



2024

# LIGHTING SOLUTION

WORLD'S HIGHEST STANDARD OF LED LIGHTING TECHNOLOGY  
**LET OUR EXPERTISE WORK FOR YOU**

# SOLUTIONS IN MACHINE VISION LIGHTING



## SOLUTION & TECHNOLOGY

CCS has a high focus on solution - our customers are continuously assured the best technology, enabling them to operate at optimum performance levels and to compete at the leading edge.

### R&D

- Extensive research facilities including the CCS Lighting Institute and AI Laboratories; more than 50 R&D engineers and over 245 global patents

### Technology Leadership

- Innovative technology covering all aspects of machine vision lighting from core photonics and spectral illumination, OLED, natural LED (full spectrum), through to specialized lighting control and integration to imaging systems



## WORLD-CLASS QUALITY

CCS set the standard for excellence in illumination; consistently developed over 26 years, our quality and manufacturing processes ensure optimum performance, uniformity, accuracy and repeatability.

### Manufacturing & Quality

- ISO9001 Quality Management and the optimum in manufacturing processes; CCS products have full compliance with International standards and environmental regulations such as CE, PSE, RoHS, REACH

### Customisation

- In addition to an extensive standard line-up, CCS also accepts custom orders - whether that be for a specific application or bespoke machine requirements. We listen to your needs and create the "optimal, custom light" for you



## MARKET-LEADING PRODUCTS

Industry's largest range of illumination for machine vision, addressing all solution types - including the Precision, Flood (Plug & Play) and Specialist sectors.

### Precision

- Industry's widest product range with over 3,284 models covering Area, Linescan and Specialised precision illumination requirements; includes FASTUS Intelligent Lighting with consistent intensity and Industry 4.0 compatibility

### Flood

- Comprehensive Plug & Play lighting systems including built-in power supplies, controllers and IP rating. Wide range of spectral options, easy set-up and connectivity to Industrial and Smart Cameras

### Specialist

- Advanced lighting systems incorporating emerging technologies such as Hyperspectral, high power SWIR, 3D Structured Light projectors, and illumination systems for Computational (multi-shot) imaging



## INTERNATIONAL SUPPORT

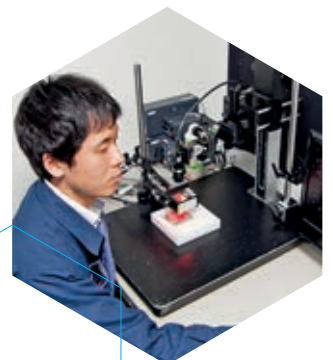
CCS has the global infrastructure and localized services to ensure support for machine vision projects, systems and machines - wherever it is needed.

### Support Services

- Providing support reassurance with 15 global sales offices and 25 testing rooms throughout Asia, Europe and America. Services include free testing of your work-pieces, and efficient trial & loan systems

### Application Knowhow

- Centralised and local customer access to advice from experienced application engineers; CCS illumination is set-up with typical camera and software configurations to prove realistic solutions for customers



# QUALITY / SOLUTION / SUPPORT

## ▶ Reference Light Sources for Camera Module LDF-RLS Series

**NEW**

- Realizes at least 90% (typ. 95%)<sup>\*1</sup> uniformity across all settable color temperatures
- 4-color temperature switching type and 2-color mixed tuning type available
- PWM intensity control<sup>\*2</sup> to prevent changes in color temperature

For details, refer to **P.183**

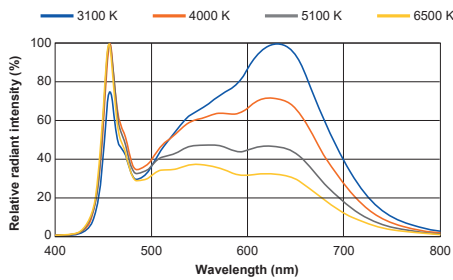
\*1 Measurement values based on our measurement conditions.

\*2 Short for pulse width modulation, this control method keeps the cycle and amplitude constant, changing only the pulse width.

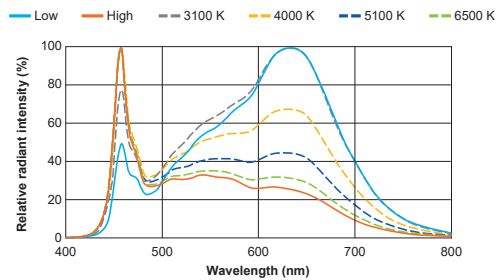


Image of use

### 4-color temperature switching type LDF-TP31X31W31W65RLS



### 2-color mixed tuning type LDFTP31X31W31W65RLS2



\* 3100 K, 4000 K, 5100 K, and 6500 K are reference values with the High and Low dimming ratios adjusted.

## ▶ Lights for Interference Fringe Inspection LDF-NB Series<sup>\*1\*2</sup>



**NEW**

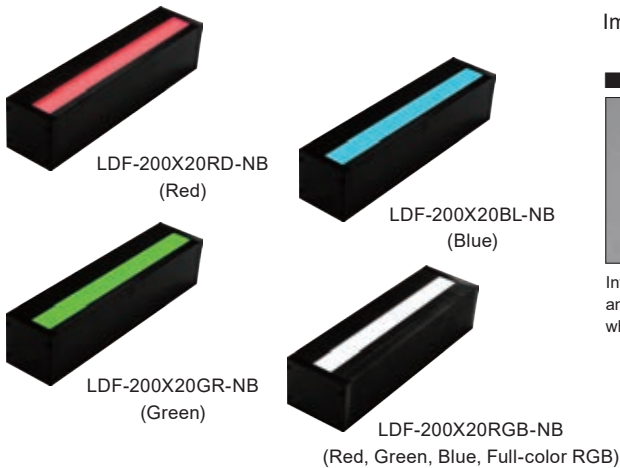
- Replacement for fluorescent lights and sodium vapor lamps
- CCS unique optical technology enables lower speckle noise<sup>\*3</sup>
- Four emission colors (Red, Green, Blue, Full-color RGB) available to suit individual needs

For details, refer to **P.271**

\*1 Interference fringes happen when light is reflected from the top and bottom boundaries of a thin film. Alternating bright and dark bands are observed.

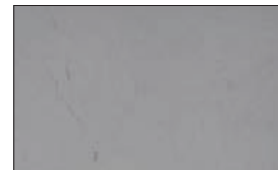
\*2 LDF-NB Series is not available in North and South America.

\*3 Speckle noise is a typical phenomenon associated with laser diodes.



### Imaging Example: Glass Lamination Inspection

■ General white LED



Interference fringes and their pattern anomaly are not visible with general white LED

■ RGB light for interference fringe inspection



Visualized lamination anomaly with light for interference fringe inspection

The data included is for reference only. Actual values may vary.

## ▶ Digital Power Supply CD-VA Series

**NEW**

- Compact and multi-functional 24 VDC input type power supply
- Supports 3 intensity control methods: PWM control, variable-voltage control, and strobe overdrive
- Up to 4 Units connectable
- Lighting output of 100 W with 2 channels and 200 W with 4 channels available (Max. 50 W for each channel)

For details, refer to

**P.333**

Output Channel	Lighting Output	Communication Method	Power Input
2/4 channel (Max. 16 channels*) <small>*With 4 control units connected</small>	2 Channels: 100 W 4 Channels: 200 W (Max. 50 W / channel)	Ethernet Parallel USB RS-232C* <small>* Uses parallel terminals</small>	24 VDC Input



CD-VA10024-2P

CD-VA20024-4P

CD-VA10024-2PE

CD-VA20024-4PE

## ▶ PCI Express Board Type Lighting Controller CX Series\*

**NEW**

- Can be mounted into an image processing PC to help save space and minimize wiring in comparison with conventional housed type power supplies
- Equipped with a range of new functions, including sequence control and trigger output, in addition to conventional lighting controls
- In addition to general PWM control, it also comes with variable-voltage intensity control that is ideal for line inspection

For details, refer to

**P.349**



CX-PV6024-4X  
(Lighting output of 60 W for 4 channels)



CX-PV12024-4X  
(Lighting output of 120 W for 4 channels)

PC mounted image



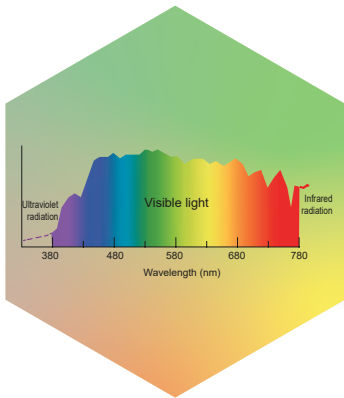
**\*This is not compliant with CE. Not available in Europe and the Americas.**

# Innovation in Illumination Technologies

## CCS Group Synergy

The CCS Group continuously strives to deliver *best in class* technology for all sectors of Illumination solutions for Machine Vision - from industry leading Precision lighting to innovative Flood and Specialist systems. This is underpinned by high performance lighting control, networking, and integration of lighting within Imaging software. Each area of CCS Group technology is fully complementary - resulting in users having the industry's widest choice, performance and quality for their Machine Vision illumination needs.





## SPECTRAL

Significant advances in Spectral developments include novel, tuneable, single LED illumination source for visible-NIR hyperspectral, unique high power SWIR, and Natural Light LED

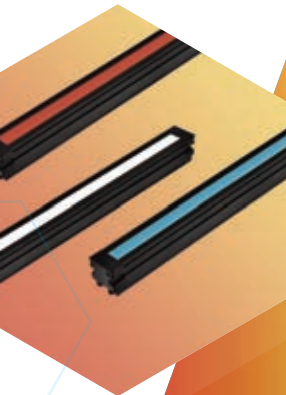
P.7



## OLED

Measuring only 3mm in thickness, the newly developed OLED technology enables a multi-layer design for flat lights - providing unique intensity and uniformity

P.267



## LINESCAN

CCS offers a broad selection of unique line light series, which are available in a wide range of different wavelengths and can be manufactured at longer lengths to suit your application needs

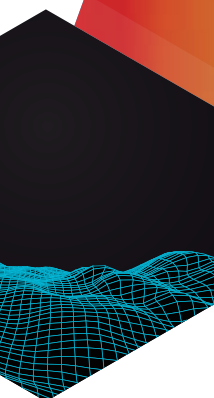
P.209



## INDUSTRY 4.0

GigE Vision/GenICam compatible lighting systems which provide plug and play set-up and easy integration with Imaging software, along with lighting data for Industry 4.0

P.15



## 3D STRUCTURED PROJECTORS

Includes EFFILUX structured LED lighting - designed for 3D reconstruction, stereovision and alignment applications. It projects powerful and accurate patterns such as : line, cross, cloud of dots

P.296



## COMPUTATIONAL ILLUMINATION

Computational Illumination from CCS provides lighting in a structured and open-architecture format - enabling high quality multi-shot image capture in a controlled fashion

P.283



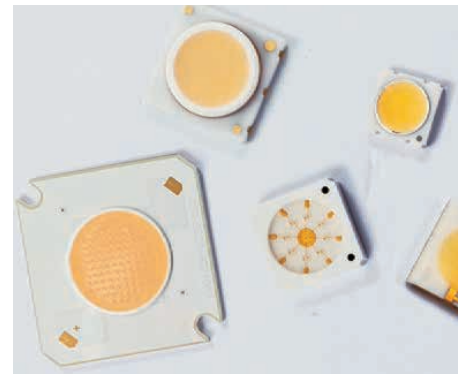
## ■ ■ Hyperspectral & SWIR

### Innovations in Spectral Illumination Technologies

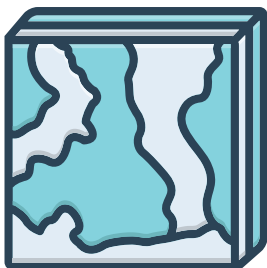
The CCS Group is combining their extensive expertise to develop leading edge technologies. This has led to significant advances in Hyperspectral land Short-Wave InfraRed (SWIR) Illumination that will expand the application possibilities for these two rapidly-growing technologies.

### Novel Illumination for Visible-NIR Hyperspectral Imaging

New developments from the CCS Group address issues of lighting for Hyperspectral Imaging in the form of a proprietary, tuneable single LED illumination source that overcomes the limitations of halogen or multiple LED based Hyperspectral Illumination solutions. The LED is a single point source, providing exceptional spatial and spectral uniformity, and enables light sources to be produced in any form factor, including projector, bar, ring, and back lights. This will allow for an enormous range of new applications for Hyperspectral Imaging in the visible and near infrared (NIR) region of the spectrum.



### The Benefits of Hyperspectral Illumination



Hyperspectral Imaging is a powerful approach that combines conventional imaging with spectroscopy. Organic materials selectively absorb light at specific wavelengths depending on their composition. These distinctive 'fingerprints' can be used to uniquely identify them. In Hyperspectral Imaging, a series of images can be acquired by sequentially allowing narrow wavelength bands of light from the sample to fall on the camera sensor.



By selecting the appropriate wavelengths, Hyperspectral Imaging allows the assessment of product quality, and the detection of contaminants and foreign material based on chemical composition, which is not possible using traditional machine vision. Another major benefit of Hyperspectral Imaging is that packaging materials are usually transparent to NIR light, meaning that the technique can be used to examine products inside their packaging.



## Hyperspectral Illumination Requirements

As with all machine vision techniques, using an appropriate illumination source is absolutely critical in delivering high quality results. The key requirement for Hyperspectral Illumination is to have as homogeneous of emission as possible over the entire wavelength range of interest from a point source to ensure that all wavelengths are generated from the same physical location.

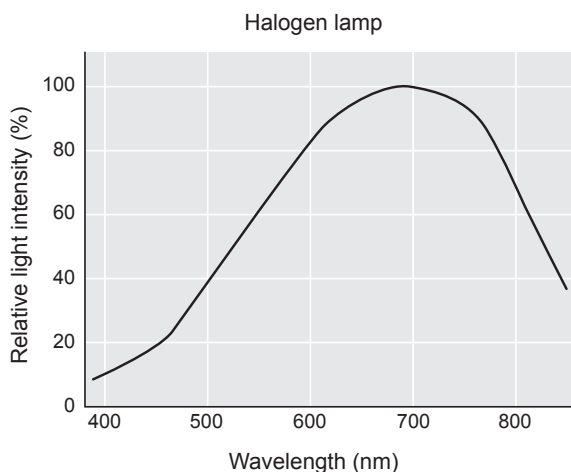


Figure 1 - Sample Spectrums for Tungsten Halogen

For visible-NIR Hyperspectral Imaging the wavelength range is 400 to 900 nm. The ideal illumination source would be sunlight, but this is not a practical solution for machine vision, so a black body radiation source in the form of a tungsten halogen light source has been the most commonly used solution to date. While this generally has good uniformity of emission over the wavelengths of interest, it has a relatively poor emission in the blue spectral range (Figure 1).

However, a large proportion of the energy emitted lies outside the wavelength region of interest. This energy is wasted and generates excessive heat, which means the lamps must be cooled or equipped with suitable heat sinks. This adds cost, complexity and can lead to significant integration challenges in production line applications due to the bulky size of the enclosures. There are also issues related to stability, an essential requirement for reproducibility of measurements in machine vision, and short lifetimes which have implications on operating and maintenance costs. In addition, EU environmental regulations may result in these types of lamps being banned going forward. Many industrial imaging applications also require the illumination to be strobed to eliminate the effects of product movement, but halogen lamps cannot be pulsed.

## LED Hyperspectral Imaging

LED illumination has largely replaced any other illumination method in most machine vision applications, but for hyperspectral imaging, the source must cover the entire spectrum between 400 and 900 nm and provide uniform illumination across the wavelength range. Although white light LEDs are available, they have a large peak in the blue region of the spectrum, a 'hole' around 480 nm and only operate up to just over 700 nm, as shown in Figure 2.

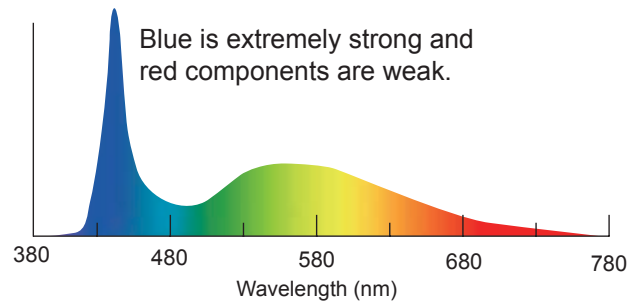


Figure 2 – Spectrum for Conventional White Light LED

This offers neither the uniformity required nor the full wavelength range to utilize the sensitivity up to 1000 nm provided by the CMOS camera sensors used in Visible NIR Hyperspectral Imaging.

An alternative approach is to use multiple monochromatic LEDs in a single illuminator to cover the required wavelength range. Dealing with multiple LED sources, however, always brings a compromise between spectrum and uniformity because the bandwidths of classic monochromatic LEDs are narrow, making it nearly impossible to produce a homogeneous high performance area hyperspectral light using the number of narrow band LEDs required. In fact, this is actually just a multispectral solution, where the available wavelengths are limited to those of the LEDs chosen. Until now, the only practical way to integrate enough LEDs for hyperspectral lighting was to combine them into a line scan illuminator. This, however, creates spatial inhomogeneity since the light from the individual LEDs arrives at the sample from different angles, depending on the position of the LED in the line.

## The new LED solution

CCS Group has addressed these issues in the form of a proprietary, tuneable single LED illumination source that overcomes the limitations of halogen or multiple LED based hyperspectral lighting solutions. It provides a nearly flat spectrum between 400 and 900 nm, as shown in Figure 3.

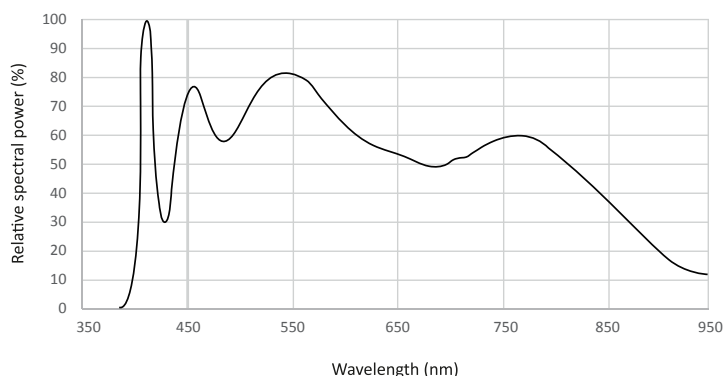


Figure 3 - Spectrum of the proprietary Hyperspectral LED

This innovative new approach provides spatial and spectral uniformity in a point source hyperspectral illuminator. These illuminators are based on a single broadband LED that was both developed and is manufactured in-house. They are therefore completely compatible with existing mechanical enclosures, meaning that any of the company's standard products can be produced in a hyperspectral imaging format.

Users can benefit both from unlimited form factors, including bar lights, line lights, back lights, ring lights, projectors, etc., to suit their particular application, and from greatly simplified integration into existing inspection processes. As a single point source, all wavelengths come from the same spatial origin of the LED, meaning there are no wavelength dependent angular absorption effects.



Crucially, for added versatility, the spectrum can be tuned within the available spectral range in order to tailor the light output to the specific application requirements – the system is not limited to fixed output wavelengths as is the case for Multispectral Imaging. In addition, the hyperspectral LED can be strobed if required and multiple LEDs can be mounted on a single PCB if increased output intensity is needed. Of course, another major benefit is the longevity associated with LEDs.

## Extending the wavelength range

Many organic materials have unique absorption and reflection properties across the electromagnetic spectrum. More importantly, these properties offer a unique fingerprint for organic material, especially in the NIR region of the electromagnetic spectrum, which holds important information regarding the material. CMOS sensors used in the Machine Vision Industry are sensitive up to about 1000nm, making it possible to capture information in an image based on these unique properties.

Light output from the new hyperspectral LED diminishes rapidly after 900nm (Figure 3), as does the sensitivity of CMOS sensors, which affects the signal-to-noise ratio. However, this can be compensated by adding two additional LEDs with a peak wavelength of respectively 930nm and 970nm. By doing so, the intensity of the light source between 900nm and 1000nm, as shown in Figure 4, can be increased significantly, allowing for better signal-to-noise ratio.

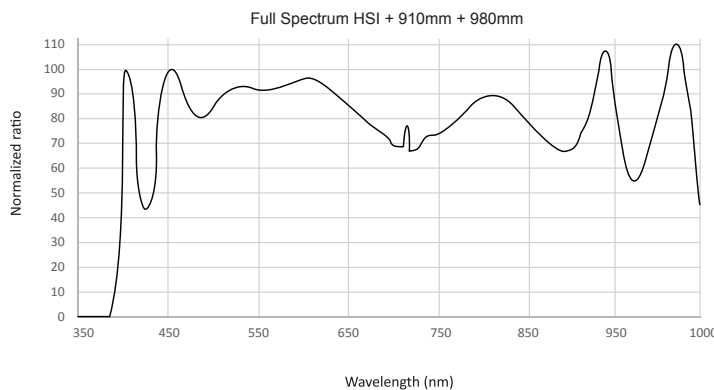
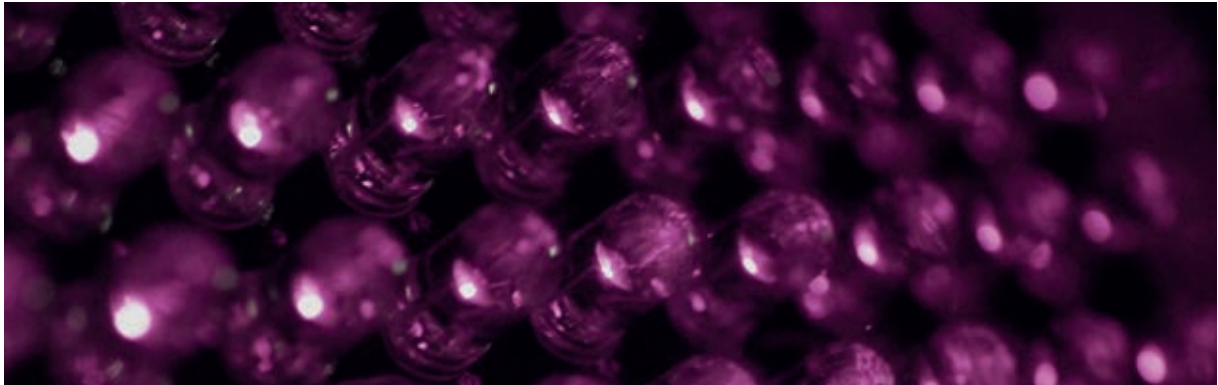


Figure 4 - Extended Range Visible-NIR Hyperspectral Solution



## Practical applications

Since existing tungsten halogen Hyperspectral Illumination sources have considerable operational challenges, such as heat dissipation, poor energy efficiency and continuous only output, together with difficulty in achieving high spatial uniformity due to lamp size and optics, it is often not possible to build these lights in the form factors most frequently needed for automated hyperspectral imaging.



The availability of the new hyperspectral LEDs in a variety of form factors will open up new opportunities across many applications and industries, including medical imaging and diagnostics, environmental monitoring, forensics, food and pharmaceutical analysis, food sorting and quality grading, biotechnology, recycling, bank note inspection and chemical analysis.

Furthermore, the CCS Group offers a broad selection of light sources with different peak wavelengths in the SWIR region. This allows light sources to be deployed in numerous SWIR or multi-spectral applications where the workpiece's absorption properties in the infrared range are key in solving the application. As an example, the specific absorption properties of organic materials and water through the near infrared and short-wave infrared regions from 750nm up to 1700nm allows the detection of defects and contamination due to foreign matter, mold, disease and pests in harvested produce such as fruit, vegetables, rice, corn, nuts, soybeans, coffee, and many more.



The new SWIR LED lighting range is available in six form factors: ring, bar, flat, dome, line, and spot light. These light sources are all available with peak wavelengths of 1050, 1200, 1300, 1450, 1550, 1650nm. The shape and size of these light sources can be customized accordingly to the specifications of the application. Please refer to P.181 and P.177 for further information about the hyperspectral product range and for the SWIR product range from CCS Group.

## Unique Light Source for High-Power SWIR Illumination

CCS's subsidiary, EFFILUX, developed a novel LED SWIR source - SWIR H.O.P. (High Optical Power) Technology, based on a proprietary material that emits SWIR light, which is designed to deliver high output power. This technology leads the way to new applications in machine vision and scientific imaging.

### Emerging SWIR imaging for machine vision

Machine vision is currently dominated by visible imaging. Indeed, similarities with the human eye perception and the technological advances in lighting power, camera resolution, and computer processing have made these technologies inevitable. However, there is an intrinsic and impassable limit: the visibility itself! Only what can be seen by the naked eye is visible.

In this context, a new generation of sensors has emerged in the machine vision market: Short-Wave InfraRed (or SWIR) cameras.

Occupying the boundary between visible and thermal imaging, this light field has the capability to reveal phenomena and elements invisible to standard CMOS/CCD cameras. The SWIR imaging market is rapidly growing due to the range of applications made possible using SWIR-range wavelengths:

- See through opaque materials (plastics, silicon, glass, etc.)
- Reveal chemical elements (water, lipids, collagen, etc.)
- Offer visibility in harsh conditions (through smoke, dust, etc.)

Until now, SWIR imaging has been severely limited by the illumination. With the exception of halogen sources, there are no light sources powerful enough for most applications in the SWIR spectrum. However, halogen sources for SWIR imaging have many drawbacks, such as high radiated heat, very short lifetime, low efficiency and non-tunable spectrum, and they are difficult to couple with optics to control coverage area and power density.

Using laser sources is also a possible solution, but only for applications which require point sources. Managing the luminous flux of a laser source is complicated and brings an undesirable speckle effect. Furthermore, it is not easy to integrate into a machine vision system and is very dangerous for eyes.

### About SWIR H.O.P. Technology

The H.O.P. (High Optical Power) Technology from EFFILUX changes the SWIR market, providing high output power and the ability to address a new class of applications. H.O.P. is more than just a good integration of LEDs – it is a new type of powerful light source, based on a proprietary material that emits its own SWIR light, making it possible to reveal invisible phenomena to SWIR cameras that usual LED systems could not.

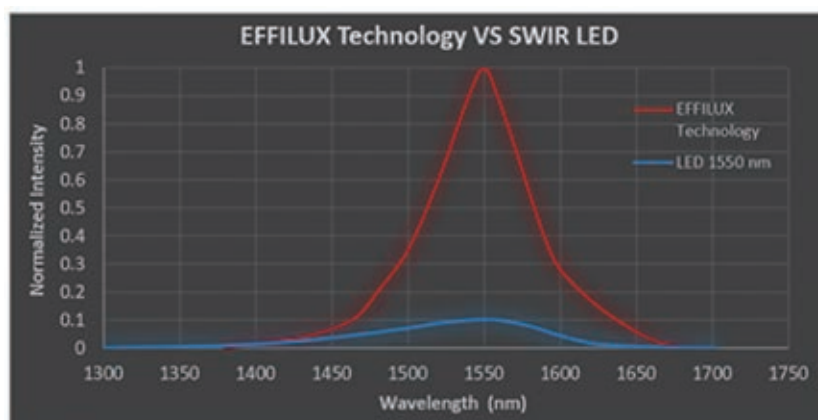


Figure 6 – Intensity comparison between EFFILUX technology and SWIR LED 1550 nm

Now, there is no need to drastically increase the camera's integration time to get a good image. This combination of SWIR sensor and the EFFILUX H.O.P. Technology provides greatly enhanced contrast – the key in all machine vision applications, even for high-speed inspection tasks.

Better yet, to achieve the same output power, many expensive SWIR LEDs can be replaced by a single H.O.P. "chip", resulting in lower costs for system builders using SWIR illumination.

## Advantages of H.O.P. Technology

The H.O.P. Technology retains all the advantages of LEDs compared to halogen or laser sources, with a huge improvement in power and the flexibility to create both highly focused SWIR beams as well as large area uniform SWIR illumination. In fact, one “chip” of the H.O.P. Technology emits a luminous flux comparable to a 50 W halogen source.

These properties make it very easy and convenient to integrate into a machine vision system:

- This technology has a great lifetime, around 50000 hours
- No excessive warm up
- Using an adequate cooling system, the H.O.P. Technology offers a perfect stability and reliability, which is crucial for repetitive tasks and measurements, and especially for calibration systems.
- Its LED-based technology makes this source speckle-free
- Quick pulse is also possible thanks to its quick response time, unlike the long wait needed to switch the light on again with halogen sources
- This technology is very compact - so it can be integrated into very compact products
- Its energy efficiency allows a low power consumption
- Fully safe for human eyes
- Adjustable to extreme conditions: thermal, vibration, humidity...

Although conventional SWIR LEDs still offer the benefits of LED technology, they are usually weaker and can only achieve output power in the mW range. Increasing the number of LEDs is a potential solution but is expensive and still does not compare to halogen in terms of power.

## Practical applications

SWIR illumination is an emerging technology that requires different thinking than for visible light sources. A thorough understanding of the fundamental optical challenges and new methods for developing effective light sources, including the use of novel materials and processes, is essential.

The H.O.P. Technology can be integrated into all EFFILUX standard illumination systems, offering an extensive range of SWIR lighting solutions, including area & line scan imaging, backlight, dome light, ring light, bar light, and any other LED lighting systems commonly used in SWIR camera applications.

As one example, this powerful SWIR light engine has been combined into a complex optical projector, resulting in the most powerful, sharp and homogenous SWIR pattern projector on the market.



Figure 7 – SWIR H.O.P. pattern projector

This is a very unique product because of its optical performance and its flexibility. Users can project any pattern they want and illuminate objects from short working distances (focused light) to far working distances (5 meters).

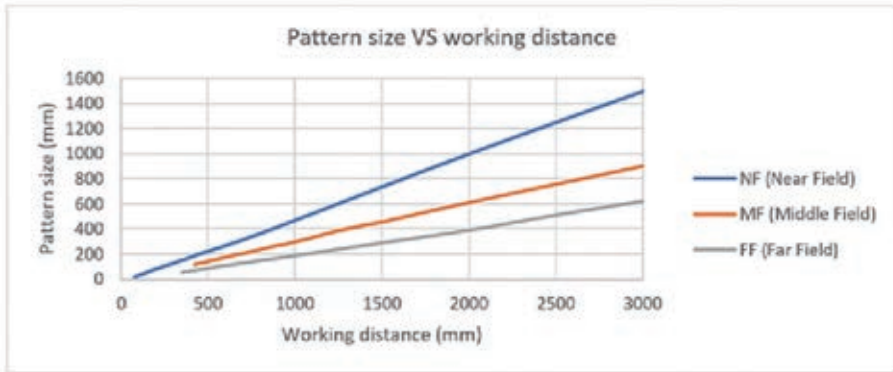


Figure 8 – Spot pattern size and related working distance

Here is a comparison between a projector with a standard LED and H.O.P. Technology. This clearly demonstrates the advantages of the H.O.P. Technology vs. any design based around SWIR LEDs only.

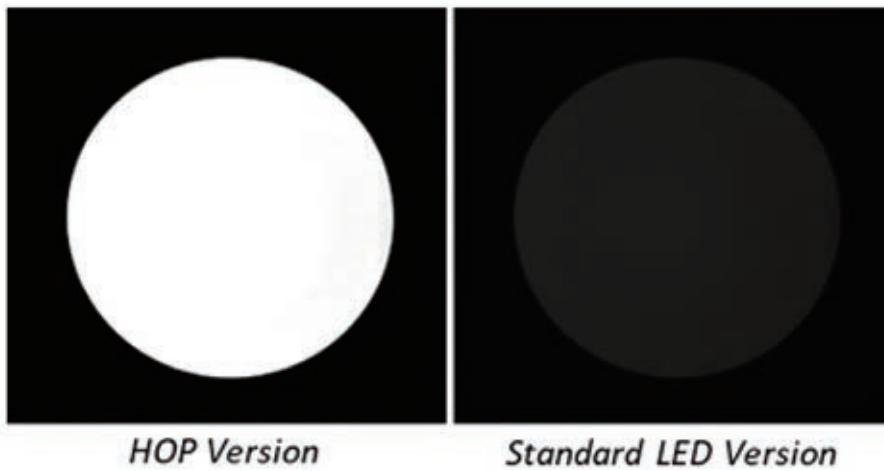


Figure 9 – Comparison of spot pattern based on H.O.P. Technology, made with an InGaAs Camera at the same exposure time

This novel technology opens up new opportunities across many applications and industries, including: Water detection for agriculture, F&B, medical and biotech industry, opaque materials inspection (plastics, silicon, solar cells etc), fill level, security, imaging in harsh environments such as smoke, fog, and dust, and many more.

For further information on H.O.P. Technology, please contact your local CCS representative.



## ■ INTELLIGENT LIGHTING FOR INDUSTRY 4.0

Intelligent lighting (smart lighting) brings benefits to various machine vision applications by enabling lighting, cameras and imaging software to be integrated within an easy, plug & play platform and process. They also provide the necessary lighting data which is important for Industry 4.0 systems - indicating factors such as lighting status, performance and lifetime information.

Thanks to advanced CCS technology, lighting solutions for machine vision image processing have become even simpler, flexible and efficient. Allowing for the significant variety of different application demands in machine vision, CCS has developed levels of intelligent lighting functions from which users can choose - from easy connection to automation systems for basic lighting connectivity and data, through to GeniCam compatible systems with intensity feedback for high precision applications.

### Why use Intelligent Lighting?

Intelligent lighting functionality provides the essential ease of use for the implementation and development of lighting within machine vision systems. Along with the need for machine vision systems to offer ever increasing inspection performance, the demands on lighting technology are also developing at a rapid pace – in parallel to this, intelligent lighting functions are making the use of this increased illumination capability very accessible and straightforward to implement. The key advantages of intelligent lighting can therefore be summarised as:

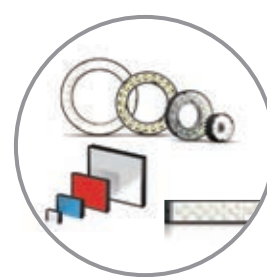
- **Integration of camera and lighting within one machine vision environment**  
*One environment, with open technology, for set-up and development of Lighting, Cameras and Imaging Software*
- **Ease of use, Plug & Play**  
*Easy connectivity and safe implementation of advanced lighting control functions such as strobing and overdriving*
- **Lighting data for Industry 4.0**  
*Essential lighting data such as intensity levels and lifetime for predictive maintenance and diagnostics*



One development environment for Lighting, Cameras and Imaging



Open network standards for ease and flexibility of implementation

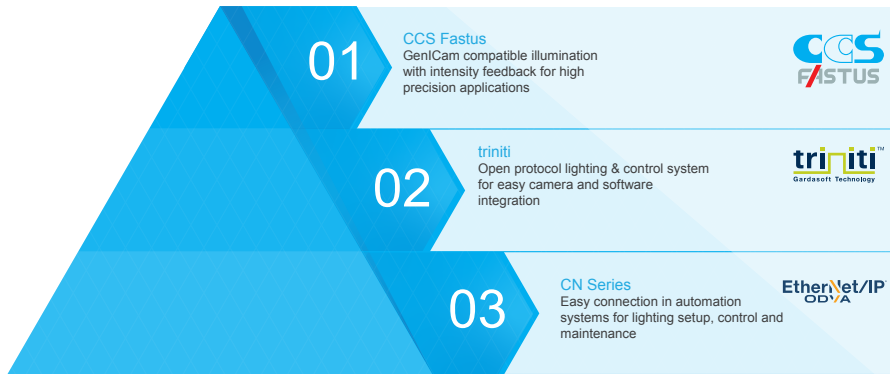


Easy connectivity of lighting and safe development of advanced control





### 3 levels of lighting integration from CCS aligned to users application requirements

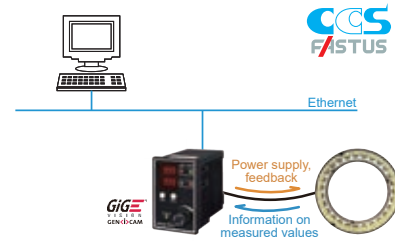


## CCS FASTUS

### GenlCam compatible illumination with intensity feedback for high precision applications

For specialist applications requiring guaranteed illumination levels, CCS FASTUS technology offers a whole new level of machine vision lighting solutions with sensing, monitoring and feedback functions - realizing stable and reliable inspection. It also guarantees lighting intensity and integrates with GenlCam for Industry 4.0 maintenance and performance data.

- Optimum uniformity
- Precise accuracy & stability
- Consistent intensity over time



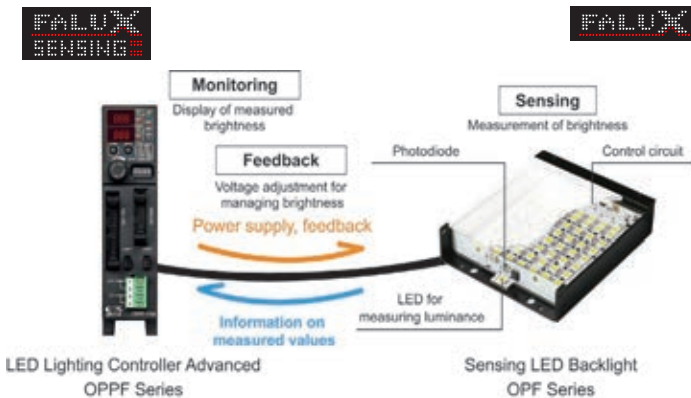
This technology is ideal for applications which demand minimal variance in illumination levels over time, for example in the Glass, Semiconductor, Pharmaceutical and Microscopy sectors. Brightness can be monitored using the built-in photodiodes by connecting a CCS FASTUS Series LED lighting controller, and this allows for accurate measurement of LED brightness even with short period illumination (monitoring of internal temperatures is also possible) - all information being seamlessly available via GenlCam for integration with Cameras, Imaging Software and diagnostic systems.

### How CCS FASTUS intelligent lighting technology delivers guaranteed illumination intensity

At the heart of CCS FASTUS intelligent LED lighting is FALUX and FALUX Sensing technology – unique, patented lighting control and illumination feedback functions which provide the necessary intelligence to drive the high performance, accuracy and stability of CCS FASTUS illumination systems for Machine Vision.

#### • Feedback-Brightness maintenance

Brightness is automatically adjusted to maintain initial settings.



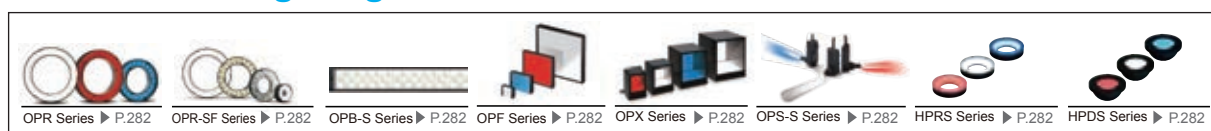
### Built-in FALUX circuit to correct variations in brightness

Using constant current circuitry dependent on the input voltage, variations in the forward current of individual LEDs are corrected for uniform brightness. Meanwhile, the temperature compensation circuit compensates for fluctuations in brightness due to increases in operational or ambient temperature.

### Equipped with FALUX Sensing for monitoring light brightness and temperature

LED brightness sensing is performed using multiple built-in photodiodes. This allows for accurate measurement of LED brightness not only during continuous illumination but also with short period illumination.

## CCS FASTUS lighting models

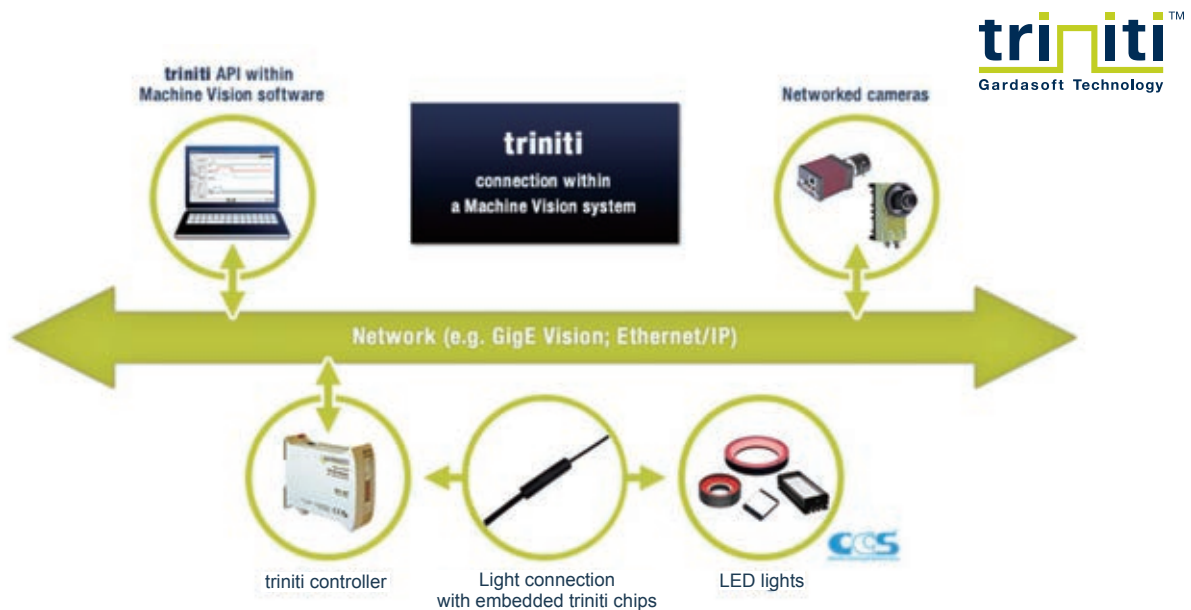




## Open protocol lighting & control system for easy camera and software integration

For high precision lighting applications, triniti™ is a new, enabling technology from our group company Gardasoft, which provides expert control, operational intelligence and full integration of Machine Vision Lighting, all within a 'plug-&-play' environment.

With triniti, Machine Vision systems with LED Lighting are now much easier to create, configure and commission, while at the same time offering increased functionality. This is because complex control techniques have now been made very easy to implement.



### Key benefits at a glance:

- Enables non-expert users to use expert Machine Vision lighting techniques
- Revolutionises the integration of lighting parameters right through to application level software
- Addresses the industry's identified need for a highly flexible system that is also readily 'plug-&-play'
- Provides a long-term stability of brightness that helps to enhance the reliability of Machine Vision systems over many years

## Compatible CCS lighting models for triniti

CCS Intelligent Lighting systems can be easily selected. The following CCS lighting ranges have the triniti Intelligent Lighting functionality available as standard (other CCS models can have this added as a 'custom fit' option).



## ■ CN Controllers

### Easy connection in automation systems via Ethernet/IP for lighting set-up, control and maintenance

Where the user requires easy connection between their automation and inspection systems, the CCS CN controllers provide the ideal connectivity via EtherNet/IP networks. Conforming to ODVA Composite Conformance Test Revision CT15, these controllers provide a true smart device for the IoT era.

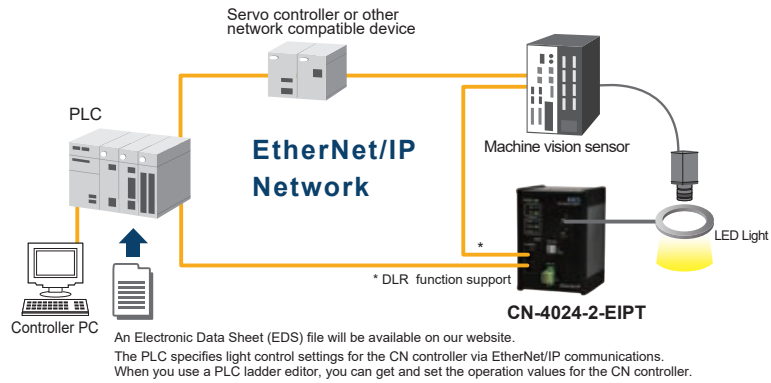
The following lighting values are available via the EtherNet/IP network for either set-up, operational or diagnostic purposes:

*Accumulated trigger count, accumulated lighting duration, and error status*

In addition, users can set and check the following values:

- Lighting mode, trigger logic, ON/OFF setting for the light unit, light intensity, strobe time, and lighting delay

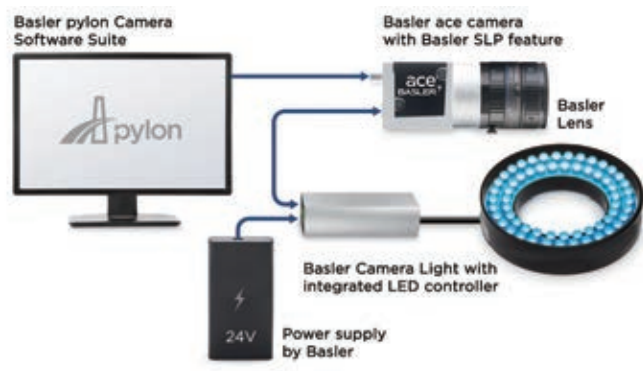
The CN controller also provides TCP/IP commands for the same operations.



## ■ CameraLight

### OEM plug & play system for easy integration of lighting and cameras in one environment

The Basler Camera Light system is a new intelligent lighting system, powered by CCS. It provides easy camera synchronization, light strobing and overdrive.



#### Simple and cost-optimized

- **Ease of use**
- Plug & Play thanks to harmonized components (camera + light + cables)
- 1 software for configuration via Basler pylon Camera Software Suite
- 1 power supply only
- **Illumination inclusive LED controller**
- Communication between lighting and camera via **Basler SLP feature**
- Parameterization of light and camera via just one interface
- Automatic timing for strobing operation

It consists of a comprehensive series of lighting which is compatible with the Basler SLP intelligent lighting concept. Jointly developed by both Basler and CCS, the world's leading camera and lighting manufacturer for machine vision applications, it offers the maximum ease of use and great cost performance.

In addition, the Basler pylon Camera Software Suite provides one configuration environment for both camera and lighting, and all parameterization of lights and camera is done via just one interface - including automatic timing for strobing and overdriving.

## M12 Connector and Flying Leads Light Unit Cables Are Now Available



SM connectors are used for the light unit cables of CCS's standard light unit.

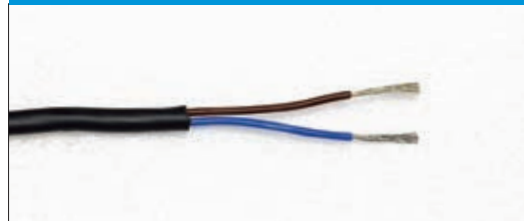
## Now You can choose

### 4-pin M12 Socket Connectors



Note: This connector cannot be used for the light units with a power consumption of more than 65 W.

### Flying Leads



These specifications are provided for custom production. Please order with the model name notation given below.

### Specifications

#### 4-pin M12 Socket Connectors



Model	Standard model name + " -M12 "
Cable Length	300 mm
Polarity & Signal	1: (+ 24 VDC) 2: No Connection 3: (- GND) 4: No Connection

#### Flying Leads



Model	Standard model name + " -FL "
Cable Length	2,000 mm
Polarity & Signal	Anode(+)Brown / Cathode(-)Blue

For example, to order LDR2-32RD2 with an **M12** connector attached, specify the model name as "LDR2-32RD2-M12".

## Applicable Products

These specifications are applicable to the standard products shown below.

<p>▶ <b>P.31</b> Ring Lights <b>LDR2</b></p> 	<p>▶ <b>P.57</b> Low-angle Square Lights <b>FPQ3</b></p> 	<p>▶ <b>P.111</b> ▶ <b>P.117</b> ▶ <b>P.123</b> Flat Dome Lights <b>LFXV / LFX3 / LFX3-PT</b></p> 
<p>▶ <b>P.35</b> Low-angle Ring Lights <b>LDR2-LA</b></p> 	<p>▶ <b>P.61</b> Bar Lights <b>LDL2</b></p> 	<p>▶ <b>P.125</b> Coaxial Lights <b>LFV3</b></p> 
<p>▶ <b>P.39</b> Low-angle Ring Lights <b>LDR-LA1</b></p> 	<p>▶ <b>P.71</b> ▶ <b>P.75</b> Bar Lights <b>HLDL3 / LB</b></p> 	<p>▶ <b>P.135</b> Coaxial Lights <b>MSU</b></p> 
<p>▶ <b>P.43</b> ▶ <b>P.44</b> Ring Lights / Low-angle Ring Lights <b>SQR / SQR-TP</b></p> 	<p>▶ <b>P.83</b> Flat Lights <b>TH2</b></p> 	<p>▶ <b>P.159</b> ▶ <b>P.165</b> Ultraviolet / Violet Lights <b>UV3 / VL3 / UV</b></p> 
<p>▶ <b>P.45</b> Ring Lights <b>HLDR3</b></p> 	<p>▶ <b>P.99</b> Flat Lights <b>LFL</b></p> 	<p>▶ <b>P.171</b> ▶ <b>P.177</b> Infrared Lights <b>IR2 Series Under 1000-nm Type / IR Series Over 1000-nm Type</b></p> 
<p>▶ <b>P.47</b> Ring Lights <b>HPR2</b></p> 	<p>▶ <b>P.103</b> Dome Lights <b>HPD2</b></p> 	<p>▶ <b>P.193</b> Spot Lights <b>LV</b></p> 
<p>▶ <b>P.51</b> Ring Lights <b>LFR</b></p> 	<p>▶ <b>P.107</b> Dome Lights <b>LDM2</b></p> 	<p>▶ <b>P.227</b> ▶ <b>P.228</b> Line Lights <b>LN / LN-HK</b></p> 
<p>▶ <b>P.53</b> Ring Lights <b>LKR</b></p> 	<p>▶ <b>P.109</b> Dome Lights <b>LAV</b></p> 	<p>▶ <b>P.233</b> Line Lights <b>LND2</b></p> 
<p>▶ <b>P.55</b> Low-angle Ring Lights <b>FPR</b></p> 	<p>▶ <b>P.110</b> Dome Lights <b>PDM</b></p> 	<p>▶ <b>P.239</b> Line Coaxial Lights <b>LVN</b></p> 

New Products	» P.3
Hyperspectral & SWIR	» P.7
Lighting for Industry 4.0	» P.15
LED Light Product Introductions	» P.31
Line Light List	» P.209
Line Light Product Introductions	» P.211
Lens Product Introductions	» P.259
CCS-LT Products	» P.267
Control Unit Selection Guide	» P.309
List of Control Unit Specifications	» P.311
Control Unit Product Introductions	» P.321
Options	» P.371
Extension Cables	» P.383
Examples of Custom Ordered Products	» P.385
Examples of Application	» P.391
Information about UV Curing	» P.399
Information about Natural Light	» P.401
Technical Guide	» P.403
Regulations, Etc.	» P.415
Model Index	» P.417
Discontinued Products Information	» P.421
Company Information	» P.423
Business Locations	» P.425
Service and Support	» P.429
Testing Room Information	» P.430

## LED Lights

### Ring Lights

Provides direct light from an angled emitting part

P.31

#### LDR2 Series

**For character recognition, visual inspection, and inspection for damage or stains**

- Applications: Character recognition, visual inspection, inspection for damage or stains, and reading 2-dimensional code, etc.
- 31 models
- LED colors: ● ○ ● ●



### Low-Angle Ring Lights

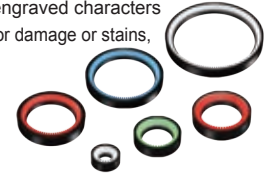
Provides direct light at a low angle from an angled emitting part

P.35

#### LDR2-LA Series

**For edge extraction, inspection for engraved characters, damage or stains**

- Applications: Inspection for engraved characters on metal surfaces, inspection for damage or stains, foreign material inspection, etc.
- 24 models
- LED colors: ● ○ ● ●



### Low-Angle Ring Lights

Provides direct light at a low angle from an emitting part directed horizontally

P.39

#### LDR-LA1 Series

**For edge extraction, inspection for engraved characters, damage, or stains**

- Applications: Inspection for engraved characters on metal surfaces, inspection for damage or stains, foreign material inspection, etc.
- 20 models
- LED colors: ● ○ ● ●



### Ring Lights

Provides direct light from the upper section

P.43

#### SQR Series

**For character recognition, visual inspection, and inspection for damage or stains**

- Applications: Character recognition, visual inspection, inspection for damage or stains, and reading 2-dimensional code, etc.
- 5 models
- LED colors: ● ○ ● ●



### Low-Angle Ring Lights

Provides direct light at a low angle from an angled emitting part

P.44

#### SQR-TP Series

**For edge extraction, inspection for text or damage**

- Applications: Visual inspection of metal parts and inspection for damage or stains, etc.
- 2 models
- LED color: ●



Direct Lighting

LED color: ● Red, ○ white, ● blue, ● green, ● violet, ● UV, ● IR

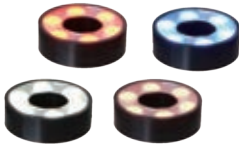
Does not include made-to-order models. The features and applications listed do not apply to certain models.

## LED Lights

**Ring Lights**  
Ring lights using condenser lens suitable for long-distance illumination **P.45**

**HLDR3 Series**  
**For wide-area, long-distance, and robot picking inspections**


- Applications: Exterior inspection of circular workpieces, metal parts, etc.
- 12 models
- LED colors: ● ○ ● ●



**Ring Lights**  
Achieves a uniform region with a high degree of freedom by using a unique illuminating mechanism **P.47**

**HPR2 Series**  
**For inspection for damage or stains, visual inspection, and color determining inspection**

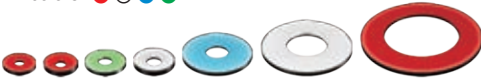
- Applications: High angle uniform illumination and inspection via feature extraction on low-angle, etc.
- 28 models
- LED colors: ● ○ ● ● (Full color: ● ● ● ●)



**Ring Lights**  
Diffused illumination from a flat emitting surface **P.51**

**LFR Series**  
**For character recognition, text inspection, and color determining inspection**

- Applications: Inspection for parts mounted on circuit boards and surface inspection for metal parts, etc.
- 23 models
- LED colors: ● ○ ● ●



**Ring Lights**  
Provides diffused light from an angled emitting surface **P.53**

**LKR Series**  
**For character recognition and inspection for stains or dents**


- Applications: Soldering inspection, product identification inspection in color determination, and inspection for stains on a glossy surface, etc.
- 12 models
- LED colors: ● ○ ● ●



**Low-Angle Ring Lights**  
Provides diffused light at a low angle from an angled emitting surface **P.55**

**FPR Series**  
**For edge extraction, inspection for engraved characters, and character recognition**

- Applications: Edge extraction of metal parts and character recognition on electronic parts, etc.
- 12 models
- LED colors: ● ○ ● ●




## LED Lights

**Low-Angle Square Lights**  
Provides diffused light at a low angle from four directions **P.57**

**FPQ3 Series**  
**For visual inspection, character recognition, and inspection for fragments or stains**

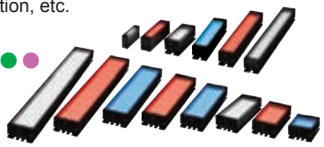
- Applications: Visual inspection for electronic parts, character recognition, pin and lead bending, and inspection for stains, etc.
- 24 models
- LED colors: ● ○ ●



**Bar Lights**  
Provides direct light from an emitting part equipped with LEDs in straight lines **P.61**

**LDL2 Series**  
**For damage and visual inspection, and text reading**

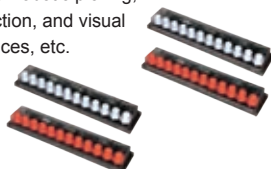
- Applications: Damage inspection of metal with hairline finishing, and foreign material and detection inspection, etc.
- 144 models
- LED colors: ● ○ ● ● ●



**Bar Lights**  
Bar light with built-in controller, perfect even for large workpieces **P.67**

**LDLB Series** <Lineup with Waterproof Types>  
**For product identification inspection, and visual inspection**

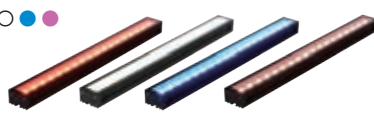
- Applications: Light source for robotic picking, product identification inspection, and visual inspection for large workpieces, etc.
- 4 models
- LED colors: ● ○



**Bar Lights**  
Robust lineup of bar lights suitable for long-distance illumination **P.71**

**HLDL3 Series**  
**For product identification inspection, visual inspection, and dimension measuring**

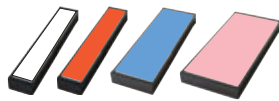
- Applications: Large workpiece exterior inspection, etc.
- 144 models
- LED colors: ● ○ ● ●



**Diffused Bar Lights**  
Produces uniform diffuse light that can be used for backlighting and direct reflected light observation **P.75**

**LB Series**  
**For visual inspection, damage, or dent inspection, foreign material inspection, Liquid surface inspection**

- Applications: Inspection of uneven surface, foreign material inspection, Backlight inspection, etc.
- 338 models
- LED colors: ● ○ ● ● ●



LED color: ● Red, ○ white, ● blue, ● green, ● violet, ● UV, ● IR

Does not include made-to-order models. The features and applications listed do not apply to certain models.



## LED Lights

### Flat Lights

Diffused illumination from a flat emitting surface

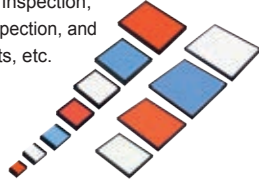
P.83

#### TH2 Series

High-Luminance Type

For dimension measuring and foreign material inspection

- Applications: Liquid surface inspection, pinhole inspection, visual inspection, and burr inspection for metal parts, etc.
- 33 models
- LED colors: ● ○ ●



### Flat Lights

Provides a diffused light of high-directivity

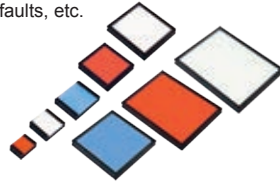
P.87

#### TH2-PM Series

High-Directivity Type

For dimension measuring and visual inspection

- Applications: Dimension measuring, visual inspection, and inspection for stains and faults, etc.
- 24 models
- LED colors: ● ○ ●



### Flat Lights

Flat light suitable for large workpieces

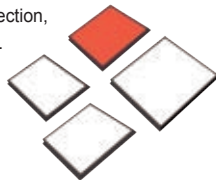
P.91

#### TH2 Series

Large Type

For visual inspection and foreign material inspection

- Applications: Inspection of liquid surface level in large workpiece, visual inspection, and foreign material inspection, etc.
- 8 models
- LED colors: ● ○



### Flat Lights

Applicable to inspection of rectangular workpieces and imaging with a line sensor camera

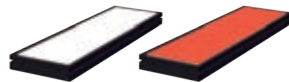
P.93

#### TH2 Series

Rectangular Type

For visual inspection and foreign material inspection

- Applications: Visual inspection of rectangular and fault inspection of sheet-shaped workpieces, etc.
- 2 models
- LED colors: ● ○



### Flat Lights

A flat emitting surface provides a light from the same axis as the camera

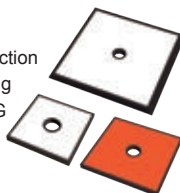
P.95

#### TH2-CR Series

Camera-Window Type

For visual inspection and foreign material inspection

- Applications: Visual inspection, inspection for foreign material and stains, reading engraved text, and inspection of FIGP material on metal components, etc.
- 6 models
- LED colors: ● ○



## LED Lights

### Flat Lights

Diffused illumination from a flat emitting surface

P.99

#### LFL Series

For dimension measuring, visual inspection, and foreign material inspection

- Applications: Liquid surface inspection, visual inspection, packaging tears and stain inspection, etc.
- 43 models
- LED colors: ● ○ ● ●



### Dome Lights

Provides diffused light evenly through the dome-shaped reflective panel

P.103

#### HPD2 Series

For visual inspection, color determination inspection, and inspection for stains

- Applications: Visual inspection for glossy surfaces, curved surfaces or uneven surfaces, text inspection, color determination inspection, engraved character inspection, inspection for damage or stains, etc.
- 30 models
- LED colors: ● ○ ● ● (Full color: ● ● ● ●)



### Dome Lights

Provides diffused light from a cone-shaped emitting surface

P.107

#### LDM2 Series

For visual inspection, color determination inspection, and text inspection

- Applications: Visual inspection for glossy surfaces, curved surfaces or uneven surfaces, text inspection, color determination inspection, soldering inspection, etc.
- 8 models
- LED colors: ● ○ ● ●



### Dome Lights

Provides diffused light evenly using a mechanism that combines a diffused lighting and a coaxial lighting

P.109

#### LAV Series

For character recognition, text inspection, and dimension measuring

- Applications: Inspection for faulty plating, inspection of a sealed target, and inspection for foreign material attached to a glossy surface
- 4 models
- LED colors: ● ○ ● ●



### Dome Lights

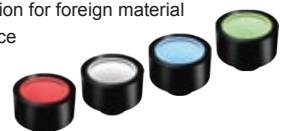
Mechanism that combines a diffused lighting, coaxial lighting, and low-angle lighting

P.110

#### PDM Series

For character recognition, text inspection, and dimension measuring

- Applications: Inspection for faulty plating, inspection of a sealed target, and inspection for foreign material attached to a glossy surface
- 4 models
- LED colors: ● ○ ● ●



LED color: ● Red, ○ white, ● blue, ● green, ● violet, ● UV, ● IR

Does not include made-to-order models. The features and applications listed do not apply to certain models.



## LED Lights

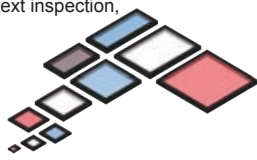
Diffused Lighting

### Flat Dome Lights P.111

Recreates the effect of a Dome Light with a thin case design

**LFXV Series**  
**For visual inspection, text inspection, foreign material inspection, and character recognition**

- Applications: Visual inspection of metal surfaces, curved surfaces or uneven surfaces, text inspection, foreign material inspection of food and medicine, etc.
- 40 models
- LED colors: ● ○ ● ●



### Flat Dome Lights P.117

Recreates the effect of a Dome Light with a thin case design

**LFX3 Series**  
**For visual inspection, text inspection, foreign material inspection, and character recognition**

- Applications: Visual inspection of metal surfaces, curved surfaces or uneven surfaces, text inspection, foreign material inspection of food and medicine, etc.
- 28 models
- LED colors: ● ○ ● ●

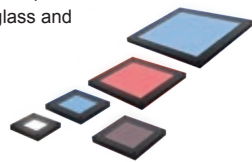


### Line Pattern Lights P.123

A cutting-edge method for inspecting bumps on a reflective surface

**LFX3-PT Series**  
**For inspecting bumps on a reflective surface**

- Applications: Inspection for bumps on a mirror, metal sheets, films, glass and liquid crystal, etc.
- 40 models
- LED colors: ● ○ ● ●

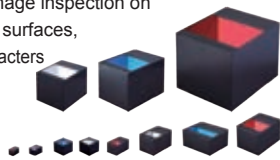


### Coaxial Lights P.125

Provides diffused light evenly from the same axis as the camera

**LFBV3 Series**  
**For faults or damage inspection, engraved character inspection, and dimension measuring**

- Applications: Faults or damage inspection on glossy surfaces and mirror surfaces, inspection for engraved characters and dents, etc.
- 33 models
- LED colors: ● ○ ●



### Coaxial Lights P.131

Equipped with a slim half mirror to support imaging using high-resolution cameras

**LFBV3-G Series**  
**For faults or damage inspection, engraved character inspection, and dimension measuring**

- Applications: Faults or damage inspection on glossy surfaces and mirror surfaces, inspection for engraved characters and dents, etc.
- 24 models
- LED colors: ● ○ ●



Diffused Lighting

## LED Lights

Collimated Lighting

### Coaxial Lights P.135

Provides diffused light with high parallelism using original lighting technology

**MSU Series**  
**For damage inspection, character recognition, inspection for dents or stain**

- Applications: Inspection for fine damage on glossy surfaces, etc.
- 9 models
- LED colors: ● ○ ● ●



### Coaxial Lights P.139

Provides diffused light with high parallelism using original lighting technology

**MFU Series**  
**For visual inspection and dimension measuring**

- Applications: Detailed visual inspection and dimension measuring, etc.
- 4 models
- LED color: ●



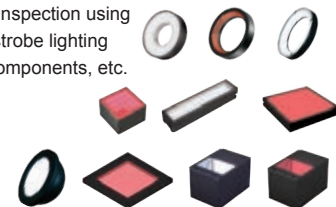
Strobe Lighting

### High Power Strobe Lights P.141

Extremely powerful strobe lighting

**PF Series**  
**For inspection of fast moving production lines**

- Applications: Visual inspection using extremely powerful strobe lighting for minuscule chip components, etc.
- 76 models
- LED colors: ● ○



Waterproof

### IP67 Lights (Waterproof Type) P.153

Waterproof Lights for use in harsh environment

**HLDR-IP Series**  
**For fault inspection and visual inspection**

- Applications: Fault inspection for metal parts, visual inspection for rubber parts, and adhesive application inspection (UV), etc.
- 7 models
- LED colors: ● ○ ● ● ● ● ●



### IP67 Lights (Waterproof Type) P.157

Waterproof Lights for use in harsh environment

**HSL-PCL Series**  
**For fault inspection and visual inspection**

- Applications: Fault inspection and visual inspection, etc.
- 4 models
- LED colors: ● ○ ● ●



LED color: ● Red, ○ white, ● blue, ● green, ● violet, ● UV, ● IR

Does not include made-to-order models. The features and applications listed do not apply to certain models.

Table of Contents



## LED Lights

### Ultraviolet / Violet Lights

High-power ultraviolet / violet lights with four wavelengths for use in a wide range of applications

P.159

#### UV3 / VL3 Series

For fluorescent observation

- Applications: Special ink observation, deep magnetic particle scratch inspection, etc.
- 68 models
- LED colors: ●●



### Ultraviolet Lights

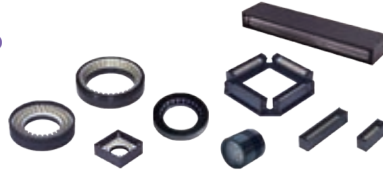
Varied Light Unit lineup using original UV-LEDs

P.165

#### UV Series

For fluorescent observation

- Applications: Reading invisible codes, etc.
- 31 models
- LED color: ●



### Ultraviolet / Violet Line Lights

High-power ultraviolet / violet line lights with four wavelengths for use in a wide range of applications

P.167

#### LNSP-UV3 / VL3-FN Series

For fluorescent observation

- Applications: Inspection for detecting seal material through fluorescent excitation, etc.
- 24 models
- LED colors: ●●



Ultraviolet / Violet Lighting



## LED Lights

### Infrared Lights (Under 1000-nm Type)

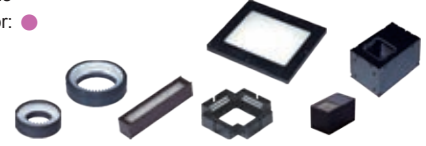
Varied Light Unit lineup using IR-LEDs

P.171

#### IR2 Series

For visual inspection and foreign material inspection

- Applications: Inspection of targets through liquid, etc.
- 36 models
- LED color: ●



### Infrared Light (Over 1000-nm Type)

Diverse lineup of lights that uses high-power infrared LEDs

P.177

#### IR Series

Lineup of 6 wavelengths: 1050 nm, 1200 nm, 1300 nm, 1450 nm, 1550 nm, 1650 nm

- Applications: Internal observation by transmission, water content inspection, etc.
- 48 models
- LED color: ●



Infrared Lighting

### SWIR / Hyperspectral imaging light

High-power light compatible with near-infrared and hyperspectral cameras

P.181

#### CIR Series

For visual inspection, foreign matter inspection, and imaging using a hyperspectral camera

- Applications: Internal observation by transmission, water content inspection, etc.
- 3 models



\*This is a custom order product.

### Reference Light Source

Reference LED light sources suitable for camera module

P.183

#### LDF-RLS Series

Reference light source with switchable color temperature to suit the application

**New**

- Applications: For camera module calibration applications (gain, white balance, shading correction)
- 2 models
- LED color: ○



Other Products

### Light Units with Intensity Control Unit

Light intensity and light ON/OFF control can be performed without an external controller

P.185

#### IU Series

For fault inspection and visual inspection

- Applications: Fault inspection and visual inspection, etc.
- 117 models
- LED colors: ●○



Intensity Control

LED color: ● Red, ○ white, ● blue, ● green, ● violet, ●UV, ● IR

Does not include made-to-order models. The features and applications listed do not apply to certain models.



## LED Lights

### Spot Light

Provides high output spot lighting using an original optical design

P.187

#### HLV3 Series

As a light source for telecentric lenses, etc.

- Applications: Light source for dimension measuring and light source for spot lights, etc.
- 45 models
- LED colors: ● ○ ● ● ●



### Spot Lights

Provides spot lighting using original converging technology

P.193

#### LV Series

As a light source for a telecentric lens

- Applications: Light source for dimension measuring and light source for spot lights, etc.
- 4 models
- LED colors: ● ○ ● ●



### Micro Fiber Heads

LED fiber light system that uses original converging technology

P.195

#### HFS / HFR Series

For visual inspection, character recognition, and dimension measuring

- Applications: Alignment mark imaging, etc.
- 1 model (straight) / 3 models (ring type)
- LED color: Depends on the light source color



### Micro Fiber Head Dedicated Light Sources

Provides high output spot lighting using an original optical design

P.197

#### HLV3-22-4-NR Series

Allows for easy installation and removal

- Usage: Dedicated light source for the micro fiber head
- 4 models
- LED colors: ● ○ ● ●



### Micro Fiber Head Dedicated Light Sources

Provides high-output spot lighting using an original optical design and converging technology

P.198

#### HLV3-3M-RGB-4 Series

Can perform stepless independent intensity control for red, blue, and green light sources

- Usage: Dedicated light source for the micro fiber head
- 1 model
- LED color: Depends on the light source color



Spot Lighting, Etc.



## LED Lights

### High-Power Light Sources

Next-generation light sources delivering high output and a fast response

P.199

#### PFBR-600 Series

LED light source that can replace a xenon flash light source

- Applications: Used connected to various light guides
- 6 models
- LED color: ○



High-Power Light Sources

### LED Light Sources

Provides light output that exceeds that of a 250 W metal halide light source

P.203

#### PFBR-150 Series

LED light source that can replace a 250 W metal halide light source

- Applications: Used connected to various light guides
- 1 model
- LED color: ○



LED Light Sources and Light Guides

### Infrared LED Light Source

High-power LED light source for infrared range

P.205

#### SLG-150V-CCS Series

Near infrared LED light source that can replace the near infrared halogen light source

- Applications: Connect to light guides and use as a light source
- 9 models
- LED color: ●



### LED Light Sources

Provides light output that exceeds that of a 100 W halogen light source

P.207

#### PFB3(A) Series

LED light source that can replace a 100 W halogen light source

- Applications: Used connected to various light guides
- 64 models
- LED color: ○



LED color: ● Red, ○ white, ● blue, ● green, ● violet, ● UV, ● IR

Does not include made-to-order models. The features and applications listed do not apply to certain models.



## LED Lights

### Line Lights

Over 1,000,000 lx illuminance and fan-less cooling design

P.211

#### LNLP Series

For visual inspection, damage or dent inspection, and foreign material inspection

- 30 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED color: ○



### Line Lights

Light unit design optimized for inspection site

P.215

#### LNSP2 Series

For visual inspection, scratch inspection, foreign material inspection, and stain inspection

- 60 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED color: ○



### LNSP2 Dedicated Coaxial Units

Used as a Coaxial Light installed to the Line Light

P.221

#### CU-LNSP2 Series

Dedicated Coaxial Units those are designed for use with the LNSP2 Series

- 5 models
- Emitting surface: Up to 500 mm in 100 mm units.



### Line Lights

Uses original converging technology to achieve illumination with reduced diffusion

P.223

#### LNSP-FN Series

For visual inspection, scratch inspection, and alignment inspection

- 30 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED color: ○



### Line Lights

Uses original converging technology to achieve illumination with reduced diffusion

P.227

#### LN / LN-HK Series

For visual inspection and fault inspection

- 8 models (LN), 2 models (LN-HK)
- Emitting surface: 60 mm, 200 mm
- LED colors: ● ○ ● ● ● (LN), ○ (LN-HK)



## LED Lights

### Line Lights

Provides diffused light from an emitting surface equipped with LEDs in a straight line

P.229

#### LNSD Series

(High luminance and high uniformity types) For fish eye, damage, or dent inspection, foreign material inspection, and stain inspection

- 180 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED colors: ● ○ ●



### Line Lights

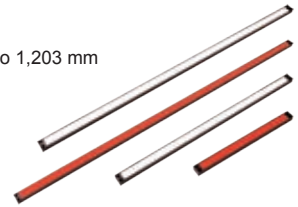
Provides diffused light from an emitting surface equipped with LEDs in straight lines

P.233

#### LND2 Series

For damage or dent inspection, and foreign material inspection

- 24 models
- Emitting surface: Up to 1,203 mm in 100 mm units.
- LED colors: ● ○



### Line Lights

Provides diffused light evenly using an original optical design

P.237

#### LT Series

For fish eye inspection and scratch inspection

- Emitting surface: Up to 1,800 mm in 100 mm units.
- LED color: ○



\*This is a custom order product.

### Line Coaxial Lights

Provides diffused light from the same axis as the camera

P.239

#### LNV Series

For fault inspection and stain inspection

- 4 models
- Emitting surface: 300 mm
- LED colors: ● ○ ● ●



### Flat Dome Lights

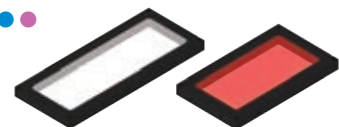
Flat enclosure recreates the dome light effect

P.240

#### LFXV Series Rectangular Type

For exterior inspections and stain inspections

- Applications: Stain inspections for glossy surfaces, non-woven fabric, etc.
- 8 models
- LED colors: ● ○ ● ● ●



LED color: ● Red, ○ white, ● blue, ● green, ● violet, ● UV, ● IR

Does not include made-to-order models. The features and applications listed do not apply to certain models.

Convergent Lighting

Diffused Lighting

## LED Lights

Diffused Lighting

### Flat Lights

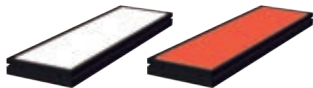
Flat lights compatible with line sensor camera applications

P.241

#### TH2 Series Rectangular Type

For dimension measuring and foreign material inspection

- Applications: Rectangular workpiece exterior inspection, sheet-shaped workpiece defect inspection, etc.
- 2 models
- LED colors: ● ○



### Line Lights (Oblique Angled Light)

Achieves angled illumination using an original optical design

P.243

#### LNDG Series

Vertical wrinkles or striations inspection, folding and bumps inspection, and moving-direction scratch inspection

- 28 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED color: ○



### Line Lights (Bi-Directional Angled Light)

Achieves bi-directional angled illumination using an original optical design

P.247

#### LNIS2 Series

Streak inspection, scratch inspection, and moving-direction scratch inspection

- 10 models
- Emitting surface: Up to 1,000 mm in 100 mm units.
- LED color: ○



### Line Lights (Bi-Directional Angled Light)

Achieves bi-directional angled illumination using an original optical design

P.251

#### LNIS Series

Streak inspection, scratch inspection, and moving-direction scratch inspection

- 10 models
- Emitting surface: Up to 1,000 mm in 100 mm units.
- LED color: ○



### Line Lights (Bi-Directional Angled Light)

Best for finding moving-direction scratches

P.255

#### LNIS-FN Series

Streak inspection, scratch inspection, and moving-direction scratch inspection

- 15 models
- Emitting surface: Up to 1,500 mm in 100 mm units.
- LED color: ○



Oblique Angled Lighting

## LED Lights

Other Products

### Organic LED (OLED)

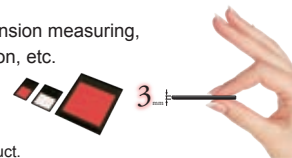
Achieves a highly uniform light emitting surface and thinness of 3 mm

P.267

#### OLF-LT Series

Unprecedented thin design. For lighting in narrow spaces

- Applications: Visual inspections, dimension measuring, foreign material inspection, etc.
- 6 models
- LED colors: ● ○



\*This is a CCS-LT brand product.

### Organic LED (OLED)

Thin organic semi-circle EL light allows for flexible bending radius designs

P.269

#### OLB-LT Series

**Special Order Products**

For observing workpiece on arc-shaped production lines

- Applications: Uniform direct light of the cylindrical workpieces, etc.
- 2 models
- LED color: ○



\*This is a CCS-LT brand product.

### Lights for Interference Fringe Inspection

Lights that make coating presence or uneven thickness on thin films Visible

P.271

#### LDF-NB Series

**New**

Replacement for fluorescent lights and sodium vapor lamps

- Applications: Inspecting uneven coatings on films and glass, and inspecting laminated glass for irregularities, etc.
- 4 models
- LED colors: ● ○ ● ●



\*This is a CCS-LT brand product.


Table of Contents

## LED Lights

**Computational Imaging**  
 Digital image capture and processing techniques that combine computation and optical encoding. **P.283**

**Computational Imaging**  
 We describe the principle of operation, product information, and application examples including the following:

- High resolution color (RGB) • Extended Depth of Field (EDOF)
- Bright field + dark field • High Dynamic Range (HDR)
- Photometric Stereo (PMS)






**triniti-enabled LED Lights**  
 Users benefit from having expert control techniques for their lighting systems readily available. **P.305**

**triniti-enabled LED Lights**  
 For fault inspection and visual inspection

- Applications: Fault inspection and visual inspection, etc.
- 65 models
- LED colors: ● ○ ●



## Lenses

Lenses		High-Resolution Telecentric Lenses <b>SE-65-M / SE-110-M</b> Series	» P.259
		Telecentric Lenses <b>SE-65 / SE-110</b> Series	» P.263
		Macro Lenses <b>SE-16 / SE-18</b> Series	» P.265

## Control Units / Controllers

Control Units / Controllers		Digital Control Units <b>PD4</b> Series	» P.313
		Digital Control Units <b>PD3</b> Series	» P.321
		Digital Control Units <b>PD2</b> Series	» P.329
		Digital Power Supply (24 VDC input type) <b>CD-VA</b> Series	<b>New</b> » P.333
		Strobe Overdrive Control Units <b>POD</b> Series	» P.339
		Strobe Overdrive Control Units <b>PTU2</b> Series	» P.343
		High Power Strobe Control Units <b>PF</b> Series	» P.345
		PCI Express Board Type Lighting Controller <b>CX</b> Series	<b>New</b> » P.349
		PoE Enabled Controller <b>CN-EPOE</b> Series	» P.351
		Controller with EtherNet/IP® Interface <b>CN-4024-2-EIPT</b>	» P.353
		*EtherNet/IP® is a trademark of ODVA, Inc.	
		Analog Controller <b>PB-2430-1</b>	» P.355
	Compact Controller <b>CC-ST-1024</b>	» P.357	



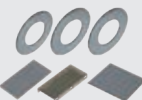



LED color: ● Red, ○ white, ● blue, ● green, ● violet, ● UV, ● IR

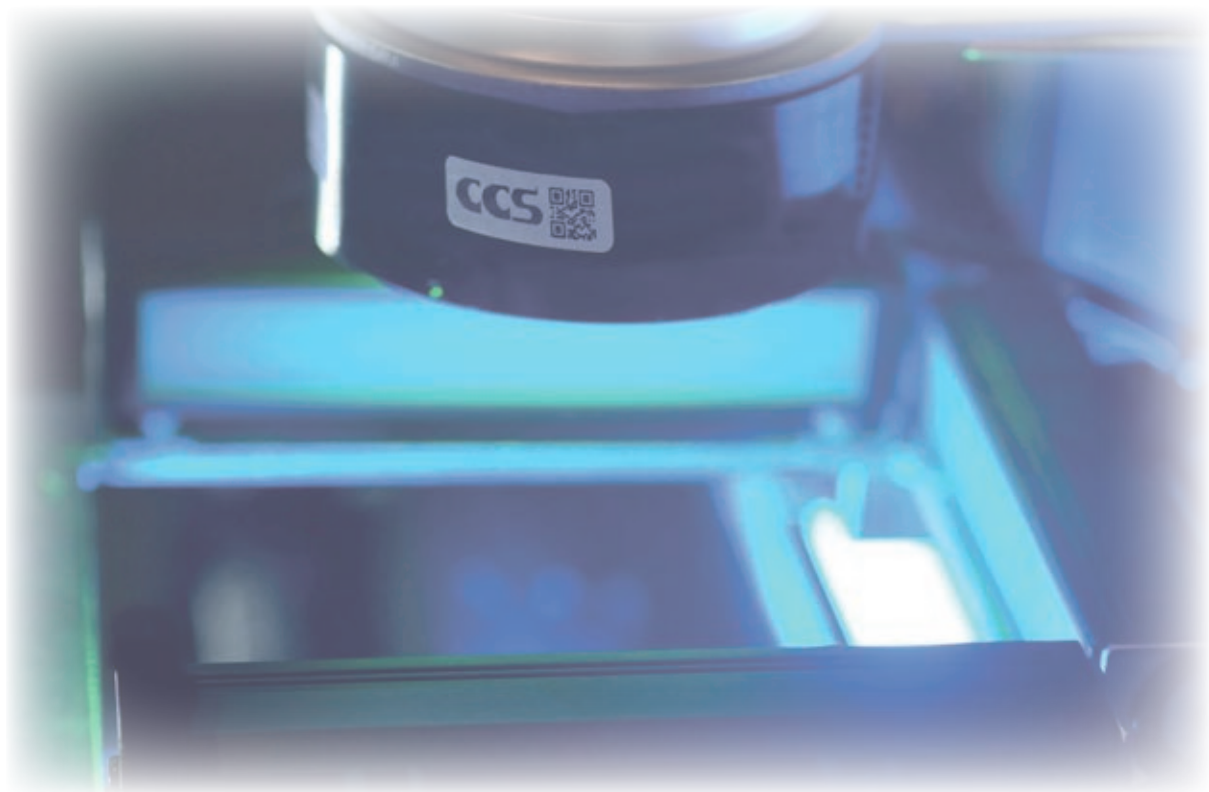
Does not include made-to-order models. The features and applications listed do not apply to certain models.

## Control Units / Controllers

Control Units / Controllers		Spot Light Dedicated Control Units <b>PJ2 Series</b>	» P.359
		Spot Light Dedicated Control Units <b>PJ Series</b>	» P.361
		Spot Light Dedicated Controller <b>CC-PJ-0707</b>	» P.363
		Analog Control Units (Constant Current) <b>PSCC Series</b>	» P.365
		Analog Control Units (Constant Voltage) <b>PSB4 Series</b>	» P.367
		Analog Control Unit (Constant Voltage) <b>PSB3-30024</b>	» P.369

## Options

Options		Lens Filters	» P.371
		Diffusion Plates	» P.375
		Polarizing Plates	» P.377
		Light Control (LC) Films	» P.379
		Protective Plates / Adapters Fixtures Brackets	» P.380
		Extension Cables	» P.383





Provides direct light from an angled emitting part



Applications

Character recognition, visual inspection, inspections for damage or stains, reading 2-dimensional code, inspecting parts on boards, etc.

Standard Ring Lights

Uses a flexible circuit board to achieve the functions needed for a Ring Light. It can illuminate workpieces at an angle and can illuminate the whole workpiece. This alleviates the influence of slight position or inclination deviations in the workpiece and enables stable imaging.

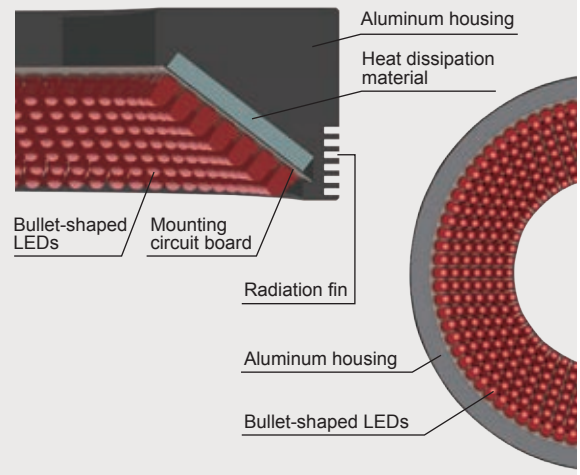
Flexible circuit board



Succeeds in Greatly Reducing LED's Heat

Heat dissipation material is used between the board and the aluminum housing, absorbing heat produced by the LEDs. This succeeds in greatly reducing the creation of heat, which causes the LEDs to deteriorate.

Cross-section image of the LDR2-120



Custom Order Example

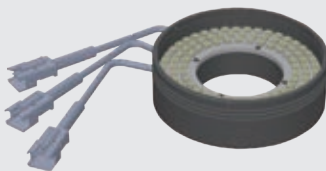
Please contact your CCS sales representative.

E.g.: Different color

Wavelength/Color Creating a full color (RGB) light unit

Customizable items

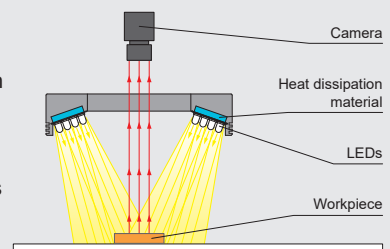
- External/Internal diameter
- Wavelength/Color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting



Example Configuration

Bend the flexible circuit board to any shape necessary and mount LEDs with high density. Illuminates the workpiece so that direct light is concentrated in the center.

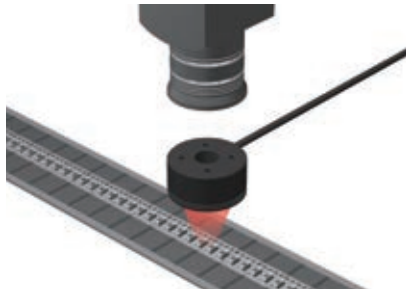
LDR2-90



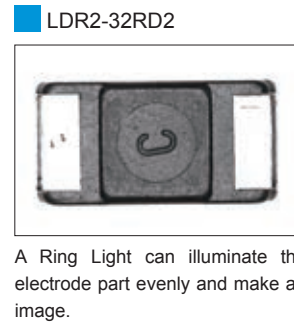
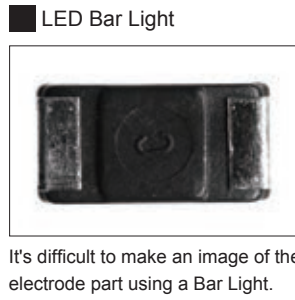
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



➤ Imaging Example: Imaging Electrodes of Electronic Parts



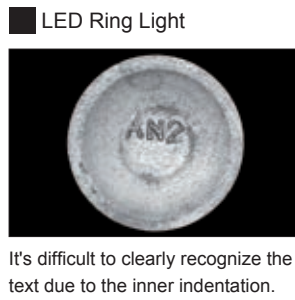
Description	Visual inspection
Workpiece	Electronic parts
Conventional lighting	LED Bar Light
New lighting	LDR2-32RD2
Result	Improved uniformity



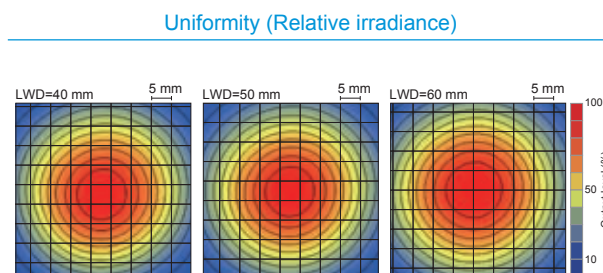
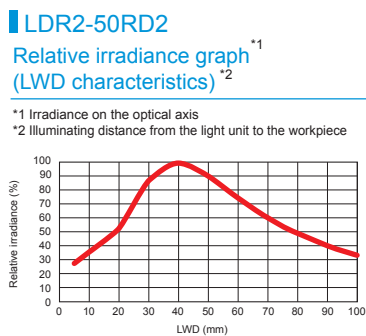
➤ Imaging Example: Imaging Text on Intake Valves



Description	Character recognition
Workpiece	Intake valves (automobile parts)
Conventional lighting	LED Ring Light
New lighting	LDR2-50RD2
Result	Emphasized characters



➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)



The data included is for reference only. Actual values may vary.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)	
LDR2-LA	Ring (Convergent/Diffused)	
LDR-LA1		
SQR		
SQR-TP		
HLDR3	Ring (Convergent/Diffused)	
HPR2		
LFR		
LKR		
FPR		
FPQ3	Square	
LDL2	Bar	
LDLB		
HLDL3		
LB	Flat	
TH2 (5 types)		
LFL		
HPD2		Dome
LDM2		
LAV		
PDM		
LFXV		
LFX3		
LFX3-PT	Coaxial	
LFV3		
LFV3-G		
MSU	Coaxial	
MFU		
PF	Strobe	
HLDR-IP	Water-proof	
HSL-PCL		
UV3/VL3	UV / Violet	
UV		
LNSP-UV3-FN		
IR2 (Under 1000-nm Type)	Infrared	
IR		
CIR (Over 1000-nm Type)		
LDF-RLS	Reference Light Source	
IU	Intensity Control	
HLV3	Spot, Etc.	
LV		
HFS/HFR		
HLV3-22-4-NR		
HLV3-3M-RGB-4		
PFBR-600SW2		
PFBR-150		
SLG-150V-CCS		
PFB3(A)		
LNL	Line (Convergent)	
LNSP2		
Coaxial Units		
LNSP-FN		
LN/LN-HK	Line (Diffused)	
LNSD		
LND2		
LT		
LNV		
LFXV (Rectangular Type)		
TH2 (Rectangular Type)	Line (Oblique Angled)	
LNDG		
LNIS2		
LNIS		
LNIS-FN	Telecentric Lens Macro Lens	
Other Lenses Products		
LDF-NB	Other Products	

# LDR2 Series



Refer to our website for product details.

CCS LDR2

Search



## Introduction to Half Ring Lights (Custom Order Example)

### LDR2-HF Series

It has a space-saving design that can be installed and used in a limited space

- The contrast can be increased by illuminating only the required parts
- Can be installed in a device with limited space and illuminates the area to be observed in pinpoint
- Can be customized according to the application such as emission color and size



LDR2-50SW2-HF

## Lineup

End of the model name: -WD: Wide type

Classification	Model Name *1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
			RD (Red)	SW (White)	BL (Blue)	GR (Green)				
Standard products	LDR2-32 □□ 2	24 V	1.6 W	1.9 W	1.9 W	1.9 W	Diffusion Plate, Polarizing Plate, Adapter, Lens attachment ring	FCB*4 Straight Cable	PD4	30 g
	LDR2-42 □□ 2	24 V	2.1 W	2.7 W	2.7 W	2.7 W	Diffusion Plate, Polarizing Plate, Adapter		PD3	50 g
	LDR2-50 □□ 2	24 V	3.1 W	3.8 W	3.8 W	3.8 W	Diffusion Plate, Polarizing Plate, Adapter, Lens attachment ring		CC-ST-1024	50 g
	LDR2-50RD2-WD	24 V	3.1 W	-	-	-	Adapter, Lens attachment ring	FCB-W*5 2-Branch Cable	POD*2	120 g *RD is 110 g
	LDR2-70 □□ 2	24 V	6.1 W	7.6 W	7.6 W	7.6 W	Diffusion Plate, Polarizing Plate	FCB-F 4-Branch Cable		110 g
	LDR2-70RD2-WD	24 V	6.1 W	-	-	-	Diffusion Plate, Polarizing Plate	FRCB Robot Cable		170 g
	LDR2-90 □□ 2	24 V	11 W	14 W	14 W	14 W			PD4	220 g
	LDR2-90RD2-WD	24 V	11 W	-	-	-			PD3	500 g
	LDR2-90-30 □□ 2	24 V	14 W	18 W	17 W	17 W	Diffusion Plate, Polarizing Plate, Adapter		POD*2	510 g
	LDR2-120 □□ 2	24 V	-	28 W	26 W	26 W				
	LDR2-120RD2-WD	24 V	24 W	-	-	-				
	Custom order products	LDR2-32 □□ 2-HF	24 V	*3	1.2 W	*3	*3			PD4
LDR2-50 □□ 2-HF		24 V	*3	1.9 W	1.9 W	*3			PD3	
LDR2-70 □□ 2-HF		24 V	*3	3.5 W	3.5 W	*3			CC-ST-1024	

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

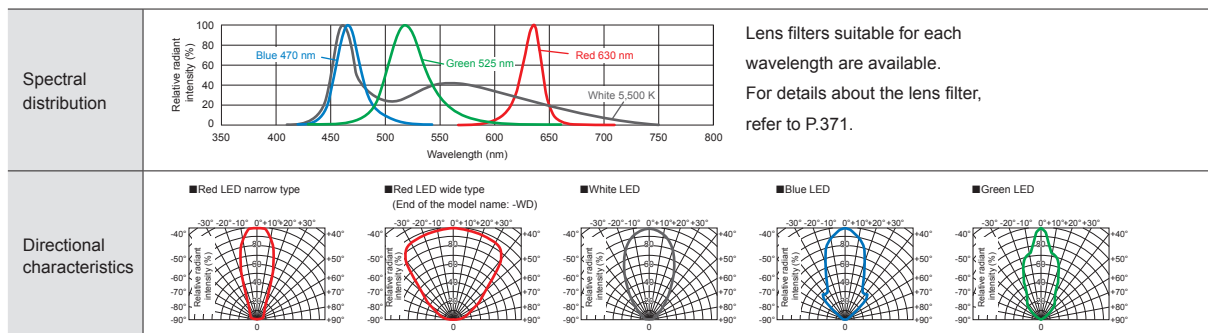
List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*3 This product is custom-made. Contact our local sales office for details.

## LED Properties



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Options



Can prevent glare, which is a problem when making images of glossy workpieces.

### Diffusion plate

An adapter is required when installing a diffusion plate.

Model name	Applicable Light Unit (Common for all colors)
DF-LDR-32	LDR2-32
DF-LDR-42	LDR2-42
DF-LDR-50	LDR2-50
DF-LDR-70*1	LDR2-70
DF-LDR-90	LDR2-90
DF-LDR-90-H28*2	LDR2-90-30
DF-LDR-120-45	LDR2-120

\*1 DF-LDR-70 does not require an adapter. It is fixed to direct lighting.

\*2 This is a custom order product. Contact our local sales office for details.

▶ P.375



Use with a polarizing filter to remove the light's surface reflection.

### Polarizing plate

An adapter is required when installing a polarizing plate.

Model name	Applicable Light Unit (Common for all colors)
PL-LDR-32	LDR2-32
PL-LDR-42	LDR2-42
PL-LDR-50	LDR2-50
PL-LDR2-70*1	LDR2-70
PL-LDR-90	LDR2-90
PL-LDR-90-H28*2	LDR2-90-30
PL-LDR-120-40	LDR2-12

\*1 PL-LDR2-70 comes with a mounting adapter.

\*2 This is a custom order product. Contact our local sales office for details.

▶ P.377



Use when installing a diffusion plate or polarizing plate to the light unit.

### Adapter

Model name	Applicable Light Unit (Common for all colors)
AD-LDR-32	LDR2-32
AD-LDR-42	LDR2-42
AD-LDR-50	LDR2-50
AD-LDR-90	LDR2-90 LDR2-90-30
AD-LDR-120	LDR2-120

▶ P.380



Light can be directly mounted to the filter thread of the lens. Suitable for environments with limited installation space.

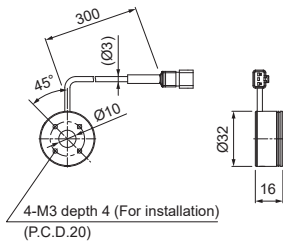
### Lens attachment ring

Model name	Note	Applicable Light Unit (Common for all colors)
MR-LDR-32-M25	M25.5 P0.5	LDR2-32
MR-LDR-32-M27	M27.0 P0.5	
MR-LDR-32-M30	M30.5 P0.5	LDR2-50
MR-LDR-50-M25	M25.5 P0.5	
MR-LDR-50-M27	M27.0 P0.5	
MR-LDR-50-M30	M30.5 P0.5	

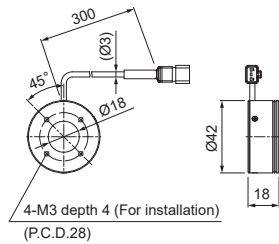
▶ P.380

## Dimensions (mm)

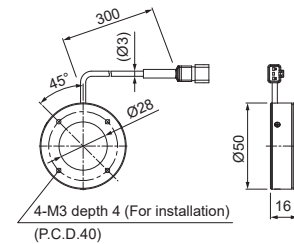
LDR2-32RD2/SW2/BL2/GR2



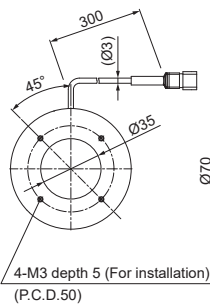
LDR2-42RD2/SW2/BL2/GR2



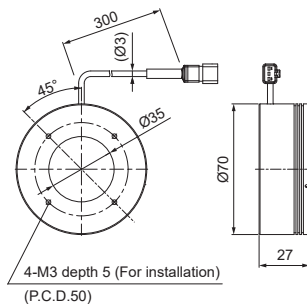
LDR2-50RD2/RD2-WD/SW2/BL2/GR2



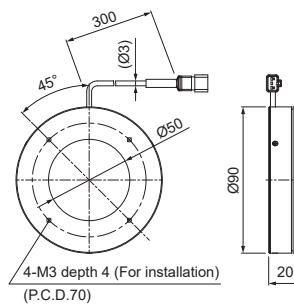
LDR2-70RD2/RD2-WD



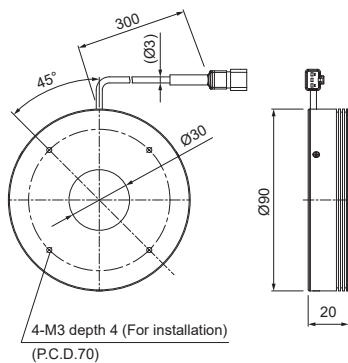
LDR2-70SW2/BL2/GR2



LDR2-90RD2/RD2-WD/SW2/BL2/GR2

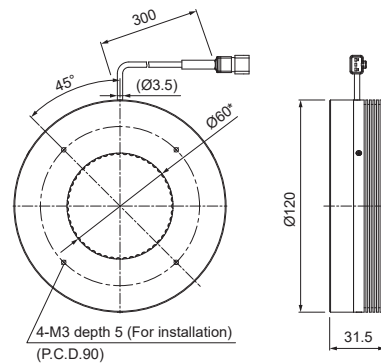


LDR2-90-30RD2/SW2/BL2/GR2



The cable diameter of LDR2-90-30SW2/BL2/GR2 is Ø3.5.

LDR2-120RD2-WD/SW2/BL2/GR2



\* The inside diameter will be around Ø56 mm due to the protruding LED.

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

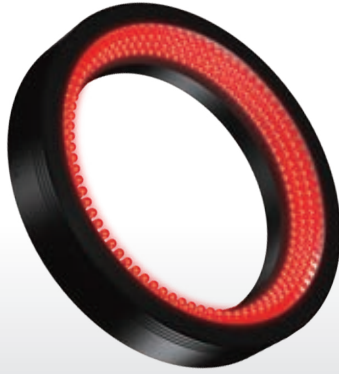
Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

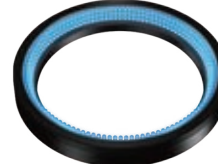
Model name	Ring Type
LDR2-LA	Ring (Direct)
LDR-LA1	
SQR	
SQR-TP	Ring (Convergent/Diffused)
HLDR3	
HPR2	
LFR	
LKR	
FPR	
FPQ3	Square
LDL2	Bar
LDLB	
HLDL3	
LB	Flat
TH2 (5 types)	
LFL	Dome
HPD2	
LDM2	
LAV	
PDM	
LFXV	
LFX3	
LFX3-PT	
LFV3	Coaxial
LFV3-G	
MSU	Coaxial
MFU	
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	
UV3/VL3	UV / Violet
UV	
LNSP-UV3-FN	Infrared
IR2 (Under 1000-nm Type)	
IR (Over 1000-nm Type)	
CIR	
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	
HFS/HFR	
HLV3-22-4-NR	
PFBR-600S-W2	
PFBR-150	
SLG-150V-CCS	
PF3(A)	
LNLP	Line (Convergent)
LN2P2	
Coaxial Units	
LN2P-FN	
LN/LN-HK	Line (Diffused)
LN2D	
LN2D	
LT	
LN2V	
LFXV (Rectangular Type)	
TH2 (Rectangular Type)	
LN2G	Line (Oblique Angled)
LN2S2	
LN2S	
LN2S-FN	Telecentric Lens
Macro Lens	
LDF-NB	Other Products



Provides direct light at a low angle from an angled emitting part



LDR2-208SW2-LA



LDR2-170BL2-LA



LDR2-132RD2-LA



LDR2-100RD2-LA



LDR2-74GR2-LA



LDR2-48SW2-LA

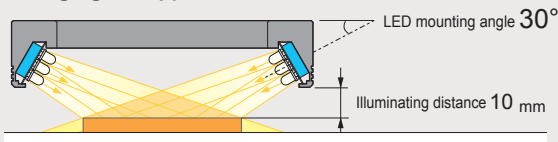
**Applications**

Inspection for engraving, damage, or stains on metal surfaces; edge extraction; foreign material inspection of medicine; inspection for damage to glass edges; visual inspection for O-rings; etc.

**Extraction of Uneven Damage or Engravings**

Providing direct light from a low angle to the center section allows for an image that emphasizes the workpiece's characteristic features.

**Imaging example for the LDR2-100RD2-LA:**  
Imaging the appearance of coins



Edge extraction is difficult with illumination from a high angle.

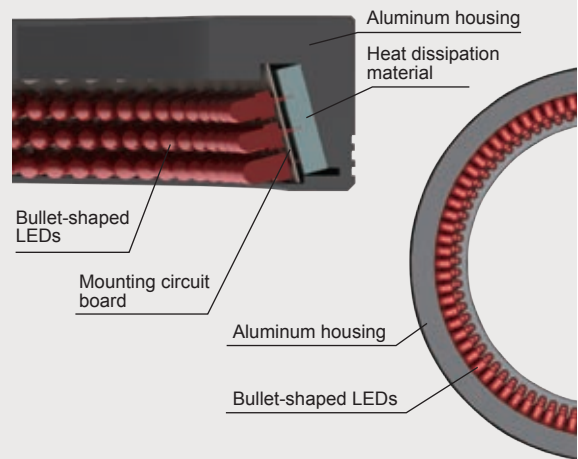


Illuminating from a low angle allows for imaging that emphasizes the edges.

**Illuminating from a Low-Angle at a Steep Slope**

By mounting LEDs on a flexible circuit board in a steep angle, it becomes possible to converge light in the center section from a low position.

**Cross-section image of the LDR2-132-LA**



**Custom Order Example**

Please contact your CCS sales representative.

E.g.: Different shape

Format/material Changed the format to a semicircle



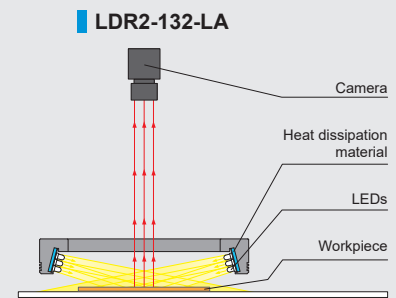
**Customizable items**

- External/internal diameter
- Wavelength/Color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Etc.

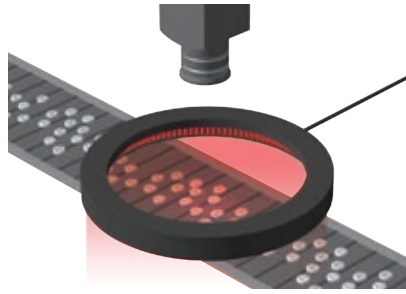
**Example Configuration**

Using a flexible circuit board to create any angle needed. Emits direct light to the center of the workpiece from a low angle.



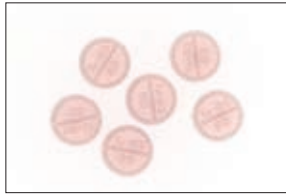
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent / Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNI5 LNI5-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

## ➤ Imaging Example: Imaging Text on Tablets and Their Appearance



Description	Text, visual inspection
Workpiece	Tablets
Conventional lighting	Interior lamp
New lighting	LDR2-170RD2-LA
Result	Emphasizes text and edge of the exterior

Workpiece image



Tablets

Interior lamp



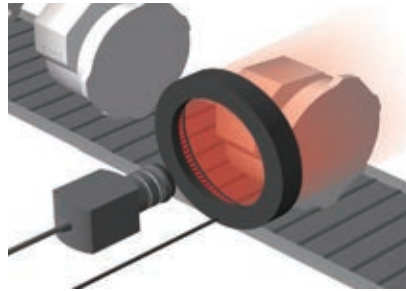
It is difficult to take an image that emphasizes the text or exterior.

LDR2-170RD2-LA



Possible to take an image that emphasizes the text or exterior.

## ➤ Imaging Example : Imaging Engraved Text on Metal Blocks (Stain Finishing)



Description	Character recognition
Workpiece	Metal blocks
Conventional lighting	LED Dome Light
New lighting	LDR2-132RD2-LA
Result	Extracts only the engraved text

Workpiece image



Metal blocks (stain finishing)

LED Dome Light



The whole thing is illuminated, making it difficult to emphasize only the characters.

LDR2-132RD2-LA



Reduces effects from the stain finishing, making it possible to emphasize the characters.

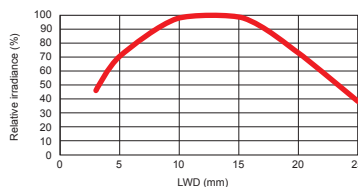
## ➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

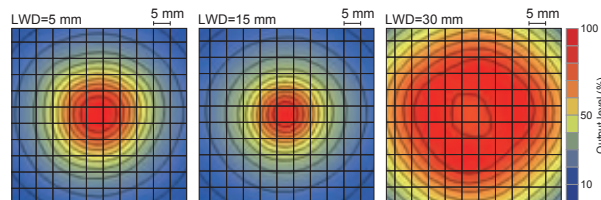
LDR2-74RD2-LA

Relative irradiance graph<sup>\*1</sup>  
(LWD characteristics)<sup>\*2</sup>

\*1 Irradiance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece



Uniformity (Relative irradiance)



LDR2	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Convergent/Diffused)
SQR-TP	Ring (Convergent/Diffused)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNVD	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Refer to our website for product details.

CCS LDR2-LA

Search



## Introduction to Half Ring Lights (Custom Order Example)

### LDR2-LA-HF Series

It has a space-saving design that can be installed and used in a limited space

- The contrast can be increased by illuminating only the required parts
- Can be installed in a device with limited space and illuminates the area to be observed in pinpoint
- Can be customized according to the application such as emission color and size



LDR2-100SW2-LA-HF

## Lineup

Classification	Model Name <sup>*1</sup>	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
			RD (Red)	SW (White)	BL (Blue)	GR (Green)				
Standard products	LDR2-48□□2-LA	24 V	2.1 W	3.1 W	3.1 W	3.1 W	Diffusion Plate Bracket	FCB*4 Straight Cable	PD4 PD3	50 g
	LDR2-74□□2-LA	24 V	4.6 W	5.7 W	5.7 W	5.7 W		FCB-W*5 2-Branch Cable	CC-ST-1024 POD*2	90 g
	LDR2-100□□2-LA	24 V	9.1 W	12 W	12 W	12 W		FCB-F 4-Branch Cable FRCB Robot Cable	PD4 PD3 POD*2	170 g
	LDR2-132□□2-LA	24 V	13 W	16 W	16 W	16 W				270 g
	LDR2-170□□2-LA	24 V	18 W	22 W	22 W	22 W				350 g
	LDR2-208□□2-LA	24 V	22 W	28 W	28 W	28 W				380 g
Custom order products	LDR2-74□□2-LAHF	24 V	*3	2.7 W	*3	*3	*3	*4 The cables with a model name that ends with "ME7", "EL2", "PF", or "PF-EL9" are not included. *5 The cables with a model name that ends with "EL2" are not included.	PD4 PD3 CC-ST-1024 POD	*3
	LDR2-100□□2-LAHF	24 V	4.6 W	5.7 W	5.7 W	*3				

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/tnk/qr/pod>

\*3 This product is custom-made. Contact our local sales office for details.

## LED Properties

**Spectral distribution**

Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

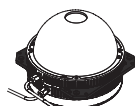
**Directional characteristics**

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Options



Can prevent glare, which is a problem when making images of glossy workpieces.



Combine with the Dome Light HPD2 Series to achieve imaging by light switching and simultaneous lighting.

### Diffusion plate

Model name	Applicable Light Unit (Common for all colors)
DF-LDR-48LA	LDR2-48-LA
DF-LDR-74LA	LDR2-74-LA
DF-LDR-100LA	LDR2-100-LA
DF-LDR-132LA	LDR2-132-LA
DF-LDR-170LA	LDR2-170-LA
DF-LDR-208LA	LDR2-208-LA

▶ P.375

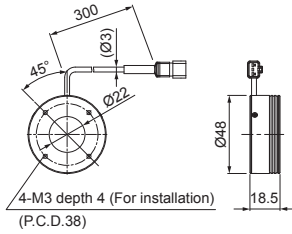
### Light joint bracket

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-75-JO	LDR2-100-LA	HPD2-75
BK-100-JO	LDR2-132-LA	HPD2-100
BK-150-JO	LDR2-170-LA	HPD2-150
BK-200-JO	LDR2-208-LA	HPD2-200

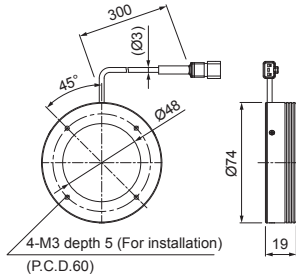
▶ P.382

➤ Dimensions (mm)

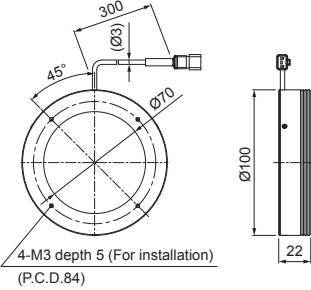
LDR2-48RD2-LA / SW2-LA / BL2-LA / GR2-LA



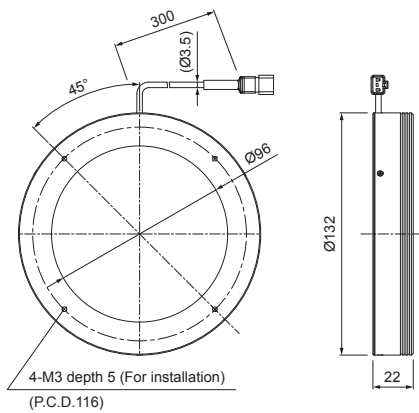
LDR2-74RD2-LA / SW2-LA / BL2-LA / GR2-LA



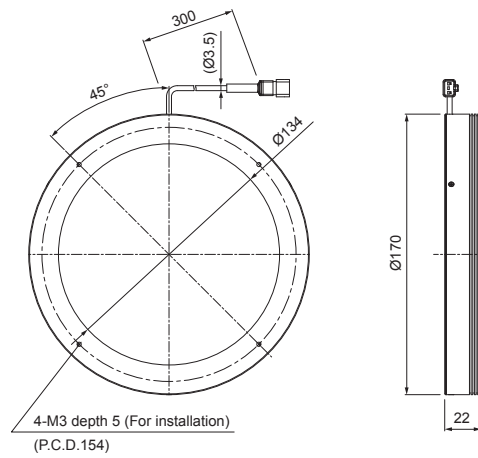
LDR2-100RD2-LA / SW2-LA / BL2-LA / GR2-LA



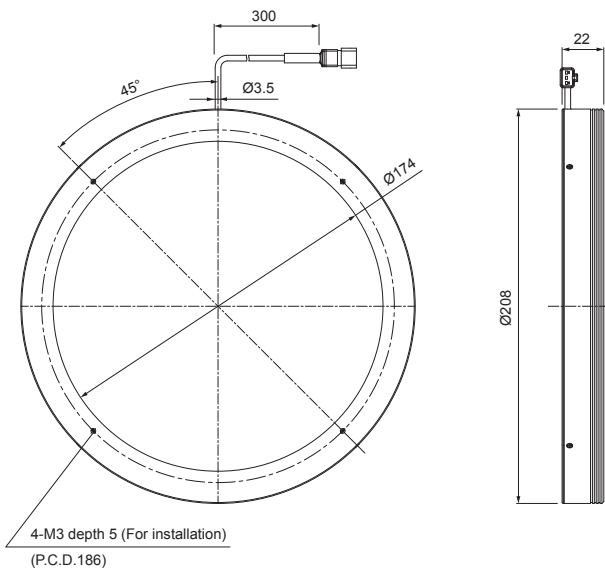
LDR2-132RD2-LA / SW2-LA / BL2-LA / GR2-LA



LDR2-170RD2-LA / SW2-LA / BL2-LA / GR2-LA



LDR2-208RD2-LA / SW2-LA / BL2-LA / GR2-LA



LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides direct light at a low angle from an emitting part directed horizontally

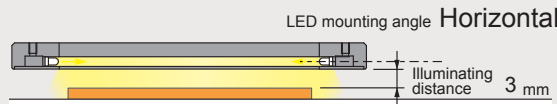


**Applications** Edge detection; inspection for engraving, damage, or stains on metal surfaces; inspection for foreign material on wafers; inspection of bonding on shrink film; engraved character recognition for rubber; etc.

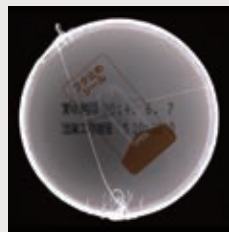
**➤ Illuminating Closest to the Workpiece**

It's capable of illuminating the workpiece from a shorter distance than the LDR2-LA Series. Suitable for imaging fine unevenness, scratches and engraved letters.

**Imaging example for the LDR-206SW2-LA1:**  
Imaging the appearance of food containers

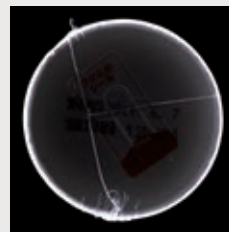


LDR2-208SW2-LA



The seal and engraved text affect the image, and the shrink seal cannot be sufficiently detected.

LDR-206SW2-LA1

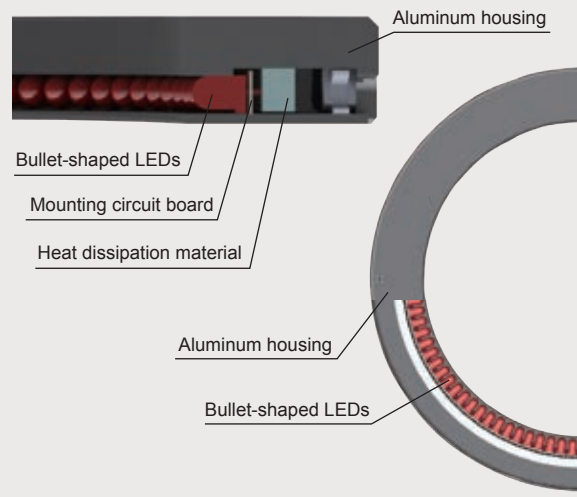


Only the shrink seal clearly stands out.

**➤ LEDs Mounted Horizontally**

Achieved a thin device that is 10 mm thick by mounting LEDs horizontally in one line. Helps save space because it can be installed near the workpiece.

**Cross-section image of the LDR-146-LA1**



**➤ Custom Order Example**

Please contact your CCS sales representative.

E.g.: Changed the format to take measures against interference with the device

**Customizable items**

Format/material Created a light unit with a shape to match the purpose



Cut to match the purpose

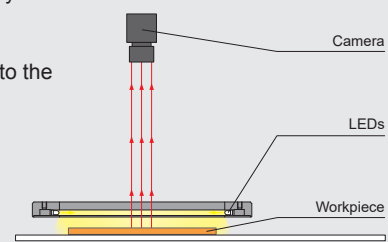
- External/internal diameter
- Wavelength/Color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Etc.

**➤ Example Configuration**

LEDs are arranged facing horizontally in a ring shape. It can be used extremely close to the workpiece.

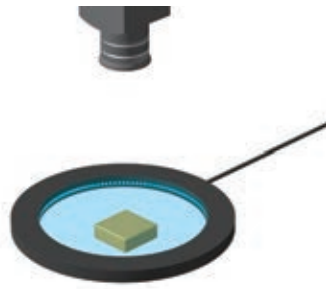
**LDR-146-LA1**



Ring (Direct)	LDR2 LDR2-LA <b>LDR-LA1</b> SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNSIS2 LNSIS LNSIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



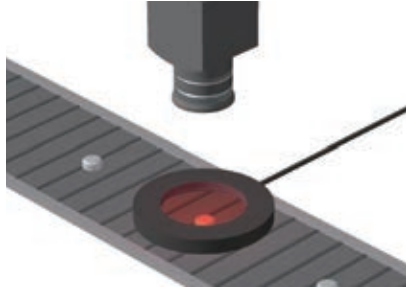
➤ Imaging Example: Imaging the Appearance of Plastic Case Surfaces



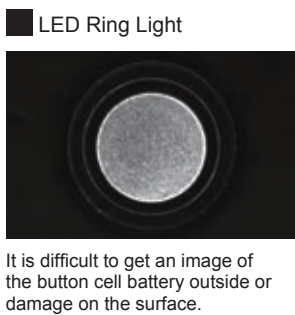
Description	Visual inspection
Workpiece	Plastic cases
Conventional lighting	Interior lamp
New lighting	LDR-146BL2-LA1
Result	Extracting the damage



➤ Imaging Example: Imaging the Appearance of Button Cell Batteries



Description	Visual inspection
Workpiece	Button cell batteries
Conventional lighting	LED Ring Light
New lighting	LDR-75RD2-LA1
Result	Extracting the damage

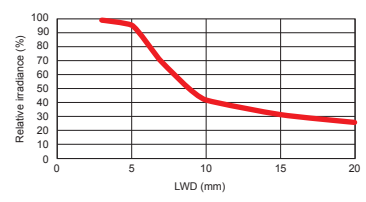


➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)

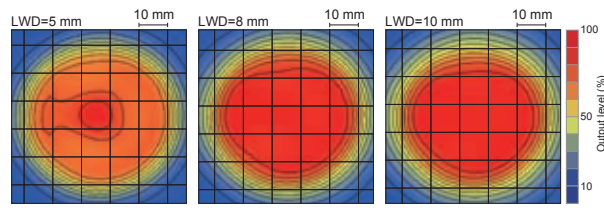
The data included is for reference only and does not guarantee the quality of this product.

**LDR-75RD2-LA1**  
Relative irradiance graph<sup>\*1</sup>  
(LWD characteristics)<sup>\*2</sup>

\*1 Irradiance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece



Uniformity (Relative irradiance)



LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Convergent/Diffused)
SQR-TP	Ring (Convergent/Diffused)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNL	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LNLN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Macro Lens
Other Products	Macro Lens
LDF-NB	Macro Lens

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



## Lineup

Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	GR (Green)				
LDR-75□□2-LA1	24 V	2.6 W	3.8 W	3.8 W	3.8 W		FCB*3 Straight Cable		55 g
LDR-96□□2-LA1	24 V	3.1 W	3.8 W	3.8 W	3.8 W		FCB-W*4 2-Branch Cable FCB-F 4-Branch Cable		100 g
LDR-146□□2-LA1	24 V	4.6 W	6.0 W	6.1 W	6.1 W	Bracket	FCRB Robot Cable	PD4 CC-ST-1024 PD3 POD*2	160 g *RD is 170 g
LDR-176□□2-LA1	24 V	6.1 W	7.6 W	7.6 W	7.6 W				205 g *RD is 210 g
LDR-206□□2-LA1	24 V	7.1 W	9.1 W	9.1 W	9.1 W				220 g *RD is 250 g

Extension Cables ▶ P.383

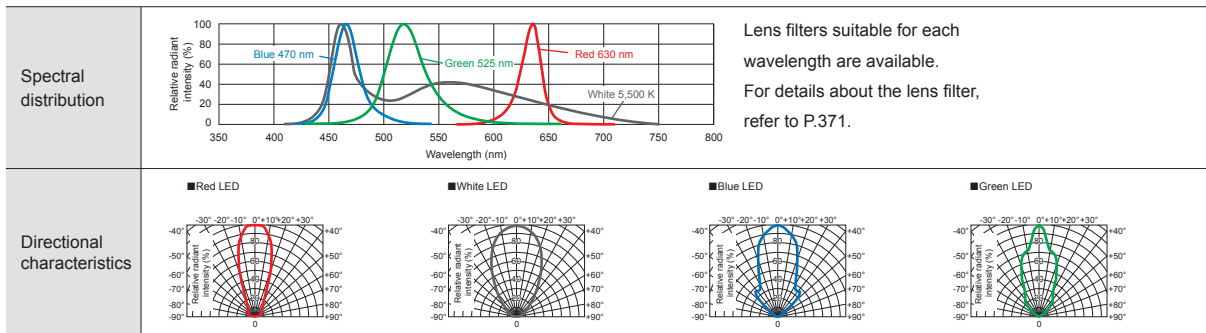
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

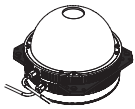
## LED Properties



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Options



Combine with the Dome Light HPD2 Series to achieve imaging by light switching and simultaneous lighting.

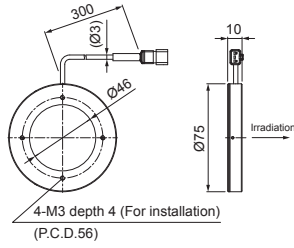
### Light joint bracket

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-75-JO	LDR-96-LA1	HPD2-75
BK-100-JO	LDR-146-LA1	HPD2-100
BK-150-JO	LDR-176-LA1	HPD2-150
BK-200-JO	LDR-206-LA1	HPD2-200

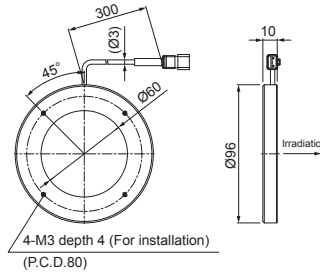
▶ P.382

➤ Dimensions (mm)

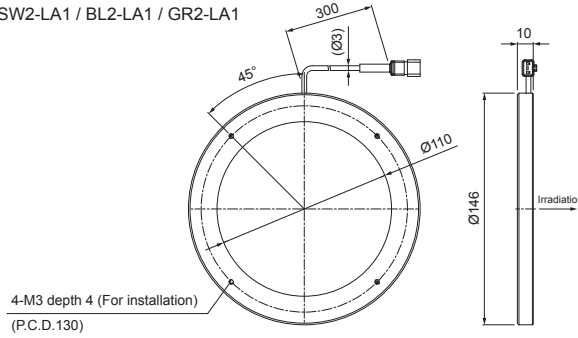
LDR-75RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



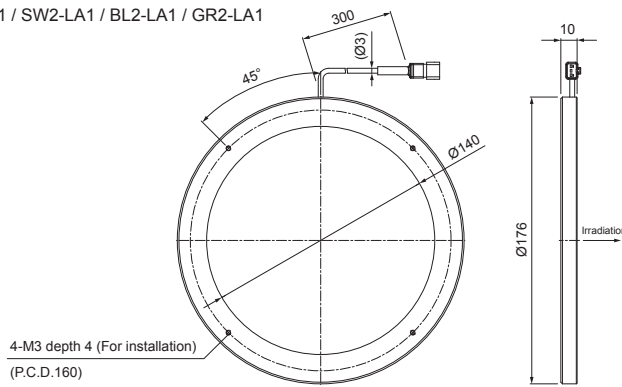
LDR-96RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



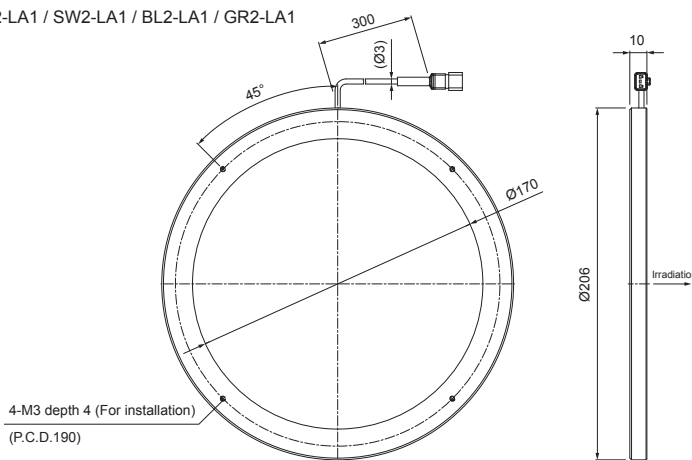
LDR-146RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



LDR-176RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



LDR-206RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Convergent/Diffused)
SQR-TP	Ring (Convergent/Diffused)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLN	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

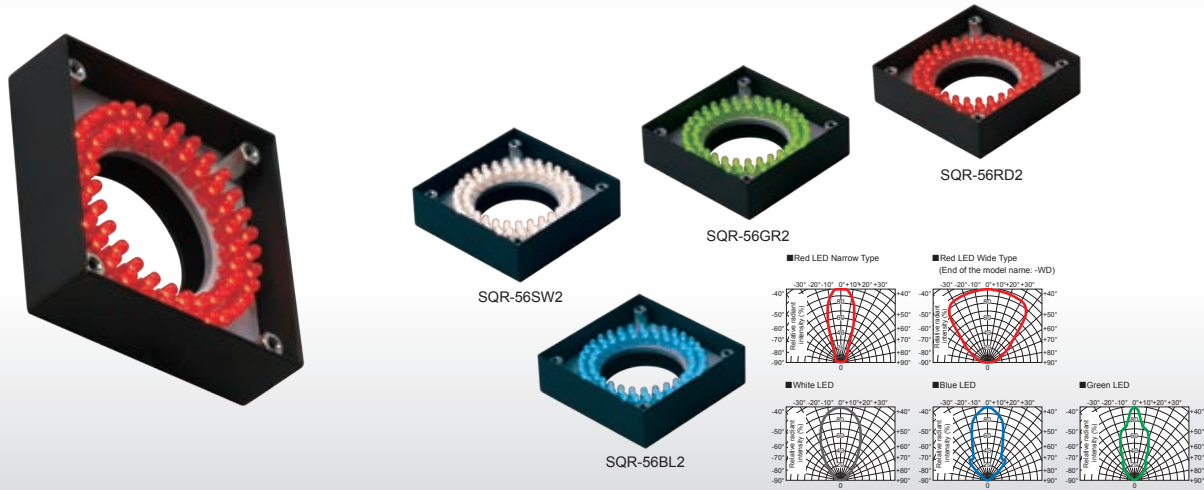
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides direct light from the upper section



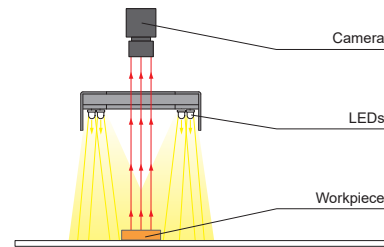
Applications

Character recognition, visual inspection, inspections for damage or stains, reading 2-dimensional code, inspecting parts on boards, etc.

Features

Rings of bullet-shaped LEDs mounted on a square case. LEDs are mounted on a flat circuit board and emit direct light onto the workpiece from above.

Example configuration (SQR-56)



Imaging example: Imaging text on paper labels



Workpiece: Beverage bottles

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

LED Ring Light



Converged light in the center interferes with stable inspection.

SQR-56SW2



The whole thing is evenly and brightly illuminated, making it possible to take an image of the label text.

Lineup

End of the model name: -WD: Wide type

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight
SQR-56RD2	Red	24 V / 3.1 W	630 nm	Diffusion plate Polarizing plate	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD4 PD3 CC-ST-1024 POD*1	75 g
SQR-56RD2-WD							
SQR-56SW2	White	24 V / 3.8 W	5,500 K				
SQR-56BL2	Blue		470 nm				
SQR-56GR2	Green		525 nm				

LED Properties: Spectral Distribution ▶ P.408

Options ▶ P.371

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

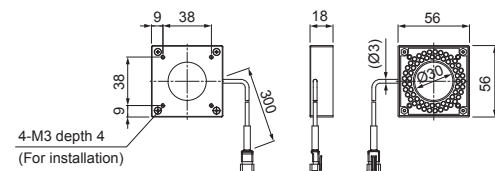
\*1 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/nk/gr/pod>

\*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

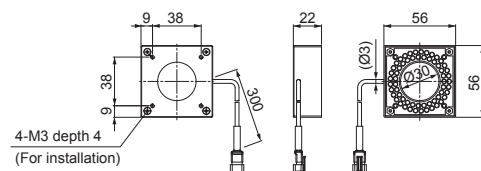
\*3 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

SQR-56RD2 / RD2-WD



SQR-56SW2 / BL2 / GR2



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Refer to our website for product details.

CCS SQR-TP

Search



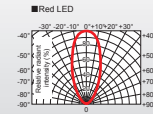
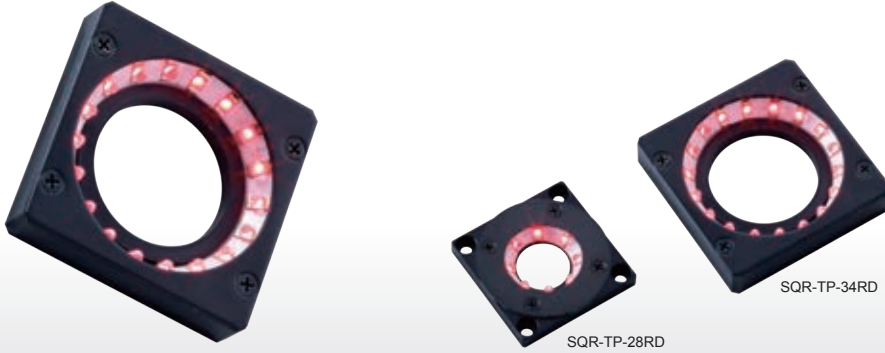
Direct Lighting

Low-Angle Ring Lights

SQR-TP Series

Low-Angle Ring Lights

Provides direct light at a low angle from an angled emitting part



**Applications** Visual inspections for metal parts; inspection for damage or stains on electronic parts; inspection for damage to resin parts; inspection for damage to glass edges; inspection for damage to stain finishing; etc.

**Features**

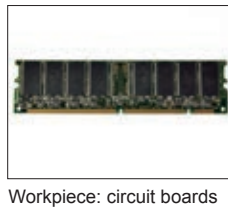
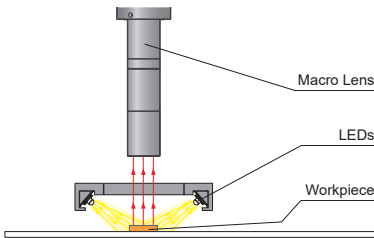
Rings of surface-mounted LEDs mounted on a square case. Provides direct light at a low angle from an angled emitting part.

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

**Example configuration (SQR-TP-34RD)**

**Imaging example: Imaging text on circuit boards**



Workpiece: circuit boards

**Macro lens + LED Spot Light**



It is difficult to recognize the surface status using coaxial illumination.

**SQR-TP-34RD**



Can make an image of the text on the circuit board, the text on the chip, and the soldering plating.

**Lineup**

Model Name	LED Color	Power Consumption	Peak Wavelength	Options	Extension Cables	Recommended Control Units	Weight
SQR-TP-28RD	Red	24 V / 0.5 W	638 nm	-	FCB <sup>*2</sup> Straight Cable FCB-W <sup>*3</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD4 PD3 CC-ST-1024 POD <sup>*1</sup>	15 g
SQR-TP-34RD		24 V / 0.9 W					16 g

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

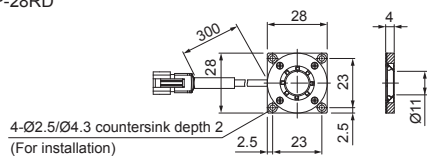
\*1 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

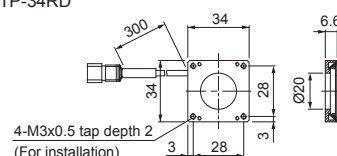
\*3 The cables with a model name that ends with "-EL2" are not included.

**Dimensions (mm)**

SQR-TP-28RD



SQR-TP-34RD



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

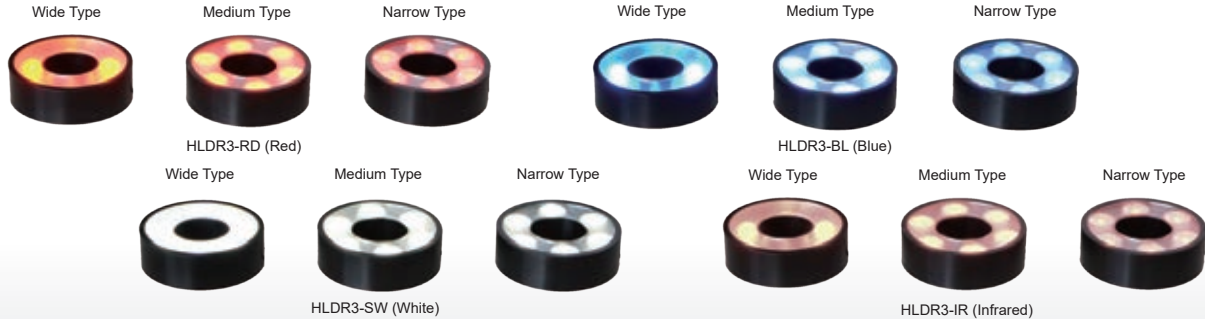
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
<b>SQR-TP</b>	<b>Ring (Direct)</b>
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLN	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products



## Convergent lighting suitable for long-distance illumination

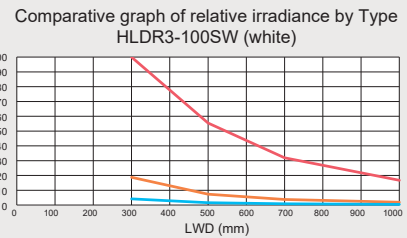
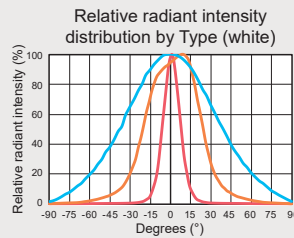
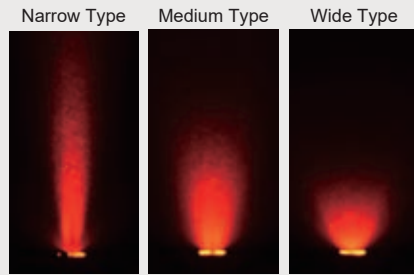


**Applications** Light source for robot picking; Part sorting, inspection for model mixing; Exterior inspection of various parts; etc.

### Three Types of Light Directivity

The data included is for reference only. Actual values may vary.

We have a lineup of Narrow Type that emits condensed illumination, Wide Type that diffuses illumination over a wide range, and Medium Type that has intermediate light distribution characteristics.



### Imaging Comparison (External observation of textured metal part)

\* The shutter speed is changed to suit imaging. The shutter speed can be adjusted to brighten imaging of dark images.  
\* Field of view: 41 mm (H) x 33 mm (V)

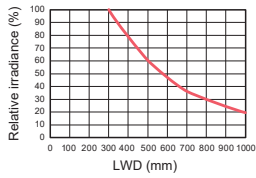
		Narrow Type HLDR3-100SW-DF-N	Medium Type HLDR3-100SW-DF-M	Wide Type HLDR3-100SW-DF-W
Workpiece image  Textured metal part	LWD 75 mm	 Shutter Speed: 800 $\mu$ s Dark in the center.	 Shutter Speed: 650 $\mu$ s More widely illuminated than the narrow Type, but not sufficiently uniform.	 Shutter Speed: 2200 $\mu$ s Uniformly illuminated in the entire FOV.
	LWD 150 mm	 Shutter Speed: 180 $\mu$ s More widely illuminated.	 Shutter Speed: 280 $\mu$ s Uniformly illuminated in the entire FOV.	 Shutter Speed: 280 $\mu$ s Insufficient quantity of light.
	LWD 750 mm	 Shutter Speed: 800 $\mu$ s Uniformly illuminated in the entire FOV.	 Shutter Speed: 800 $\mu$ s Insufficient quantity of light.	 Shutter Speed: 800 $\mu$ s Insufficient quantity of light.

## Data: Relative Irradiance Graph and Uniformity (Representative Example)

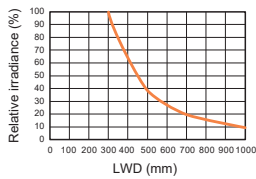
### Relative irradiance graph (LWD characteristics)

\*1 Irradiation strength on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece

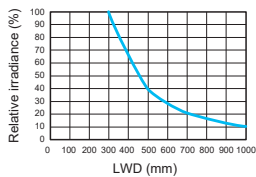
HLDR3-100SW-DF-N (Narrow Type)



HLDR3-100SW-DF-M (Medium Type)

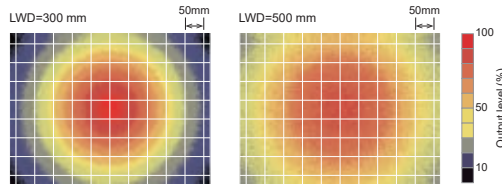
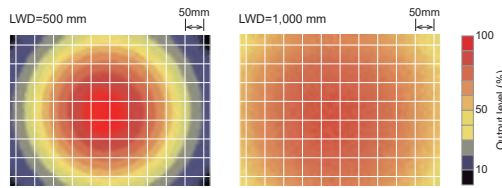
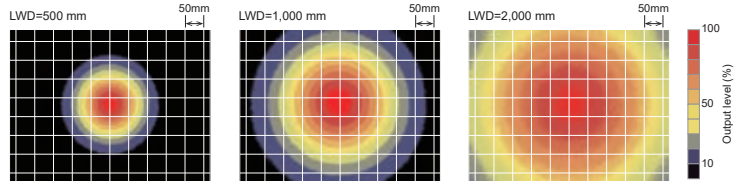


HLDR3-100SW-DF-W (Wide Type)



### Uniformity (Relative irradiance)

The data included is for reference only. Actual values may vary.



## Lineup Model Name Endings: Narrow Type, -M: Medium Type, -W: Wide Type

Model Name *1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	IR (Infrared)				
HLDR3-100□□-DF-N	24 V	15 W				-	FCB <sup>*2</sup> Straight Cable FCB-W <sup>*3</sup> 2-Branch Cable FCB-F 4-Branch Cable FRCB Robot Cable	PD4 PD3	340 g
HLDR3-100□□-DF-M		340 g							
HLDR3-100□□-DF-W		310 g							

Note: Please inquire if you would like to use in combination with a strobe control unit (override Type)

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

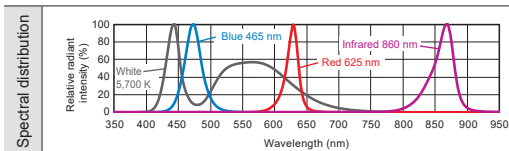
\*1 □□ in the model name contains the LED color.

(RD: Red, SW: White, BL: Blue, IR: Infrared)

\*2 Cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

\*3 Cables with a model name that ends with "-EL2" are not included.

## LED Properties

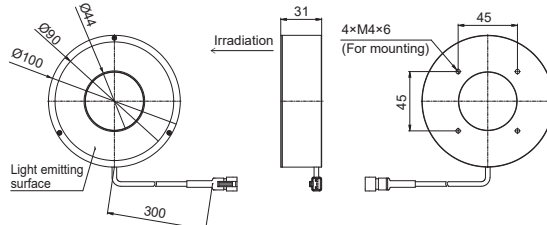


Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Dimensions (mm)

HLDR3-100□□DF-N / -M / -W (common dimensions)  
(□□=RD, SW, BL, IR)



You can inquire using our website.

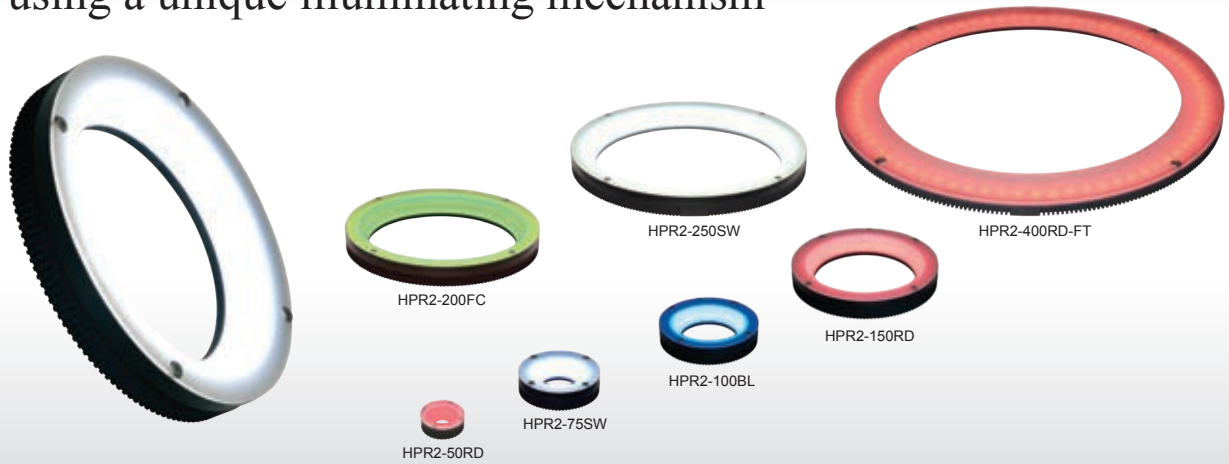
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
(Rectangular Type)	Line (Diffused)
LFXV	Line (Diffused)
(Rectangular Type)	Line (Diffused)
TH2	Line (Diffused)
(Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
Other Products	Lenses
LDF-NB	Products



Achieves a uniform region with a high degree of freedom by using a unique illuminating mechanism



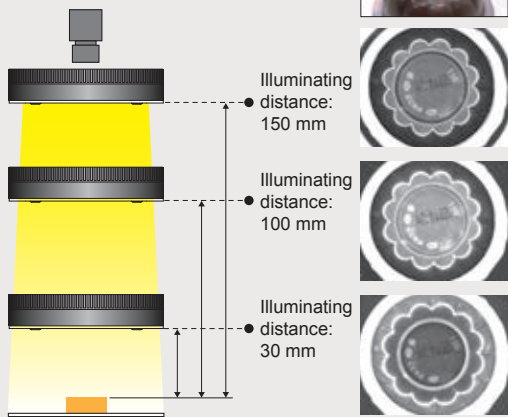
Applications

Inspection for damage or stains, visual and color determination inspections, character recognition, text inspection, high angle uniform illumination, characteristic extraction at low angle, etc.

Supports from Low Angles to High Angles

Provides diffused light from the LEDs without waste using a unique illuminating mechanism. Even if the distance from the workpiece to the light unit is changed, there is little variation in the uniform region and it can therefore be used for a wide variety of uses.

Achieves a uniform region with a high degree of freedom

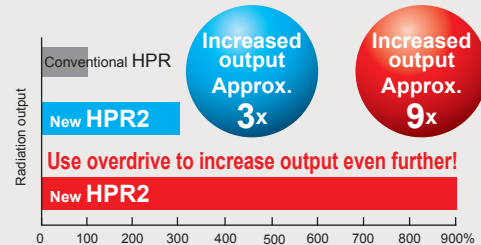


Provides Diffused Light at High Output

It achieves uniform illumination of diffused light at high output using surface-mounted LEDs and a specially processed diffusion plate.

Achieved higher output than the conventional product

Output comparison with the conventional product



- This is a comparison between the HPR-100 and HPR2-100 light units, using red and white colors.
- It can be combined with a strobe control unit for even brighter emission than continuous emission.
- \*Cannot use a full color (RGB) type.
- The data included is for reference only. Actual values may vary.

Added two sizes and a full color (RGB) type

We added the HPR2-75 and HPR2-200 models. Also, we added a full color (RGB) type to the lineup as variation for wavelengths, increasing the applications of our products.

Custom Order Example

Please contact your CCS sales representative.

E.g.: Different shape

Format/material

Changed the format to a semicircle to match the workpiece.

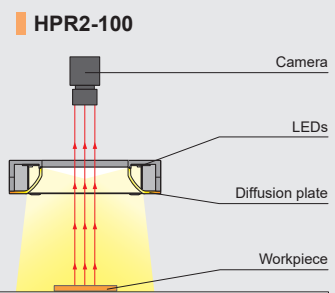
Customizable items

- External/internal diameter
  - Wavelength/Color
  - Increase output
  - Cable length
  - Illuminating angle
  - Format/material
  - Connector format
  - Installation/mounting
- Etc.



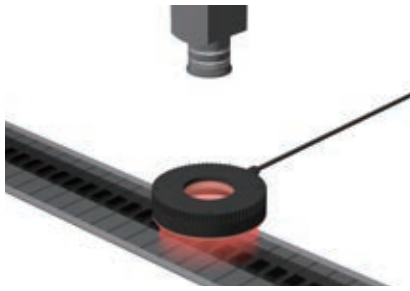
Example Configuration

Uses a unique illuminating mechanism and emits diffused light at high output.

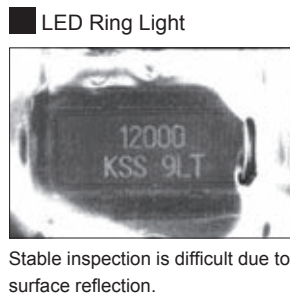
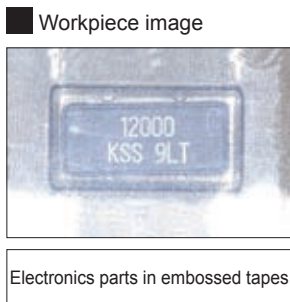




➤ Imaging Example: Imaging Text on Electronic Parts



Description	Printing inspection
Workpiece	Electronics parts in embossed tapes
Conventional lighting	LED Ring Light
New lighting	HPR2-75RD
Result	Improved uniformity

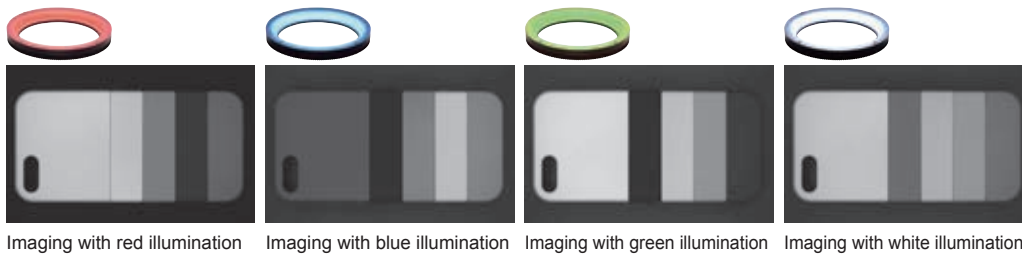


➤ Imaging Example: Imaging the Appearance of Multi-Colored Workpieces



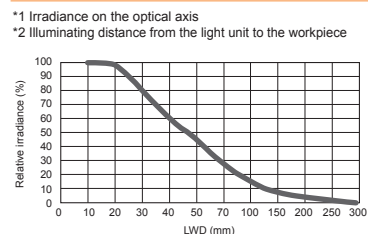
Description	Visual inspection
Workpiece	Smartphone cases
Conventional lighting	-
New lighting	HPR2-200FC: full color (RGB) type
Result	Allows for color determination.

**HPR2-200FC: full color (RGB) type**



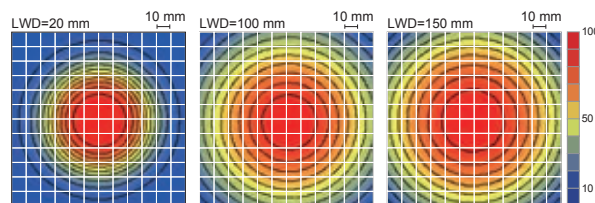
➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)

**HPR2-75SW**  
Relative irradiance graph\*<sup>1</sup>  
(LWD characteristics)\*<sup>2</sup>



The data included is for reference only. Actual values may vary.

Uniformity (Relative irradiance)



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LN2P2 Coaxial Units LN2P-FN LN/LN-HK	Line (Convergent)
LN2D LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LN2G LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# HPR2 Series



Refer to our website for product details.

CCS HPR2

Search



## Introduction to Half Ring Lights (Custom Order Example)

### HPR2-HFCT Series

It has a space-saving design that can be installed and used in a limited space

- The contrast can be increased by illuminating only the required parts
- Can be installed in a device with limited space and illuminates the area to be observed in pinpoint
- Can be customized according to the application such as emission color and size



HPR2-100SW-HFCT

## Lineup

Classification	Model Name <sup>1</sup>	Input Voltage	Power Consumption					Options	Extension Cables	Recommended Control Units <sup>4</sup>		Weight
			RD (Red)	SW (White)	BL (Blue)	IR860 <sup>3</sup> (Infrared)	FC <sup>4</sup> (Red/Green/Blue)			PD4	PD3	
Standard products	HPR2-50□□	24 V	7.6 W	9.1 W	9.1 W	9.1 W	3.8 W <sup>4</sup>	Bracket	FCB <sup>6</sup> Straight Cable	PD4	PD3	46 g
	HPR2-75□□	24 V	17 W	16 W	16 W	12 W	6.0 W <sup>4</sup>			CC-ST-1024	POD <sup>2</sup>	
	HPR2-100□□	24 V	17 W	23 W	23 W	23 W	11 W <sup>4</sup>	FCB-W <sup>7</sup> 2-Branch Cable	FCB-F 4-Branch Cable	PD4	PD3	170 g
	HPR2-150□□	24 V	27 W	27 W	27 W	35 W	15 W <sup>4</sup>			POD <sup>2</sup>	250 g	
	HPR2-200□□	24 V	34 W	41 W	41 W	46 W	19 W <sup>4</sup>	FRCB Robot Cable	FCB-F 4-Branch Cable	PD4	PD3	380 g
	HPR2-250□□ <sup>5</sup>	24 V	45 W	46 W	46 W	46 W	24 W <sup>4</sup>			POD <sup>2</sup>	510 g	
	HPR2-400□□-FT	24 V	45 W	46 W	46 W	-	30 W <sup>4</sup>	-	-	-	1,050 g	
Custom order products	HPR2-50□□-HFCT	24 V	*3	4.6 W	*3	*3	*3	*3	*6 The cables with a model name that ends with "ME7", "EL2", "PF", or "PF-EL9" are not included. *7 The cables with a model name that ends with "EL2" are not included.	PD4	PD3	*3
	HPR2-75□□-HFCT	24 V	*3	7.6 W	*3	*3	*3			CC-ST-1024	POD	
	HPR2-100□□-HFCT	24 V	*3	12 W	*3	*3	*3			PD4	PD3	
	HPR2-150□□-HFCT	24 V	*3	14 W	*3	*3	*3			POD		

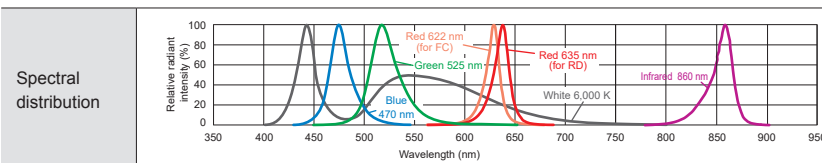
Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

<sup>1</sup> □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR860: Infrared, FC: Red/Green/Blue)  
<sup>2</sup> For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/rod>  
<sup>3</sup> This product is custom-made. Contact our local sales office for details.  
<sup>4</sup> For the full color (RGB) type control unit, use the PD3 3-channel specification. Cannot be used with the strobe control unit (override mode).  
<sup>5</sup> The model name for the infrared option is HPR2-250IR86.

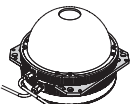
## LED Properties



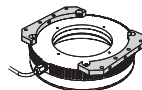
Lens filters suitable for each wavelength are available.  
For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.  
The data included is for reference only. Actual values may vary.

## Options



Combine with the Dome Light HPD2 Series to achieve imaging by light switching and simultaneous lighting.



Achieves installation using installation holes with a larger gap than the light unit body installation holes, or installation on a vertical surface.

### Light joint bracket

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-75-JO	HPR2-75 Series	HPD2-75 Series
BK-100-JO	HPR2-100 Series	HPD2-100 Series
BK-150-JO	HPR2-150 Series	HPD2-150 Series
BK-200-JO	HPR2-200 Series	HPD2-200 Series
BK-250-JO	HPR2-250 Series	HPD2-250 Series

▶ P.382

### Expansion mounting bracket

Model name	Applicable Light Unit (Common for all colors)
BK-50-CI	HPR2-50 Series
BK-75-CI	HPR2-75 Series
BK-100-CI	HPR2-100 Series
BK-150-CI	HPR2-150 Series
BK-200-CI	HPR2-200 Series
BK-250-CI	HPR2-250 Series

▶ P.382

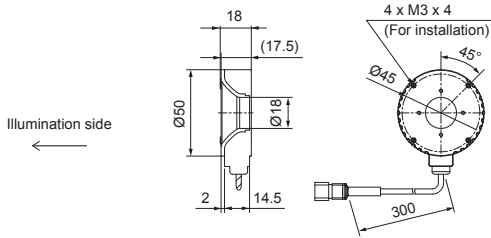
- Example of the expansion mounting bracket in use



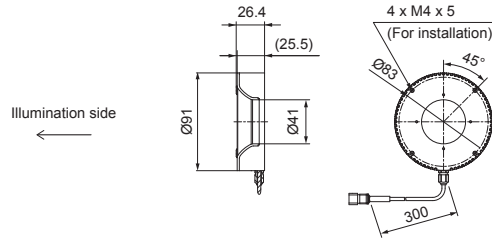
Ring Light: Image of usage with the HPR2-200RD

➤ **Dimensions (mm)**

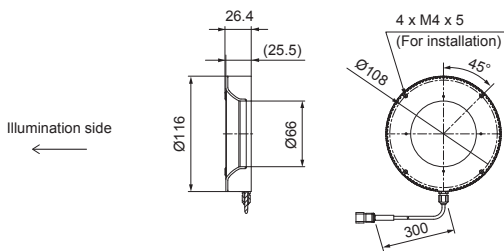
HPR2-50RD/SW/BL/FC



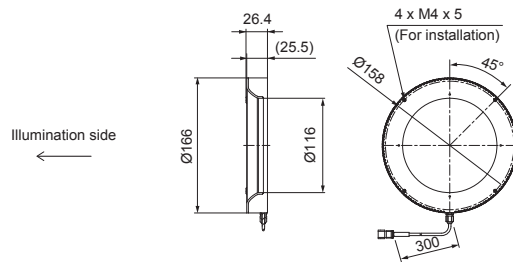
HPR2-75RD/SW/BL/FC



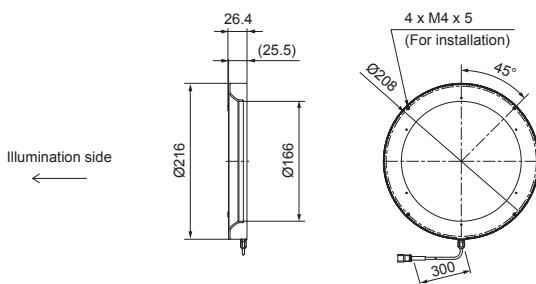
HPR2-100RD/SW/BL/FC



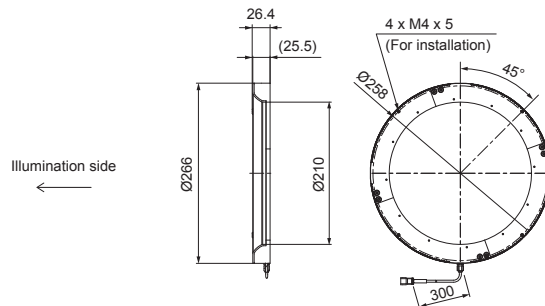
HPR2-150RD/SW/BL/FC



HPR2-200RD/SW/BL/FC

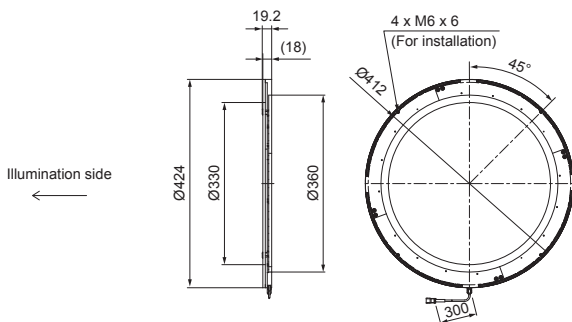


HPR2-250RD/SW/BL/FC

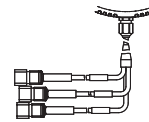


The HPR2-250 model has a curved diffusion plate. Be aware this differs from the conventional product.

HPR2-400RD-FT / SW-FT / BL-FT / FC-FT



The HPR2-400-FT has a flat diffusion plate.



The full color type (HPR2-□□FC, HPR2-400FC-FT) has three connectors. Use a 3-channel control unit if controlling intensity separately for each color.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/diffused)
HPR2	Ring (Convergent/diffused)
LFR	Ring (Convergent/diffused)
LKR	Ring (Convergent/diffused)
FPR	Ring (Convergent/diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products

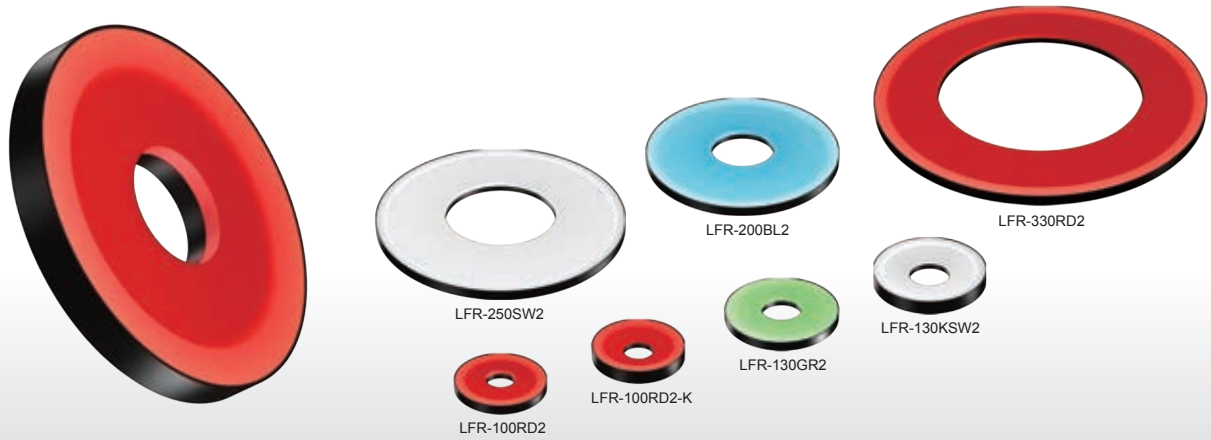
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



## Diffused illumination from a flat emitting surface



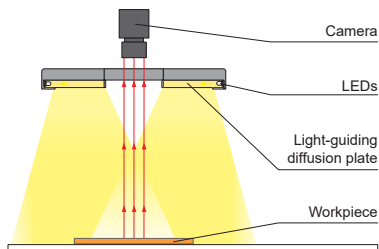
### Applications

Inspection for parts mounted on circuit boards, surface inspection for metal parts, inspection for faults on bottle tops, character recognition, text inspection, printing inspection, color determination inspection, etc.

### Features

LEDs embedded around a circular light-guiding diffusion plate. Uniformly diffused light emitted from a flat emitting surface.

#### Example configuration (LFR-100)



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

#### Imaging example: Imaging for detecting content in trays

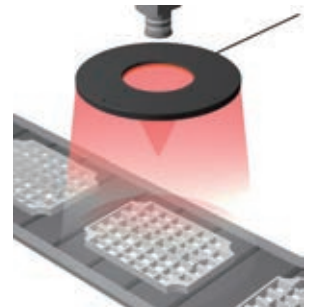


Workpiece: Content in trays

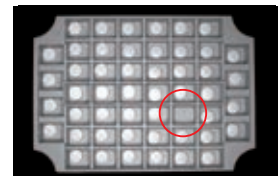
#### LED Ring Light



Converged light in the center interferes with stable inspection.



#### LFR-250RD2



The whole thing is illuminated evenly, allowing for detection of present contents.

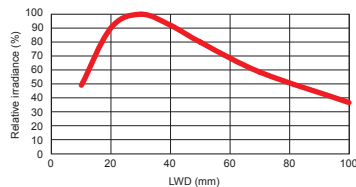
### Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

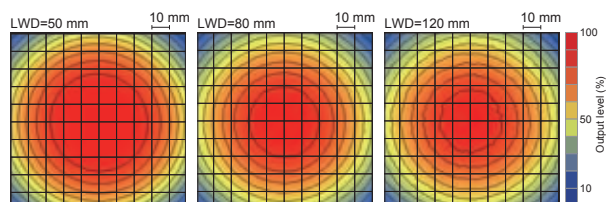
#### LFR-130RD2

Relative irradiance graph<sup>\*1</sup>  
(LWD characteristics)<sup>\*2</sup>

- \*1 Irradiance on the optical axis
- \*2 Illuminating distance from the light unit to the workpiece



#### Uniformity (Relative irradiance)



**Lineup** End of the model name: -K: Type with angled emitting surface

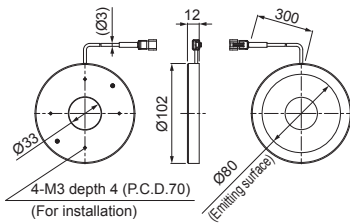
Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	GR (Green)				
LFR-100□□2	24 V	3.6 W	4.6 W	4.6 W	4.6 W	FCB*5 Straight Cable	PD4 PD3 CC-ST-1024 POD*2	120 g *RD is 170 g	
LFR-100□□2-K*3	24 V	3.6 W	4.6 W	4.6 W	4.5 W			FCB-W*6 2-Branch Cable	190 g *RD, SW are 140 g
LFR-130□□2	24 V	4.6 W	5.7 W	5.7 W	5.7 W			FCB-F 4-Branch Cable	250 g
LFR-130□□2-K*3	24 V	4.6 W	5.7 W	5.7 W	5.7 W	FCB Robot Cable	PD4 PD3 CC-ST-1024*4 POD*2	190 g *SW is 200 g	
LFR-200□□2	24 V	8.1 W	11 W	11 W	-			-	490 g
LFR-250□□2	24 V	11 W	13 W	13 W	-	*5 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *6 The cables with a model name that ends with "-EL2" are not included.	PD4 PD3 POD*2	1,080 g *SW is 1,090 g	
LFR-330RD2	24 V	14 W	-	-	-			-	1,500 g

LED Properties: Spectral Distribution ▶ P.408    Extension Cables ▶ P.383    Control Unit Selection Guide ▶ P.309    List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green) (LFR-200 and LFR-250 are only available in red, white and blue.)  
 \*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/link/gr/pod>  
 \*3 Only the white models have the names LFR-100KSW2 and LFR-130KSW2.

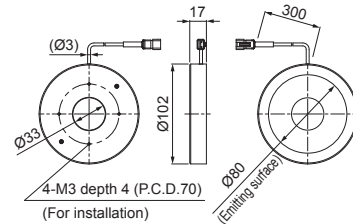
**Dimensions (mm)**

LFR-100RD2/SW2/BL2/GR2



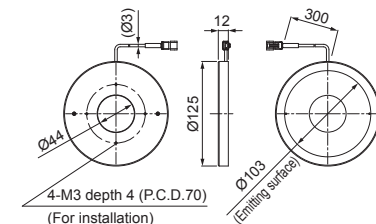
The emitting surface for the LFR-100SW2/BL2/GR2 is Ø77.

LFR-100RD2-K / KSW2 / BL2-K / GR2-K

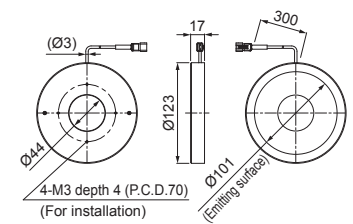


The emitting surface for the LFR-100KSW2/BL2/GR2 is Ø78.

LFR-130RD2/SW2/BL2/GR2

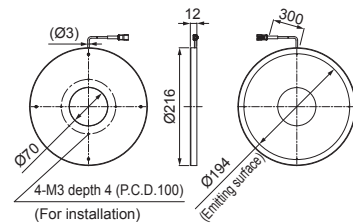


LFR-130RD2-K / KSW2 / BL2-K / GR2-K



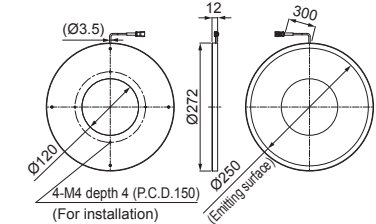
The emitting surface for the LFR-130KSW2 is Ø99.

LFR-200RD2/SW2/BL2



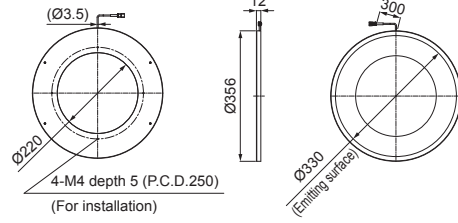
The emitting surface for the LFR-200SW2/BL2 is Ø193.

LFR-250RD2/SW2/BL2



The emitting surface for the LFR-250SW2/BL2 is Ø246.

LFR-330RD2



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFB3	Coaxial
LFB3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LNLN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides diffused light from an angled emitting surface



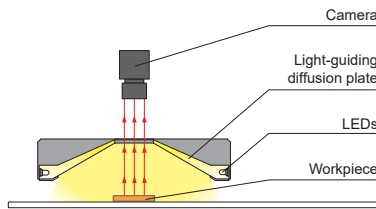
**Applications**

Soldering inspection, parts identification with color, inspection for stains on glossy surfaces, character recognition on metal parts, dent inspection on metal parts, etc.

**Features**

LEDs embedded around a circular light-guiding diffusion plate. Uniformly diffused light from an emitting surface angled with respect to the workpiece.

**Example configuration (LKR-125)**



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

**Imaging example: Imaging soldering parts on the cap of light bulbs**



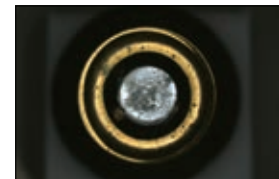
Workpiece: Light bulbs



It is difficult to evenly illuminate the whole solder.



**LKR-125SW2**



It is possible to evenly illuminate the whole solder, including the cap.

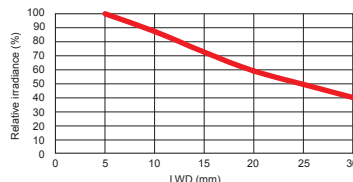
**Data: Relative Irradiance Graph and Uniformity (Representative Example)**

The data included is for reference only. Actual values may vary.

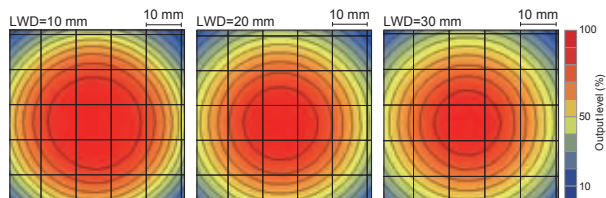
**LKR-70RD2**

Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

- \*1 Irradiance on the optical axis
- \*2 Illuminating distance from the light unit to the workpiece



Uniformity (Relative irradiance)



## Lineup

Model Name <sup>*1</sup>	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	GR (Green)				
LKR-70□□2	24 V	2.6 W	3.8 W	3.8 W	3.8 W	-	FCB* <sup>3</sup> Straight Cable  FCB-W* <sup>4</sup> 2-Branch Cable  FCB-F 4-Branch Cable  FRCB Robot Cable	PD4    PD3 CC-ST-1024    POD* <sup>2</sup>	125 g <small>*SW is 130 g</small>
LKR-70-8□□2	24 V	2.6 W	3.8 W	3.8 W	3.8 W				140 g
LKR-125□□2	24 V	4.6 W	5.7 W	5.7 W	6.7 W				490 g <small>*RD is 295 g, SW is 300 g</small>

Extension Cables ▶ P.383

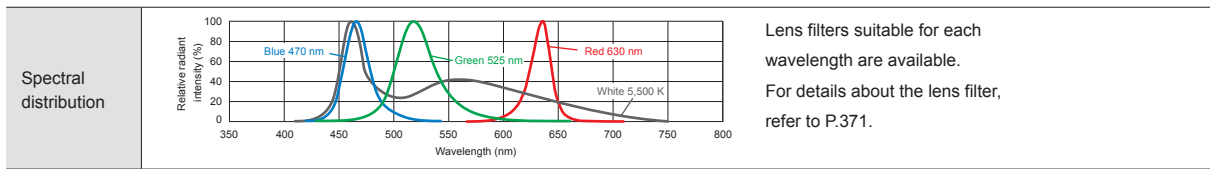
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lmk/qr/pod>

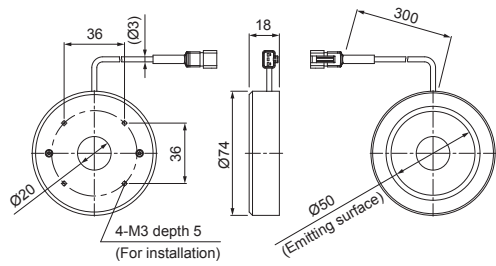
## LED Properties



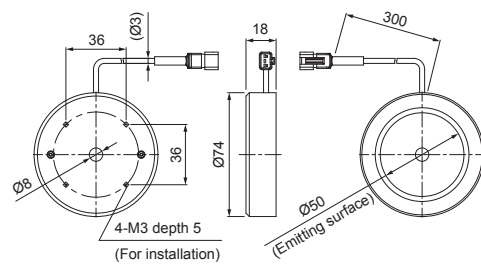
Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Dimensions (mm)

LKR-70RD2/SW2/BL2/GR2

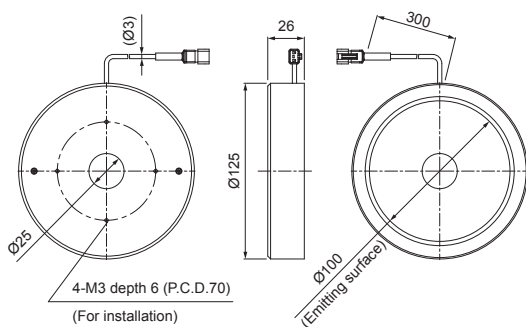


LKR-70-8RD2/SW2/BL2/GR2



The emitting surface for the LKR-70-8SW2/BL2/GR2 is Ø49.2.

LKR-125RD2/SW2/BL2/GR2



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/diffused)
HPR2	Ring (Convergent/diffused)
LFR	Ring (Convergent/diffused)
LKR	Ring (Convergent/diffused)
FPR	Ring (Convergent/diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
Other Products	Lenses
LDF-NB	Other Products



Provides diffused light at a low angle from an angled emitting surface

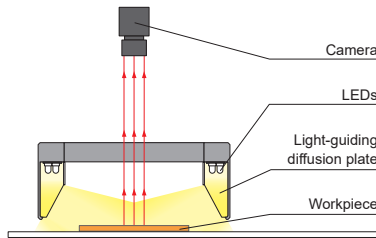


**Applications** Edge extraction of metal parts, character recognition for electronic parts, inspection for parts on circuit boards, label inspections, imaging of alignment marks, etc.

**Features**

Light from the vertically-arranged LEDs is transmitted through the light-guiding diffusion plate and uniformly diffused light is concentrated on the center of the workpiece from a low angle.

**Example configuration (FPR-100)**



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

**Imaging example: Imaging the appearance of metal parts**



Workpiece: Nut for bearings



It is difficult to evenly illuminate the slanted exterior.



It is possible to evenly illuminate the slanted exterior.

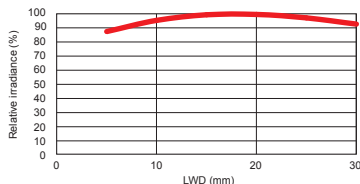
**Data: Relative Irradiance Graph and Uniformity (Representative Example)**

The data included is for reference only. Actual values may vary.

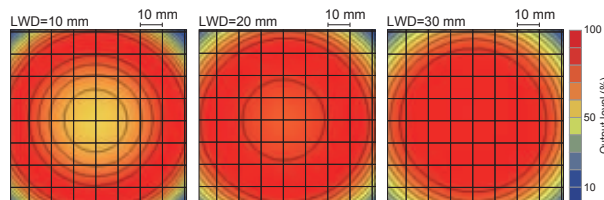
**FPR-100RD2**

Relative irradiance graph<sup>\*1</sup>  
(LWD characteristics)<sup>\*2</sup>

- \*1 Irradiance on the optical axis
- \*2 Illuminating distance from the light unit to the workpiece



**Uniformity (Relative irradiance)**





## Lineup

Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	GR (Green)				
FPR-100□□2	24 V	6.1 W	7.6 W	7.6 W	7.6 W	-	FCB**4 Straight Cable	PD4 PD3 CC-ST-1024 POD*2	220 g
FPR-136□□2	24 V	9.1 W	12 W	12 W	12 W		FCB-W**5 2-Branch Cable	PD4 PD3 CC-ST-1024*3 POD*2	300 g *SW is 280 g
FPR-180□□2	24 V	13 W	16 W	16 W	16 W		FCB-F 4-Branch Cable	PD4 PD3 POD*2	400 g *SW is 380 g
							FRCB Robot Cable		

Extension Cables ▶ P.383

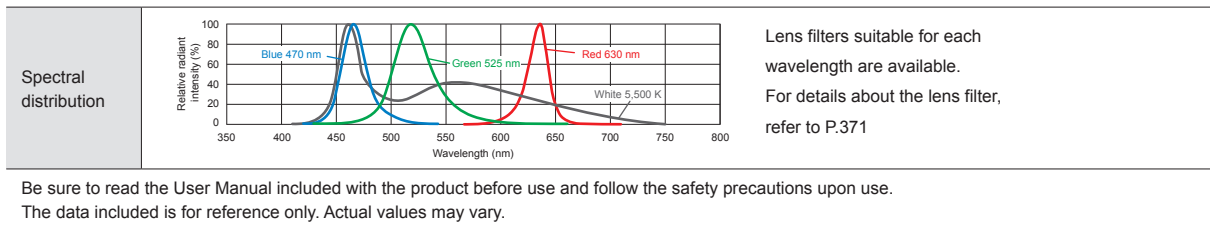
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)

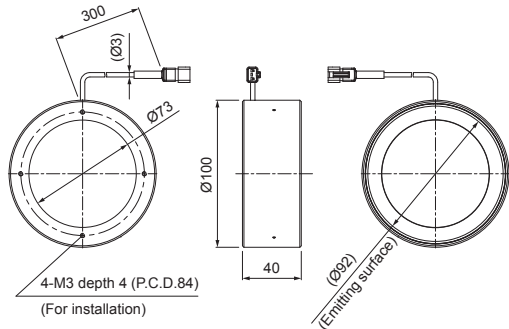
\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/rod>

## LED Properties

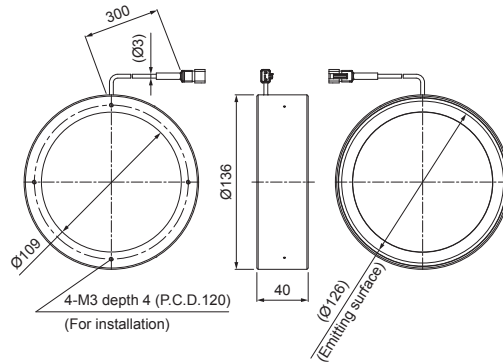


## Dimensions (mm)

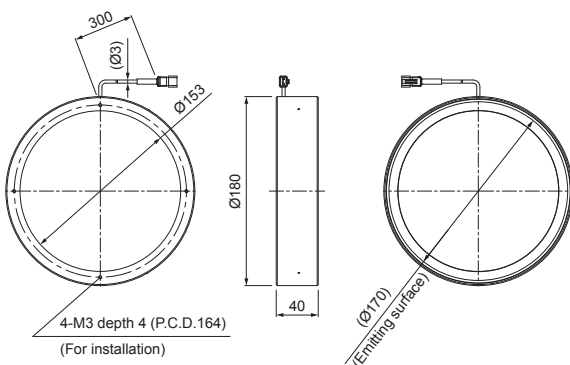
FPR-100RD2/SW2/BL2/GR2



FPR-136RD2/SW2/BL2/GR2



FPR-180RD2/SW2/BL2/GR2



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFB3	Coaxial
LFB3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

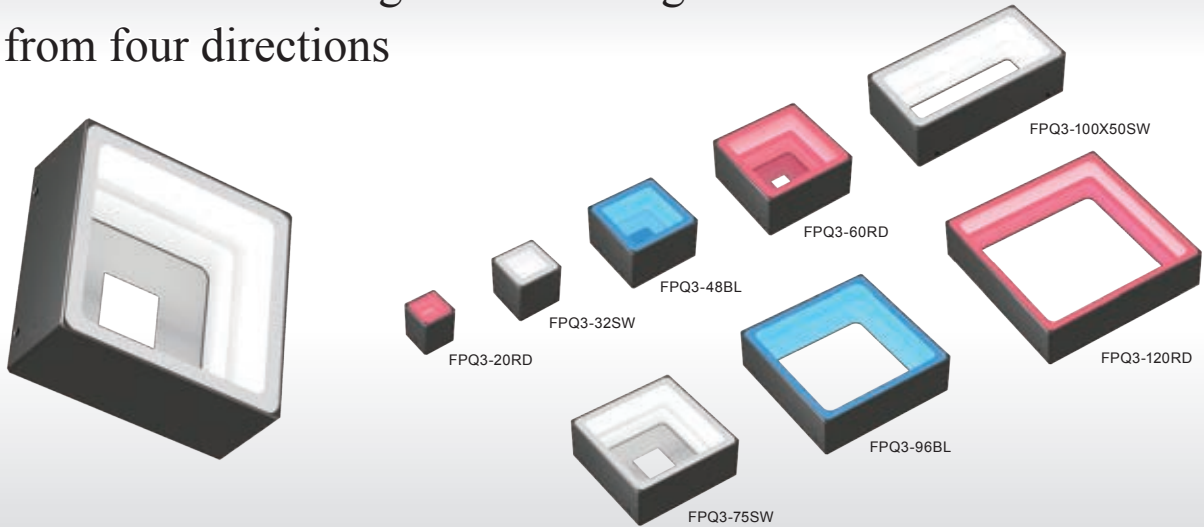
You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides diffused light at a low angle from four directions



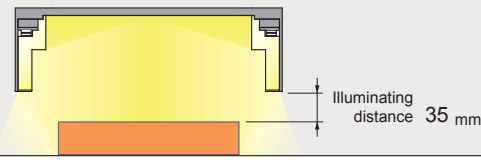
Applications

Visual inspection for electronic parts; character recognition; inspection for bending, slipping, and staining of pins or leads; visual and pattern inspections for circuit boards; fault inspection for LCDs; IC lead inspection; etc.

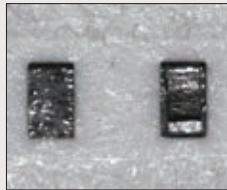
Effective for quadrangular workpieces

The FPQ3 Series is a low angle light suitable for rectangular workpieces. It prevents the detection of contours at four corners and reflection, which is difficult with a ring light.

Imaging example for the FPQ3-48RD: Imaging for detecting electronics parts



LED Ring Light



There is glare from the surface film and it is difficult to determine if the part is there.

FPQ3-48RD

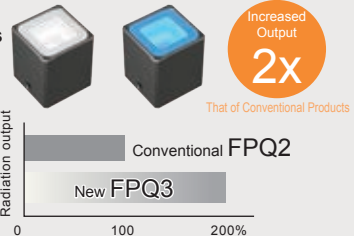


Film glare is removed, making it possible to determine if the part is there.

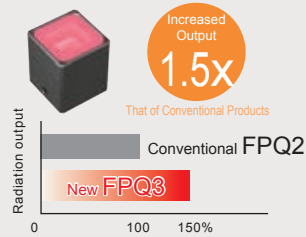
High-Output, 2x Conventional Products

Output has been increased by 2x for white and blue, 1.5x for red light units. Furthermore, output is more than doubled when used with a POD Series strobe overdrive control unit

White Lights  
Blue Lights



Red Lights

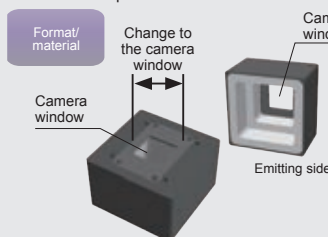


Comparison of the conventional products of the same color. The data included is for reference only. Actual values may vary.

Custom Order Example

Please contact your CCS sales representative.

E.g.: Changed format so that the light unit does not overlap with the field of view.



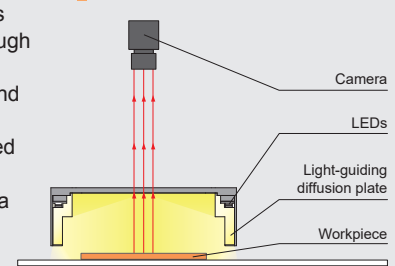
Customizable items

- External/Internal diameter
- Wavelength/color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

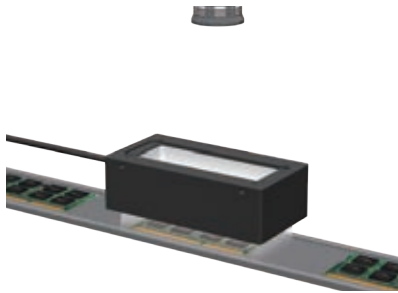
Example Configuration

Light illuminated from the LEDs is transmitted through the light-guiding diffusion plate and uniform diffused light is illuminated centrally on the workpiece from a low angle.

FPQ3-96

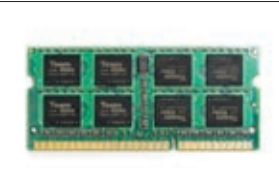


### Imaging Example: Imaging the Appearance of PC Memory Boards




Description	Visual inspection
Workpiece	PC memory boards
Conventional lighting	FPQ2-120SW
New lighting	FPQ3-100X50SW
Result	Improved uniformity

**Workpiece image**



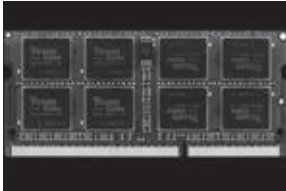
PC memory boards

**FPQ2-120SW**




It is difficult to evenly illuminate and capture the appearance of the memory boards.

**FPQ3-100X50SW**




It is possible to evenly illuminate and capture the appearance of the memory boards.

### Imaging Example: Imaging the Appearance of Electronic Components




Description	Visual inspection
Workpiece	Electronic components
Conventional lighting	Without reflection panel
New lighting	With a reflection panel
Result	Improved uniformity

**Workpiece image**




Electronic components

**Without Reflection Plate**



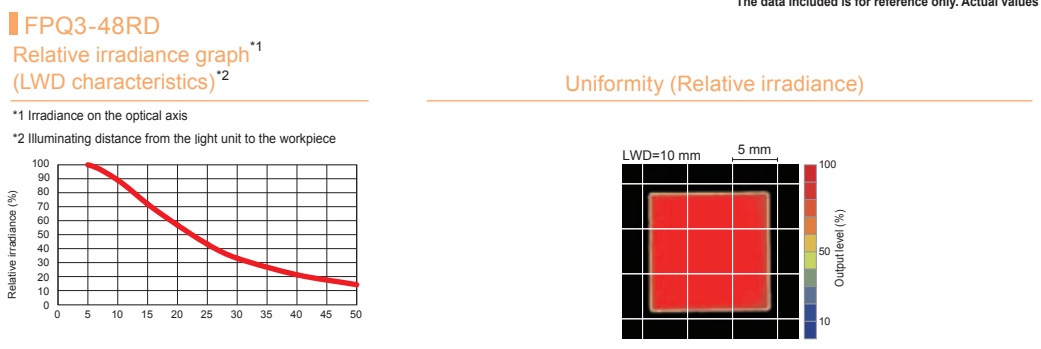
Illuminating from a low angle allows you to observe the engraved characters.

**With a Reflection Plate**

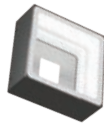


Illuminating from above and a low angle allows you to observe the characters and blots.

### Data: Relative Irradiance Graph and Uniformity (Representative Example)



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
<b>FPQ3</b>	<b>Square</b>
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof Violet UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL LNSP2 Coaxial Units LNSP-FN LNLN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNSIS2 LNSIS LNSIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products



Lineup

Model Name*1	Input Voltage	Power Consumption			Options	Extension Cables	Recommended Control Units		Weight
		RD (Red)	SW (White)	BL (Blue)					
FPQ3-20□□	24 V	1.3 W	3.1 W	2.6 W	-	FCB*5 Straight Cable	PD4	PD3	25 g
FPQ3-32□□	24 V	3.8 W	7.1 W	5.1 W	Reflective plate		CC-ST-1024	POD*2	50 g
FPQ3-48□□	24 V	5.1 W	11 W	7.6 W	-	FCB-W*6 2-Branch Cable	PD4	PD3	90 g
FPQ3-60□□	24 V	7.6 W	15 W	11 W	-	FCB-F 4-Branch Cable	CC-ST-1024*3	POD*2	
						FRCB Robot Cable	PD4	PD3	CC-ST-1024*4
FPQ3-75□□	24 V	12 W	22 W	16 W	-	FCB-W*6 2-Branch Cable	PD4	PD3	155 g
FPQ3-96□□	24 V	13 W	25 W	18 W	Reflective plate		POD*2	PD3	170 g
FPQ3-120□□	24 V	16 W	27 W	21 W	Reflective plate	FCB-W*6 2-Branch Cable	POD*2	PD3	220 g
FPQ3-100×50□□	24 V	11 W	18 W	13 W	Reflective plate		POD*2	PD3	135 g

Extension Cables ▶ P.383

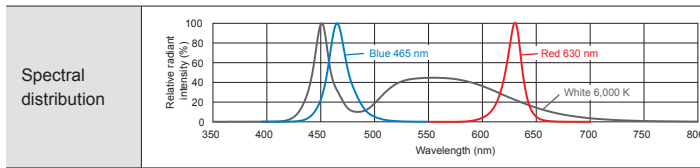
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

LED Properties



Lens filters suitable for each wavelength are available.  
For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.  
The data included is for reference only. Actual values may vary.

Options



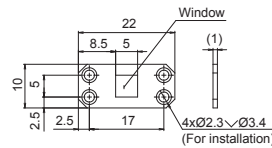
Installing the reflection plate on the light unit enhances the dome effect, which enables highly-uniform and diffused illumination.

Reflection plate

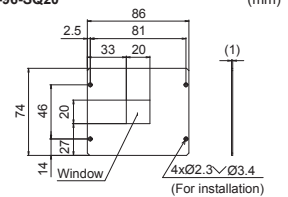
Model name	Applicable Light Unit (Common for all colors)
RP-FPQ3-32-SQ5	FPQ3-32
RP-FPQ3-96-SQ20	FPQ3-96
RP-FPQ3-120-SQ20	FPQ3-120
RP-FPQ3-100X50-SQ10	FPQ3-100X50

Accessories: Flat countersunk head screws, JClS #0 type 1, M2 (4 mm) x 5 pieces  
The FPQ3-48-, FPQ3-60-, and FPQ3-75 Series light units have a factory-installed reflection plate.

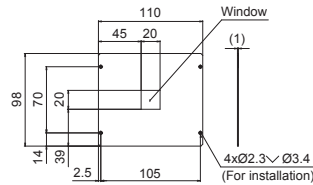
RP-FPQ3-32-SQ5



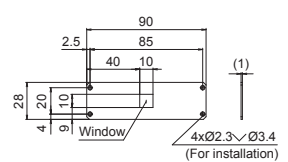
RP-FPQ3-96-SQ20



RP-FPQ3-120-SQ20

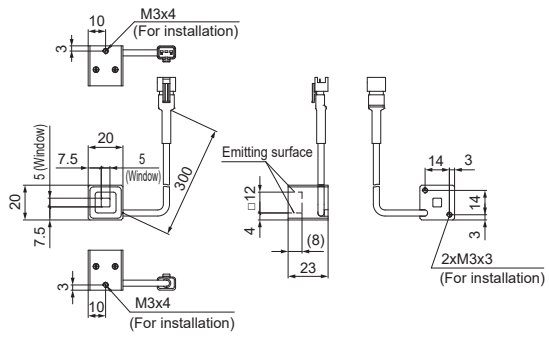


RP-FPQ3-100X50-SQ10

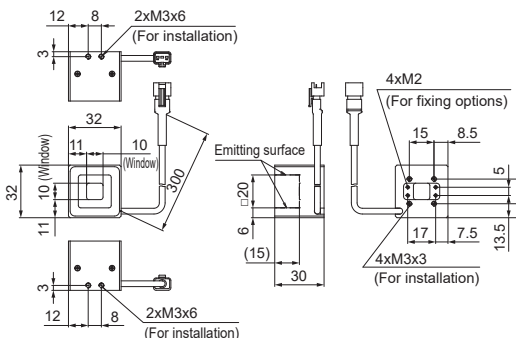


Dimensions (mm)

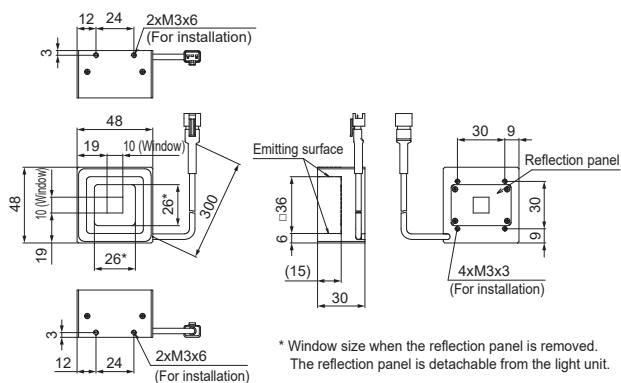
FPQ3-20RD/SW/BL



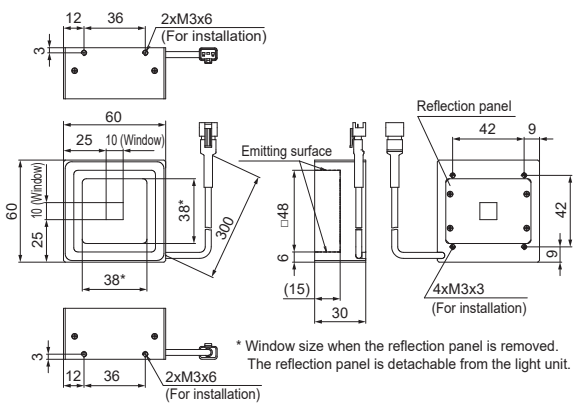
FPQ3-32RD/SW/BL



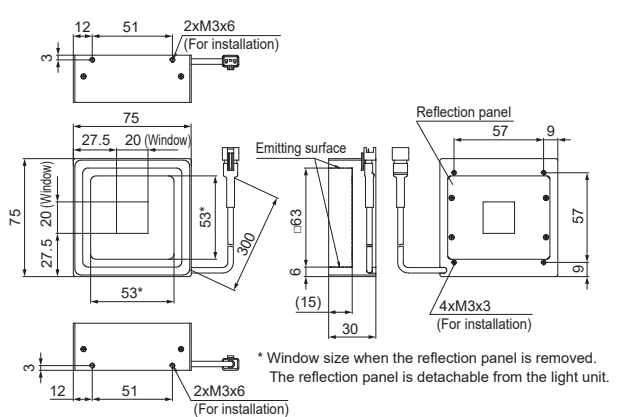
FPQ3-48RD/SW/BL



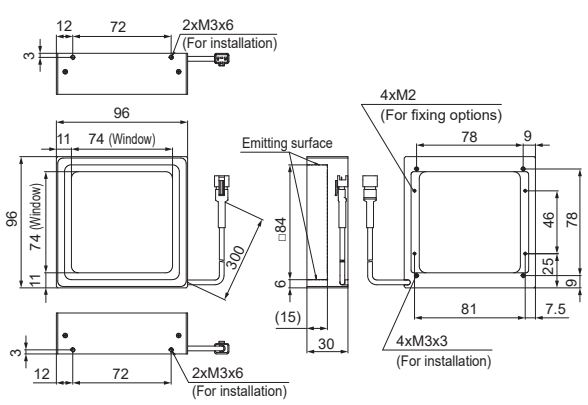
FPQ3-60RD/SW/BL



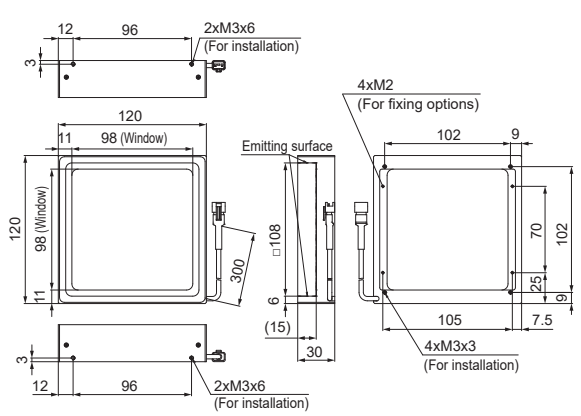
FPQ3-75RD/SW/BL



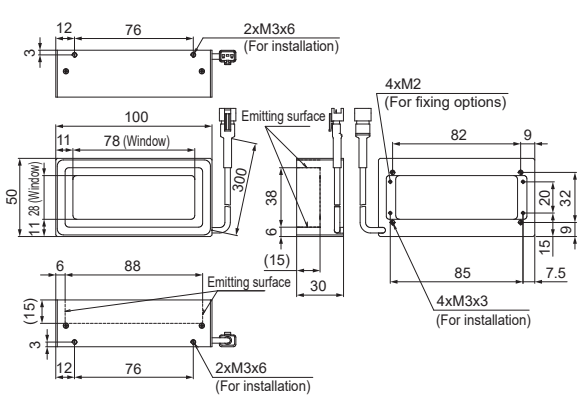
FPQ3-96RD/SW/BL



FPQ3-120RD/SW/BL



FPQ3-100x50RD/SW/BL



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2		
LDR2-LA	Ring	(Direct)
LDR-LA1	Ring	(Direct)
SQR		
SQR-TP		
HLDR3		(Convergent/Diffused)
HPR2		
LFR	Ring	(Convergent/Diffused)
LKR		
FPR		
<b>FPQ3</b>	<b>Square</b>	
LDL2		
LDLB	Bar	
HLDL3	Bar	
LB		
TH2 (5 types)		
LFL	Flat	
HPD2		
LDM2		
LAV	Dome	
PDM		
LFXV		
LFX3		
LFX3-PT		
LFV3	Coaxial	
LFV3-G	Coaxial	
MSU	Coaxial	
MFU	Coaxial	
PF	Strobe	
HLDR-IP	Water-proof	
HSL-PCL	Water-proof	
UV3/VL3	Violet	
UV	Violet	
LNSP-UV3-FN	UV / Violet	
IR2 (Under 1000-nm Type)	Infrared	
IR (Over 1000-nm Type)	Infrared	
CIR		
LDF-RLS	Reference Light Source	
IU	Intensity Control	
HLV3		
LV		
HFS/HFR		
HLV3-22-4-NR	Spot, Etc.	
HLV3-3M-RGB-4		
PFBR-600SW2		
PFBR-150		
SLG-150V-CCS		
PF3(A)		
LNL1	Line (Convergent)	
LNSP2	Line (Convergent)	
Coaxial Units		
LNSP-FN	Line (Convergent)	
LNLN-HK	Line (Convergent)	
LNSD	Line (Diffused)	
LND2	Line (Diffused)	
LT	Line (Diffused)	
LNV	Line (Diffused)	
LFXV (Rectangular Type)	Line (Diffused)	
TH2 (Rectangular Type)	Line (Diffused)	
LNDG	Line (Oblique Angled)	
LNIS2	Line (Oblique Angled)	
LNIS	Line (Oblique Angled)	
LNIS-FN	Line (Oblique Angled)	
Telecentric Lens		
Macro Lens		
LDF-NB	Other Products	



Provides direct light from an emitting part equipped with LEDs in straight lines



Applications

Various inspections for reading text, visual inspection for damage on long and thin workpieces, damage inspection for metal with hairline finishing, light source for a line sensor camera, various inspections to detect foreign material, etc.

Rich Lineup with 144 Models

We have a lineup of 144 models, such as combinations of the size and emitting width of the emitting surface, directional characteristics, and the emitted color.

Compatible with a wide range of uses

You can freely adjust the illuminating direction and angle for use in a wide range of uses.

Bar lights allow the illumination direction and angle to be freely adjusted, enabling imaging according to the workpiece.



Illuminating image from direction A



Illuminating image from direction B



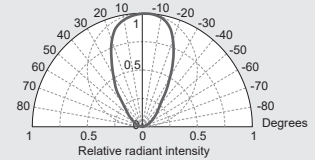
Bar Lights That Use Surface-Mounted LEDs

These are Bar Lights that use surface-mounted LEDs. We provide the narrow type, which performs convergent illumination for a narrow space, and the wide type (-WD) which illuminates a wide space.

Select the directional characteristics of a narrow type or wide type

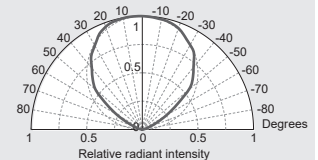
Directional characteristics of the Narrow Type (White)

Zoomed-in view of the emitting surface



Directional characteristics of the Wide Type (White)

Zoomed-in view of the emitting surface

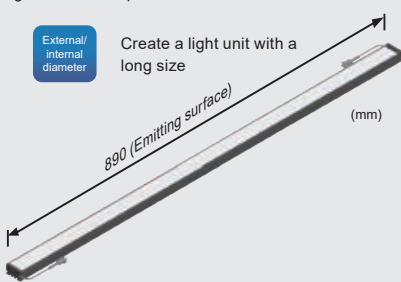


Custom Order Example

E.g.: Different shape



Create a light unit with a long size

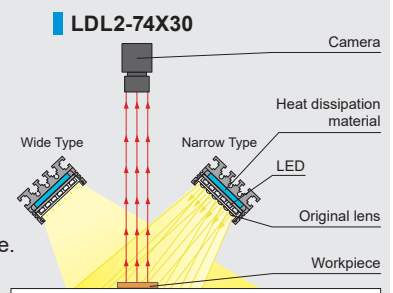


- External/internal diameter
- Wavelength/color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Contact us for any inquiries.

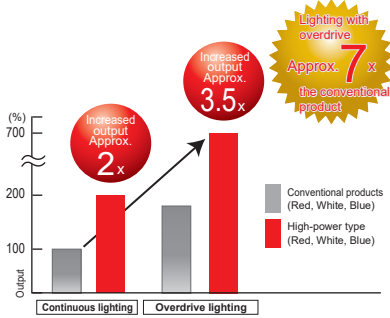
Example Configuration

Achieved light with a narrow directionality using the original lens located in front of the LEDs. Illuminates direct light from any angle.



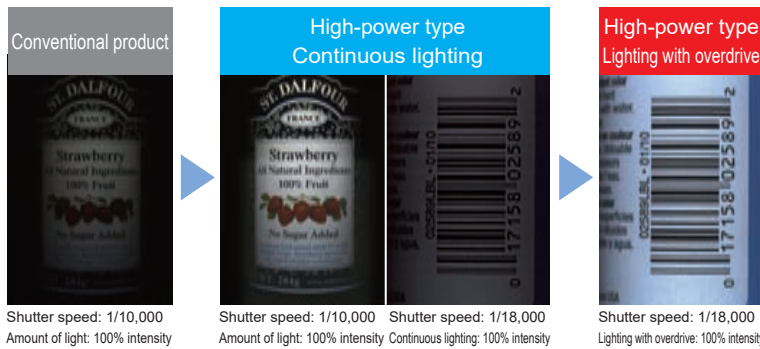
## Increased Brightness and Rich Variety of Sizes

### Brightness comparison



For detailed information on the overdrive, refer to P.412.

The data included is for reference only. Actual values may vary.

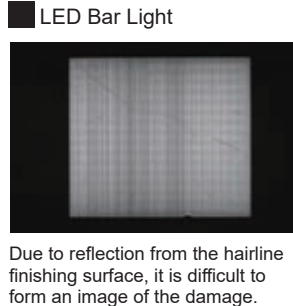


\*Comparison of LDL2-74X30SW and LDL2-74X30SW2. Comparison of LDL2-74X30SW2 on continuous lighting and overdrive lighting.

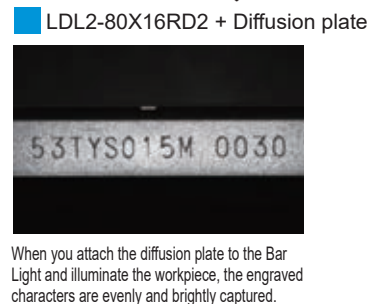
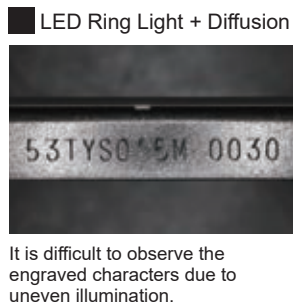
## Imaging Example: Imaging of Damage in Sheet Metals (Hairline Finishing)



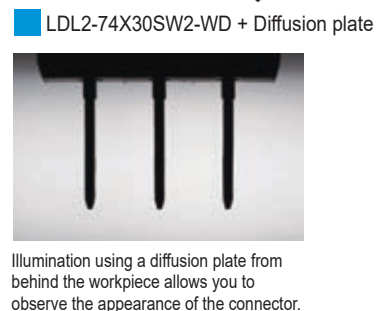
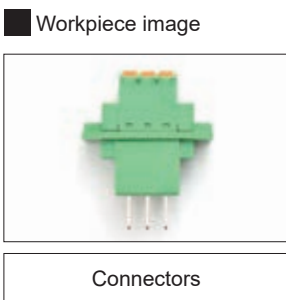
Description	Visual inspection
Workpiece	Aluminum sheets (hairline finishing)
Before the proposal	LED Bar Light
After the proposal	LDL2-74X30RD Precise illumination angle and direction
Result	Extracts only the damage



## Imaging Example: Imaging Engraved Characters on Plastic Surfaces



## Imaging Example: Imaging the Appearance of Connector Pins



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Macro Lens
Other Products	Macro Lens
LDF-NB	Macro Lens

# LDL2 Series

Refer to our website for product details.

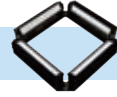


CCS LDL2

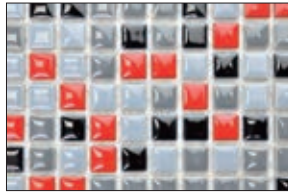
Search



## Imaging Example: Imaging the Surface and Appearance of Tiles

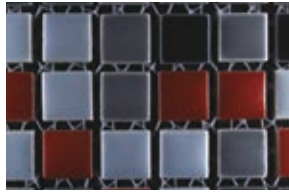


Workpiece image



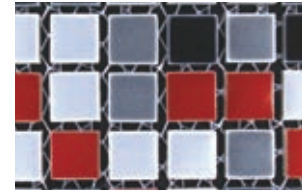
Tiles

LDL2-119X16SW2 (double use)



It is difficult to observe the surface and appearance of the tiles with a double use of the Bar Lights due to uneven illumination.

LDL2-119X16SW2 (quadruple use) + bracket



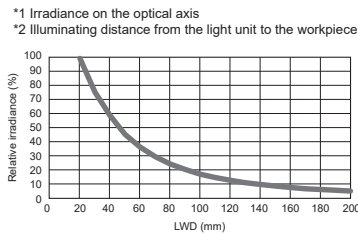
The Bar Lights which are mounted on the four sides of the bracket illuminate the surface and appearance of the tiles, so that they are captured brightly and evenly.

## Data: Relative Irradiance Graph/Uniformity (Representative Example)

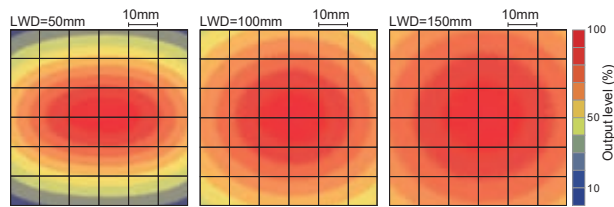
The data included is for reference only. Actual values may vary.

### LDL2-74X30SW2(A) (Narrow type)

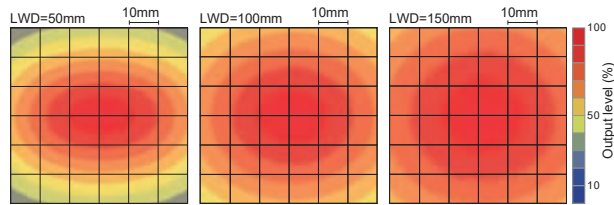
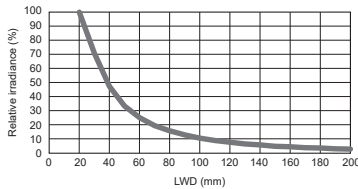
Relative irradiance graph\*1  
(LWD characteristics)\*2



### Uniformity (Relative irradiance)



### LDL2-74X30SW2-WD(A) (Wide type)



## LED Properties

**Spectral distribution**

Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

**Directional characteristics**

Be sure to read the User Manual included with the product before use and observe cautionary information. The data included is for reference only. Actual values may vary.



**Lineup** “-WD” at the end of the model name: Wide type

Emitting width	Model Name <sup>*1</sup>	Input Voltage	Power Consumption					Option	Extension Cables	Recommended Control Units	Weight	
			RD2 (Red)	SW2 <sup>*2</sup> (White)	BL2 (Blue)	GR (Green)	IR850 (Infrared)					
4 mm	LDL2-19X4□□ <sup>*4</sup>	24 V	1.3 W	1.3 W	1.1 W	—	—	Diffusion Plate Polarizing Plate Bracket <sup>*6</sup> <small>*6 Available as custom order</small>			12 g	
	LDL2-33X8□□ <sup>*4</sup>	24 V	2.6 W	2.1 W	1.5 W	0.8 W	1.3 W <sup>*3</sup>	Diffusion Plate Polarizing Plate Bracket	PD4 CC-ST-1024 <sup>*9</sup>	PD3 POD <sup>*5</sup>	20 g	
8 mm	LDL2-41X16□□(-WD)	24 V	3.8 W	3.8 W	3.8 W	1.9 W	—				50 g	
	LDL2-80X16□□(-WD)	24 V	7.6 W	7.6 W	7.6 W	3.8 W	—				75 g	
16 mm	LDL2-119X16□□(-WD)	24 V	12 W	12 W	12 W	5.7 W	—				95 g	
	LDL2-158X16□□(-WD)	24 V	16 W	16 W	16 W	7.6 W	—		FCB <sup>*6</sup> Straight Cable	PD4 CC-ST-1024 <sup>*9</sup>	PD3 POD	120 g
	LDL2-197X16□□(-WD)	24 V	19 W	19 W	19 W	9.5 W	—			<small>*9 Can only use Green.</small>	145 g	
	LDL2-236X16□□(-WD)	24 V	23 W	23 W	23 W	12 W	—		FCB-W <sup>*7</sup> 2-Branch Cable			170 g
	LDL2-275X16□□(-WD)	24 V	27 W	27 W	27 W	14 W	—				195 g	
	LDL2-314X16□□(-WD)	24 V	31 W	31 W	31 W	16 W	—		FCB-F 4-Branch Cable	PD4 POD <sup>*5</sup>	PD3	220 g
	LDL2-353X16□□(-WD)	24 V	35 W	35 W	35 W	18 W	—					245 g
	LDL2-392X16□□(-WD)	24 V	38 W	38 W	38 W	19 W	—		FRCB Robot Cable			270 g
	LDL2-431X16□□(-WD)	24 V	42 W	42 W	42 W	21 W	—			<small>*6 The cables with a model name that ends with -ME7/-EL2/-PF/-PF-EL9 are not included. *7 The cables with a model name that ends with -EL2 are not included.</small>		295 g
	LDL2-470X16□□(-WD)	24 V	46 W	46 W	46 W	23 W	—					320 g
	LDL2-509X16□□(-WD)	24 V	50 W	50 W	50 W	25 W	—					345 g
	LDL2-26X30□□(-WD)	24 V	3.8 W	3.8 W	3.8 W	1.9 W	—			PD4 CC-ST-1024 <sup>*9</sup>	PD3 POD <sup>*5</sup>	55 g
	LDL2-50X30□□(-WD)	24 V	7.6 W	7.6 W	7.6 W	3.8 W	—					80 g
	LDL2-74X30□□(-WD)	24 V	12 W	12 W	12 W	5.7 W	—					100 g
LDL2-98X30□□(-WD)	24 V	16 W	16 W	16 W	7.6 W	—	Diffusion Plate Polarizing Plate Protective Plate Bracket		PD4 CC-ST-1024 <sup>*9</sup>	PD3 POD	125 g	
LDL2-122X30□□(-WD)	24 V	19 W	19 W	19 W	9.5 W	—			<small>*9 Can only use Green.</small>		150 g	
LDL2-146X30□□(-WD)	24 V	23 W	23 W	23 W	12 W	—					170 g	
LDL2-170X30□□(-WD)	24 V	27 W	27 W	27 W	14 W	—					200 g	
LDL2-194X30□□(-WD)	24 V	31 W	31 W	31 W	16 W	—					225 g	
LDL2-218X30□□(-WD)	24 V	35 W	35 W	35 W	18 W	—					240 g	
LDL2-242X30□□(-WD)	24 V	38 W	38 W	38 W	19 W	—					275 g	
LDL2-266X30□□(-WD)	24 V	42 W	42 W	42 W	21 W	—					280 g	
LDL2-290X30□□(-WD)	24 V	46 W	46 W	46 W	23 W	—					325 g	
LDL2-314X30□□(-WD)	24 V	50 W	50 W	50 W	25 W	—			PD4 POD <sup>*5</sup>	PD3	350 g	
LDL2-338X30□□(-WD)	24 V	53 W	53 W	53 W	27 W	—					375 g	
LDL2-362X30□□(-WD)	24 V	57 W	57 W	57 W	29 W	—					400 g	
LDL2-386X30□□(-WD) <sup>*3</sup>	24 V	61 W	61 W	61 W	31 W	—		FCB-EL2 Straight Cable			425 g	
LDL2-410X30□□(-WD) <sup>*3</sup>	24 V	65 W	65 W	65 W	33 W	—					450 g	
LDL2-434X30□□(-WD) <sup>*3</sup>	24 V	69 W	69 W	69 W	35 W	—		FCB-W-EL2 2-Branch Cable			475 g	
LDL2-458X30□□(-WD) <sup>*3</sup>	24 V	72 W	72 W	72 W	37 W	—					500 g	
LDL2-482X30□□(-WD) <sup>*3</sup>	24 V	76 W	76 W	76 W	38 W	—					525 g	
LDL2-506X30□□(-WD) <sup>*3</sup>	24 V	80 W	80 W	80 W	40 W	—		FCB-EL2 Straight Cable			550 g	

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\* For the peak wavelength / correlated color temperature, refer to the spectral distribution on P.63 “LED Properties”.

\*1 □□ in the model name contains the LED color. (RD2: Red, SW2: White, BL2: Blue, GR: Green, IR860: Infrared)

\*2 SW: (A) is added to the end of the model name only for white color. Example: LDL2-41X16SW2(A), LDL2-41X16SW2-WD(A)

\*3 The connector is an EL connector (ELP-02V ①: + ②: brown, - blue). Please use a power supply with EL connectors when using this product.

\*4 All LEDs of the LDL2-19X4 and LDL2-33X8 have wide type directional characteristics.

\*5 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

**Change in model names**

“(A)” is added to the end of SW2 model names only  
e.g. LDL2-41X16SW2 → LDL2-41X16SW2(A)  
LDL2-41X16SW2-WD → LDL2-41X16SW2-WD(A)

Reason	Impact on functions and performance
LEDs have been changed due to the discontinuation of the LEDs used.	Lower correlated color temperature (more yellow) Conventional product: 7800 K New product: 7000 K

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SOR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water- proof UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LN LT LTV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# LDL2 Series

Refer to our website for product details.

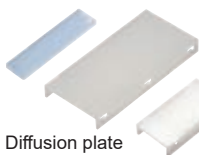


CCS LDL2

Search



## Option

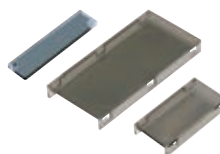


Can prevent glare, which is a problem when making images of glossy workpieces.

### Diffusion plate

Model name	Applicable Light Unit (Common for all colors)
DF-LDL2-19X4	LDL2-19X4
DF-LDL2-33X8	LDL2-33X8
DF-LDL2-41X16	LDL2-41X16 (-WD)
DF-LDL2-80X16	LDL2-80X16 (-WD)
DF-LDL2-119X16	LDL2-119X16 (-WD)
DF-LDL2-158X16	LDL2-158X16 (-WD)
DF-LDL2-26X30	LDL2-26X30 (-WD)
DF-LDL2-50X30	LDL2-50X30 (-WD)
DF-LDL2-74X30	LDL2-74X30 (-WD)
DF-LDL2-98X30	LDL2-98X30 (-WD)
DF-LDL2-122X30	LDL2-122X30 (-WD)
DF-LDL2-146X30	LDL2-146X30 (-WD)
DF-LDL2-218X30	LDL2-218X30 (-WD)
DF-LDL2-266X30	LDL2-266X30 (-WD)

▶ P.375



Use with a polarizing filter to remove the light's surface reflection.

### Polarizing plate

Model name	Applicable Light Unit (Common for all colors)
PL-LDL2-19X4-HO	LDL2-19X4
PL-LDL2-19X4-VE	
PL-LDL2-33X8-HO	LDL2-33X8
PL-LDL2-33X8-VE	
PL-LDL2-41X16	LDL2-41X16 (-WD)
PL-LDL2-41X16-VE	
PL-LDL2-80X16	LDL2-80X16 (-WD)
PL-LDL2-80X16-VE	
PL-LDL2-119X16	LDL2-119X16 (-WD)
PL-LDL2-119X16-VE	
PL-LDL2-158X16	LDL2-158X16 (-WD)
PL-LDL2-158X16-VE	

▶ P.377

There are two kinds of polarizing plates: the HO and the VE. For details, refer to P. 377.

Model name	Applicable Light Unit (Common for all colors)
PL-LDL2-26X30	LDL2-26X30 (-WD)
PL-LDL2-26X30-VE	
PL-LDL2-50X30	LDL2-50X30 (-WD)
PL-LDL2-50X30-VE	
PL-LDL2-74X30	LDL2-74X30 (-WD)
PL-LDL2-74X30-VE	
PL-LDL2-98X30	LDL2-98X30 (-WD)
PL-LDL2-98X30-VE	
PL-LDL2-122X30	LDL2-122X30 (-WD)
PL-LDL2-122X30-VE	
PL-LDL2-146X30	LDL2-146X30 (-WD)
PL-LDL2-146X30-VE	
PL-LDL2-218X30	LDL2-218X30 (-WD)
PL-LDL2-218X30-VE	
PL-LDL2-266X30	LDL2-266X30 (-WD)
PL-LDL2-266X30-VE	



Protects the emitting part of the light unit.

Not intended to protect against dust or water.

### Protective plate

Model name	Applicable Light Unit (Common for all colors)
CV-LDL2-41X16	LDL2-41X16 (-WD)
CV-LDL2-80X16	LDL2-80X16 (-WD)
CV-LDL2-119X16	LDL2-119X16 (-WD)
CV-LDL2-158X16	LDL2-158X16 (-WD)
CV-LDL2-26X30	LDL2-26X30 (-WD)
CV-LDL2-50X30	LDL2-50X30 (-WD)
CV-LDL2-74X30	LDL2-74X30 (-WD)
CV-LDL2-98X30	LDL2-98X30 (-WD)
CV-LDL2-122X30	LDL2-122X30 (-WD)
CV-LDL2-146X30	LDL2-146X30 (-WD)
CV-LDL2-218X30	LDL2-218X30 (-WD)
CV-LDL2-266X30	LDL2-266X30 (-WD)

Not applicable for the LDL2-19X4 and LDL2-33X8 Series.

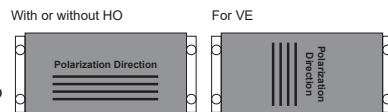
▶ P.380

### When the model number ends with or without HO

As shown in the figure, the polarization direction is **horizontal** with respect to the long side of the polarizing plate.

### When the model number ends with VE

As shown in the figure, the polarization direction is **perpendicular** with respect to the long side of the polarizing plate.



Refer to the Technical Guide Page for polarization. ▶ P.413



You can freely adjust the illuminating angle when affixing the Bar Light. Various kinds of illumination are possible depending on the affixing method, such as illumination from two or four directions.

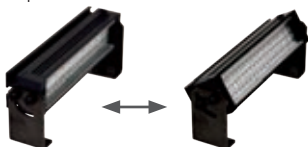
### Bracket

Model name	Note
BK-LDL2	Angle adjustment bracket common for the LDL2 Series (x2)

Not applicable for the LDL2-19X4 and LDL2-33X8 Series.

▶ P.381

### Usage example of the BK-LDL2



Adjustable illuminating angle between 0 to 90°



You can freely adjust the illuminating angle when affixing the Bar Light. Various kinds of illumination are possible depending on the affixing method, such as illumination from two or four directions.

### Bracket

Model name	Note
BK-LDQ2-33X8	Bracket that can install four of the Bar Lights.

▶ P.381

We accept custom orders for the brackets that are applicable for the following products. Contact your CCS sales representative for details.

Applicable Light Unit	BK-LDQ2
LDL2-19X4	Bracket that can install four Bar Lights. (Custom orders)
LDL2-26X30	
LDL2-50X30	



You can freely adjust the illuminating angle when affixing the Bar Light. Various kinds of illumination are possible depending on the affixing method, such as illumination from two or four directions.

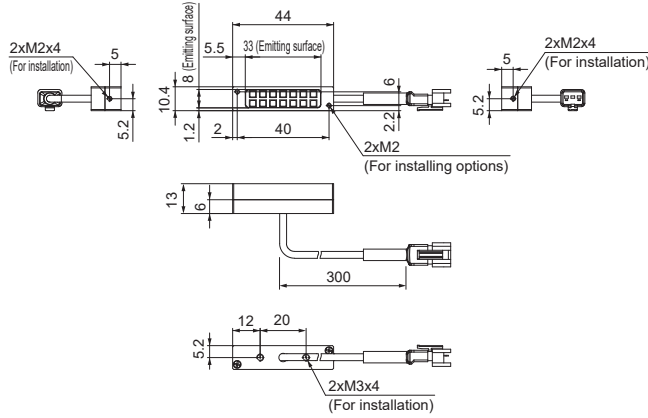
### Bracket

Model name	Note
BK-LDQ2-41X16	Bracket that can install four of the Bar Lights.
BK-LDQ2-80X16	
BK-LDQ2-119X16	
BK-LDQ2-158X16	
BK-LDQ2-74X30	
BK-LDQ2-98X30	
BK-LDQ2-122X30	
BK-LDQ2-146X30	
BK-LDQ2-218X30	
BK-LDQ2-266X30	

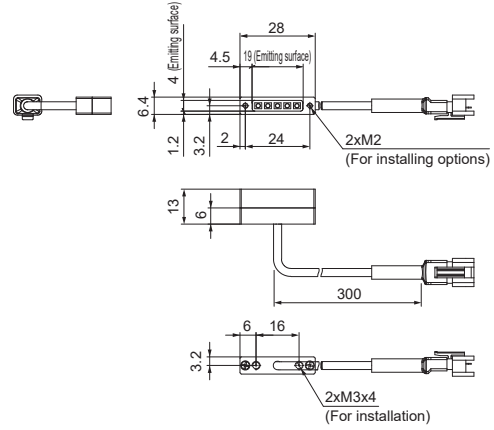
▶ P.381

## Dimensions (mm)

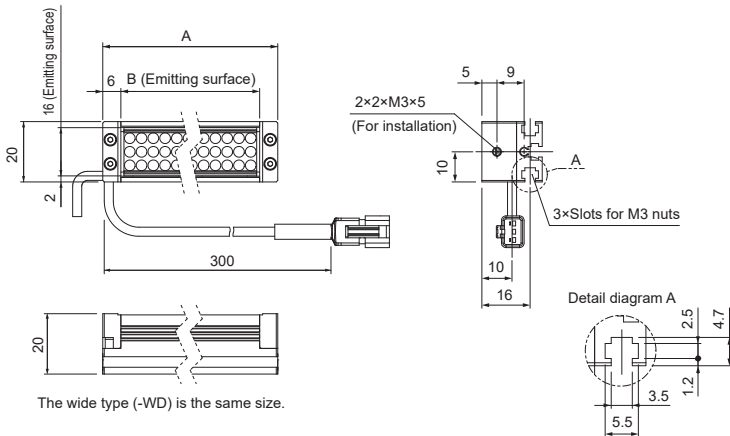
**LDL2-33X8** (Common for all colors)



**LDL2-19X4** (Common for all colors)

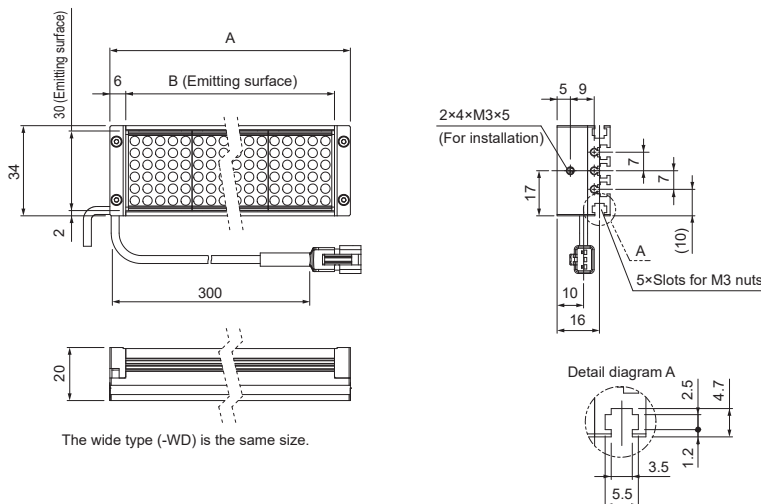


**LDL2-*nnn*X16** (Common for all colors)  
*nnn* = B (Emitting surface)



Applicable Light Unit	A	B
LDL2-41X16(-WD)	53	41
LDL2-80X16(-WD)	92	80
LDL2-119X16(-WD)	131	119
LDL2-158X16(-WD)	170	158
LDL2-197X16(-WD)	209	197
LDL2-236X16(-WD)	248	236
LDL2-275X16(-WD)	287	275
LDL2-314X16(-WD)	326	314
LDL2-353X16(-WD)	365	353
LDL2-392X16(-WD)	404	392
LDL2-431X16(-WD)	443	431
LDL2-470X16(-WD)	482	470
LDL2-509X16(-WD)	521	509

**LDL2-*nnn*X30** (Common for all colors)  
*nnn* = B (Emitting surface)



Applicable Light Unit	A	B
LDL2-26X30(-WD)	38	26
LDL2-50X30(-WD)	62	50
LDL2-74X30(-WD)	86	74
LDL2-98X30(-WD)	110	98
LDL2-122X30(-WD)	134	122
LDL2-146X30(-WD)	158	146
LDL2-218X30(-WD)	230	218
LDL2-266X30(-WD)	278	266
LDL2-170X30(-WD)	182	170
LDL2-194X30(-WD)	206	194
LDL2-242X30(-WD)	254	242
LDL2-290X30(-WD)	302	290
LDL2-314X30(-WD)	326	314
LDL2-338X30(-WD)	350	338
LDL2-362X30(-WD)	374	362
LDL2-386X30(-WD) <sup>*1</sup>	398	386
LDL2-410X30(-WD) <sup>*1</sup>	422	410
LDL2-434X30(-WD) <sup>*1</sup>	446	434
LDL2-458X30(-WD) <sup>*1</sup>	470	458
LDL2-482X30(-WD) <sup>*1</sup>	494	482
LDL2-506X30(-WD) <sup>*1</sup>	518	506

\*1 EL connector (ELP-02V, 1: +Brown, 2: -Blue).  
 Use the control unit which has EL connectors.

LDR2		
LDR2-LA	Ring	(Direct)
LDR-LA1	Ring	(Direct)
SQR		
SQR-TP		
HLDR3		
HPR2	Ring	(Convergent/Diffused)
LFR	Ring	(Convergent/Diffused)
LKR	Ring	(Convergent/Diffused)
FPR	Ring	(Convergent/Diffused)
FPQ3	Square	
<b>LDL2</b>	<b>Bar</b>	
LDLB		
HLDL3		
LB		
TH2 (5 types)	Flat	
LFL	Flat	
HPD2		
LDM2		
LAV		
PDM		
LFXV		
LFX3		
LFX3-PT		
LFV3		
LFV3-G		
MSU		
MFU		
PF		
HLDR-IP	Water-proof	
HSL-PCL	Water-proof	
UV3/VL3	UV / Violet	
UV	UV / Violet	
LNSP-UV3-FN	UV / Violet	
IR2 (Under 1000-nm Type)	Infrared	
IR (Over 1000-nm Type)	Infrared	
CIR	Infrared	
LDF-RLS	Reference Light Source	
IU	Intensity Control	
HLV3		
LV		
HFS/HFR		
HLV3-22-4-NR	Spot, Etc.	
HLV3-3M-RGB-4	Spot, Etc.	
PFBR-600SW2	Spot, Etc.	
PFBR-150	Spot, Etc.	
SLG-150V-CCS	Spot, Etc.	
PFB3(A)	Spot, Etc.	
LNL3		
LNSP2	Line (Convergent)	
Coaxial Units	Line (Convergent)	
LNSP-FN	Line (Convergent)	
LN/LN-HK	Line (Convergent)	
LNSD		
LND2	Line (Diffused)	
LT	Line (Diffused)	
LNV	Line (Diffused)	
LFXV (Rectangular Type)	Line (Diffused)	
TH2 (Rectangular Type)	Line (Diffused)	
LNDG	Line (Oblique Angled)	
LNIS2	Line (Oblique Angled)	
LNIS	Line (Oblique Angled)	
LNIS-FN	Line (Oblique Angled)	
Telecentric Lens		
Macro Lens		
LDF-NB	Other Products	

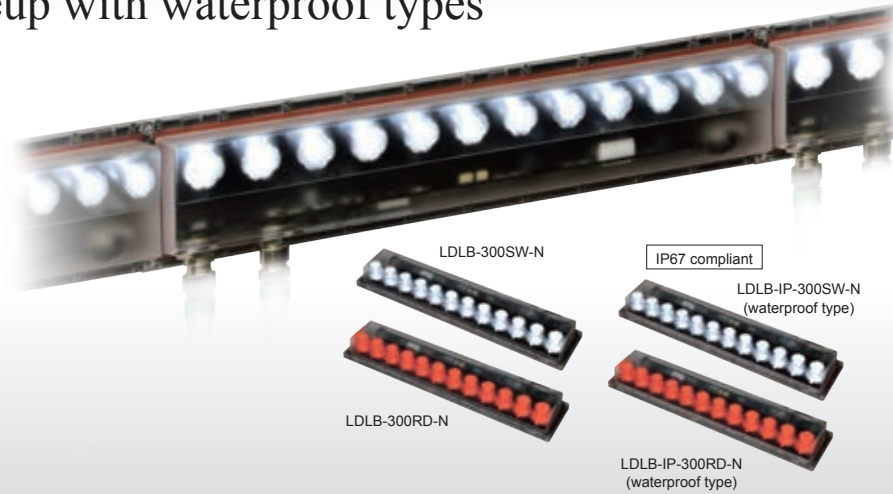
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



Bar Light with built-in controller and lineup with waterproof types



Applications

Light source for robotic picking, visual inspection for beverage packages, product identification inspection for various parts, inspection for missing mounted parts, visual inspection for large workpieces, etc.

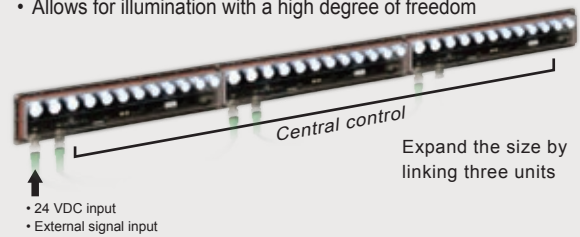
Overdrive Can Illuminate Even 3 m Away

Just one light unit provides both constant lighting and overdrive lighting.

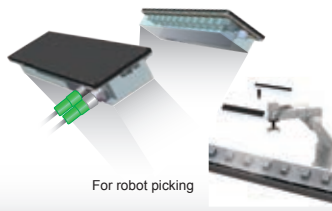


Can Be Connected in a Daisy-Chain

- Connect up to three units
- Centrally control the chain externally
- Allows for illumination with a high degree of freedom



Example connection 1 Simultaneous illumination with 2 units

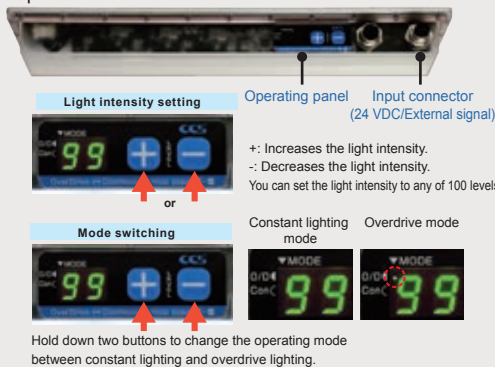


Example connection 2 Simultaneous illumination with 3 units



Built-In Controller, 24 VDC Input

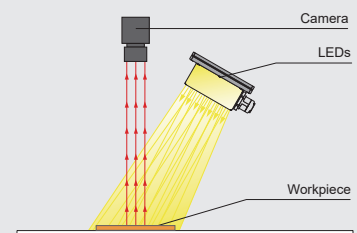
The controller is built-in, so you don't need a control unit for light control. You can set intensity values and switch modes by panel operations.



Example Configuration

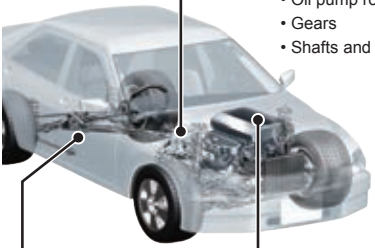
Bar light with built-in controller. Enables long-distance illumination of large workpieces. Even brighter with the overdrive switching.

LDLB Series



➤ Applications

Inspections in automotive industry




**Surfaces of transmission parts**

- Oil pump rotors
- Gears
- Shafts and others


**Presence of engine parts**

- Mounting screws for head covers
- Oil caps
- Oil filters and others



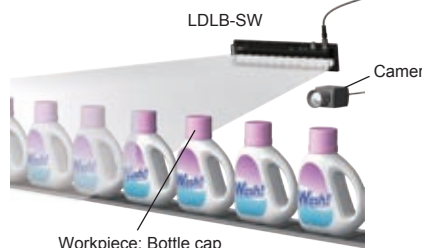
**Positions of holes on door parts**

- Mounting holes for door locks
- Mounting holes for door knobs
- Mounting holes for side mirrors and others



Inspections in packaging industry

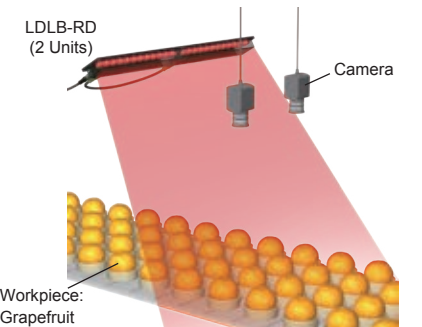
**Bottle cap appearance and tightening**



LDLB-SW  
Camera  
Workpiece: Bottle cap

Inspections in foodstuff industry

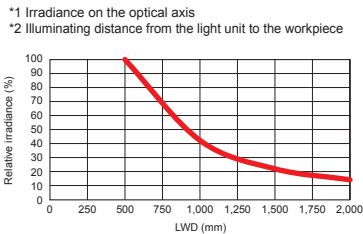
**Size of fruit**



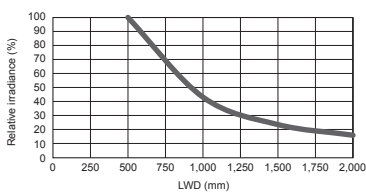
LDLB-RD (2 Units)  
Camera  
Workpiece: Grapefruit

➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)

LDLB-300RD-N (Red)  
Relative irradiance graph<sup>\*1</sup>  
(LWD characteristics)<sup>\*2</sup>

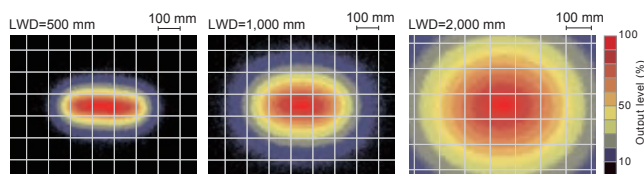
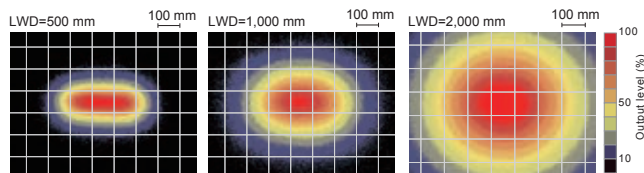


LDLB-300SW-N (White)



The data included is for reference only. Actual values may vary.

Uniformity (Relative irradiance)



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LNV (Rectangular Type) LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

# LDLB Series

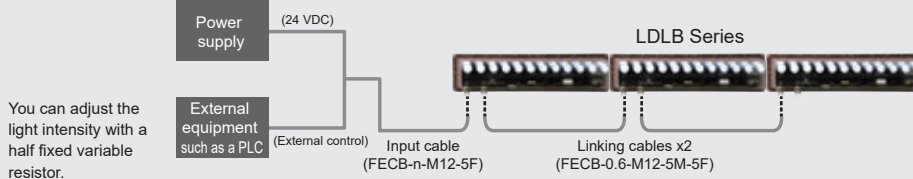


Refer to our website for product details.


## System Configuration Example

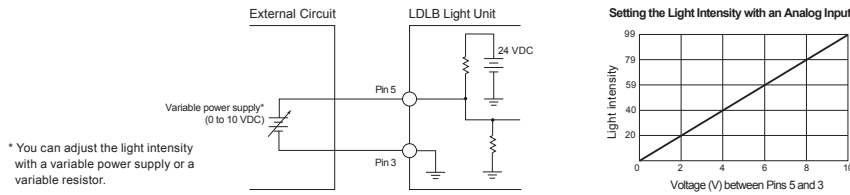
Example: Daisy-chaining three light units



## Connection Example

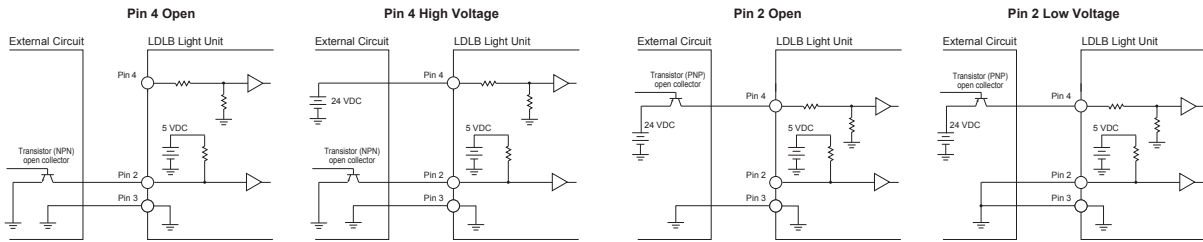
Refer to the User Manual for details.

### External control of light intensity



\* You can adjust the light intensity with a variable power supply or a variable resistor.

### ON/OFF Inputs With these light units, you can use a sink type input (NPN) or a source type input (PNP).



Logic Table

Logic switching	Pin 4	Open		High voltage	
		Open	Low voltage	Open	Low voltage
Signal input	Pin 2 (NPN)	Lit.	Not lit.	Not lit.	Not lit.
Operating mode	Constant Lighting Mode	Not lit.	Lit.	Lit.	Not lit.
	Overdrive Mode	Not lit.	Lit.	Lit.	Not lit.

Refer to the following table for the low and high voltages.

Pin	Signal input status	Range
Pin 2 (NPN)	Low voltage	0 to 1.1 VDC
Pin 4	High voltage	20.7 to 26.4 VDC

Logic Table

Logic switching	Pin 2	Open		Low voltage	
		Open	High voltage	Open	High voltage
Signal input	Pin 4 (PNP)	Lit.	Not lit.	Not lit.	Not lit.
Operating mode	Constant Lighting Mode	Not lit.	Lit.	Lit.	Not lit.
	Overdrive Mode	Not lit.	Lit.	Lit.	Not lit.

Refer to the following table for the low and high voltages.

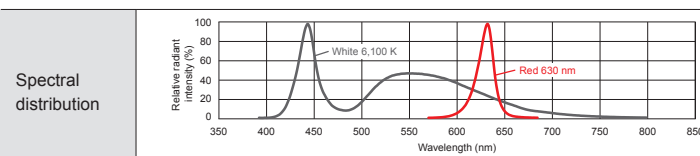
Pin	Signal input status	Range
Pin 2	Low voltage	0 to 1.1 VDC
Pin 4 (PNP)	High voltage	20.7 to 26.4 VDC

## Lineup

Model Name	Protective Structure	LED Color	Power Consumption	Input Voltage (rated)	Input Voltage (range)	Peak Wavelength / Correlated Color Temperature	Input/Output Connectors	Optional Cables	Weight
LDLB-300RD-N	—	Red	24 W	24 VDC	22.8 to 26.4 VDC	630 nm	M12 connector	FECB-M12-5F Input Cable	500 g
LDLB-300SW-N		White	31 W			6,100 K		FECB-0.6-M12-5F Link Cable	
LDLB-IP-300RD-N	IP67 compliant (JIS C 0920)	Red	24 W			630 nm			
LDLB-IP-300SW-N		White	31 W			6,100 K			

Optional Cables ▶ P.70

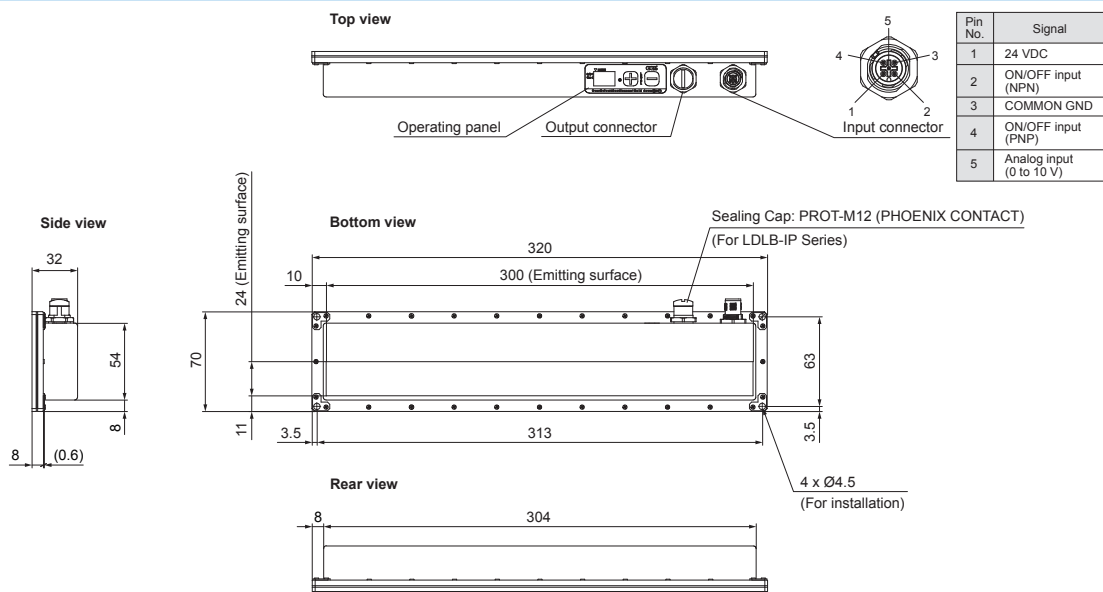
## Common Specifications



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Dimensions (mm)



## Optional Cables

### Input cable

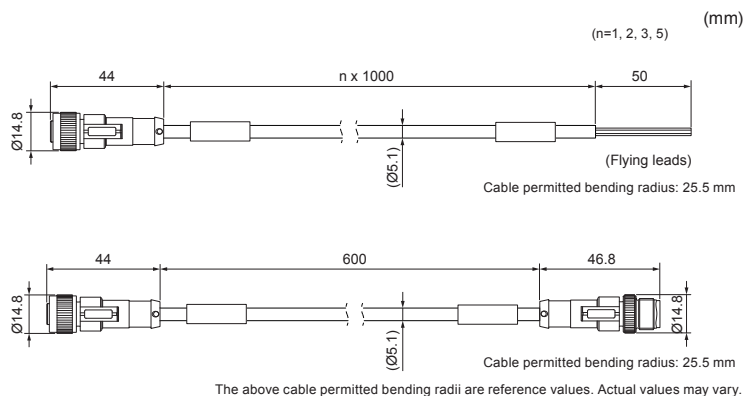
Model Name	Length	Weight
FECB-1-M12-5F	1 m	55 g
FECB-2-M12-5F	2 m	90 g
FECB-3-M12-5F	3 m	130 g
FECB-5-M12-5F	5 m	210 g

This cable supplies power to the light unit and inputs signals for light intensity control or to turn the light ON and OFF.

### Link cable

Model Name	Length	Weight
FECB-0.6-M12-5M-5F	0.6 m	50 g

This cable is used to daisy-chain light units.



## Maximum Length of Optional Cables

Number of light units connected in Constant Lighting Mode			Number of light units	The table gives the maximum length of the input cable.
1	2	3		
10 m	7 m	4.5 m	1	
Number of light units connected in Overdrive Mode			2 or 3	The table gives the maximum total length of the input cable and link cables.
1	2	3		
3 m	1 m	Cannot be used.		

The wire diameter is AWG 22 for the optional cables.

If the maximum length given above is exceeded, shorten the input cable or contact CCS. For details, refer to the User Manual.

## Cautionary Information regarding Waterproofing

- Handle the light unit and connectors with care. Do not deform or damage the connectors.
- Connect the cables correctly to the light units.
- Connect a Sealing Cap to any output connectors to which a cable is not connected to maintain water resistance. The Sealing Cap is connected to the output connector when the light unit is shipped.
- If the light unit is not used for a long period of time with the cable disconnected, attach the Cap to the connector.
- After cleaning manufacturing lines, be sure to wipe away any moisture remaining on the emitting surface. Imaging can be affected by moisture on the emitting surface.
- Use water to wash away any cleaning agent adhered to this product.
- Use water to wash away any oils or chemicals adhered to this product.

## Note

**"IP67" indicates the level of protection against foreign material entering electrical instruments**

The 1st numeral "6" indicates the following level of protection:

- No dust inside the instrument. (dustproof)

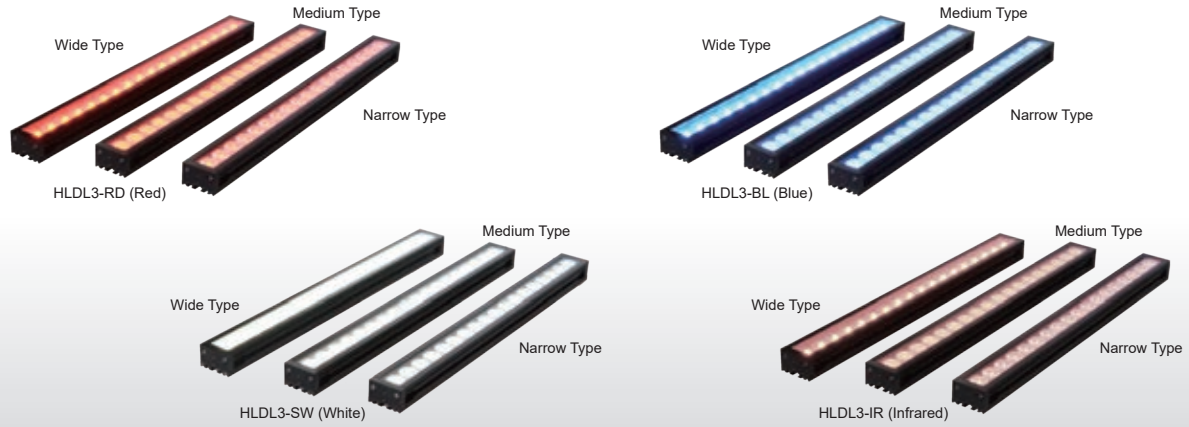
The 2nd numeral "7" indicates the following level of protection:

- No damage when submerged in water at the rated pressure for the rated time. (watertight type)
- Can be submerged in water to a depth of 1 m (for instruments with a height of less than 850 mm) for 30 minutes.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
<b>LDLB</b>	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNL3	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique/Angled)
LNIS2	Line (Oblique/Angled)
LNIS	Line (Oblique/Angled)
LNIS-FN	Line (Oblique/Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products



The best-suited choice for long-distance illumination  
Robust lineup expands possible applications



**Applications** Light source for robot picking; Model mixing inspection of various parts; Inspection for unmounted parts; Exterior inspection of large workpieces; Measurement of pressed parts punch dimensions; etc.

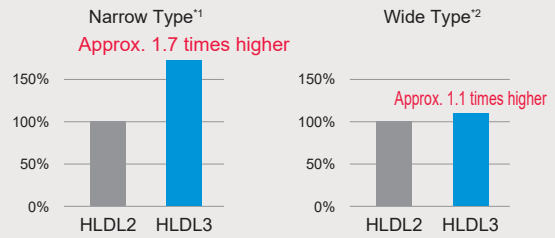
**Robust Lineup**

Light emitting surface length	150 to 1,800 mm (150 mm units, 12 sizes)
LED color	Red, White, Blue, Infrared
Light directivity	Narrow Type, Medium Type, Wide Type

Total of 144 models in the lineup!

**Increased Brightness**

Comparison with conventional products (Size 300, White)

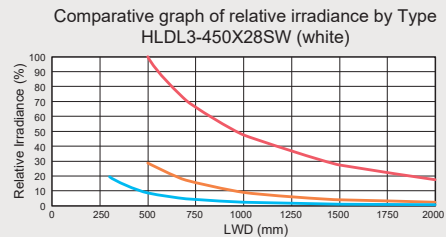
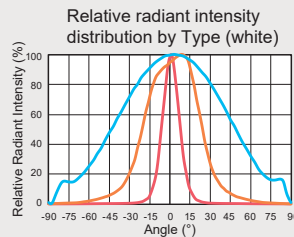
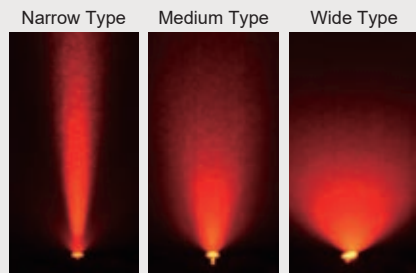


<sup>1</sup> Comparison between HLDL3-300X28SW-DF-N and HLDL2-300X45SW-DF-N for LWD 1,000 mm.  
<sup>2</sup> Comparison between HLDL3-300X28SW-DF-W and HLDL2-300X45SW-DF-W for LWD 300 mm.

**Three Types of Light Directivity**

The data included is for reference only. Actual values may vary.

In addition to the Narrow Type that emits condensed illumination, and Wide Type that diffuses illumination over a wide range, a Medium Type that has intermediate light distribution characteristics has been newly added.

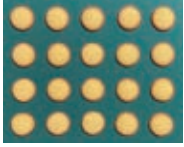




## Imaging Comparison (Light source for pastry picking)

\* The shutter speed is changed to suit imaging. The shutter speed can be adjusted to brighten imaging of dark images.  
 \* Field of view: 380 mm (H) × 317 mm (V)

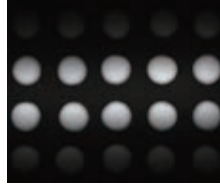
Workpiece image



Baked pastries

LWD 500 mm

Narrow Type



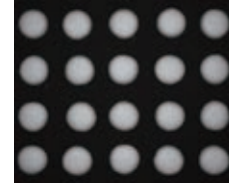
Shutter Speed: 180 $\mu$ s  
 Only central part of FOV illuminated.

Medium Type



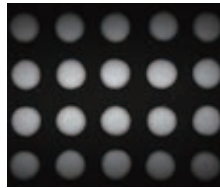
Shutter Speed: 550 $\mu$ s  
 More widely illuminated than the narrow Type, but still dark at the edge of FOV.

Wide Type

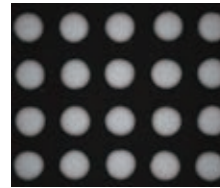


Shutter Speed: 2,000 $\mu$ s  
 Uniformly illuminated in the entire FOV.

LWD 1,000 mm



Shutter Speed: 550 $\mu$ s  
 More widely illuminated but still dark at the edge of FOV.

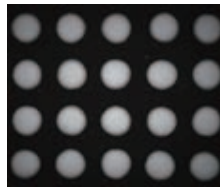


Shutter Speed: 2,800 $\mu$ s  
 Uniformly illuminated.



Shutter Speed: 2,800 $\mu$ s  
 Insufficient quantity of light.

LWD 2,000 mm



Shutter Speed: 900 $\mu$ s  
 Uniformly illuminated in the entire FOV.



Shutter Speed: 900 $\mu$ s  
 Insufficient quantity of light.



Shutter Speed: 900 $\mu$ s  
 Insufficient quantity of light.

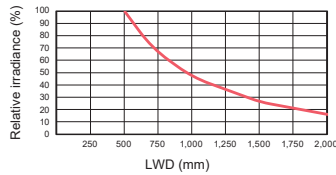
## Data: Relative Irradiance Graph/Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

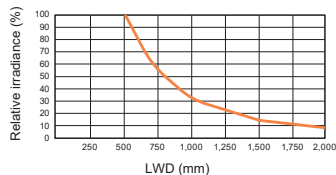
Relative irradiance graph\*1  
 (LWD characteristics)\*2

\*1 Irradiance on the optical axis  
 \*2 Illuminating distance from the light unit to the workpiece

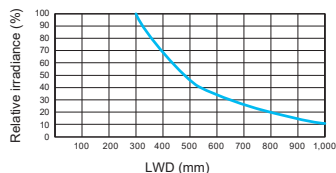
HLDL3-450X28SW-DF-N (Narrow Type)



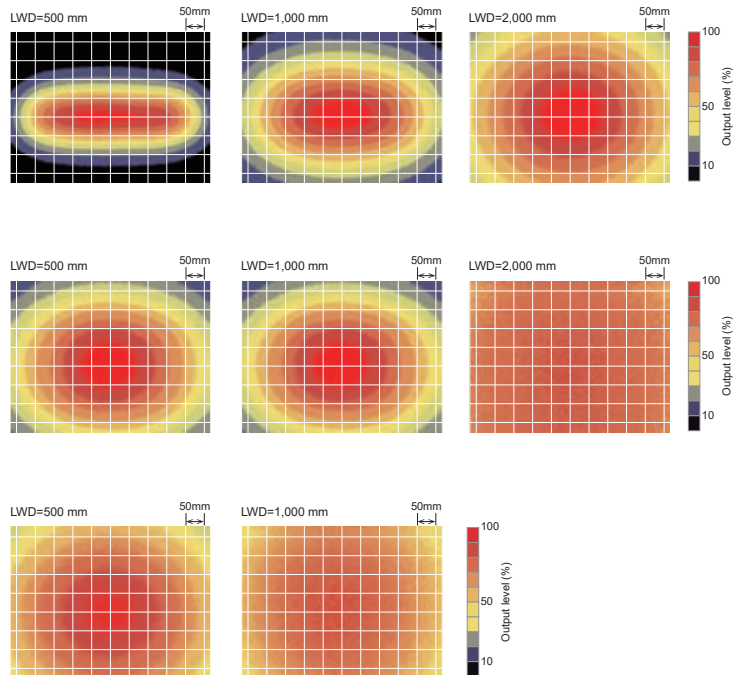
HLDL3-450X28SW-DF-M (Medium Type)



HLDL3-450X28SW-DF-W (Wide Type)



Uniformity (Relative irradiance)



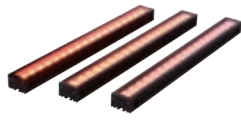
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# HLDL3 Series



Refer to our website for product details.

CCS HLDL3

Search



## Lineup Model Name Endings: -N: Narrow Type, -M: Medium Type, -W: Wide Type

Model Name <sup>1</sup>	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	IR (Infrared)				
HLDL3-150X28□□-DF-N	24 V	15 W							350 g
HLDL3-150X28□□-DF-M									350 g
HLDL3-150X28□□-DF-W									370 g
HLDL3-300X28□□-DF-N	24 V	30 W							600 g
HLDL3-300X28□□-DF-M									600 g
HLDL3-300X28□□-DF-W									620 g
HLDL3-450X28□□-DF-N	24 V	44 W				Diffusion Plate Polarizing Plate <sup>4</sup> Bracket	FCB <sup>2</sup> Straight Cable FRCB Robot Cable	PD4 PD3	910 g
HLDL3-450X28□□-DF-M									910 g
HLDL3-450X28□□-DF-W									940 g
HLDL3-600X28□□-DF-N	24 V	59 W							1,200 g
HLDL3-600X28□□-DF-M									1,200 g
HLDL3-600X28□□-DF-W									1,240 g
HLDL3-750X28□□-DF-N	24 V	74 W						PD4-12024 PD3-10024-8 PSB4	1,510 g
HLDL3-750X28□□-DF-M									1,510 g
HLDL3-750X28□□-DF-W									1,560 g
HLDL3-900X28□□-DF-N	24 V	88 W					FCB-EL2 Straight Cable	PD4-12024 PSB4	1,800 g
HLDL3-900X28□□-DF-M									1,800 g
HLDL3-900X28□□-DF-W									1,860 g
HLDL3-1050X28□□-DF-N	24 V	103 W				*4 Excluding infrared		PD4-12024 PSB4	2,110 g
HLDL3-1050X28□□-DF-M									2,110 g
HLDL3-1050X28□□-DF-W									2,180 g
HLDL3-1200X28□□-DF-N	24 V	117 W						PD4-12024 PSB4	2,400 g
HLDL3-1200X28□□-DF-M									2,400 g
HLDL3-1200X28□□-DF-W									2,480 g
HLDL3-1350X28□□-DF-N	24 V	132 W							2,710 g
HLDL3-1350X28□□-DF-M									2,710 g
HLDL3-1350X28□□-DF-W									2,800 g
HLDL3-1500X28□□-DF-N	24 V	147 W					FCB-EL2 Straight Cable × 2 pcs <sup>3</sup>	PSB4	3,000 g
HLDL3-1500X28□□-DF-M									3,000 g
HLDL3-1500X28□□-DF-W									3,100 g
HLDL3-1650X28□□-DF-N	24 V	161 W							3,310 g
HLDL3-1650X28□□-DF-M									3,310 g
HLDL3-1650X28□□-DF-W									3,420 g
HLDL3-1800X28□□-DF-N	24 V	176 W							3,600 g
HLDL3-1800X28□□-DF-M									3,600 g
HLDL3-1800X28□□-DF-W									3,720 g

Please inquire if you would like to use in combination with a strobe control unit (override type)

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

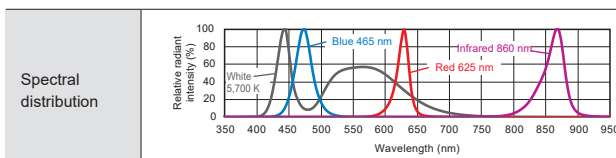
List of Control Unit Specifications ▶ P.311

<sup>1</sup> □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR: Infrared)

<sup>2</sup> Cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

<sup>3</sup> Use two extension cables of the same length. If the two extension cables are of different lengths, the different cable specs may lead to uneven light emission.

## LED Properties



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

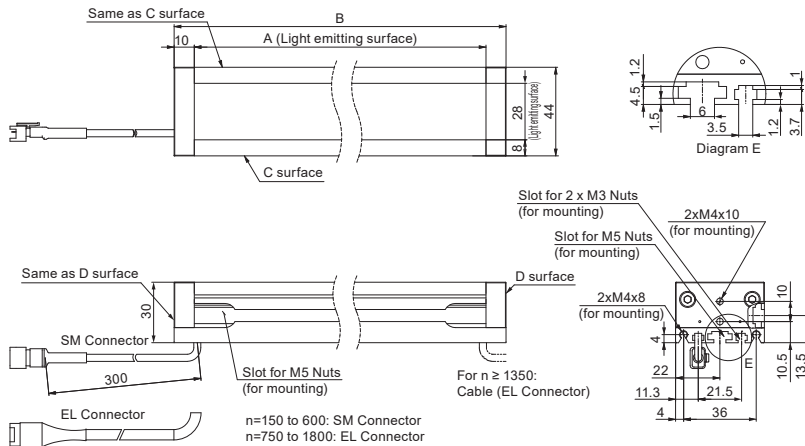
Imaging Examples

Digital Catalogs

Register to use them.

## Dimensions (mm)

HLDL3-nX28□□-DF-N / -M / -W (common dimensions) (n = 150 to 1800, □□ = RD, SW, BL, IR)



n	Size A	Size B
150	150	170
300	300	320
450	450	470
600	600	620
750	750	770
900	900	920
1050	1050	1070
1200	1200	1220
1350	1350	1370
1500	1500	1520
1650	1650	1670
1800	1800	1820

## Options

### Diffusion Plate

Prevents glare that arises when imaging glossy workpieces.  
 \* The light unit is shipped with a low-uniformity, high-transmittance diffusion plate installed.  
 A white wide-Type light unit is shipped with the DF-HLDL3 Series diffusion plate installed.

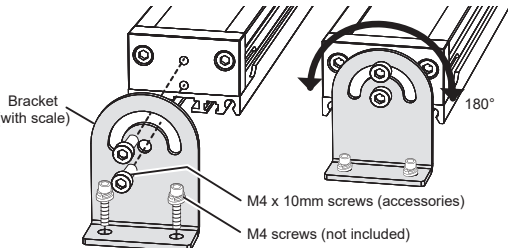
Series Name	Uniformity	Transmittance	Remarks
DF-HLDL3 Series	Medium	Medium	Refer to the pages on optional products. (P.375)
DF-HLDL3-HU Series	High	Low	

### Installation Bracket

The illumination angle can be freely adjusted when fixing HLDL3 Series light units.

Model Name	Remarks
BK-HLDL3	Angle Adjustment Bracket (2 pcs) common for HLDL3 Series types. Refer to the pages on optional products. (P.381)

\* For a longer light unit, please give an additional support to central part.  
 \* This is not intended for use together with a mounting compatibility bracket.



### Polarizing Plate

The surface reflection of the workpiece can be removed when used in combination with a polarizing filter.

\* Remove the diffusion plate to mount the polarizing plate.  
 If you want to use both the polarizing plate and diffusion plate, contact us for custom orders.

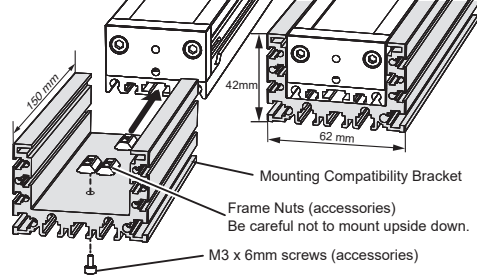
Series Name	Polarization Direction	Remarks
PL-HLDL3-HO Series	Horizontal	Refer to the pages on optional products. (P.377)
PL-HLDL3-VE Series	Vertical	

### Mounting Compatibility Bracket

This bracket is used to install HLDL3 Series lighting (unit width: 44 mm) with the same method as HLDL2 Series lighting (unit width: 62 mm).

Model Name	Remarks
AD-HLDL3	HLDL2 Series Mounting Compatibility Bracket common for HLDL3 Series types. Refer to the pages on optional products. (P.381)

\* The height of the HLDL2 Series wide Type is 26 mm. Using the HLDL3 wide Type light unit with an HLDL3 bracket increases the height to 42 mm, so the light emitting surface will be closer to the workpiece.



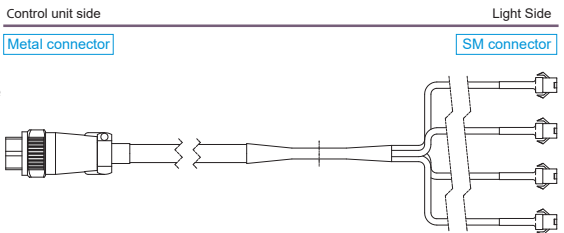
### Extension Cables (custom example)

Cables can be custom ordered according to customer requests. Please contact your local sales representative for a custom order.

Example: FCB-F-n-ME7-SM3-OC

4-branch cable which can connect a PSB4 power source and four HLDL3 light units (SM connectors).

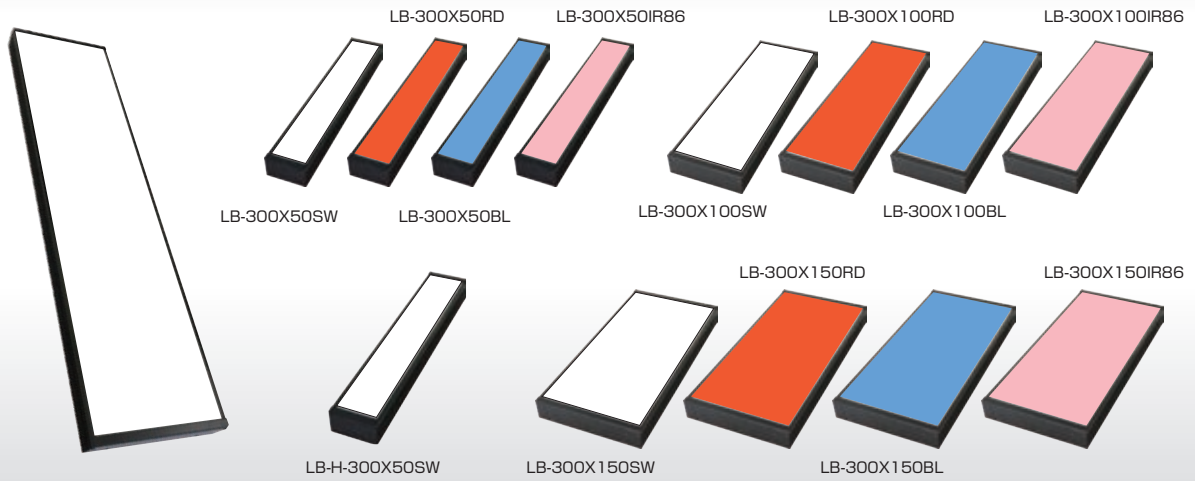
Custom orders are available as needed for number of branches, connector type, length changes, and so on.



LDR2	Ring	(Direct)
LDR2-LA	Ring	(Direct)
LDR-LA1	Ring	(Direct)
SQR	Ring	(Direct)
SQR-TP	Ring	(Direct)
HLDL3	Ring	(Convergent/Diffused)
HPR2	Ring	(Convergent/Diffused)
LFR	Ring	(Convergent/Diffused)
LKR	Ring	(Convergent/Diffused)
FPR	Ring	(Convergent/Diffused)
FPQ3	Square	(Convergent/Diffused)
LDL2	Bar	(Direct)
LDLB	Bar	(Direct)
HLDL3	Bar	(Direct)
LB	Bar	(Direct)
TH2 (5 types)	Flat	(Direct)
LFL	Flat	(Direct)
HPD2	Dome	(Direct)
LDM2	Dome	(Direct)
LAV	Dome	(Direct)
PDM	Dome	(Direct)
LFXV	Dome	(Direct)
LFX3	Dome	(Direct)
LFX3-PT	Dome	(Direct)
LFV3	Coaxial	(Direct)
LFV3-G	Coaxial	(Direct)
MSU	Coaxial	(Direct)
MFU	Coaxial	(Direct)
PF	Strobe	(Direct)
HLDL-IP	Water-proof	(Direct)
HSL-PCL	Water-proof	(Direct)
UV3/VL3	UV / Violet	(Direct)
UV	UV / Violet	(Direct)
LNSP-UV3-FN	UV / Violet	(Direct)
IR2	Infrared	(Direct)
(Under 1000-nm Type)	Infrared	(Direct)
IR	Infrared	(Direct)
(Over 1000-nm Type)	Infrared	(Direct)
CIR	Infrared	(Direct)
LDF-RLS	Reference Light Source	(Direct)
IU	Intensity Control	(Direct)
HLV3	Spot, Etc.	(Direct)
LV	Spot, Etc.	(Direct)
HFS/HFR	Spot, Etc.	(Direct)
HLV3-22-4-NR	Spot, Etc.	(Direct)
HLV3-3M-RGB-4	Spot, Etc.	(Direct)
PFBR-600SW2	Spot, Etc.	(Direct)
PFBR-150	Spot, Etc.	(Direct)
SLG-150V-CCS	Spot, Etc.	(Direct)
PFB3(A)	Spot, Etc.	(Direct)
LNLP	Line (Convergent)	(Direct)
LNLP2	Line (Convergent)	(Direct)
Coaxial Units	Line (Convergent)	(Direct)
LNLP-FN	Line (Convergent)	(Direct)
LN/LN-HK	Line (Convergent)	(Direct)
LNLD	Line (Diffused)	(Direct)
LNLD2	Line (Diffused)	(Direct)
LT	Line (Diffused)	(Direct)
LNVP	Line (Diffused)	(Direct)
LFXV (Rectangular Type)	Line (Diffused)	(Direct)
LFXV (Rectangular Type)	Line (Diffused)	(Direct)
TH2 (Rectangular Type)	Line (Diffused)	(Direct)
LNLDG	Line (Oblique Angled)	(Direct)
LNIS2	Line (Oblique Angled)	(Direct)
LNIS	Line (Oblique Angled)	(Direct)
LNIS-FN	Line (Oblique Angled)	(Direct)
Telecentric Lens	Macro Lens	(Direct)
Other Products	Macro Lens	(Direct)
LDF-NB	Other Products	(Direct)



Wide emitting surface uniform diffused lighting



Applications

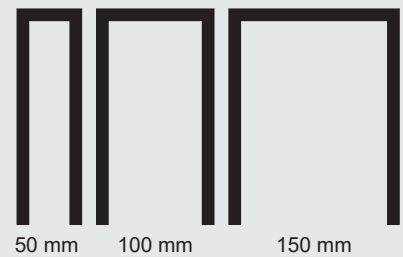
Inspection of the appearance of square-shaped workpieces, inspection of satin surface, inspection of liquid level in cylindrical containers, inspection of transparent containers, inspection of uneven surface, etc.

Total of 338 Models Wide Lineup

An extensive lineup of 338 models is available in combinations of light emitting surface size, emitting width, color, etc. The product can be used in a variety of configurations to suit your inspection needs.

Choose from 3 Emitting Widths

Standard Type	<b>Emitting Width 3 Types</b> 50 / 100 / 150 mm	<b>LED Colors 4 Types</b> Red/White/Blue/Infrared	<b>Size 26 Types</b> Light emitting surface length 200 mm to 2700 mm	= 312 Models
High Power Type	<b>Emitting Width 1 Type</b> 50 mm	<b>LED Colors 1 Type</b> White	<b>Size 26 Types</b> Light emitting surface length 200 mm to 2700 mm	= 26*1 Models



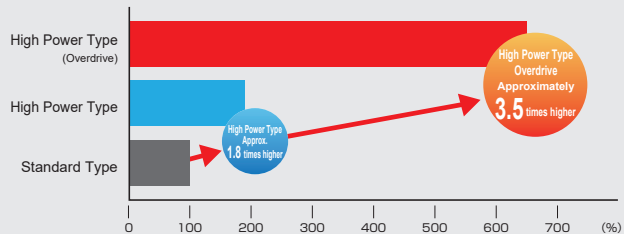
\*1 High power type is only available in emitting width 50 mm, white.

\*High power type is only available with an emitting width of 50 mm.

High Power Type with Overdrive Also Available



Brightness Comparison



Measurement conditions: 100% intensity, LWD 50 mm, irradiance comparison between LB-300X50SW and LB-H-300X50SW  
 Overdrive is only available for high power type sizes 200 to 700.  
 Model: LB-H-□□X50SW (□□=200 to 700)  
 For information on the combination of light units and POD Series control units, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

The data included is for reference only. Actual values may vary.

## Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

### Relative irradiance<sup>\*1</sup> graph (LWD<sup>\*2</sup> characteristics)

### Uniformity (Relative irradiance)

\*1 Irradiance on the optical axis  
\*2 Illuminating distance between the light unit and the workpiece

<p>LB-300X50SW</p> <p>Standard Type</p> <p>Emitting Width 50 mm</p>		
<p>LB-300X100SW</p> <p>Standard Type</p> <p>Emitting Width 100 mm</p>		
<p>LB-300X150SW</p> <p>Standard Type</p> <p>Emitting Width 150 mm</p>		
<p>LB-H-300X50SW</p> <p>High Power Type</p> <p>Emitting Width 50 mm</p>		

## LED Properties

	Standard Type	High Power Type
Spectral distribution		
<p>Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.</p>		

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.  
The data included is for reference only. Actual values may vary.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFX3	Coaxial
LFX3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LX	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNLP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNLP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LNLD2	Line (Diffused)
LT	Line (Diffused)
LNVD	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNLDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LB Series



Refer to our website for product details.

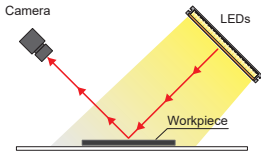
CCS LB

Search



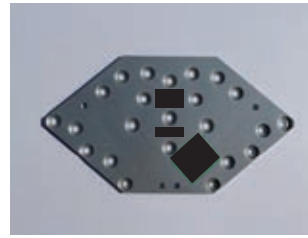
Imaging Example: Specular Reflection Observation Satin Metal Sheet ID Mark Inspection

Example Configuration



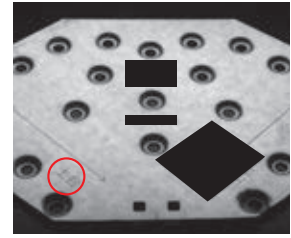
Diffused lighting is illuminated from a slanted angle to observe the specular reflection. Light emitting surface width can be selected to match the workpiece and characteristics.

Workpiece



Satin metal plate

LB-300X150SW



Uniform illumination of wide satin surfaces for clear ID mark imaging.

Imaging Example: Specular Reflection Observation Transparent Workpiece Surface Inspection

Workpiece



Plastic sheet

LNSD-300SW(A)



For highly deflective workpieces, brightness is not uniform.

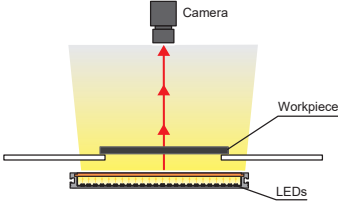
LB-300X50SW



Wide light-emitting surface reduces the effect of deflection for uniform brightness throughout the entire image.

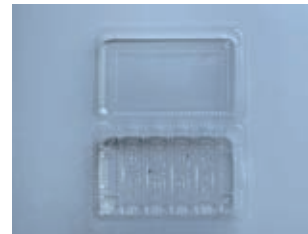
Imaging Example: Backlight Transparent Container Stain Inspection

Example Configuration



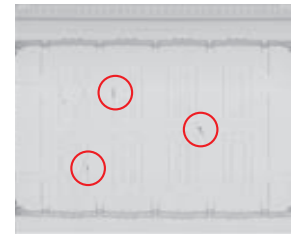
Diffused lighting is illuminated from the back of the workpiece. Suitable for translucent workpiece foreign contamination inspection, liquid level inspection, silhouette inspection, etc.

Workpiece



Transparent container

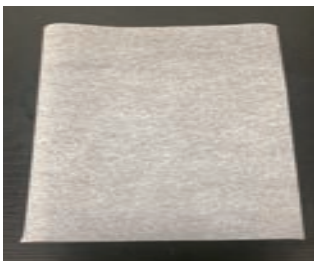
LB-300X150SW



Uniform diffused lighting illumination from a wide light emitting surface minimizes the effect of unevenness and clearly images stains.

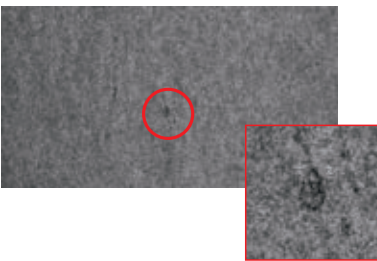
Imaging Example: Backlight Inspection for Dirt on Fiber Workpieces

Workpiece



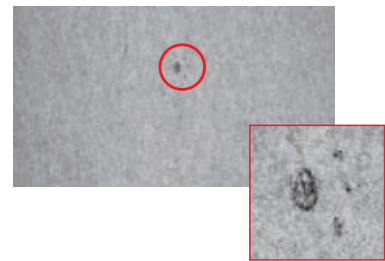
Tracing paper

LNSD-300SW(A)



The light-emitting surface is narrow and the angle of light to the surface is small, reducing the overall light hitting the paper and making it difficult to see the dirt.

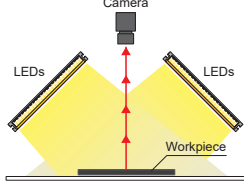
LB-300X150BL



The large light-emitting surface allows light to hit the paper from multiple directions, making it easier to see the difference between stains and paper.

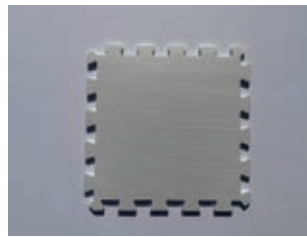
**Imaging Example: Diffused Dome Illumination Scratch Inspection of Uneven Mats**

**Example Configuration**



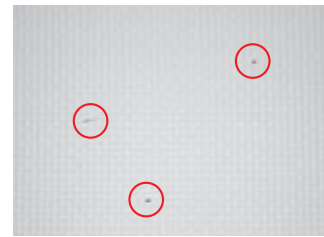
Uniform diffused lighting is illuminated from 2 directions to reproduce the dome effect. Images can be captured with minimal shading and halation effects on uneven surfaces.

**Workpiece**



Joint mat

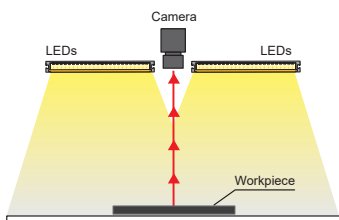
**LB-600X150SW × 2 units**



Clear imaging of scratches by suppressing shadows on uneven surfaces.

**Imaging Example: Wide-range Uniform Illumination Foreign Contamination Inspection of Non-Woven Fabrics**

**Example Configuration**



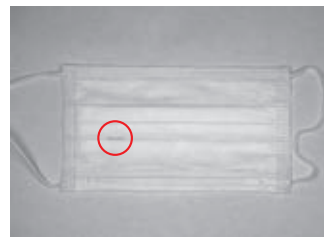
Uniform diffused lighting is illuminated on the same axis as the camera. Also effective for wide-area imaging, such as wide workpieces, etc.

**Workpiece**



Mask

**LB-300X150SW × 2 units**



Clear imaging of foreign contamination that overlaps the shadows of the seams.

**Imaging Example: Wide-range Uniform Illumination Surface Inspection of Metal Machined Parts**

**Workpiece**



Aluminum machined parts (black anodized aluminum)

**HLDL3-750X28SW-DF-W**



Not uniformly illuminated. The cutting marks on the machined surface stand out.

**LB-700X150SW**



Uniformly illuminated to capture images with no cutting marks visible.

**Imaging Example: Wide-range Uniform Illumination Robot Picking/Positioning of Metal Parts**

**Workpiece**



Metal plates (satin finish)

**HLDL3-600X28SW-DF-W**



Uneven lighting overall and unable to capture images with uniform brightness.

**LB-600X150SW**



Uniform brightness across the entire image.

LDR2	Ring (Direct)
LDR2-LA	
LDR-LA1	
SQR	
SQR-TP	Ring (Convergent/Diffused)
HLDR3	
HPR2	
LFR	
LKR	Ring (Convergent/Diffused)
FPR	
FPQ3	
LDL2	Bar
LDLB	
HLDL3	
LB	Flat
TH2 (5 types)	
LFL	Dome
HPD2	
LDM2	
LAV	
PDM	
LFXV	
LFX3	
LFX3-PT	Coaxial
LFV3	
LFV3-G	Coaxial
MSU	
MFU	Strobe
PF	
HLDR-IP	Water-proof
HSL-PCL	
UV3/VL3	UV / Violet
UV	
LNSP-UV3-FN	Infrared
IR2 (Under 1000-nm Type)	
IR (Over 1000-nm Type)	
CIR	
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	
HFS/HFR	
HLV3-22-4-NR	
HLV3-3M-RGB-4	
PFBR-600SW2	
PFBR-150	Spot, Etc.
SLG-150V-CCS	
PFB3(A)	Line (Convergent)
LNL	
LNSP2	
Coaxial Units	
LNSP-FN	
LN/LN-HK	Line (Diffused)
LNSD	
LND2	
LT	
LNV	
LFXV (Rectangular Type)	
TH2 (Rectangular Type)	Line (Oblique Angled)
LNDG	
LNIS2	
LNIS	
LNIS-FN	Telecentric Lens
Macro Lens	
LDF-NB	Other Products



Refer to our website for product details.

CCS LB

Search



Lineup (Standard Type)

Emitting Width	Model Name <sup>1</sup>	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight	
		RD (Red)	SW (White)	BL (Blue)	IR86 (Infrared)					
50 mm	LB-200X50□□		18 W		10 W				470 g	
	LB-300X50□□		27 W		15 W				610 g	
	LB-400X50□□		36 W		20 W				750 g	
	LB-500X50□□		45 W		24 W			PD4	890 g	
	LB-600X50□□		54 W		29 W			PD3	1,030 g	
	LB-700X50□□		63 W		34 W				1,170 g	
	LB-800X50□□		72 W		39 W				1,310 g	
	LB-900X50□□		81 W		44 W		FCB-EL2		1,450 g	
	LB-1000X50□□		90 W		48 W				1,590 g	
	LB-1100X50□□		99 W		53 W			PD4	1,730 g	
	LB-1200X50□□		108 W		58 W			PD3 <sup>3</sup>	1,870 g	
	LB-1300X50□□		117 W		63 W			*3 Can only use infrared.	2,010 g	
	LB-1400X50□□		125 W		68 W				2,150 g	
	LB-1500X50□□		134 W		72 W			PD4 <sup>3</sup>	2,290 g	
	LB-1600X50□□		143 W		77 W			PD3 <sup>3</sup>	2,430 g	
	LB-1700X50□□		152 W		82 W			PSB4	2,570 g	
	LB-1800X50□□		161 W		87 W			*3 Can only use infrared.	2,710 g	
	LB-1900X50□□		170 W		92 W				2,850 g	
	100 mm	LB-2000X50□□		179 W		96 W		FCB-EL2 <sup>3</sup>		2,990 g
		LB-2100X50□□		188 W		101 W		FCB-1.25SQ-ME7 <sup>4</sup>		3,130 g
LB-2200X50□□			197 W		106 W		FCB-20-2.0SQ-ME7 <sup>4</sup>		3,270 g	
LB-2300X50□□			206 W		111 W		*3 Can only use infrared.	PD4 <sup>3</sup>	3,410 g	
LB-2400X50□□			215 W		116 W		*4 Excluding infrared.	PSB4	3,550 g	
LB-2500X50□□			224 W		120 W			*3 Can only use infrared.	3,690 g	
LB-2600X50□□			233 W		125 W				3,830 g	
LB-2700X50□□			242 W		130 W				3,970 g	
						Diffusion Plates				
						Polarizing Plates <sup>4</sup>				
						Protective Plates				
						*4 Excluding infrared.				
		LB-200X100□□		36 W		20 W			PD4	770 g
		LB-300X100□□		54 W		29 W			PD3	1,010 g
		LB-400X100□□		72 W		39 W				1,250 g
		LB-500X100□□		90 W		48 W		FCB-EL2		1,490 g
		LB-600X100□□		108 W		58 W			PD4 PD3 <sup>3</sup>	1,730 g
		LB-700X100□□		125 W		68 W			*3 Can only use infrared.	1,970 g
		LB-800X100□□		143 W		77 W			PD4 <sup>3</sup> PD3 <sup>3</sup>	2,210 g
		LB-900X100□□		161 W		87 W			PSB4	2,450 g
	LB-1000X100□□		179 W		96 W			*3 Can only use infrared.	2,690 g	
	LB-1100X100□□		197 W		106 W			PD4 <sup>3</sup> PSB4	2,930 g	
	LB-1200X100□□		215 W		116 W			*3 Can only use infrared.	3,170 g	
	LB-1300X100□□		233 W		125 W				3,410 g	
	LB-1400X100□□		250 W		135 W				3,650 g	
	LB-1500X100□□		268 W		144 W				3,890 g	
	LB-1600X100□□		286 W		154 W		FCB-1.25SQ-ME7		4,130 g	
	LB-1700X100□□		304 W		164 W		FCB-20-2.0SQ-ME7		4,370 g	
	LB-1800X100□□		322 W		173 W				4,610 g	
	LB-1900X100□□		340 W		183 W				4,850 g	
	LB-2000X100□□		358 W		192 W			PSB4	5,090 g	
	LB-2100X100□□		375 W		202 W		FCB-1.25SQ-ME7		5,330 g	
	LB-2200X100□□		393 W		212 W		FCB-20-2.0SQ-ME7		5,570 g	
	LB-2300X100□□		411 W		221 W		*2 Requires 2 cables. (Excluding infrared)		5,810 g	
	LB-2400X100□□		429 W		231 W				6,050 g	
	LB-2500X100□□		447 W		240 W				6,290 g	
	LB-2600X100□□		465 W		250 W				6,530 g	
	LB-2700X100□□		483 W		260 W				6,770 g	

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR86: Infrared)

\*2 Connect these connectors to the two output connectors that power the lighting on the same channel of the control unit. For example, for PSB4 Series control units, connect to the L1-1 and L1-2 output connectors.

Use 2 extension cables of the same length. If the two extension cables are of different lengths, the different cable specs may lead to uneven light emission.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311



## Lineup (Standard Type)

Emitting Width	Model Name <sup>*1</sup>	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	IR86 (Infrared)				
150 mm	LB-200X150□□		54 W		29 W			PD4 PD3	1,030 g
	LB-300X150□□		81 W		44 W		FCB-EL2	PD4 <sup>4</sup> PD3 <sup>4</sup>	1,350 g
	LB-400X150□□		108 W		58 W			PSB4	1,670 g
	LB-500X150□□		134 W		72 W			PD4 <sup>4</sup> PSB4	1,990 g
	LB-600X150□□		161 W		87 W		FCB-EL2 <sup>4</sup>	*4 Can only use infrared.	2,310 g
	LB-700X150□□		188 W		101 W		FCB-1.25SQ-ME7 <sup>5</sup>	PD4 <sup>4</sup> PSB4	2,630 g
	LB-800X150□□		215 W		116 W		FCB-20-2.0SQ-ME7 <sup>5</sup>	*4 Can only use infrared.	2,950 g
	LB-900X150□□		242 W		130 W				3,270 g
	LB-1000X150□□		268 W		144 W				3,590 g
	LB-1100X150□□		295 W		159 W		FCB-1.25SQ-ME7		3,910 g
							FCB-20-2.0SQ-ME7		4,230 g
						Diffusion Plates			4,550 g
						Polarizing Plates <sup>*5</sup>			4,870 g
						Protective Plates		FCB-1.25SQ-ME7	5,190 g
						*5 Excluding infrared.		FCB-20-2.0SQ-ME7	5,510 g
									5,830 g
									6,150 g
									6,470 g
									6,790 g
									7,110 g
									7,430 g
								7,750 g	
								8,070 g	
								8,390 g	
								8,710 g	
								9,030 g	

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR86: Infrared)  
 \*2 Connect these connectors to the two output connectors that power the lighting on the same channel of the control unit. For example, for PSB4 Series control units, connect to the L1-1 and L1-2 output connectors. Use 2 extension cables of the same length. If the two extension cables are of different lengths, the different cable specs may lead to uneven light emission.  
 \*3 For extension cables and control units for LB-2300/2400/2500/2600/2700X150 (excluding infrared), please contact our sales representative.

## Lineup (High Power Type)

Emitting Width	Model Name	LED Emitting Color	Power Consumption	Options	Extension Cables	Recommended Control Units	Weight	
50 mm	LB-H-200X50SW	White	28 W				470 g	
	LB-H-300X50SW		42 W			PD4	610 g	
	LB-H-400X50SW		56 W				PD3 POD	750 g
	LB-H-500X50SW		70 W					890 g
	LB-H-600X50SW		84 W			FCB-EL2		1,030 g
	LB-H-700X50SW		98 W				PD4 PSB4 POD	1,170 g
	LB-H-800X50SW		112 W				PD4 PSB4	1,310 g
	LB-H-900X50SW		126 W					1,450 g
	LB-H-1000X50SW		140 W					1,590 g
	LB-H-1100X50SW		154 W					1,730 g
	LB-H-1200X50SW		168 W					1,870 g
	LB-H-1300X50SW		181 W			Diffusion Plates		2,010 g
	LB-H-1400X50SW		195 W			Polarizing Plates		2,150 g
	LB-H-1500X50SW		209 W			Protective Plates	FCB-1.25SQ-ME7	2,290 g
	LB-H-1600X50SW		223 W				FCB-20-2.0SQ-ME7	2,430 g
	LB-H-1700X50SW		237 W					2,570 g
	LB-H-1800X50SW		251 W					2,710 g
	LB-H-1900X50SW		265 W					2,850 g
	LB-H-2000X50SW		279 W					2,990 g
	LB-H-2100X50SW		293 W					3,130 g
	LB-H-2200X50SW		307 W					3,270 g
LB-H-2300X50SW	321 W					3,410 g		
LB-H-2400X50SW	335 W					3,550 g		
LB-H-2500X50SW	348 W					3,690 g		
LB-H-2600X50SW	362 W					3,830 g		
LB-H-2700X50SW	376 W					3,970 g		

\*1 Connect these connectors to the two output connectors that power the lighting on the same channel of the control unit. For example, for PSB4 Series control units, connect to the L1-1 and L1-2 output connectors. Use 2 extension cables of the same length. If the two extension cables are of different lengths, the different cable specs may lead to uneven light emission.



Refer to our website for product details.

CCS LB

Search

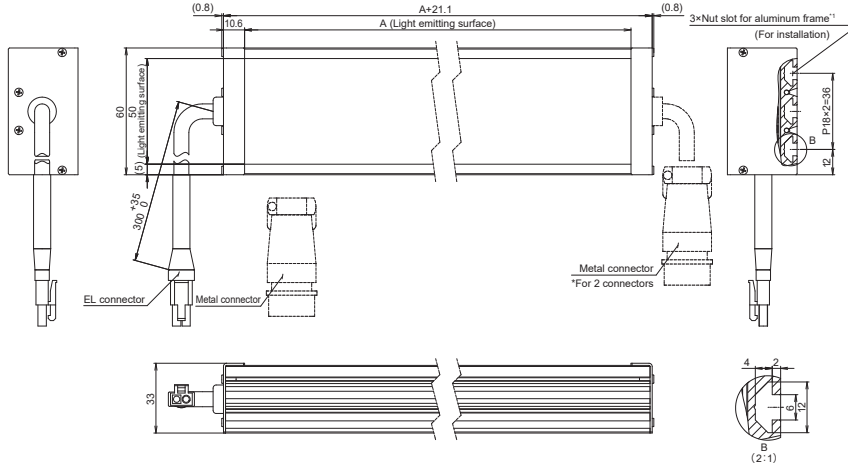


Dimensions (mm)

Emitting Width 50 mm Standard Type (for all wavelengths) / High Power Type

LB-H-nX50SW (n=200 to 2700)

LB-nX50□□ (n=200 to 2700, □□=RD, SW, BL, IR86)



LB-H-nX50SW

n Dimensions	Connector Type
200 to 1,000	EL connector
1,100 to 2,100	Metal connector
2,200 to 2,700	Metal connector*2*

LB-nX50RD/SW/BL

n Dimensions	Connector Type
200 to 1,600	EL connector
1,700 to 2,700	Metal connector

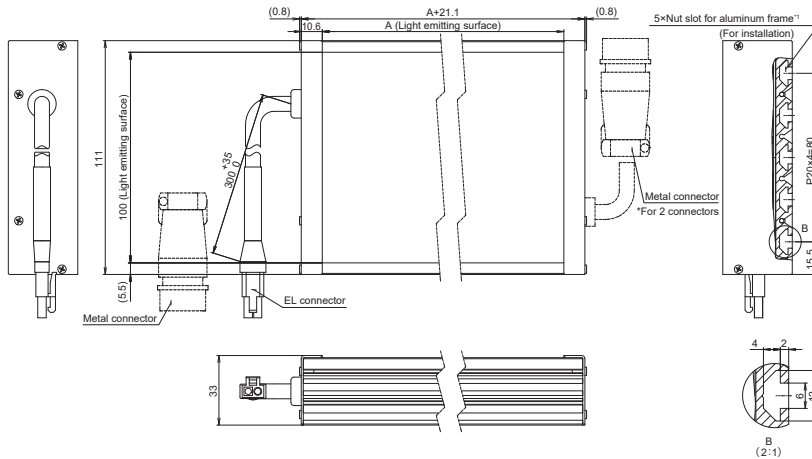
LB-nX50IR86

n Dimensions	Connector Type
200 to 2,700	EL connector

\*1 Nuts can be installed by using post-installation nuts or by removing the side panels.

Emitting Width 100 mm Standard Type (for all wavelengths)

LB-nX100□□ (n=200 to 2700, □□=RD, SW, BL, IR86)



LB-nX100RD/SW/BL

n Dimensions	Connector Type
200 to 800	EL connector
900 to 1,600	Metal connector
1,700 to 2,700	Metal connector*2*

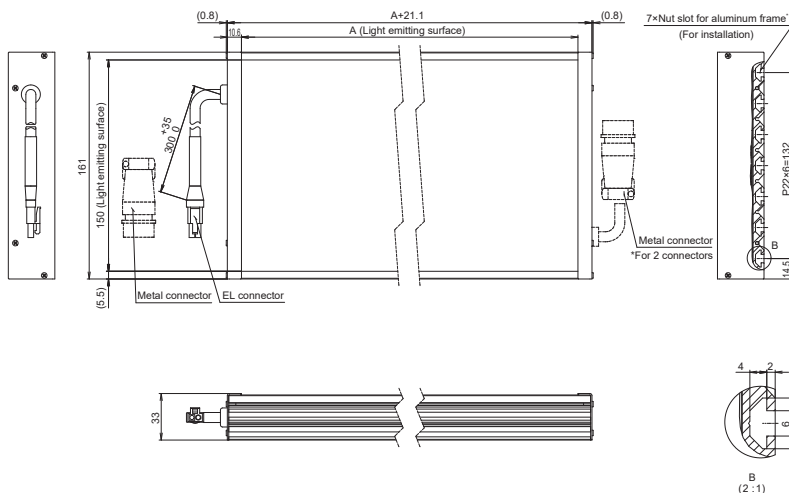
LB-nX100IR86

n Dimensions	Connector Type
200 to 1,500	EL connector
1,600 to 2,700	Metal connector

\*1 Nuts can be installed by using post-installation nuts or by removing the side panels.

Emitting Width 150 mm Standard Type (for all wavelengths)

LB-nX150□□ (n=200 to 2700, □□=RD, SW, BL, IR86)



LB-nX150RD/SW/BL

n Dimensions	Connector Type
200 to 500	EL connector
600 to 1,100	Metal connector
1,200 to 2,700	Metal connector*2*

LB-nX150IR86

n Dimensions	Connector Type
200 to 1,000	EL connector
1,100 to 2,000	Metal connector
2,100 to 2,700	Metal connector*2*

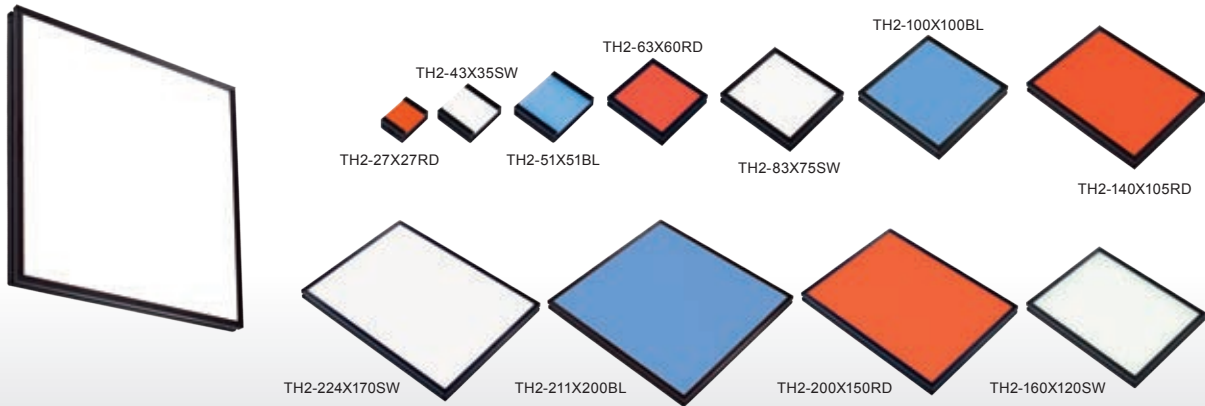
\*1 Nuts can be installed by using post-installation nuts or by removing the side panels.

Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent / Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB LDL3 <b>LB</b>
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Strobe Coaxial	MSU MFU
Water-proof	PF
UV / Violet	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNFP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNS2 LNS LNS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB





## Diffuse illumination from a flat emitting surface



### Applications

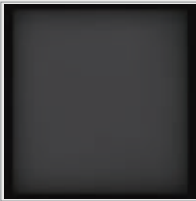
Inspection of liquid surface level in PET bottles, inspection of the appearance of electronic or automobile components, inspection of pinholes, inspection for burr of metal components, etc.

### Achieved Further-Higher Luminance

With their increased brightness, these Flat Lights are available at high-speed production lines.

#### Increased output greater than that of the conventional products

Conventional product  
TH-63X60SW (White)



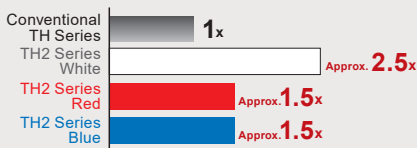
Shutter speed: 1/10,000  
Amount of light: 100% intensity

TH2-63X60SW (White)



Shutter speed: 1/10,000  
Amount of light: 100% intensity

#### Graph of the radiance comparison

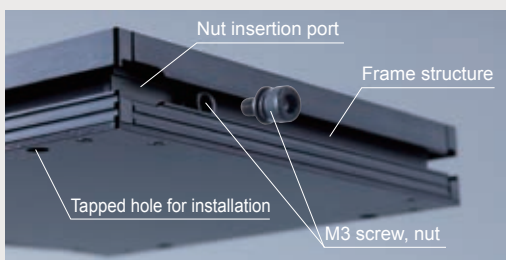


For the high-luminance type 63 x 60 models

The data included is for reference only. Actual values may vary.

### Install freely to match your environment

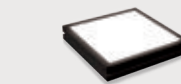
Uses installation method by frame structure. Tapped holes for installation are included not only on the unit side but also on the bottom.



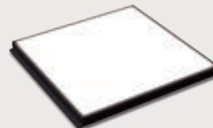
### Rich Product Lineup

Our abundant product lineup can meet a wide range of needs. A total of 73 models of different types of Flat Lights.

For transmission purpose



**High-directivity type** ▶ P.87  
High light directivity and effective for dimensional measurement.



**Large type** ▶ P.91  
Suitable for large workpieces. Secures a large inspection area.



**Rectangular type** ▶ P.93  
Supports sheet-shaped workpieces. Recommended for line sensor camera applications.

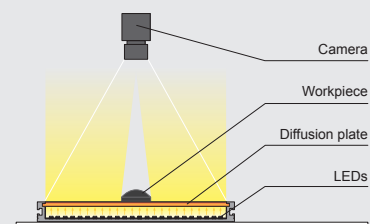


**Camera-window type** ▶ P.95  
Provide a light from the same axis as the camera and a wide range of uniform illumination. Available for reflection purpose.

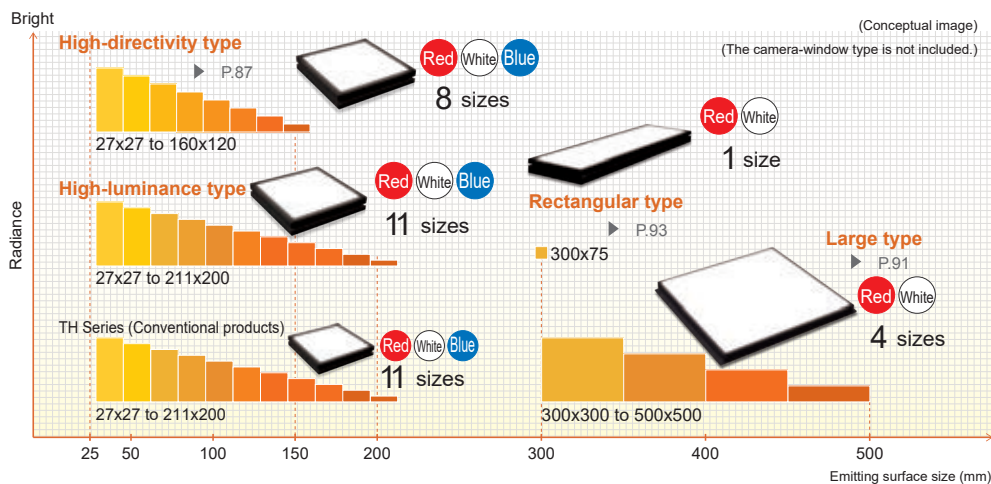
### Example Configuration

Achieved high output with a flat shape. Light from the LEDs is transmitted through the diffusion panel and illuminated on the rear of the workpiece.

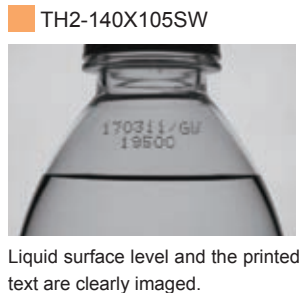
#### TH2-140X105



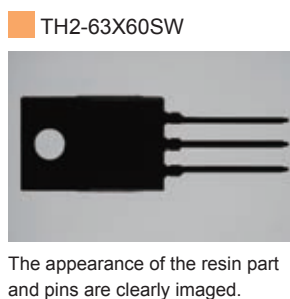
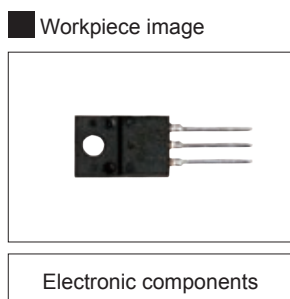
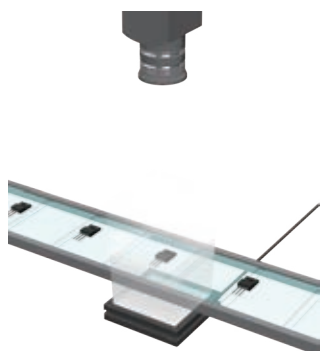
### Brightness and Size of Each Light Unit Type



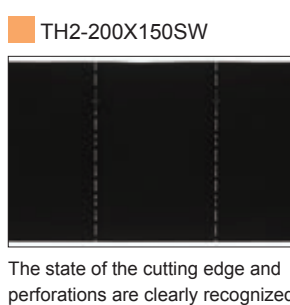
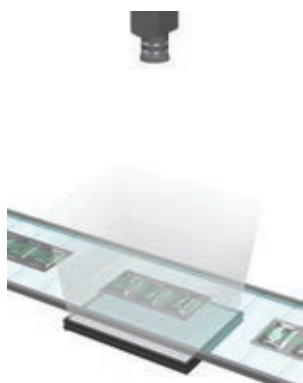
### Imaging Example: Imaging the Liquid Surface Level in PET Bottles



### Imaging Example: Imaging the Appearance of Electronic Components



### Imaging Example: Imaging the Appearance of Medicines (Individual Packaging)



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HADR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# TH2 Series

High-Luminance Type



Refer to our website for product details.

CCS TH2

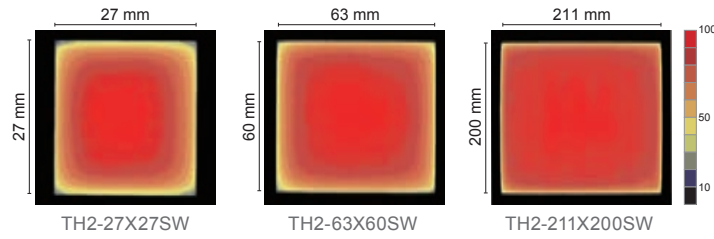
Search



## Data: Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

### Uniformity (Relative radiance)



## Lineup

Model Name*1	Input Voltage	Power Consumption			Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)				
TH2-27X27□□	24 V	2.3 W	2.9 W	2.7 W		FCB <sup>3</sup> Straight Cable		30 g
TH2-43X35□□	24 V	4.9 W	4.8 W	4.8 W		FCB-W <sup>4</sup> 2-Branch Cable	PD4 PD3 CC-ST-1024 POD <sup>2</sup>	40 g
TH2-51X51□□	24 V	6.5 W	8.2 W	8.2 W		FCB-F 4-Branch Cable		60 g
TH2-63X60□□	24 V	9.9 W	9.7 W	9.7 W		FRCB Robot Cable		100 g
TH2-83X75□□	24 V	15 W	16 W	16 W	Light control film Bracket		PD4 PD3 POD <sup>2</sup>	140 g
TH2-100X100□□	24 V	26 W	25 W	25 W				200 g
TH2-140X105□□	24 V	28 W	28 W	28 W				260 g
TH2-160X120□□	24 V	35 W	35 W	35 W				310 g
TH2-200X150□□	24 V	45 W	44 W	44 W				440 g
TH2-224X170□□	24 V	66 W	66 W	66 W		FCB-EL2 Straight Cable	PD4-10024 PD3-10024-8 POD-22024-4-PEI <sup>2</sup>	540 g
TH2-211X200□□	24 V	67 W	65 W	65 W		FCB-W-EL2 2-Branch Cable	PSB4	580 g

LED Properties: Light Spectrum ▶ P.408

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

## Options



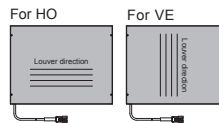
In this plastic film are fine louvers with extremely narrow gaps between them. It reduces light diffusion in a particular direction and increases parallelism.

### Light control film

There are two types of light control films: the HO and the VE. For details, refer to P.379.

Model name	Applicable Light Unit (Common for all colors)	Model name	Applicable Light Unit (Common for all colors)
LC-TH-27X27-HO	TH2-27X27	LC-TH-83X75-HO	TH2-83X75
LC-TH-27X27-VE		LC-TH-83X75-VE	
LC-TH-43X35-HO	TH2-43X35	LC-TH-100X100-HO	TH2-100X100
LC-TH-43X35-VE		LC-TH-100X100-VE	
LC-TH-51X51-HO	TH2-51X51	LC-TH-140X105-HO	TH2-140X105
LC-TH-51X51-VE		LC-TH-140X105-VE	
LC-TH-63X60-HO	TH2-63X60	LC-TH-160X120-HO	TH2-160X120
LC-TH-63X60-VE		LC-TH-160X120-VE	

▶ P.379



### Bracket

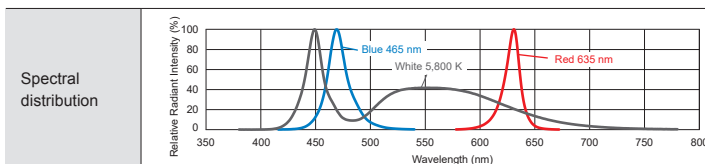
This is a dedicated bracket for affixing the TH2 Series light units. The TH2 Series can be affixed in four points.

Model name	Applicable Light Unit (Common for all colors)
BK-TH-LE12	Installation bracket common to all TH2 models (includes 4)

▶ P.381

## LED Properties

The data included is for reference only. Actual values may vary.



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Before using the product, be sure to read the User Manual attached to the product and follow the usage precautions.

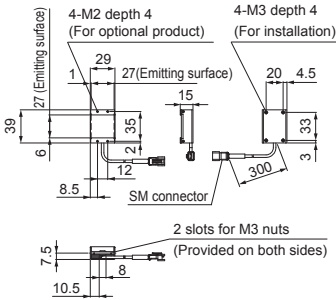
\* For both TH2 (current product) and TH (former product), the correlated color temperature as a light is 5800K, and the correlated color temperature for the LED alone is 6600K, yielding no difference.

The data included is for reference only. Actual values may vary.

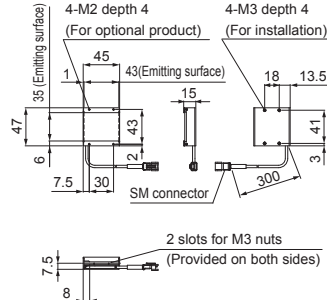
## Dimensions (mm)

Even for the light units of the same emitting surface size, the thickness and other dimensions of the product differ between the high-luminance and high-directivity type light units. Be sure to check the dimension diagrams before installing the light units.

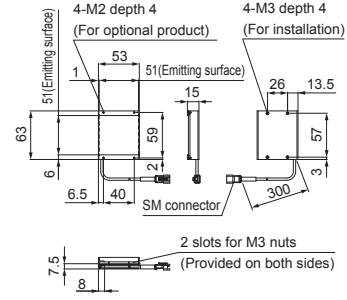
TH2-27X27RD/SW/BL



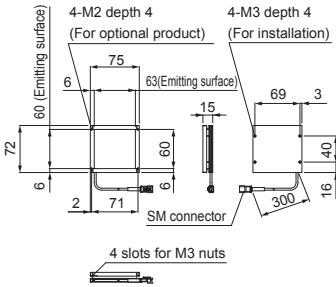
TH2-43X35RD/SW/BL



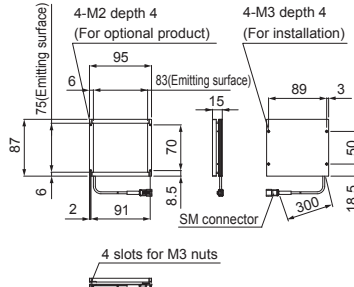
TH2-51X51RD/SW/BL



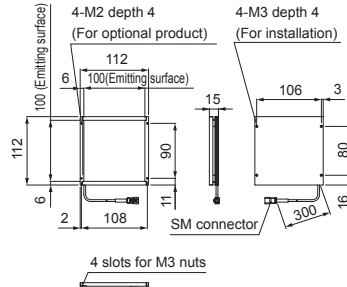
TH2-63X60RD/SW/BL



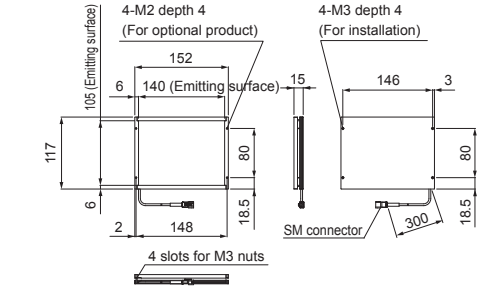
TH2-83X75RD/SW/BL



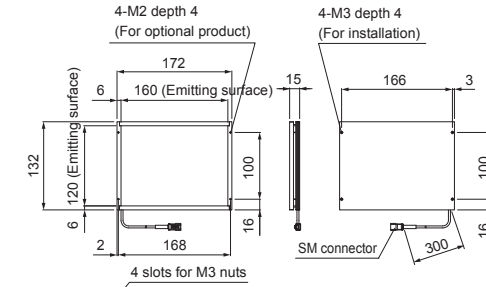
TH2-100X100RD/SW/BL



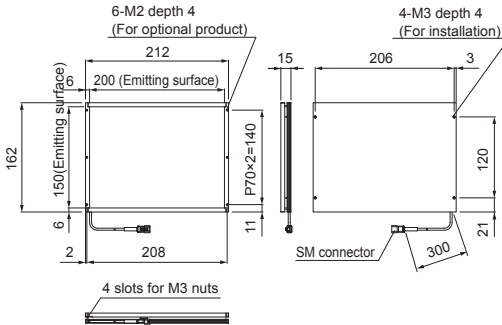
TH2-140X105RD/SW/BL



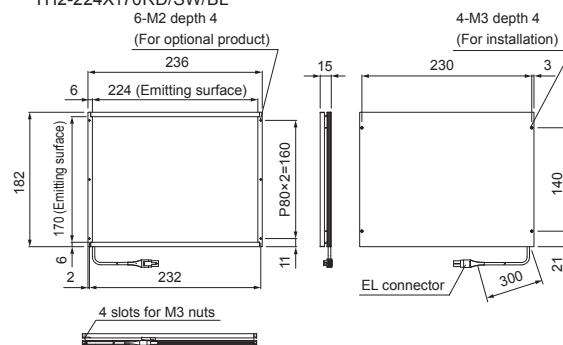
TH2-160X120RD/SW/BL



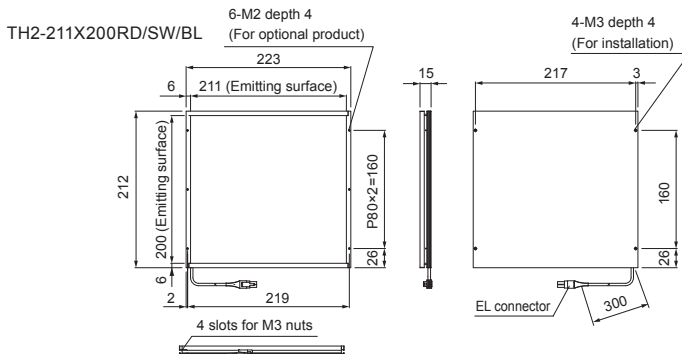
TH2-200X150RD/SW/BL



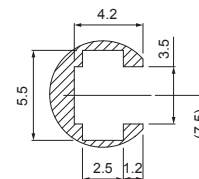
TH2-224X170RD/SW/BL



TH2-211X200RD/SW/BL



Nut slot detail diagram



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

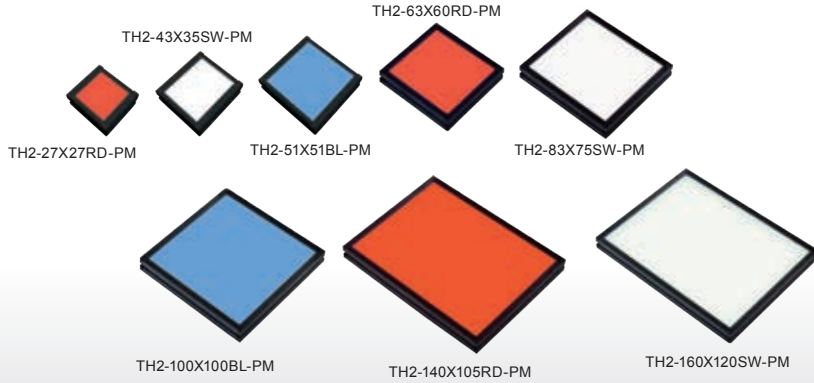
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLP	Line (Convergent)
LN2P2	Line (Convergent)
Coaxial Units	Line (Convergent)
LN2P-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LN2D	Line (Diffused)
LN2D2	Line (Diffused)
LT	Line (Diffused)
LN2V	Line (Diffused)
LF2V (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LN2D-G	Line (Angled)
LN2S2	Line (Oblique Angled)
LN2S	Line (Oblique Angled)
LN2S-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products



Provides a light of high-directivity



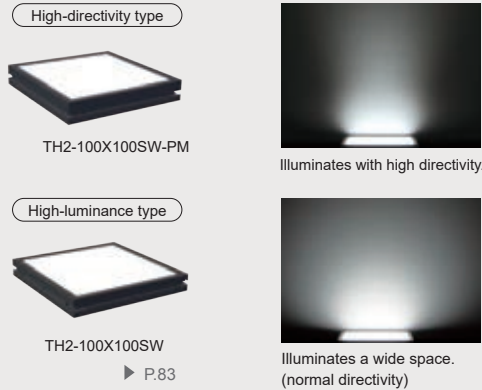
Applications

Inspection of the appearance of screws; dimension measurement of automobile components, end mills, and other objects; inspection of the appearance of pillar-shaped objects; etc.

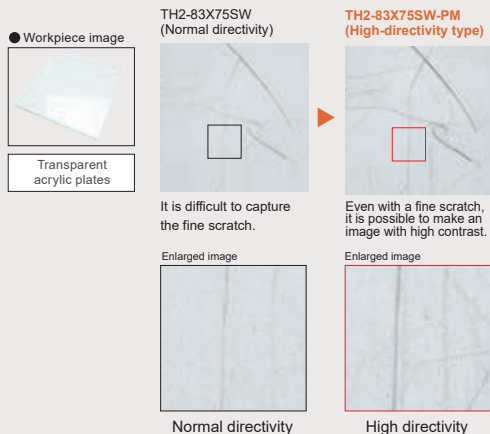
Achieved High Directivity of Light

High-power flat lights with enhanced light directivity. Suitable for inspections that require contour extraction of workpieces such as dimensional measurement.

Comparison of light directivity



Comparison of images



Abundant Emitting Surface Sizes

Available in a wide variety of sizes. The size can be selected according to the workpiece.

Emitting surface size (mm)



27x27, 43x35, 51x51, 63x60, 83x75, 100x100, 140x105, and 160x120

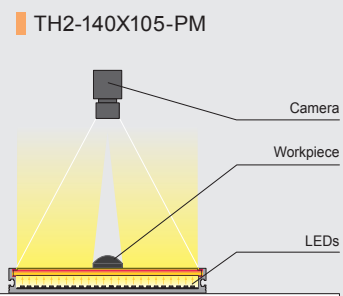
LED colors

The product lineup includes white, red, and blue light units, which can deal with a wide variety of inspection contents.

The rich lineup consists of 24 models, with 8 sizes in each color.

Example Configuration

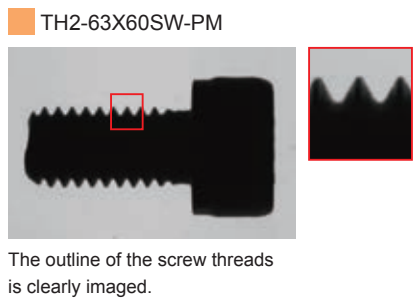
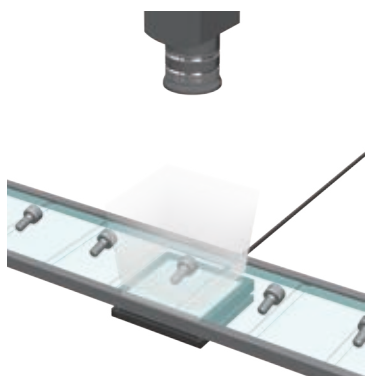
These high-output Flat light units are equipped with improved light directivity. Suitable for inspections that require contour extraction of workpieces such as dimensional measurement.



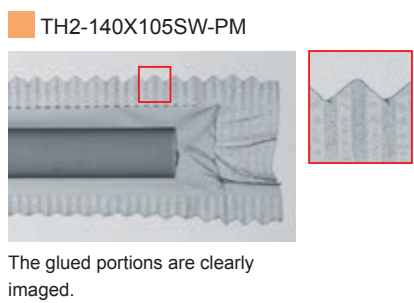
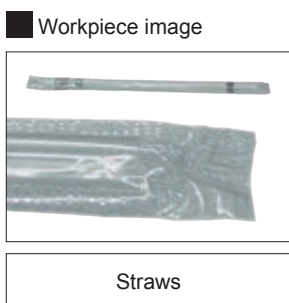
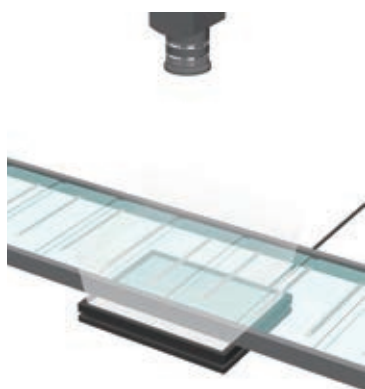
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Strobe	MSU MFU
Water-proof	PF
UV / Violet	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNSIS2 LNSIS LNSIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



➤ Imaging Example: Imaging the Appearance of Screws



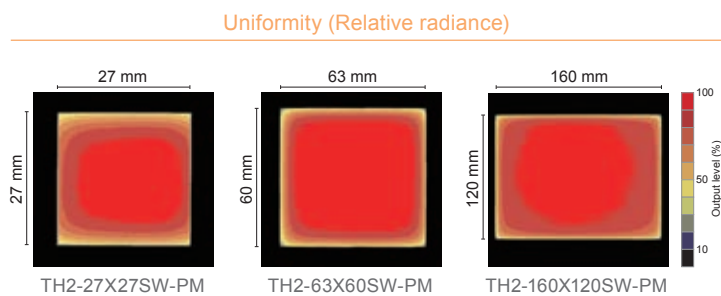
➤ Imaging Example: Imaging the Appearance of Transparent Straw Bags



➤ Imaging Example: Imaging the Appearance of Acrylic Plates



➤ Data: Uniformity (Representative Example) The data included is for reference only. Actual values may vary.



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDL3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDL-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNFP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# TH2-PM Series

High-Directivity Type



Refer to our website for product details.

CCS TH2

Search



## Lineup

Model Name*1	Input Voltage	Power Consumption			Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)				
TH2-27X27□□-PM	24 V	2.5 W	3.1 W	3.1 W	Bracket	FCB*3 Straight Cable	PD4 PD3 CC-ST-1024 POD*2	40 g
TH2-43X35□□-PM	24 V	5.7 W	5.5 W	5.5 W		FCB-W*4 2-Branch Cable		60 g
TH2-51X51□□-PM	24 V	7.3 W	9.9 W	9.9 W		FCB-F 4-Branch Cable		80 g
TH2-63X60□□-PM	24 V	9.9 W	9.7 W	9.7 W		FRCB Robot Cable	120 g	
TH2-83X75□□-PM	24 V	15 W	16 W	16 W		*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.	170 g	
TH2-100X100□□-PM	24 V	26 W	25 W	25 W			PD4 PD3	240 g
TH2-140X105□□-PM	24 V	28 W	28 W	28 W			POD*2	320 g
TH2-160X120□□-PM	24 V	34 W	35 W	35 W				390 g

Extension Cables ▶ P.383

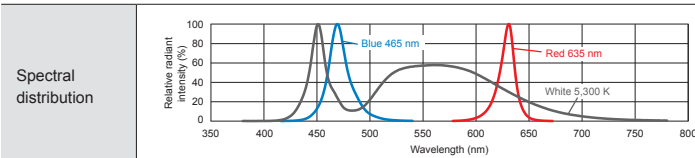
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

## LED Properties



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Options



This is a dedicated bracket for affixing the TH2 Series light units. The TH2 Series can be affixed in four points.

### Bracket

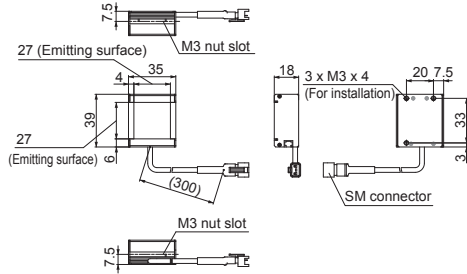
Model name	Applicable Light Unit (Common for all colors)
BK-TH-LE12	Installation bracket common to all TH2 models (includes 4)

▶ P.381

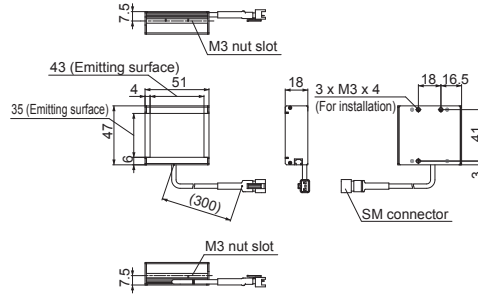
## Dimensions (mm)

Even for the light units of the same emitting surface size, the thickness and other dimensions of the product differ between the high-luminance and high-directivity type light units. Be sure to check the dimension diagrams before installing the light units.

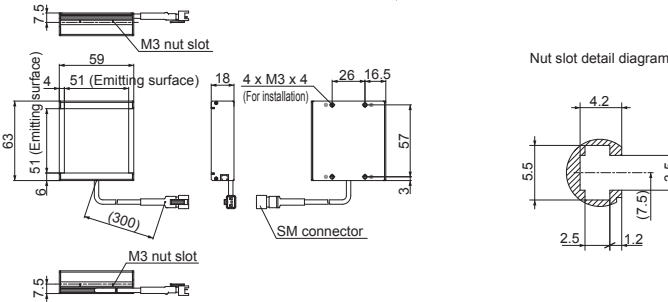
TH2-27X27RD-PM / SW-PM / BL-PM



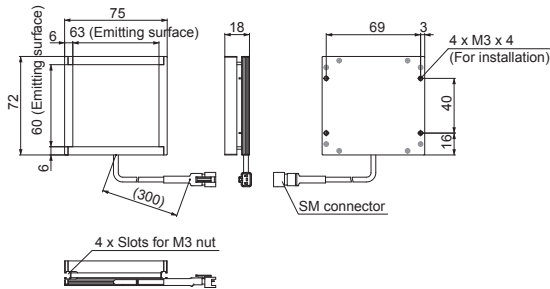
TH2-43X35RD-PM / SW-PM / BL-PM



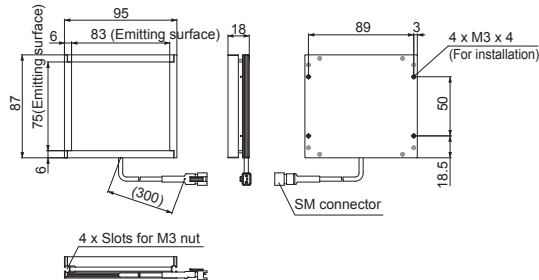
TH2-51X51RD-PM / SW-PM / BL-PM



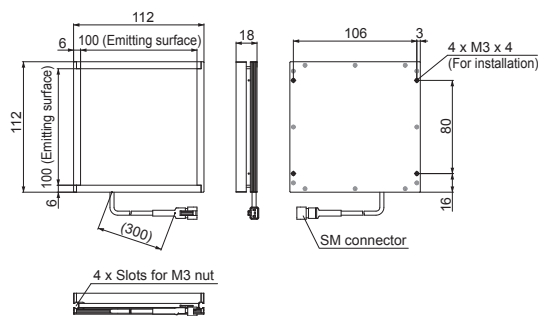
TH2-63X60RD-PM / SW-PM / BL-PM



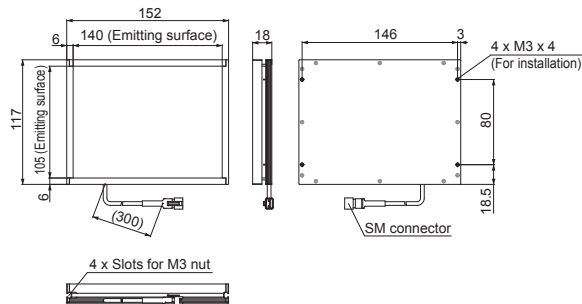
TH2-83X75RD-PM / SW-PM / BL-PM



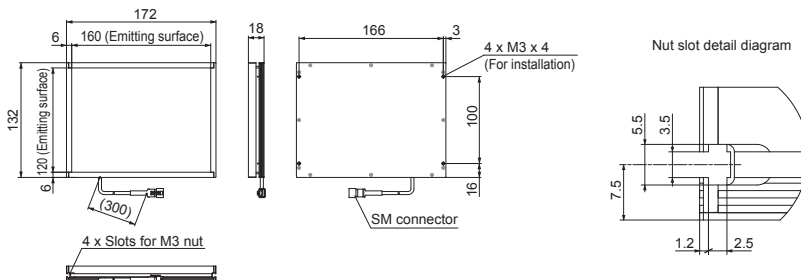
TH2-100X100RD-PM / SW-PM / BL-PM



TH2-140X105RD-PM / SW-PM / BL-PM



TH2-160X120RD-PM / SW-PM / BL-PM



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2	Infrared (Under 1000-nm Type)
IR	Infrared (Over 1000-nm Type)
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

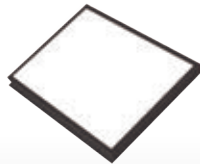
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

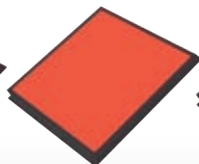
Inquire on our website here. <https://www.ccs-grp.com/contact/>



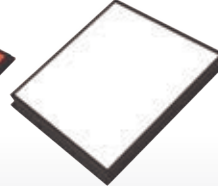
## Flat light suitable for large workpieces



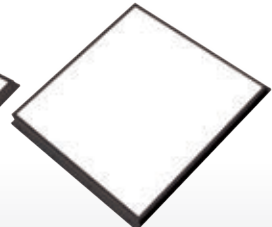
TH2-380X250SW



TH2-300X300RD



TH2-400X400SW



TH2-500X500SW

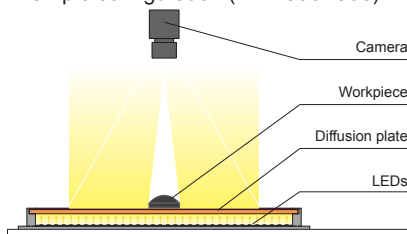
### Applications

Inspection of liquid surface level in large bottles and infusion bags, inspection of the appearance of wafers and automobile components, light source embedded in conveyors, etc.

### Features

Flat light units with an emitting surface of up to 500 x 500 mm.  
Supports large workpieces. Secures a large inspection area.

#### Example configuration (TH2-300X300)



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.



#### Imaging example: Imaging the liquid surface level in large bottles



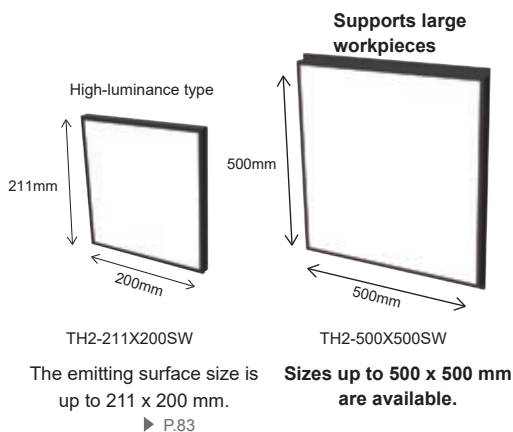
Height: 400 mm  
Capacity: 1.8 L

#### TH2-500X500SW

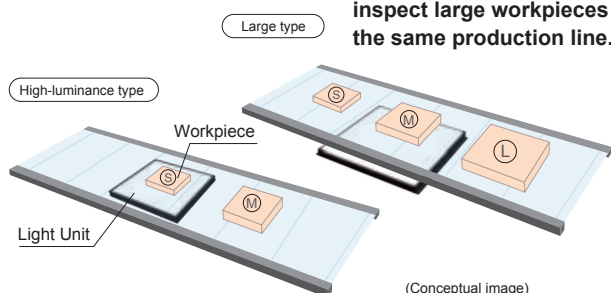


The liquid surface level and the label position are clearly imaged.

### Comparison of Emitting Surface Sizes



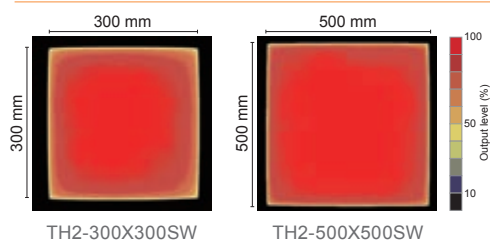
#### Comparison of the maximum workpiece size in a production line



The large type lets you expand the inspection region so that you can inspect large workpieces in the same production line.

## Data (Representative Example)

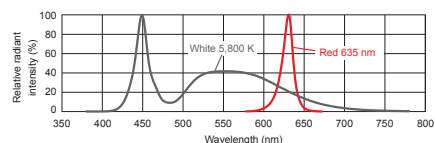
### Uniformity (Relative radiance)



The data included is for reference only. Actual values may vary.

## LED Properties

### Spectral distribution



White 5,800 K  
Red 635 nm

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.

The data included is for reference only. Actual values may vary.

## Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight
TH2-300X300RD	Red	24 V / 85 W	635 nm	-	FCB-EL2 Straight Cable	PD4-12024	2,700 g
TH2-300X300SW	White	24 V / 86 W	5,800 K			PD3-10024-8	
TH2-380X250RD	Red	24 V / 90 W	635 nm			POD-22024-4-PEI*1	2,900 g
TH2-380X250SW	White	24 V / 93 W	5,800 K			PSB4	
TH2-400X400RD	Red	24 V / 130 W	635 nm		FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4	5,400 g
TH2-400X400SW	White	24 V / 153 W	5,800 K				
TH2-500X500RD	Red	24 V / 202 W	635 nm				
TH2-500X500SW	White	24 V / 239 W	5,800 K				7,800 g

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

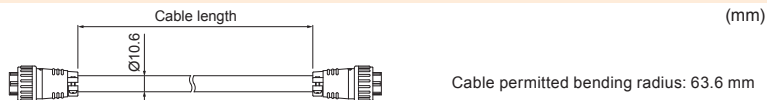
\*1 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

## Extension Cables (Metal Connectors)

It is required when connecting the light and recommended control unit PSB4 Series.

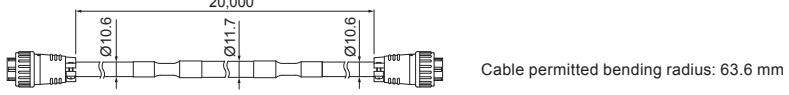
### FCB-1.25SQ-ME7

Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g



### FCB-20-2.0SQ-ME7

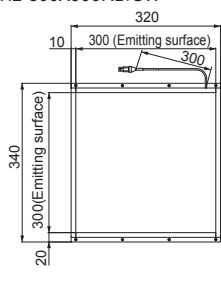
Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



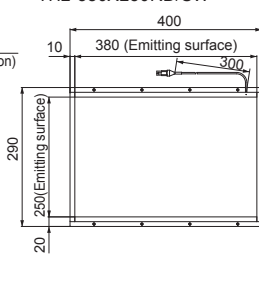
The above cable permitted bending radii are reference values. Actual values may vary.

## Dimensions (mm)

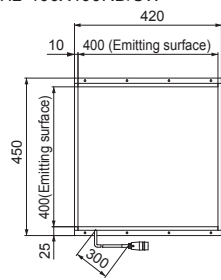
### TH2-300X300RD/SW



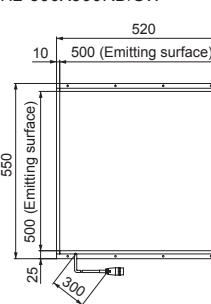
### TH2-380X250RD/SW



### TH2-400X400RD/SW



### TH2-500X500RD/SW



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

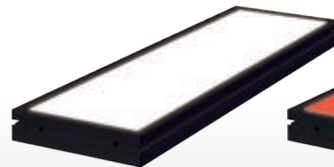
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

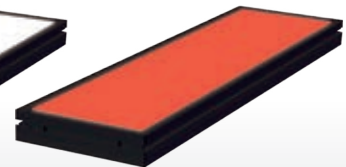
Inquire on our website here. <https://www.ccs-grp.com/contact/>



Flat light units with a 300 x 75 mm emitting surface.  
Applicable to inspection of rectangular workpieces and imaging with a line sensor camera.



TH2-300X75SW



TH2-300X75RD

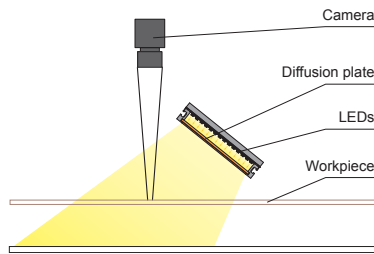
Applications

Inspection of the appearance of cylindrical containers or square-shaped workpieces, inspection for stains and foreign material on non woven fabrics, fault inspection of films, inspection of the appearance of glass, etc.

Features

Flat light suitable for rectangular workpieces.  
Also applicable to inspections with a line sensor camera.

Example configuration (TH2-300X75)



Imaging example: Imaging the appearance of a cylindrical container

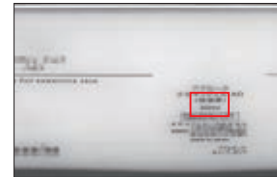


Workpiece: Cylindrical container (cosmetics)



Inspection with a line sensor camera

TH2-300X75SW

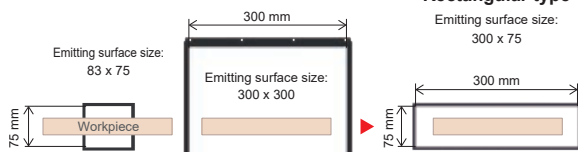


The state of the surface can be imaged. Also the printed text is clearly recognized.

Comparison of Emitting Surface Sizes

Supports rectangular workpieces

(For use with area sensor cameras)

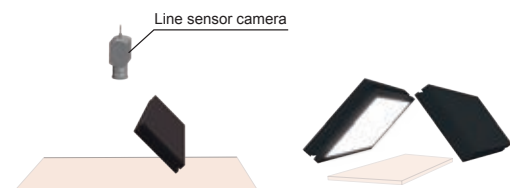


The length is too short to be applied to the workpiece.

The length is suitable, but there are large unused areas.

We will provide the ideal size for the workpiece to help you save space.

Also applicable to inspection with a line sensor camera



Sheet-shaped workpieces which are easy to flap

Reproducing the effect of Dome Lights

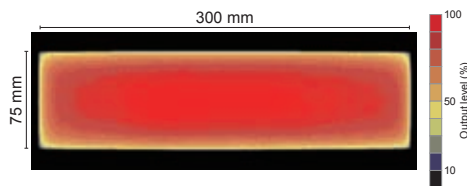
Can be used for a wide range of applications.

## Data (Representative Example)

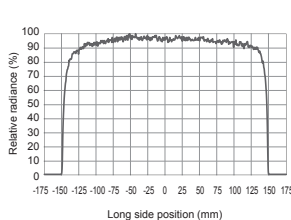
The data included is for reference only. Actual values may vary.

### TH2-300X75SW

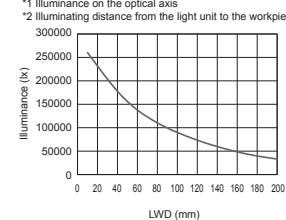
#### Uniformity (Relative radiance)



#### Relative radiance distribution

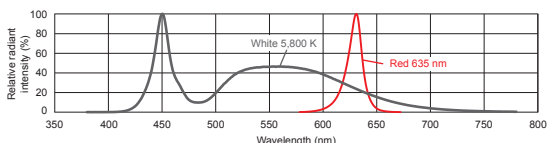


#### Illuminance graph (LWD characteristics)

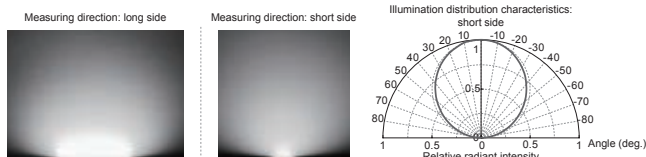


\*1 Illuminance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece

#### Spectral distribution



#### Characteristic of the illumination distribution



Lens filters suitable for each wavelength are available.

For details about the lens filter, refer to P.371.

## Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight
TH2-300X75RD	Red	24 V / 54 W	635 nm	-	FCB-EL2 Straight Cable  FCB-W-EL2 2-branch Cable	PD4*1  PD3-10024-8  POD-22024-4-PEI*2  PSB4	650 g
TH2-300X75SW	White	24 V / 68 W	5,800 K				

\*1 PD4-6024 is not available in white color.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

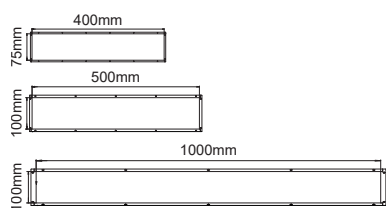
List of Control Unit Specifications ▶ P.311

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

## Custom Order Example

Outer Diameter Size Change

Manufactured with a light size that matches the workpiece



Production results (example)

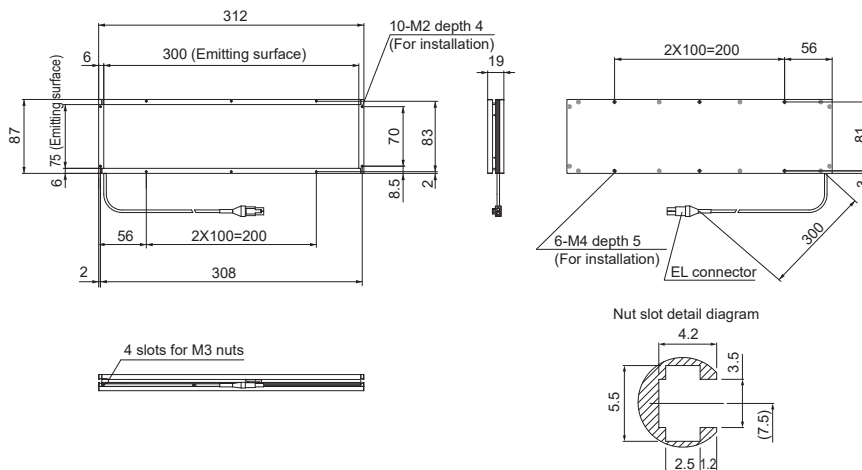
- TH2-400X75
- TH2-500X100
- TH2-1000X100  -ME
- TH2-1760X60  -ME
- TH2-2000X100  -ME

- Wavelength / Color Temperature Change
- High Output
- Cable Length Change
- Format / Material Change
- Connector format change
- Installation / mounting change

etc.  
Contact us for any inquiries.

## Dimensions (mm)

TH2-300X75RD/SW



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

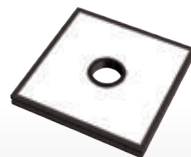
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing / Quotation
- Discontinued Products

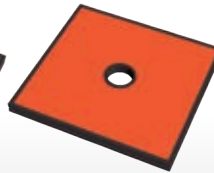
Inquire on our website here. <https://www.ccs-grp.com/contact/>



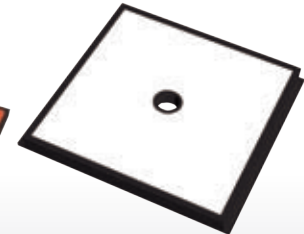
Provide a light from the same axis as the camera



TH2-150X150SW-CR35



TH2-211X200RD-CR35



TH2-300X300SW-CR35

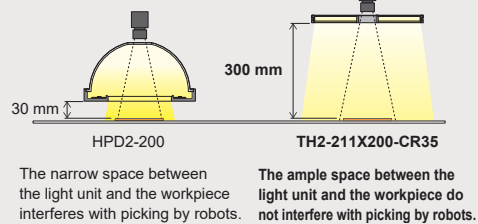
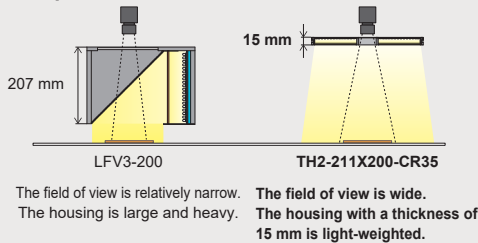
**Applications**

Inspection of FIPG sealing material on metal components, inspection for stains and foreign materials in disposable diapers, reading engraved text on piston ring, robot picking, etc.

**➤ Illumination from the Same Axis as the Camera**

Flat lights with a camera window at the center of the emitting surface. They do not serve as a back light but provide a light from the same axis as the camera in the way the dome lights and coaxial lights do.

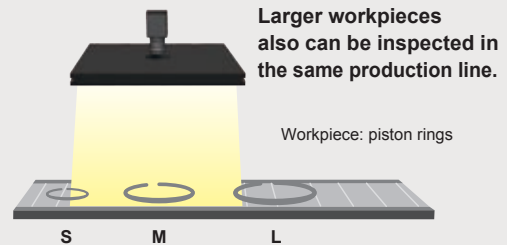
**Comparison of structures**



**➤ Uniform Illumination of a Wide Range**

These light units have a wider emitting surface compared to that of the coaxial lights and dome lights. This enables uniform illumination of a wide range.

**Applicable to a wide range of workpiece sizes**



**Product lineup**

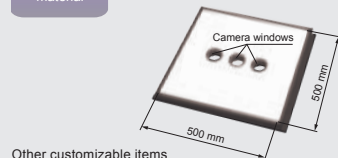
The available LED color is white or red.  
Three sizes of emitting surface: 150 x 150 mm, 211 x 200 mm, and 300 x 300 mm.  
These light units can deal with a wide variety of inspection contents.

**➤ Custom Order Example**

Please contact your CCS sales representative.

E.g.: Large size of 500 x 500 mm

Creating a large size light unit



**Customizable items**

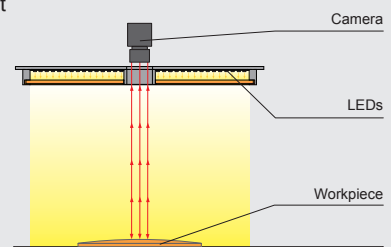
- External/Internal diameter
- Wavelength/Color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Other customizable items  
• Changes in the shape of the camera window  
• Changes in the LED color (blue, infrared, or other color)

**➤ Example Configuration**

Flat Lights with a camera window at the center of the emitting surface. They provide a light from the same axis as the camera.

**TH2-300X300-CR35**





➤ Imaging Example: Imaging FIPG Sealing Material on Metal Components



FIPG sealing material on metal components

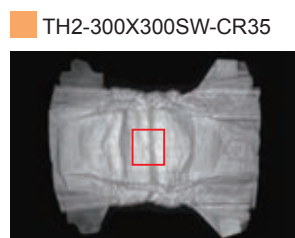


The state of FIPG sealing material can be imaged.  
The above sample workpiece has been made specifically for sample imaging and is not the one for actual inspection.

➤ Imaging Example: Imaging Stains and Foreign Materials in Disposable Diapers



Disposable diapers



The foreign material on the surface is imaged.  
The above sample workpiece has been made specifically for sample imaging.

➤ Imaging Example: Imaging Engraved Text on Textured Metal Surfaces

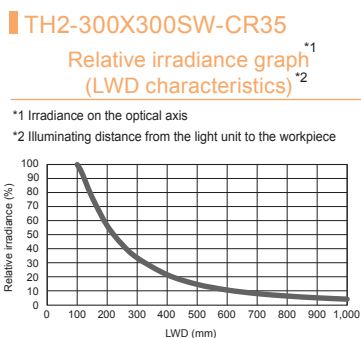


Textured metal

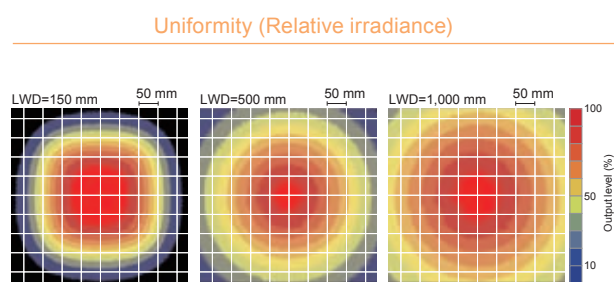


The engraved text is clearly imaged.

➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)



The data included is for reference only. Actual values may vary.



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique/Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# TH2-CR Series

## Camera-Window Type



Refer to our website for product details.

CCS TH2

Search



### Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight
TH2-150X150RD-CR35	Red	24 V / 30 W	635 nm	Bracket	FCB*2 Straight Cable  FCB-W*3 2-branch Cable  FCB-F 4-branch Cable  FRCB Robot Cable	PD4    PD3  POD*1	350 g
TH2-150X150SW-CR35	White	24 V / 30 W	5,800 K				
TH2-211X200RD-CR35	Red	24 V / 63 W	635 nm	-	FCB-EL2 Straight Cable  FCB-W-EL2 2-branch Cable	PD4-12024  PD3-10024-8  POD-22024-4-PEI*1  PSB4	550 g
TH2-211X200SW-CR35	White	24 V / 62 W	5,800 K				
TH2-300X300RD-CR35	Red	24 V / 83 W	635 nm				
TH2-300X300SW-CR35	White	24 V / 84 W	5,800 K				

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

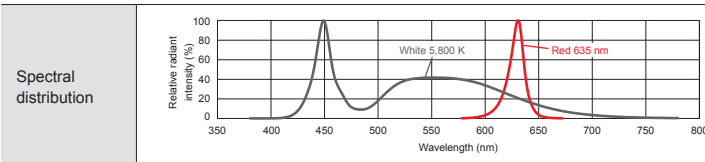
\*1 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

\*3 The cables with a model name that ends with "-EL2" are not included.

Light units with a 500 x 500 mm emitting surface are available for custom orders.  
We also accept custom orders for the size of the camera window, LED color (blue, infrared, or other color), etc.  
Please feel free to contact your CCS sales representative for details.

### LED Properties



Lens filters suitable for each wavelength are available.  
For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.  
The data included is for reference only. Actual values may vary.

### Options



This is a dedicated bracket for affixing the TH2 Series light units. The TH2 Series light units can be affixed in four points.

#### Bracket

Model name	Applicable Light Unit (Common for all colors)
BK-TH-LE12	Installation bracket common to all TH2 models (includes 4)

▶ P.381

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

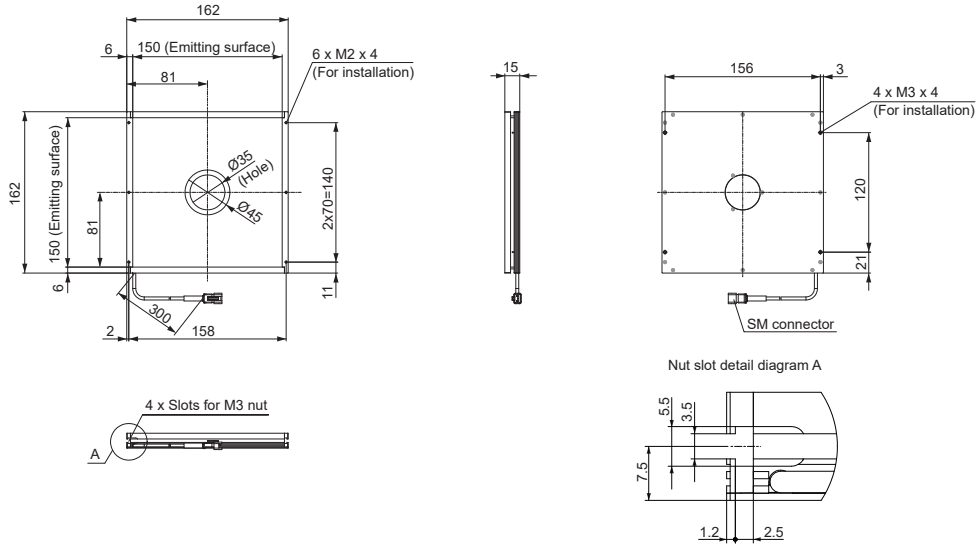
Imaging Examples

Digital Catalogs

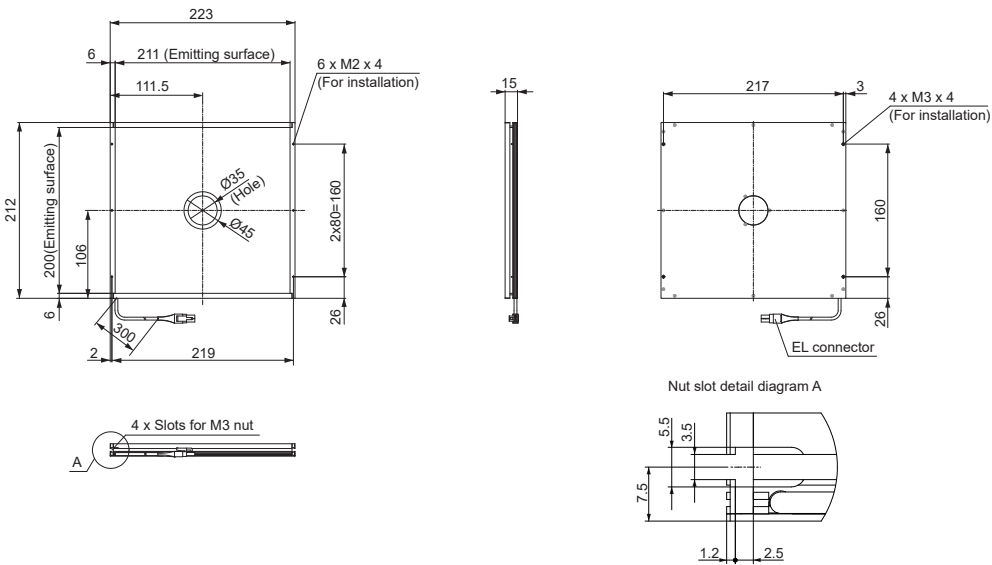
Register to use them.

➤ **Dimensions (mm)**

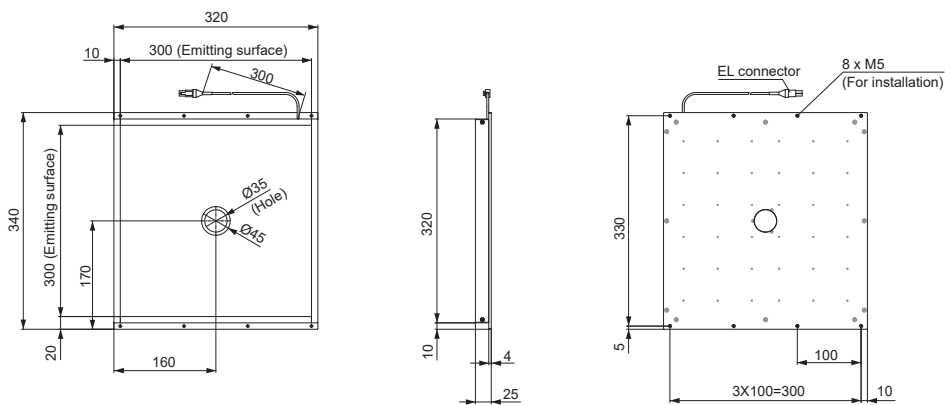
TH2-150X150RD-CR35 / SW-CR35



TH2-211X200RD-CR35 / SW-CR35



TH2-300X300RD-CR35 / SW-CR35



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

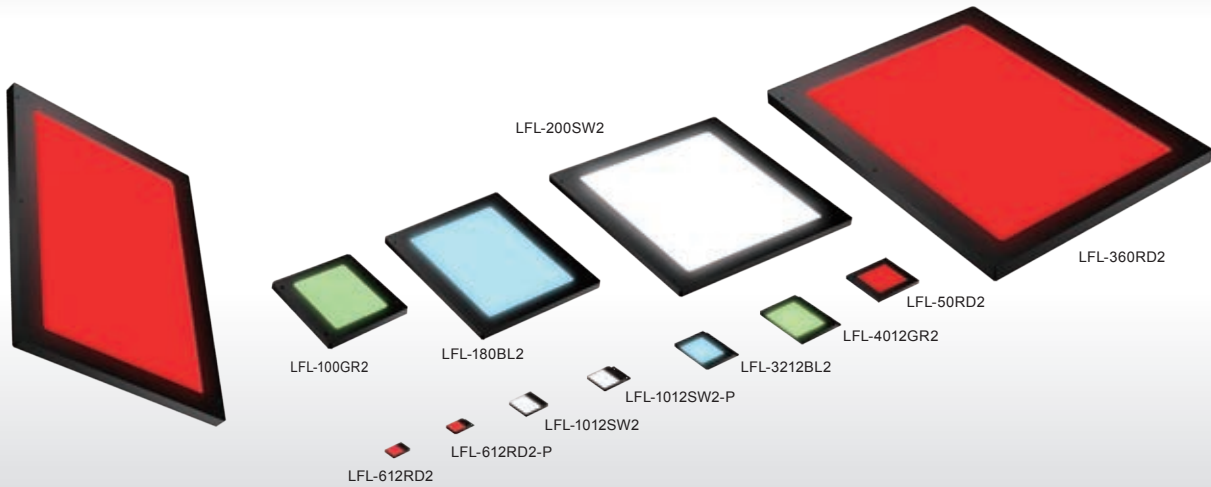
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	LDR2-LA	LDR-LA1	SQR	SQR-TP	Ring (Direct)
HLDR3	HPR2	LFR	LKR	FPR	Ring (Convergent/Diffused)
FPQ3					Square
LDL2	LDLB	HLDL3	LB		Bar
TH2 (5 types)					Flat
LFL					
HPD2	LDM2	LAV	PDM	LFXV	Dome
LFX3	LFX3-PT				
LFX3	LFX3-G				Coaxial
MSU	MFU				Coaxial
PF					Strobe
HLDR-IP	HSL-PCL	UV3/VL3	UV	LNSP-UV3-FN	Water-proof Violet
IR2 (Under 1000-nm Type)	IR (Over 1000-nm Type)	CIR			Infrared
LDF-RLS					Reference Light Source Intensity Control
IU					
HLV3	HFS/HFR	HLV3-22-4-NR	HLV3-3M-RGB-4	PFBR-600SW2	Spot, Etc.
PFBR-150	SLG-150V-CCS	PFB3(A)			
LNL	LNSP2	Coaxial Units	LNSP-FN	LN/LN-HK	Line (Convergent)
LNSD	LND2	LT	LNV	LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)					
LNDG	LNIS2	LNIS	LNIS-FN		Line (Oblique Angled)
Telecentric Lens	Macro Lens				Lenses
LDF-NB					Other Products



## Diffused illumination from a flat emitting surface



### Applications

Dimension measuring, visual inspection, foreign material inspections, liquid level inspection, burr inspection of metal parts, inspection for tears or stains on packaging, etc.

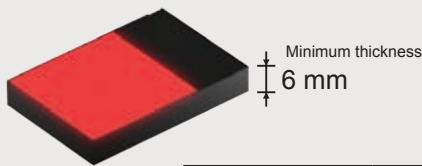
### Rich Lineup with 43 Models

#### Rich lineup

The lineup consists of 35 models, with 9 sizes of emitting surfaces from 25 x 25 mm to 360 x 250 mm in each color. The rich lineup has a total of 43 models, including the LFL-612-P and LFL-1012-P, which add a plate for installation to the housing.

#### Energy-saving type that is light-weight and thin

The light unit's thin design, with a minimum thickness of 6 mm, allows for space-saving installation.

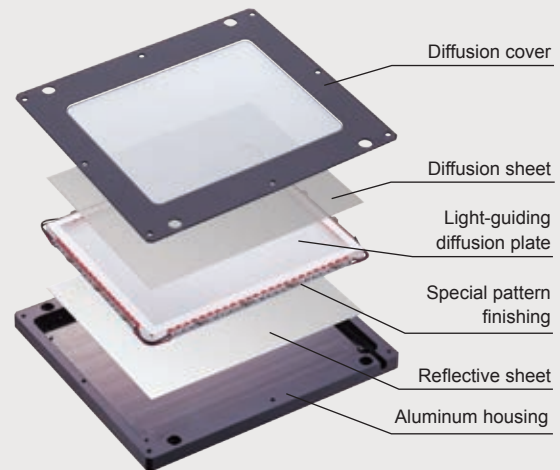


Model Name	LFL-612RD2
Power Consumption	24 V / 0.6 W
Weight	25 g

### Uses a Unique Method of Light Guidance

LEDs are placed around the light-guiding diffusion plate. The special pattern finishing achieves illumination with even greater diffusion.

#### Cross-section image of the LFL-100



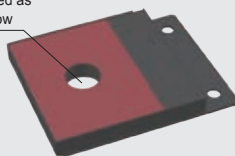
### Custom Order Example

Please contact your CCS sales representative.

E.g.: Different shape

Allows you to create a light unit with a hole in it and pass things through the center

Can also be used as a camera window



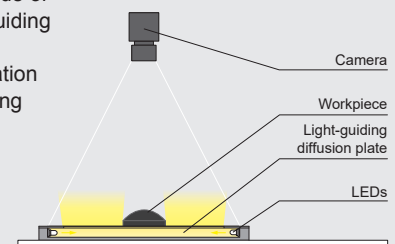
#### Customizable items

- External/internal diameter
- Wavelength/color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting
- Etc.

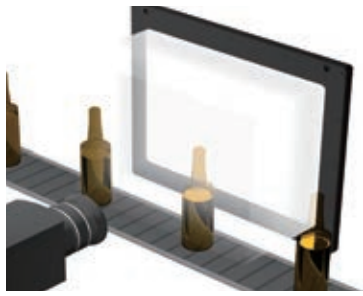
### Example Configuration

LEDs embedded around the outside of a square light-guiding diffusion plate. Diffused illumination from a flat emitting surface.

#### LFL-100



### Imaging Example: Imaging the Liquid Level in Glass Containers



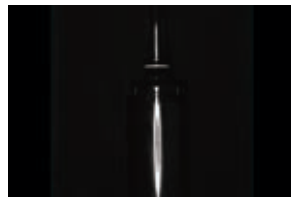
Description	Liquid volume inspection
Workpiece	Glass containers
Conventional lighting	LED Ring Light
New lighting	LFL-180SW2
Result	Emphasizes the level of the liquid

Workpiece image



Glass containers

LED Ring Light



It is difficult to form an image of the liquid level due to surface reflection.

LFL-180SW2



It is possible to form an image of the liquid level without surface reflection.

### Imaging Example: Imaging the Liquid Level in Plastic Containers



Description	Liquid volume inspection
Workpiece	Plastic containers
Conventional lighting	LED Ring Light
New lighting	LFL-180SW2
Result	Emphasizes the level of the liquid

Workpiece image



Plastic containers

LED Ring Light



It is difficult to form an image of the liquid level due to surface reflection.

LFL-180SW2



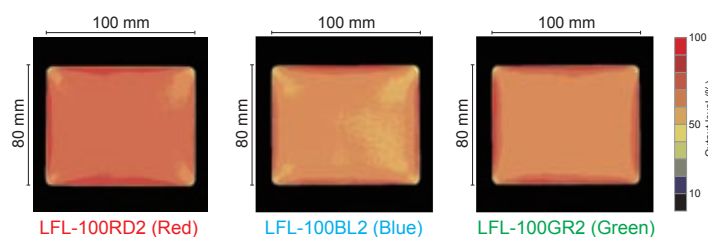
It is possible to form an image of the liquid level without surface reflection.

### Data: Uniformity (Representative Example)

LFL-100

The data included is for reference only. Actual values may vary.

Uniformity (Relative radiance)



LFL-100RD2 (Red)

LFL-100BL2 (Blue)

LFL-100GR2 (Green)

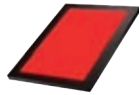
LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDL-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL3 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Other Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LFL Series



Refer to our website for product details.

CCS LFL

Search



## Lineup

"-P" at the end of the model name: Type with an affixing plate

Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units		Weight
		RD (Red)	SW (White)	BL (Blue)	GR (Green)					
LFL-612□□2*2	24 V	0.6 W	0.4 W	0.4 W	0.4 W			PD4	PD3*2	25 g *SW is 20 g
LFL-612□□2-P*2	24 V	0.6 W	0.4 W	0.4 W	0.4 W			CC-ST-1024	POD*3	25 g
LFL-1012□□2	24 V	0.6 W	0.8 W	0.8 W	0.8 W		FCB*4 Straight Cable			35 g *SW is 30 g
LFL-1012□□2-P	24 V	0.6 W	0.8 W	0.8 W	0.8 W	-	FCB-W*5 2-Branch Cable			35 g *SW is 30 g
LFL-3212□□2	24 V	1.6 W	2.3 W	2.3 W	2.3 W		FCB-F 4-Branch Cable	PD4	PD3	80 g
LFL-4012□□2	24 V	2.1 W	2.7 W	2.7 W	2.7 W		FCB-F 4-Branch Cable	CC-ST-1024	POD*3	105 g *SW is 110 g
LFL-50□□2	24 V	2.1 W	3.1 W	3.0 W	3.0 W		FRCB Robot Cable			50 g
LFL-100□□2	24 V	5.1 W	5.3 W	5.3 W	5.3 W					215 g *SW is 220 g
LFL-180□□2	24 V	7.1 W	9.1 W	9.1 W	9.1 W	Light control film				375 g *SW is 370 g
LFL-200□□2	24 V	12 W	12 W	12 W	12 W					500 g *BL, GR are 495 g
LFL-360□□2	24 V	30 W	37 W	38 W	-			PD4	PD3	2,320 g *RD is 2,360 g

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

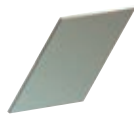
List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)

\*2 These red lights cannot be used with the PD3-5024-4-SI or PD3-5024-4-ET control unit.

\*3 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

## Options



In this plastic film are fine louvers with extremely narrow gaps between them. It reduces light diffusion in a particular direction and increases parallelism.

### Light control film

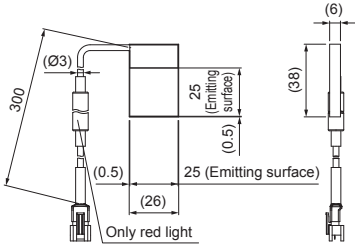
Model Name	Applicable Light Unit (Common for all colors)
LC-LFL-100	LFL-100
LC-LFL-180	LFL-180
LC-LFL-200	LFL-200

▶ P.379

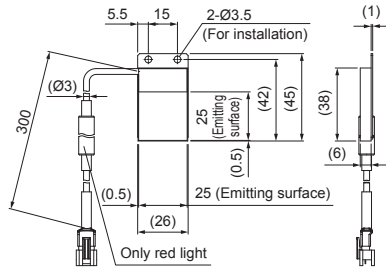
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent / Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat (5 types)	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

➤ **Dimensions (mm)**

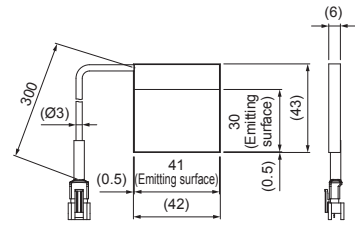
LFL-612RD2/SW2/BL2/GR2



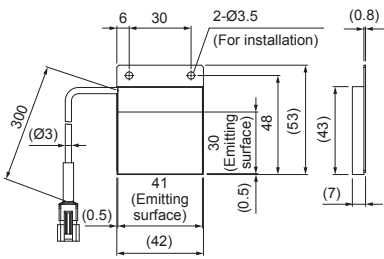
LFL-612RD2-P / SW2-P / BL2-P / GR2-P



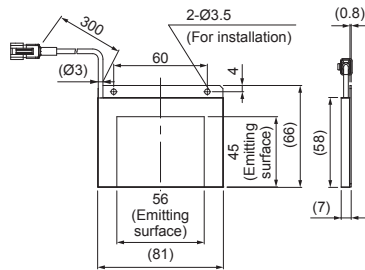
LFL-1012RD2/SW2/BL2/GR2



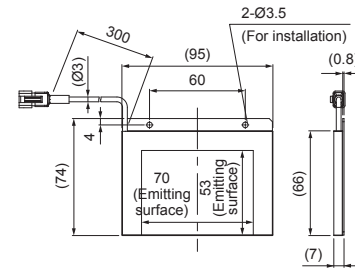
LFL-1012RD2-P / SW2-P / BL2-P / GR2-P



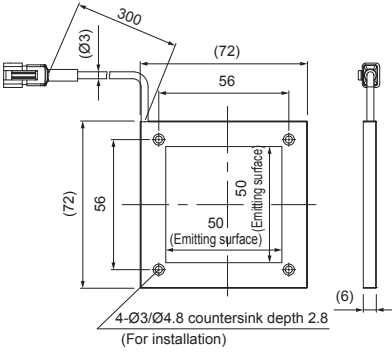
LFL-3212RD2/SW2/BL2/GR2



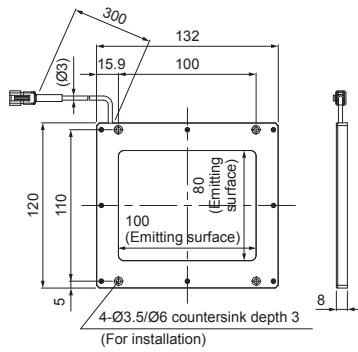
LFL-4012RD2/SW2/BL2/GR2



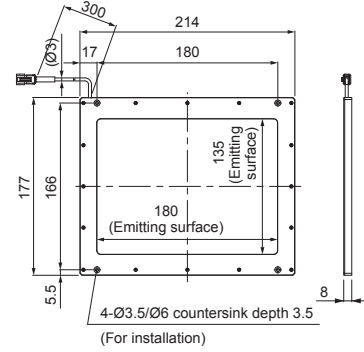
LFL-50RD2/SW2/BL2/GR2



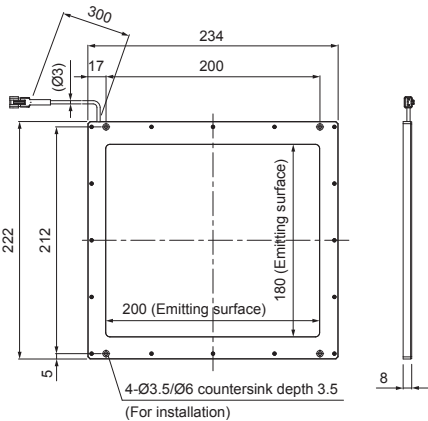
LFL-100RD2/SW2/BL2/GR2



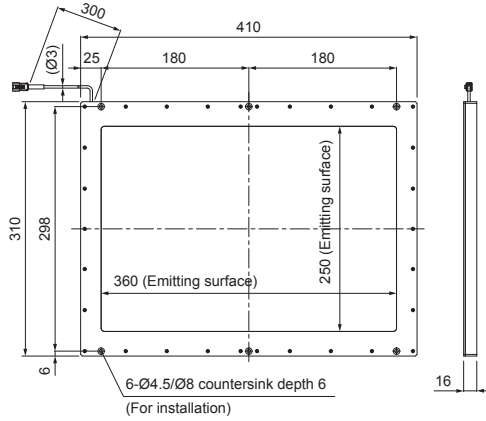
LFL-180RD2/SW2/BL2/GR2



LFL-200RD2/SW2/BL2/GR2



LFL-360RD2/SW2/BL2



LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNFP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides diffused light evenly through the dome-shaped reflective panel



**Applications**

Visual, text, or color determination inspections on glossy surfaces, curved surfaces, or uneven surfaces; inspection for engraving, damage, or stains on stain finishing; visual inspection of metal with hairline finishing; inspection of parts on circuit boards; etc.

**Applicable to a Wide Variety of Industries**

It is bright and even if the distance from the workpiece to the light unit is changed, there is little change in the uniform region. Therefore, it can be used in a wide range of industries.

**Semiconductor industry** (Circuit board)



HPD2-100SW (White)

**Electronic parts industry** (Capacitor)



HPD2-150SW (White)

**Food industry** (Chocolate)



HPD2-250SW (White)

**Packaging industry** (Top of a drink container)



HPD2-150SW (White)

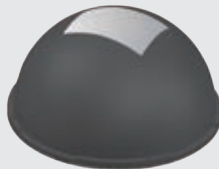
**Custom Order Example**

Please contact your CCS sales representative.

E.g.: Different shape

Format/material

Changed the camera aperture to a rectangle



**Customizable items**

External/internal diameter

Wavelength/color

Increase output

Cable length

Illuminating angle

Format/material

Connector format

Installation/mounting

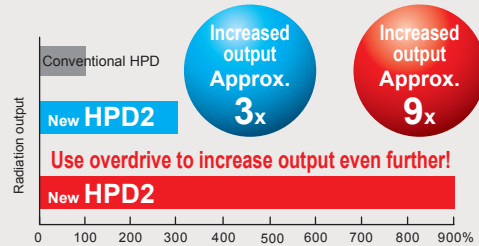
Etc.

**Diffused Light at High Output**

Light from the surface-mounted LEDs is diffused inside the dome-shaped reflective panel. This uniformly illuminates a wide range of region.

**Achieved higher output than the conventional product**

**Output comparison with the conventional product**



- This is a comparison between the HPD-100 and HPD2-100 light units, using red and white colors.
- It can be combined with a Strobe control unit for even brighter emission than continuous emission.
- \*Cannot use a full color (RGB) type.
- The data included is for reference only. Actual values may vary.

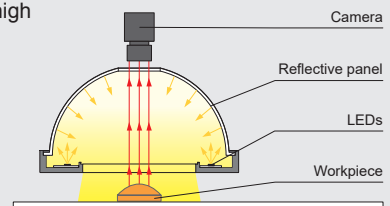
**Added two sizes and an infrared and full color (RGB) type**

We added the HPD2-75 and HPD2-200 models. Also, we added infrared (860 nm) and full color (RGB) types to the lineup as variation for wavelengths, increasing the applications of our products.

**Example Configuration**

Uses a unique illuminating mechanism and emits diffused light at high output.

**HPD2-150**

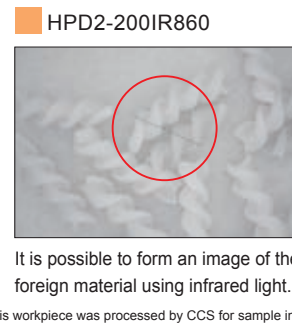
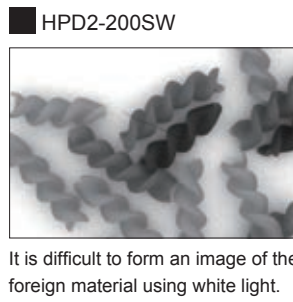
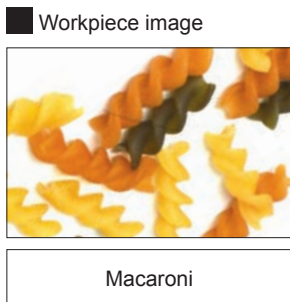




➤ Imaging Example: Imaging Foreign Materials Mixed in Food



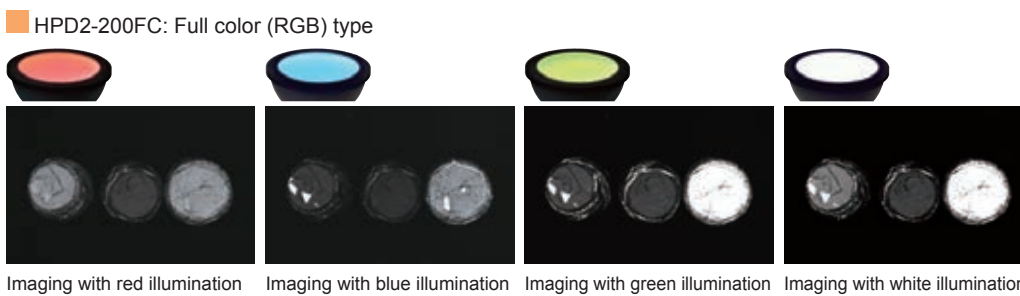
Description	Foreign material inspection
Workpiece	Macaroni
Conventional lighting	HPD2-200SW
New lighting	HPD2-200IR860: Infrared type
Result	Emphasizes the foreign material



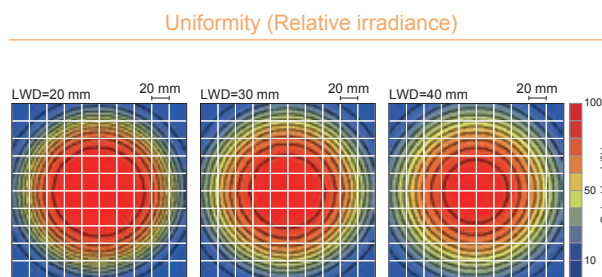
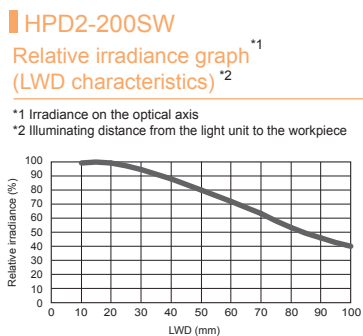
➤ Imaging Example: Imaging the Appearance of Multi-Colored Workpieces for Color Determination



Description	Visual inspection
Workpiece	Chocolate
Conventional lighting	-
New lighting	HPD2-200FC: Full color (RGB) type
Result	Allows for multi-color determination



➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)



The data included is for reference only. Actual values may vary.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS PFB3(A)	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Other Lenses
LDF-NB	Other Products

# HPD2 Series



Refer to our website for product details.

CCS HPD2

Search



## Lineup

Model Name*1	Input Voltage	Power Consumption					Options	Extension Cables	Recommended Control Units*2	Weight
		RD (Red)	SW (White)	BL (Blue)	IR860 (Infrared)	FC (Red/Green/Blue)				
HPD2-75□□	24 V	17 W	16 W	16 W	12 W	6.0 W*2	Bracket	FCB*5 Straight Cable  FCB-W*6 2-Branch Cable  FCB-F 4-Branch Cable  FRCB Robot Cable	PD4    PD3 POD*3	140 g
HPD2-100□□	24 V	17 W	23 W	23 W	23 W	11 W*2				160 g
HPD2-150□□	24 V	27 W	27 W	27 W	35 W	15 W*2				285 g
HPD2-200□□	24 V	34 W	41 W	41 W	46 W	19 W*2				460 g
HPD2-250□□	24 V	45 W	46 W	46 W	46 W	24 W*2				650 g
HPD2-400□□	24 V	45 W	46 W	46 W	46 W	30 W*2				1,300 g

\*5 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.  
\*6 The cables with a model name that ends with "-EL2" are not included.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

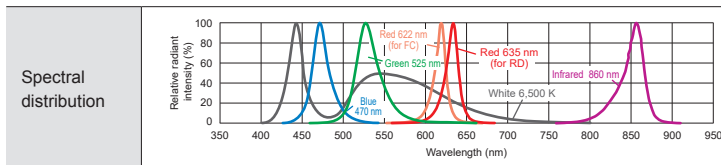
List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR860: Infrared, FC: Red/Green/Blue)

\*2 For the full color (RGB) type control unit, use the PD3 3-channel specification. Cannot be used with the strobe control unit (overdrive mode).

\*3 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

## LED Properties

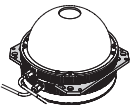


Lens filters suitable for each wavelength are available.

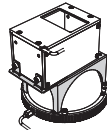
For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Options



Combine with a ring light to achieve imaging by light switching and simultaneous lighting.



Combine with a coaxial light to solve uneven illumination and achieve uniform illumination from all directions.



Achieves installation using installation holes with a larger gap than the light unit body installation holes, or installation on a vertical surface.

### Light joint bracket

Model Name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)		
BK-75-JO	HPD2-75	HPR2-75	LDR2-100-LA	LDR-96-LA1
BK-100-JO	HPD2-100	HPR2-100	LDR2-132-LA	LDR-146-LA1
BK-150-JO	HPD2-150	HPR2-150	LDR2-170-LA	LDR-176-LA1
BK-200-JO	HPD2-200	HPR2-200	LDR2-208-LA	LDR-206-LA1
BK-250-JO	HPD2-250	HPR2-250	-	-

▶ P.382

### Coaxial light joint bracket

Model Name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-HPD2-75-LFV	HPD2-75	LFV3-35
BK-HPD2-100-LFV	HPD2-100	LFV3-50
BK-HPD2-150-LFV	HPD2-150	
BK-HPD2-200-LFV	HPD2-200	LFV3-70
BK-HPD2-250-LFV	HPD2-250	

▶ P.382

### Expansion mounting bracket

Model Name	Applicable Light Unit (Common for all colors)
BK-75-CI	HPD2-75
BK-100-CI	HPD2-100
BK-150-CI	HPD2-150
BK-200-CI	HPD2-200
BK-250-CI	HPD2-250

▶ P.382

Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

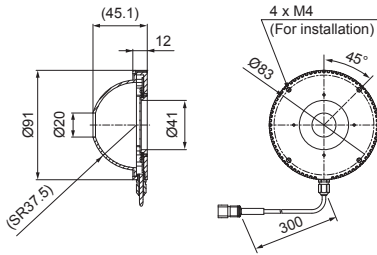
Digital Catalogs

Register to use them.

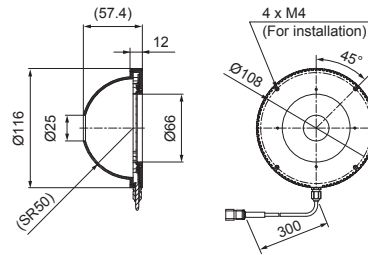
## Dimensions (mm)

M4 and M6 installation holes are tapped and perforated holes.

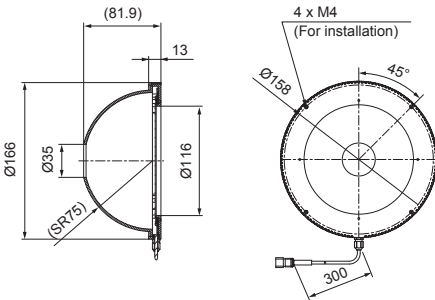
HPD2-75RD/SW/BL/FC/IR860



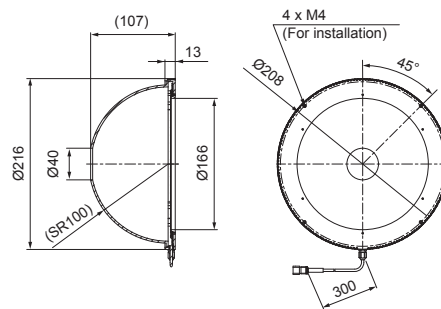
HPD2-100RD/SW/BL/FC/IR860



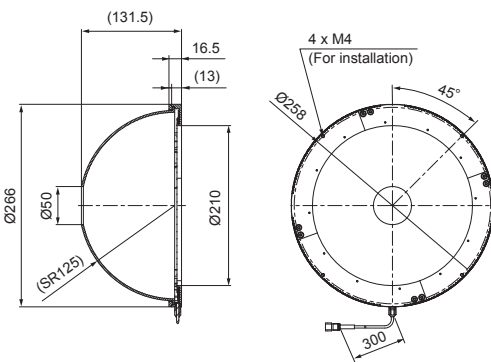
HPD2-150RD/SW/BL/FC/IR860



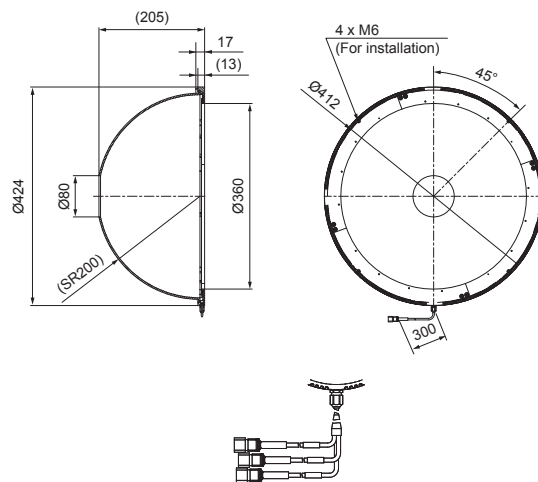
HPD2-200RD/SW/BL/FC/IR860



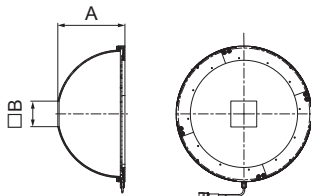
HPD2-250RD/SW/BL/FC/IR860



HPD2-400RD/SW/BL/FC/IR860



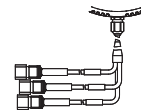
- The camera aperture can be changed to a square.
- Special order



Model	Dimension A	Dimension B
HPD2-75□-SQ20	45.1	20
HPD2-100□-SQ30	56.7	30
HPD2-150□-SQ40	81.3	40
HPD2-200□-SQ50	105.8	50
HPD2-250□-SQ60	130.3	60
HPD2-400□-SQ80	205	80

□ is a placeholder for letters that indicate the color of the emitted light. Dimensions are subject to change.

The full color type (HPD2-□□FC) has three connectors. Use a 3-channel control unit if controlling intensity separately for each color.



LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNFP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNVD	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products

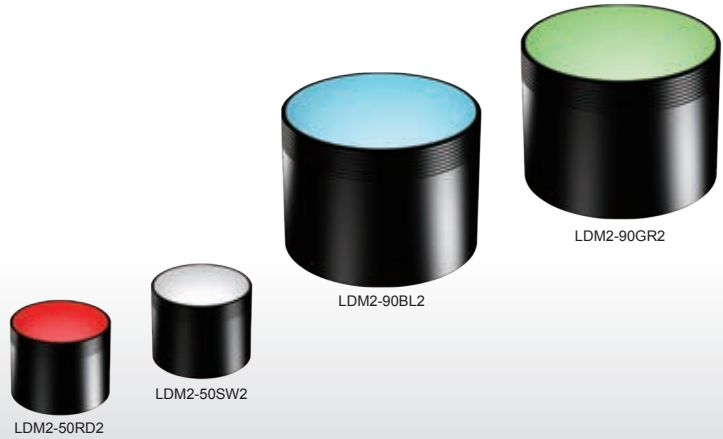
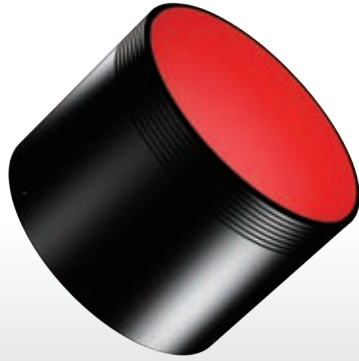
You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides diffused light from a cone-shaped emitting surface



LDM2-90GR2

LDM2-90BL2

LDM2-50SW2

LDM2-50RD2

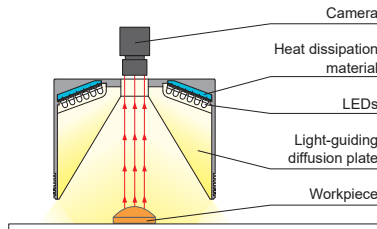
**Applications**

Inspection for the visual, text, or color determination on glossy surfaces, curved surfaces, or uneven surfaces; soldering inspection; surface inspection for metal parts; text inspection for can bottoms; character recognition for glossy workpieces; etc.

**Features**

Light emitted from the LEDs is transmitted through the light-guiding diffusion plate and the uniformly diffused light from a wide emitting surface surrounds the whole workpiece.

**Example configuration (LDM2-90)**



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

**Imaging example: Imaging text on aluminum bottle cans**



Workpiece: Aluminum bottle cans

**LED Bar Light**



It is difficult to form an image of the text due to the influence of uneven illumination.

**LDM2-90RD2**



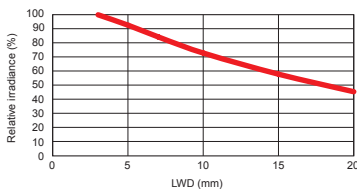
It is possible to illuminate the whole thing evenly to form an image of the text.

**Data: Relative Irradiance Graph and Uniformity (Representative Example)**

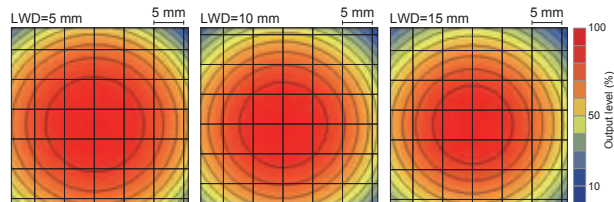
The data included is for reference only. Actual values may vary.

**LDM2-50RD2**  
Relative irradiance graph<sup>\*1</sup>  
(LWD characteristics)<sup>\*2</sup>

\*1 Irradiance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece



**Uniformity (Relative irradiance)**



## Lineup

Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	GR (Green)				
LDM2-50□□2	24 V	3.6 W	5.0 W	5.0 W	5.0 W	-	FCB*3 Straight Cable  FCB-W*4 2-Branch Cable  FCB-F 4-Branch Cable  FRCB Robot Cable	PD4    PD3 CC-ST-1024    POD*2	100 g
LDM2-90□□2	24 V	14 W	18 W	18 W	18 W	-	FCB-F 4-Branch Cable  FRCB Robot Cable	PD4    PD3 POD*2	500 g

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

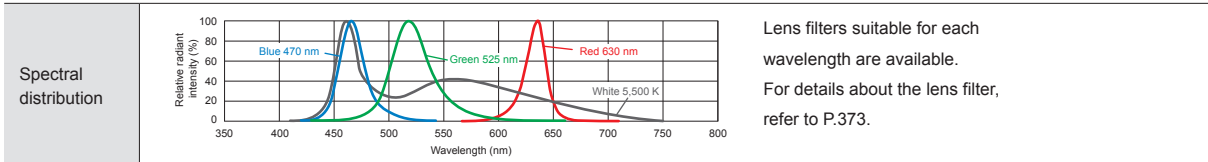
\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pond>

\*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

\*4 The cables with a model name that ends with "-EL2" are not included.

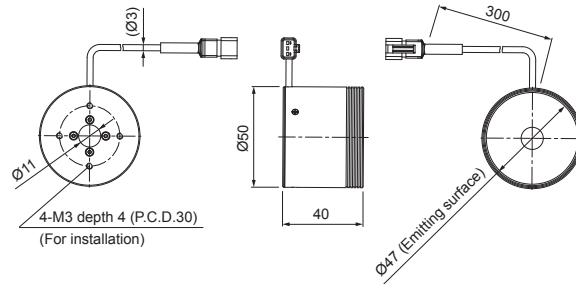
## LED Properties



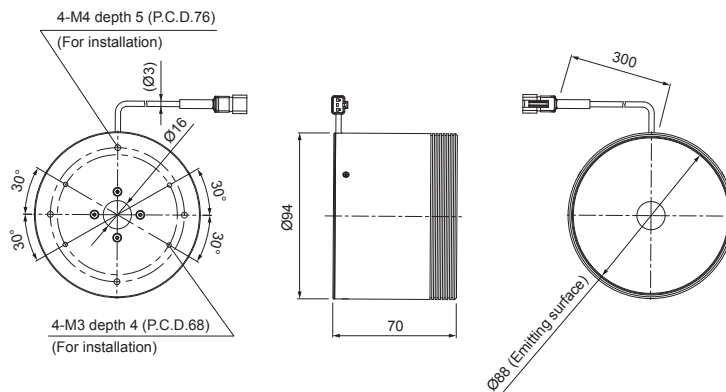
Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Dimensions (mm)

LDM2-50RD2/SW2/BL2/GR2



LDM2-90RD2/SW2/BL2/GR2



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

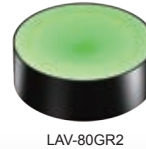
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Control Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFBR3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products



Provides diffused light evenly using a mechanism that combines a diffused lighting and a coaxial lighting



Applications

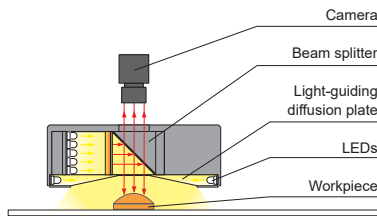
Faulty plating inspection, inspection of a sealed target, inspection for foreign material attached to a glossy surface, character recognition and text inspection of glossy surfaces, dimension measuring of electronic parts, etc.

Features

Combines diffused lighting and a coaxial lighting. Used for uniformly illuminating glossy, curved workpieces.

Example configuration (LAV-80)

Imaging example: Imaging the appearance of connector pins



Workpiece: Connector pins

LED Ring Light



It is difficult to illuminate the whole thing evenly to form an image of the exterior.

LAV-80RD2



It is possible to illuminate the whole thing evenly to form an image of the exterior.

Lineup

Classification	Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
			RD (Red)	SW (White)	BL (Blue)	GR (Green)				
Standard products	LAV-80□□2	24 V	3.6 W	5.0 W	5.0 W	5.0 W	-	FCB*3 Straight Cable, FCB-F 4-Branch Cable	PD4, PD3	190 g
Custom order products	LAV-93□□2-CR25	24 V	6.7 W	6.9 W	6.9 W	*5	-	FCB-W*4 2-Branch Cable, FRCB Robot Cable	POD*2	*5

Use a 2-channel control unit.

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)  
 \*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

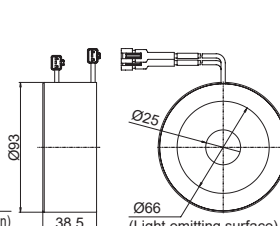
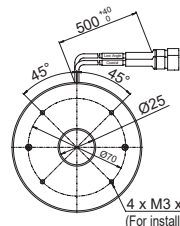
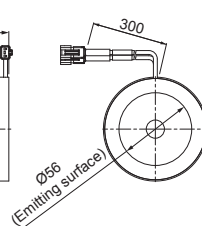
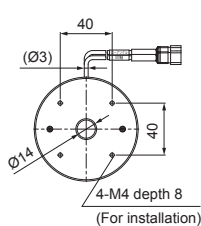
\*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

\*4 The cables with a model name that ends with "-EL2" are not included.  
 \*5 This product is custom-made. Contact our local sales office for details.

Dimensions (mm)

LAV-80RD2/SW2/BL2/GR2

LAV-93RD2/SW2/BL2/-CR25



It can be custom ordered. Feel free to contact us.  
 • Changing the shape  
 • Increased brightness  
 • Changing the wavelength, etc.

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

The emitting surface for the LAV-80SW2/BL2/GR2 is Ø54.

Illumination part	Power consumption
Coaxial illumination part	Red: 1.0 W White/Blue/Green: 1.6 W
Diffused illumination part	Red: 2.6 W White/Blue/Green: 3.4 W

Illumination part	Power consumption
Coaxial illumination part	Red: 3.6 W White/Blue: 2.7 W
Diffused illumination part	Red: 3.1 W White/Blue: 4.2 W

If adjusting the intensity for each part separately, use a 2-channel control unit.

Various technical documents available.

- PDF Drawings
- DXF Drawings
- Product Brochures
- Instruction Guides
- 3D CAD
- Data Sheets
- Imaging Examples
- Digital Catalogs

Register to use them.



Provides diffused light evenly using a mechanism that combines a diffused lighting, coaxial lighting, and low-angle lighting



**Applications**

Faulty plating inspection, inspection of a sealed target, inspection for foreign material attached to a glossy surface, character recognition and text inspection of glossy surfaces, dimension measuring of electronic parts, etc.

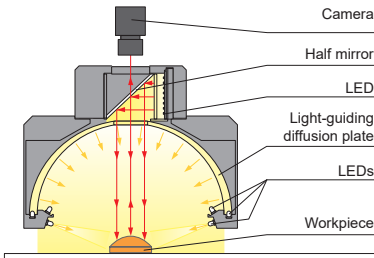
**Features**

This light unit combines the three types: dome lighting, low-angle lighting, and coaxial lighting. It illuminates the workpiece with uniform diffused light.

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

**Example configuration (PDM-150-15)**

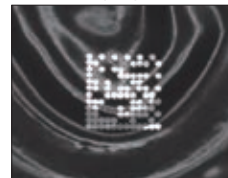


**Imaging example: Imaging 2-D codes**



Workpiece: Contact lens packages

**LED Ring Light**



It is difficult to determine the 2-D code due to the glossy and wavy surface.

**PDM-150-15RD2**



It is possible to determine the 2-D code by evenly illuminating the surface.

**Lineup**

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Unit	Weight
PDM-150-15RD2	Red	24 V / 18 W	630 nm	-	FCB*1 Straight Cable	FCB-F 4-branch Cable	1,140 g
PDM-150-15SW2	White		5,500 K				
PDM-150-15BL2	Blue	24 V / 22 W	470 nm		FCB-W*2 2-branch Cable	FRCB Robot Cable	1,170 g
PDM-150-15GR2	Green		525 nm				

Use a 3-channel control unit.

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

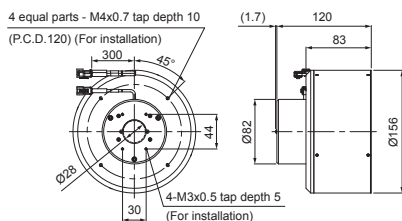
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.  
\*2 The cables with a model name that ends with "-EL2" are not included.

**Dimensions (mm)**

PDM-150-15RD2/SW2/BL2/GR2



Illumination part	Power consumption
Coaxial illumination part	Red: 3.1 W, White: 2.2 W, Blue/Green: 2.7 W
Dome illumination part	Red: 10.2 W, White: 14 W, Blue/Green: 13 W
Low-angle illumination part	Red: 4.6 W, White/Blue/Green: 6.1 W

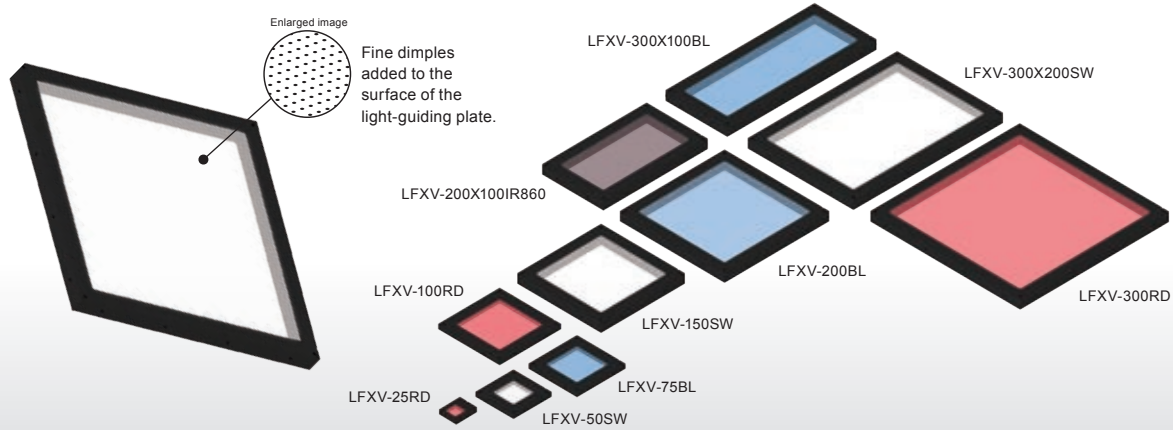
If adjusting the intensity for each part separately, use a 3-channel control unit.

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNPF-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Other Products
LDF-NB	Other Products



## Recreates the effect of dome lights using thin case design



**Applications**

Appearance or text inspection on metal surfaces, curved surfaces, or uneven surfaces; foreign material inspection of food and medicine; character recognition of packaging; inspection of text on can surfaces; etc.

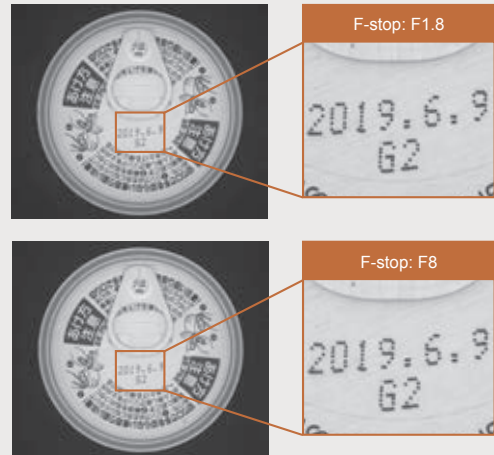
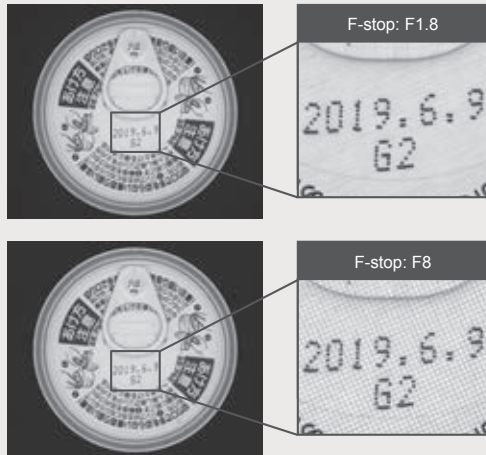
### Bright and Clear Field of View Using New Light-Guiding Plate

Reduces image irregularities and moire due to the surface dot pattern.

For details on "Image irregularities due to the surface dot pattern", refer to P.118 "Using LFX3 -Obtaining appropriate images-".

● LFX3-100SW (White)

● LFXV-100SW (White)



Note: Image irregularities and moire may occur, depending on the capture conditions and the type of the image processing.

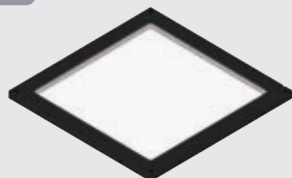
Imaging environment: 5-megapixel camera (effective pixels: 2448x2048, 3.45x3.45 μm, 2/3 inch), 5M-compatible lens (focal length: 25 mm, F1.8-16), Distance between the camera and the workpiece: 290 mm, Distance between the light unit and the workpiece: 20 mm  
The data included is for reference only. Actual values may vary.

Spots of light may appear due to foreign objects in the light-guiding plate, but this falls within our testing standards and is not a product defect.

### Custom Order Example

E.g: Different shape

Format/material Created a light unit that has an enlarged emitting surface.



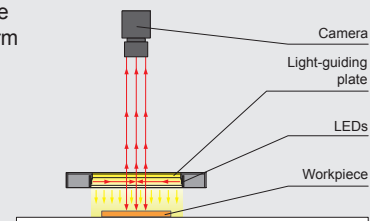
- External/internal diameter
- Increase output
- Illuminating angle
- Connector format
- Wavelength/color
- Cable length
- Format/material
- Installation/mounting

Etc.  
Please contact your CCS sales representative.

### Example Configuration

Fine dimples added to the surface of the light-guiding plate enable the uniform illumination of workpieces.

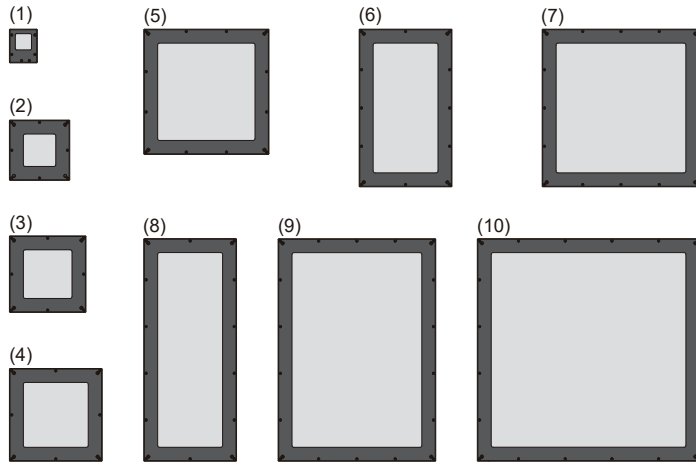
● LFXV-100





## Total of 40 Models in 10 Different Sizes

Total of 40 models with a lineup of four different light colors in 10 different light emitting surface sizes.  
Large sizes and rectangular sizes now available.

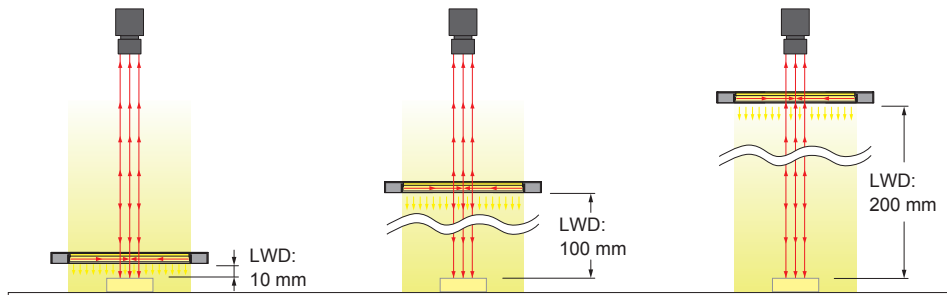


NO.	Series	Light emitting surface size (mm)	LED color
(1)	LFXV-25	25x25	Red/White/ Blue/Infrared
(2)	LFXV-50	50x50	
(3)	LFXV-75	75x75	
(4)	LFXV-100	100x100	
(5)	LFXV-150	150x150	
(6)	LFXV-200X100	200x100	
(7)	LFXV-200	200x200	
(8)	LFXV-300X100	300x100	
(9)	LFXV-300X200	300x200	
(10)	LFXV-300	300x300	

## Suitable for a Wide Range of Applications

Recreates the effect of Dome Lights when used close to the workpiece.  
Recreates the effect of Coaxial Lights when used further from the workpiece.

**Imaging Comparison**  
Changing the distance between the light and the workpiece (LWD) highlights different parts of the workpiece.



### Workpiece



At LWD of 10 mm, the whole surface of the workpiece is illuminated uniformly. The bumps are eliminated from the image.



At LWD of 100 mm, the bumps and pull tab are captured.



At LWD of 200 mm, the bumps and pull tab are emphasized.

### Workpiece



At LWD of 10 mm, the whole surface of the workpiece is illuminated uniformly. This allows the outer edge of the container and the printed text to be imaged.



At LWD of 100 mm, the printed text and shrink film are captured.



At LWD of 200 mm, the shrink film is emphasized.

LWD is the distance between the lighting fixture and the workpiece. The data included is for reference only. Actual values may vary.

LDR2 LDR-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water- proof UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNSIS2 LNSIS LNSIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

# LFXV Series

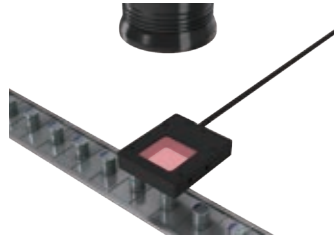
Refer to our website for product details.

CCS LFXV

Search



## Imaging Example: Imaging the Appearance of Capacitors



Description	Visual inspection
Workpiece	Capacitors
Conventional light	LED Diffusion Ring Light
New light	LFXV-25RD
Result	Improves the uniformity

Workpiece image



Capacitors

LED Diffusion Ring Light



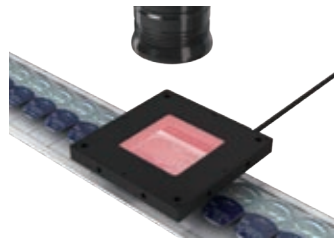
Hairline finishing on the surface makes it difficult to read the printed text.

LFXV-25RD



The hairline finishing is no longer visible, making it possible to read the printed text.

## Imaging Example: Imaging the Appearance of Contact Lens Packages



Description	Visual inspection
Workpiece	Contact lens packages
Conventional light	LED Ring Light
New light	LFXV-50RD
Result	Improves the uniformity

Workpiece image



Contact lens packages

LED Ring Light



It is difficult to determine the 2-D code due to the glossy and wavy surface.

LFXV-50RD



It is possible to determine the 2-D code by evenly illuminating the surface.

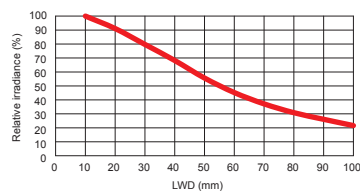
## Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

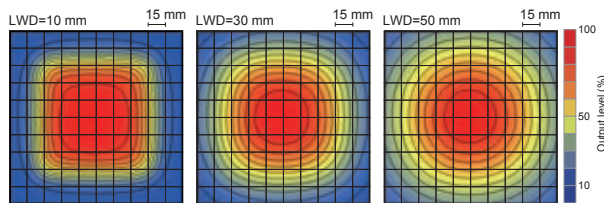
### LFXV-100RD

Relative irradiance graph<sup>\*1</sup>  
(LWD characteristics)<sup>\*2</sup>

\*1 Irradiance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece

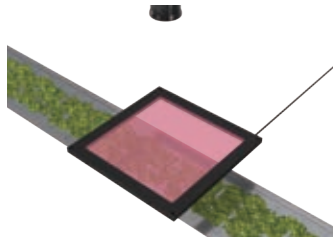


### Uniformity (Relative irradiance)



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM <b>LFXV</b> LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Strobe Coaxial	MSU MFU
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

### Imaging Example: Imaging of Foreign Materials in Tea Leaves



Description	Foreign materials inspection
Workpiece	Tea leaves
Conventional light	LED Dome Light
New light	LFXV-200IR860: Infrared Type
Result	Emphasizes foreign material

**Workpiece image**

Tea leaves

**LED Dome Light**

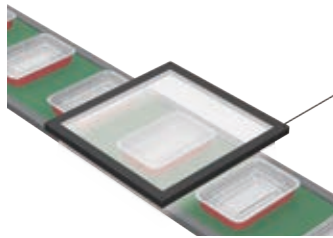
It is difficult to image foreign objects using white light.

**LFXV-200IR860**

Foreign objects can be imaged using infrared light.

The foreign object was intentionally added for image sampling purposes.

### Imaging Example: Imaging the Appearance of Food Packages



Description	Visual inspection
Workpiece	Food package
Conventional light	LED Dome Light
New light	LFXV-300SW
Result	Improves the uniformity

**Workpiece image**

Food packages

**LED Dome Light**

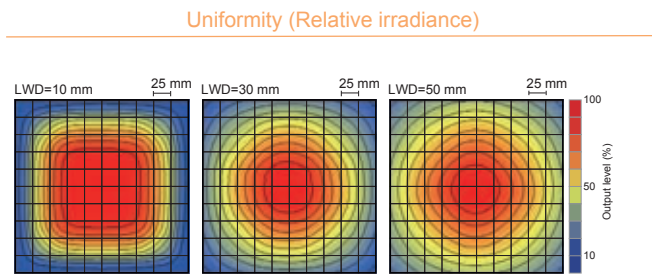
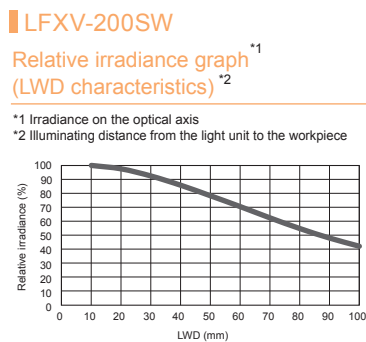
Shadows from the lighting aperture obscure the center of the container, making imaging difficult.

**LFXV-300SW (White)**

Uniformly lights the container all the way to the bottom, enabling imaging of the container appearance.

### Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LFXV Series



Refer to our website for product details.

CCS LFXV

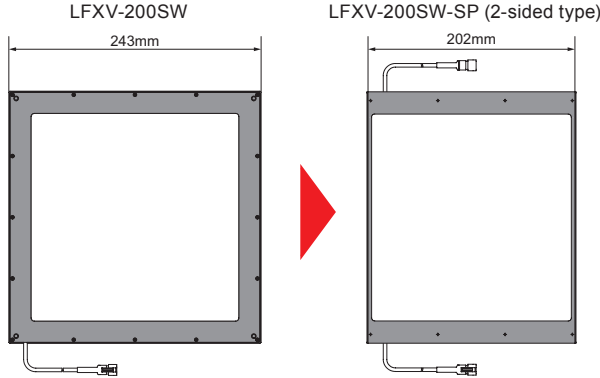
Search



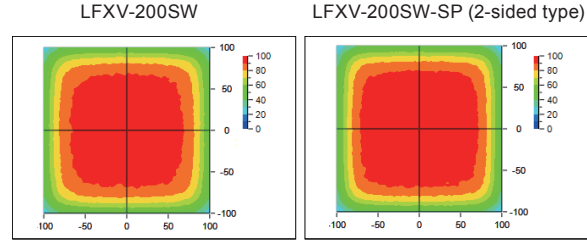
## Introduction to LFXV Series 2-sided Type (Custom Order Example)

Saves space without lowering uniformity by installing LEDs on only two sides.

### Helps save space



### Comparison of the uniformity (relative irradiance) (simulation)



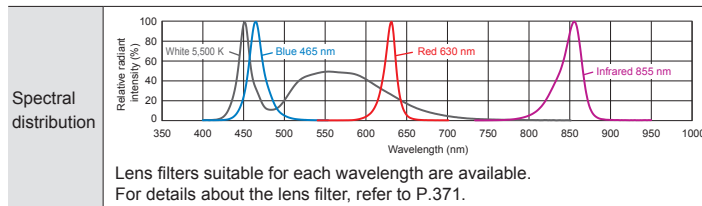
Note: Above is simulation data.  
Actual uniformity depends on the customer's operating environment. Contact our local sales office for details.  
The central irradiance of the 2-sided type is about 50% lower than the original model.

## Lineup

Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	IR860 (Infrared)				
LFXV-25□□	24 V	1.2 W	1.3 W	1.2 W	1.2 W	-	FCB*3 Straight Cable	PD4, PD3	80 g
LFXV-50□□		9.1 W	9.9 W	9.3 W	5.7 W	Protective Plate	FCB-W*4 2-Branch Cable	CC-ST-1024, POD*2	190 g
LFXV-75□□		14 W	15 W	14 W	12 W			290 g	
LFXV-100□□		16 W	20 W	19 W	12 W		400 g		
LFXV-150□□		28 W	30 W	28 W	17 W		870 g		
LFXV-200X100□□		23 W	30 W	28 W	17 W		870 g		
LFXV-200□□		31 W	40 W	38 W	23 W		1,300 g		
LFXV-300X100□□		31 W	40 W	38 W	23 W		1,300 g		
LFXV-300X200□□		38 W	50 W	47 W	29 W		1,600 g		
LFXV-300□□		46 W	60 W	56 W	34 W		2,000 g		
								FRCB Robot Cable	PD4, PD3, POD*2

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR860: Infrared)  
\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Options

Protects the light-guiding dispersion plate. (It is not intended to prevent dust, water droplets, etc.)

Protective Plate

Model Name	Applicable Light Unit
PR-LFXV-50	LFXV-50
PR-LFXV-75	LFXV-75
PR-LFXV-100	LFXV-100, LFXV-PF-100
PR-LFXV-150	LFXV-150
PR-LFXV-200X100	LFXV-200X100
PR-LFXV-200	LFXV-200

\*Protective plates of sizes other than the above can be custom ordered. Contact our local sales office for details.

## Precautions for Use

### Imaging may be affected by dirt or dust on the light unit's surface.

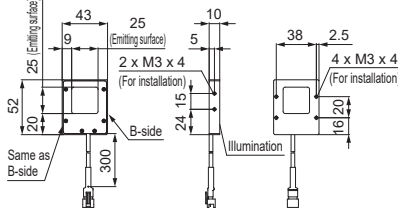
Be careful when handling the emitting surface and do not let dirt, dust, or fingerprints get on the light unit.

- Do not touch dirt or dust by hand. Remove by blowing air.
- If finger prints get on the light unit, wipe them off using a fine soft cloth.
- If the light unit is very dirty, use a diluted neutral cleaner and a fine soft cloth to lightly wipe it down.
- Do not use chemicals such as alcohol to wipe the emitting surface.

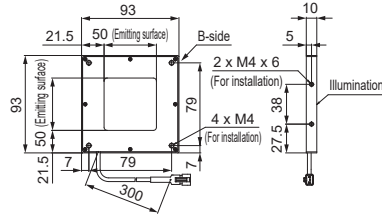
Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

## Dimensions (mm)

LFXV-25RD/SW/BL/IR860

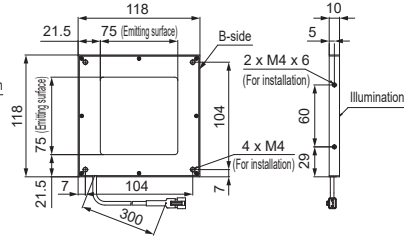


LFXV-50RD/SW/BL/IR860



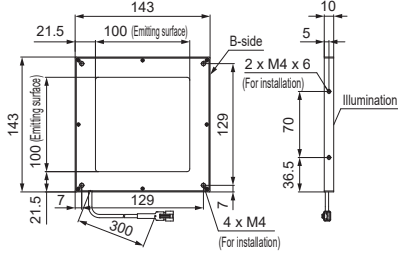
\*All sides are the same as B-side.

LFXV-75RD/SW/BL/IR860



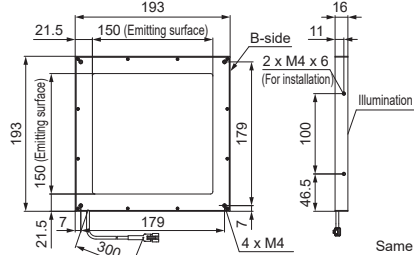
\*All sides are the same as B-side.

LFXV-100RD/SW/BL/IR860



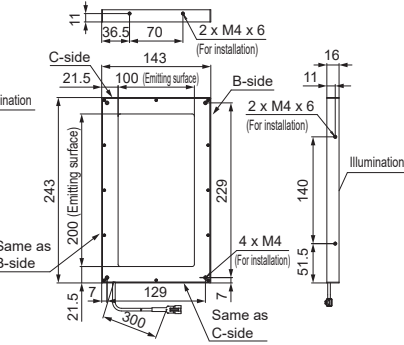
\*All sides are the same as B-side.

LFXV-150RD/SW/BL/IR860

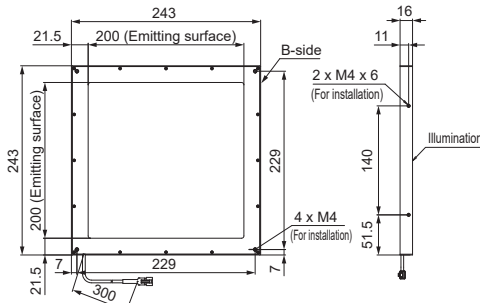


\*All sides are the same as B-side.

LFXV-200X100RD/SW/BL/IR860

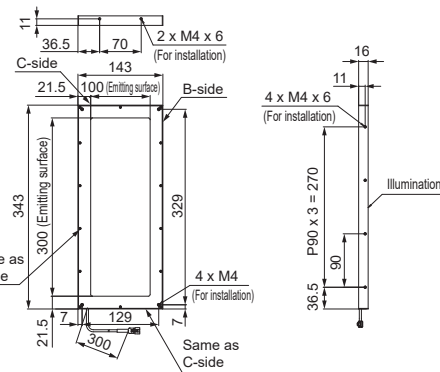


LFXV-200RD/SW/BL/IR860

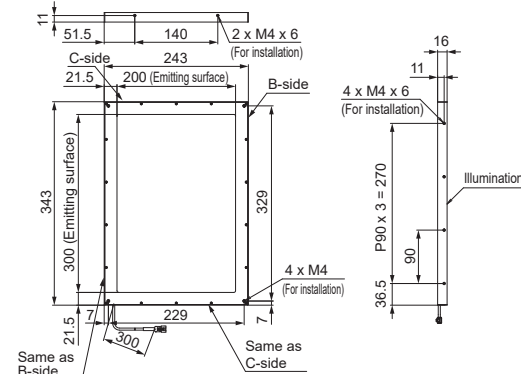


\*All sides are the same as B-side.

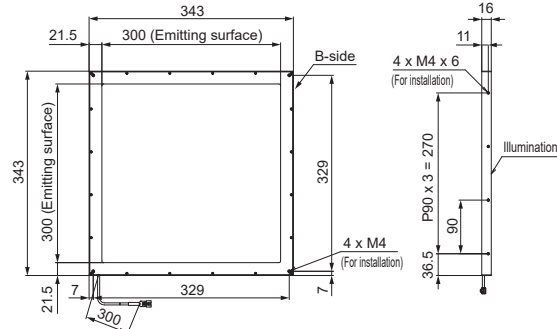
LFXV-300X100RD/SW/BL/IR860



LFXV-300X200RD/SW/BL/IR860



LFXV-300RD/SW/BL/IR860

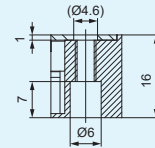
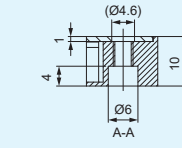
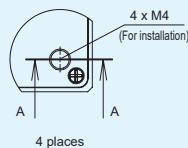


\*All sides are the same as B-side.

### Diagrams for 4 x M4 Installation Holes

• LFXV-50/75/100

• LFXV-150/200X100/200/300X100/300X200/300\*

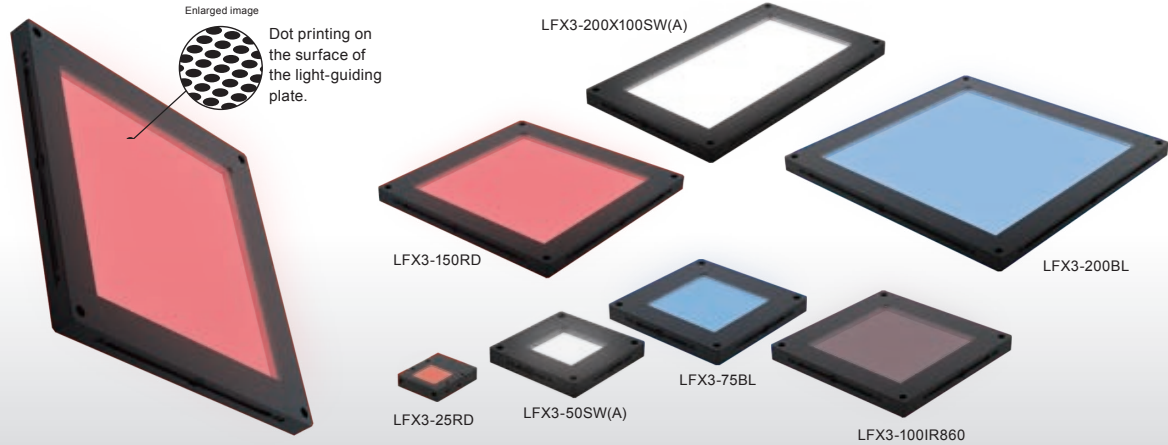


\* Use together with the M4 mounting holes on the sides if securing a heavy lighting fixture.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFX3	Coaxial
LFX3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLPL	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products



## Recreates the effect of a Dome Light with a thin case design

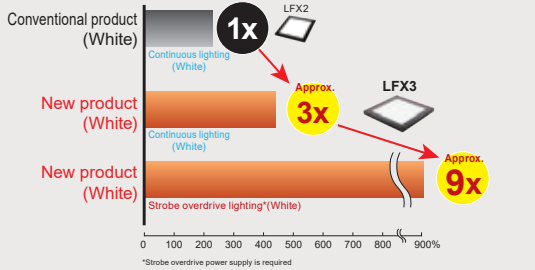


### Applications

Appearance or text inspection on metal surfaces, curved surfaces, or uneven surfaces; foreign material inspection of food and medicine; character recognition of packaging; inspection of text on can surfaces; etc.

### High Output to Match High-Speed Inspection

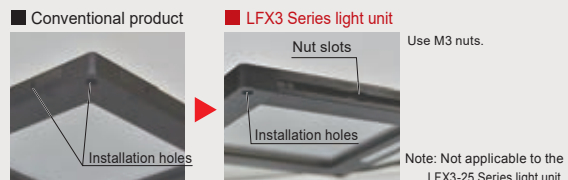
The LFX3 Series light units are high-power flat dome lights perfect for fast-moving production lines. The brightness of the white lights has been tripled.



**Shutter speed: 1/24,000**  
 Measurement condition Intensity setting: 100%  
 Brightness comparison between the LFX2-100SW and LFX3-100SW(A) light units.  
 The data included is for reference only. Actual values may vary.

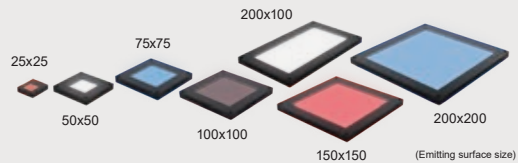
### Installation Using Nut Slots

Nut Slots are provided on the sides of the light unit for a high degree of freedom in installation to match the environment.



### Expanded Product Lineup: 28 Models in Total

The light unit is available in 7 sizes and 4 LED colors: red, white, blue, and infrared.



Series	Emitting surface size (mm)	LED color
LFX3-25 Series	25 x 25	Red/White/Blue/IR 
LFX3-50 Series	50 x 50	
LFX3-75 Series	75 x 75	
LFX3-100 Series	100 x 100	
LFX3-150 Series	150 x 150	
LFX3-200X100 Series	200 x 100	
LFX3-200 Series	200 x 200	

### Designed to prevent falling screws

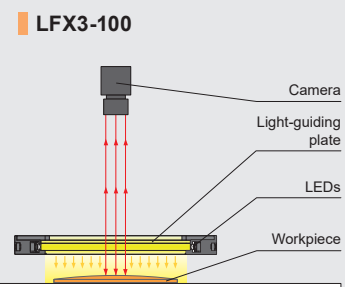
No worries of screws\* loosening and falling. Cover screws are not used on the light projection side of the light unit.



\* The screws that are used to install the light unit are not considered.

### Example Configuration

The dot pattern on the surface of the light-guiding plate controls the diffusion and transmission of light, making it possible to emit uniformly diffused light onto the workpiece.



LDR2 LDR-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFX3 LFX3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

## Light-Weight Compact Design, Space-Saving Installation, and Wide Field of View

Comparison of images of printed text  
Workpiece: Medicine  
(Individual packaging)



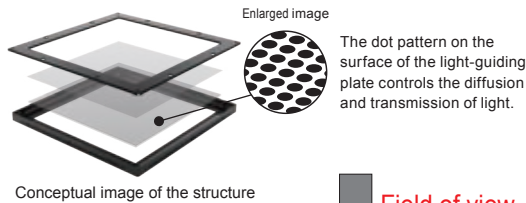
Flat Dome Light  
LFX3-200BL



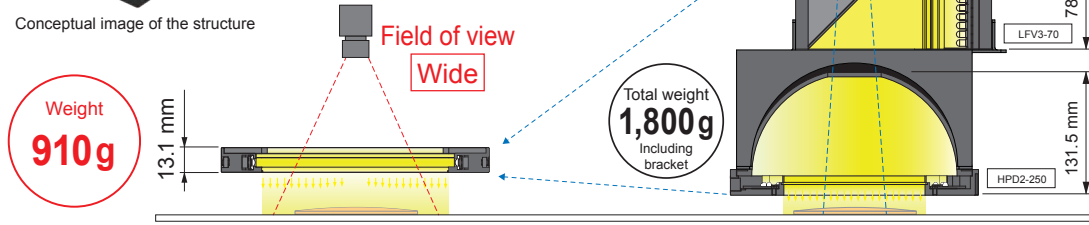
Dome Light + Coaxial Light  
HPD2-250BL + LFX3-70BL



Comparison of structures  
**Flat Dome Light (LFX3-200)**



Dome Light + Coaxial Light  
(HPD2-250) + (LFX3-70)



**Recreating the effect of Dome Lights with a thin case design**

## Achieving proper imaging

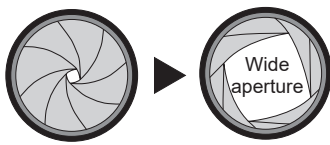
Uneven imaging may occur due to the dot pattern on the emitting surface



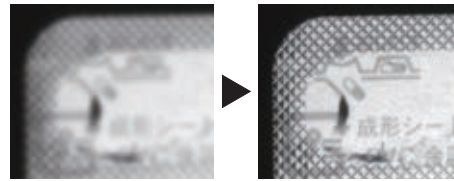
Workpiece:  
Pharmaceutical product  
(Blister pack)

Reducing image unevenness caused by the dot pattern

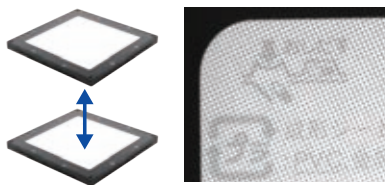
1. Widen the lens aperture slightly more than usual.



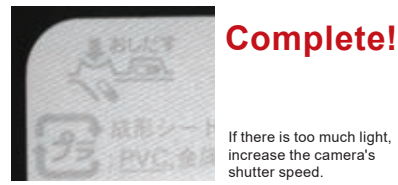
2. Focus the lens on the target workpiece.



3. If the dot pattern is visible, adjust the position of the light unit.



4. Finely adjust the light intensity.



Ambient light may reflect off the light unit surface or workpiece surface, affecting the imaging

To prevent effects from ambient light:

- Equip a lens filter to the lens.
- Prevent ambient light from entering with a hood or cover.
- Increase the shutter speed, or slightly increase the light intensity.

# LFX3 Series



Refer to our website for product details.

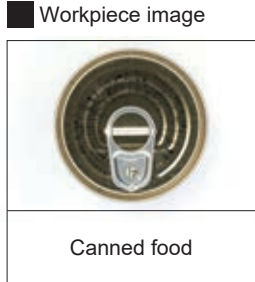
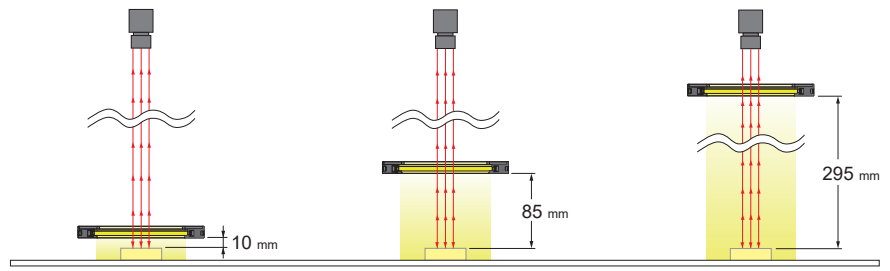
CCS LFX3

Search



## Supports a Wide Variety of Applications from Low Angles to High Angles

**Imaging comparison: top of a can**  
Changing the distance between the light unit and the workpiece (LWD) allows for imaging to fit your purpose.



With illumination from LWD 10 mm, the whole surface of the workpiece can be illuminated evenly and the bumps are erased from the image.



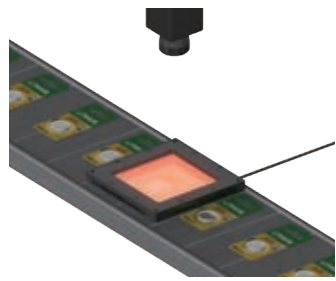
With illumination from LWD 85 mm, the bumps of the pull tab alone can be emphasized in the image.



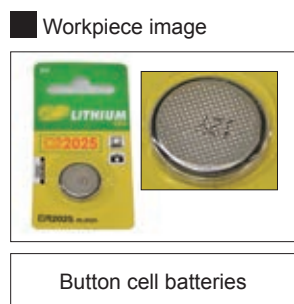
With illumination from LWD 295 mm, all of the bumps on the workpiece surface can be emphasized in the image.

Imaging environment: LFX3-100RD, f25 lens, WD 365 mm, field of view: 69 mm

## Imaging Example: Imaging Characters on Button Cell Batteries



Description	Character recognition
Workpiece	Button cell batteries
Conventional lighting	LED Dome Light
New lighting	LFX3-100RD
Result	Emphasizes the characters



The textured surface makes it impossible to read the printed characters.

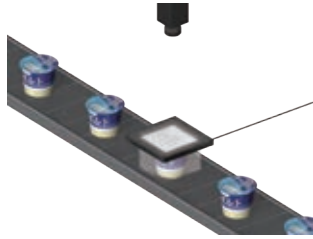


Effects from the textured surface are suppressed so that the characters stand out clearly.

Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HDL3 LB
Flat (5 types)	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV <b>LFX3</b> LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR3(A)
Line (Convergent)	LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNS2 LNS LNS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



### Imaging Example: Imaging the Appearance of Containers



Description	Visual inspection
Workpiece	Food (Yogurt containers)
Conventional lighting	LED Ring Light
New lighting	LFX3-100SW(A)
Result	Improves the uniformity

Workpiece image



Food containers

LED Ring Light



It is difficult to image the surface evenly.

LFX3-100SW(A)



The printed patterns on the surface are clearly captured.

### Imaging Example: Imaging the Appearance of Cans (Top Surface)

Workpiece image



Cans (Top surface)

LED Flat Dome Light (Blue)



It is difficult to capture the texture of the top surface.

LFX3-100IR860 (Infrared)



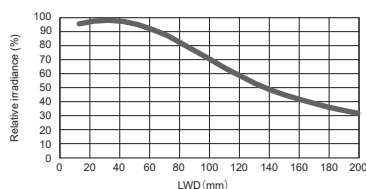
The printed ink transmits infrared light so that the texture of the top surface is evenly captured.

### Data: Relative Irradiance Graph and Uniformity (Representative Example)

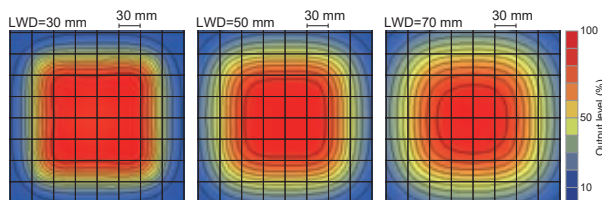
LFX3-200SW(A)

Relative irradiance graph (LWD characteristics)<sup>\*1</sup>

\*1 Irradiance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece



Uniformity (Relative irradiance)



The data included is for reference only. Actual values may vary.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3	Dome
LFX3-PT	
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique/Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# LFX3 Series



Refer to our website for product details.

CCS LFX3

Search



## Lineup

Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight								
		RD (Red)	SW <sup>2</sup> (White)	BL (Blue)	IR860 (Infrared)												
LFX3-25□□	24 V	1.6 W	1.5 W	0.8 W	1.4 W			<table border="1"> <tr><td>PD4</td><td>PD3</td></tr> <tr><td>CC-ST-1024</td><td>POD*3</td></tr> </table>	PD4	PD3	CC-ST-1024	POD*3	80 g				
PD4	PD3																
CC-ST-1024	POD*3																
LFX3-50□□	24 V	13 W	12 W	6.1 W	6.6 W		<table border="1"> <tr><td>FCB*6 Straight Cable</td></tr> <tr><td>FCB-W*7 2-Branch Cable</td></tr> <tr><td>FCB-F 4-Branch Cable</td></tr> <tr><td>FRCB Robot Cable</td></tr> </table>	FCB*6 Straight Cable	FCB-W*7 2-Branch Cable	FCB-F 4-Branch Cable	FRCB Robot Cable	<table border="1"> <tr><td>PD4</td><td>PD3</td></tr> <tr><td>CC-ST-1024*4</td><td>POD*3</td></tr> </table> <p>*4 Can only use blue and infrared.</p>	PD4	PD3	CC-ST-1024*4	POD*3	230 g
FCB*6 Straight Cable																	
FCB-W*7 2-Branch Cable																	
FCB-F 4-Branch Cable																	
FRCB Robot Cable																	
PD4	PD3																
CC-ST-1024*4	POD*3																
LFX3-75□□	24 V	13 W	18 W	9.1 W	14 W			<table border="1"> <tr><td>PD4</td><td>PD3</td></tr> <tr><td>CC-ST-1024*5</td><td>POD*3</td></tr> </table> <p>*5 Can only use blue.</p>	PD4	PD3	CC-ST-1024*5	POD*3	320 g				
PD4	PD3																
CC-ST-1024*5	POD*3																
LFX3-100□□	24 V	19 W	23 W	13 W	14 W	-			400 g								
LFX3-150□□	24 V	25 W	35 W	19 W	20 W			<table border="1"> <tr><td>PD4</td><td>PD3</td></tr> <tr><td>POD*3</td></tr> </table>	PD4	PD3	POD*3	620 g					
PD4	PD3																
POD*3																	
LFX3-200X100□□	24 V	28 W	35 W	19 W	20 W				620 g								
LFX3-200□□	24 V	37 W	46 W	25 W	27 W				910 g								

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR860: Infrared)

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*2 (A) is added only to the model name that ends with SW.

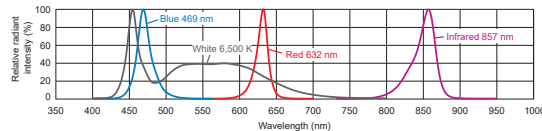
\*3 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

### Change in model names (A) is added to the end of select model names e.g. LFX3-25SW → LFX3-25SW(A)

Reason	Effect on functions and performance
LEDs have been changed due to the discontinuation of the LEDs used.	Lower correlated color temperature (more yellow) Conventional product: 6800 K New product: 6500 K

## LED Properties

Spectral distribution



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Precautions for Use

### Imaging may be affected by dirt or dust on the light unit's surface

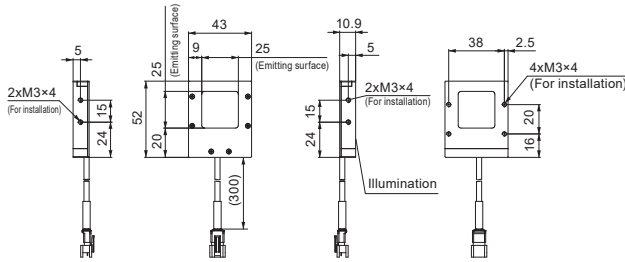
**Be careful when handling the emitting surface and do not let dirt, dust, or fingerprints get on the light unit.**

- Do not touch dirt or dust by hand. Remove by blowing air.
- If finger prints get on the light unit, wipe them off using a fine soft cloth.
- If the light unit is very dirty, use a diluted neutral cleaner and a fine soft cloth to lightly wipe it down.
- Do not use chemicals such as alcohol to wipe the emitting surface.

Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

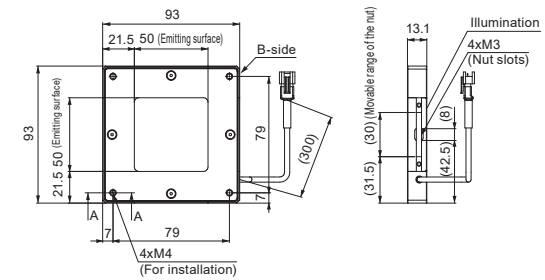
## Dimensions (mm)

LFX3-25RD/SW(A)/BL/IR860



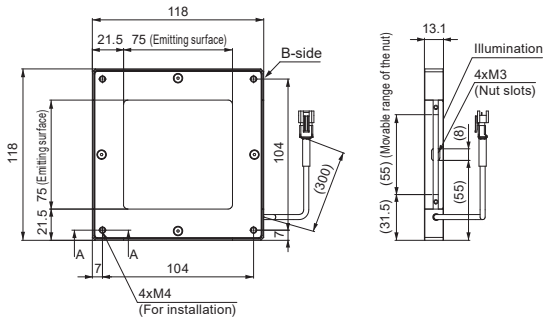
The holes for installation are on the light projection side surface of the light unit.  
The LFX3-25 Series light units do not have nut slots.

LFX3-50RD/SW(A)/BL/IR860



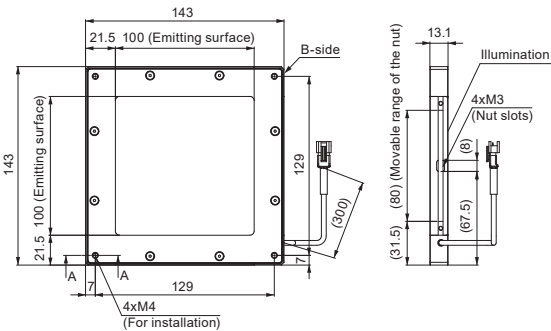
\*All sides are the same as side B.

LFX3-75RD/SW(A)/BL/IR860



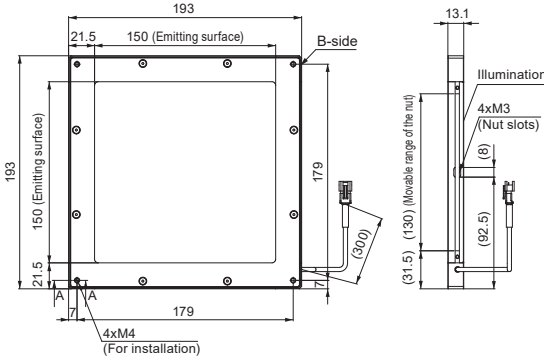
\*All sides are the same as side B.

LFX3-100RD/SW(A)/BL/IR860



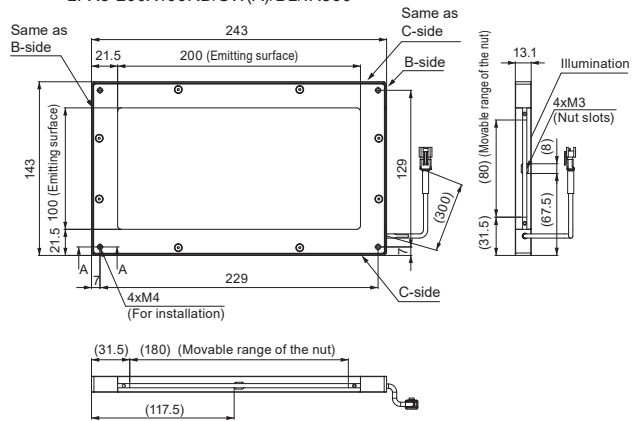
\*All sides are the same as side B.

LFX3-150RD/SW(A)/BL/IR860

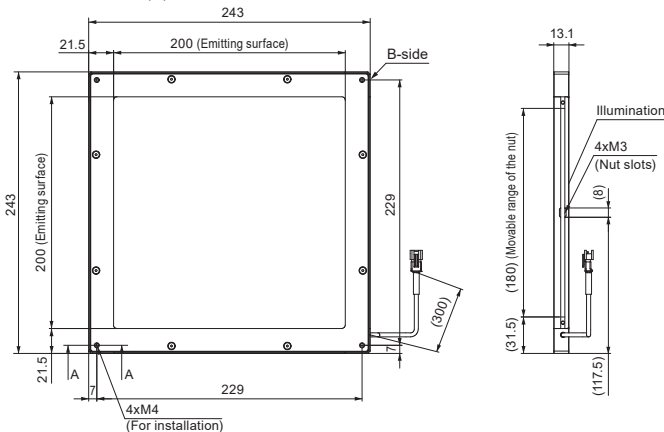


\*All sides are the same as side B.

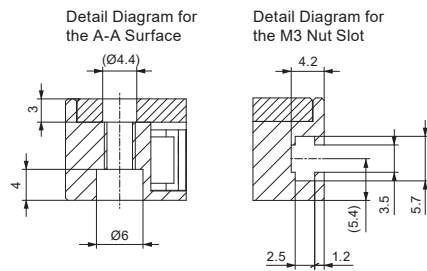
LFX3-200X100RD/SW(A)/BL/IR860



LFX3-200RD/SW(A)/BL/IR860



\*All sides are the same as side B.



Note: These detail diagrams are not applicable to the LFX3-25 Series light units.

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

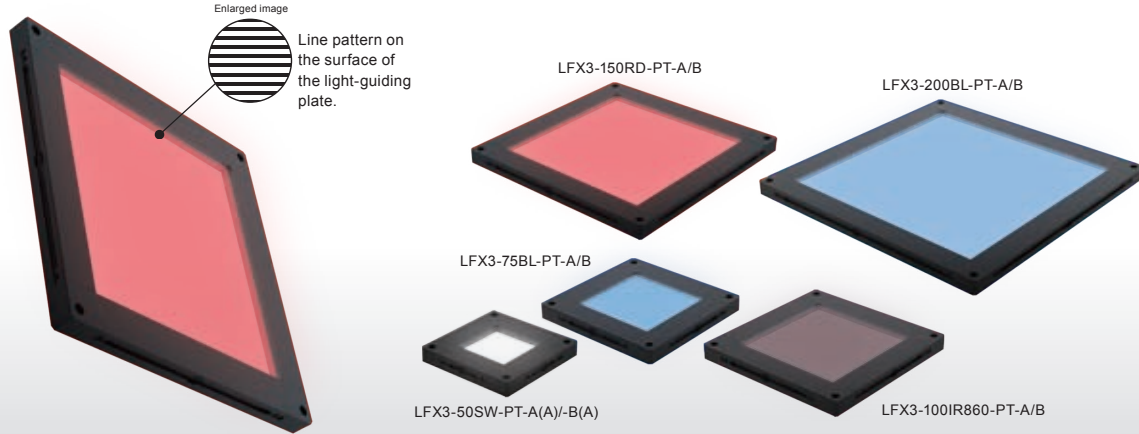
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



## A cutting-edge method for inspecting bumps on a reflective surface

### Special Order Products



**Applications** Inspection for bumps on a reflective surface such as mirrors, metal sheets, films, glass parts, liquid crystal parts

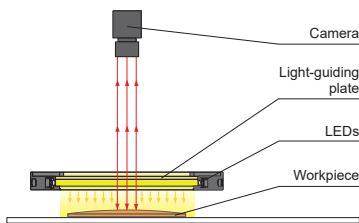
### Features

We altered the dot printings on the light-guiding plate surface to a line pattern. This makes it possible to detect gentle bumps on reflective surfaces which are hard to find with coaxial lights.

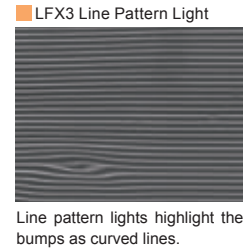
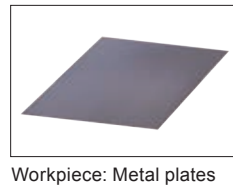
We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

#### Example configuration (LFX3-100-PT)



#### Imaging example: Imaging the appearance of metal plates



### Two Types of Line Patterns Available

Select one to match your inspection conditions.

**Imaging examples**

**1 mm type**

LFX3-PT-A Series

Distance: 30 mm

**2 mm type**

LFX3-PT-B Series

Distance: 150 mm

**Narrow pitch**

The distance from the light unit to the workpiece is **short**.

**Wide pitch**

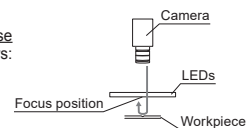
The distance from the light unit to the workpiece is **long**.

#### Achieving proper imaging

Install the LFX3-PT Series light unit so that it projects the line pattern onto the inspection object surface. When using this light unit, please adjust the focus to the line pattern reflected on the object surface. If the captured image has interference fringes, adjust the settings as follows:

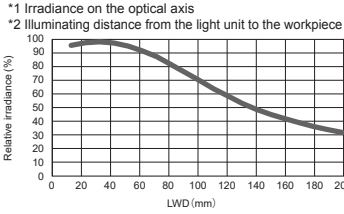
- Open the camera aperture
- Increase the light working distance

Imaging conditions (distance between the camera and the inspection object, focus position, aperture, etc.) and light position differ depending on the inspection. The above explanation is only a guide for adjustment.



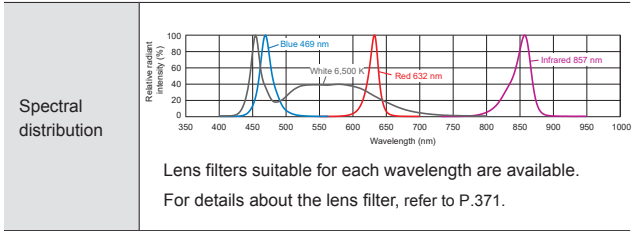
➤ Data: Relative Irradiance Graph (Representative Example)

■ LFX3-200SW-PT-A(A)  
Relative irradiance graph (LWD Characteristics)<sup>\*1</sup>



The graph included is for reference only. Results for individual products may vary.

➤ LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.  
The data included is for reference only. Actual values may vary.

➤ Lineup

Model Name <sup>*1</sup>	Type	Input Voltage	Power Consumption				Extension Cables	Recommended Control Units	Weight
			RD (Red)	SW <sup>2</sup> (White)	BL (Blue)	IR860 (Infrared)			
LFX3-50□□-PT-A/B	1 mm type (Model ends with: -A) / 2 mm type (Model ends with: -B)	24 V	13 W	12 W	6.1 W	6.6 W	FCB <sup>*6</sup> Straight Cable	PD4 PD3 CC-ST-1024 <sup>*4</sup> POD <sup>*3</sup>	230 g
LFX3-75□□-PT-A/B		24 V	13 W	18 W	9.1 W	14 W	FCB-W <sup>*7</sup> 2-Branch Cable	PD4 PD3 CC-ST-1024 <sup>*5</sup> POD <sup>*3</sup>	320 g
LFX3-100□□-PT-A/B		24 V	19 W	23 W	13 W	14 W	FCB-F 4-Branch Cable	PD4 PD3	400 g
LFX3-150□□-PT-A/B		24 V	25 W	35 W	19 W	20 W	FRCB Robot Cable	PD4 PD3 POD <sup>*3</sup>	620 g
LFX3-200□□-PT-A/B		24 V	37 W	46 W	25 W	27 W			910 g

<sup>\*1</sup> □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR860: Infrared)

<sup>\*2</sup> '(A)' is added to the end of SW model names only.

<sup>\*3</sup> For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/gr/pod>

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

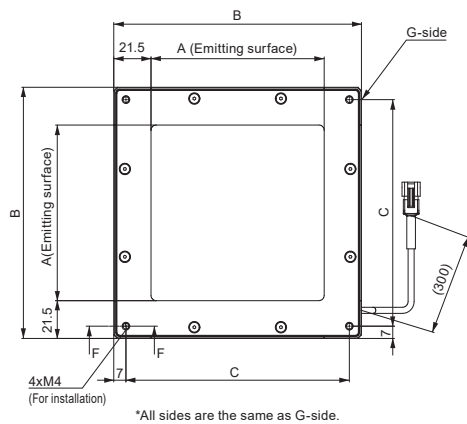
Change in model names '(A)' is added to the end of SW2 model names only e.g. LFX3-50SW-PT-A → LFX3-50SW-PT-A(A)

Reason	Effect on functions and performance
LEDs have been changed due to the discontinuation of the LEDs used.	Lower correlated color temperature (more yellow). Conventional product: 6800 K New product: 6500 K

➤ Dimensions (mm)

LFX3-PT-A/B Series

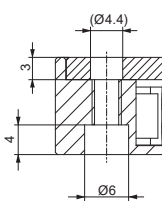
(Common for all colors)



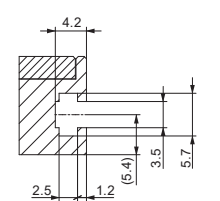
Dimensions by size (mm)

Emitting surface size	Dimensions				
	A	B	C	D	E
50x50	50	93	79	30	42.5
75x75	75	118	104	55	55
100x100	100	143	129	80	67.5
150x150	150	193	179	130	92.5
200x200	200	243	229	180	117.5

Detail Diagram for the F-F Surface



Detail Diagram for the M3 Nut Slot



- If the light unit is very dirty, use a diluted neutral cleaner and a fine soft cloth to lightly wipe it down.
- Do not use chemicals such as alcohol to wipe the emitting surface.

Imaging may be affected by dirt or dust on the light unit's surface. Be careful when handling the emitting surface and do not let dirt, dust, or fingerprints get on the light unit.

- Do not touch dirt or dust by hand. Remove by blowing air.
- If finger prints get on the light unit, wipe them off using a fine soft cloth.

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

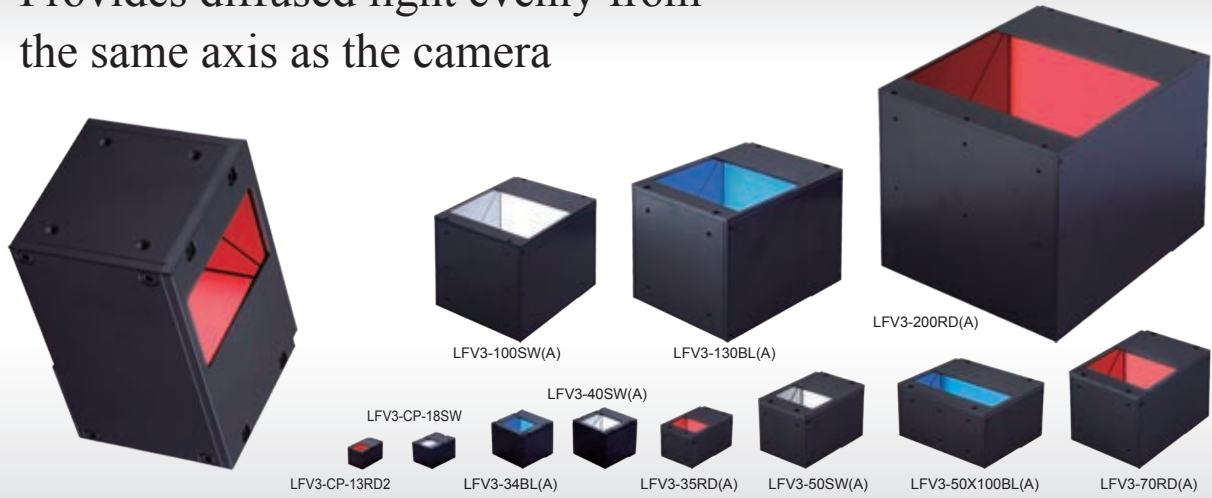
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides diffused light evenly from the same axis as the camera



For information on change in model names, refer to P.127.

### Applications

Inspection for fault, damage, scratches, or dents on glossy surfaces or mirrors; pattern inspection on printed circuit boards; dimension measuring of glass; inspection for damage and dents on resin molded products; etc.

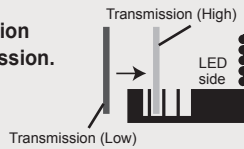
## Freely Customize the Diffusion

### Customize the diffusion

Diffusion plate status	Result
Change the transmission from (high) to (low)	Increased uniformity
Change the installation position to the LED side	Emphasized directionality

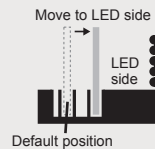
#### 1) Prepared two types of diffusion plates with different transmission.

Replace the diffusion plate to change the transmission.



#### 2) The installation position of the diffusion plate can be adjusted.

Change the position to achieve various imaging effects.



### LFV3-CP Series

Replacing the half-mirror with a beam splitter increased accuracy. Suitable for imaging small workpieces and environments with limited installation space.



LFV3-CP-13SW

## Supports High-Resolution Cameras

Highly-accurate optical glass is used for the camera window and the half-mirror. This allows for stable imaging when using high-resolution cameras.

### LFV3 Series, a Coaxial Light with improved quality

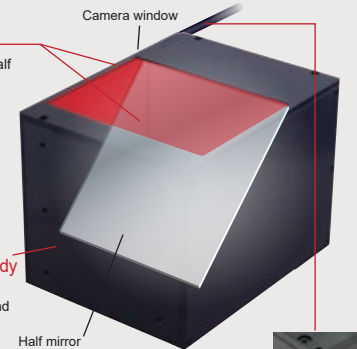
**Uses optical glass**  
The camera window and half mirror are made of optical glass.

**Expanded area for the camera window**  
By making the camera window wider, we ensured a larger field of vision.

**Used an aluminum body**  
Used aluminum alloy to improve heat dissipation and achieve a durable body.

**Increased light unit installation holes**  
We increased the number of installation holes for the light unit. Various installation directions are supported.

**Can be installed to the cable surface**  
The cable can be bent flat in relation to the installation surface.

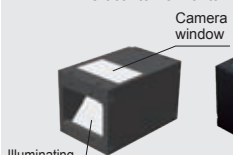


This description excludes the LFV3-CP-13 Series and the LFV3-CP-18 Series.

## Custom Order Example

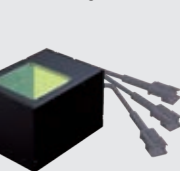
E.g.: Different shape

Format/material  
Created a light unit that changed the illuminating port from vertical to horizontal



E.g.: Different color

Wavelength/color  
Creating a full color (RGB) light unit



External/internal diameter

Wavelength/color

Increase output

Cable length

Illuminating angle

Format/material

Connector format

Installation/mounting

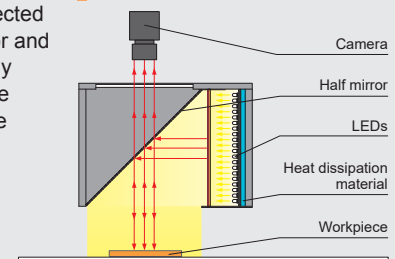
Etc.

Please contact your CCS sales representative.

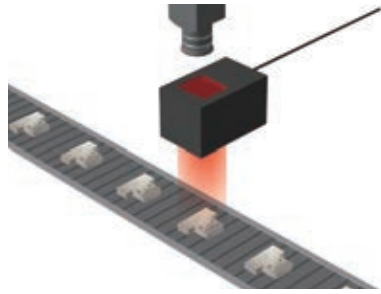
## Example Configuration

Diffused light from the LEDs is reflected on the half mirror and directed vertically downward on the same axis as the camera axis.

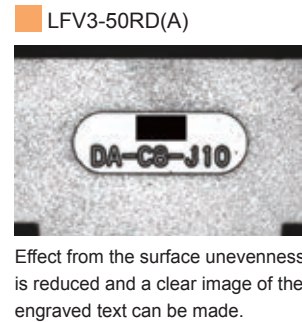
### LFV3-100



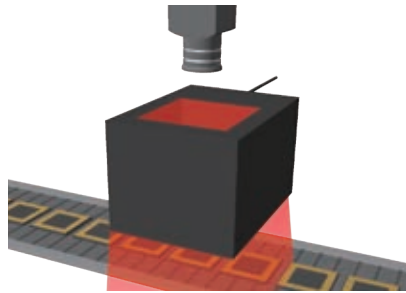
### ➤ Imaging Example: Imaging Engraved Text on Metal Connector Hoods



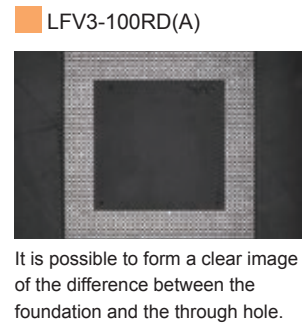
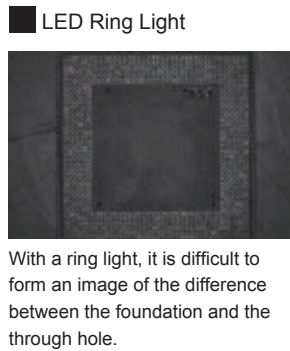
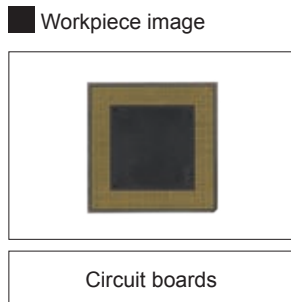
Description	Character recognition
Workpiece	Connector hoods
Conventional lighting	LED bar light
New lighting	LFV3-50RD(A)
Result	Emphasizes the engraved text



### ➤ Imaging Example: Imaging Through-Holes on Circuit Boards



Description	Visual inspection
Workpiece	Circuit boards
Conventional lighting	LED ring light
New lighting	LFV3-100RD(A)
Result	Improved uniformity



### ➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)

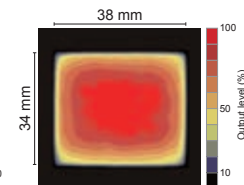
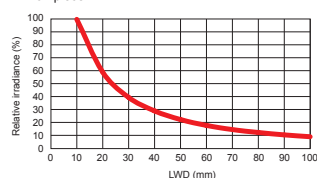
The data included is for reference only. Actual values may vary.

#### LFV3-35RD(A)

Relative irradiance graph (LWD characteristics)<sup>\*2</sup>

Uniformity (Relative radiance)

<sup>\*1</sup> Irradiance on the optical axis  
<sup>\*2</sup> Illuminating distance from the light unit to the workpiece

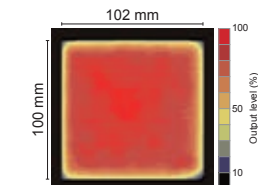
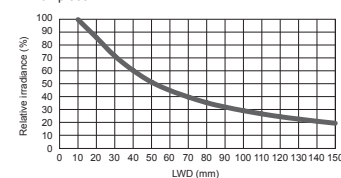


#### LFV3-100SW(A)

Relative irradiance graph (LWD characteristics)<sup>\*2</sup>

Uniformity (Relative radiance)

<sup>\*1</sup> Irradiance on the optical axis  
<sup>\*2</sup> Illuminating distance from the light unit to the workpiece



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL LNSP2 Coaxial Units LNSP-FN LNLN-HK	Line (Convergent)
LNSD LND2 LT LNV LNFV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNSIS2 LNSIS LNSIS-FN	Line (Oblique/Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# LFV3 Series



Refer to our website for product details.

CCS LFV3

Search



## Introduction to Illumination Port Position Change Type (Custom Order Example)

### LFV3-RA Series

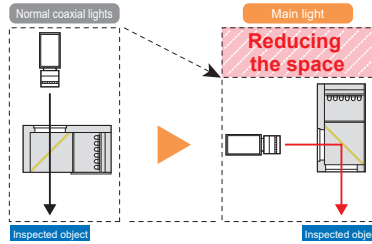


### LFV3-35SW-RA24

The position of the illumination port of normal coaxial light can be changed by 90°. Suitable for the transportation system of the inspected objects and for environments where there are restrictions in the installation conditions of the camera.

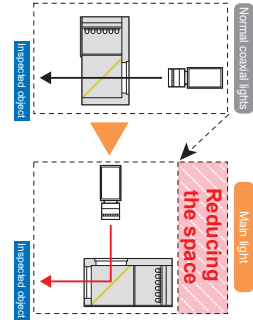
\* The captured image is inverted.

#### 1. Reducing the installation space in the vertical direction



Compared to normal coaxial lights, this light helps reduce the installation space in the vertical direction.

#### 2. Reducing the installation space in the horizontal direction



Compared to normal coaxial lights, this light helps reduce the installation space in the horizontal direction.

## Lineup

Classification	Model Name*1	Input Voltage	Power Consumption			Options	Extension Cables	Recommended Control Units	Weight
			RD (Red)	SW (White)	BL (Blue)				
Standard products	LFV3-34□□ (A)	24 V	3.7 W	3.2 W	3.2 W	—		80 g	
	LFV3-35□□ (A)	24 V	3.1 W	3.7 W	3.1 W	Diffusion Plate, Polarizing Plate, Protective Plate, LC film, Bracket	PD4, PD3, CC-ST-1024, POD*2	175 g	
	LFV3-40□□ (A)	24 V	4.6 W	4.6 W	4.6 W	—		100 g	
	LFV3-50□□ (A)	24 V	8.1 W	11 W	9.1 W	Diffusion Plate, Polarizing Plate, Protective Plate, LC film, Bracket	PD4, PD3, CC-ST-1024*3, POD*2	335 g	
	LFV3-50X100□□ (A)	24 V	17 W	20 W	17 W	Diffusion Plate, Polarizing Plate, Protective Plate, LC film	FCB*4 Straight Cable	530 g	
	LFV3-70□□ (A)	24 V	13 W	19 W	16 W	Diffusion Plate, Polarizing Plate, Protective Plate, LC film, Bracket	FCB-W*5 2-Branch Cable	620 g	
	LFV3-100□□ (A)	24 V	22 W	27 W	27 W		FCB-F 4-Branch Cable	1,060 g	
	LFV3-130□□ (A)	24 V	31 W	46 W	38 W	Diffusion Plate, Polarizing Plate, Protective Plate, LC film	FRCB Robot Cable	1,750 g	
	LFV3-200□□ (A)	24 V	43 W	60 W	53 W			4,350 g	
	LFV3-CP-13□□*6	24 V	2.1 W	2.3 W	1.3 W	—		PD4, PD3, CC-ST-1024, POD*2	37 g
LFV3-CP-18□□*6	24 V	3.3 W	4.1 W	3.4 W	—		PD4, PD3, CC-ST-1024, POD*2	70 g	
Custom order products	LFV3-35□□-RA (A)	24 V	3.1 W	3.7 W	3.1 W			PD4, PD3, CC-ST-1024, POD*2	*7
	LFV3-50□□-RA (A)	24 V	8.1 W	11 W	9.1 W			PD4, PD3, CC-ST-1024*3, POD*2	
	LFV3-50X100□□-RA (A)	24 V	17 W	20 W	17 W			PD4, PD3, CC-ST-1024*3, POD*2	
	LFV3-70□□-RA (A)	24 V	13 W	19 W	16 W			PD4, PD3, POD*2	
	LFV3-100□□-RA (A)	24 V	22 W	27 W	27 W			PD4, PD3, POD*2	
LFV3-130□□-RA (A)	24 V	*7	46 W	*7					

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue)

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*6 Add "2" to the end of the model numbers with the red option only. Example: LFV3-CP-13RD2

\*7 This product is custom-made. Contact our local sales office for details.

### Change in model names

Reason	Effect on functions and performance	Relevant models (applicable to all colors)
Due to part manufacturer's circumstances, some optical parts were expected to become difficult to obtain. CCS has changed these parts with those of comparable performance.	The functions and performance of the light units have not been affected.	LFV3-34(A) / LFV3-35(A) / LFV3-40(A) / LFV3-50(A) / LFV3-50X100(A) / LFV3-70(A) / LFV3-100(A) / LFV3-130(A) / LFV3-200(A)

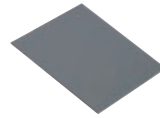


## Options

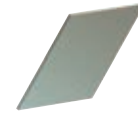


Replace the default diffusion plate to change the transmission.

When selecting, be aware that the default diffusion plate varies based on the emitted color.



Use with a polarizing filter to remove the light's surface reflection.



In this plastic film are fine louvers with extremely narrow gaps between them. It reduces light diffusion in a particular direction and increases parallelism.

### Diffusion plate

Model Name	Applicable Light Unit (Common for all colors)
DF-LFV3-35	LFV3-35(A)
DF-LFV3-50	LFV3-50(A)
DF-LFV3-50X100	LFV3-50X100(A)
DF-LFV3-70	LFV3-70(A)
DF-LFV3-100	LFV3-100(A)
DF-LFV3-130	LFV3-130(A)
DF-LFV3-200	LFV3-200(A)

Model Name	Applicable Light Unit (Common for all colors)
DF-LFV3-35-UF	LFV3-35(A)
DF-LFV3-50-UF	LFV3-50(A)
DF-LFV3-50X100-UF	LFV3-50X100(A)
DF-LFV3-70-UF	LFV3-70(A)
DF-LFV3-100-UF	LFV3-100(A)
DF-LFV3-130-UF	LFV3-130(A)
DF-LFV3-200-UF	LFV3-200(A)

### Polarizing plate

Model Name	Applicable Light Unit (Common for all colors)
PL-LFV3-35	LFV3-35(A)
PL-LFV3-50	LFV3-50(A)
PL-LFV3-50X100	LFV3-50X100(A)
PL-LFV3-70	LFV3-70(A)
PL-LFV3-100	LFV3-100(A)
PL-LFV3-130	LFV3-130(A)
PL-LFV3-200	LFV3-200(A)

### Light Control (LC) Film

Model Name	Applicable Light Unit (Common for all colors)
LC-LFV3-35	LFV3-35(A)
LC-LFV3-50	LFV3-50(A)
LC-LFV3-50X100	LFV3-50X100(A)
LC-LFV3-70	LFV3-70(A)
LC-LFV3-100	LFV3-100(A)
LC-LFV3-130	LFV3-130(A)
LC-LFV3-200	LFV3-200(A)

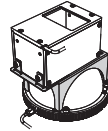
▶ P.376

▶ P.378

▶ P.379

### Coaxial Light joint bracket

Model Name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-HPD2-75-LFV	LFV3-35	HPD2-75
BK-HPD2-100-LFV	LFV3-50	HPD2-100
BK-HPD2-150-LFV	LFV3-70	HPD2-150
BK-HPD2-200-LFV	LFV3-100	HPD2-200
BK-HPD2-250-LFV	LFV3-130	HPD2-250



Combine with a Dome Light to solve uneven illumination and achieve uniform illumination from all directions.

▶ P.382

Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

## Regarding Changing the Diffusion Plate and Adjusting the Position

### Models that support replacing the diffusion plate

Model (Common for all colors)
LFV3-35 / 50 / 50X100 / 70 / 100 / 130 / 200

LFV3-34 / 40 / CP-13 / CP-18 does not support this feature.

### Models that support adjusting the position of the diffusion plate

Model (Common for all colors)
LFV3-50 / 50X100 / 70 / 100 / 130 / 200

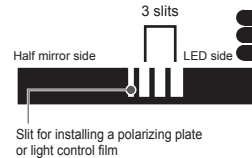
LFV3-34 / 35 / 40 / CP-13 / CP-18 does not support this feature.

### Regarding the default diffusion plate

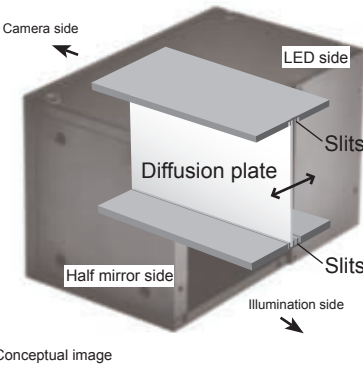
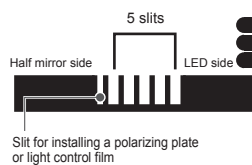
LFV3-35 / 50 / 50X100 / 70 / 100 / 130 / 200	
Red light, white light	Blue light
Diffusion plate (Light color) is default	Diffusion plate (Deep color) is default
Transmission: High	Transmission: Low (End of the model name: -UF)

### Position adjustment slit

For LFV3-50 / 50X100 / 70

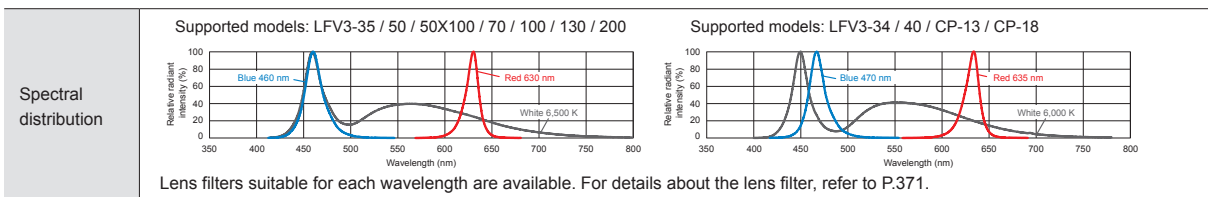


For LFV3-100 / 130 / 200



For details about replacing the diffusion plate or adjusting the position, refer to the User Manual included with the product.

## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

For details on the effective field of view when using coaxial lights, see "Effective Field of View of Coaxial Lights" on P. 405.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Stroke
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL1	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
(Rectangular Type)	Line (Diffused)
LFXV	Line (Diffused)
(Rectangular Type)	Line (Diffused)
TH2	Line (Diffused)
(Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique/Angled)
LNIS2	Line (Oblique/Angled)
LNIS	Line (Oblique/Angled)
LNIS-FN	Line (Oblique/Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

# LFV3 Series



Refer to our website for product details.

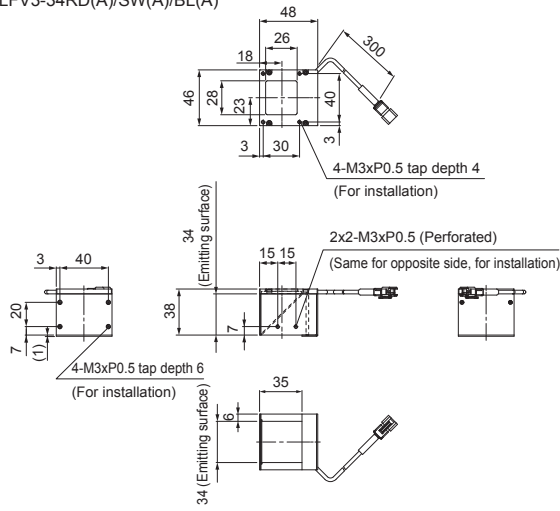
CCS LFV3

Search

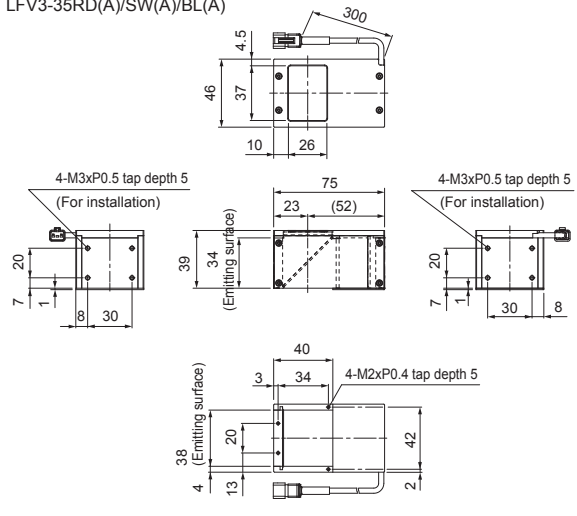


## Dimensions (mm)

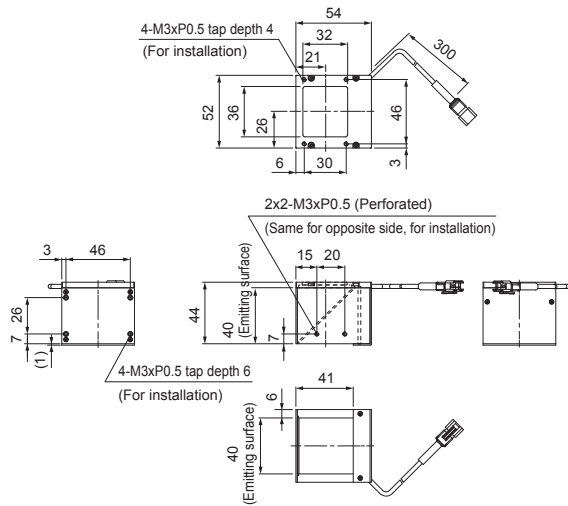
LFV3-34RD(A)/SW(A)/BL(A)



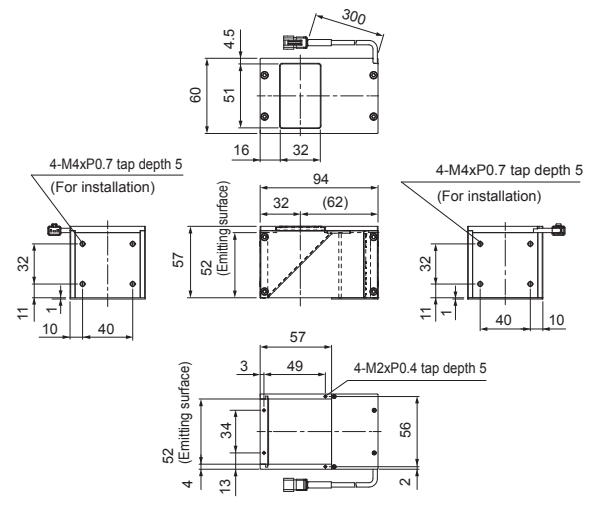
LFV3-35RD(A)/SW(A)/BL(A)



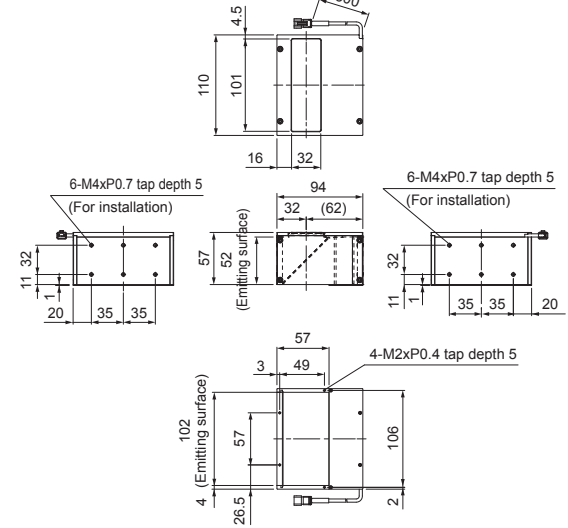
LFV3-40RD(A)/SW(A)/BL(A)



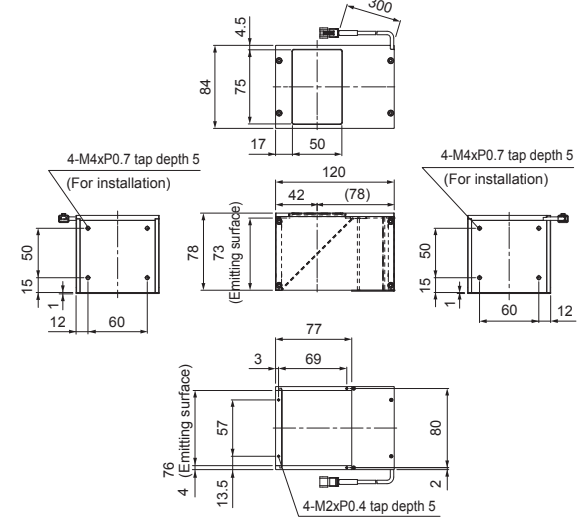
LFV3-50RD(A)/SW(A)/BL(A)



LFV3-50X100RD(A)/SW(A)/BL(A)



LFV3-70RD(A)/SW(A)/BL(A)



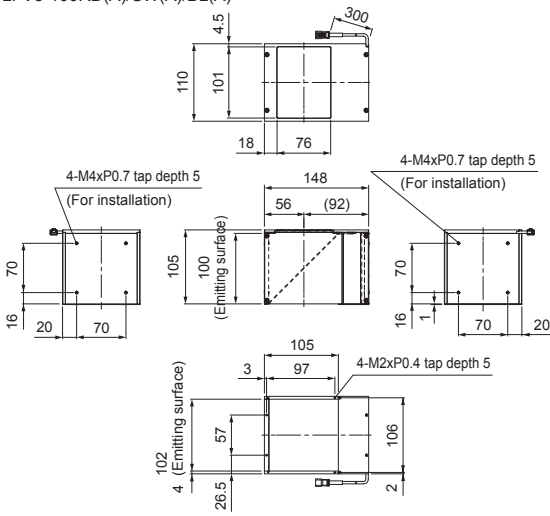
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	<b>LFV3</b> LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
UV / Violet	
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNSIS2 LNSIS LNSIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

Various technical documents available.

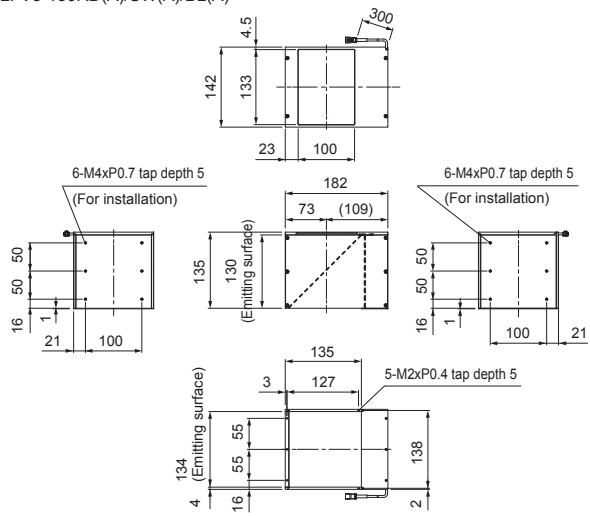
- PDF Drawings
- DXF Drawings
- Product Brochures
- Instruction Guides
- 3D CAD
- Data Sheets
- Imaging Examples
- Digital Catalogs

Register to use them.

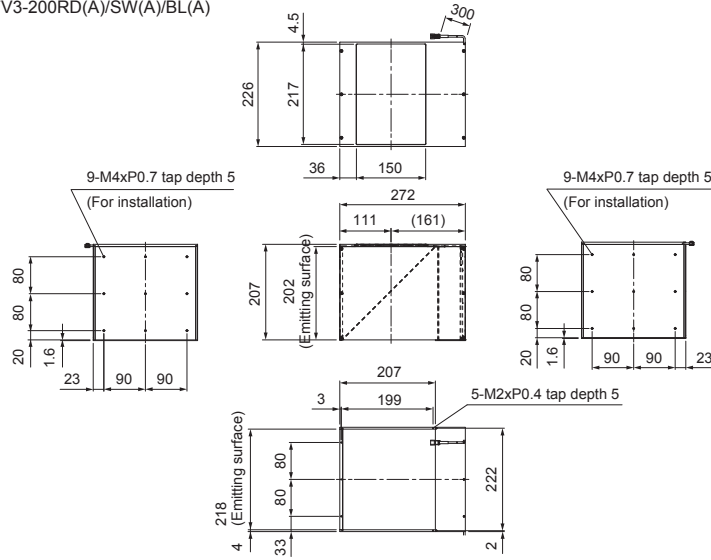
Lfv3-100RD(A)/SW(A)/BL(A)



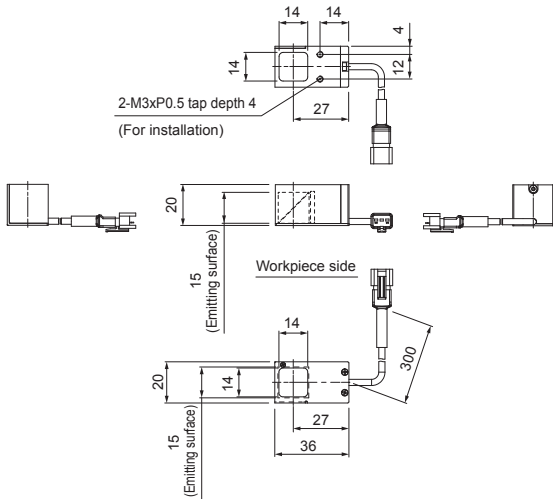
Lfv3-130RD(A)/SW(A)/BL(A)



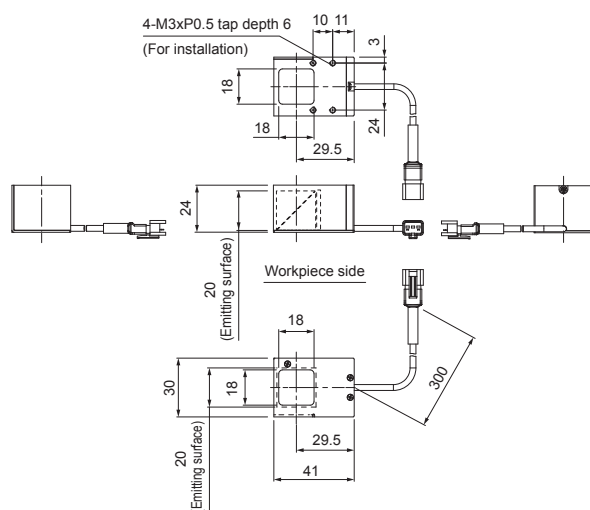
Lfv3-200RD(A)/SW(A)/BL(A)



Lfv3-CP-13RD2/SW/BL



Lfv3-CP-18RD2/SW/BL



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

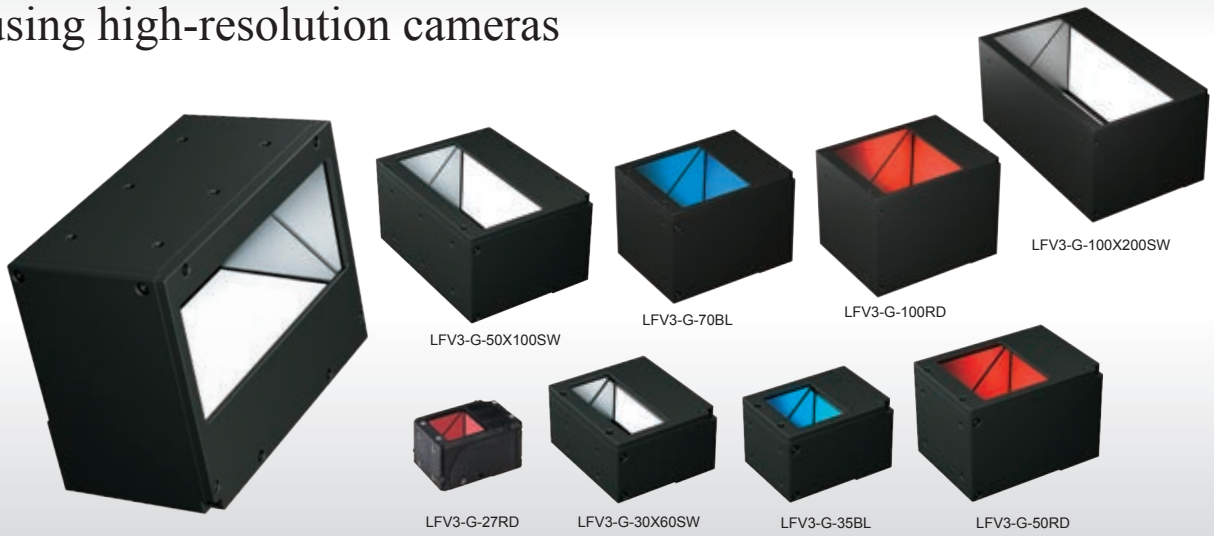
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
Lfv3	Coaxial
Lfv3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNFP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Macro Lens
Macro Lens	Macro Lens
LDF-NB	Other Products



Equipped with a slim half mirror to support imaging using high-resolution cameras

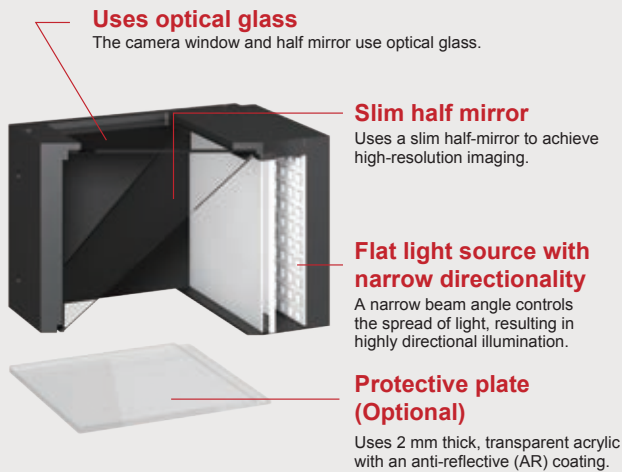


**Applications**

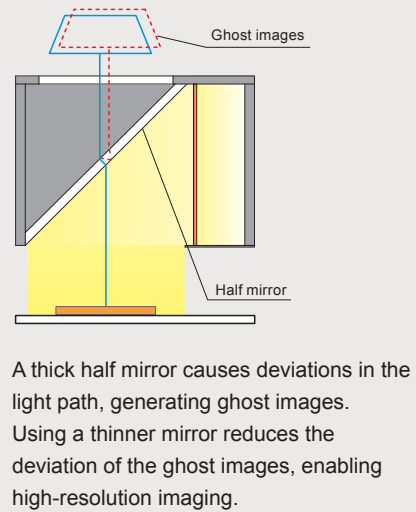
Inspection for damage, scratches, or dents on glossy surfaces or mirrors; pattern inspection on printed circuit boards; dimension measuring of glass; inspection for damage and dents on resin molded products; etc.

**Prevents ghost images and achieves higher resolution imaging than conventional products.**

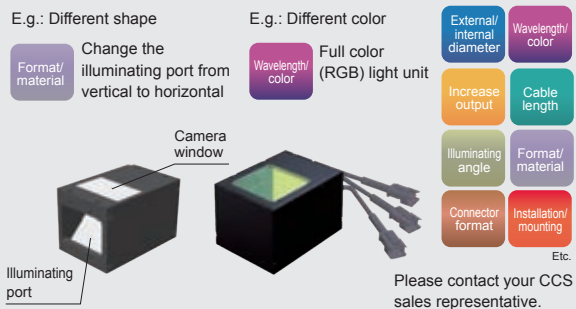
**LFV3-G Series structure (example)**



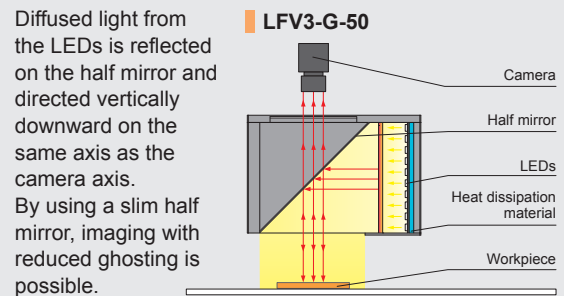
**Causes of ghost images (example)**



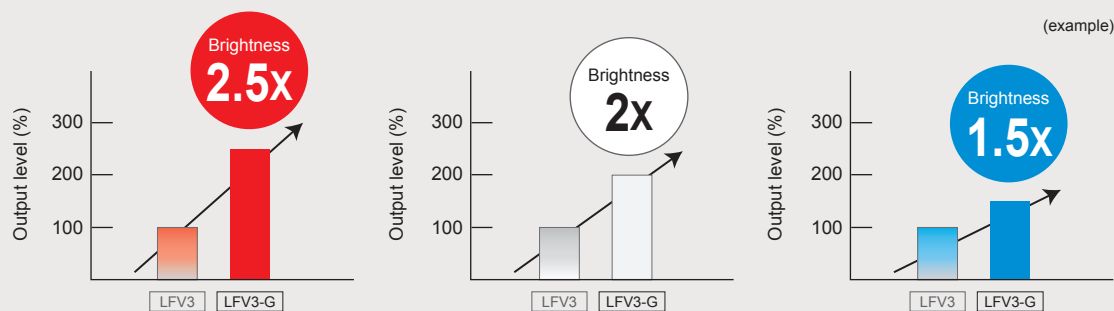
**Custom Order Example**



**Example Configuration**



➤ Achieves up to 2.5 Times Higher Output Compared to LFBV3



In comparison with light colors of the LFBV3 Series. (These values are for reference only and are not guaranteed values.)

Strobe Overdrive Power Supply  
POD Series

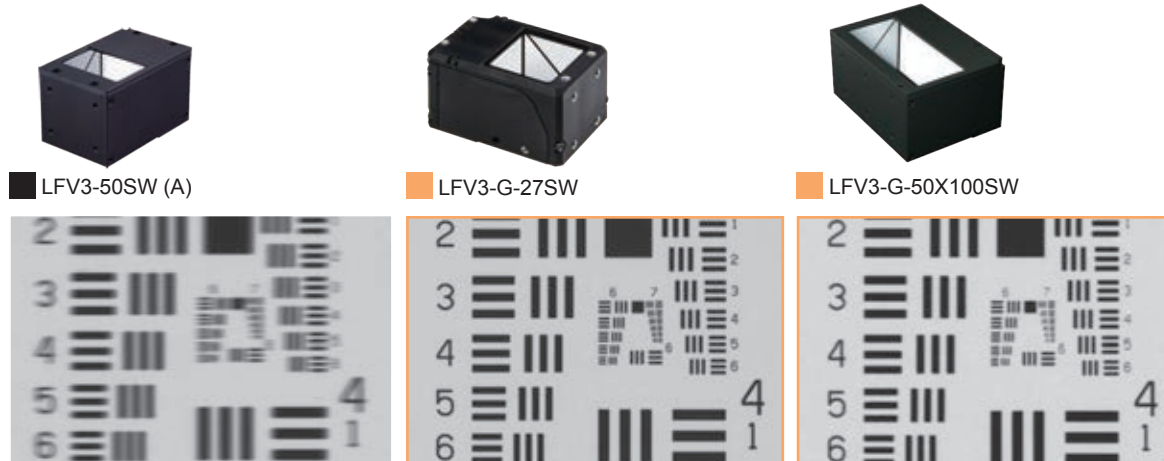
▶ P.339



Even  
**brighter**  
with the strobe  
overdrive power  
supply

Can be combined with the strobe overdrive power supply POD Series to further increase the brightness several times more.

➤ Imaging Example: Imaging Comparison of Resolution Evaluation Chart



[Imaging conditions] Camera: 2448x2048 3.45 μm monochrome camera, Lens: 2x telecentric lens, Field of view: 4.2 x 3.5 mm (the image is a cutout of about 1.3 x 1.0 mm at the center), Resolution: 1.7 μm/pixel, WD: 110 mm, LWD: 25 mm. \* The shutter speed and light intensity are adjusted for each image.

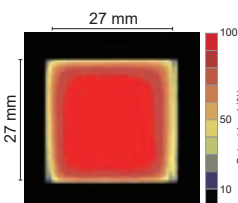
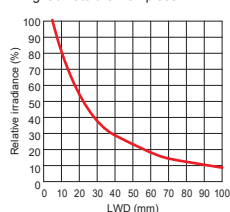
➤ Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

■ LFBV3-G-27RD

Relative irradiance graph (LWD characteristics)<sup>\*1</sup>  
Uniformity (Relative radiance)<sup>\*2</sup>

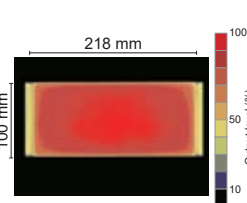
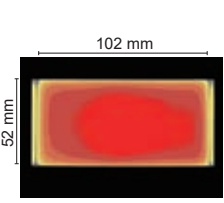
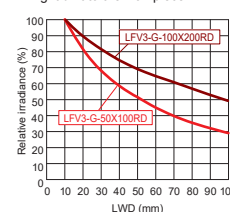
\*1 Irradiance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece



■ LFBV3-G-50X100RD (Red) / 100X200RD (Red)

Relative Irradiance Graph (LWD characteristics)<sup>\*1</sup>  
Uniformity (Relative radiance)<sup>\*2</sup>

\*1 Irradiance on the optical axis  
\*2 Illuminating distance from the light unit to the workpiece



LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFBV3	Coaxial
LFBV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LN	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique/Angled)
LNIS2	Line (Oblique/Angled)
LNIS	Line (Oblique/Angled)
LNIS-FN	Line (Oblique/Angled)
Telecentric Lens	Macro Lens
Other Products	Macro Lens
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LFV3-G Series



Refer to our website for product details.

CCS LFV3-G

Search



## Lineup

Model Name*1	Input Voltage	Power Consumption			Options*2	Extension Cables	Recommended Control Units		Weight	
		RD (Red)	SW (White)	BL (Blue)						
LFV3-G-27□□	24 V	5.0 W	5.0 W	5.0 W	Protective Plate	FCB*5 Straight Cable  FCB-W*6 2-Branch Cable  FCB-F 4-Branch Cable  FRCB Robot Cable	PD4	PD3	110 g	
							CC-ST-1024	POD*3		
LFV3-G-30X60□□	24 V	12 W	11 W	8.1 W				PD4	PD3	165 g
								CC-ST-1024*4	POD*3	
								*4 Can only use blue.		
LFV3-G-35□□	24 V	8.4 W	8.3 W	7.1 W				PD4	PD3	140 g
								CC-ST-1024	POD*3	
LFV3-G-50□□	24 V	17 W	17 W	15 W						285 g
										445 g
										570 g
LFV3-G-50X100□□	24 V	34 W	34 W	29 W				990 g		
								1,730 g		
LFV3-G-70□□	24 V	28 W	25 W	22 W						
LFV3-G-100□□	24 V	40 W	37 W	32 W						
LFV3-G-100X200□□	24 V	59 W	59 W	59 W						

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

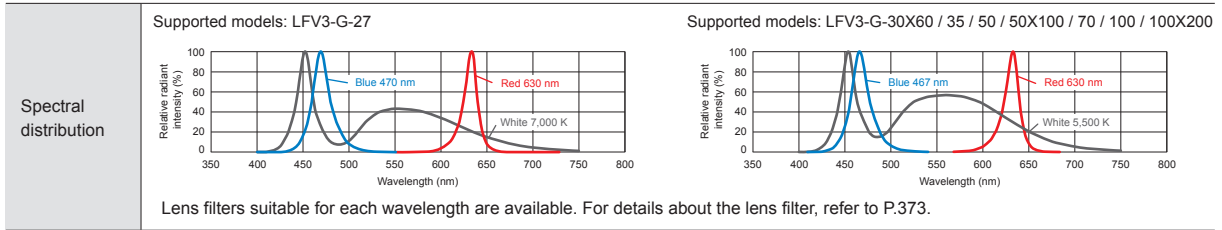
List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue)

\*2 If you need to replace the diffusion plate or install a polarizing plate, we can do so as a custom-order.

\*3 For information on the combination of the LFV3-G and POD Series, please refer to the CCS website. <https://www.ccs-grp.com/lnk/qr/pod>

## LED Properties

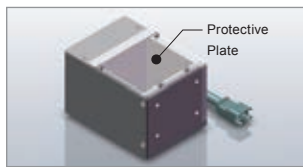


Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.373.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

For details on the effective field of view when using coaxial lights, see "Effective Field of View of Coaxial Lights" on P. 405.

## Options



Protective plates are available to prevent any reductions in performance due to intrusion of foreign matter into the lights. Anti-reflective (AR coating) has been applied.  
\* Be aware that installing a protective plate may reduce image resolution.

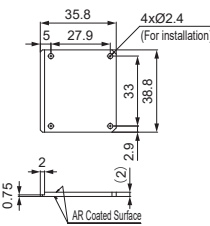
### Protective Plate

Accessories:  
Pan Head Screws x 5

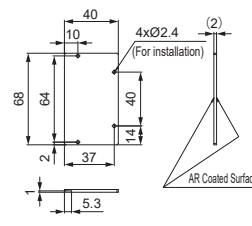
Model Name	Applicable Light Unit (Common for all colors)
PR-LFV3-27	LFV3-G-27
PR-LFV3-30X60	LFV3-G-30X60
PR-LFV3-35	LFV3-G-35, LFV3-35(A), LFV-G-PF-35
PR-LFV3-50	LFV3-G-50, LFV3-50(A)
PR-LFV3-50X100	LFV3-G-50X100, LFV3-50X100(A)
PR-LFV3-70	LFV3-G-70, LFV3-70(A)
PR-LFV3-100	LFV3-G-100, LFV3-100(A)
PR-LFV3-100X200	LFV3-G-100X200

\* Protective plates for products other than the applicable light units listed above are available by custom order.

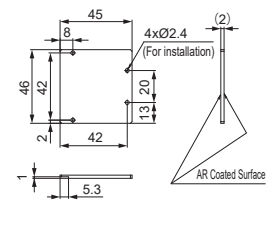
PR-LFV3-27



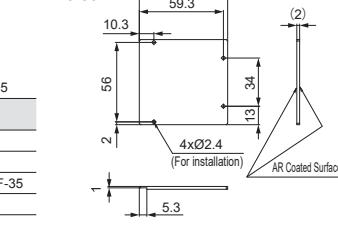
PR-LFV3-30X60



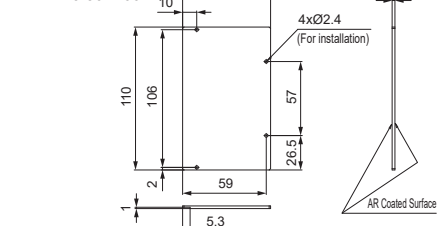
PR-LFV3-35



PR-LFV3-50



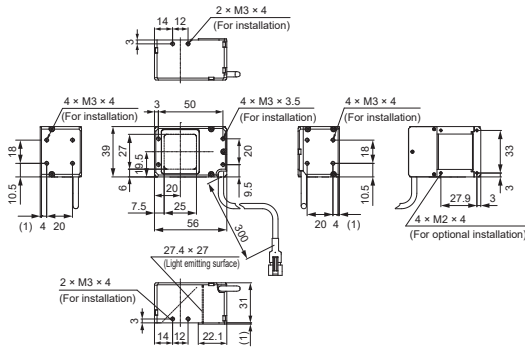
PR-LFV3-50X100



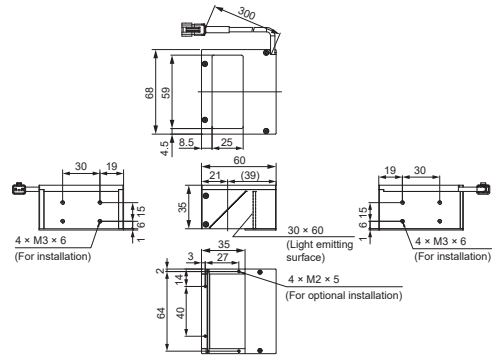
Refer to our website for other external dimensions. <https://www.ccs-grp.com/products/series/318>

➤ Dimensions (mm)

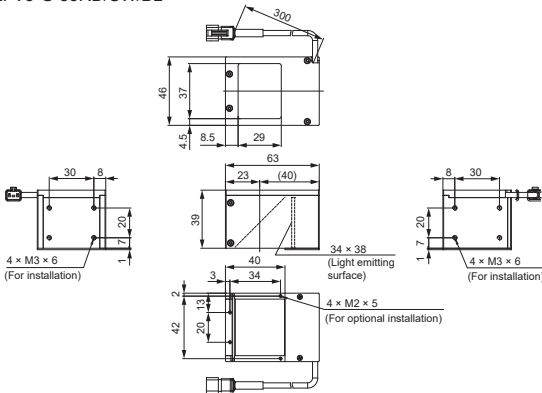
LFV3-G-27RD/SW/BL



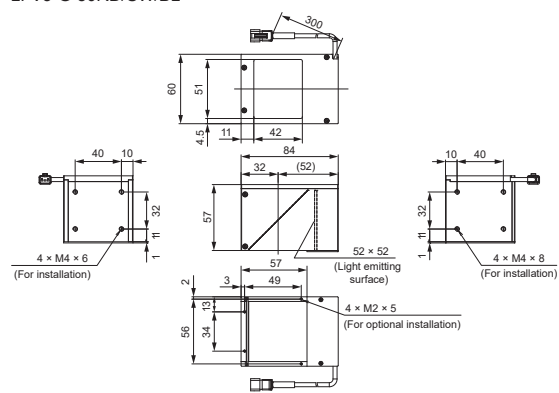
LFV3-G-30X60RD/SW/BL



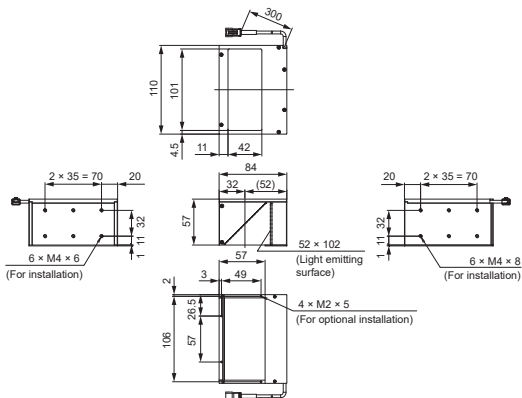
LFV3-G-35RD/SW/BL



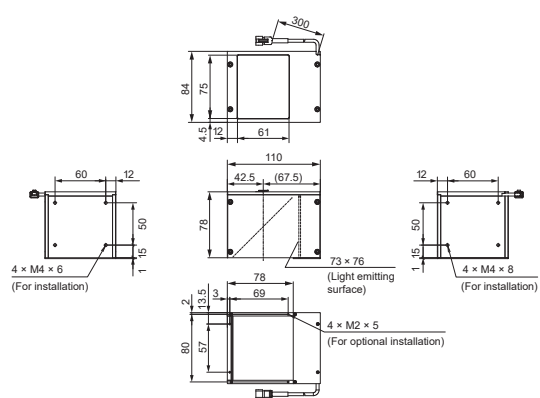
LFV3-G-50RD/SW/BL



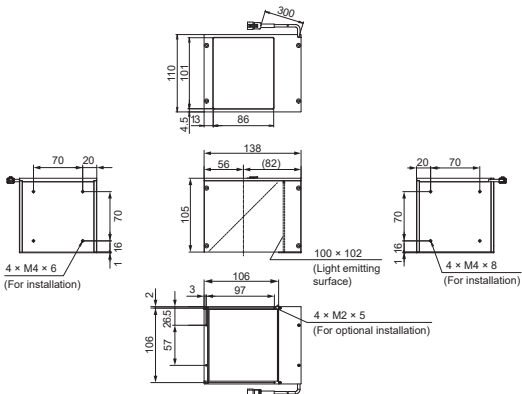
LFV3-G-50X100RD/SW/BL



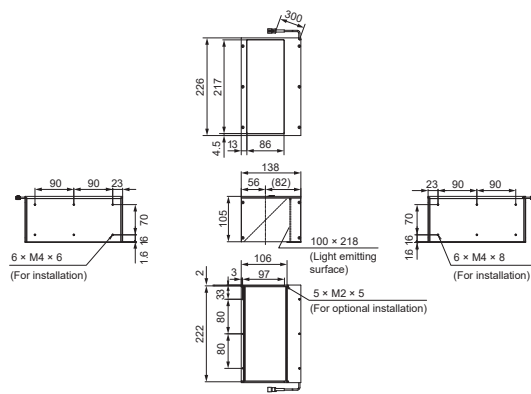
LFV3-G-70RD/SW/BL



LFV3-G-100RD/SW/BL



LFV3-G-100X200RD/SW/BL



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNL	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products



Provides light with high parallelism using original lighting technology



MSU-10SW2



MSU-30X20RD2



MSU-30BL2

**Applications**

Inspection for fine damage on glossy surfaces, character recognition on glossy surfaces, etc.

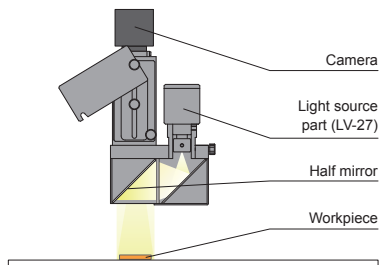
**Features**

Provides collimated lighting created using a special lens. Suitable for extracting minute scratches, dents and depressions on glossy surfaces. The attached lens can be used to condense light.

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

**Example configuration (MSU-10)**



**Imaging example: Imaging button cell batteries**



Workpiece: Button cell batteries

**LED Coaxial Light**



With the Coaxial Light, it is possible to reduce surface reflection and form an image of the engraved text.

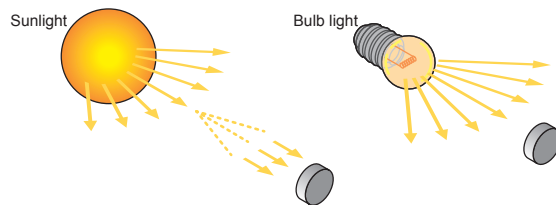
**MSU-30X20RD2**



Not only is the image of the engraved text more clear than with the Coaxial Light, fine differences in the surface can also be imaged.

**Collimated Light Optical Unit MSU Series**

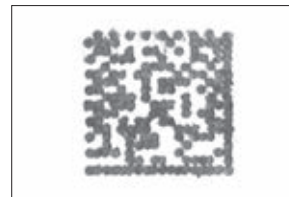
Light emitted from a normal light source moves in a straight line while radially diffusing. Collimated light refers to light where one point of light emitted from a source at infinitely far distance, such as the sun, hits any surface from the same angle. The MSU Series is an optical unit developed by applying the principle of collimated light.



**Extracts Damage, Scratches, and Dents on Mirror Objects**

This optical unit is effective for inspections that were difficult using conventional image processing, such as extracting shallow and tiny scratches, damage and dents, and reading barcodes on mirror workpieces.

**Imaging of 2-dimensional code**



Using an LED Light allows for high performance, stable, and low-cost imaging. This is an applied product that melds lighting technology design with optical design.

For details about the procedure for usage, refer to the material "MSU Series Operating Procedures" on our website. You can download this information from the product website page.



**Lineup**

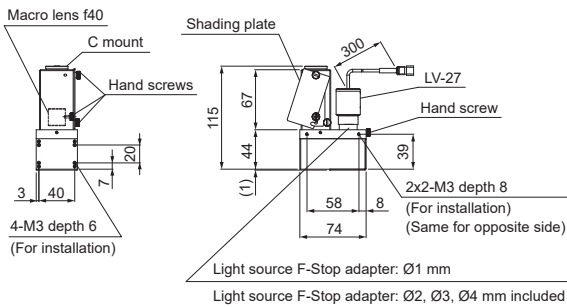
Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	GR (Green)				
MSU-10□□2	24 V	0.8 W	0.4 W	0.4 W	—	FCB*3 Straight Cable  FCB-W*4 2-Branch Cable  FCB-F 4-Branch Cable  FRCB Robot Cable  *3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.	PD4    PD3 CC-ST-1024    POD*2	275 g	
MSU-30□□2	24 V	0.8 W	—	0.4 W	—			2,000 g	
MSU-30X20□□2	24 V	0.8 W	0.5 W	0.5 W	0.5 W			540 g	

LED Properties: Spectral Distribution ▶ P.408    Extension Cables ▶ P.383    Control Unit Selection Guide ▶ P.309    List of Control Unit Specifications ▶ P.311

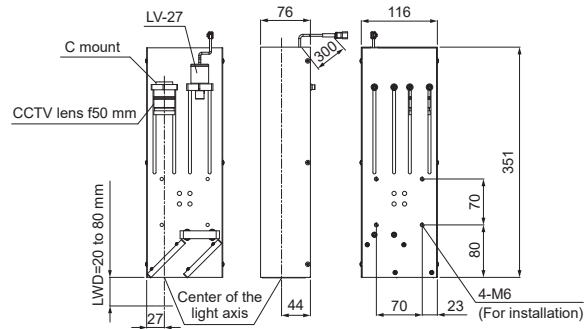
\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)  
 \*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

**Dimensions (mm)**

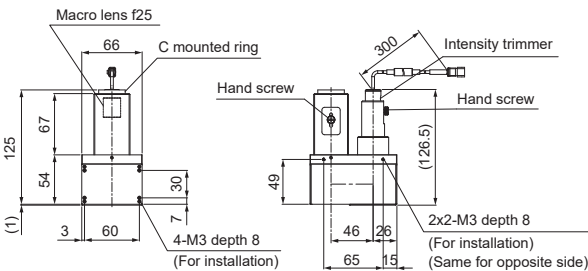
MSU-10RD2/SW2/BL2



MSU-30RD2/BL2



MSU-30X20RD2/SW2/BL2/GR2



**Reference chart for the field of vision (Estimate)**

Using a 1/3 inch sensor camera

Model Name	Field of vision	WD
MSU-10	7.5 mm	58 mm
MSU-30	18.7 mm	50 mm
MSU-30X20	15 mm	24 mm

Regarding reference field of vision  
 This is an estimate to help you select a light unit, and individual units may vary from the data listed above depending on your imaging conditions.

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

Integrated lens for easy light source and camera optical axis adjustment

**Built to order**  
This is a made-to-order product. For quotes and details, contact your CCS sales representative.



MSU-47X34SW+TH2SP

**Applications**

Imaging where the degree of extraction of minor scratches, dents, and depressions on the glossy surface is adjusted, imaging that improves the reproducibility of verification conditions, etc.

**Features**

- Lens-integrated coaxial lights with the light source built into the telecentric lens
- The NA of the light source side and imaging side can be adjusted
- The parallelism of the light can be changed by adjusting the aperture on the lens side and light side
- Enables easy light source and camera optical axis adjustment
- A unique optical design that achieves a compact housing
- Compatible with high-megapixel cameras such as 2/3-type 5 MP and 1-type 9 MP

**Light Aperture Adjustment Example**

Imaging the Appearance of Button Battery



Workpiece: Button battery



Light aperture status



Light aperture status



Light aperture status

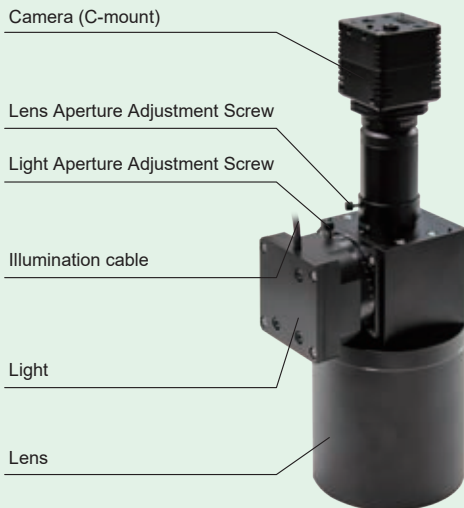
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Strobe	MSU MFU
Water-proof	PF
UV / Violet	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

Lineup

Model Name	Input Voltage	Power Consumption	LED Color	Correlated Color Temperature	Options	Extension Cables	Recommended Control Units								
MSU-47X34SW+TH2SP	24 V	2.9 W	White	5800 K	-	<table border="1"> <tr> <td>FCB<sup>1</sup> Straight Cable</td> <td>FCB-F 2-Branch Cable</td> </tr> <tr> <td>FCB-W<sup>2</sup> 4-Branch Cable</td> <td>FRCB Robot Cable</td> </tr> </table> <p><sup>1</sup> The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. <sup>2</sup> The cables with a model name that ends with "-EL2" are not included.</p>	FCB <sup>1</sup> Straight Cable	FCB-F 2-Branch Cable	FCB-W <sup>2</sup> 4-Branch Cable	FRCB Robot Cable	<table border="1"> <tr> <td>PD4</td> <td>PD3</td> </tr> <tr> <td>CC-ST-1024</td> <td>POD</td> </tr> </table>	PD4	PD3	CC-ST-1024	POD
FCB <sup>1</sup> Straight Cable	FCB-F 2-Branch Cable														
FCB-W <sup>2</sup> 4-Branch Cable	FRCB Robot Cable														
PD4	PD3														
CC-ST-1024	POD														
Extension Cables ▶ P.383						Control Unit Selection Guide ▶ P.309		List of Control Unit Specifications ▶ P.311							

Parts/Usage

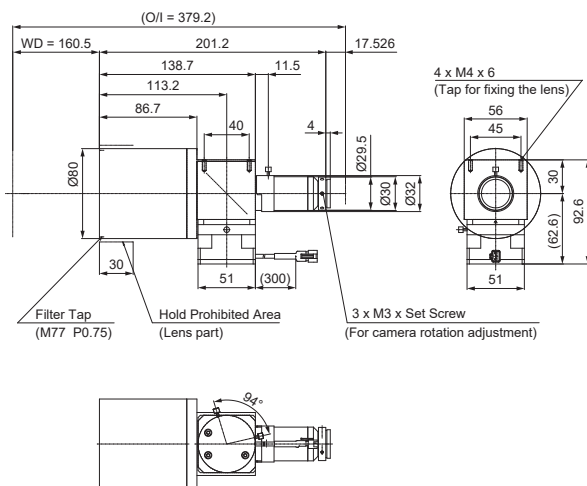
Parts



Usage

- Camera installation**  
The field of view changes by the sensor size of the mounted camera. Select and install the camera according to the workpiece.
- Installing the main body**  
Secure the main body so that the working distance (WD) is around 160 mm.
- Adjusting the optical axis**  
The camera's optical axis and the workpiece must be vertically aligned. Use a mirror for easier adjustment of the optical axis alignment. We recommend dimming the light while adjusting the alignment. Align the optical axis by adjusting the tilt of the light unit or the brightness to evenly illuminate the entire field of view.
- Imaging the workpiece**  
Slide the "light aperture adjustment screw" and observe the change in the workpiece. Fix the light aperture adjustment screw near where appropriate images can be obtained. If it is necessary to obtain depth of field, slide the lens aperture adjustment screw and fix it near the appropriate depth of field.
- Setting the light intensity**  
Adjust the light brightness and the exposure time of the camera to set the appropriate brightness.

Dimensions (mm)



Specifications

Model Name	MSU-47X34SW+TH2SP	
Lens Shape	Object-side Telecentric Lens	Fixed Magnification Lens
Optical Magnification	0.3x ±5%	
Working Distance (WD)	(160.5 ±5)mm	
Depth of Field	4.44 to 33.3 mm *Calculated with a permissible confusion circle diameter of 40 μm	
Resolution	11.2-83.9 μm *Theoretical resolution at a wavelength of 550 nm	
NA	0.03 to 0.004 (design value)	
Effective F Value (Fe)	5 to 34.7 (design value)	
TV Distortion	-0.01% (design value)	
Weight	Approx. 1.1 kg	
Filter Diameter	M77 P0.75	
Mount	C mount	
Applicable Image Size*	10.3 x 14.1 mm (diagonal 17.6 mm, 1.1 type)	
Field of View (VxH)	1/3 type: 12 x 16 mm, 1/2 type: 16 x 21.3 mm, 1/1.8 type: 18.0 x 23.6 mm, 2/3 type: 23.6 x 28.3 mm, 1 type: 34 x 42.6 mm, 1.1 type: 34.5 x 47.1 mm	
Light Model Name	TH2-27X27SW (LED color: white, correlated color temperature: 5800 K)	
Light Input Voltage (max.)	24 VDC	
Light Power Consumption (typ.)	2.9 W	
Distance Between Objects (O/I)	379.2 mm (design value)	
Focal Length	475.5 mm (design value)	
Exit Pupil Position	-142.7 mm	
Operating environment humidity	Temperature: 0 to 40°C, Humidity: 20 to 80% RH (with no condensation)	
Storage temperature/humidity	Temperature: -10 to 50°C, Humidity: 20 to 80% RH (with no condensation)	

\*As the image size is in inches, the field of view is an approximation.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LN LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products



Provides light with high parallelism using original lighting technology



**Applications** Dimension measuring, dimension measuring of cylindrical objects, inspection for fine burrs, etc.

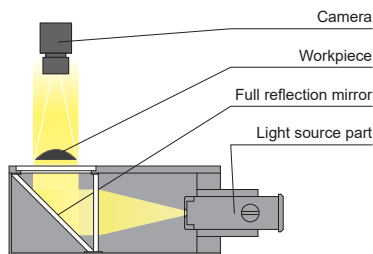
**Features**

Our unique optical design achieves highly accurate imaging that prevents light from wrapping around the workpiece. Light convergence can be adjusted according to the lens on the imaging side.

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

**Example configuration (MFU-34×30)**

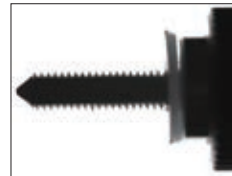


**Imaging example: Imaging the appearance of screws**



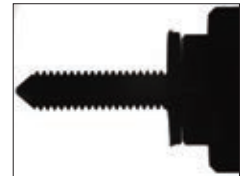
Workpiece: Knurled screws

**LED Flat Light**



With a Flat Light, the emitted light wraps around the workpieces, making it difficult to emphasize the edges.

**MFU-34X30BL2**



It prevents the emitted light from wrapping around, allowing for the edges to be emphasized.

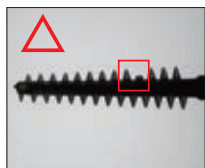
**Comparison of Imaging with a Flat Light and Collimated Light**

**Inspection of the appearance of interdental brush**

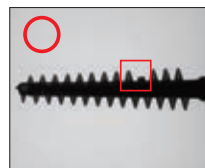
**Normal light**



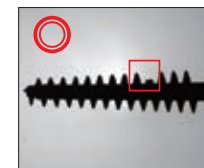
**Flat Light (High Brightness Type) TH2-27X27BL**



**Flat Light (High Directivity Type) TH2-27X27BL-PM**



**MFU-34X30BL2**



Flat lights make it difficult to emphasize the edges of the silhouette because the light wraps around the workpiece

With the MFU-34X30BL2, it is possible to emphasize the edges of the silhouette by preventing light from wrapping around the workpiece.

## Lineup

Model Name	LED Color	Input Voltage	Power Consumption	Extension Cables	Recommended Control Units	Weight	
MFU-34X30BL2-12	Blue	12 VDC	0.9 W	CB Straight Cable	PD2 <sup>*1</sup>	200 g	
MFU-54X40BL2-12				CB-F 4-branch Cable			
MFU-34X30BL2-24		24 VDC	1.7 W	CB-W 2-branch Cable	RFB Robot Cable	200 g	
MFU-54X40BL2-24				FCB <sup>*2</sup> Straight Cable	FCB-F 4-branch Cable		PD4
				FCB-W <sup>*3</sup> 2-branch Cable	FRCB Robot Cable	CC-ST-1024	400 g

The MFU Series cannot be used with the strobe control unit (override mode).

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

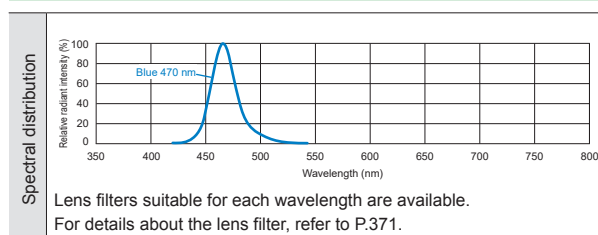
List of Control Unit Specifications ▶ P.311

\*1 The light unit is made for 12V input voltage. Please select a power supply with a 12V output voltage.

\*2 Excluding products with model numbers ending in -ME7, -EL2, -PF, or -PF-EL9.

\*3 Excluding products with model numbers ending in -EL2.

## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.  
The data included is for reference only. Actual values may vary.

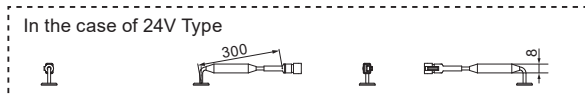
## Usage Instructions

- 1) Set the item to be inspected and determine the imaging range.
- 2) Set this product and determine the distance between the lens and the camera (WD).
- 3) Align this product's light axis with the center of the imaging field of vision.
- 4) Adjust intensity.

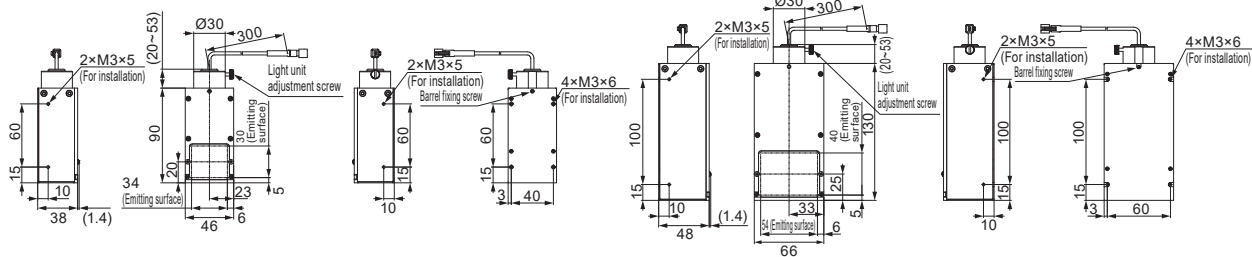
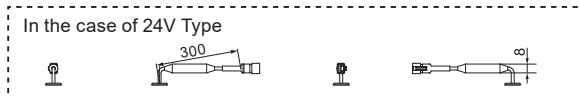
For details about the procedure for usage, refer to the material "MFU Series Operating Procedures" on our website.  
You can download this information from the product website page.

## Dimensions (mm)

MFU-34X30BL2-12/-24

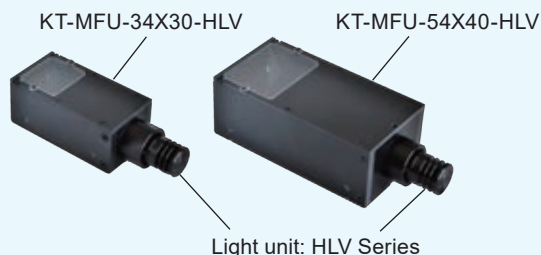


MFU-54X40BL2-12/-24



## KT-MFU Series (Spot lighting equipment for light units is sold separately)

KT-MFU Series are collimated backlight units that can be used in combination with the HLV Series. They are capable of higher power light emission than MFU Series.

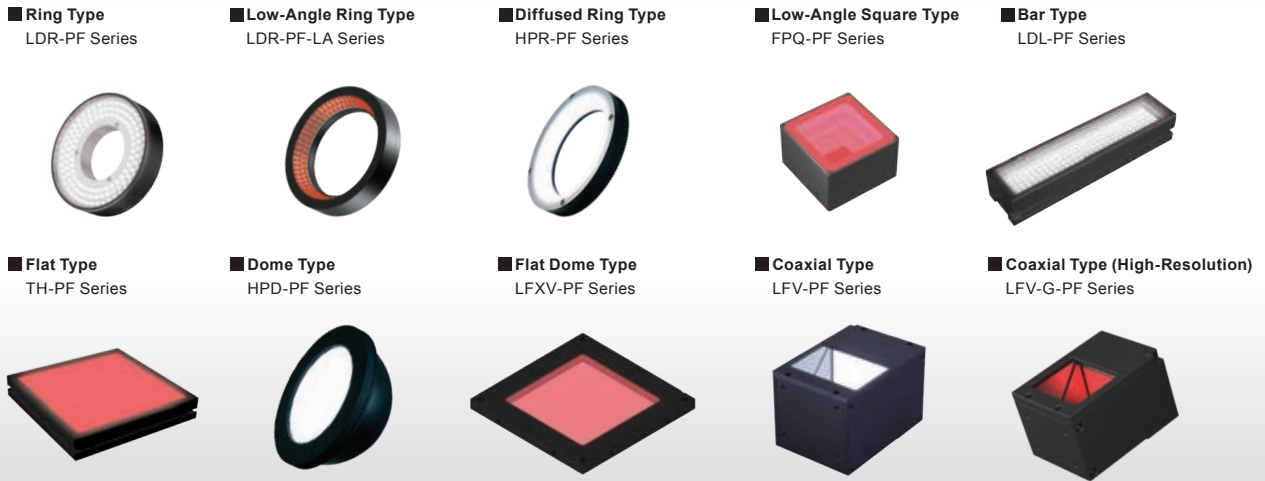


Model Name	Weight
KT-MFU-34X30-HLV	200 g
KT-MFU-54X40-HLV	400 g

Compatible Lights: HLV3-22-1C/ -2C/ -4C Series  
\* HLV3 (L-shape Type) and HLV3-22-2C-1220 are not compatible with the KT-MFU Series.  
\* Please use the recommended light units for each HLV product.



## Ultra-high power strobe light units



**Applications**

Inspections for damage or stains, visual and color determination inspections, printed character inspection, appearance inspection for food or medicines, etc.

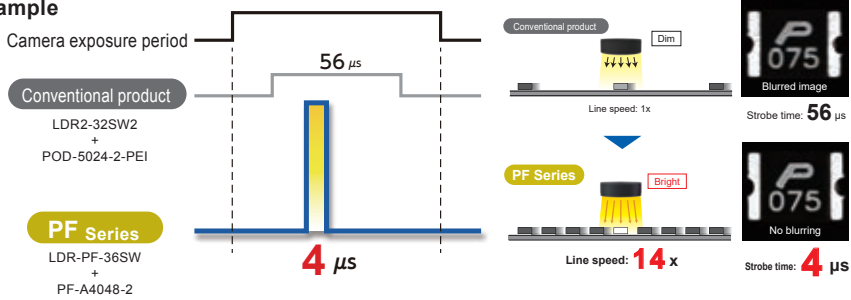
### “Extreme Power” Strobe Lights

The High Power Strobe Lights PF Series enables extreme power strobe lighting. The PF Series light units are dedicatedly designed for strobe lighting to achieve further large output power than that of the conventional products when used with the dedicated control units.

This makes them applicable to fast inspection lines and a wide range of applications improving productivity.

**Comparison of images with the conventional product**

**Example**



**Conventional product**  
Long strobe time due to lack of brightness leads to image blurring.

**PF Series**  
High power emission enables instantaneous imaging.

### Wide Variety of Available Light Units

Flat type, flat dome type, low-angle square type, and coaxial (high-resolution) type have been added. A total of 10 series with 76 models are available to meet your inspection needs.

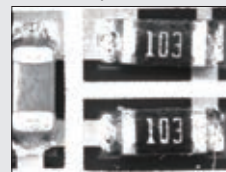


We accept custom orders. Please feel free to inquire.

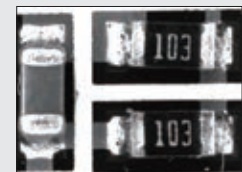
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

### Brightness Comparable to Xenon Flash Lamps

Achieved the same inspection speed made possible by xenon lamps.



15 W xenon flash lamp  
Strobe time: 1.75 μs (measured value)

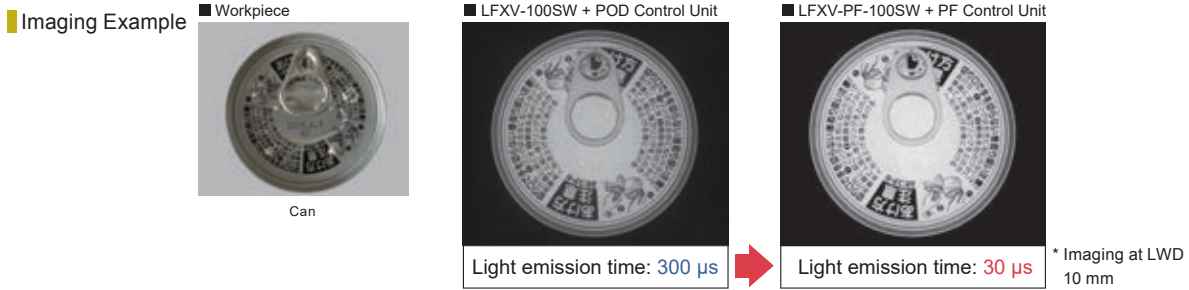


High power strobe light unit  
Strobe time: 15 μs

The data included is for reference only. Actual values may vary.

## Shorten Emission Time for Faster Inspection Lines

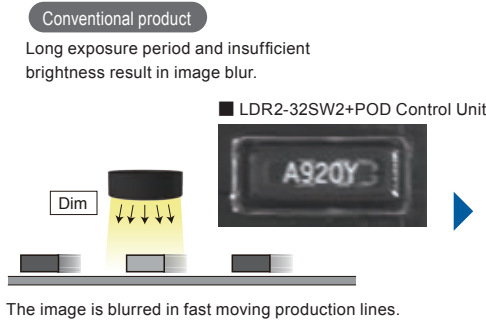
Inspection lines can be faster as clear images can be captured even with a short light emission time.



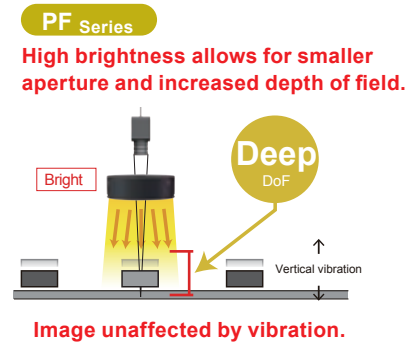
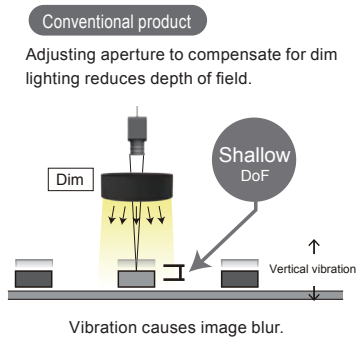
Shorten emission time to approx. 1/10 of conventional products on overdrive.

## No Blur at High Speed

### Horizontal Blur



### Vertical Blur



## Freely Adjustable Flash Timing

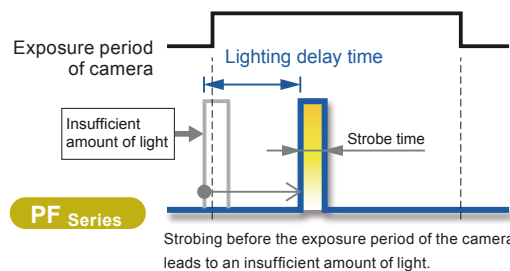
You can use the lighting delay time setting of the control unit to adjust the timing of the flash to be within the exposure period of the camera.

Dedicated Control Units PF-A4048-2 and PF-A16048-4

Maximize performance of the high power strobe light units.



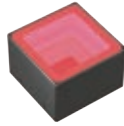
For more information on the dedicated control units ▶ P.345



Delaying the timing of the flash enables strobing within the exposure period of the camera.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

# PF Series



Refer to our website for product details.

CCS High Power Strobe Lights

Search



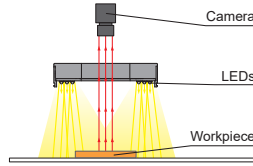
## Features of Each Series

### Ring Type LDR-PF Series

Strong direct light from the LEDs mounted on the flat board illuminates the workpiece from above.



Example configuration (LDR-PF-75)



Imaging example: Imaging the external appearance of chip components



Chip component



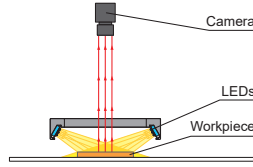
The appearance of the chip component is captured.

### Low-Angle Ring Type LDR-PF-LA Series

Provides extremely strong direct light from a low angle to the center.



Example configuration (LDR-PF-75-LA)



Imaging example: Imaging the appearance of medicine tablets with imprinted text



Medicine tablets



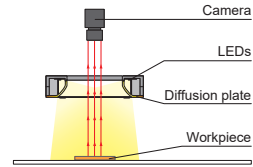
Strobe light allows you to capture the imprinted text and the appearance of the workpiece.

### Diffused Ring Type HPR-PF Series

The diffusion plate transmits light from LEDs and provides strong and uniform diffused light.



Example configuration (HPR-PF-100)



Imaging example: Imaging the appearance of beverage containers



Beverage container



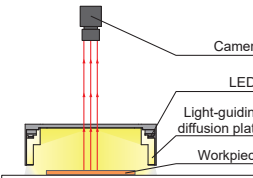
Condition of container bottom and text are clearly imaged.

### Low-Angle Square Type FPQ-PF Series

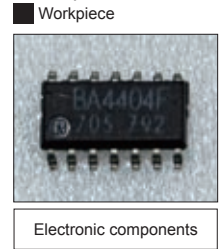
Low-angle diffuse illumination from 4 directions



Example configuration (FPQ-PF-48)



Imaging example: Exterior imaging of electronic components



Electronic components



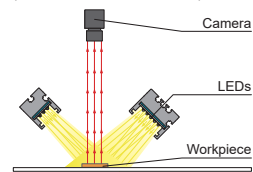
Clearly image print and cracked areas on electronic components.

### Bar Type LDL-PF Series

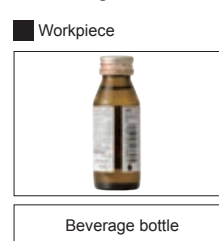
The diffusion plate transmits light from LEDs and provides uniform diffused light on the whole workpiece from its wide emitting surface.



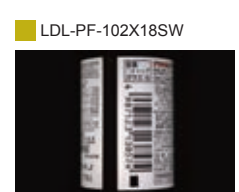
Example configuration (LDL-PF-102X18/102X30)



Imaging example: Imaging the paper label of beverage bottles



Beverage bottle

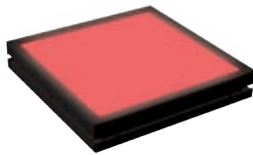


Captured image of a paper label and barcode.

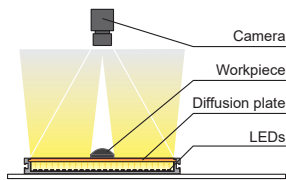


**Flat Type TH-PF Series**

Uniform diffuse light for backlight illumination



Example configuration (TH-PF-100X100)



**Imaging example: liquid level testing for disinfectant solution**

Workpiece



Disinfectant solution

TH-PF-100X100SW/RD



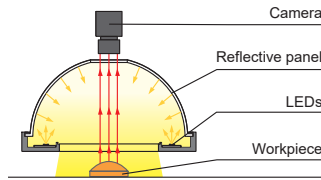
Accurately detect liquid level and label position.

**Dome Type HPD-PF Series**

Light from the LEDs is diffused inside the dome-shaped reflective panel. The whole surface of the workpiece is illuminated with diffused light uniformly.



Example configuration (HPD-PF-150)



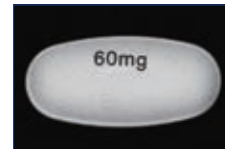
**Imaging example: Imaging the surface of medicine tablets**

Workpiece



Medicine tablet

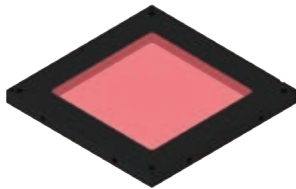
HPD-PF-75SW



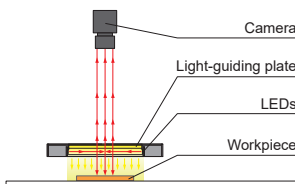
Condition of tablet surface and text are clearly imaged.

**Flat Dome Type LFXV-PF Series**

Dome light effect in a flat design



Example configuration (LFXV-PF-100)



**Imaging example: Print inspection on food cans**

Workpiece



Food cans

LFXV-PF-100SW



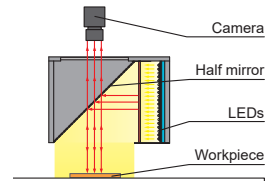
Print is clear and readable.

**Coaxial Type Lfv-PF Series**

Diffused light from the LEDs is reflected on the half mirror and directed vertically downward on the same axis as the camera axis.



Example configuration (Lfv-PF-100)



**Imaging example: Imaging the appearance of cans**

Workpiece



Can

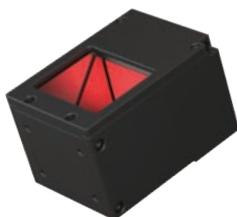
Lfv-PF-100SW



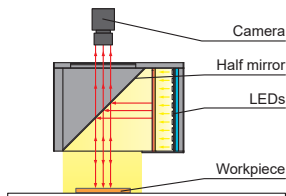
Condition and the appearance of can are clearly imaged.

**Coaxial Type (High-Resolution) Lfv-G-PF Series**

Thin half-mirror prevents ghost images

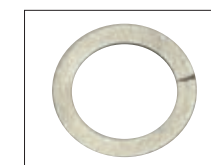


Example configuration (Lfv-G-PF-35)



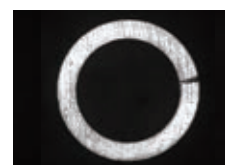
**Imaging example: Exterior inspection of drain gasket**

Workpiece



Drain gasket

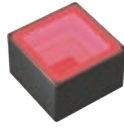
Lfv-G-PF-35SW



Clearly image gasket chipping.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

# PF Series



Refer to our website for product details.

CCS High Power Strobe Lights

Search



## Data: Illuminance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

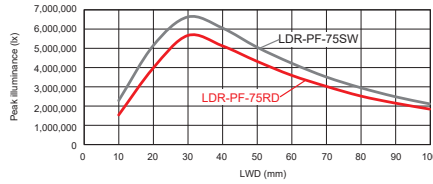
### Ring Type LDR-PF Series



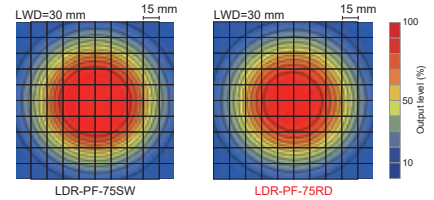
LDR-PF-75SW/RD

#### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



#### Uniformity (Relative irradiance)



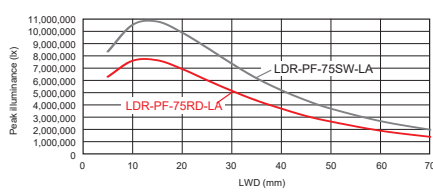
### Low-Angle Ring Type LDR-PF-LA Series



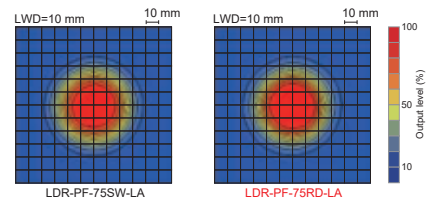
LDR-PF-75SW/RD-LA

#### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



#### Uniformity (Relative irradiance)



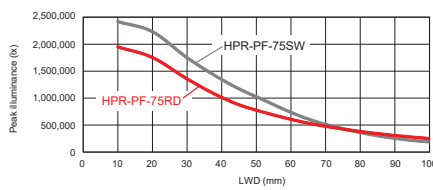
### Diffused Ring Type HPR-PF Series



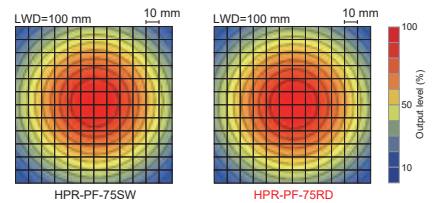
HPR-PF-75SW/RD

#### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



#### Uniformity (Relative irradiance)



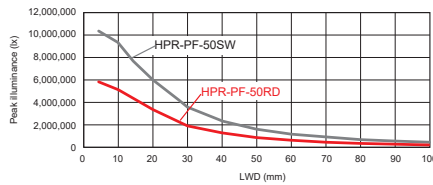
### Low-Angle Square Type FPQ-PF Series



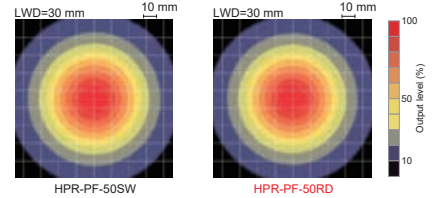
HPR-PF-50SW/RD

#### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



#### Uniformity (Relative irradiance)



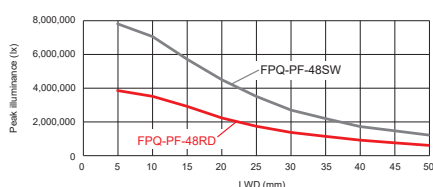
### Low-Angle Square Type FPQ-PF Series



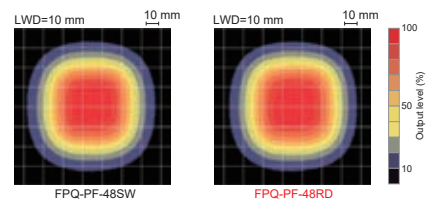
FPQ-PF-48SW/RD

#### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

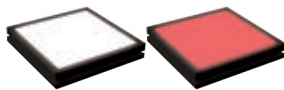
<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



#### Uniformity (Relative irradiance)

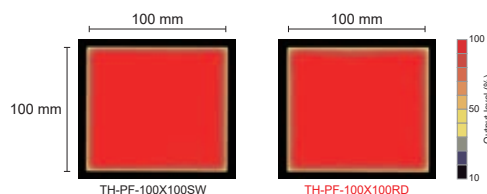


### Flat Type TH-PF Series

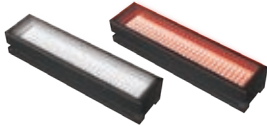


TH-PF-100X100SW/RD

#### Uniformity (Relative irradiance)



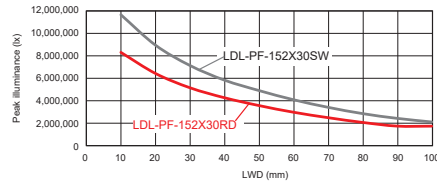
## Bar Type LDL-PF Series



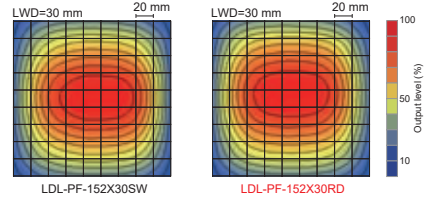
LDL-PF-152X30SW/RD

### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

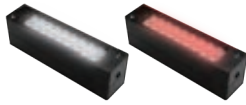
<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



### Uniformity (Relative irradiance)



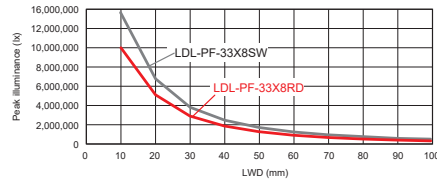
## Bar Type LDL-PF Series



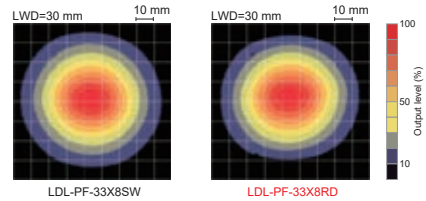
LDL-PF-33X8SW/RD

### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



### Uniformity (Relative irradiance)



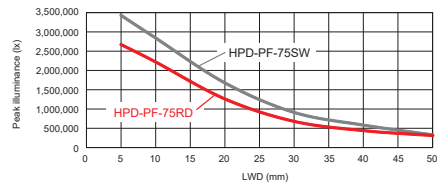
## Dome Type HPD-PF Series



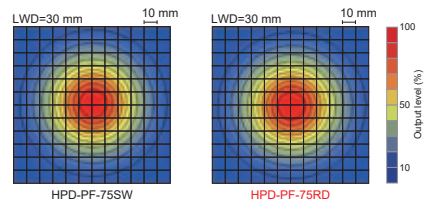
HPD-PF-75SW/RD

### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

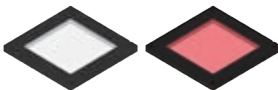
<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



### Uniformity (Relative irradiance)



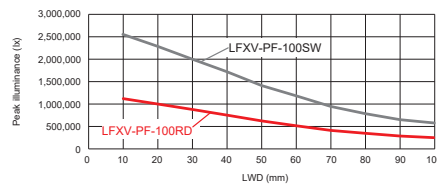
## Flat Dome Type LFXV-PF Series



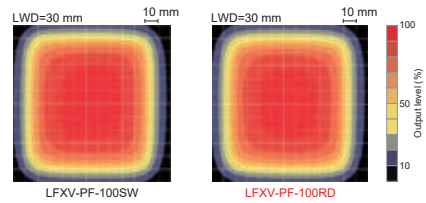
LFXV-PF-100SW/RD

### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

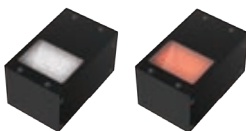
<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



### Uniformity (Relative irradiance)



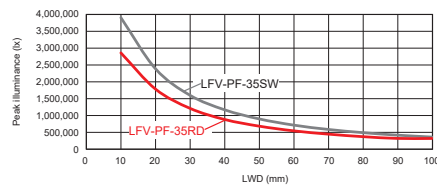
## Coaxial Type LFXV-PF Series



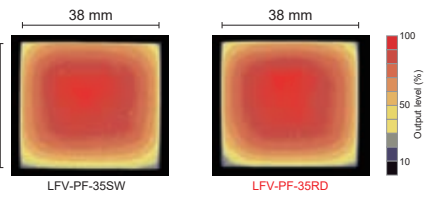
LFXV-PF-35SW/RD

### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

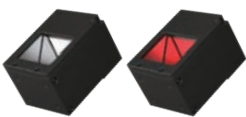
<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



### Uniformity (Relative irradiance)



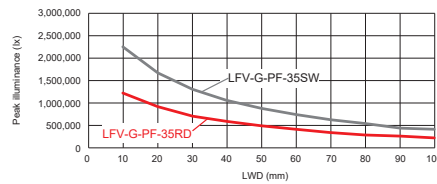
## Coaxial Type (High-Resolution) LFXV-G-PF Series



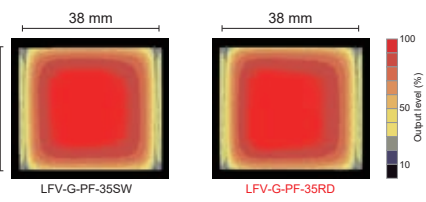
LFXV-G-PF-35SW/RD

### Illuminance graph<sup>\*1</sup>(LWD characteristics)<sup>\*2</sup>

<sup>\*1</sup> Illuminance on the optical axis <sup>\*2</sup> Illuminating distance from the light unit to the workpiece



### Uniformity (Relative irradiance)



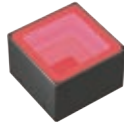
LDR2	Ring	(Direct)
LDR2-LA	Ring	(Direct)
LDR-LA1	Ring	(Direct)
SQR	Ring	(Direct)
SQR-TP	Ring	(Direct)
HLDR3	Ring	(Convergent/Diffused)
HPR2	Ring	(Convergent/Diffused)
LFR	Ring	(Convergent/Diffused)
LKR	Ring	(Convergent/Diffused)
FPR	Ring	(Convergent/Diffused)
FPQ3	Square	
LDL2	Bar	
LDLB	Bar	
HLDL3	Bar	
LB	Bar	
TH2 (5 types)	Flat	
LFL	Flat	
HPD2	Dome	
LDM2	Dome	
LAV	Dome	
PDM	Dome	
LFXV	Dome	
LFX3	Dome	
LFX3-PT	Dome	
LFV3	Coaxial	
LFV3-G	Coaxial	
MSU	Coaxial	
MFU	Coaxial	
PF	Strobe	
HLDR-IP	Water-proof	
HSL-PCL	Water-proof	
UV3/VL3	Violet	
UV	Violet	
LNSP-UV3-FN	Violet	
IR2	Infrared	(Under 1000-nm Type)
IR	Infrared	(Over 1000-nm Type)
CIR	Infrared	
LDF-RLS	Reference Light Source	
IU	Intensity Control	
HLV3	Spot, Etc.	
LV	Spot, Etc.	
HFS/HFR	Spot, Etc.	
HLV3-22-4-NR	Spot, Etc.	
HLV3-3M-RGB-4	Spot, Etc.	
PFBR-600SW2	Spot, Etc.	
PFBR-150	Spot, Etc.	
SLG-150V-CCS	Spot, Etc.	
PFB3(A)	Spot, Etc.	
LNL	Line	(Convergent)
LNSP2	Line	(Convergent)
Coaxial Units	Line	(Convergent)
LNSP-FN	Line	(Convergent)
LNLN-HK	Line	(Convergent)
LNSD	Line	(Diffused)
LND2	Line	(Diffused)
LT	Line	(Diffused)
LNV	Line	(Diffused)
LFXV (Rectangular Type)	Line	(Diffused)
TH2 (Rectangular Type)	Line	(Diffused)
LNDG	Line	(Oblique Angled)
LNIS2	Line	(Oblique Angled)
LNIS	Line	(Oblique Angled)
LNIS-FN	Line	(Oblique Angled)
Telecentric Lens	Lenses	
Macro Lens	Lenses	
Other Products	Lenses	
LDF-NB	Products	

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

# PF Series



Refer to our website for product details.

CCS High Power Strobe Lights

Search



## Lineup

Type	Model Name <sup>*1</sup>	Peak Current		Options	Extension Cables	Dedicated <sup>*4</sup> Control Units	Weight	
		RD (Red)	SW (White)					
Ring	LDR-PF-36□□	5.4 A		Diffusion plate	FCB-PF Straight Cable (Dedicated Cable)		70 g	
	LDR-PF-54□□	10.8 A		Polarizing plate			110 g	
	LDR-PF-75□□	18 A	21.6 A	Adapter			150 g	
Low-Angle Ring	LDR-PF-75□□-LA	14.4 A		Diffusion plate	FCB-PF Straight Cable (Dedicated Cable)		125 g	
	LDR-PF-100□□-LA	28.8 A		Adapter	FCB-PF-EL9 Straight Cable (Dedicated Cable)		200 g	
	LDR-PF-150□□-LA	42 A					350 g	
Diffused Ring	HPR-PF-50□□	6 A		Brackets	FCB-PF Straight Cable (Dedicated Cable)		50 g	
	HPR-PF-75□□	12 A					170 g	
	HPR-PF-100□□	21.6 A					180 g	
	HPR-PF-150□□	36 A					270 g	
	HPR-PF-200□□	43.2 A					400 g	
Low-Angle Square	FPQ-PF-32□□ (Custom)	*2		Reflective plate	FCB-PF Straight Cable (Dedicated Cable)		*2	
	FPQ-PF-48□□	14 A		-			90 g	
Bar	Emitting width 4 mm	LDL-PF-19X4□□ (Custom)	*2		Diffusion plate Polarizing plate Brackets	FCB-PF Straight Cable (Dedicated Cable)	PF-A4048-2 PF-A16048-4	*2
	Emitting width 8 mm	LDL-PF-33X8□□	4 A					22 g
	Emitting width 18 mm	LDL-PF-52X18□□	5.4 A					140 g
		LDL-PF-102X18□□	10.8 A					210 g
		LDL-PF-152X18□□	16.2 A					290 g
	Emitting width 30 mm	LDL-PF-52X30□□	9 A					180 g
		LDL-PF-102X30□□	18 A					270 g
LDL-PF-152X30□□	27 A		380 g					
Flat	TH-PF-27X27□□ (Custom)	*2		Light control film Brackets	FCB-PF-EL9 Straight Cable (Dedicated Cable)		*2	
	TH-PF-51X51□□ (Custom)	*2					*2	
	TH-PF-100X100□□	41 A					200 g	
Dome	HPD-PF-75□□	12 A		Brackets	FCB-PF Straight Cable (Dedicated Cable)		150 g	
	HPD-PF-100□□	21.6 A					170 g	
	HPD-PF-150□□	36 A					310 g	
	HPD-PF-200□□	43.2 A					480 g	
Flat Dome	LFXV-PF-25□□ (Custom)	*2		Protective plate	FCB-PF-EL9 Straight Cable (Dedicated Cable)		*2	
	LFXV-PF-50□□ (Custom)	*2					*2	
	LFXV-PF-75□□ (Custom)	*2					*2	
	LFXV-PF-100□□	26 A	36 A				440 g	
Coaxial	LFV-PF-35□□	10.8 A	14.4 A	Diffusion plate	FCB-PF Straight Cable (Dedicated Cable)		230 g	
	LFV-PF-50□□	18.0 A	21.6 A	Polarizing plate			400 g	
	LFV-PF-70□□	37.8 A		Brackets			FCB-PF-EL9 Straight Cable (Dedicated Cable)	800 g
	LFV-PF-100□□	48.6 A	64.8 A	Diffusion plate Polarizing plate Light control film				PF-A16048-4
Coaxial (High-Resolution)	LFV-G-PF-27□□ (Custom)	*2		Protective plate	FCB-PF		PF-A4048-2	
	LFV-G-PF-35□□	8 A					PF-A16048-4	150 g

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White)

\*2 Contact our local sales office for details.

\*3 Light unit has two connectors. Use two extension cables of the same length to connect the light unit. Using cables of different lengths may cause uneven light emission due to voltage drop caused by the DC resistance of the cable.

\*4 The output characteristics and light intensity setting values for starting light emission vary with the combinations of light units and power supplies. Set the intensity range in accordance with the application.

Extension Cables ▶ P.148

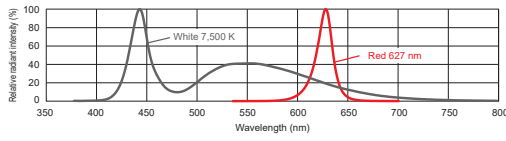
Dedicated power supply ▶ P.345

We accept custom orders. • Shape modifications  
Please feel free to inquire. • Brightness increases  
• Changes in wavelength, etc.

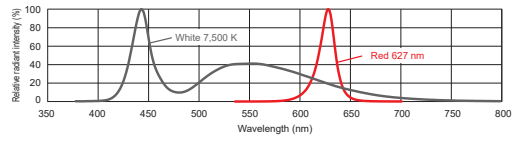
## LED Properties

Spectral  
distribution

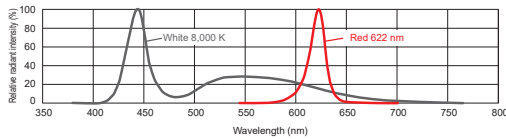
### LDR-PF Series



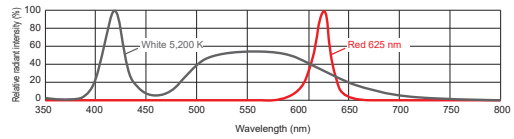
### LDL-PF Series



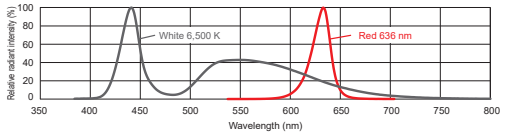
### LDR-PF-LA Series



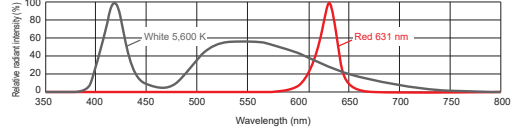
### TH-PF Series



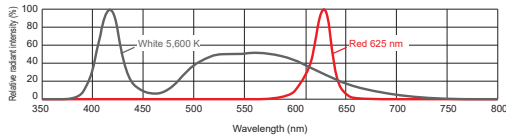
### HPR-PF/HPD-PF Series \*Excluding HPR-PF-50



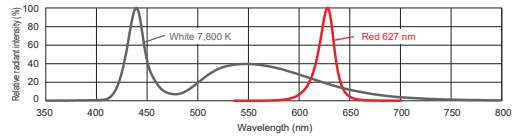
### LFXV-PF Series



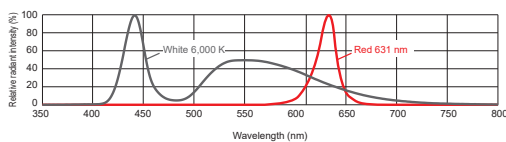
### HPR-PF-50SW/RD



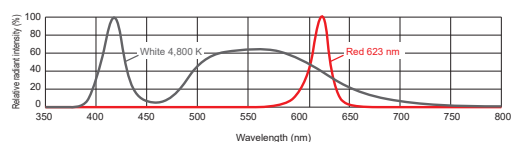
### LFV-PF Series



### FPQ-PF Series



### LFV-G-PF Series



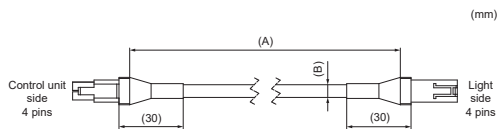
Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.

The data included is for reference only. Actual values may vary.

## Extension Cables

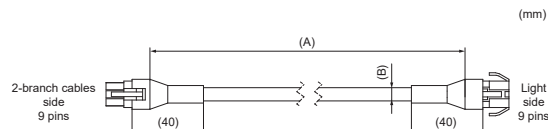
### FCB-PF



Model Name	Dimension A	Dimension B	Permitted bending radius *	Weight
FCB-1-PF	1 m	Ø5.9	35.4 mm	100 g
FCB-2-PF	2 m			150 g
FCB-3-PF	3 m	Ø7.0	42.0 mm	200 g
FCB-5-PF	5 m			450 g

\*The allowable cable bend radius is for reference only. It is not a guaranteed value. Refer to the user manual for extension cable connection method.

### FCB-PF-EL9



Model Name	Dimension A	Dimension B	Permitted bending radius *	Weight
FCB-1-PF-EL9	1 m	Ø7.4	44.4 mm	100 g
FCB-2-PF-EL9	2 m			190 g
FCB-3-PF-EL9	3 m	Ø9.1	54.6 mm	270 g
FCB-5-PF-EL9	5 m			680 g

\*The allowable cable bend radius is for reference only. It is not a guaranteed value. Refer to the user manual for extension cable connection method.

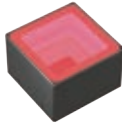
LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
<b>PF</b>	<b>Strobe</b>
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique/Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

# PF Series



Refer to our website for product details.

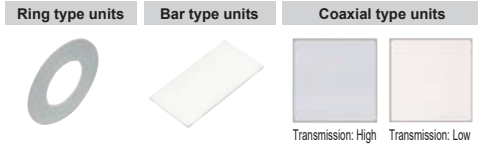
CCS High Power Strobe Lights

Search



## Options

### Diffusion Plates



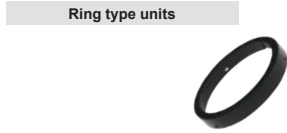
Reduces glare, especially problematic in the imaging of glossy workpieces.

Model Name <sup>1</sup>	Applicable Light Unit
DF-LDR-PF-OO	LDR-PF Series <sup>2</sup>
DF-LDR-PF-OO-LA	LDR-PF-LA Series <sup>2</sup>
DF-LDL-PF-OO	LDL-PF Series
DF-LDL2-33X8	LDL-PF-33X8
DF-LFV3-OO (Transmission: High) <sup>3</sup>	LFV-PF Series
DF-LFV3-OO-UF (Transmission: Low)	

<sup>1</sup> OO in the model name contains the light size.  
<sup>2</sup> An adapter is needed for attachment to the light unit.  
<sup>3</sup> It is the same diffusion plate as the standard equipment.

▶ P.375

### Adapters



For attaching a diffusion plate or polarizing plate to the light unit.

Model Name <sup>1</sup>	Applicable Light Unit
AD-LDR-PF-OO	LDR-PF Series
AD-LDR-PF-OO-LA	LDR-PF-LA Series

<sup>1</sup> OO in the model name contains the light size.  
 ▶ P.380

### Protective Plates

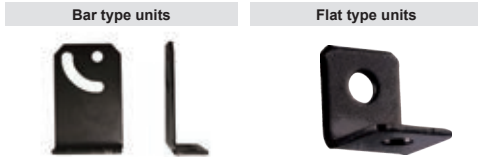


Protects the emitting part of the light unit.

Model Name <sup>1</sup>	Applicable Light Unit
PR-LFV3-OO	LFV-G-PF Series
PR-LFXV-OO	LFXV-PF Series

<sup>1</sup> OO in the model name contains the light size.  
 PR-LFV3 Series ▶ P.133  
 PR-LFXV Series ▶ P.115

### Brackets

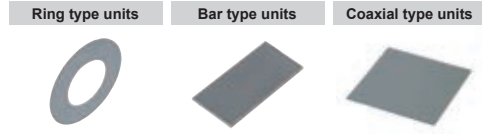


Secures light units.

Model Name	Applicable Light Unit
BK-LDL-PF	LDL-PF Series
BK-TH-LE12	TH-PF Series

▶ P.381

### Polarizing Plates

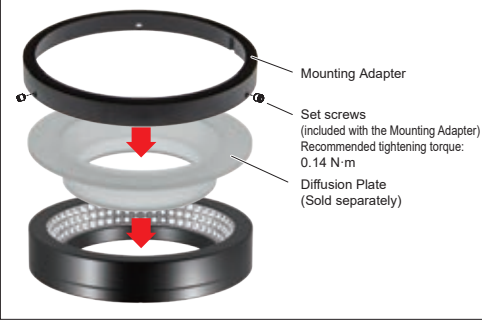


Reduces glare when used in combination with a polarizing filter on the camera.

Model Name <sup>1</sup>	Applicable Light Unit
PL-LDR-PF-OO	LDR-PF Series <sup>2</sup>
PL-LDL-PF-OO-HO/VE <sup>3</sup>	LDL-PF Series
PL-LDL2-33X8-HO/VE	LDL-PF-33X8
PL-LFV3-OO	LFV-PF Series

<sup>1</sup> OO in the model name contains the light size.  
<sup>2</sup> An adapter is needed for attachment to the light unit.  
<sup>3</sup> HO: Light is polarized parallel to the longer edge of the plate.  
 VE: Light is polarized parallel to the shorter edge of the plate.  
 ▶ P.377

### How to Install the Diffusion Plate



### Light Control Films

Flat type units/Coaxial type units

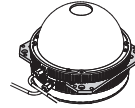


Improves parallelism of light to reduce light diffraction.

Model Name <sup>1</sup>	Applicable Light Unit
LC-LFV3-OO	LFV-PF Series
LC-TH2-OO-HO/VE <sup>2</sup>	TH-PF Series

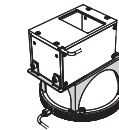
<sup>1</sup> OO in the model name contains the light size.  
<sup>2</sup> Model suffix -HO/VE has a different louver direction.  
 HO: When installed with the cable outlet directly below, the louver direction is horizontal.  
 VE: When installed with the cable outlet directly below, the louver direction is vertical.  
 ▶ P.379

### Light Joint Brackets



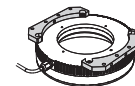
Model Name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-75-JO	HPD-PF-75	HPR-PF-75
BK-100-JO	HPD-PF-100	HPR-PF-100
BK-150-JO	HPD-PF-150	HPR-PF-150
BK-200-JO	HPD-PF-200	HPR-PF-200

### Coaxial Light Joint Brackets



Model Name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-HPD2-75-LFV	HPD-PF-75	LFV-PF-35
BK-HPD2-100-LFV	HPD-PF-100	LFV-PF-50
BK-HPD2-150-LFV	HPD-PF-150	
BK-HPD2-200-LFV	HPD-PF-200	LFV-PF-70

### Expansion Mounting Brackets



Model Name	Applicable Light Unit (Common for all colors)
BK-75-CI	HPD-PF-75 / HPR-PF-75
BK-100-CI	HPD-PF-100 / HPR-PF-100
BK-150-CI	HPD-PF-150 / HPR-PF-150
BK-200-CI	HPD-PF-200 / HPR-PF-200

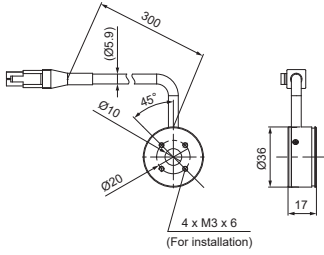
▶ P.382

➤ **Dimensions (mm)**

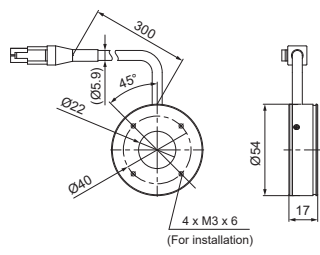
**Ring Type**  
**LDR-PF Series**



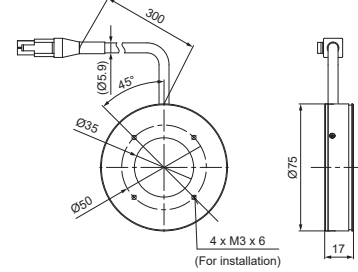
LDR-PF-36SW/RD



LDR-PF-54SW/RD



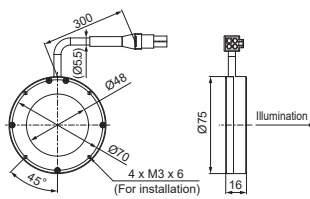
LDR-PF-75SW/RD



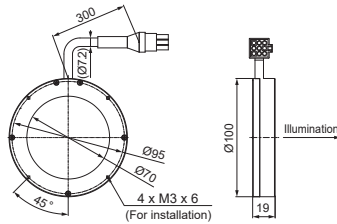
**Low-Angle Ring Type**  
**LDR-PF-LA Series**



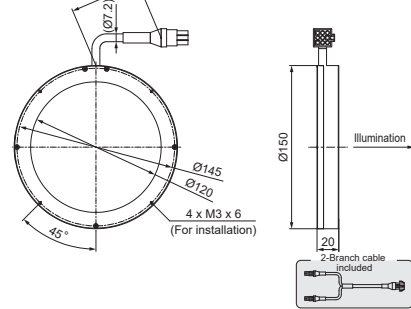
LDR-PF-75RD-LA / SW-LA



LDR-PF-100RD-LA / SW-LA



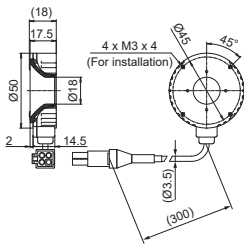
LDR-PF-150RD-LA / SW-LA



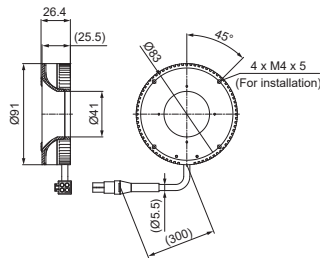
**Diffused Ring Type**  
**HPR-PF Series**



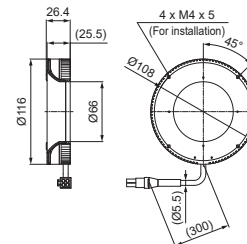
HPR-PF-50SW/RD



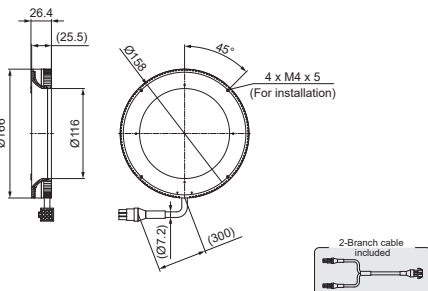
HPR-PF-75SW/RD



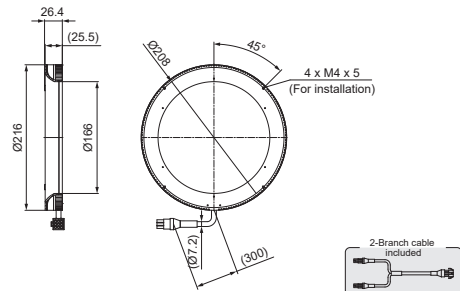
HPR-PF-100SW/RD



HPR-PF-150SW/RD



HPR-PF-200SW/RD



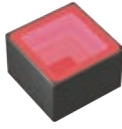
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2	Ring	(Direct)
LDR2-LA	Ring	(Direct)
LDR-LA1	Ring	(Direct)
SQR	Ring	(Direct)
SQR-TP	Ring	(Direct)
HLDR3	Ring	(Convergent/Diffused)
HPR2	Ring	(Convergent/Diffused)
LFR	Ring	(Convergent/Diffused)
LKR	Ring	(Convergent/Diffused)
FPR	Ring	(Convergent/Diffused)
FPQ3	Square	(Convergent/Diffused)
LDL2	Bar	
LDLB	Bar	
HLDL3	Bar	
LB	Bar	
TH2 (5 types)	Flat	
LFL	Flat	
HPD2	Dome	
LDM2	Dome	
LAV	Dome	
PDM	Dome	
LFV	Dome	
LFV3	Dome	
LFV3-PT	Dome	
LFV3	Coaxial	
LFV3-G	Coaxial	
MSU	Coaxial	
MFU	Coaxial	
<b>PF</b>	<b>Strobe</b>	
HLDR-IP	Water-proof	
HSL-PCL	Water-proof	
UV3/VL3	UV / Violet	
UV	UV / Violet	
LNSP-UV3-FN	UV / Violet	
IR2 (Under 1000-nm Type)	Infrared	
IR (Over 1000-nm Type)	Infrared	
CIR	Infrared	
LDF-RLS	Reference Light Source	
IU	Intensity Control	
HLV3	Spot, Etc.	
LV	Spot, Etc.	
HFS/HFR	Spot, Etc.	
HLV3-22-4-NR	Spot, Etc.	
PFBR-600SW2	Spot, Etc.	
PFBR-150	Spot, Etc.	
SLG-150V-CCS	Spot, Etc.	
PFB3(A)	Spot, Etc.	
LNL	Line (Convergent)	
LNSP2	Line (Convergent)	
Coaxial Units	Line (Convergent)	
LNSP-FN	Line (Convergent)	
LNLN-HK	Line (Convergent)	
LNSD	Line (Diffused)	
LND2	Line (Diffused)	
LT	Line (Diffused)	
LNV	Line (Diffused)	
LFVX (Rectangular Type)	Line (Diffused)	
TH2 (Rectangular Type)	Line (Diffused)	
LNDG	Line (Oblique Angled)	
LNIS2	Line (Oblique Angled)	
LNIS	Line (Oblique Angled)	
LNIS-FN	Line (Oblique Angled)	
Telecentric Lens	Lenses	
Macro Lens	Lenses	
Other Products	Lenses	
LDF-NB	Other Products	

# PF Series



Refer to our website for product details.

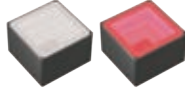
CCS High Power Strobe Lights

Search

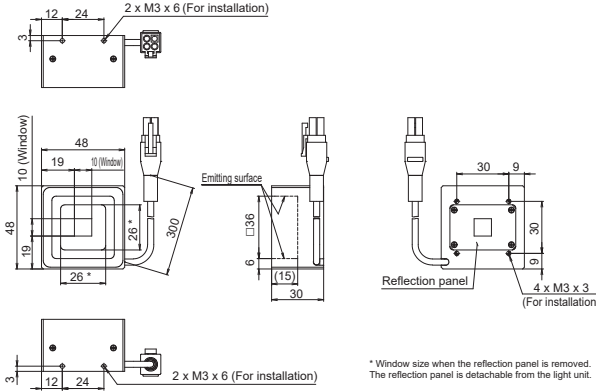


## Dimensions (mm)

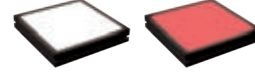
### Low-Angle Square Type FPQ-PF Series



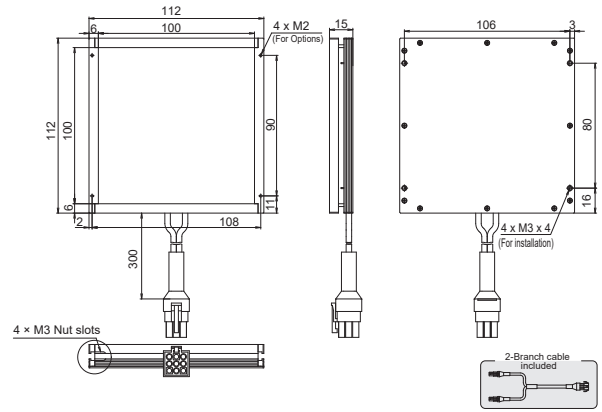
FPQ-PF-48SW/RD



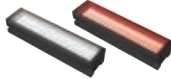
### Flat Type TH-PF Series



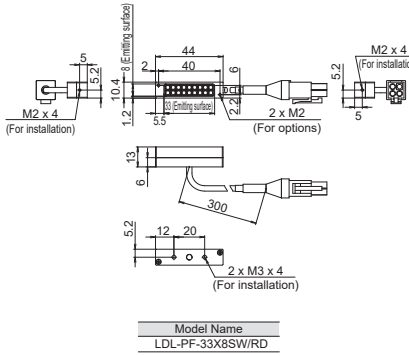
TH-PF-100X100SW/RD



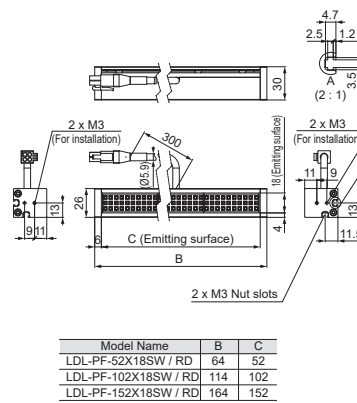
### Bar Type LDL-PF Series



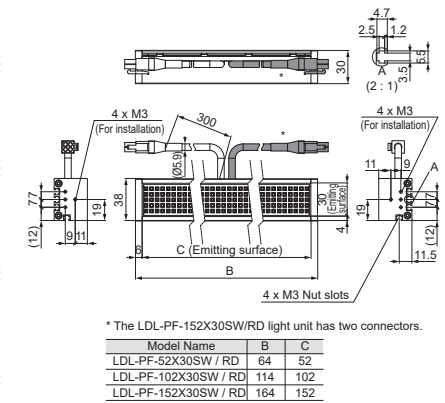
Emitting width 8 mm



Emitting width 18 mm



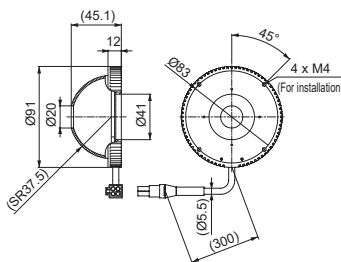
Emitting width 30 mm



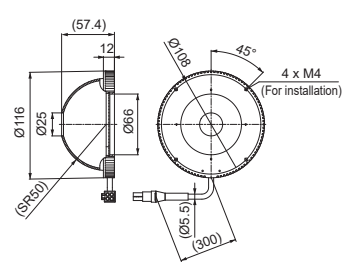
### Dome Type HPD-PF Series



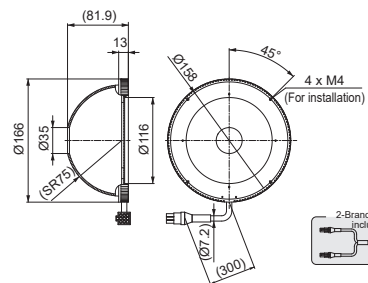
HPD-PF-75SW/RD



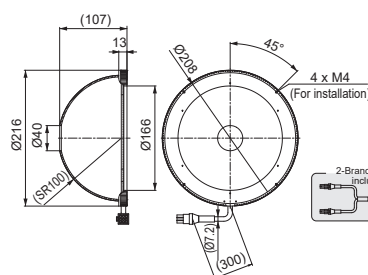
HPD-PF-100SW/RD



HPD-PF-150SW/RD

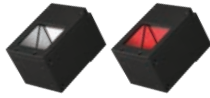


HPD-PF-200SW/RD

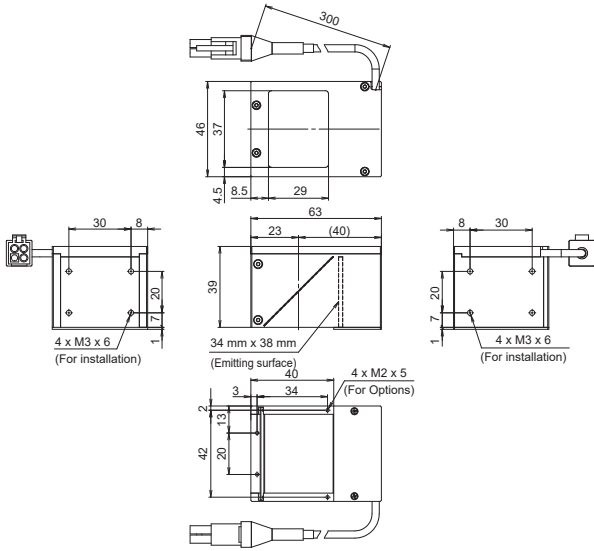




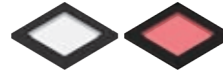
## Coaxial Type (High-Resolution) LFBV-G-PF Series



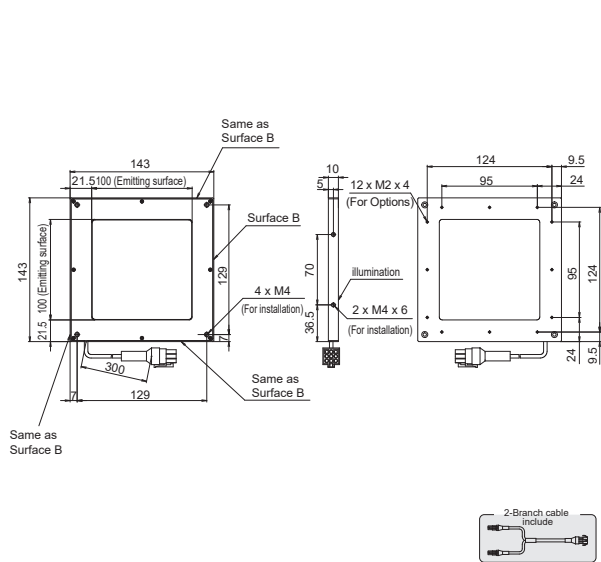
LFBV-G-PF-35SW/RD



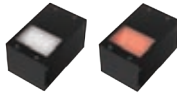
## Flat Dome Type LFBV-PF Series



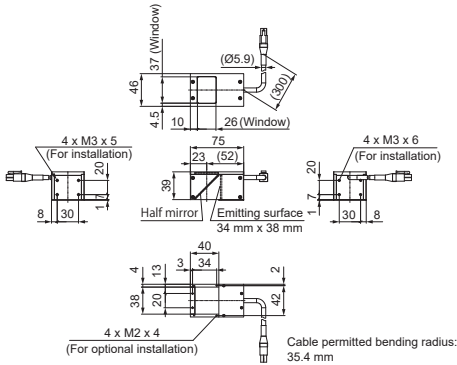
LFBV-PF-100SW/RD



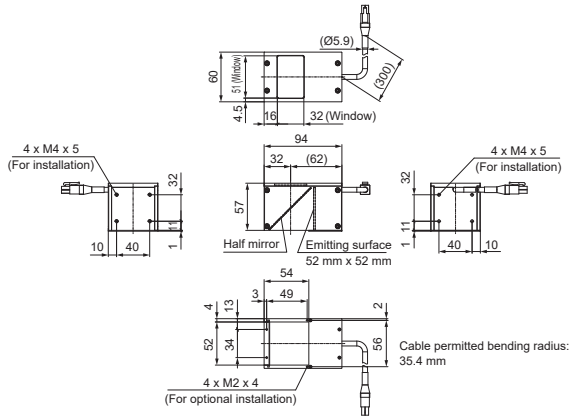
## Coaxial Type LFBV-PF Series



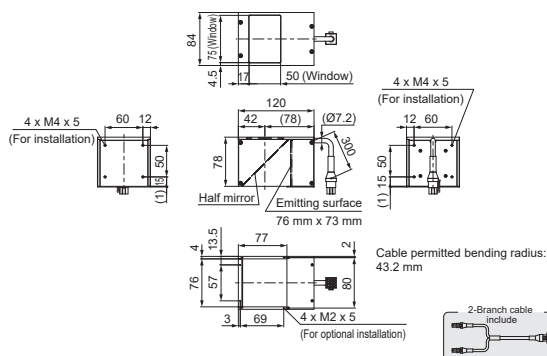
LFBV-PF-35SW/RD



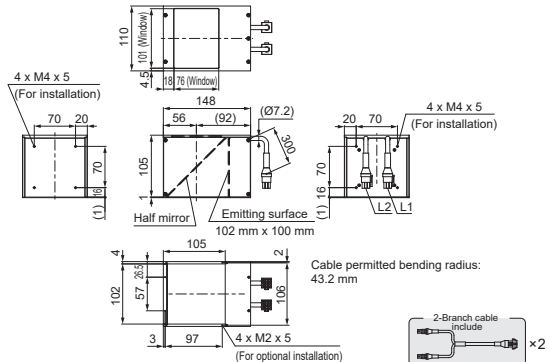
LFBV-PF-50SW/RD



LFBV-PF-70SW/RD



LFBV-PF-100SW/RD



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFBV3	Coaxial
LFBV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
(Rectangular Type)	Line (Diffused)
LFXV	Line (Diffused)
(Rectangular Type)	Line (Diffused)
TH2	Line (Diffused)
(Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

Waterproof

IP67 Lights (Waterproof Type)

**HLDR-IP Series**

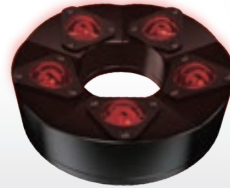
Refer to our website for product details.

CCS HLDR-IP

Search



Provides diffused light converged by a lens



HLDR-IP67-100RD



HLDR-IP67-100SW



HLDR-IP67-100UV3/VL3

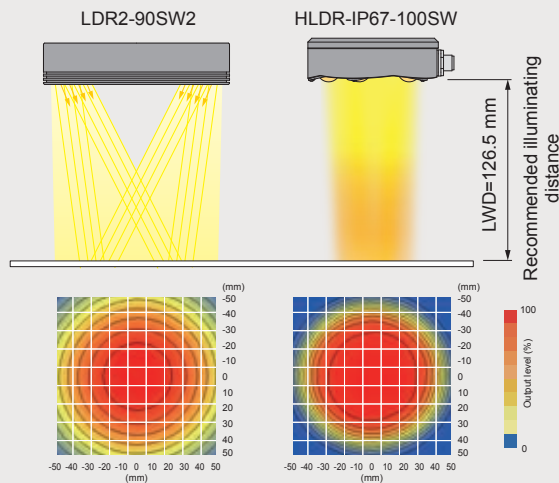
**Applications**

Fault inspection for metal parts, visual inspection for rubber parts, visual inspection for resin parts, adhesive application inspection for food containers (UV), etc.

**Achieves Convergent Illumination**

The HLDR-IP Series features convergent ring lights that ensure brightness with a convergent lens.

**Comparison of illumination between a ring light and the HLDR-IP Series**



**IP67 Compliant**

It has a waterproof and rustproof structure for use in harsh environments. Optimal for sites where manufacturing lines must be cleaned, such as for food and chemicals.

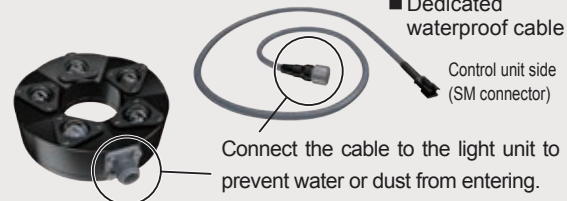
**Waterproof Ring Light HLDR-IP Series**

- Convergent ring light
- Emitted color: Red, white, UV (365 nm)
- IP67 compliant
- Uses an M12 connector



**Uses an M12 connector**

■ Dedicated waterproof cable



**Custom Order Example**

Please contact your CCS sales representative.

E.g.: Changed the illuminating angle

**Customizable items**

Creating a light unit with a changed converging distance



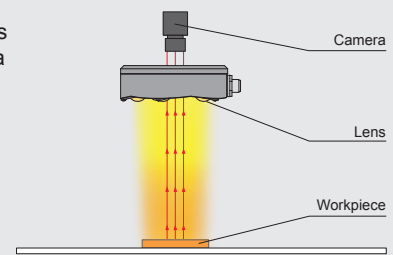
- External/internal diameter
- Wavelength/color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Etc.

**Example Configuration**

Convergent waterproof ring light that ensures brightness with a convergent lens.

**HLDR-IP67-100**



Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

Digital Catalogs

Register to use them.

## Regarding Recommended Distance

The data included is for reference only. Actual values may vary.

Convergent illumination image



LWD  
0 mm

Recommended distance

126.5 mm  
±10 mm

116.5 mm

126.5 mm

136.5 mm



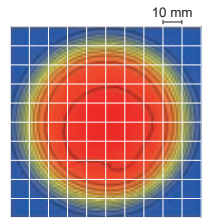
Converging range

- Red Approximately Ø 40 mm
- White Approximately Ø 35 mm
- Ultraviolet Approximately Ø 35 mm

### LWD=116.5 mm

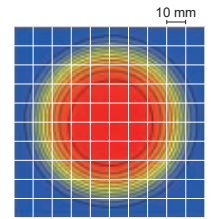
Illuminance  
Approximately **59,000** lx

Red

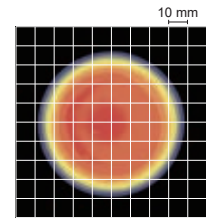


Illuminance  
Approximately **138,000** lx

White



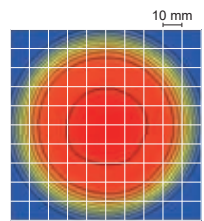
Ultraviolet (HLDR-IP67-100UV3-365)



### LWD=126.5 mm

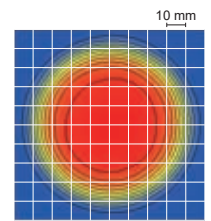
Illuminance  
Approximately **53,000** lx

Red

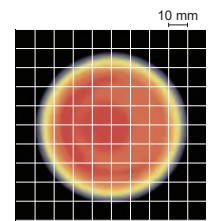


Illuminance  
Approximately **124,000** lx

White



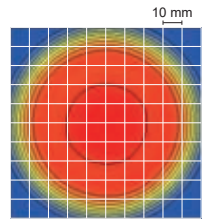
Ultraviolet (HLDR-IP67-100UV3-365)



### LWD=136.5 mm

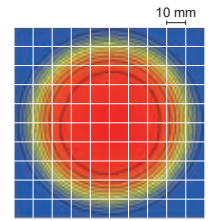
Illuminance  
Approximately **47,000** lx

Red

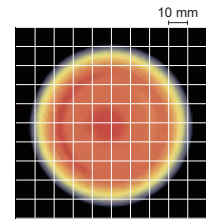


Illuminance  
Approximately **113,000** lx

White



Ultraviolet (HLDR-IP67-100UV3-365)



- Converged near LWD=126.5 mm.
- If the recommended range (126.5 mm±10 mm) is exceeded, the uniformity may change and the imaging may be affected.
- LWD is the distance from the light unit to the workpiece.

## Safe to Use When Washing Manufacturing Lines

When washing manufacturing lines



Food, chemicals, etc.

For manufacturing lines that use water



Automotive parts, etc.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFB3 LFB3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
<b>HLDR-IP</b> HSL-PCL	<b>Water-proof</b>
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LNV LNV LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNSIS2 LNSIS LNSIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



Refer to our website for product details.

CCS HLDR-IP

Search



Imaging Example: Fluorescent Observation of Adhesive on Plastic Containers



Description	Application inspection for adhesive
Workpiece	Plastic containers
Conventional lighting	LED visible light lighting
New lighting	HLDR-IP67-100UV3-365
Result	Only detects the adhesive

Workpiece image



Plastic containers

LED visible light lighting



It was difficult to detect the application of the adhesive using visible light lighting.

HLDR-IP67-100UV3-365



Only the adhesive causes fluorescent scattering, allowing for an image of the application status.

Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Dedicated Cables	Recommended Control Units	Weight
HLDR-IP67-100RD	Red	24 V / 18 W	627 nm	FCB-M12 Straight Cable ▶ P.156	PD4 PD3	420 g
HLDR-IP67-100SW	White		6,500 K			
HLDR-IP67-100UV3-365	Ultraviolet		365 nm			
HLDR-IP67-100VL3-□*1	Violet		385/395/405 nm			

\*1 □ in the model name contains the wavelength (385, 395, or 405). This is a special order.

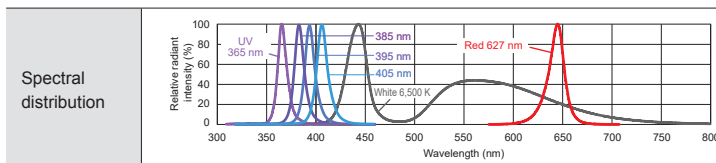
Dedicated Cables ▶ P.156

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

Please inquire if you would like to use in combination with a strobe control unit (overdrive type).

LED Properties



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

Options



Transmits light with wavelength range of 290 nm to 365 nm. (Transmission of 90% min.)

Band-pass filter F-BP324

Model Name	Size
F-BP324	25 sizes (Refer to the pages on optional products.)

▶ P.371

Other various band-pass filters used for different wavelengths are available. For details, refer to the pages on optional lens filters.

▶ P.371



Blocks light with a wavelength of 420 nm or lower, transmits light with a longer wavelength.

Ultraviolet cutting filter L42 Series

Model Name	Size
L42-25	M25.5 P0.5
L42-27	M27.0 P0.5
L42-30	M30.5 P0.5
L42-40	M40.5 P0.5
L42-46	M46.0 P0.75

▶ P.374



Transmits light in a wavelength range from approximately 280 to 380 nm centered on 340 nm.

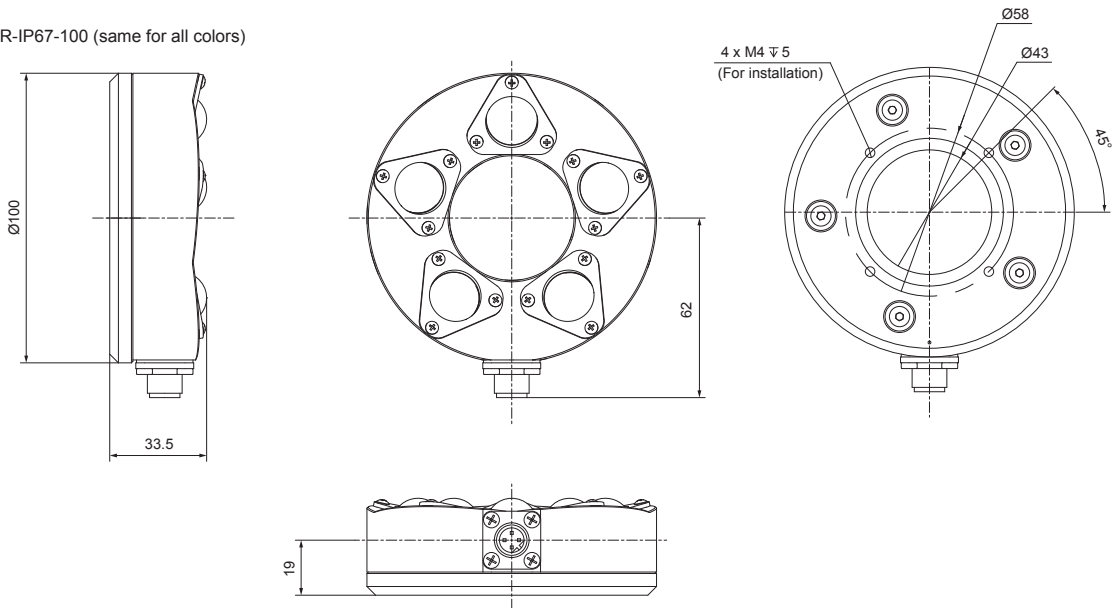
Ultraviolet transmission filter U340 Series

Model Name	Size
U340-25	M25.5 P0.5
U340-27	M27.0 P0.5
U340-30	M30.5 P0.5
U340-40	M40.5 P0.5
U340-46	M46.0 P0.75

▶ P.374

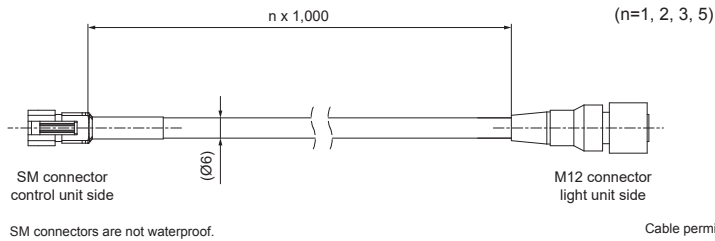
## Dimensions (mm)

HLDR-IP67-100 (same for all colors)



## Dedicated Cable

Model Name	Cable Length	Weight
FCB-1-M12	1 m	70 g
FCB-2-M12	2 m	125 g
FCB-3-M12	3 m	180 g
FCB-5-M12	5 m	305 g



SM connectors are not waterproof.

Cable permitted bending radius: 40 mm

The above cable permitted bending radius is a reference value. Actual value may vary.

## Regarding Case Materials

	LED Light (Common for all colors)	Dedicated cable
Case material	Body: aluminum alloy (black anodized) Screws: SUS Washers: SUS, elastomer (TPE) Connectors: PA resin Lens: silicone	Light unit side connector: soft PBT Cable: PVC Control unit side connector: nylon

Indicates the details for materials only regarding the external parts.

## Note

**"IP67" indicates the level of protection against foreign material entering electrical instruments**

The 1st numeral "6" indicates the following level of protection:

- No dust inside the instrument. (dustproof)

The 2nd numeral "7" indicates the following level of protection:

- No damage when submerged in water at the rated pressure for the rated time. (watertight type)
- Can be submerged in water to a depth of 1 m (for instruments with a height of less than 850 mm) for 30 minutes.

## Cautionary Information regarding Waterproofing

- After cleaning manufacturing lines, be sure to wipe away any moisture remaining on the lens. Imaging can be affected by moisture on the lens.
- Use water to wash away any cleaning agent adhered to this product.
- Use water to wash away any oils or chemicals adhered to this product.
- The control unit connectors (SM connectors) on dedicated cables are not waterproof.

## Cautionary Information regarding UV Products

- Do not expose your eyes or skin to direct UV irradiation.
- When using an UV illumination, be sure to wear UV blocking eye wear and avoid looking at irradiating parts (emitting parts).
- Do not turn on UV-LED irradiating parts (emitting parts) if they are facing someone's eyes.
- Wear long sleeves and gloves to protect your skin from UV irradiation.
- Thoroughly educate all those involved near the product about the dangers of UV LEDs.

E.g.: UV blocking eye wear



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFB3 LFB3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
<b>HLDR-IP</b> HSL-PCL	<b>Water-proof</b>
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLPL LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNSIS2 LNSIS LNSIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

Waterproof

IP67 Lights (Waterproof Type)

**HSL-PCL Series**

Refer to our website for product details.

CCS HSL-PCL

Search



## High-Power Spot Lights



HSL-58RD-D300PCL



HSL-58SW-D300PCL



HSL-58BL-D300PCL



HSL-58GR-D300PCL



Note: These products are sold only outside Japan.

### Features

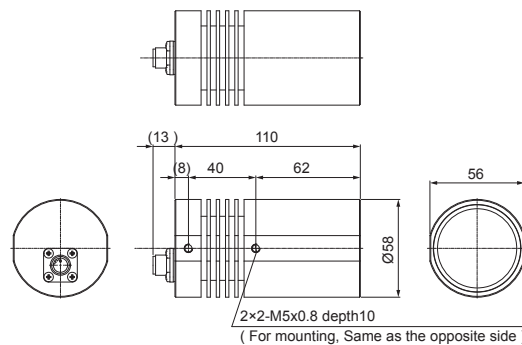
- For replacement of halogen
- Long lifetime
- Low power consumption
- High uniformity
- IP67 Compliant

Model name	LED color
HSL-58RD-D300PCL	Red
HSL-58SW-D300PCL	White
HSL-58BL-D300PCL	Blue
HSL-58GR-D300PCL	Green

### Common Specifications

LED color	Red, White, Blue, Green
Peak wavelength	Red: 645 nm typ., Blue: 470 nm typ., Green: 520 nm typ.
Power consumption	2.8 W max.
Polarity & signal	1: (+), 2: no connection, 3: (-), 4: (R)
Housing material	Aluminum
Cooling method	Natural air cooling
Recommended LWD	2,000 mm or less
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Weight	400 g
Recommended controller	CC-PJ Series *Refer to P.363 for more details.

### Dimensions (mm)



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP <b>HSL-PCL</b>
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Remote Control	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

## Recommended Controller

### CC-PJ Series



Refer to P.363 for more details.

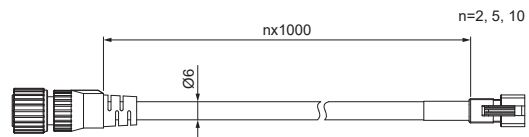
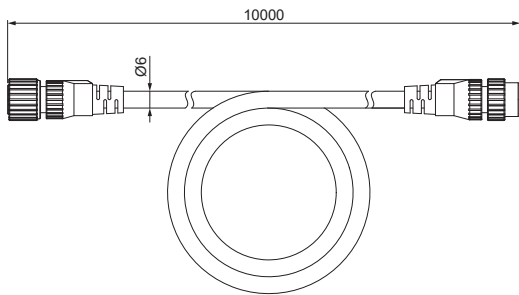
#### Features

- Constant-current analog controller
- Compact & space-saving
- 1-channel light output
- 100 different levels of light intensity
- 24 VDC input
- CE certified
- ON/OFF control and Strobe lighting via External control

## HSL-PCL Cables

#### Dimensions (mm)

Extension cable



2 m	FCB-2-HSL-SM
5 m	FCB-5-HSL-SM
10 m	FCB-10-HSL-SM
10 m	FCB-EX10-HSL (Extension cable)

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



## Increased range of applications with high output and 4 wavelengths



LDR2-60UV3/VL3-N  
(Narrow Type)

LDL-71X12UV3/VL3-N  
(Narrow Type)

LN-61UV3/VL3

LDR2-60UV3/VL3-W  
(Wide Type)

LDL-71X12UV3/VL3-W  
(Wide Type)

HLDR-IP67-100UV3/VL3

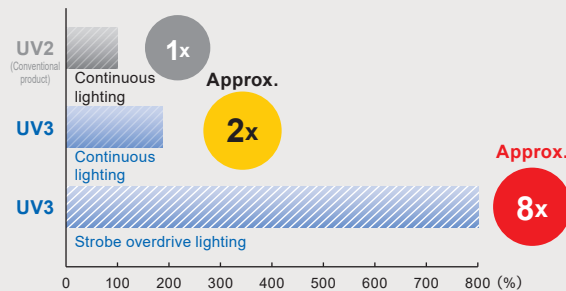
HLV2-24UV3/VL3

\* 365 nm wavelength for ultraviolet light UV3 Series. 385 nm, 395 nm, and 405 nm wavelengths for violet light VL3 Series.

**Applications** Special ink observation, deep magnetic particle scratch inspection, adhesive coating inspection, deep penetration scratch inspection, coating inspection, etc.

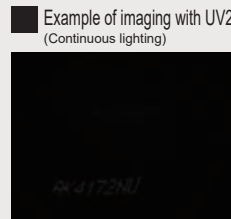
## Increased Brightness When Overdriving

### Comparison with a conventional product (LDR2-60UV3-365-N)

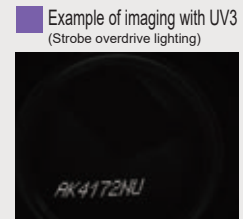


\* Comparison between the LDR2-60UV3-365-N and LDR2-60UV2-365-N at 100 mm LWLD. The increase in brightness varies depending on model. (These values are for reference only and are not guaranteed values.)

### Imaging special ink on can



Example of imaging with UV2 (Continuous lighting)  
A lack of brightness makes it difficult to perform fluorescence observation for special inks.

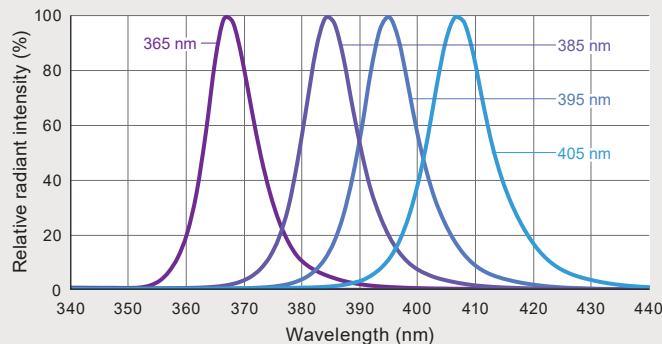


Example of imaging with UV3 (Strobe overdrive lighting)  
Enables fluorescence observation for special inks even with faster shutter speed.

\* Comparison of imaging at 1ms shutter speed

## 4 Wavelengths (365/386/395/405 nm) Expand Possible Applications

### Spectral distribution



\* 365 nm wavelength is for the LNSP-UV3 ultraviolet light series. 385 nm, 395 nm, and 405 nm wavelengths are for the LNSP-VL3 series.

### Cautionary Information regarding UV Products

- Do not expose your eyes or skin to direct UV irradiation.
- When using UV illumination, be sure to wear UV blocking eye wear and avoid looking at irradiating parts (emitting parts).
- Do not turn on UV-LED irradiating parts (emitting parts) if they are facing someone's eyes.
- Wear long sleeves and gloves to protect your skin from UV irradiation.
- Thoroughly educate all those involved near the product about the dangers of UV LEDs.

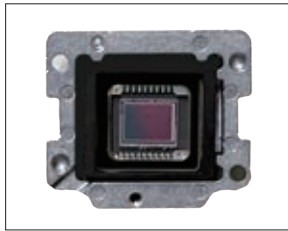
E.g.:  
UV blocking eye wear





### Imaging Example: Imaging Adhesive on an Imaging Sensor Substrate

Workpiece image



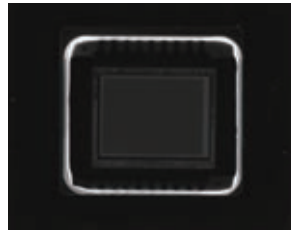
Imaging sensor substrate

White LED lighting (LDR2-90-30SW2)



It is difficult to capture the adhesive with white LED lighting.

UV-LED lighting (LDR2-100UV3-365-W)



With UV light, the adhesive can be observed because of emitted fluorescent light.

### Imaging Example: Imaging of Grease Applied on a Gear Part

Workpiece image



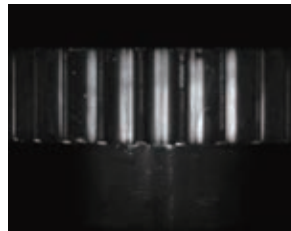
Gear part

White LED lighting (LDR2-90SW2)



With white light, it is difficult to capture the application of the grease on the uneven surface.

UV-LED lighting (LDL-138X12UV3-365-W)



With UV light, the application of the grease can be observed because of emitted fluorescent light.

### Data: Relative Irradiance Graph and Uniformity (Representative Example)

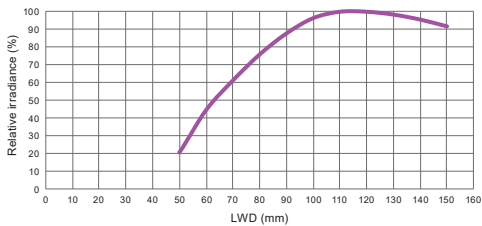
LDR2-100UV3-365-N (Narrow Type)

The data included is for reference only. Actual values may vary.

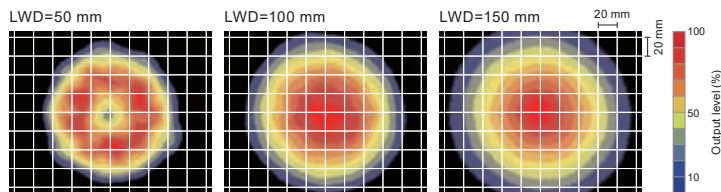
Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

\*1 Irradiance on the optical axis

\*2 Illuminating distance from the light unit to the workpiece



Uniformity (Relative irradiance)



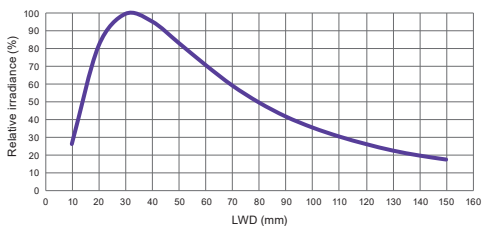
\* At short distances, uniformity of irradiation from narrow type light units is reduced. This may affect imaging depending on the type of workpiece.

LDR2-100UV3-365-W (Wide Type)

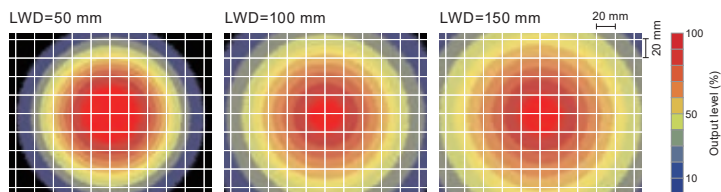
Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

\*1 Irradiance on the optical axis

\*2 Illuminating distance from the light unit to the workpiece



Uniformity (Relative irradiance)



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof UV/ Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# UV3/VL3 Series



Refer to our website for product details.

CCS UV3/VL3

Search



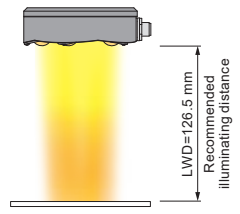
## Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

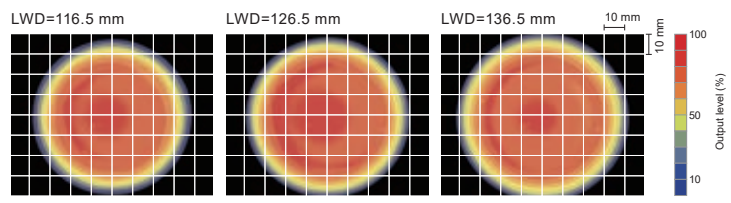
### HLDR-IP67-100UV3-365

Regarding recommended distance

Recommended illuminating distance  
(126.5 mm±10 mm)  
If distance is exceeded, the uniformity may change and the imaging may be affected.

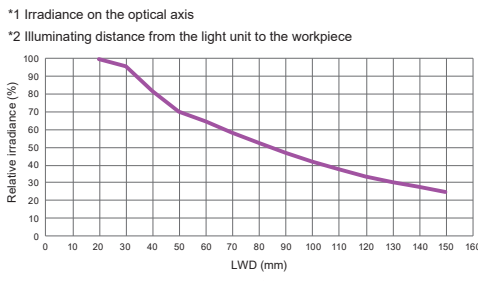


Uniformity (Relative irradiance)

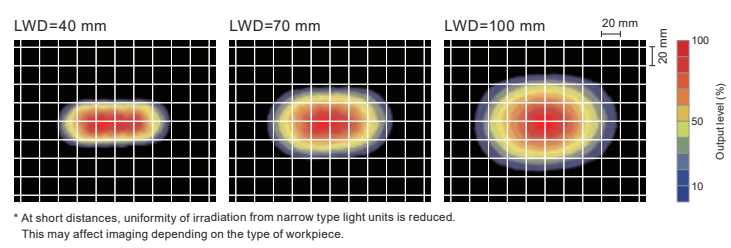


### LDL-71X12UV3-365-N (Narrow Type)

Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

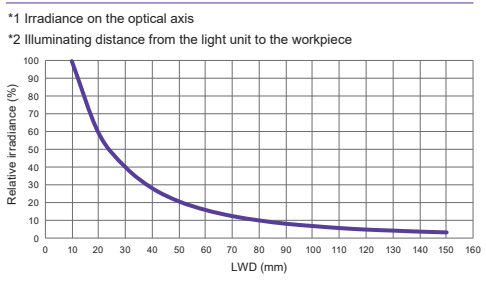


Uniformity (Relative irradiance)

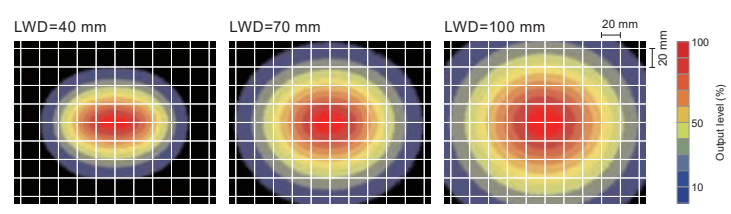


### LDL-71X12UV3-365-W (Wide Type)

Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

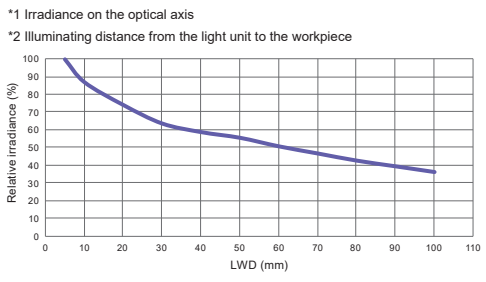


Uniformity (Relative irradiance)

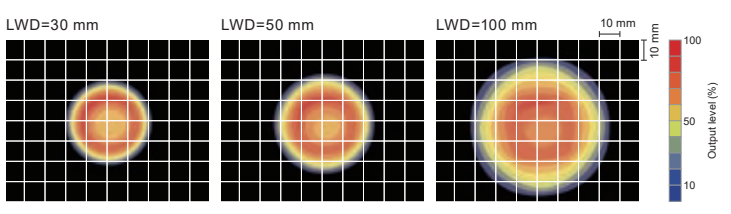


### HLV2-24UV3-365

Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

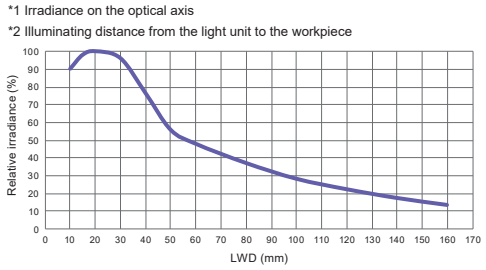


Uniformity (Relative irradiance)

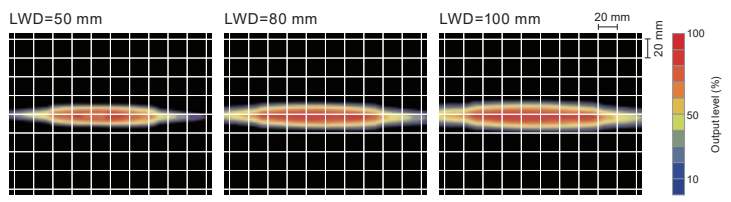


### LN-61UV3-365

Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>



Uniformity (Relative irradiance)



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent / Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HDL3 LB
Flat (5 types)	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNS2 LNS LNS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

Various technical documents available.

- PDF Drawings
- DXF Drawings
- Product Brochures
- Instruction Guides
- 3D CAD
- Data Sheets
- Imaging Examples
- Digital Catalogs

Register to use them.

**Lineup** End of the model name -N: Narrow Type / -W: Wide Type

Wavelength 385/395/405 nm will be manufactured on a built-to-order system.

Model Name <sup>1</sup>	LED Color	Power Consumption	Extension Cables	Recommended Control Units	Weight				
LDR2-60UV3-365-N/-W	Ultraviolet	24 V / 7.6 W		PD4 PD3	End of the model name -N: 80g				
LDR2-60VL3-□-N/-W	Violet			CC-ST-1024 POD <sup>5</sup>	End of the model name -W: 85g				
LDR2-100UV3-365-N/-W	Ultraviolet	24 V / 23 W		PD4 PD3	End of the model name -N: 210g				
LDR2-100VL3-□-N/-W	Violet			POD <sup>5</sup>	End of the model name -W: 240g				
LDL-71X12UV3-365-N/-W	Ultraviolet	24 V / 7.6 W		FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD4 PD3	270 g			
LDL-71X12VL3-□-N/-W	Violet				CC-ST-1024 POD <sup>5</sup>				
LDL-138X12UV3-365-N/-W	Ultraviolet	24 V / 16 W			FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD4 PD3	450 g		
LDL-138X12VL3-□-N/-W	Violet					POD <sup>5</sup>			
LDL-205X12UV3-365-N/-W	Ultraviolet	24 V / 23 W				FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD4 PD3	600 g	
LDL-205X12VL3-□-N/-W	Violet						POD <sup>5</sup>		
LDL-339X12UV3-365-N/-W	Ultraviolet	24 V / 38 W	FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable				PD4 PD3	950 g	
LDL-339X12VL3-□-N/-W	Violet						POD <sup>5</sup>		
LN-61UV3-365	Ultraviolet	24 V / 7.6 W					FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD4 PD3	430 g
LN-61VL3-□	Violet							CC-ST-1024 POD <sup>5</sup>	
LN-128UV3-365	Ultraviolet	24 V / 16 W		FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable				PD4 PD3	700 g
LN-128VL3-□	Violet							POD <sup>5</sup>	
LN-195UV3-365	Ultraviolet	24 V / 23 W			FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable			PD4 PD3	970 g
LN-195VL3-□	Violet							POD <sup>5</sup>	
HLDL-IP67-100UV3-365	Ultraviolet	24 V / 18 W				FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable		PD4 PD3	420 g
HLDL-IP67-100VL3-□	Violet							POD <sup>5</sup>	
HLV2-24UV3-365	Ultraviolet	0.7 A / 2.8 W	FCB <sup>3</sup> Straight Cable FCB-W <sup>4</sup> 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable					PD3 <sup>2</sup> CC-PJ-0707	50 g
HLV2-24VL3-□	Violet							PJ PJ2	

\*1 □ in the model name contains the wavelength 385/395/405. Extension Cables ▶ P.383 Control Unit Selection Guide ▶ P.309 List of Control Unit Specifications ▶ P.311

\*2 Not compatible with PD3-3024-3 Series or PD3-5024-3 Series.  
 \*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.  
 \*4 The cables with a model name that ends with "-EL2" are not included.  
 \*5 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

**Note: Models without POD as the recommended control unit cannot be used in combination with the strobe overdrive control unit. Please contact us if you would like to make a special order for the combination.**

**About HLDL-IP67**

**Case Material**

	LED Light	Dedicated Cables
Case Material	Body: aluminum alloy (black anodized) Screws: SUS Washers: SUS, elastomer (TPE) Connectors: PA resin Lens: silicone	Light unit side connector: soft PBT Cable: PVC Control unit side connector: nylon

**Note**

The 1st numeral "6" indicates the following level of protection:  
 • No dust inside the instrument. (dustproof)  
 The 2nd numeral "7" indicates the following level of protection:  
 • No damage when submerged in water at the rated pressure for the rated time. (watertight type)  
 • Can be submerged in water to a depth of 1 m (for instruments with a height of less than 850 mm) for 30 minutes.

**Cautionary Information regarding Waterproofing**

- After cleaning manufacturing lines, be sure to wipe away any moisture remaining on the lens. Imaging can be affected by moisture on the lens.
- Use water to wash away any cleaning agent adhered to this product.
- Use water to wash away any oils or chemicals adhered to this product.
- The control unit connectors (SM connectors) on dedicated cables are not waterproof.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDL3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3 LDL2 LDLB HLDL3 LB	Square Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDL-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV/ Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNSL LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNS2 LNS LNS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# UV3/VL3 Series



Refer to our website for product details.

CCS UV3/VL3

Search



## Options



Blocks light with a wavelength of 420 nm or lower, transmits light with a longer wavelength.

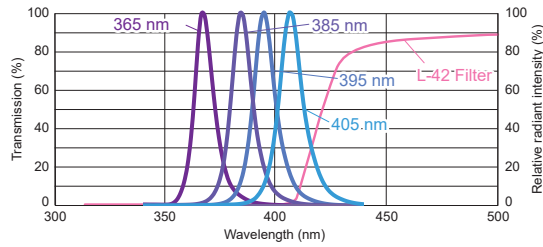
Ultraviolet cutting filter  
L42 Series

Model Name	Size
L42-25	M25.5 P0.5
L42-27	M27.0 P0.5
L42-30	M30.5 P0.5
L42-40	M40.5 P0.5
L42-46	M46.0 P0.75

▶ P.374

\* Y48 filters to absorb wavelengths 480 nm or smaller are available for VL3 Series. Contact our local sales office for details.

## Filter Characteristics and UV-LED Spectral Distribution



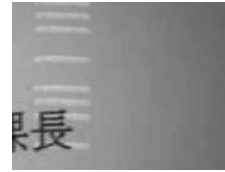
## Imaging Examples

Workpiece



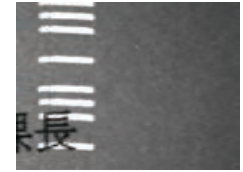
Postcard

Without ultraviolet cutting filter



Without a filter, both UV and visible light are captured.

With ultraviolet cutting filter



By using a UV cut filter, only the excited scattering light from the ink will be captured.



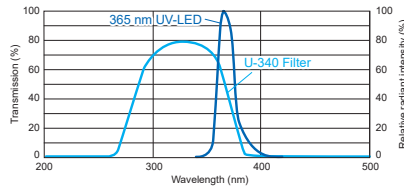
Transmits light with wavelength range of approx. 280 nm to 380 nm, centered around 340 nm.

Ultraviolet transmission filter  
U340 Series

Model Name	Size
U340-25	M25.5 P0.5
U340-27	M27.0 P0.5
U340-30	M30.5 P0.5
U340-40	M40.5 P0.5
U340-46	M46.0 P0.75

▶ P.374

## Characteristics of UV Transmission Filter and UV-LED Spectral Distribution



Transmits light with a specific range of wavelength and is available for a wide range of fluorescent wavelengths

Band-pass filter  
F-BP Series

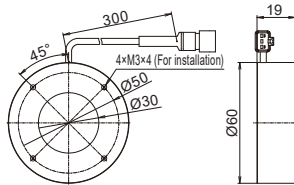
- High transmittance at 90% or greater
- Hard coated filter with high durability
- Twelve-product lineup available for a wide range of wavelengths

▶ P.371

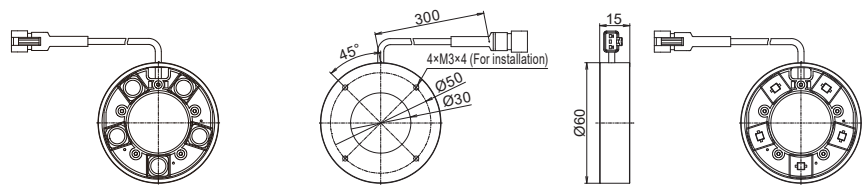
## Dimensions (mm)

### Ring Lights

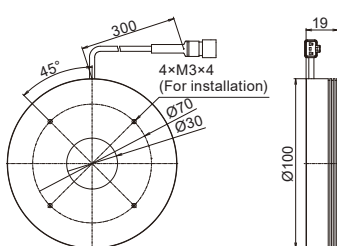
LDR2-60UV3/VL3-N (Narrow Type)



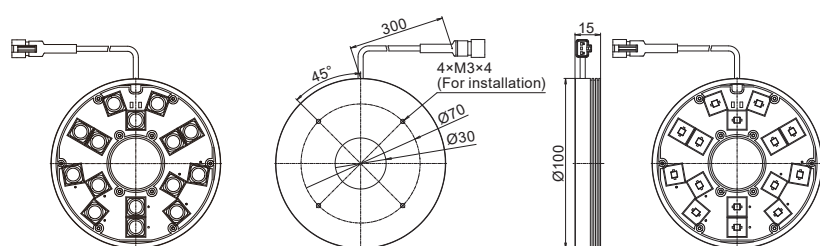
LDR2-60UV3/VL3-W (Wide Type)



LDR2-100UV3/VL3-N (Narrow Type)



LDR2-100UV3/VL3-W (Wide Type)



Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

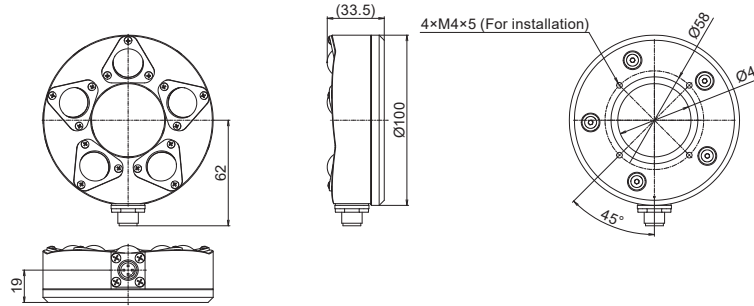
Digital Catalogs

Register to use them.

## Dimensions (mm)

### Ring Lights (Waterproof Type)

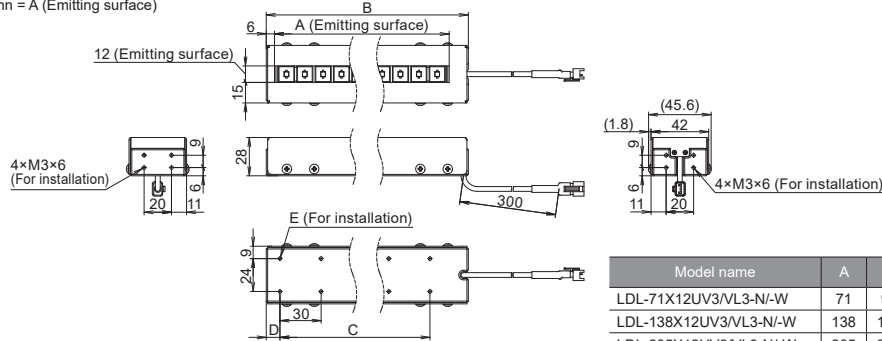
HLDR-IP67-100UV3/VL3



### Bar Lights

LDL-nnnX12UV3/VL3-N-W (drawings for both narrow type and wide type)

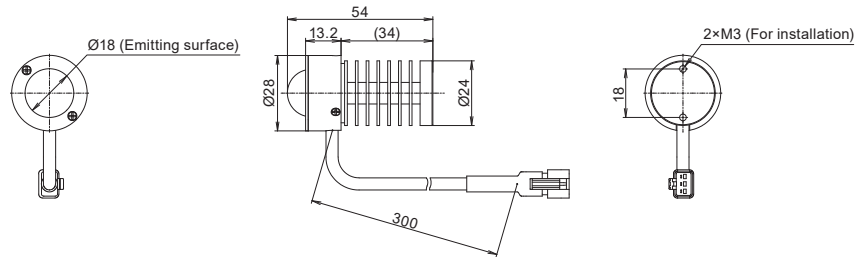
nnn = A (Emitting surface)



Model name	A	B	C	D	E
LDL-71X12UV3/VL3-N-W	71	91	P30×2=60	10	6×M3×6
LDL-138X12UV3/VL3-N-W	138	158	P30×4=120	10	10×M3×6
LDL-205X12UV3/VL3-N-W	205	225	P30×6=180	20	14×M3×6
LDL-339X12UV3/VL3-N-W	339	359	P30×10=300	29.5	22×M3×6

### Spot Lights

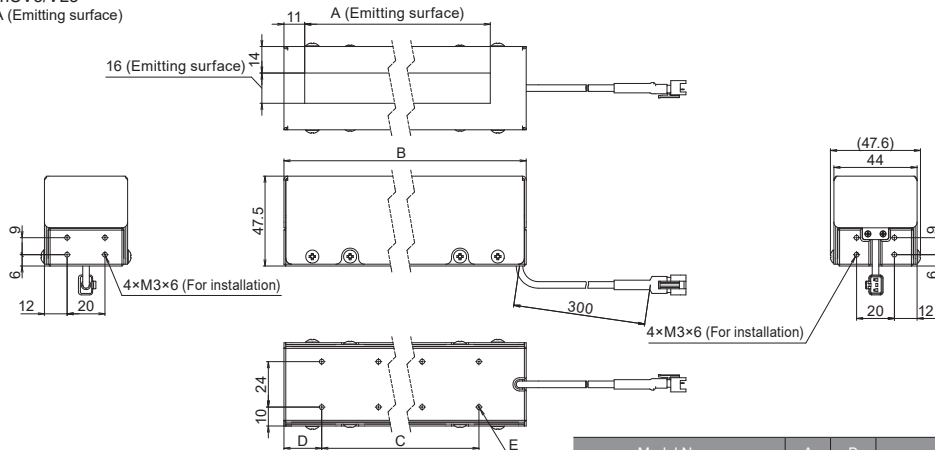
HLV2-24UV3/VL3



### Line Lights

LN-nnnUV3/VL3

nnn = A (Emitting surface)



Model Name	A	B	C	D	E
LN-61UV3/VL3	61	91	P30×2=60	10	6×M3×6
LN-128UV3/VL3	128	158	P30×4=120	10	10×M3×6
LN-195UV3/VL3	195	225	P30×6=180	20	14×M3×6

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3	Water- proof UV/ Violet
UV LN-SP-UV3-FN	UV/ Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNLP LN-SP2 Coaxial Units LN-SP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lens
LDF-NB	Other Products

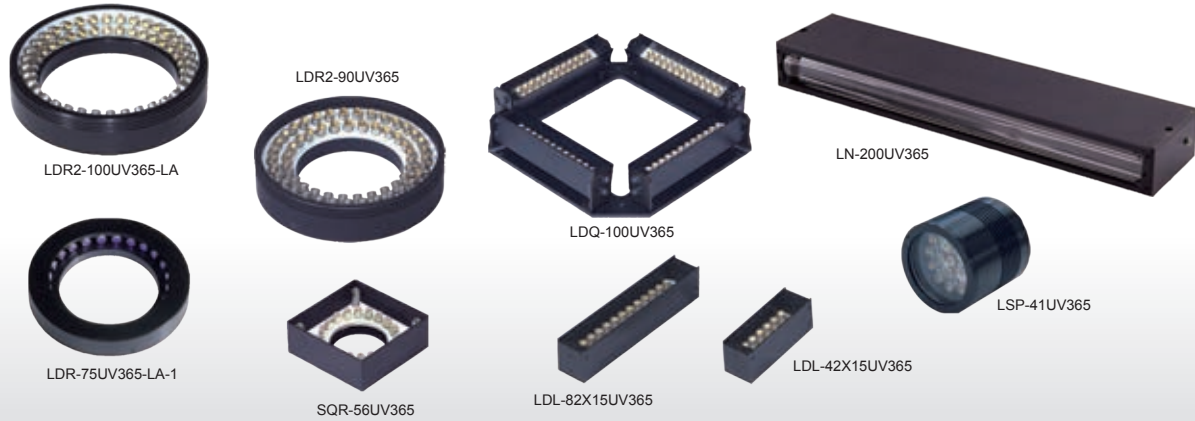
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



## Varied light unit lineup using original UV-LEDs



### Applications

Detecting seal material through fluorescent excitation, reading invisible code, inspections using differences in spectral reflectivity, inspections using differences in scattering rates, etc.

### Uses Original UV-LEDs

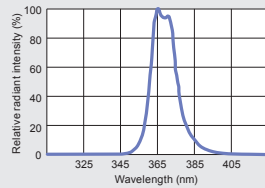
Uses LEDs with our unique spark prevention mechanism



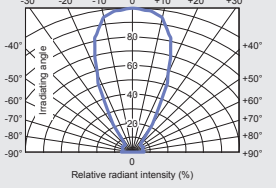
Because they have a steel alloy cap, many ultraviolet LEDs are susceptible to static electricity or impact. In particular, dead LEDs due to sparks occurring from contact with metal shards have been a major issue. Our company's original ultraviolet LEDs successfully solved this problem through our unique spark prevention mechanism. Compared to the conventional products, we significantly increased our "safety" and "reliability."

### Peak Wavelength of 365 nm, Directional Characteristics of ±20°

#### Light spectrum of the UV-LED



#### Directional characteristics



Our original ultraviolet LEDs have a peak wavelength of 365 nm and directional characteristics of ±20°. Using the mono-wavelength, a characteristic of LEDs, allows for stable imaging over a long period of time that captures the workpiece's characteristics more accurately than using a black light. Our extensive lineup provides appropriate lights according to the inspected object, inspection environment and optical system.

### Lineup

Model Name	LED Color	Power Consumption *1		Peak Wavelength	Options	Extension Cables	Recommended Control Units		Weight	Dimensions
		June 2014 or earlier	July 2014 or later				PD4	PD3		
LDR2-32UV365	Ultraviolet	24 V / 0.4 W	24 V / 0.3 W	365 nm	Band-pass filter ▶ P.371	FCB**4 Straight Cable	PD4	PD3	30 g	1
LDR2-42UV365		24 V / 0.8 W	24 V / 0.6 W						50 g	
LDR2-50UV365		24 V / 1.2 W	24 V / 0.9 W						50 g	
LDR2-70UV365		24 V / 3.1 W	24 V / 2.3 W						130 g	
LDR2-90UV365		24 V / 3.8 W	24 V / 2.8 W						170 g	
LDR2-90-30UV365	24 V / 6.1 W	24 V / 4.5 W	220 g	FCB-W**5 2-branch Cable	CC-ST-1024**3	POD**2	220 g	1		
LDR2-120UV365	24 V / 9.5 W	24 V / 7.0 W	510 g							
LDR2-74UV365-LA	24 V / 1.9 W	24 V / 1.4 W	90 g							
LDR2-100UV365-LA	24 V / 4.6 W	24 V / 3.4 W	170 g							
LDR2-132UV365-LA	24 V / 6.9 W	24 V / 5.0 W	270 g							
LDR2-170UV365-LA	24 V / 9.9 W	24 V / 7.3 W	350 g	FCB-F 4-branch Cable	FCB Robot Cable	*3 Cannot be used with LDR2-208UV365-LA that was manufactured in July 2014 or earlier.	380 g	5		
LDR2-208UV365-LA	24 V / 12 W	24 V / 8.4 W	70 g							
LDR-75UV365-LA-1	24 V / 1.6 W	24 V / 1.2 W	100 g							
LDR-96UV365-LA-1	24 V / 2.3 W	24 V / 1.7 W	160 g							
LDR-146UV365-LA-1	24 V / 3.1 W	24 V / 2.3 W	200 g							
LDR-176UV365-LA-1	24 V / 3.8 W	24 V / 2.8 W	220 g	FCB Robot Cable	*4 The cables with a model name that ends with "-ME*" or "-EL2*" are not included. *5 The cables with a model name that ends with "-EL2*" are not included.	70 g	6			
LDR-206UV365-LA-1	24 V / 4.6 W	24 V / 3.4 W	100 g							
LDR-176UV365-LA-1	24 V / 3.8 W	24 V / 2.8 W	160 g							
LDR-206UV365-LA-1	24 V / 4.6 W	24 V / 3.4 W	200 g	FCB Robot Cable	*4 The cables with a model name that ends with "-ME*" or "-EL2*" are not included. *5 The cables with a model name that ends with "-EL2*" are not included.	200 g	7			
LDR-206UV365-LA-1	24 V / 4.6 W	24 V / 3.4 W	220 g							

\*1 The power consumption varies according to the production date. Refer to the power consumption given by the label tag of the product.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qtr/pod>

Model Name	LED Color	Power Consumption <sup>*1</sup>		Peak Wavelength	Options	Extension Cables	Recommended Control Units	Weight	Dimensions
		June 2014 or earlier	July 2014 or later						
SQR-56UV365	Ultraviolet	24 V / 1.6 W	24 V / 1.2 W	365 nm	Band-pass filter ▶ P.371	FCB*3 Straight Cable	PD4	80 g	8
LDL-34X8UV365		24 V / 0.4 W	24 V / 0.3 W					15 g	9
LDL-42X15UV365		24 V / 0.8 W	24 V / 0.6 W					30 g	10
LDL-74X27UV365		24 V / 3.1 W	24 V / 2.3 W					95 g	11
LDL-82X15UV365		24 V / 1.6 W	24 V / 1.2 W					45 g	12
LDL-130X15UV365		24 V / 2.3 W	24 V / 1.7 W					85 g	
LDL-180X16UV365	24 V / 3.8 W	24 V / 2.8 W	110 g	12					
LDQ-60-25UV365	Ultraviolet	24 V / 1.6 W	24 V / 1.2 W	365 nm	Ultraviolet cutting filter Ultraviolet transmission filter ▶ P.374	FCB-W*4 2-branch Cable	CC-ST-1024	60 g	13
LDQ-78UV365		24 V / 1.6 W	24 V / 1.2 W					100 g	14
LDQ-100UV365		24 V / 3.1 W	24 V / 2.3 W					330 g	15
LDQ-150UV365		24 V / 6.1 W	24 V / 4.5 W					490 g	16
LDQ-200UV365		24 V / 9.1 W	24 V / 6.7 W					790 g	17
LN-200UV365	Ultraviolet	24 V / 1.9 W	24 V / 1.4 W	365 nm				400 g	18
LSP-41UV365		24 V / 1.2 W	24 V / 0.9 W					115 g	19

\*1 The power consumption varies according to the production date. Refer to the power consumption given by the label tag of the product.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pond>

## Dimensions (mm)

**1** 4-M3 depth 4

Model Name	A	B	C	D
LDR2-32UV365	Ø32	Ø10	16	P.C.D.20
LDR2-42UV365	Ø42	Ø18	18	P.C.D.28
LDR2-50UV365	Ø50	Ø28	16	P.C.D.40
LDR2-90UV365	Ø90	Ø50	20	P.C.D.70
LDR2-90-30UV365	Ø90	Ø30	20	P.C.D.70

**2** 4-M3 depth 5  
P.C.D.50

**3** 4-M3 depth 5  
P.C.D.90

**4** 4-M3 depth 5  
P.C.D.60

**5** 4-M3 depth 5

Model Name	A	B	C	D
LDR2-100UV365-LA	Ø100	Ø70	22	P.C.D.84
LDR2-132UV365-LA	Ø132	Ø96	22	P.C.D.116
LDR2-170UV365-LA	Ø170	Ø134	22	P.C.D.154
LDR2-208UV365-LA	Ø208	Ø174	22	P.C.D.186

**6** 4-M3 depth 4

**7** 4-M3 depth 4

Model Name	A	B	C
LDR-96UV365-LA-1	Ø96	Ø80	Ø60
LDR-146UV365-LA-1	Ø146	Ø130	Ø110
LDR-176UV365-LA-1	Ø176	Ø160	Ø140
LDR-206UV365-LA-1	Ø206	Ø190	Ø170

**8**

**9**

**10**

**11**

**12**

Model Name	A	B	C	D	E
LDL-82X15UV365	92	82	17	20	15
LDL-130X15UV365	140	130	17	21	15
LDL-180X16UV365	191.4	181.4	18	21	16

**13**

**14**

**15**

**16**

**17**

**18**

**19**

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	
LDR-LA1	
SQR	Ring (Direct)
SQR-TP	
HLDR3	Ring (Convergent/Diffused)
HPR2	
LFR	
LKR	
FPR	
FPQ3	Square
LDL2	Bar
LDLB	
HLDL3	
LB	Flat
TH2 (5 types)	
LFL	Dome
HPD2	
LDM2	
LAV	
PDM	
LFV3	Coaxial
LFV3-G	
MSU	Coaxial
MFU	
PF	Water-proof
HLDR-IP	
HSL-PCL	UV / Violet
UV3/VL3	
LN-SP-UV3-FN	Infrared
IR2 (Under 1000-nm Type)	
IR (Over 1000-nm Type)	
CIR	
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	
HFS/HFR	
HLV3-22-4-NR	
HLV3-3M-RGB-4	Line (Convergent)
PFBR-600SW2	
PFBR-150	
SLG-150V-CCS	Line (Diffused)
PFBR3(A)	
LNLP	Line (Convergent)
LN-SP2	
Coaxial Units	
LN-SP-FN	
LN/LN-HK	Line (Diffused)
LN-SD	
LN-D2	
LN-L	
LN-V (Rectangular Type)	
LN-V (Rectangular Type)	Line (Oblique Angled)
LN-V	
LN-V	
LN-V	Telecentric Lens
LN-V	
LN-V	
LDF-NB	Other Products



## Increased range of applications with high output and 4 wavelengths



LNSP-300UV3/VL3-FN  
(Narrow Type)



LNSP-300UV3/VL3-FN  
(Wide Type)

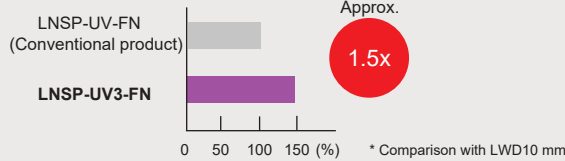
\* 365 nm wavelength for ultraviolet light UV3 Series. 385 nm, 395 nm, and 405 nm wavelengths for violet light VL3 Series.

### Applications

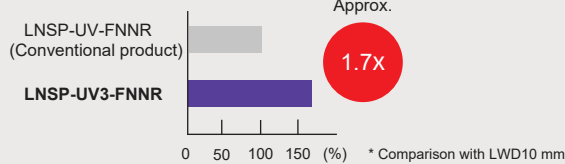
Seal material presence inspection using fluorescence excitation, various inspections using different spectral reflectance, various inspections using scattering rate differences

### Increased brightness compared with conventional products

#### Narrow Type comparison



#### Wide Type comparison



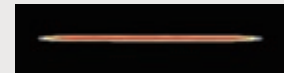
### The light distribution angle can be selected based on the application

Two types are available. The narrow type can focus illumination on a narrow area using a rod lens, while the wide type offers wider illumination.

#### Narrow Type



Uniformity graph



#### Wide Type

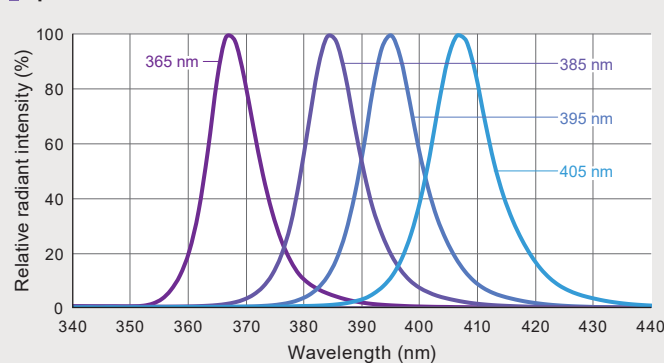


Uniformity graph



### 4 Wavelengths (365/386/395/405 nm) Expand Possible Applications

#### Spectral distribution



\* 365 nm wavelength is for the LNSP-UV3 ultraviolet light series.  
385 nm, 395 nm, and 405 nm wavelengths are for the LNSP-VL3 series.

#### Cautionary Information regarding UV Products

- Do not expose your eyes or skin to direct UV irradiation.
- When using UV illumination, be sure to wear UV blocking eye wear and avoid looking at irradiating parts (emitting parts).
- Do not turn on UV-LED irradiating parts (emitting parts) if they are facing someone's eyes.
- Wear long sleeves and gloves to protect your skin from UV irradiation.
- Thoroughly educate all those involved near the product about the dangers of UV LEDs.

E.g.:  
UV blocking eye wear





➤ **Imaging Example: Imaging for Detecting Contact Lenses inside Packaging**

Workpiece image



Contact lenses

LED visible light lighting



With visible light lighting, it is difficult to detect the contact lenses.

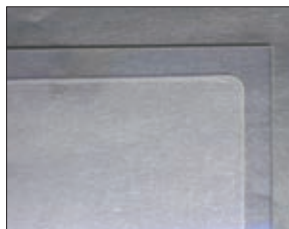
LNSP-300UV3-365-FNNR



Depending on the type of contact lens, they absorb the ultraviolet wavelength, allowing for the inside of the pack to be imaged.

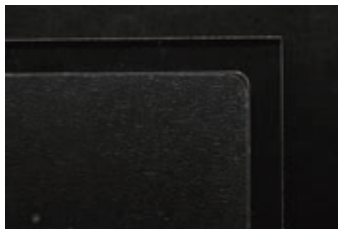
➤ **Imaging Example: Imaging for the Alignment of Clear Films**

Workpiece image



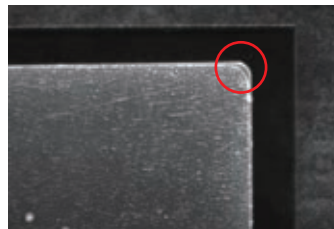
Clear plate (bottom) and film (top)

LED visible light lighting



With visible light lighting, it is difficult to form an image of the clear film.

LNSP-300UV3-365-FN



Only the clear film causes scattering, emphasizing the edge.

➤ **Imaging Example: Imaging of invisible code**

Workpiece image



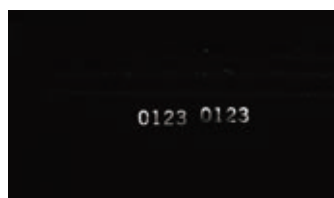
Plastic plate

LED visible light lighting



Fluorescent observation is difficult with white light.

LNSP-300UV3-365-FN



Fluorescent observation for the invisible code is possible.

➤ **Imaging Example: Imaging foreign material on paper**

Workpiece image



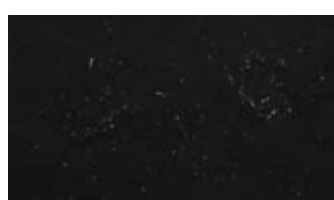
White paper (Tissue)

LED visible light lighting



Fluorescent observation is difficult with white light.

LNSP-300UV3-365-FNNR



Fluorescent observation for foreign material, such as dust, is possible.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDL-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV/ Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNS2 LNS LNS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# LNSP-UV3/VL3-FN Series



Refer to our website for product details.

CCS LNSP-UV3

Search



## Data: Relative Irradiance Graph and Uniformity (Representative Example)

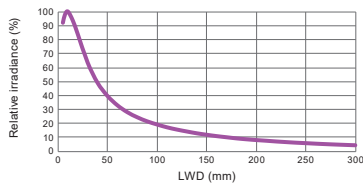
### LNSP-300UV3-365-FN (Narrow Type)

The data included is for reference only. Actual values may vary.

#### Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

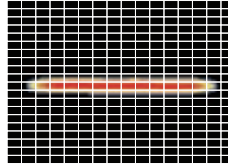
\*1 Irradiance on the optical axis

\*2 Illuminating distance from the light unit to the workpiece

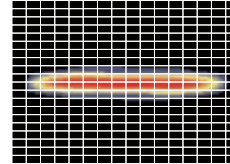


#### Uniformity (Relative irradiance)

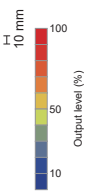
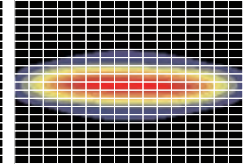
LWD=30 mm



LWD=50 mm



LWD=100 mm

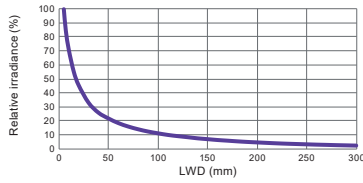


### LNSP-300UV3-365-FNNR (Wide Type)

#### Relative irradiance graph<sup>\*1</sup> (LWD characteristics)<sup>\*2</sup>

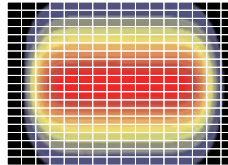
\*1 Irradiance on the optical axis

\*2 Illuminating distance from the light unit to the workpiece

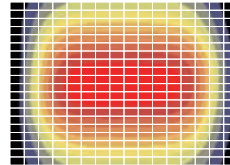


#### Uniformity (Relative irradiance)

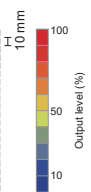
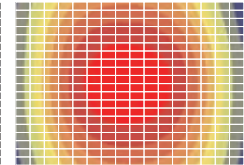
LWD=30 mm



LWD=50 mm



LWD=100 mm



## Lineup End of the model name -FN: Narrow Type / -FNNR: Wide Type

Wavelength 385/395/405 nm will be manufactured on a built-to-order system.

Model Name <sup>*1</sup>	LED Color	Power Consumption <sup>*2</sup>	Extension Cables	Recommended Control Units	Weight		
LNSP-100UV3-365-FN	Ultraviolet	36 W			900 g		
LNSP-100VL3-□-FN	Violet						
LNSP-100UV3-365-FNNR	Ultraviolet				700 g		
LNSP-100VL3-□-FNNR	Violet						
LNSP-200UV3-365-FN	Ultraviolet	70 W			QCBM	PSCC-30048 (A)	1,300 g
LNSP-200VL3-□-FN	Violet				QCB	PSCC-60048 (A)	
LNSP-200UV3-365-FNNR	Ultraviolet						
LNSP-200VL3-□-FNNR	Violet						
LNSP-300UV3-365-FN	Ultraviolet	103 W			1,700 g		
LNSP-300VL3-□-FN	Violet	104 W					
LNSP-300UV3-365-FNNR	Ultraviolet	103 W					
LNSP-300VL3-□-FNNR	Violet	104 W			1,300 g		

\*1 □ in the model name contains the wavelength 385/395/405.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*2 Power consumption includes the cooling fan.

## Options



Blocks light with a wavelength of 420 nm or lower, transmits light with a longer wavelength.

#### Ultraviolet cutting filter L42 Series

Model Name	Size
L42-25	M25.5 P0.5
L42-27	M27.0 P0.5
L42-30	M30.5 P0.5
L42-40	M40.5 P0.5
L42-46	M46.0 P0.75

▶ P.374



Transmits light with wavelength range of approx. 280 nm to 380 nm, centered around 340 nm.

#### Ultraviolet transmission filter U340 Series

Model Name	Size
U340-25	M25.5 P0.5
U340-27	M27.0 P0.5
U340-30	M30.5 P0.5
U340-40	M40.5 P0.5
U340-46	M46.0 P0.75

▶ P.374



Transmits light with a specific range of wavelength and is available for a wide range of fluorescent wavelengths

#### Band-pass filter F-BP Series

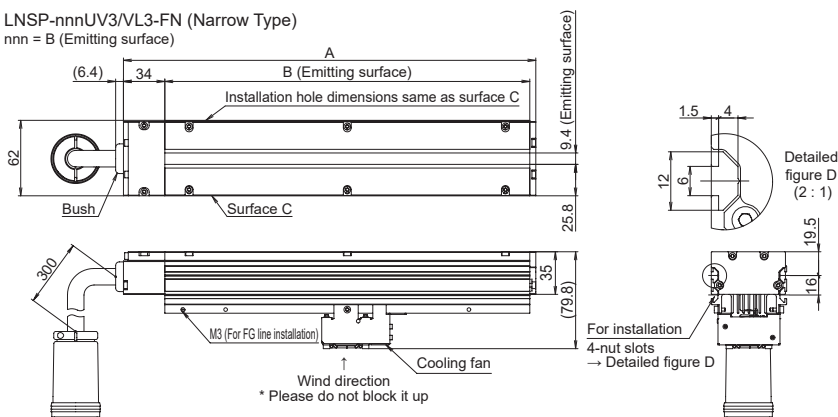
- High transmittance at 90% or greater
- Hard coated filter with high durability
- Twelve-product lineup available for a wide range of wavelengths

▶ P.371

➤ **Dimensions (mm)**

LNSP-nnnUV3/VL3-FN (Narrow Type)

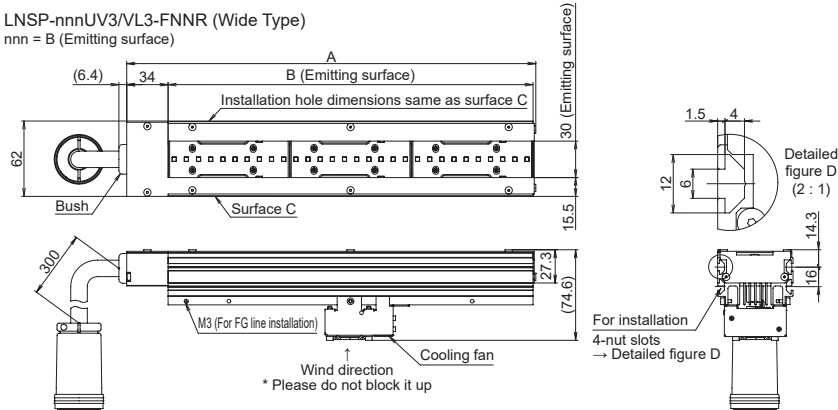
nnn = B (Emitting surface)



Model Name	A	B
LNSP-100UV3/VL3-FN	139	100
LNSP-200UV3/VL3-FN	239	200
LNSP-300UV3/VL3-FN	339	300

LNSP-nnnUV3/VL3-FNNR (Wide Type)

nnn = B (Emitting surface)



Model Name	A	B
LNSP-100UV3/VL3-FNNR	136.3	100
LNSP-200UV3/VL3-FNNR	236.3	200
LNSP-300UV3/VL3-FNNR	336.3	300

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof UV/ Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

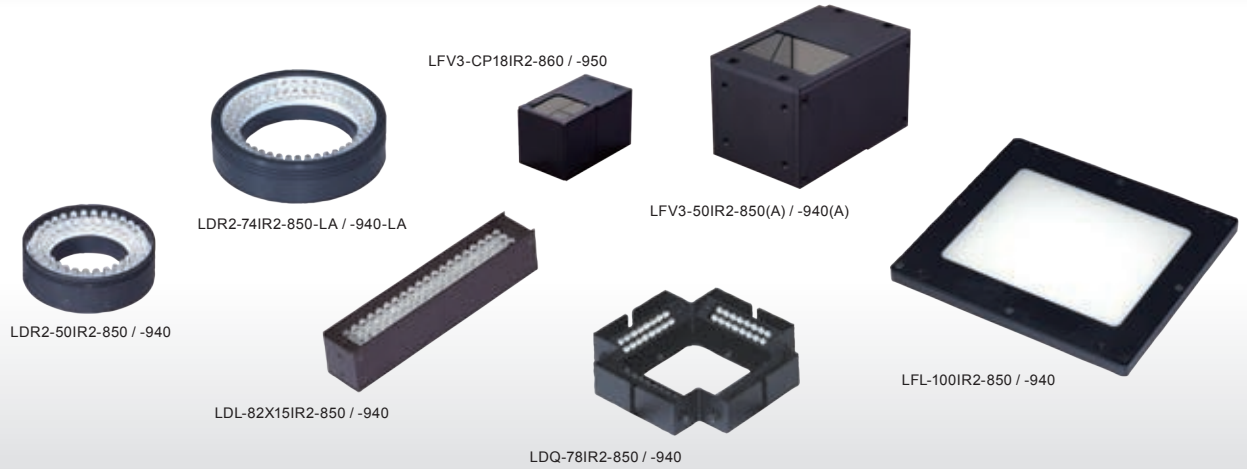
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



Varied light unit lineup using IR-LEDs



Applications

Visual inspection that cancels the surface pattern, inspection penetrating liquid for foreign material inside, inspections using differences in spectral reflectivity, inspection for the inside of packaged food, etc.

What Is Infrared Light?

Infrared light is light that has a wavelength longer than that of visible red light and cannot be seen by the human eye. Compared to visible red light, infrared light has a low scattering rate and high transmission, and therefore is used in imaging which penetrates printed patterns or liquids.

Comparison of visible light and infrared imaging

Features (1)

Penetration

Visible light



Imaging with infrared light



Infrared irradiation penetrates the liquid to make inside visible.

Features (2)

Cancellation

Visible light



Imaging with infrared light

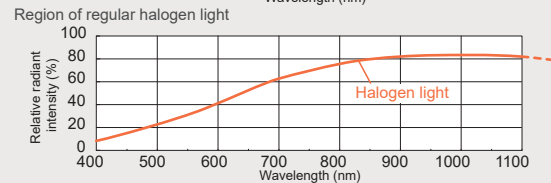
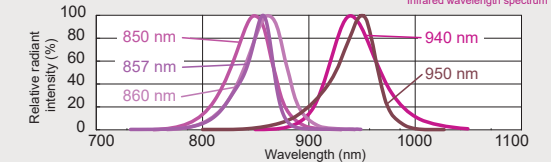
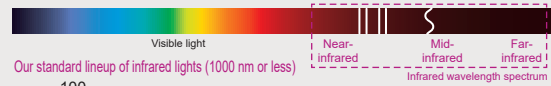


Infrared irradiation cancels out the printing to image the surface evenly.

Merits

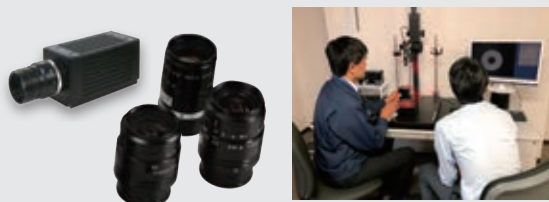
Irradiation of the Infrared LED includes only the energy of specific region of wavelength, so that the irradiation heat is extremely low compared to the halogen lights and gives less damage on the workpiece.

	Infrared LED	Regular halogen light
Irradiation heat	Extremely low	Heat-generating
Influence on the workpiece	Small heat damage	Huge heat damage



We also provide infrared-compatible cameras and lenses

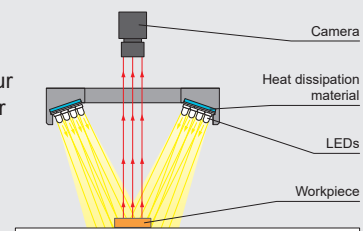
In our testing room, imaging experiments can be conducted with infrared cameras and lenses. Our dedicated staff will recommend a lighting solution that achieves proper images.



Example Configuration

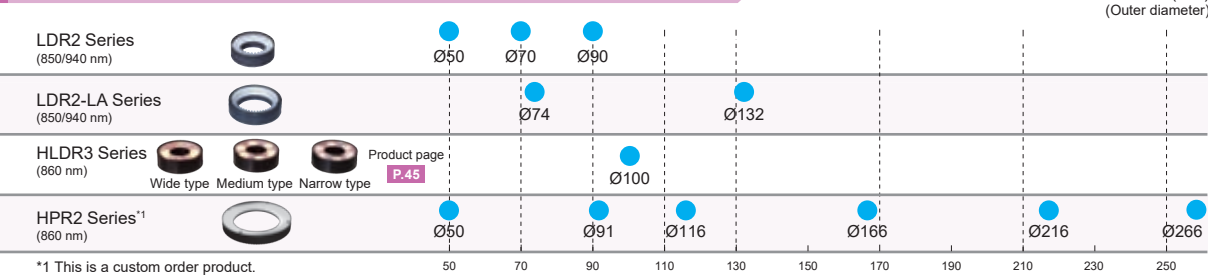
Ring Lights that use infrared LEDs. Bar types and coaxial types are also available. Select your format to match your needs.

LDR2-90IR2-850/940

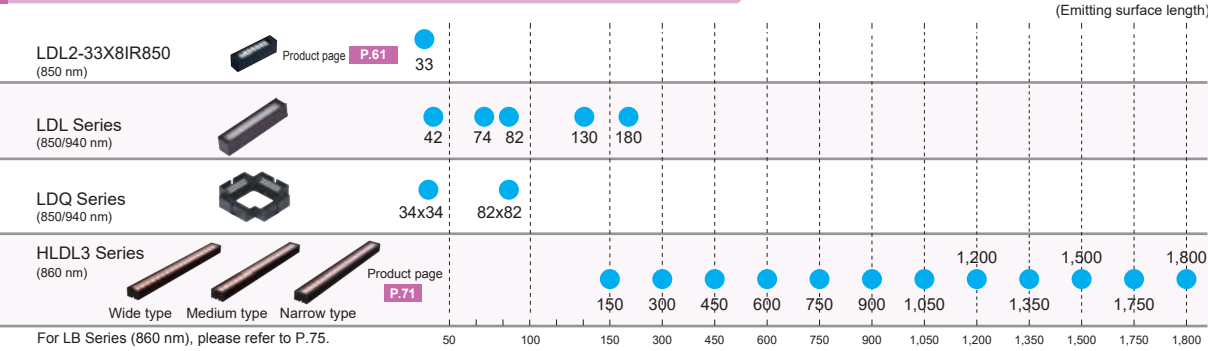


## Extensive Lineup of Infrared Lights

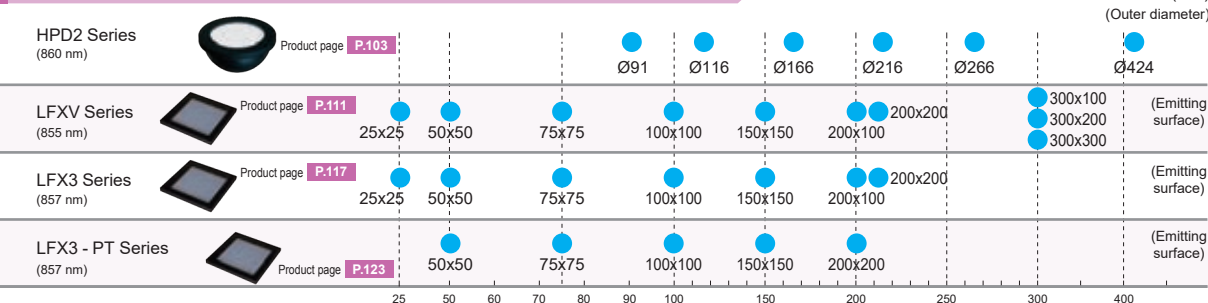
### Ring Lights



### Bar Lights



### Dome Lights / Flat Dome Lights



### Flat Lights



### Coaxial Lights



### Spot Light



The size, wavelength and shape can be changed in custom orders. Feel free to contact us.  
Refer to P.177 for the product lineup with wavelengths of 1000 nm or more.

### Precautions Regarding Infrared Products

- This product uses infrared LEDs. The brightness will not be visually noticeable, but the lit LEDs emit infrared radiation.
- The peak wavelength range corresponds to IR-A (780 to 1400 nm).
- Do not direct infrared radiation into the eyes.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2	LDR2-LA	LDR-LA1	SQR	SQR-TP	Ring (Direct)
HLDR3	HPR2	LFR	LKR	FPR	Ring (Convergent/Diffused)
FPQ3	LDL2	LDLB	HLDL3	LB	Square
TH2 (5 types)	LFL	HPD2	LDM2	LAV	Bar
LFXV	LFX3	LFX3-PT	LFV3	LFV3-G	Flat
MSU	MFU	PF	HLDL-IP	HSL-PCL	Dome
UV / Violet	UV	LNSP-UV3-FN	IR2 (Under 1000-nm Type)	IR (Over 1000-nm Type)	Water-proof
LDF-RLS	IU	HLV3	LV	HFS/HFR	UV / Water-proof
HLV3	HLV3-22-4-NR	HLV3-3M-RGB-4	PFBR-600SW2	PFBR-150	Spot, Etc.
LNSP2	LNSP-FN	LN/LN-HK	LNSD	LND2	Intensity Control
LNSD	LND2	LT	LNV	LFXV (Rectangular Type)	Line (Convergent)
TH2 (Rectangular Type)	LNDG	LNIS2	LNIS	LNIS-FN	Line (Diffused)
LNSD	Telecentric Lens	Macro Lens	LDF-NB	Other Products	Line (Oblique Angled)

# IR2 Series



Refer to our website for product details.

CCS IR2

Search



## Imaging Example

### Imaging for Foreign Materials in Disinfectant Products

Workpiece image



Disinfectant products

LED visible light lighting



It is difficult to check the inside with visible light imaging.

LFL-100IR2-940



Imaging with infrared light penetrates the liquid and captures the foreign materials.

This workpiece was processed by CCS for sample imaging.

### Imaging the Appearance of Leatherware

Workpiece image



Leatherware

LED visible light lighting



The leather and the threads are of the same color, so that it is difficult to capture the stitching.

LDR2-132IR2-850-LA



Infrared light penetrates the dye to highlight the threads and captures the stitching.

## Lineup

Shape	Series	Model Name	LED Color	Power Consumption	Peak Wavelength	Options	Extension Cables	Recommended Control Units	Weight		
Ring Lights	LDR2	LDR2-50IR2-850/-940	Infrared	24 V / 3.8 W	850 nm / 940 nm	-	FCB*5 Straight Cable	PD4	130 g		
		LDR2-70IR2-850/-940		24 V / 7.6 W	850 nm / 940 nm			PD3	170 g		
		LDR2-90IR2-850/-940		24 V / 14 W	850 nm / 940 nm			POD*4	90 g		
	LDR2-LA	LDR2-74IR2-850-LA/-940-LA	Infrared	24 V / 6.9 W	850 nm / 940 nm	-	FCB-W*6 2-Branch Cable	-	270 g		
		LDR2-132IR2-850-LA/-940-LA		24 V / 16 W	850 nm / 940 nm				-		
	HPR2	-	-	Infrared	HPR2-50IR860*1	860 nm	Bracket	FCB-F 4-Branch Cable	-	-	
					HPR2-75IR860*1					24 V / 9.1 W	-
					HPR2-100IR860*1					24 V / 12 W	-
					HPR2-150IR860*1					24 V / 23 W	-
					HPR2-200IR860*1					24 V / 35 W	-
HPR2-250IR860*1					24 V / 46 W					-	
Bar Lights	LDL	-	Infrared	LDL-33X8IR850*2	850 nm	-	FCRB Robot Cable	-	40 g		
				LDL-42X15IR2-850/-940					24 V / 1.3 W	850 nm	40 g
				LDL-74X27IR2-850/-940					24 V / 2.3 W	850 nm / 940 nm	80 g
				LDL-82X15IR2-850/-940					24 V / 6.9 W	850 nm / 940 nm	60 g
				LDL-130X15IR2-850/-940					24 V / 3.8 W	850 nm / 940 nm	90 g
				LDL-180X15IR2-850/-940					24 V / 6.1 W	850 nm / 940 nm	110 g
	LDQ	-	-	Infrared	LDQ-78IR2-850/-940	850 nm / 940 nm	-	-	PD4	110 g	
					LDQ-150IR2-850/-940				24 V / 6.1 W	850 nm / 940 nm	POD*4
Dome Lights	HPD2	-	Infrared	HPD2-75IR860	860 nm	Bracket	-	-	140 g		
				HPD2-100IR860					24 V / 12 W	860 nm	160 g
				HPD2-150IR860					24 V / 23 W	860 nm	285 g
				HPD2-200IR860					24 V / 35 W	860 nm	460 g
				HPD2-250IR860					24 V / 46 W	860 nm	650 g
				HPD2-400IR860					24 V / 46 W	860 nm	1,300 g

\*1 This is a custom order product. Contact your local sales office for details.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*2 Cannot be used in combination with a strobe control unit (overdrive specification type). Contact us for custom orders.

\*3 The LDQ Series is equipped with four lights. If individual dimming is required, select the 4-channel control unit.

\*4 For information on the combination of LED units and POD Series control units, please refer to our website. <https://www.ccs-grp.com/Ink/qr/pod>

Please refer to the following pages for HLDL3 Series and LB Series infrared lights.  
HLDL3 Series P.71 / LB Series P.75

## Lineup

Shape	Series	Model Name	LED Color	Power Consumption	Peak Wavelength	Options	Extension Cables	Recommended Control Units	Weight							
Flat Dome Lights	LFXV	LFXV-25IR860	Infrared	24 V / 1.2 W	855 nm	Protective Plate * Protective plates for LFXV-25, 300X100, and 300 are available as custom orders.			80 g							
		LFXV-50IR860		24 V / 5.7 W	855 nm				190 g							
		LFXV-75IR860		24 V / 12 W	855 nm				290 g							
		LFXV-100IR860		24 V / 12 W	855 nm				400 g							
		LFXV-150IR860		24 V / 17 W	855 nm				870 g							
		LFXV-200X100IR860		24 V / 17 W	855 nm				870 g							
		LFXV-200IR860		24 V / 23 W	855 nm				1,300 g							
		LFXV-300X100IR860		24 V / 23 W	855 nm				1,300 g							
		LFXV-300X200IR860		24 V / 29 W	855 nm				1,600 g							
		LFXV-300IR860		24 V / 34 W	855 nm				2,000g							
	LFX3	LFX3-25IR860	Infrared	24 V / 1.4 W	857 nm	FCB-W*5 Straight Cable			FCB-W*6 2-Branch Cable	80 g						
		LFX3-50IR860		24 V / 6.6 W	857 nm					230 g						
		LFX3-75IR860		24 V / 14 W	857 nm					320 g						
		LFX3-100IR860		24 V / 14 W	857 nm					400 g						
		LFX3-150IR860		24 V / 20 W	857 nm					620 g						
		LFX3-200X100IR860		24 V / 20 W	857 nm					620 g						
		LFX3-200IR860		24 V / 27 W	857 nm					910 g						
		LFX3-PT		LFX3-50IR860-PT-A/-B*2	Infrared					24 V / 6.6 W	857 nm	FCB-F 4-Branch Cable			FRCB Robot Cable	230 g
				LFX3-75IR860-PT-A/-B*2						24 V / 14 W	857 nm					230 g
				LFX3-100IR860-PT-A/-B*2						24 V / 14 W	857 nm					230 g
LFX3-150IR860-PT-A/-B*2	24 V / 20 W		857 nm	230 g												
LFX3-PT	LFX3-200IR860-PT-A/-B*2	Infrared	24 V / 27 W	857 nm					230 g							
	LDL		LDL-60X60IR2-850/940	Infrared					24 V / 7.6 W	850 nm / 940 nm				140 g		
			LDL-100X100IR2-850/940						24 V / 21 W	850 nm / 940 nm				650 g		
	LFL		LFL-100IR2-850/940	Infrared					24 V / 7.6 W	850 nm / 940 nm				220 g		
Coaxial Lights	LFDV3-CP	LFDV3-CP18IR2-860/950	Infrared	24 V / 2.6 W	860 nm / 950 nm				70 g							
		LFDV3	LFDV3-35IR2-850(A)/940(A)*3	Infrared	24 V / 3.1 W	850 nm / 940 nm				175 g						
			LFDV3-50IR2-850(A)/940(A)*3		24 V / 9.1 W	850 nm / 940 nm				335 g						

Shape	Series	Model Name	LED Color	Input current	Power Consumption	Peak Wavelength	Options	Extension Cables	Recommended Control Units	Weight
Spot Light	HLV3	HLV3-22IR860	Infrared	1000 mA	4.1 W	860 nm	Condenser Lens	FCB*5 Straight Cable		53 g
		HLV3-22IR950-SP*4			3.4 W	950 nm				

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 For information on the combination of LED units and POD Series control units, please refer to our website. <https://www.ccs-grp.com/lnk/qkr/pod>

\*2 1 mm type (Model ends with: -A) / 2 mm type (Model ends with: -B)

\*3 Model changes

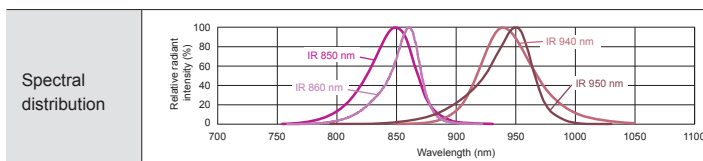
Reason: Since it may be difficult to obtain parts from optical parts manufacturers, they have been changed to equivalent optical parts.

Impact on functionality and performance: No impact on the functionality or performance.

[Add (A) to the end of the model] Example: LFDV3-35IR2-850 → LFDV3-35IR2-850(A)

\*4 This is a custom order product. Contact your local sales office for details.

## LED Properties



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# IR2 Series



Refer to our website for product details.

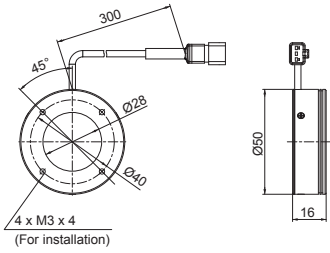
CCS IR2

Search

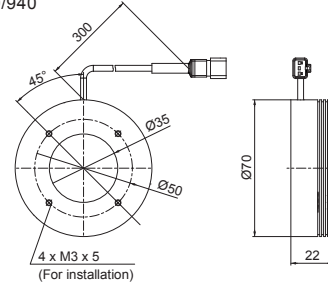


## Dimensions (mm)

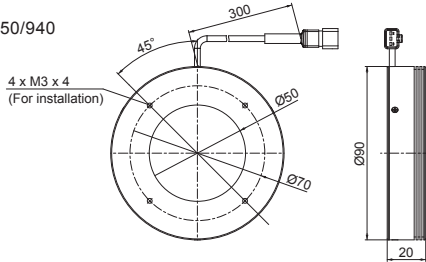
LDR2-50IR2-850/940



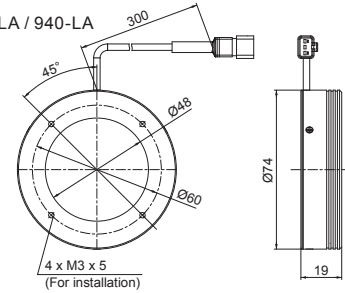
LDR2-70IR2-850/940



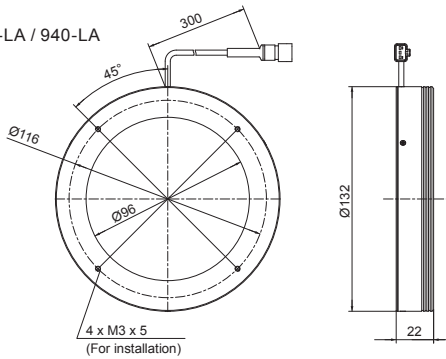
LDR2-90IR2-850/940



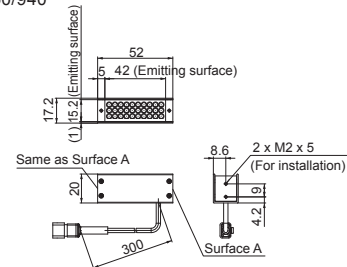
LDR2-74IR2-850-LA / 940-LA



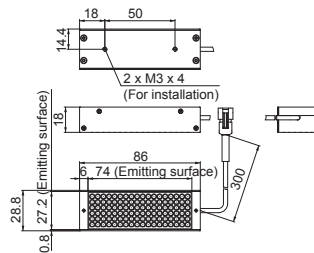
LDR2-132IR2-850-LA / 940-LA



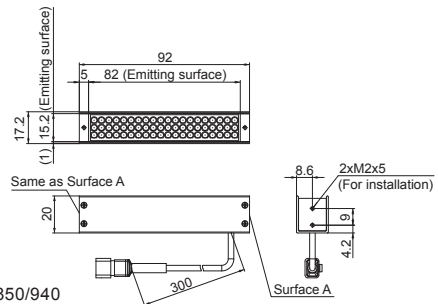
LDL-42X15IR2-850/940



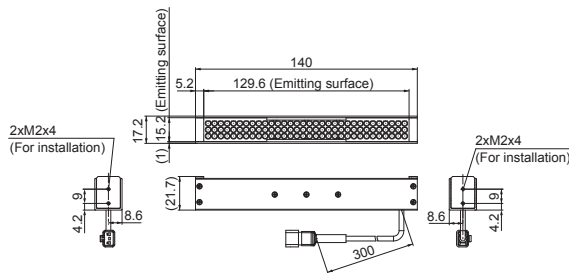
LDL-74X27IR2-850/940



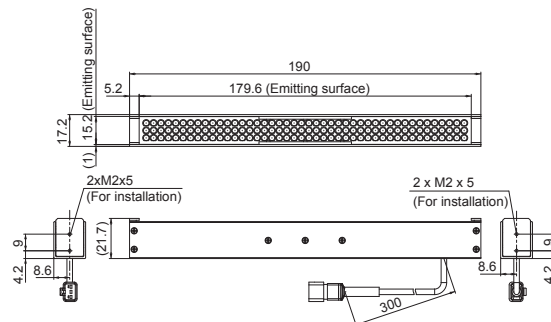
LDL-82X15IR2-850/940



LDL-130X15IR2-850/940



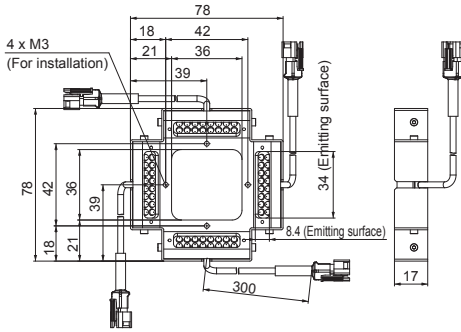
LDL-180X15IR2-850/940



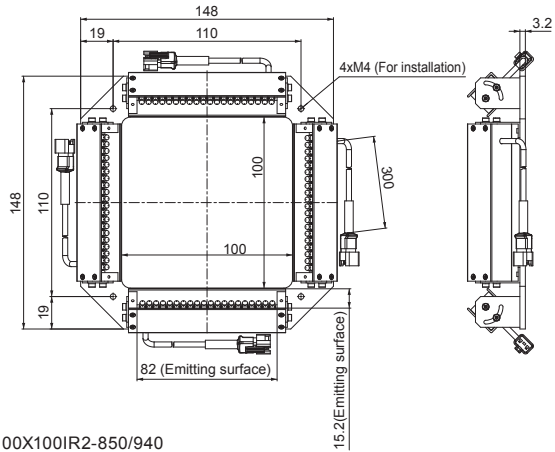
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent / Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN (LN/LN-HK)
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNSIS2 LNSIS LNSIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



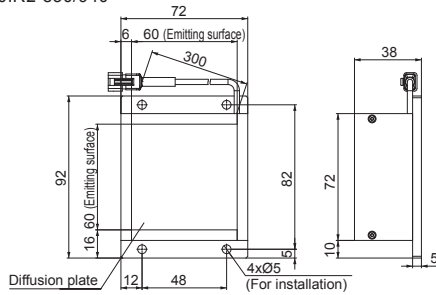
LDQ-78IR2-850/940



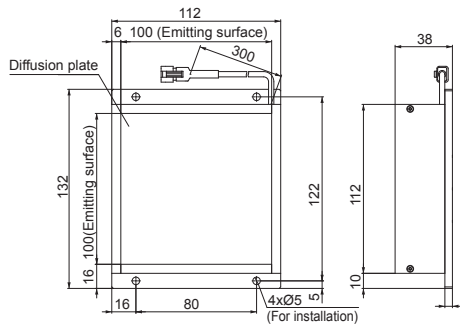
LDQ-150IR2-850/940



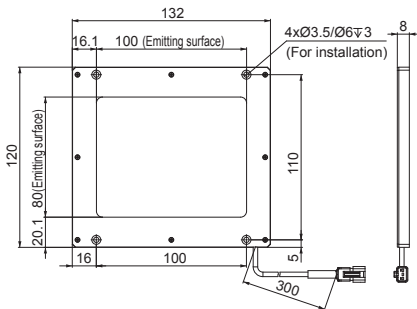
LDL-60X60IR2-850/940



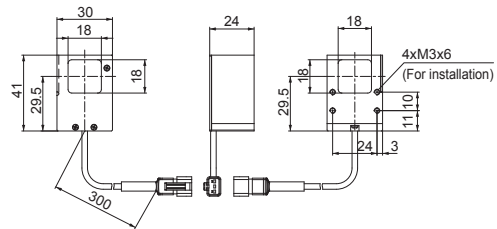
LDL-100X100IR2-850/940



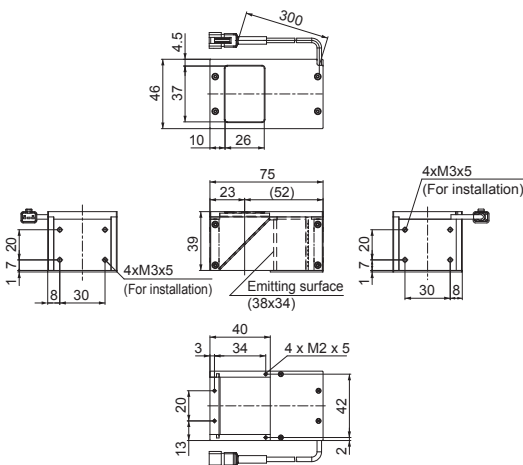
LFL-100IR2-850/940



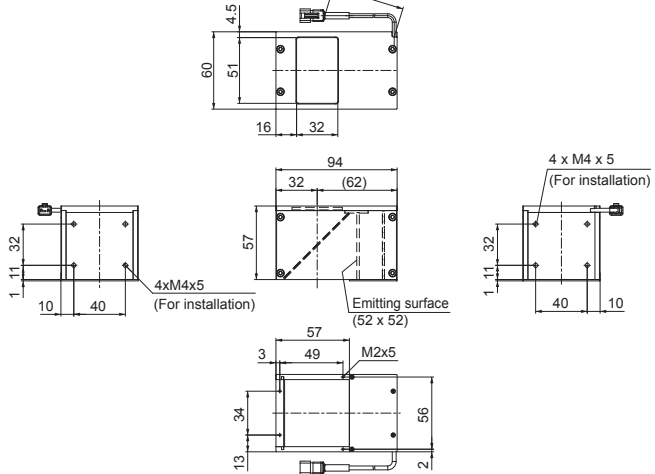
LFV3-CP18IR2-860/950



LFV3-35IR2-850(A)/940(A)



LFV3-50IR2-850(A)/940(A)



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

External dimensions other than the above can be found on the series page or on the website.  
<https://www.ccs-grp.com/product/vision/>

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNFP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNVP	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
Other Products	Products
LDF-NB	Products



## The power to “see” what “cannot be seen” Diverse lineup of lights that uses high-power infrared LEDs



**Applications**

Visual inspection with the surface pattern canceled, inspection of foreign matters inside the liquid by transmission, various inspections using different spectral reflectance, inspection of the contents of packed food, etc.

### Imaging example of Infrared Lights (Over 1000-nm Type)

Infrared light has different light transmission and reflection properties for workpieces than visible light, which makes it possible to observe features that cannot be imaged with visible light.

**Wafer transmission inspection**

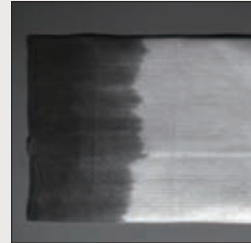
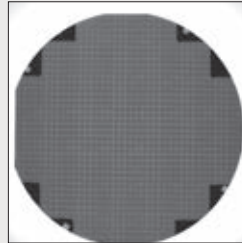
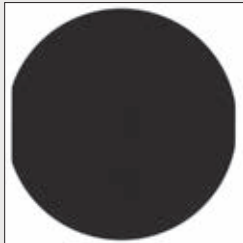
**Wet sheet water content inspection**

BEFORE (visible light)

AFTER (infrared 1200 nm)

BEFORE (visible light)

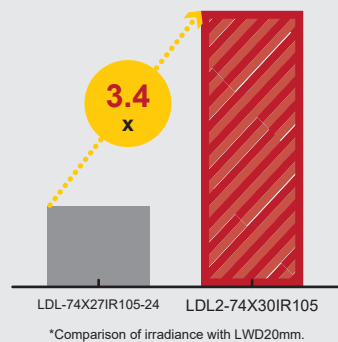
AFTER (infrared 1450 nm)



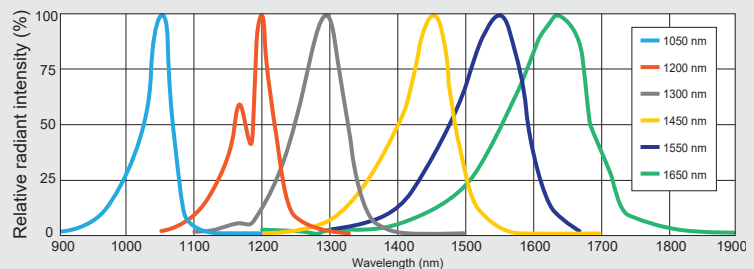
Enables observation by transmission, which is not possible with visible light.

Water absorbs wavelengths above 1450 nm, so if it contains water, the image will be black.

### 3.4 times higher output than conventional products



### Lineup of 6 wavelengths



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
UV / Violet	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Infrared	LDF-RLS
Reference Light Source	IU
Intensity Control	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR3(A)
Spot, Etc.	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Convergent)	LNDG LNSIS2 LNSIS LNSIS-FN
Line (Diffused)	Telecentric Lens Macro Lens
Line (Oblique Angled)	LDF-NB
Lenses	
Other Products	

## Lineup (Model ending with -WD: Wide type)

Series	Model Name <sup>*1</sup>	Input Voltage	Power Consumption					Options	Extension Cables	Recommended Control Units		Weight	
			1050 nm	1200 nm	1300 nm	1450 nm	1550 nm			1650 nm			
HPR2	HPR2-100IR □□	24 V	13 W	11 W	10 W	8.6 W	8.6 W	8.6 W	Bracket	FCB <sup>*4</sup> Straight Cable	PD4	PD3	170 g
												CC-ST-1024 <sup>6</sup>	
	HPR2-150IR □□		19 W	16 W	15 W	13 W	13 W	13 W			PD4	PD3	250 g
											POD <sup>*2</sup>		
LDL2	LDL2-74X30IR □□ (-WD)		8.4 W	5.7 W	5.7 W	5.7 W	5.3 W	5.3 W	Bracket Polarizing Plate	FCB <sup>*4</sup> Straight Cable	PD4	PD3	100 g
											CC-ST-1024	POD <sup>*2</sup>	
TH2	TH2-100X100IR □□	16 W	13 W	13 W	12 W	12 W	12 W	Bracket Polarizing Plate	FCB-W <sup>*5</sup> 2-Branch Cable FCB-F 4-Branch Cable	PD4	PD3	300 g	
										POD <sup>*2</sup>			
HPD2	HPD2-100IR □□	24 V	13 W	11 W	10 W	8.6 W	8.6 W	8.6 W	Bracket	FRCB Robot Cable	PD4	PD3	160 g
	HPD2-150IR □□		19 W	16 W	15 W	13 W	13 W	13 W			PD4	PD3	285 g
											POD <sup>*2</sup>		
LN-HK	LN-60IR □□ -HK		11 W	7.1 W	7.1 W	6.6 W	6.6 W	6.6 W	Polarizing Plate		PD4	PD3	222 g
											CC-ST-1024 <sup>7</sup>	POD <sup>*2</sup>	

Series	Model Name <sup>*1</sup>	Input current (max.)	Power Consumption					Options	Extension Cables	Recommended Control Units		Weight	
			1050 nm	1200 nm	1300 nm	1450 nm	1550 nm			1650 nm			
HLV	HLV-22IR □□	700 mA	1.2 W	1.2 W	1.1 W	1.1 W	1.1 W	1.1 W	—	FCB <sup>*4</sup> Straight Cable FRCB Robot Cable	PD3 <sup>*3</sup>	CC-PJ-0707	32 g
											PJ	PJ2	

\*1 □□ is the corresponding wavelength. Model 105: 1050 nm, 120: 1200 nm, 130: 1300 nm, 145: 1450 nm, 155: 1550 nm, 165: 1650 nm

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*3 Not compatible with PD3-3024-3 series or PD3-5024-3 series.

\*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

\*5 The cables with a model name that ends with "-EL2" are not included.

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

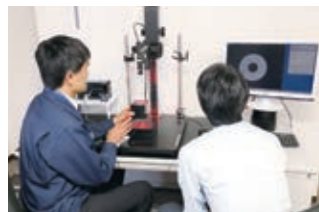
List of Control Unit Specifications ▶ P.311

It can be custom ordered in sizes, shapes and wavelengths other than the above. Feel free to contact us.

## SWIR System consultation (lights + camera + lens)

CCS offers free testing for machine vision applications including SWIR imaging. Our expert staff will recommend the optimal lighting solution for your application.

Equipped with cameras and lenses with high sensitivity in the near infrared range



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# IR Series Over 1000-nm Type



Refer to our website for product details.

CCS Over 1000-nm Type

Search



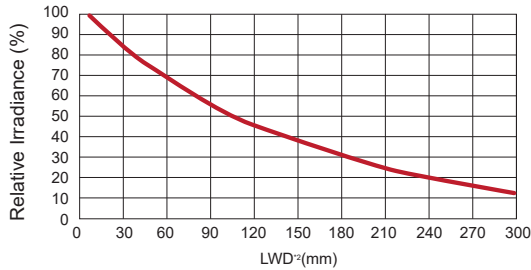
## Data (Representative Examples)

The data included is for reference only. Actual values may vary.

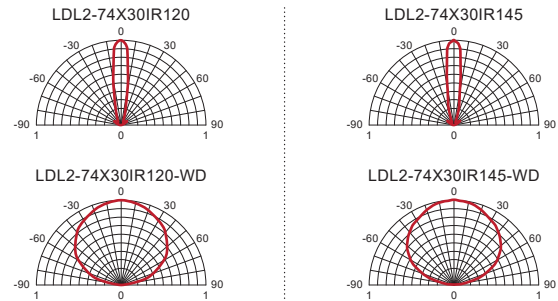
### LDL2-74X30IR105 (narrow type)

#### Relative Irradiance Graph (LWD Characteristics)<sup>\*1</sup><sup>\*2</sup>

\*1 Irradiance on the optical axis \*2 Illuminating distance between the light unit and the workplace



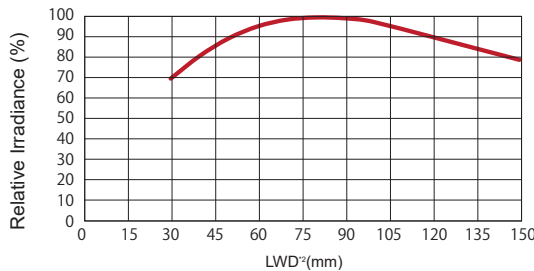
#### Directional Characteristics



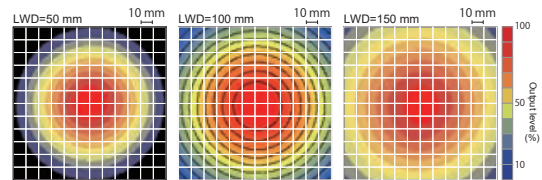
### HPR2-100IR105

#### Relative Irradiance Graph (LWD Characteristics)<sup>\*1</sup><sup>\*2</sup>

\*1 Irradiance on the optical axis \*2 Illuminating distance between the light unit and the workplace



#### Uniformity (Relative Irradiance)



## Options

### • Polarizing Plates

Use with a polarizing filter to remove the light's surface reflection.

Model Name	Applicable Light Unit
PL-LDL2-74X30-WGFHO	LDL2-74X30IR
PL-LDL2-74X30-WGFVE	
PL-TH-100X100-WGFHO	TH2-100X100IR
PL-LN-60-WGFHO	LN-60IR-HK

### • Brackets

#### Bar Lights

The angle of illumination can be adjusted as you desire when securing the light unit.



Model Name	Note
BK-LDL2	Angle adjustment brackets (x2)

▶ P.381

#### Flat Lights

This is a dedicated bracket for affixing the TH2 Series light units. The TH2 Series can be affixed in four points.

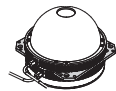


Model Name	Note
BK-TH-LE12	Installation brackets common BK-TH-LE12 to all TH2 models (includes 4)

▶ P.381

### • Light Joint Brackets

Combine a dome and ring light to achieve imaging by light switching and simultaneous lighting.



Model Name	Applicable Light Unit 1	Applicable Light Unit 2
BK-100-JO	HPR2-100IR	HPD2-100IR
BK-150-JO	HPR2-150IR	HPD2-150IR

▶ P.382

### • Expansion Mounting Brackets

Achieves installation using installation holes with a larger gap than the light unit body installation holes, or installation on a vertical surface.

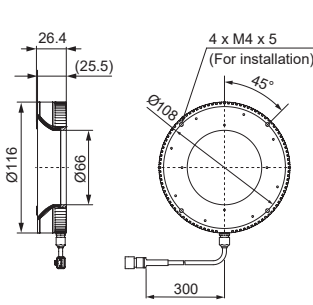


Model Name	Applicable Light Unit
BK-100-CI	HPR2-100IR, HPD2-100IR
BK-150-CI	HPR2-150IR, HPD2-150IR

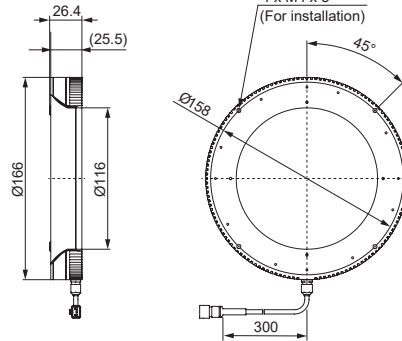
▶ P.382

## Dimensions (mm)

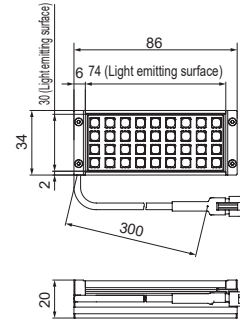
HPR2-100IR (common for all wavelengths)



HPR2-150IR (common for all wavelengths)

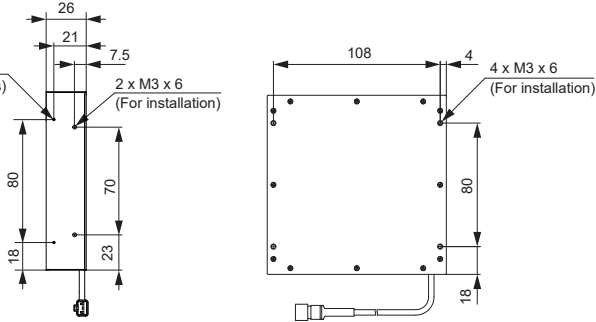
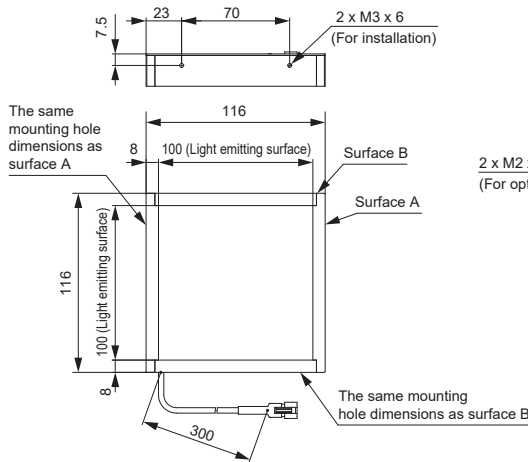


LDL2-74X30IR (common for all wavelengths)

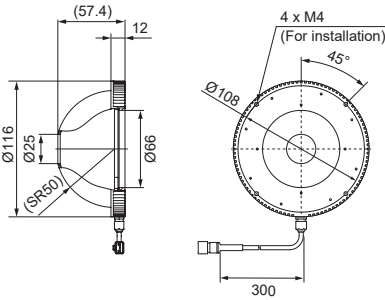


The wide type (-WD) has the same size.

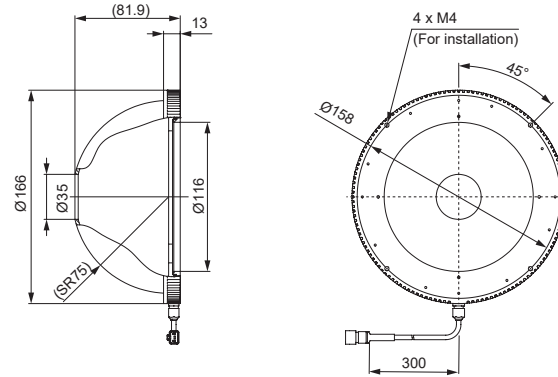
TH2-100X100IR (common for all wavelengths)



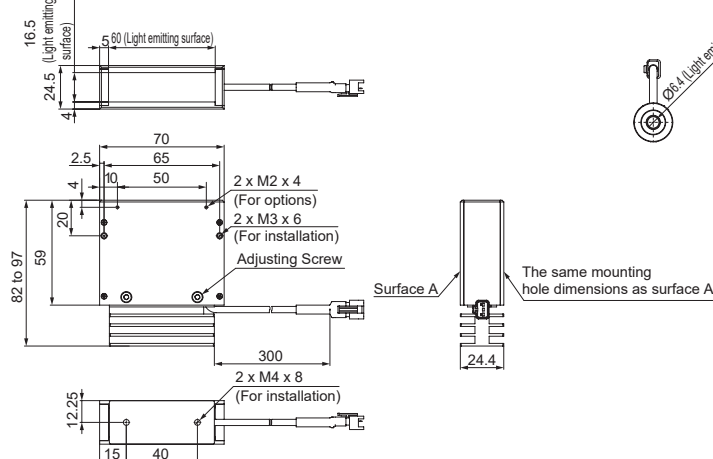
HPD2-100IR (common for all wavelengths)



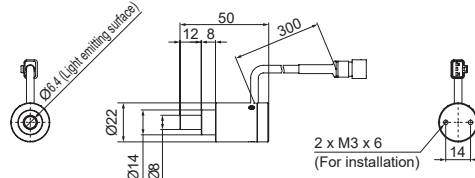
HPD2-150IR (common for all wavelengths)



LN-60IR-HK (common for all wavelengths)



HLV-22IR (common for all wavelengths)



LDR2	Ring	(Direct)
LDR2-LA	Ring	(Direct)
SQR	Ring	(Direct)
SQR-TP	Ring	(Direct)
HLDR3	Ring	(Convergent/Diffused)
HPR2	Ring	(Convergent/Diffused)
LFR	Ring	(Convergent/Diffused)
LKR	Ring	(Convergent/Diffused)
FPR	Ring	(Convergent/Diffused)
FPQ3	Square	(Convergent/Diffused)
LDL2	Bar	(Convergent/Diffused)
LDLB	Bar	(Convergent/Diffused)
HLDL3	Bar	(Convergent/Diffused)
LB	Bar	(Convergent/Diffused)
TH2 (5 types)	Flat	(Convergent/Diffused)
LFL	Flat	(Convergent/Diffused)
HPD2	Dome	(Convergent/Diffused)
LDM2	Dome	(Convergent/Diffused)
LAV	Dome	(Convergent/Diffused)
PDM	Dome	(Convergent/Diffused)
LFXV	Dome	(Convergent/Diffused)
LFX3	Dome	(Convergent/Diffused)
LFX3-PT	Dome	(Convergent/Diffused)
LFV3	Coaxial	(Convergent/Diffused)
LFV3-G	Coaxial	(Convergent/Diffused)
MSU	Coaxial	(Convergent/Diffused)
MFU	Coaxial	(Convergent/Diffused)
PF	Strobe	(Convergent/Diffused)
HLDR-IP	Water-proof	(Convergent/Diffused)
HSL-PCL	Water-proof	(Convergent/Diffused)
UV3/VL3	UV / Violet	(Convergent/Diffused)
UV	UV / Violet	(Convergent/Diffused)
LNSP-UV3-FN	UV / Violet	(Convergent/Diffused)
IR2 (Under 1000-nm Type)	Infrared	(Convergent/Diffused)
IR (Over 1000-nm Type)	Infrared	(Convergent/Diffused)
CIR	Infrared	(Convergent/Diffused)
LDF-RLS	Reference Light Source	(Convergent/Diffused)
IU	Intensity Control	(Convergent/Diffused)
HLV3	Spot, Etc.	(Convergent/Diffused)
HFS/HFR	Spot, Etc.	(Convergent/Diffused)
HLV3-22-4-NR	Spot, Etc.	(Convergent/Diffused)
HLV3-3M-RGB-4	Spot, Etc.	(Convergent/Diffused)
PFBR-600SW2	Spot, Etc.	(Convergent/Diffused)
PFBR-150	Spot, Etc.	(Convergent/Diffused)
SLG-150V-CCS	Spot, Etc.	(Convergent/Diffused)
PF3(A)	Spot, Etc.	(Convergent/Diffused)
LNLP	Line (Convergent)	(Convergent/Diffused)
LN2P2	Line (Convergent)	(Convergent/Diffused)
Coaxial Units	Line (Convergent)	(Convergent/Diffused)
LN2P-FN	Line (Convergent)	(Convergent/Diffused)
LN/LN-HK	Line (Convergent)	(Convergent/Diffused)
LN2D	Line (Diffused)	(Convergent/Diffused)
LND2	Line (Diffused)	(Convergent/Diffused)
LT	Line (Diffused)	(Convergent/Diffused)
LN2V	Line (Diffused)	(Convergent/Diffused)
LFXV (Rectangular Type)	Line (Diffused)	(Convergent/Diffused)
TH2 (Rectangular Type)	Line (Diffused)	(Convergent/Diffused)
LNDG	Line (Oblique Angled)	(Convergent/Diffused)
LNIS2	Line (Oblique Angled)	(Convergent/Diffused)
LNIS	Line (Oblique Angled)	(Convergent/Diffused)
LNIS-FN	Line (Oblique Angled)	(Convergent/Diffused)
Telecentric Lens	Lenses	(Convergent/Diffused)
Macro Lens	Lenses	(Convergent/Diffused)
Other Products	Lenses	(Convergent/Diffused)
LDF-NB	Lenses	(Convergent/Diffused)

You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here. <https://www.ccs-grp.com/contact/>



# High Intensity Light Source for Hyperspectral & SWIR Cameras

**Built to order**  
This is a made-to-order product. For queries and details, contact your CCS sales representative.



**Applications** Observation of transmission, absorption and reflection of an object by illuminating a specific wavelength in the near-infrared region, imaging using a hyperspectral camera

## Features

- We propose a wide range of applications with wavelength characteristics from visible light to near infrared (around 2500 nm).
- The special halogen lamp achieves long life. \* TH-200X30CIR/LN-200CIR only. Warranty period is one year or cumulative lighting hours up to 8,000 hours.
- The unique optical design suppresses heat rays and minimizes damage to the inspected object.
- We can manufacture lights of various shapes and sizes according to customer requests.
- For imaging with a hyperspectral camera that requires high output. \*LDL-222X42CIR (-LACL) only.

## Hyperspectral Imaging Light

### LDL-222X42CIR

The condensing lamp enables high-power illumination. Especially useful for imaging with a hyperspectral camera that requires high output and infrared camera projects that require high-speed inspection.

- Imaged with visible light LED light
- Imaged with a hyperspectral camera



Imaging of foreign matters in coffee powder at 400 nm to 900 nm

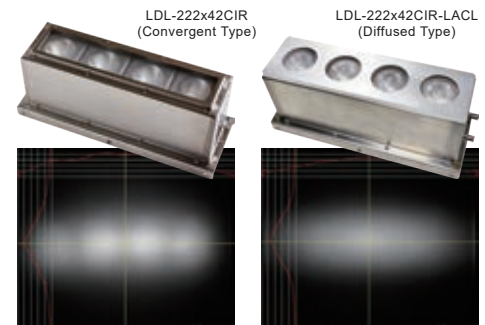


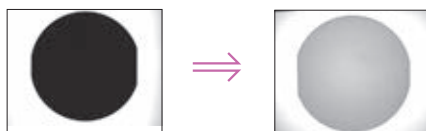
Image of the illumination

## Diffused Type

### TH-200X30CIR

Achieves uniform light emission with a special infrared-compatible diffuser. For wide-range illumination and transmission imaging.

- Imaged with visible light LED light
- Imaged with diffused infrared light



Imaged with a wafer at 1200 nm

## Convergent Type

### LN-200CIR

The rod lens converges irradiation for imaging with an infrared line sensor.

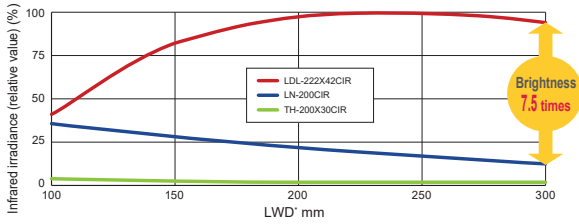
- Imaged with visible light LED light
- Imaged with convergent infrared light



Imaged rice with different water content at 1450 nm

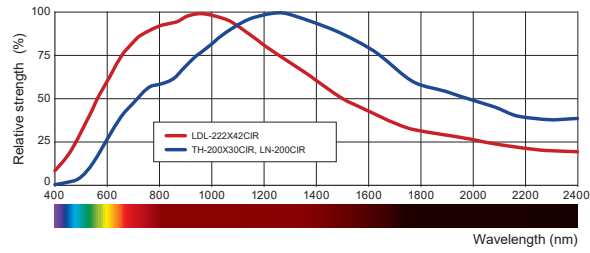
**Data**

**Infrared irradiance graph**



\*Illuminating distance between the light unit and the workpiece Note: Not guaranteed values.  
The data for LDL-222X42CIR(-LACL) is the average of LDL-222X42CIR and LDL-222X42CIR-LACL.

**Spectral distribution**



**Specifications**

**LDL-222X42CIR(-LACL)**

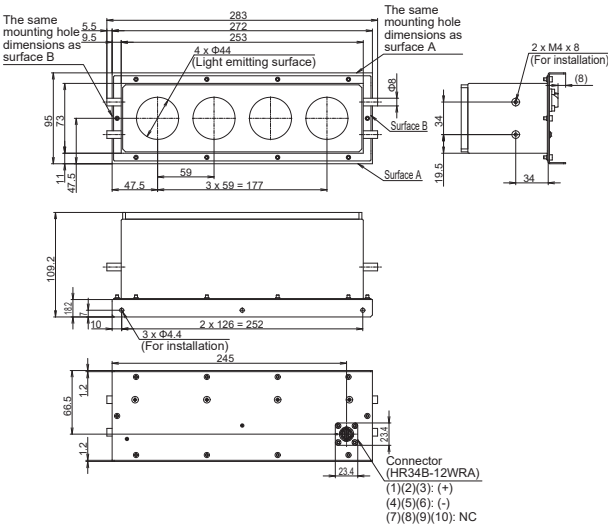
Input Voltage (Rated)	12 VDC
Input Voltage (Range)	11.4 to 12 VDC
Power Consumption	87 W max.
Connector	HR34B-12WRA-10P
Cooling method	Natural air-cooling
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 70% RH (with no condensation)
CE mark	Safety standard: Conforms to EN62471
Environmental regulations	RoHS compliant
Case material	SUS
Weight	1740 g max.
Accessories	User Manual

**TH-200X30CIR/LN-200CIR**

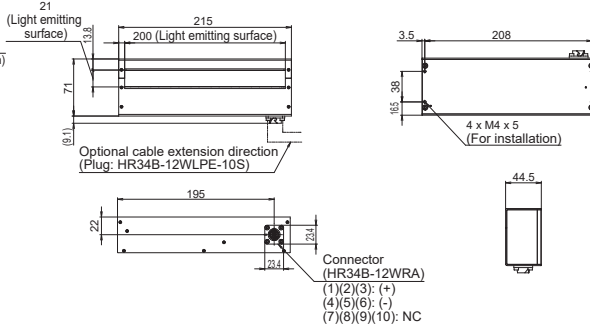
Input Voltage (Rated)	5.2 VDC typ.
Input Voltage (Range)	5.0 to 5.2 VDC
Power Consumption	46 W max.
Connector	HR34B-12WRA-10P
Cooling method	Natural air-cooling
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation)
Storage environment	Temperature: -20 to 45°C, Humidity: 20 to 70% RH (with no condensation)
CE mark	Safety standard: Conforms to EN62471
Environmental regulations	RoHS compliant
Case material	Aluminum alloy
Weight	720 g max.
Accessories	User Manual

**Dimensions (mm)**

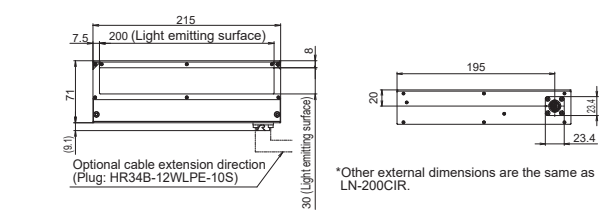
**LDL-222X42CIR-LACL**



**LN-200CIR**



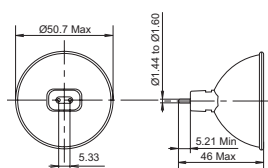
**TH-200X30CIR**



\*Please see our website for LDL-222X42CIR dimensions.

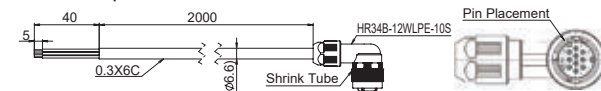
**Option (mm)**

For LDL-222X42CIR(-LACL) only  
Replacement Lamp



**Common optional cable**

**FCB-2-NC6HR10**



**SWIR System consultation (lights + camera + lens)**

CCS offers free testing for machine vision applications including SWIR imaging. Our expert staff will recommend the optimal lighting solution for your application.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Stroke
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Macro Lens
Macro Lens	Macro Lens
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

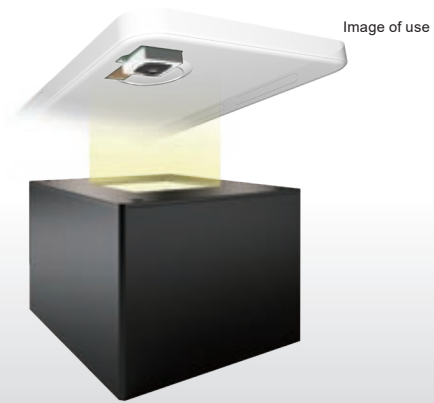


Switch the color temperature to suit the application in camera module adjustment, using just one unit

**NEW**



LDF-RLS Series



**Applications** For camera module calibration applications (gain, white balance, shading correction) / backlight for chart imaging inspection, etc.

## Features

- Realizes at least 90% (typ. 95%)<sup>\*1</sup> uniformity across all settable color temperatures
- 4-color temperature switching type and 2-color mixed tuning type available
- PWM intensity control<sup>\*2</sup> to prevent changes in color temperature

\*1 Measurement values based on our measurement conditions.

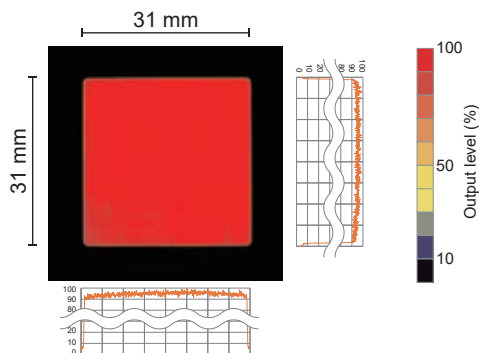
\*2 Short for pulse width modulation, this control method keeps the cycle and amplitude constant, changing only the pulse width.

## 4-color temperature switching type Model Name: LDF-TP31X31W31W65RLS

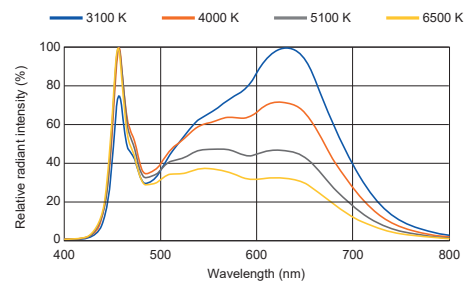
- Can be lit using four correlated color temperatures (3100 K, 4000 K, 5100 K, 6500 K)
- Correlated color temperatures can be switched by lights-on switching control using power supplies for lighting with four or more channels from CCS

### Uniformity (Relative radiance)

Correlated Color Temperature: 5100 K



### Spectral distribution



The data included is for reference only. Actual values may vary.

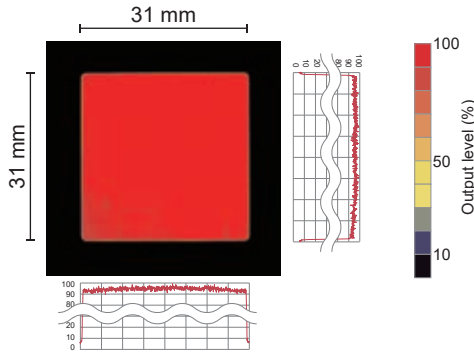


## 2-color mixed tuning type Model Name: LDFTP31X31W31W65RSL2

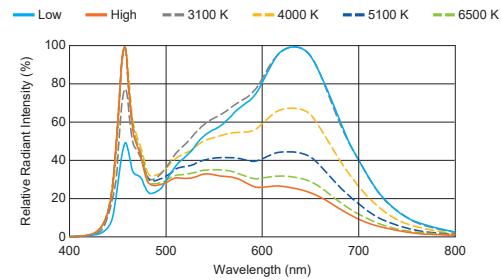
- Can be lit using correlated color temperatures 2800 K and 7600 K
- By changing the intensity ratio of two correlated color temperatures and mixed tuning, it is possible to change to a correlated color temperature suitable for the specifications

### Uniformity (Relative radiance)

Correlated color temperature: 7600 K (Lighting channel: High)



### Spectral distribution



\* 3100 K, 4000 K, 5100 K, and 6500 K are reference values with the High and Low dimming ratios adjusted.

The data included is for reference only. Actual values may vary.

## Lineup

Model Name	LED Color	Power Consumption	Correlated color temperature (typ.)	Recommended Control Units	Weight
LDF-TP31X31W31W65RSL <sup>*1</sup>	White	24 V / 0.92 W (max. per channel)	3100 K ±100 K 4000 K ±120 K 5100 K ±150 K 6500 K ±210 K	CN-1024-EPOE PD3-5024-4	325 g
LDFTP31X31W31W65RSL2	White	24 V / 2.15 W (Low: 1.08 W, High: 1.07 W)	Low: 2800 K High: 7600 K Adjustable intensity ratio to set any color temperature	PD4-6024-2	310 g

\*1 For the LDF-TP31X31W31W65RSL, do not light more than one channel at the same time.

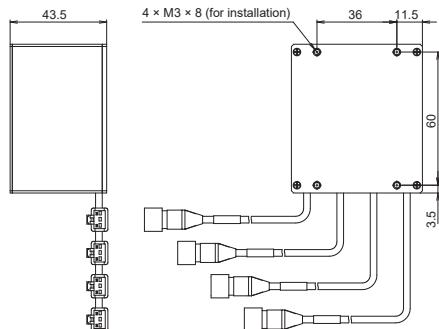
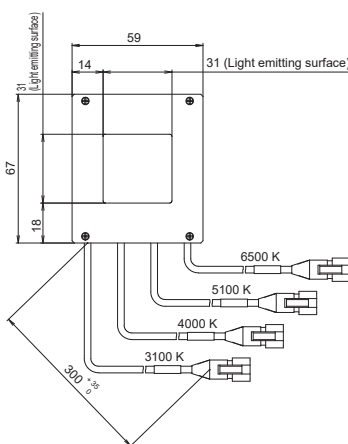
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

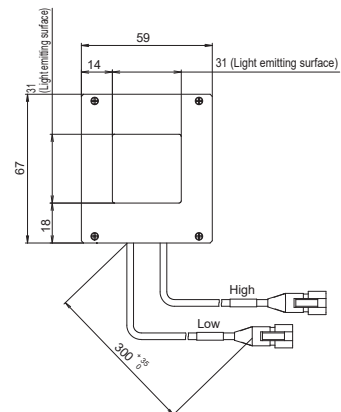
Other sizes and brightnesses can be **manufactured to order**. Contact your local sales office for details.

## Dimensions (mm)

### ■ LDF-TP31X31W31W65RSL



### ■ LDFTP31X31W31W65RSL2



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



Light intensity and light ON/OFF control can be performed without an external controller.



HPR2-IU Series

The light intensity can be set to any of 126 levels by adjusting the intensity control unit.

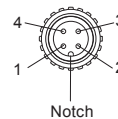
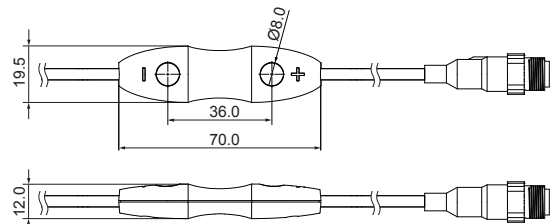
An M12 input connector, to which you can connect **Smart Cameras** and other devices to supply power.

Note: These products are sold only outside Japan.

Common Specifications

Lighting method	Continuous lighting
Drive method	Constant-voltage system
Intensity control method	PWM control
PWM frequency	125 kHz
Input voltage (rating)	24 VDC
Input voltage (range)	21.6 to 24 VDC
Input connector	M12 (4 pins, male)
Cable length	670 mm (including the intensity control unit)

Dimensions (mm)



Pin No.	Signal
1	24 VDC*1
2	NC
3	COMMON GND
4	ON/OFF input (+24 V)*2

- \*1 Voltage rating: 24 VDC, Voltage range: 21.6 to 24 VDC
  - The brightness of the light unit will be lower when the input voltage is less than 24 VDC.
  - Use a stable power source with an output voltage that does not fluctuate.
- \*2 Voltage rating: 24 VDC, Voltage range: 20 to 26.4 VDC

Custom Order Example

Please contact your CCS sales representative.  
E.g.: Different color

Creating a blue LED light unit

Customizable items

- Wavelength/Color
- External/Internal diameter
- Wavelength/Color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Optional Accessories

- Extension Cable**  
Model name: **FRCB-n-M12-4M-4F** (n=1, 2, 3)  
This robot cable is used to extend the light unit cable length.  
Cable length: 1, 2, 3 m
- Continuous Lighting Adapter**  
Model name: **FRCB-0.5-M12-AL-4M4F**  
This Adapter is used to continuously turn ON the light unit. A robot cable is used.  
(Pins 1 and 4 are internally connected.)  
Cable length: 0.5 m

### Ring Lights

	Model name	Power consumption (typ.)
HPR2	HPR2-50RD-IU	8.1 W
	HPR2-50SW-IU	9.6 W
	HPR2-75RD-IU	11 W
	HPR2-75SW-IU	11 W
	HPR2-100RD-IU	11 W
	HPR2-100SW-IU	11 W
	HPR2-150RD-IU	11 W
	HPR2-150SW-IU	11 W
LDR2	LDR2-32RD2-IU	2.0 W
	LDR2-32SW2-IU	2.4 W
	LDR2-42RD2-IU	2.5 W
	LDR2-42SW2-IU	3.2 W
	LDR2-50RD2-IU	3.6 W
	LDR2-50SW2-IU	4.3 W
	LDR2-70RD2-IU	6.6 W
	LDR2-70SW2-IU	8.1 W
	LDR2-90RD2-IU	11 W
	LDR2-90SW2-IU	11 W
	LDR2-50RD2-WD-IU	3.6 W
	LDR2-70RD2-WD-IU	6.6 W
LDR2-90RD2-WD-IU	11 W	
LFR	LFR-100RD2-IU	4.1 W
	LFR-100SW2-IU	5.1 W
	LFR-130RD2-IU	5.1 W
LKR	LKR-70RD2-IU	3.0 W
	LKR-70SW2-IU	4.3 W
LDR-LA1	LDR-75RD2-LA1-IU	3.0 W
	LDR-75SW2-LA1-IU	4.3 W
	LDR-96RD2-LA1-IU	3.6 W
	LDR-96SW2-LA1-IU	4.3 W
	LDR-146RD2-LA1-IU	5.1 W
	LDR-146SW2-LA1-IU	6.6 W
LDR2-LA	LDR-176RD2-LA1-IU	6.6 W
	LDR-176SW2-LA1-IU	8.1 W
	LDR-206RD2-LA1-IU	7.6 W
	LDR-206SW2-LA1-IU	9.6 W
LDR2-LA	LDR2-48RD2-LA-IU	2.5 W
	LDR2-48SW2-LA-IU	3.6 W
	LDR2-74RD2-LA-IU	5.1 W
	LDR2-74SW2-LA-IU	6.2 W
LDR2-LA	LDR2-100RD2-LA-IU	9.6 W
	LDR2-100SW2-LA-IU	11 W
	LDR2-132RD2-LA-IU	11 W
	LDR2-132SW2-LA-IU	11 W

### Bar Lights

	Model name	Power consumption (typ.)
LDL2	LDL2-33X8RD2-IU	3.0 W
	LDL2-33X8SW2-IU(A)	2.5 W
	LDL2-41X16RD2-IU	4.3 W
	LDL2-41X16SW2-IU(A)	4.3 W
	LDL2-41X16RD2-WD-IU	4.3 W
	LDL2-41X16SW2WDIU(A)	4.3 W
	LDL2-80X16RD2-IU	8.1 W
	LDL2-80X16SW2-IU(A)	8.1 W
	LDL2-80X16RD2-WD-IU	8.1 W
	LDL2-80X16SW2WDIU(A)	8.1 W
	LDL2-119X16RD2-IU	11 W
	LDL2-119X16SW2-IU(A)	11 W
	LDL2-119X16RD2-WD-IU	11 W
	LDL2-119X16SW2WDIU(A)	11 W
LDL2	LDL2-74X30RD2-IU	11 W
	LDL2-74X30SW2-IU(A)	11 W
	LDL2-74X30RD2-WD-IU	11 W
	LDL2-74X30SW2WDIU(A)	11 W

### Square Lights

	Model name	Power consumption (typ.)
FPQ3	FPQ3-32RD-IU	4.3 W
	FPQ3-32SW-IU	7.6 W
	FPQ3-48RD-IU	5.6 W
	FPQ3-48SW-IU	11 W

### Back Lights

	Model name	Power consumption (typ.)
TH2	TH2-27X27RD-IU	2.8 W
	TH2-27X27SW-IU	3.4 W
	TH2-43X35RD-IU	5.4 W
	TH2-43X35SW-IU	5.3 W
	TH2-51X51RD-IU	7.0 W
	TH2-51X51SW-IU	8.7 W
	TH2-63X60RD-IU	10.4 W
	TH2-63X60SW-IU	10.2 W
	TH2-83X75RD-IU	11 W
	TH2-83X75SW-IU	11 W

### Back Lights (Continued)

	Model name	Power consumption (typ.)
LFL	LFL-612RD2-P-IU	1.0 W
	LFL-612SW2-P-IU	0.9 W
	LFL-1012RD2-IU	1.0 W
	LFL-1012SW2-IU	1.3 W
	LFL-1012RD2-P-IU	1.0 W
	LFL-1012SW2-P-IU	1.3 W
	LFL-3212RD2-IU	2.0 W
	LFL-3212SW2-IU	2.8 W
	LFL-4012RD2-IU	2.5 W
	LFL-4012SW2-IU	3.2 W
	LFL-50RD2-IU	3.0 W
	LFL-50SW2-IU	3.6 W
LFL	LFL-100RD2-IU	5.6 W
	LFL-100SW2-IU	5.8 W

### Dome Lights

	Model name	Power consumption (typ.)
HPD2	HPD2-75RD-IU	11 W
	HPD2-75SW-IU	11 W
	HPD2-100RD-IU	11 W
	HPD2-100SW-IU	11 W
	HPD2-150RD-IU	11 W
	HPD2-150SW-IU	11 W

### Flat Dome Lights

	Model name	Power consumption (typ.)
LFX3	LFX3-50RD-IU	11 W
	LFX3-50SW-IU(A)	11 W
	LFX3-75RD-IU	11 W
	LFX3-75SW-IU(A)	11 W
	LFX3-100RD-IU	11 W
LFX3-100SW-IU(A)	11 W	

### Coaxial Lights

	Model name	Power consumption (typ.)
LFV3	LFV3-34RD-IU (A)	4.2 W
	LFV3-34SW-IU (A)	3.7 W
	LFV3-35RD-IU (A)	3.6 W
	LFV3-35SW-IU (A)	4.2 W
	LFV3-40RD-IU (A)	5.1 W
	LFV3-40SW-IU (A)	5.1 W
	LFV3-50RD-IU (A)	8.6 W
	LFV3-50SW-IU (A)	11 W
	LFV3-70RD-IU (A)	11 W
	LFV3-70SW-IU (A)	11 W
	LFV3-CP-13RD2-IU	2.5 W
	LFV3-CP-13SW-IU	2.8 W
LFV3-CP-18RD2-IU	3.8 W	
LFV3-CP-18SW-IU	4.6 W	

Note: For information on the LED color, wavelength, and other specifications, refer to those of the light unit that does not have "-IU" at the end of the model name.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-A	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNL	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products



Provides high output and uniform spot lighting using an original optical design  
Lineup of shapes selectable according to the installation space

**L-Type**



**Cylindrical Type**



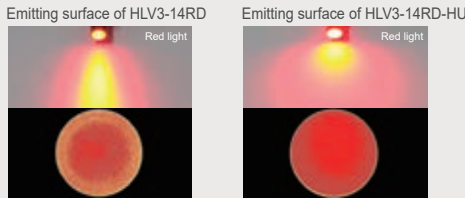
**Applications**

As a light source for a telecentric lens, light source for alignment of LCDs or circuit boards, light source for dimension measuring, light source for spot illumination, etc.

**Lineup with Selection to Match Your Needs**

**Compact and Lightweight Models HLV3-14/-HU**

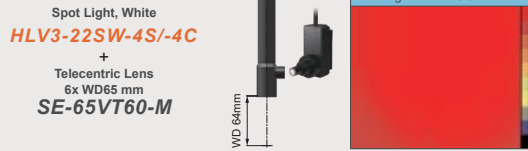
- Standard type and high-uniformity type (-HU) are available



Note) Comparison using our measurement conditions. The data included is for reference only and the results for individual products may vary.

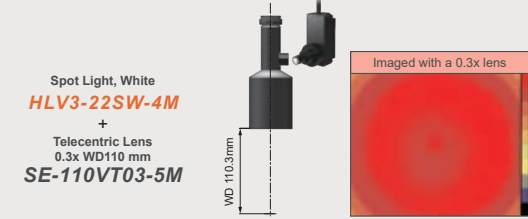
**High Output Models HLV3-22-4S/-4C**

- Optimized for high-magnification telecentric lenses



**High Uniformity Models HLV3-22-4M**

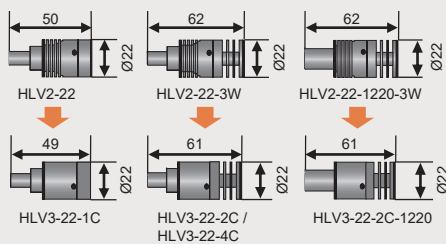
- Optimized for low-magnification telecentric lenses



Note) Each color represents the brightness in steps of 10% the maximum value. The results for individual products may vary.

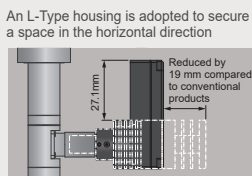
**Cylindrical Type HLV3-C Series**

- Housing design suitable for changing from HLV2



**L-Type Standard Model HLV3-22-1/-2**

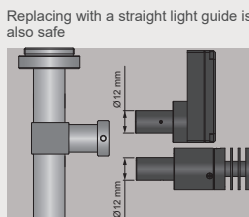
- The housing design of the conventional product (HLV2) has been revised to save more space



Mounting holes on rear of Spot Light enable flexible installation. (See external dimensions)

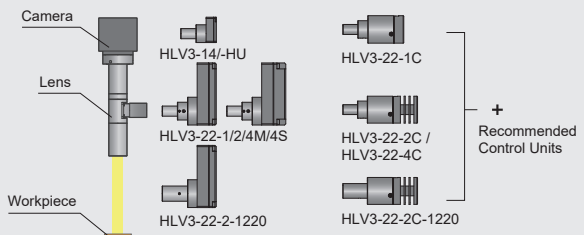
**Emission tip diameter is Ø12 mm HLV3-22-2-1220/-2C-1220**

- Lens light mounting cap size compatible with Ø12 mm



**Example Configuration**

Spot light that achieves high output, high uniformity and high quality.



## ➤ Lineup that can be selected according to the application

### HLV3 (L-Type)

Model Name	Compared to the brightness of conventional lighting*1				Compared to the brightness of HLV3 Series units*2				Uniformity	Compact design	Reduced individual brightness differences	Recommended magnification for telecentric lenses*3
	RD (red)	SW (white)	BL (blue)	GR (green)	RD (red)	SW (white)	BL (blue)	GR (green)				
HLV3-14	1.7 <sub>x</sub>	1.1 <sub>x</sub>	3.0 <sub>x</sub>	1.3 <sub>x</sub>	—	—	—	—	○	◎	—	1.0 <
HLV3-14-HU	0.9 <sub>x</sub>	1.1 <sub>x</sub>	1.0 <sub>x</sub>	1.7 <sub>x</sub>	—	—	—	—	◎	◎	—	1.0 <
HLV3-22-1	1.2 <sub>x</sub>	1.4 <sub>x</sub>	1.5 <sub>x</sub>	1.2 <sub>x</sub>	1.0 <sub>x</sub>	1.0 <sub>x</sub>	1.0 <sub>x</sub>	1.0 <sub>x</sub>	◎	○	○	1.0 <
HLV3-22-2	1.1 <sub>x</sub>	1.5 <sub>x</sub>	1.5 <sub>x</sub>	1.2 <sub>x</sub>	1.8 <sub>x</sub>	1.7 <sub>x</sub>	1.6 <sub>x</sub>	1.5 <sub>x</sub>	◎	○	○	1.0 <
HLV3-22-2-1220	1.1 <sub>x</sub>	1.5 <sub>x</sub>	1.5 <sub>x</sub>	1.2 <sub>x</sub>	1.8 <sub>x</sub>	1.7 <sub>x</sub>	1.6 <sub>x</sub>	1.5 <sub>x</sub>	◎	○	○	—
HLV3-22-4M	1.0 <sub>x</sub>	1.3 <sub>x</sub>	1.2 <sub>x</sub>	1.0 <sub>x</sub>	1.6 <sub>x</sub>	1.4 <sub>x</sub>	1.3 <sub>x</sub>	1.3 <sub>x</sub>	◎	△	○	0.8 >
HLV3-22-4S	1.6 <sub>x</sub>	1.9 <sub>x</sub>	2.0 <sub>x</sub>	1.6 <sub>x</sub>	2.5 <sub>x</sub>	2.2 <sub>x</sub>	2.1 <sub>x</sub>	2.0 <sub>x</sub>	◎	△	○	1.0 <
HLV3-22IR860	—	—	—	—	—	—	—	—	—	△	—	—

\*1 When comparing conventional lighting brightness, the comparison for HLV3-14 is with HLV2-14 of the same color, HLV3-14-HU is with HLV2-14HU of the same color, HLV3-22-1 is with HLV2-22 of the same color, and HLV3-22-2/-2-1220/-4M/-4S are with HLV2-22-3W of the same color.

\*2 When comparing the brightness of the HLV3 Series, the comparison uses HLV3-22-1 standard values for each emission color. HLV3-14, HLV3-14-HU and HLV3-22IR860 have individual differences and are thus not used for the comparison.

\*3 Recommended magnification for our telecentric lenses.

Note: Comparison using our measurement conditions.

The data included is for reference only and the results for individual products may vary.

### HLV3 (Cylindrical)

Model Name	Comparison of brightness with conventional HLV2*1				Comparison of brightness within HLV3*2				Reduced individual brightness differences	Recommended magnification for telecentric lenses*3
	RD (red)	SW (white)	BL (blue)	GR (green)	RD (red)	SW (white)	BL (blue)	GR (green)		
HLV3-22-1C	1.6 <sub>x</sub>	1.8 <sub>x</sub>	1.4 <sub>x</sub>	1.4 <sub>x</sub>	1.0 <sub>x</sub>	1.0 <sub>x</sub>	1.0 <sub>x</sub>	1.0 <sub>x</sub>	—	1.0 <
HLV3-22-2C	1.6 <sub>x</sub>	1.9 <sub>x</sub>	1.5 <sub>x</sub>	1.5 <sub>x</sub>	1.7 <sub>x</sub>	1.6 <sub>x</sub>	1.6 <sub>x</sub>	1.6 <sub>x</sub>	—	1.0 <
HLV3-22-2C-1220	1.6 <sub>x</sub>	1.9 <sub>x</sub>	1.5 <sub>x</sub>	1.5 <sub>x</sub>	1.7 <sub>x</sub>	1.6 <sub>x</sub>	1.6 <sub>x</sub>	1.6 <sub>x</sub>	—	1.0 <
HLV3-22-4C	2.1 <sub>x</sub>	2.5 <sub>x</sub>	1.9 <sub>x</sub>	1.9 <sub>x</sub>	2.4 <sub>x</sub>	2.2 <sub>x</sub>	2.1 <sub>x</sub>	2.0 <sub>x</sub>	—	1.0 <

\*1 When comparing conventional lighting brightness, the comparison for HLV3-22-1C is with HLV2-22 of the same color, and HLV3-22-2C/-2C-1220/-4C are with HLV2-22-3W of the same color.

\*2 When comparing the brightness of the HLV3 Series, the comparison uses HLV3-22-1C standard values for each emission color.

\*3 Recommended magnification for our telecentric lenses.

Note: Comparison using our measurement conditions.

The data included is for reference only and the results for individual products may vary.

## ➤ Reduced Individual Differences

(Excluding HLV3-14/-14-HU,HLV3-22IR860,HLV3-22-1C/-2C/-2C-1220, and -4C)

The HLV3 Series (L-Type) uses a new design that allows the brightness to be adjusted within the standard values determined for each model.

In the production process, the brightness of each HLV3 Series spot light is measured and adjusted to the standard value established for each model. This allows us to produce high-quality spot lights with minimal variations in brightness between units of the same model.

The HLV3 Series helps reduce labor time to install, maintain, and adjust brightness of spot lights and helps reduce time required on site.

## ➤ Optimized for the Optical System of CCS High-Resolution Telecentric Lenses

We recommend lights suitable for the magnification of telecentric lenses. A high-uniformity type is available for low-magnification lenses, and a high-output type for high-magnification lenses.

Spot lights use an original lens to maintain high quality with minimal deviation in the optical axis.

Use spot lights with our original telecentric lenses (coaxial type) to create a stable imaging environment.

### Recommended Magnification of Our Telecentric Lenses

Telecentric lens	Magnification WD	0.3	0.5	0.8	1.0	1.5	2.0	3.0	4.0	6.0
		65 mm		SE-65 VT05-M	SE-65 VT08-M	SE-65 VT10-M		SE-65 VT20-M		SE-65 VT40-M
110 mm		SE-110 VT03-5M	SE-110 VT05-M	SE-110 VT08-M	SE-110 VT10-M	SE-110 VT15-M	SE-110 VT20-M	SE-110 VT30-M	SE-110 VT40-M	

Recommendation based on the test results using our measurement conditions.

You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof UV / Violet
(Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# HLV3 Series



Refer to our website for product details.

CCS HLV3

Search



## Lineup

Shape	Model Name*1	Input Current (max.)	Power Consumption (max.)					Options	Extension Cables	Recommended Control Units	Weight (max.)
			RD (Red)	SW (White)	BL (Blue)	GR (Green)	IR (Infrared)				
L-Type	HLV3-14□□(-HU)	275 mA	0.7 W	0.9 W	0.9 W	1.1 W	-	-	FCB*3 Straight Cable FRCB Robot Cable FCB-HLV3-10*5 Straight Cable FRCB-HLV3-10*5 Robot cable *5 Only PJ2 can be used.	PD3*2	18 g
	HLV3-22□□-1	385 mA	1.1 W	1.4 W	1.5 W	1.5 W	-	Condenser lens		CC-PJ-0707	46 g
	HLV3-22□□-2	700 mA	2.1 W	2.5 W	2.7 W	2.8 W	-			PJ	
	HLV3-22□□-2-1220		2.1 W	2.5 W	2.7 W	2.8 W	-	-		PJ2	47 g
	HLV3-22□□-4M	1000 mA	3.2 W	3.7 W	4.0 W	4.1 W	-	Condenser lens		PJ2	53 g
	HLV3-22□□-4S		3.2 W	3.7 W	4.0 W	4.1 W	-				
	HLV3-22IR860		-	-	-	-	4.1 W				
HLV3-22IR950-SP*4	-	-	-	-	3.4 W	-	-	-	-		
Cylindrical type	HLV3-22□□-1C	385 mA	1.1 W	1.3 W	1.4 W	1.4 W	-	Condenser lens	PD3*2	34 g	
	HLV3-22□□-2C	700 mA	2.0 W	2.4 W	2.6 W	2.7 W	-		CC-PJ-0707	39 g	
	HLV3-22□□-2C-1220	700 mA	2.0 W	2.4 W	2.6 W	2.7 W	-	-	PJ	40 g	
	HLV3-22□□-4C	1000 mA	3.0 W	3.5 W	3.8 W	4.0 W	-	Condenser lens	PJ2	39 g	

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, GR: Green)  
 \*2 The PD3-3024-3 and PD3-5024-3 Series are not applicable to these products.  
 \*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.  
 \*4 This is a custom order product. Contact our local sales office for details.

## Increase HLV3 Series brightness by 2.4x for high-speed lighting

Combine the power adapter and strobe overdrive control unit to suit the imaging environment.

• Spot Lighting  
HLV3-22-4M/4S/4C Series emission colors  
(red, white, blue, green),  
HLV3-22IR860 (infrared)

• Straight Cable  
FCB-1/-2/-3/-5

• Power Adapter  
RB-16.4-48-HK  
Special order

• Strobe Overdrive Control Unit  
POD-5024-2-PEI / POD-22024-4-PEI

+ + + +

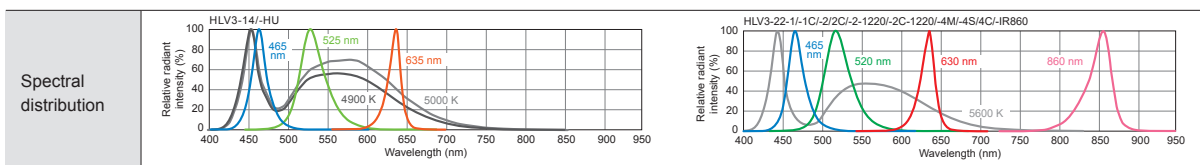
\* Branch cables cannot be used. \* This is an adapter for using the HLV3 Series with a strobe overdrive control unit or constant voltage control unit. ▶ P.339

### Light and power adapter compatibility table (example)

Light Model Name	Emitting Color					Power Adapter Model Name (custom order)	
						Constant Voltage Control Unit PD2, PD3	Strobe Overdrive Control Unit PTU2, POD
HLV3-14	RD	-	-	GR	-	RB-82-24-15SP Quantity of light: 0.9x, Power consumption: 7.3 W*1	RB-56-48-W15 Quantity of light: 2.5x, Peak current: 0.86A
	-	SW	BL	-	-		RB-33-48-W15 Quantity of light: 4.8x, Peak current: 1.5 A
HLV3-22-1 / -1C	RD	SW	BL	GR	-	RB-56-24 Quantity of light: 0.8x, Power consumption: 11W*1	RB-22-48-HK Quantity of light: 4.6x, Peak current: 2.2 A
HLV3-22-2 / -2C	RD	SW	BL	GR	-	RB-33-24-HKTK Quantity of light: 0.8x, Power consumption: 18 W*1	RB-22-48-HK Quantity of light: 2.5x, Peak current: 2.2 A
HLV3-22-4S / 4M /-4C HLV3-22-NR-4 HLV3-22IR860	RD	SW	BL	GR	IR	RB-24-24-HK Quantity of light: 0.7x, Power consumption: 25 W*1	RB-16.4-48-HK Quantity of light: 2.4x, Peak current: 2.9 A

\*1 Power consumption is the total value of the applicable light and power adapter. Note: The quantity of light may decrease depending on the combination. Contact our local sales office for details.

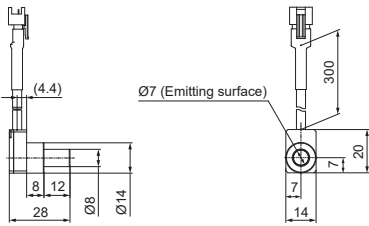
## LED Properties



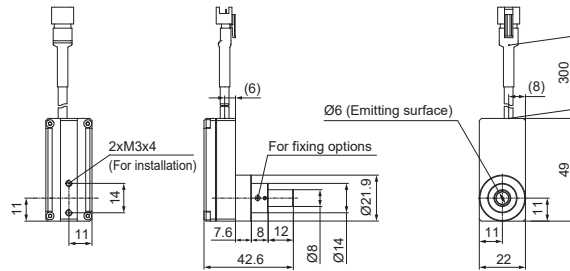
Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary. See P.371 for details about lens filters.

## Dimensions (mm)

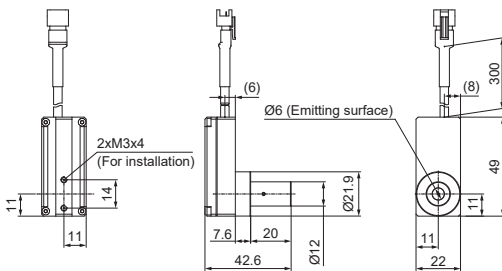
Compact Model HLV3-14 (-HU)



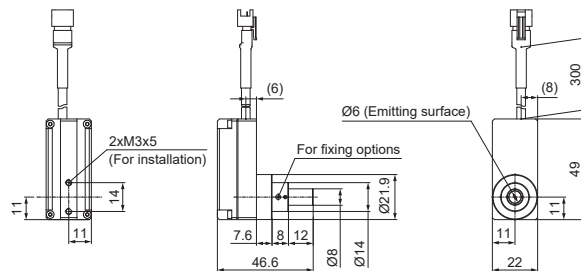
Standard Model HLV3-22-1 / -2



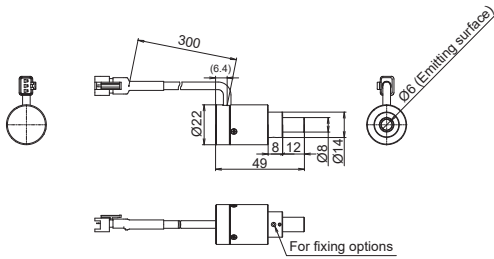
Ø12-mm Light Emitting Tip HLV3-22-2-1220



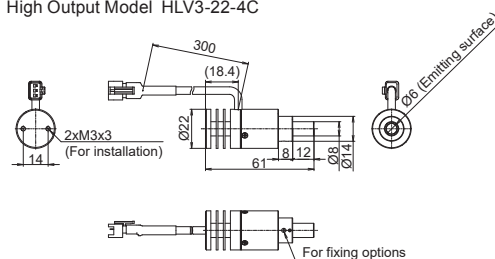
High Output Model HLV3-22-4S/4M  
Infrared Model HLV3-22IR860



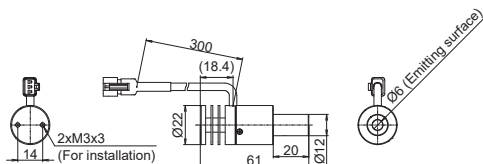
Standard Model HLV3-22-1C



Standard Model HLV3-22-2C  
High Output Model HLV3-22-4C



Ø12-mm Light Emitting Tip HLV3-22-2C-1220



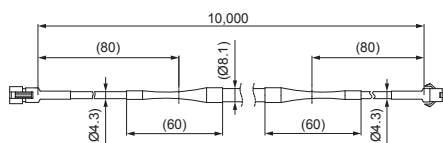
## Optional Cables (Sold Separately)

Extension Cables	Straight Cables		Robot Cables	
	FCB-1/-2/-3/-5 (1 m / 2 m / 3 m / 5 m)		FRCB-1/-2/-3/-5 (1 m / 2 m / 3 m / 5 m)	
	FCB-HLV3-10 (10 m) *		FRCB-HLV3-10 (10 m) *	

\* These 10-m extension cables connect the HLV3 Series spot light and the PJ2 Series control unit.

### FCB-HLV3-10 Straight Cable

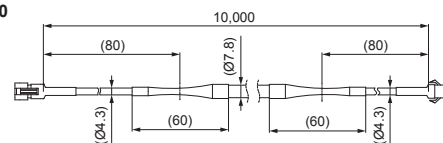
(Unit: mm)



Weight: 1,200 g max., Cable permitted bending radius: 65 mm

### FRCB-HLV3-10 Robot Cable

(Unit: mm)



Weight: 1,200 g max., Cable permitted bending radius: 35 mm

### Notes

- The total length of the FCB-1/-2/-3/-5 and FRCB-1/-2/-3/-5 extension cables must be no longer than 5 m.
- Branch cables are not available for the HLV3 spot lights.

You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2	LDR-LA	LDR-LA1	SQR	SQR-TP	Ring (Direct)
HLDR3	HPR2	LFR	LKR	FPR	Ring (Convergent/Diffused)
FPQ3	LDL2	LDLB	HLDL3	LB	Square Bar
TH2 (5 types)	LFL	HPD2	LDM2	LAV	Flat Dome
LFV3	LFV3-G	MSU	MFU	PF	Coaxial Coaxial
HLDR-IP	HSL-PCL	UV3/VL3	UV	LNSP-UV3-FN	Water-proof Violet
IR2 (Under 1000-nm Type)	IR (Over 1000-nm Type)	CIR			Infrared
LDF-RLS	IU	HLV3	LV	HFS/HFR	Reference Light Source Intensity Control
LNLP	LNSP2	Coaxial Units	LNSP-FN	LN/LN-HK	Spot, Etc.
LNSD	LND2	LT	LNV	LFVX (Rectangular Type)	Line (Convergent)
LNIS2	LNIS	LNIS-FN	Telecentric Lens	Macro Lens	Line (Diffused)
LDF-NB			Other Products		Line (Oblique Angled)

# HLV3 Series



Refer to our website for product details.

CCS HLV3

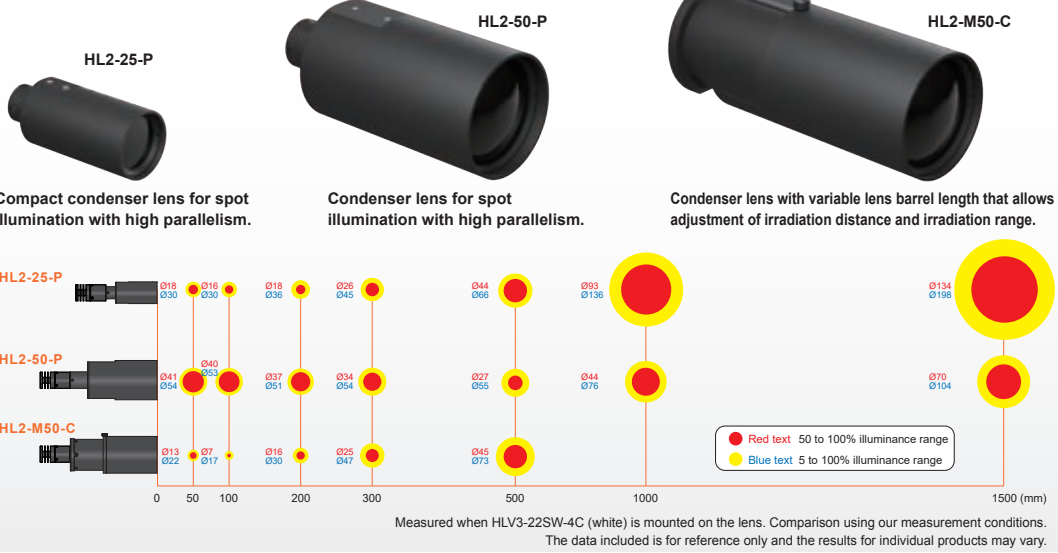
Search



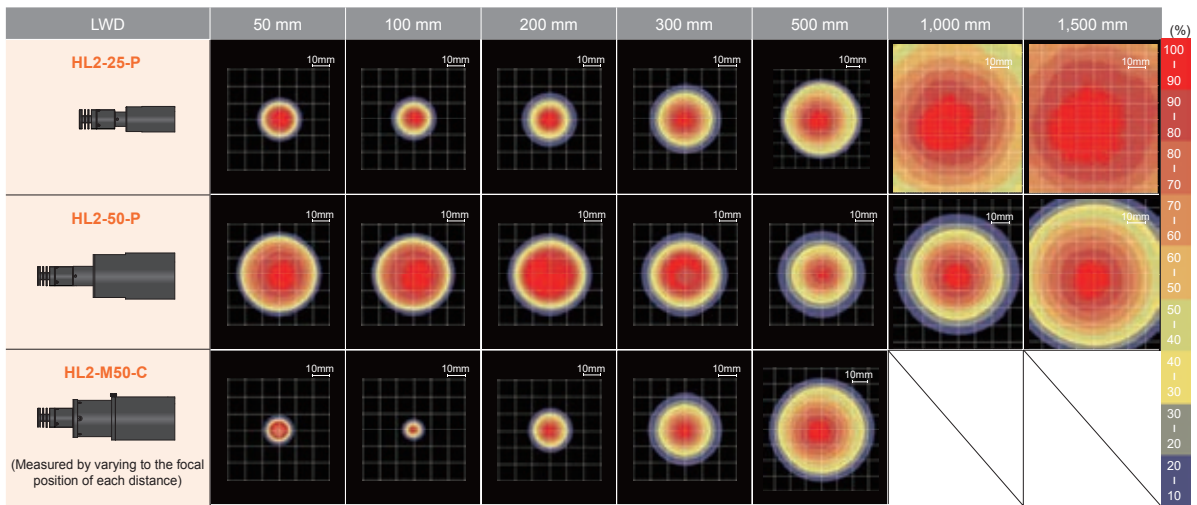
## Introduction to Condenser Lenses

Even in an imaging environment where there is a long distance from the workpiece, illumination suitable for the imaging conditions can be achieved by selecting a condenser lens according to the illumination distance, range and uniform area.

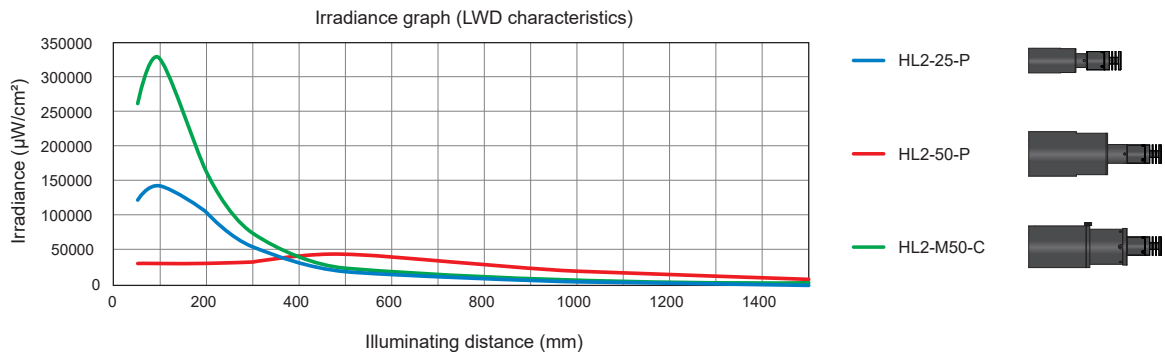
Recommended models for installation | HLV3-22 model \*Excludes HLV3-22-2(C)-1220 and HLV3-22-NR



## Illuminance Distributions (LWD Characteristics)



## Data: Irradiance Comparison Graph



Various technical documents available.

- PDF Drawings
- DXF Drawings
- Product Brochures
- Instruction Guides
- 3D CAD
- Data Sheets
- Imaging Examples
- Digital Catalogs

Register to use them.



## Condenser Lens (HL Series)

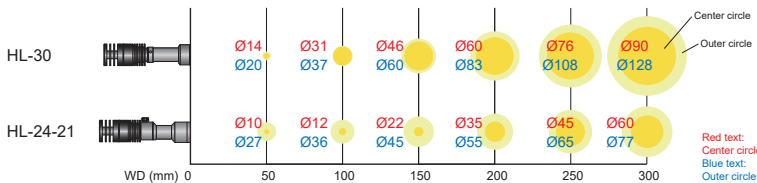
Dedicated condenser lens for HLV3-22 (L-shaped/cylindrical)

HL-30/HL-24-21



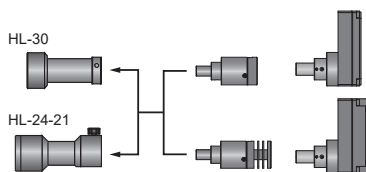
Cannot be used with HLV3-14/HLV3-22-2-1220/HLV3-22-2C-1220/HLV3-22-4-NR Series.

### HL-30/HL-24-21 illumination range



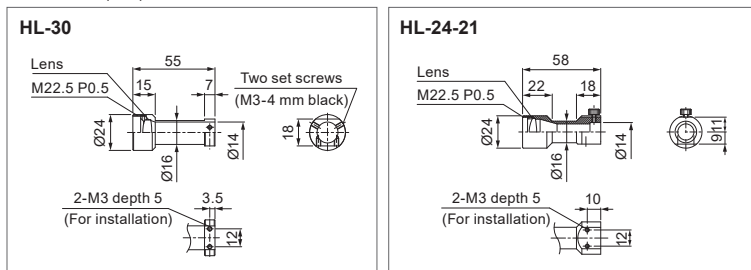
When connected with HLV2-22-3W. Data listed here represents actual measurement values. Not a guaranteed value.

### Mounting to HLV3-22

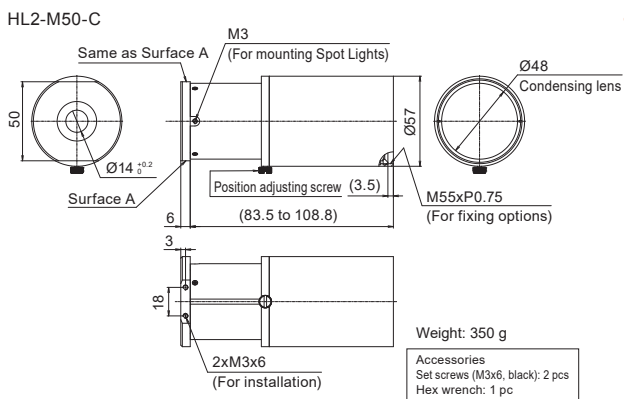
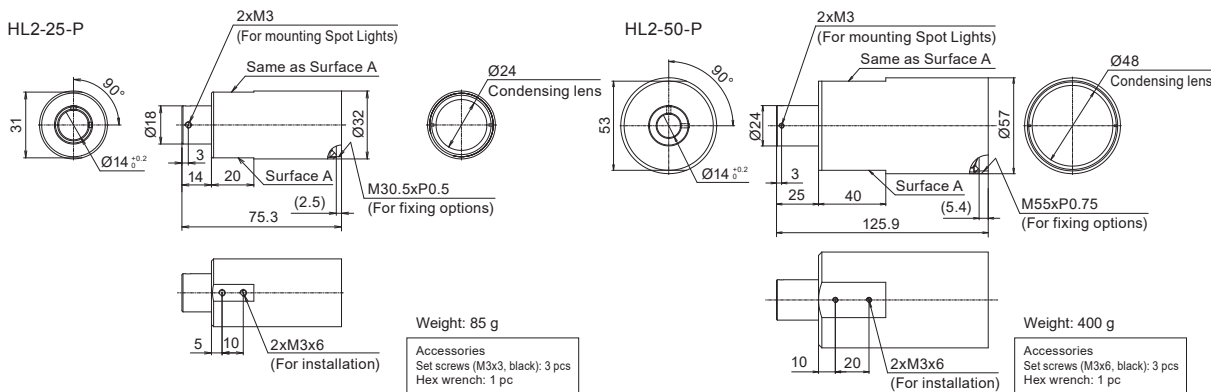


Compatible models  
HLV3-22-1/1C/2/2C/4M/4S/4C Series

### Dimensions (mm)

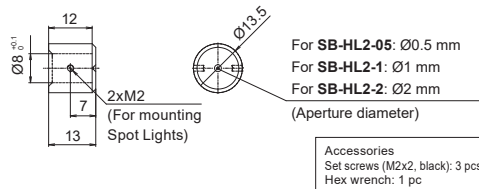


## Condenser Lens Dimensions (mm)

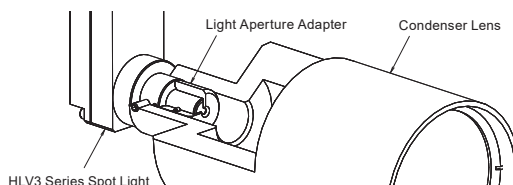


### Light aperture adapter (sold separately)

Attach the light aperture adapter to the HLV3 Series spot light to change the directivity of emitted light. When combined with a condenser lens, use the light aperture adapter to make fine adjustments to the illuminating distance and range.



Put the Light Aperture Adapter and Condenser Lens all the way onto the tip of the Spot Light.



### Polarizing filter (sold separately)

Many sizes available for condenser lens. Use in combination with another one installed on the camera lens.

- For HL2-25-P  
Model: PL-30/PL-30-NL (with a screw to lock the polarizing direction)
- For HL2-50-P/HL2-M50-C  
Model: PL-2-55-NL (with a screw to lock the polarizing direction)
- For HL-30/-24-21  
Model: PL-22-NL (with screw lock) \* This is a custom-order product. Contact our sales representative for details.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLPL	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
Other Products	Lenses
LDF-NB	Lenses

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



## Provides spot lighting using original converging technology



### Applications

As a light source for a telecentric lens, light source for inspecting alignment of LCDs or circuit boards, light source for dimension measuring, light source for spot illumination, etc.

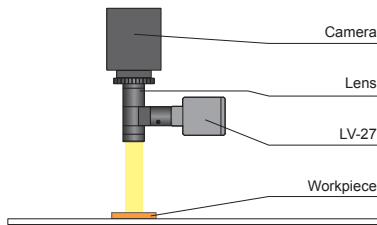
### Features

Spot Light with tip radius of  $\varnothing 8$  mm and emitting surface of  $\varnothing 6$  mm. Can be used embedded into the coaxial illuminating section of a telecentric lens or macro lens.

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

#### Example configuration (LV-27)



#### Lightweight, compact design

It has a lightweight and compact design and is suitable for saving space.

#### Spot Light with low power consumption

The LV Series consumes 0.8 W (for red) of power, and can be used for saving energy.

### Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight
LV-27RD2	Red	24 V / 0.8 W	630 nm	-	<ul style="list-style-type: none"> <li>FCB*2 Straight Cable</li> <li>FCB-W*3 2-branch Cable</li> <li>FCB-F 4-branch Cable</li> <li>FCRB Robot Cable</li> </ul>	<ul style="list-style-type: none"> <li>PD4</li> <li>PD3</li> <li>CC-ST-1024</li> <li>POD*1</li> </ul>	40 g
LV-27SW2	White	24 V / 0.4 W	5,500 K				
LV-27BL2	Blue	24 V / 0.4 W	470 nm				
LV-27GR2	Green	24 V / 0.6 W	525 nm				

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

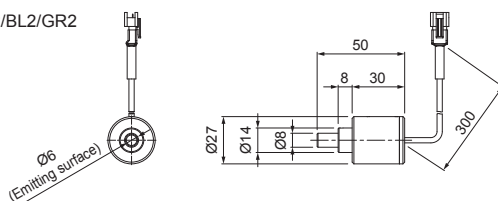
\*1 For information on the combination of light units and POD series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

\*3 The cables with a model name that ends with "-EL2" are not included.

### Dimensions (mm)

LV-27RD2/SW2/BL2/GR2



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

### Note

- Use as a Spot Light for directly illuminating the workpiece.
- In addition to light units with a tip radius of  $\varnothing 8$  mm, we also offer  $\varnothing 10$  mm and  $\varnothing 12$  mm as custom orders.





## LED fiber light (straight) that uses original converging technology



HFS-14-500

Model name	HFS-14-500
Fiber material	Multicomponent glass
Case material	Aluminum alloy
Flexible tube material	SUS
Strand diameter (μm)	50
Fiber arrangement	Random
Numerical aperture (NA)	0.56
Receiving angle (°)	68
Transmitted wavelength (nm)	300 to 1,300
Minimum bending radius (mm)	50

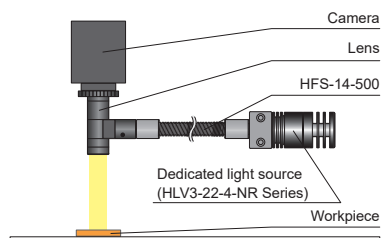
**Applications** As a light source for a telecentric lens, visual inspection for chips, alignment mark imaging, etc. (Common for the HFS and HFR Series)

### Features

This is a unique light unit system that melds the strengths of both LEDs and fibers. The HFS Series, a straight type, is lightweight, compact, and easy to manage, and therefore can be used in a variety of applications.

We accept custom orders. • Changes in length, etc. Please feel free to inquire.

### Example configuration (HFS-14-500)

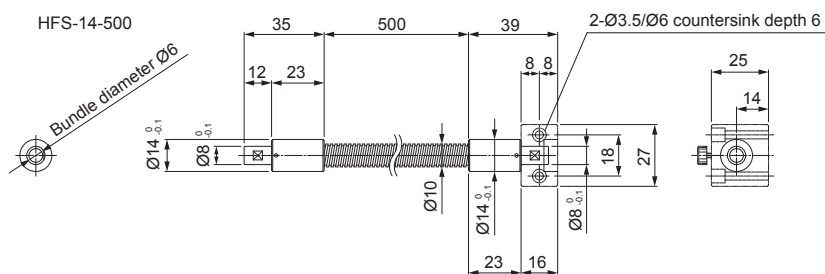


### It can be used in a variety of situations



Dedicated Light Source (HLV3-22-4-NR Series) Product Page ▶ P.197

### Dimensions (mm)



### Common Specifications for the HFS/HFR Series

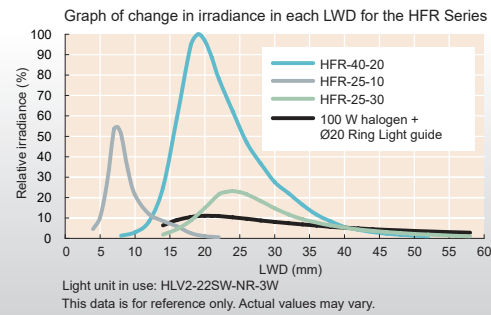
Model Name	Operating Temperature and Humidity	Storage Temperature and Humidity	Weight
HFS-14-500	Temperature: 0 to 40°C, Humidity: 20% to 70%RH (with no condensation)	Temperature: -10 to 60°C, Humidity: 20% to 70%RH (with no condensation)	115 g
HFR-25-10			60 g
HFR-25-30			
HFR-40-20			250 g



# LED fiber light (ring type) that uses original converging technology



Model name	HFR-25-10/30 HFR-40-20
Fiber material	Plastic
Case material	Aluminum alloy
Flexible tube material	SUS
Strand diameter (µm)	500
Fiber arrangement	-
Numerical aperture (NA)	0.5
Receiving angle (°)	60
Transmitted wavelength (nm)	400 to 700
Minimum bending radius (mm)	30



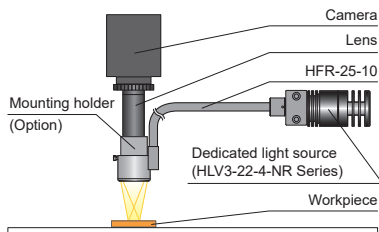
## Features

The HFR Series, a ring type, does not illuminate a broad range like a halogen fiber light, but can perform convergent illumination for the required field of vision.

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

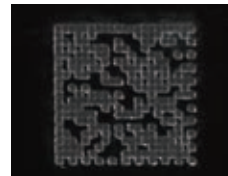
### Example configuration (HFR-25-10)



### Imaging using HFR-25-10 (white)

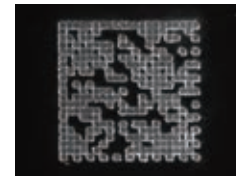


100 W halogen + Ring Light guide:  
LWD 20 mm



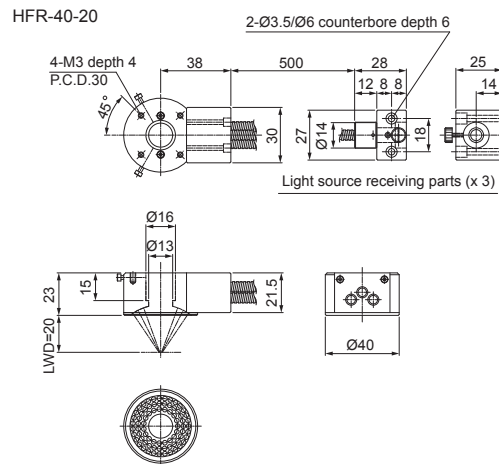
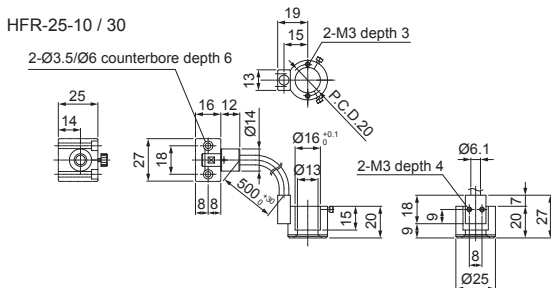
Intensity: 100%  
Shutter speed: 1/4,000 sec

HFR-25-10 (White): LWD 10 mm



Intensity: 100%  
Shutter speed: 1/4,000 sec

## Dimensions (mm)



## Options

### Mounting holder for HFR-25-10 / -30

Light units can be easily installed and mounted in the position for the most efficient convergence.



Dedicated Light Source (HLV3-22-4-NR Series) Product Page ▶ P.197

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFV	Dome
LFV3	Dome
LFV3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLP	Line (Convergent)
LN2P2	Line (Convergent)
Coaxial Units	Line (Convergent)
LN2P-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LN2D	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFVX (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products



Provides high output spot lighting using an original optical design



Connection example for HLV3-22-4-NR and a micro fiber head



Straight type: HFS-14-500



Ring type: HFR-25-10 / HFR-25-30 / HFR-40-20 (Three light sources are required for use.)

## Features

The micro fiber head dedicated light source allows for easy installation and removal. It's possible to choose the emission color when imaging the workpiece to achieve accurate feature extraction.

We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

### For the light source of a micro fiber head



Micro Fiber Head Product Page ▼ P.195

### For the light source of a full color blending unit



Full Color Blending Unit Product Page ▼ P.198

## Lineup

Model Name	LED Color	Peak Wavelength / Correlated Color Temperature (typ.)	Input Current (max.)	Power Consumption (max.)	Options	Extension Cables	Recommended Control Units	Weight (max.)
HLV3-22RD-4-NR	Red	630 nm	1,000 mA	3.0 W	-	FCB* Straight Cable FRCB Robot Cable FCB-HLV3-10 Straight Cable FRCB-HLV3-10 Robot Cable	PJ2	37 g
HLV3-22SW-4-NR	White	5,600 K		3.5 W				
HLV3-22BL-4-NR	Blue	465 nm		3.8 W				
HLV3-22GR-4-NR	Green	520 nm		4.0 W				

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

PJ2 Series Product Page ▶ P.359

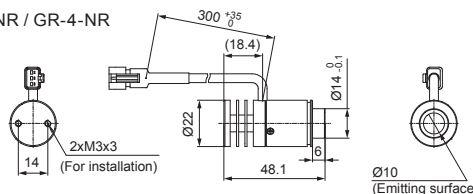
\* The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

**Caution**

- The total length of the FCB-1/1-2/1-3/1-5 and FRCB-1/1-2/1-3/1-5 extension cables must be no longer than 5 m.
- Branch cables cannot be used. Use the FCB Series (straight cable) or the FRCB Series (robot cable).

## Dimensions (mm)

HLV3-22RD-4-NR / SW-4-NR / BL-4-NR / GR-4-NR





Full color light source that provides the illumination color suitable for the workpiece



Connection example for HLV3-3M-RGB-4 and a micro fiber head



Straight type: HFS-14-500



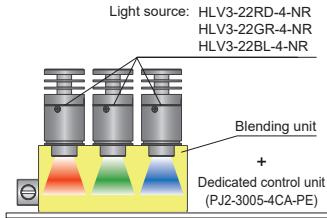
Ring type: HFR-25-10 / HFR-25-30 / HFR-40-20 (Three light sources are required for use.)

## Features

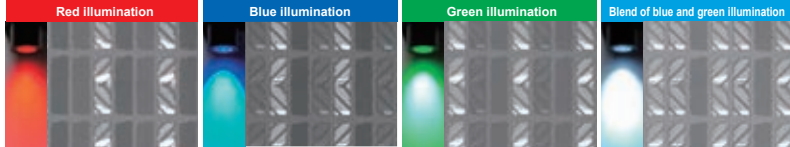
The red/blue/green emission colors emitted from the dedicated light source are mixed in the unit to achieve the illumination color suitable for the workpiece. Combine with a micro fiber head to support a wide variety of applications.

We accept custom orders. • Shape modifications  
Please feel free to inquire. • Brightness increases  
• Changes in wavelength, etc.

### Example configuration (HLV3-3M-RGB-4)



### Imaging example: Imaging of liquid-crystal color filters



Use the HLV3-22-4-NR Series to create illumination with a highly accurate blended color. Independently adjust the intensity for each color to create exactly the color you want and help improve inspection accuracy. Micro Fiber Head Product Page ▼ P.195 HLV3-22-4-NR Series Product Page ▼ P.197

## Lineup

Model Name	LED Color	Peak Wavelength / Correlated Color Temperature (typ.)	Input Current (max.)	Power Consumption (max.)	Options	Extension Cables	Recommended Control Units	Weight (max.)
HLV3-3M-RGB-4	Red	630 nm	1,000 mA	11 W	-	FCB* Straight Cable FRCB Robot Cable FCB-HLV3-10 Straight Cable FRCB-HLV3-10 Robot Cable	PJ2-3005 -4CA-PE	232 g
	Blue	465 nm						
	Green	520 nm						

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

PJ2 Series Product Page ▶ P.359

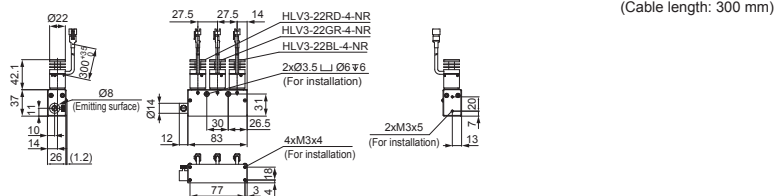
\* The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

**Caution**

- The total length of the FCB-1/-2/-3/-5 and FRCB-1/-2/-3/-5 extension cables must be no longer than 5 m.
- Branch cables cannot be used. Use the FCB Series (straight cable) or the FRCB Series (robot cable).

## Dimensions (mm)

HLV3-3M-RGB-4



LDR2	Ring	(Direct)
LDR2-LA	Ring	(Direct)
LDR-LA1	Ring	(Direct)
SQR	Ring	(Direct)
SQR-TP	Ring	(Direct)
HLDR3	Ring	(Convergent/Diffused)
HPR2	Ring	(Convergent/Diffused)
LFR	Ring	(Convergent/Diffused)
LKR	Ring	(Convergent/Diffused)
FPR	Ring	(Convergent/Diffused)
FPQ3	Square	
LDL2	Bar	
LDLB	Bar	
HLDL3	Bar	
LB	Bar	
TH2 (5 types)	Flat	
LFL	Flat	
HPD2	Dome	
LDM2	Dome	
LAV	Dome	
PDM	Dome	
LFXV	Dome	
LFX3	Dome	
LFX3-PT	Dome	
LFV3	Coaxial	
LFV3-G	Coaxial	
MSU	Coaxial	
MFU	Coaxial	
PF	Strobe	
HLDR-IP	Water-proof	
HSL-PCL	Water-proof	
UV3/VL3	UV / Violet	
UV	UV / Violet	
LNSP-UV3-FN	UV / Violet	
IR2 (Under 1000-nm Type)	Infrared	
IR (Over 1000-nm Type)	Infrared	
CIR	Infrared	
LDF-RLS	Reference Light Source	
IU	Intensity Control	
HLV3	Spot, Etc.	
LV	Spot, Etc.	
HFS/HFR	Spot, Etc.	
HLV3-22-4-NR	Spot, Etc.	
HLV3-3M-RGB-4	Spot, Etc.	
PFBR-600SW2	Spot, Etc.	
PFBR-150	Spot, Etc.	
SLG-150V-CCS	Spot, Etc.	
PF3(A)	Spot, Etc.	
LNLN	Line (Convergent)	
LNSP2	Line (Convergent)	
Coaxial Units	Line (Convergent)	
LNSP-FN	Line (Convergent)	
LNLN-HK	Line (Convergent)	
LNSD	Line (Diffused)	
LND2	Line (Diffused)	
LT	Line (Diffused)	
LNV	Line (Diffused)	
LFXV (Rectangular Type)	Line (Diffused)	
TH2 (Rectangular Type)	Line (Diffused)	
LNDG	Line (Oblique Angled)	
LNIS2	Line (Oblique Angled)	
LNIS	Line (Oblique Angled)	
LNIS-FN	Line (Oblique Angled)	
Telecentric Lens Macro Lens	Other Products	
LDF-NB	Other Products	



Next-generation light sources delivering high output and a fast response



PFBR-600SW2-LLCF (Filter Changer Model)

PFBR-600SW2-LL



The supplied AC cord is for use with 100 to 120 VAC. If you want to use the light source unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Applications

Connected to a dedicated light guide and used as a light source /  
Connected to a plastic light guide and used as a light source \* XF type only

Caution

These products emit high-intensity visible light. Heat-sensitive or flammable light-absorbing materials may be damaged because light-absorbing materials convert incident light into heat. Check the instructions in the User Manual and use the products in a safe manner.

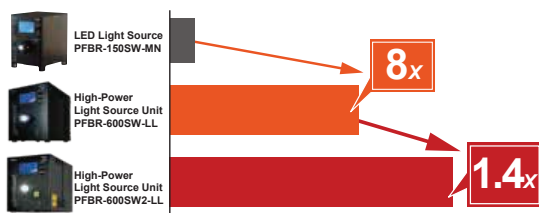
Features

- Continuous lighting and strobe lighting (internal trigger mode and external trigger mode) can be selected
- Available control modes include manual control and external control over Ethernet, parallel communication, and serial communication
- Light intensity can be set in a maximum of 1,024 steps (10-bit: 1,024 steps / 8-bit: 256 steps)

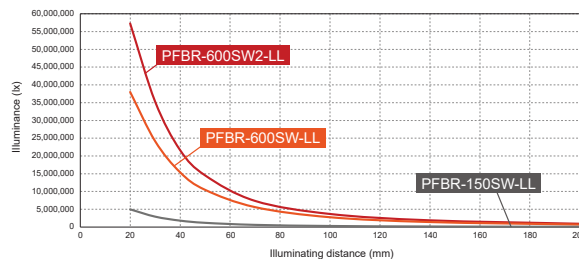
Provides High Output to Easily Replace Xenon Flash Light Sources

Output increased more than 1.4x that of conventional products. The result is an ultra-high output light source unit comparable to xenon flash light sources.

■ Illuminance Comparison Graph (Image)



Note: Actual measurement values with intensity of 100%, a bundle of Ø8 mm, a straight light guide with a total length of 1,000 mm installed, and at a position 50 mm away from the fiber output edge. (Results may vary for individual units.)



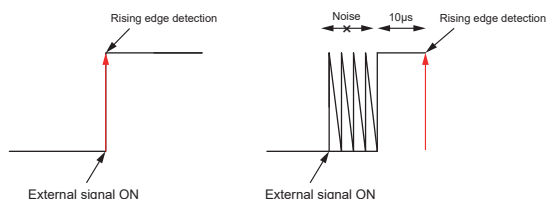
Note: Actual measurement values with intensity of 100%, bundles of Ø8 mm, a straight light guide with a total length of 1,000 mm installed, and at positions at each illuminating distance away from the fiber output edge. (Results may vary for individual units.)

Trigger Filter Function

Stable detection of external trigger input even in noisy environments.

■ Trigger filter set time = 00µs

■ Trigger filter set time = 10µs



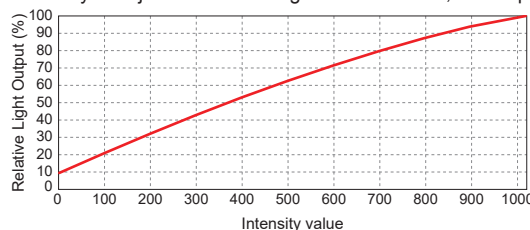
Recognizes as a rising edge trigger at the time of external signal ON.

Recognizes as a rising edge trigger after 10µs from external signal ON. Noise detected from external signal ON until trigger filter set time will not be recognized as a rising edge trigger.

\* Please refer to the instruction manual for details.

Dimming and light output characteristics

Light intensity is adjustable with a high resolution of 1,024 steps.



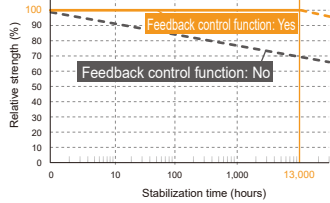
Note: Actual measurement values using our measurement conditions. Results for individual products may vary. The correction function on this product is permanently enabled.



## Equipped with Light Quantity Feedback Control Function

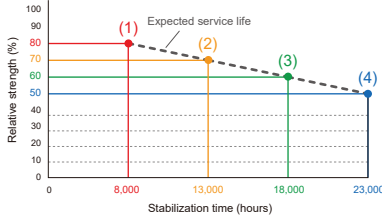
Use the light quantity feedback control function and set the desired stabilization time to maintain output over long periods.

Comparison of relative strength according to light quantity feedback control function (Representative)



Note: When the stabilization time is set to 13,000 hours. This graph is representative of the function. Actual values may vary.

Relationship between light quantity feedback control function and stabilization time (Representative)



Note: In Ta=40°C environment. This graph is representative of the function. Actual values may vary.

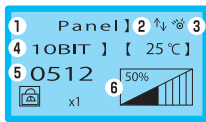
- (1) Stabilized up to 8,000 hours at 80% maximum light quantity.
- (2) Stabilized up to 13,000 hours at 70% maximum light quantity.
- (3) Stabilized up to 18,000 hours at 60% maximum light quantity.
- (4) Stabilized up to 23,000 hours at 50% maximum light quantity.

Note: Refer to the user manual for more information on the light quantity feedback control function.

## Easily Checked Operating Status on the LCD Panel

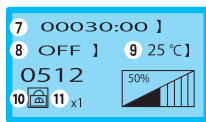
Displays operating status such as light source temperature, light intensity and operating time.

Operation Display 1



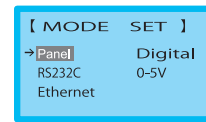
- 1 Operating mode
- 2 Feedback function icon
- 3 Light ON icon
- 4 Intensity resolution
- 5 Intensity value
- 6 Intensity indicator

Operation Display 2



- 7 Total time (min.)
  - 8 Strobe setting
  - 9 Light source temperature
  - 10 Lock icon
  - 11 Intensity step magnification
- When you press the operating knob, the display of the magnification will change in the following order: x1, x10, and x100.

MODE Setting Display



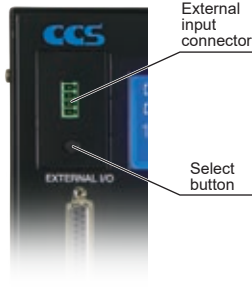
Note: Refer to the user manual for details of displayed contents.

## External Control by Use of a Large Variety of Communication Methods

- Ethernet communication control: TCP/IP, UDP/IP
- Parallel communication control
- Digital light control: Compatible with sink and source types
- Serial communication control: RS-232C
- Analog light control: Intensity control from 0 to 5 V

## PFBR-600SW2-LLCF Filter Changer Model

Use color filters to emit light at specific wavelengths.



PFBR-600SW2-LLCF

- Equipped with a multi-filter changer that holds five filters.
- Filters can be changed manually and using external communication.
- Easily replace filters by removing the front cover.
- Filters available in six colors.

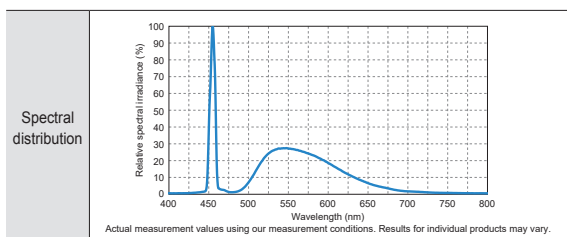


- Red
- Blue
- Green
- Cyan
- Magenta
- Yellow

Note: Refer to the user manual for installing and setting filters.

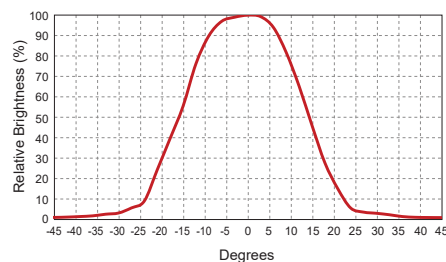
A variety of filters are available with excellent heat resistance.

## Light Spectrum Characteristics



Before using the product, be sure to read the User Manual included with the product and follow the usage precautions. The data included is for reference only. Actual values may vary.

## Light distribution characteristics at the fiber output end



Note: Actual measurement values with intensity of 100%, a bundle of Ø8 mm, a straight light guide with a total length of 1,000 mm installed, and at a position 1,000 mm away from the fiber output edge. (Results may vary for individual units.)

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# PFBR-600SW2 Series

CCS PFBR-600SW2

Search



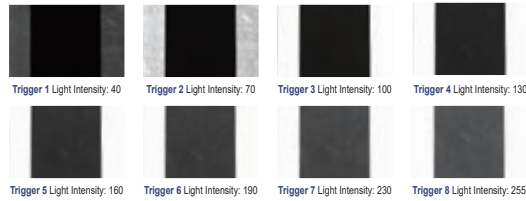
## High Power & High Speed Switching PFBR-600SW2-LL-HD / LLCF-HD (Custom Products)



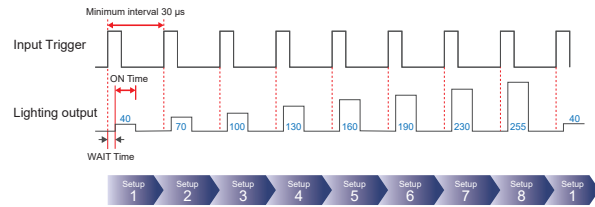
By applying preset light intensity values in a sequence according to the trigger input, it is possible to change light intensity at high speed (8 patterns max). It is suited for inspections where the workpiece surface has differing reflectivity or transparency.

These models are custom products. For more details, please contact your local CCS sales representative.

Workpiece sample of electrode sheet (same workpiece under different light intensity set for each trigger input)



Timing Chart



## High Power & Dedicated Strobe Operation PFBR-600SW2-LL-XF / LLCF-XF (Custom Products)

This model is for dedicated strobe operation and offers an alternative solution to xenon flash lamps. It achieves high power output and long life of over 50,000 hours\*1. No special light guide is required, but a plastic light guide is available.

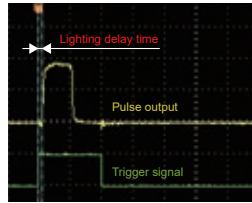
These models are custom products. For more details, please contact your local CCS sales representative.

\* The strobe lighting time can be set from 1 μs to 99 μs.

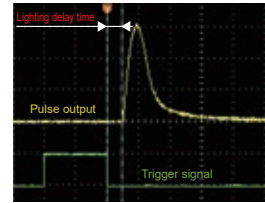
\*1 Operating environment: 25°C clean room, lighting conditions: Duty 1% Lifetime is the time when the radiant quantity drops to half under our measurement conditions.

### Comparison of PFBR-600SW2-LL-XF and Xenon flash lamp in strobe operation.

(PFBR-600SW2-LL-XF has no jitter (delay time after trigger input).)



[PFBR-600SW2-LL-XF]



[Xenon light source]

## Lineup

Series	Model Name	LED Color	Correlated Color Temperature	Power Consumption	Light Guide Adapter	External Control Cables	Weight
Standard type	PFBR-600SW2-LL	White	5500 K	410 VA at 100 V input 420 VA at 240 V input	AD-PFBR-600-01 AD-PFBR-600-02 AD-PFBR-600-03	Parallel Communication Cable	6.6 kg
	PFBR-600SW2-LLCF (Filter changer equipped models)						6.9 kg
HD Series (custom order product)	PFBR-600SW2-LL-HD						6.6 kg
	PFBR-600SW2-LLCF-HD (Filter changer equipped models)						6.9 kg
XF Series (custom order product)	PFBR-600SW2-LL-XF	6.6 kg					
	PFBR-600SW2-LLCF-XF (Filter changer equipped models)	6.9 kg					

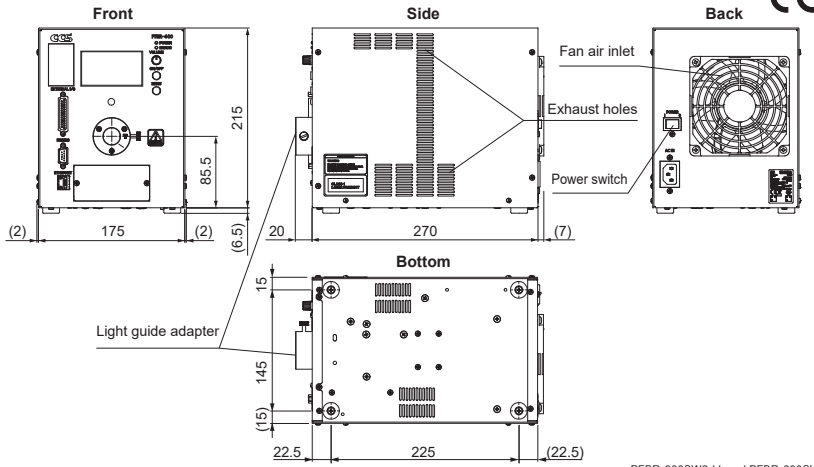
## Common Specifications

Applicable fiber bundle diameter	Ø6 to Ø14 mm
Light distribution angle	Total angle of 30°
Emitting color	White
Correlated color temperature (typ.)	5500 K
Drive method	Constant-current system
Intensity control method	Variable-current control
Number of channels	1 channel
Input power supply	100 to 240 VAC (±10%), 50/60 Hz
Power consumption (typ.)	410 VA at 100 V input, 420 VA at 240 V input
Inrush current (typ.)	40 A (From a cold start)
Ground leakage current	0.5 mA max. (240 VAC, 60 Hz, with 100 % load)
Insulation withstand voltage (input-output, input-FG)	1500 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 MΩ min.
Strobe lighting time	PFBR-600SW2-LL/ LLCF: 1 μs to 9999 μs PFBR-600SW2-LL-HD/LLCF-HD: 1 μs to 9999 μs PFBR-600SW2-LL-XF/LLCF-XF: 1 μs to 99 μs

Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 80% (with no condensation) Altitude: Up to 2000 m AC overvoltage: Category II Pollution Level: 2
Storage environment	Temperature: -15 to 60°C Humidity: 20 to 85% (with no condensation)
Cooling method	Forced cooling
Applicable standards	Safety standards: CE, UKCA EN 60825-1, BS EN 60825-1, IEC60825-1, IEC62471(High risk) Laser classification: Class 1 Environmental regulations: RoHS compliant
Material/ Surface processing	Aluminum alloy (black alumite)
Weight	6.6 kg max. *Models with a filter changer weigh less than 6.9 kg
Accessories	User manual, 2-m 3-prong AC power cable with ground terminal, Filter Changer Model Only: Filter holders x 5 pcs., holder mounting screws x 18 pcs.

## Dimensions (mm)

PFBR-600SW2-LL / PFBR-600SW2-LLCF



PFBR-600SW2-LL and PFBR-600SW2-LLCF share the same dimensions.

## Options

### Light Guides

We propose light guides according to the application such as straight, ring and line.

#### Straight Type



#### Ring Type



#### Bar Type for Line Sensors

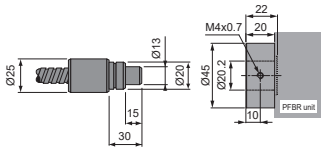


A variety of dedicated light guides are available with excellent heat resistance.

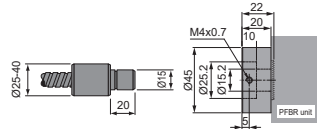
● We accept custom orders for the light guides. Please contact your CCS sales representative for details.

### Light Guide Adapter

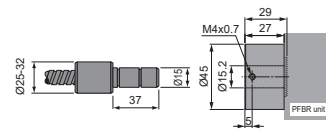
#### AD-PFBR-600-01 \*SU base



#### AD-PFBR-600-02 \*HY base



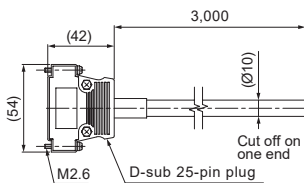
#### AD-PFBR-600-03 \*MO base



● Please be aware that the light guide adapter must be installed after purchase by the customer.

### External Control Cables: EXCB2-25M-3

Parallel communication cable (Compatible with digital and analog intensity control)



- Purchase a commercially available RS-232 crossover cable (length: 3 m max.) for the serial communication cable.
- Purchase a commercially available LAN cable (length: shorter than 30 m) for the Ethernet communication cable. Refer to the user manual for more information.

### Color Filters

Use filters to emit the optimum light for the inspected workpiece.

Available Six Colors  
Five filters can be installed.



- Red : DFR-610A
- Blue : DFB-500A
- Green : DFG-505A
- Cyan : DFC-590A
- Magenta : DFM-495A
- Yellow : DFY-520A

● A variety of filters are available with excellent heat resistance.

● Contact your CCS sales representative for the detailed information.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LNLD2	Line (Diffused)
LT	Line (Diffused)
LNlv	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNLDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



## Provides light output that exceeds that of a 250 W metal halide light source



We accept custom orders for red, blue, and green light.

Contact your CCS sales representative for details.



The supplied AC cord is for use with 100 to 120 VAC. If you want to use the light source unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

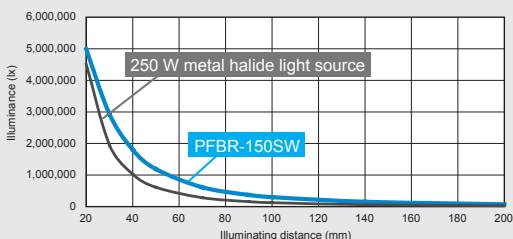
**Applications** Connect to light guides and use as a light source

**Caution** This product emits high-intensity visible light. Materials that absorb light may convert that light into heat and be damaged. Check the instructions in the User Manual and use this product in a safe manner.

### Achieves the Highest Level in the Industry with 2 Million lx\*

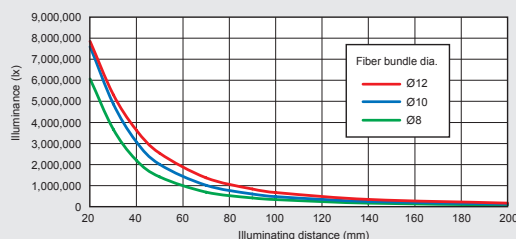
\* Actual measurement values with a bundle of Ø10 mm, a straight light guide with a total length of 1,080 mm installed, and at a position 50 mm away from the fiber output edge. Results for individual products may vary.

LED light source unit that exceeds a 250 W metal halide light source



Actual measurement values with intensity of 100%, bundle of Ø8 mm, a straight light guide with a total length of 1,100 mm installed, and at positions at each illuminating distance away from the fiber output edge. Results for individual products may vary.

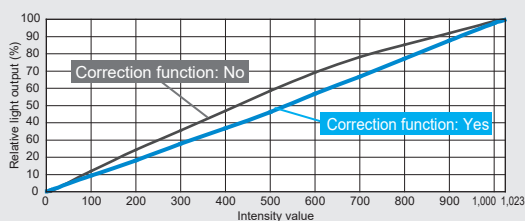
Achieves high output with the optical design tailored to various fibers



Actual measurement values with intensity of 100%, bundles of Ø8, 10, and 12 mm, a straight light guide with a total length of 1,080 mm installed, and at positions at each illuminating distance away from the fiber output edge. Results for individual products may vary.

### 1,024-Step Intensity, Linear Characteristics with Reproducibility

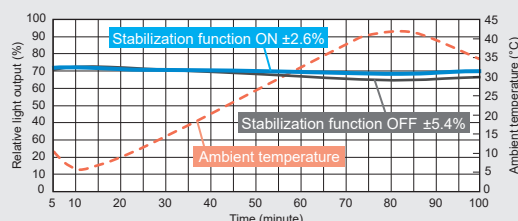
Our unique correction function provides reproducible linearity



Actual measurement values using our measurement conditions. Results for individual products may vary. The correction function of this product is always set to "Yes".  
 ■ Intensity value can be adjusted in steps  
 • 1,024-step intensity (10-bit) • 256-step intensity (8-bit)

### Equipped with a Light Output Stabilization (Feedback) Function

Stable light output even in severe operating environments



Actual measurement values using our measurement conditions. Results for individual products may vary. Stabilization function is set to OFF when shipped from the factory.

### Standard Compatibility with Three Types of Light Guides

Check the dimensions of the light guide to be used before selecting an adapter.

- For details, refer to Dimensions of the light guide adapters chart on P. 204.
- Be careful as plastic fiber cannot be used.
- A light guide adapter is not provided with the LED light source. Order one separately.

### External Control with a Large Variety of Communication Methods

- Ethernet communication control: TCP/IP and UDP/IP
- Serial communication control: RS-232C
- Parallel communication control
- Digital light control: Compatible with sink and source types
- Analog light control: Intensity control from 0 to 5 V

## Lineup

Model Name	LED Color	Correlated Color Temperature	Power Consumption	Light Guide Adapters	External Control Cables	Weight					
PFBR-150SW-MN	White	6,500 K	200 VA	<table border="1"> <tr><td>AD-PFBR-150-MO</td></tr> <tr><td>AD-PFBR-150-HY</td></tr> <tr><td>AD-PFBR-150-SU</td></tr> </table>	AD-PFBR-150-MO	AD-PFBR-150-HY	AD-PFBR-150-SU	<table border="1"> <tr><td>Parallel communication cable</td></tr> <tr><td>Serial communication cable</td></tr> </table>	Parallel communication cable	Serial communication cable	3,900 g
AD-PFBR-150-MO											
AD-PFBR-150-HY											
AD-PFBR-150-SU											
Parallel communication cable											
Serial communication cable											

### Dimensions of the light guide adapters chart (mm)

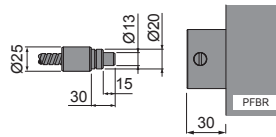
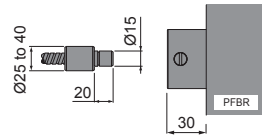
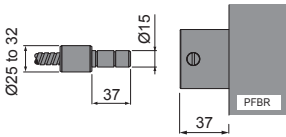
Select a light guide adapter when you evaluate the LED light source.

Options

Model name: AD-PFBR-150-MO

Model name: AD-PFBR-150-HY

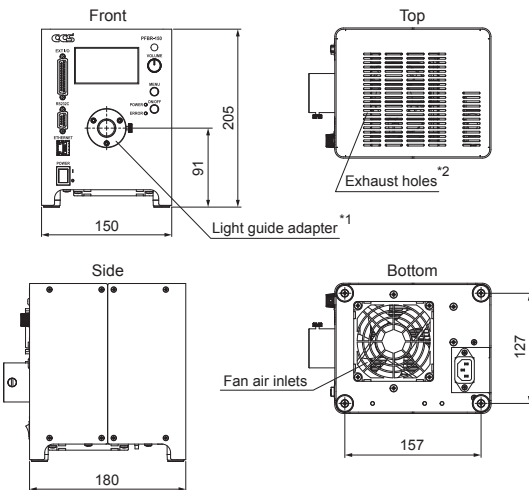
Model name: AD-PFBR-150-SU



**Caution**

- Be careful as plastic fiber cannot be used.
- Please be aware that the light guide adapter must be installed after purchase by the customer. Inquire with the CCS sales representative regarding sizes not listed here.

## Dimensions (mm)



\*1 A light guide adapter is not provided with the LED light source. Order one separately. The shape of the light guide adapter depends on the details of the order.

\*2 Installation method: Do not place any objects within 100 mm of the exhaust holes on the top panel.

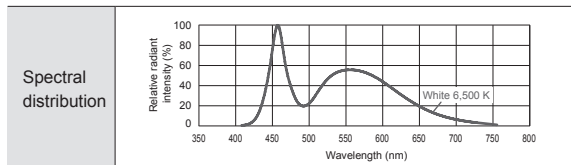
We accept custom orders. Please feel free to inquire.

- Changes in wavelength (red, blue, and green)
- Change in light distribution angle, etc.

## Specifications

Applicable fiber bundle diameter	Ø8 to Ø14 mm
Light distribution angle	Total angle of 30°
Drive method	Constant-current system
Intensity control method	Variable-current control
Number of channels	1 channel
Input power supply	100 to 240 VAC (±10%), 50/60 Hz
Power consumption (typ.)	200 VA
Inrush current (typ.)	15 A at 100 VAC, 30 A at 200 VAC From a cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)
Insulation withstand voltage (Input-FG)	1,500 VAC 1-min. cutoff current 10 mA
Operating environment	Temperature: 5 to 40°C, Humidity: 20% to 80%RH (with no condensation) Altitude: 2,000 m max., Transient overcurrent: Category II, Pollution level: 2
Storage environment	Temperature: -15 to 60°C Humidity: 20% to 85%RH (with no condensation)
Cooling method	Forced air cooling
Applicable standards	CE, UKCA, IEC 62471 (High risk), RoHS compliant
Material/ Surface processing	Aluminum alloy (black alumite)
Accessories	User Manual x 1, 3-prong AC cord with ground terminal (2 m) x 1

## LED Properties

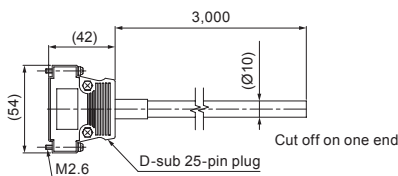


Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Optional Accessories (Sold Separately)

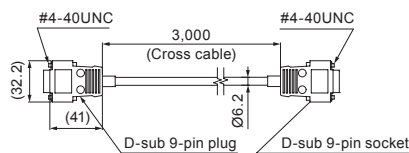
External control cable: EXCB2-25M-3

Parallel communication cable (Compatible with digital and analog intensity)



External control cable: EXCB2-9M-9F-3-CR

Serial communication cable (RS-232C)



You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFVX	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNL	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFVX (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

## Near infrared LED light source suitable for replacement of near infrared halogen light source

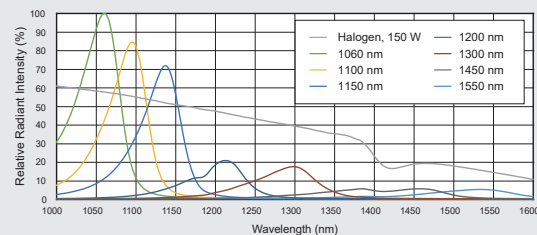
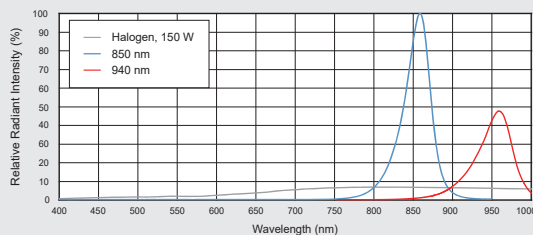


The supplied AC cord is for use with 100 to 120 VAC. If you want to use the light source unit with 200 to 240 VAC, you must procure another appropriate AC power cord.



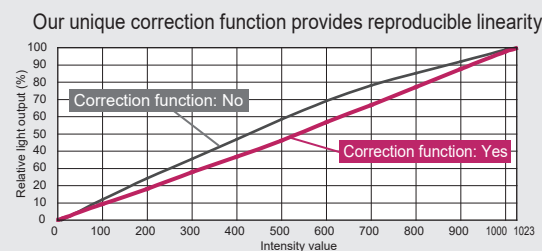
**Applications** Connect to light guides and use as a light source

### Lineup of nine wavelengths (compared to halogen light sources)



\*The graphs included are for reference only. Actual values may vary.

### 1,024-Step Intensity, Linear Characteristics with Reproducibility

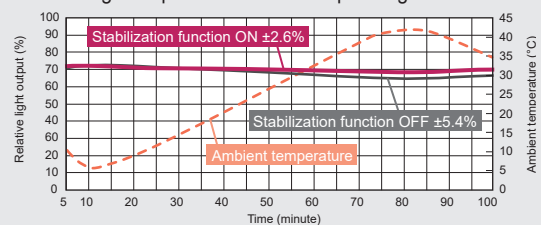


\* Graph is an image (not a guaranteed value).  
The correction function of this product is always set to "Yes".

- Intensity value can be adjusted in steps
- 1,024-step intensity (10-bit) • 256-step intensity (8-bit)

### Equipped with a function for stabilizing optical output

Stable light output even in severe operating environments



\* Graph is an image (not a guaranteed value).  
The stabilization function will be set to OFF when the product is shipped.

### Standard Compatibility with Three Types of Light Guides

Check the dimensions of the light guide to be used before selecting an adapter.

- For details, refer to Dimensions of the light guide adapters chart on P.206
- Be careful as plastic fiber cannot be used.
- This product includes an adapter for attaching light guides. Please specify the shape of the light guide adapter when placing an order.

### External Control with a Large Variety of Communication Methods

- Ethernet communication control: TCP/IP and UDP/IP
- Serial communication control: RS-232C
- Parallel communication control
- Digital light control: Compatible with sink and source types
- Analog light control: Intensity control from 0 to 5

Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Strobe Coaxial	MSU MFU
Water-proof	PF
UV / Violet	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 <b>SLG-150V-CCS</b> PFB3(A)
Line (Convergent)	LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNS2 LNS LNS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

**Lineup** (Model numbers ending with -MN: Light distribution angle of 30° / -MM: Light distribution angle of 50°)

Model Name *1*2	LED Color	Power Consumption *2									Light Guide Adapters	External Control Cables	Weight
		850 nm	940 nm	1060 nm	1100 nm	1150 nm	1200 nm	1300 nm	1450 nm	1550 nm			
SLG-150V-CCS-□-MN	Infrared	95 VA			110 VA	115 VA					AD-SLG-150-MO AD-SLG-150-SU AD-SLG-150-HY	Parallel communication cable Serial communication cable	3,900 g
SLG-150V-CCS-□-MM							115 VA						

\*1 The □ in the model name contains the corresponding wavelength.

(850: 850 nm, 940: 940 nm, 1060: 1060 nm, 1100: 1100 nm, 1150: 1150 nm, 1200: 1200 nm, 1300: 1300 nm, 1450: 1450 nm, 1550: 1550 nm)

\*2 Corresponding wavelengths of 1200 nm or less are only for the MN model (light distribution angle of 30°). Corresponding wavelengths of 1300 nm or more are only for the MM model (light distribution angle of 50°).

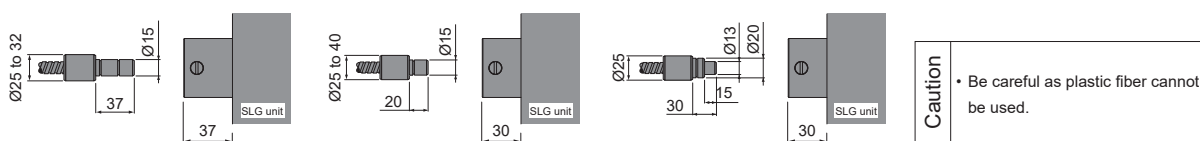
**Dimensions of the light guide adapters chart (mm)** Select a light guide adapter when you evaluate the LED light source.

Options

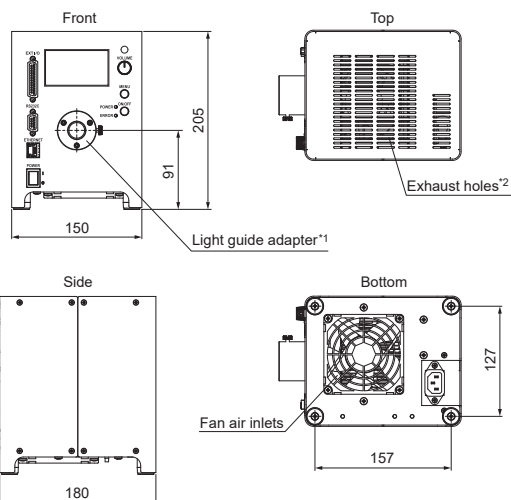
Model name: AD-SLG-150-MO

Model name: AD-SLG-150-HY

Model name: AD-SLG-150-SU



**Dimensions (mm)**



\*1 This product includes an adapter for attaching light guides.

Please specify the shape of the light guide adapter when placing an order.

\*2 Installation method: Do not place any objects within 100 mm of the exhaust holes on the top panel.

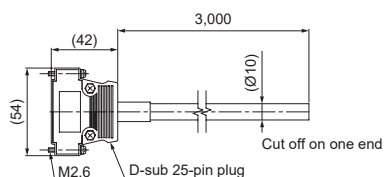
**Specifications**

Applicable fiber bundle diameter	Ø8 to Ø14 mm
Light distribution angle	Model numbers ending with -MN: Total angle of 30° Model numbers ending with -MM: Total angle of 50°
Drive method	Constant-current system
Intensity control method	Variable-current control
Number of channels	1 channel
Input power supply	100 to 240 VAC (±10%), 50/60 Hz
Power consumption (typ.)	850/940 nm: 95 VA 1060/1100 nm: 110 VA 1150/1200/1300/1450/1550 nm: 115 VA
Inrush current (typ.)	15 A at 100 VAC, 30 A at 200 VAC From a cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)
Insulation withstand voltage (input-output, input-FG)	1,500 VAC 1-min. Cutoff current 10 mA 500 VDC 20 MΩ min.
Operating environment	Temperature: 5 to 40°C, Humidity: 20% to 80%RH (with no condensation) Altitude: 2,000 m max., Transient overcurrent: Category II, Pollution level: 2
Storage environment	Temperature: -15 to 60°C Humidity: 20% to 85%RH (with no condensation)
Cooling method	Forced air cooling
CE marking	Safety standard: Conforms to EN61010-1 EMC standard: Conforms to EN61000-6-2, EN61000-6-4
Environmental regulations	RoHS compliant
Material/surface processing	Aluminum alloy (black alumite)
Accessories	User Manual × 1, 3-prong AC cord with ground terminal (2 m) × 1 Light guide adapter × 1

**Optional Accessories (Sold Separately)**

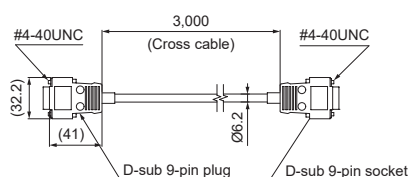
External control cable: EXCB2-25M-3

Parallel communication cable (Compatible with digital and analog intensity)



External control cable: EXCB2-9M-9F-3-CR

Serial communication cable (RS-232C)



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3	Dome
LFX3-PT	
LFB3	Coaxial
LFB3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR-150	Spot, Etc.
LNLPL LNSP2	Line (Convergent)
Coaxial Units LNSP-FN LNLN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNI2 LNI3 LNI3-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



Provides light output that exceeds that of a 100 W halogen light source



(Without external control)

(With external control)

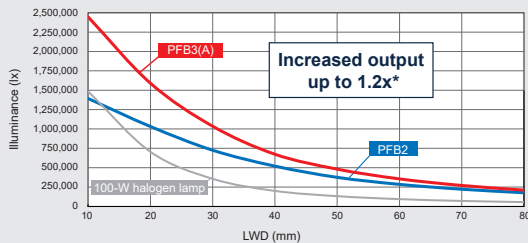


**Applications** Connect to light guides and use as a light source

**Renewed with Increased Brightness**

Achieved high output up to 1.2x that of the conventional PFB2 Series.

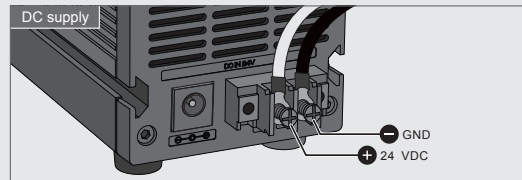
**Illuminance comparison with a 100-W halogen lamp**



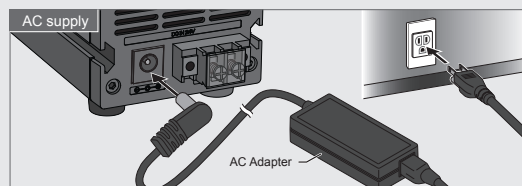
\* Actual measurement values with light intensity of 100%, bundles of Ø6 mm, a straight light guide installed, and at positions of 50 mm illuminating distance away from the fiber output edge. The data included is for reference only and the results for individual products may vary.

**Select a Power Supply to Match Your Actual Environment**

The terminal block on the unit rear supports 24 VDC input. With an optional AC adapter, it can also support 100 to 240 VAC input. You can make a selection to match your actual environment.



Use the terminal block on the rear of this unit for 24 VDC input.



Use the optional AC adapter for 100 to 240 VAC input. Model name: ADP2460-PFB-JTLV6 (U.S. DoE CEC Level VI External Power Supply Efficiency Standards compliant)

**Supports Major Light Guide Manufacturers**

Supports major light guide manufacturers (5 Japanese companies, 6 international companies).

For details, refer to *Light Guide Adapter Dimensions Chart* on P. 208.

**Selectable External Control**

The lineup includes a model where intensity can only be manually adjusted, and models that allow for external control. There are three types of external control: serial, parallel, and analog. ON/OFF control and intensity control are possible by each control type.



Standard type  
PFB3-20SW-JT(A) Series  
Manual intensity control | Without external control

Serial type  
PFB3-20SW-SJT(A) Series  
Manual intensity control | With external control

Parallel type  
PFB3-20SW-PJT(A) Series  
Manual intensity control | With external control

Analog type  
PFB3-20SW-AJT(A) Series  
Manual intensity control | With external control



## Lineup

Model Name	LED Color	Power Consumption	Options	Weight
PFB3-20SW-JT-□□□(A)	White	18 W	AC Adapter	1,200 g
PFB3-20SW-SJT-□□□(A)			AC Adapter External control cable (Serial type)	
PFB3-20SW-PJT-□□□(A)			AC Adapter	
PFB3-20SW-AJT-□□□(A)			External control cable (Parallel, Analog type)	

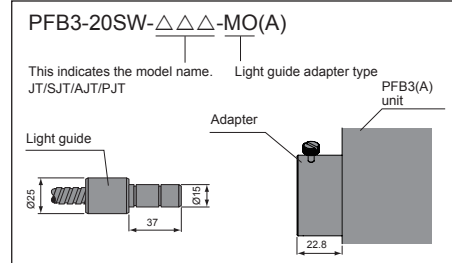
LED Properties: Spectral Distribution ▶ P.408

Inquire with your light guide manufacturer for details about the light guide. Installation method: Do not place anything within 50 mm of the fan exhaust outlet on the rear, the air inlets on the left and right sides, and the top of the PFB3(A) unit.

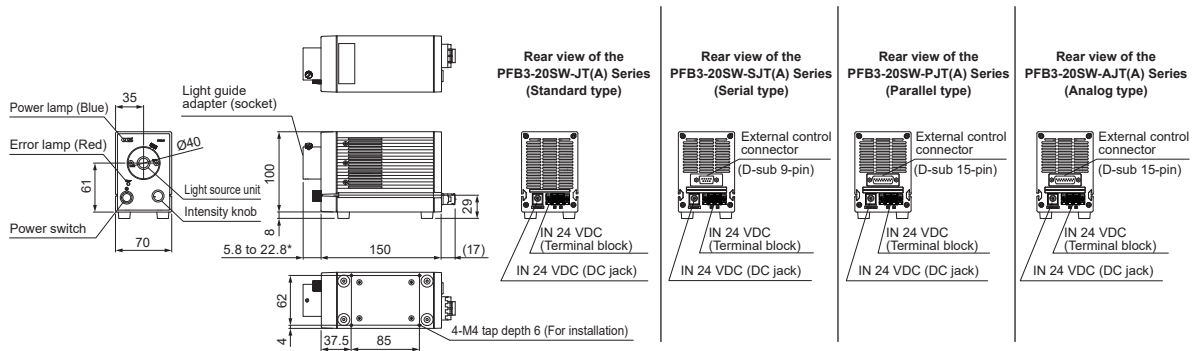
### How to read the lineup selection chart

PFB3-20SW-JT-□□□(A)	
Model name	This indicates the light guide adapter type.
JT/SJT/AJT/PJT	-MO/-NP/-MI/-HY/-SU/-VL/-TF/-TE/-SH1/-SH2/ -DJ1/-DJ2/-DJ3/-DJ4/-CS1/-IT

### How to read light guide adapter dimensions chart



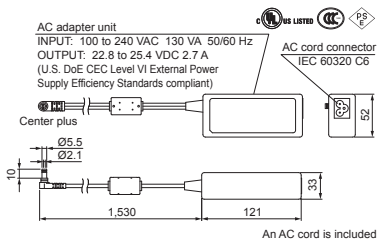
## Dimensions (mm)



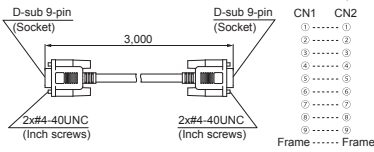
\* The dimensions of the connection adapter (socket) vary based on the light guide in use. For detailed information, refer to *Light Guide Adapter Dimensions Chart*.

## Options

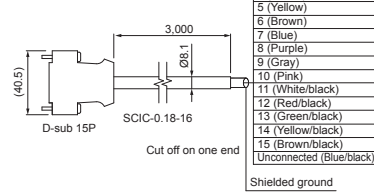
### AC adapter: ADP2460-PFB-JTLV6



### External control cable: EXCB2-9-9-3-ST (Serial type)



### External control cable: EXCB2-B3 (Parallel, analog type)



## Light Guide Adapter Dimensions Chart (mm)

Common for the series			
PFB3-20SW-□□□-MO(A)	PFB3-20SW-□□□-NP(A)	PFB3-20SW-□□□-MI(A)	PFB3-20SW-□□□-HY(A)
PFB3-20SW-□□□-SU(A)	PFB3-20SW-□□□-VL(A)	PFB3-20SW-□□□-TF(A)	PFB3-20SW-□□□-TE(A)
PFB3-20SW-□□□-SH1(A)	PFB3-20SW-□□□-SH2(A)	PFB3-20SW-□□□-DJ1(A)	PFB3-20SW-□□□-DJ2(A)
PFB3-20SW-□□□-DJ3(A)	PFB3-20SW-□□□-DJ4(A)	PFB3-20SW-□□□-CS1(A)	PFB3-20SW-□□□-IT(A)


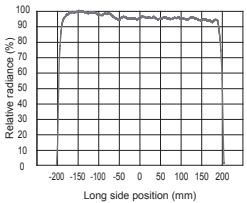
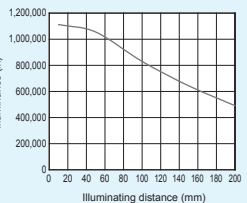

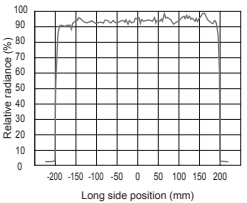
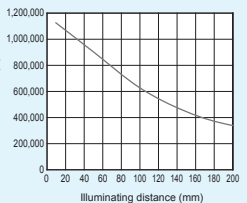

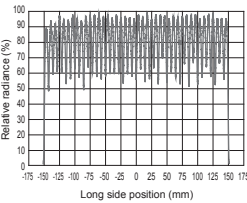
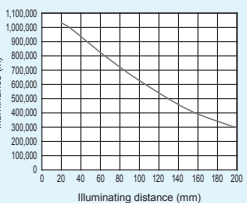
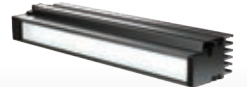
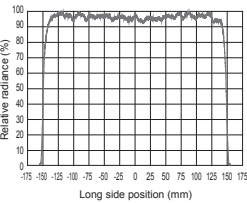
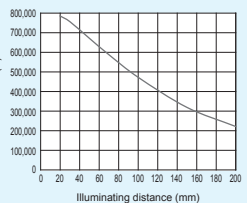
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Stroke
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNFP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
(Rectangular Type)	Line (Diffused)
LFXV	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products

(By brightness)

Series name	Brightness	Cooling method	Illum. method	Relative radiance distribution	Graph of the change in illuminance (on the optical axis)
<b>LNL Series</b>  ▶ Applicable control units: PSCC Series <b>Refer to: P.211</b>	1,000,000 lx Emitting width (Short side): 21 mm	Natural air	Convergent		
<b>LNSP-FN Series</b>  ▶ Applicable control units: PSCC Series <b>Refer to: P.223</b>	900,000 lx Emitting width (Short side): 23 mm	Forced air (Fan)	Convergent		
<b>LNSP2 Series (NDF Type)</b>  ▶ Applicable control unit: PD3-10024-8 / PSB4 Series <b>Refer to: P.215</b>	900,000 lx Emitting width (Short side): 25 mm	Natural air	Convergent		
<b>LNSP2 Series (Standard Type)</b>  ▶ Applicable control unit: PD3-10024-8 / PSB4 Series <b>Refer to: P.215</b>	650,000 lx Emitting width (Short side): 25 mm	Natural air	Convergent		

(By brightness)





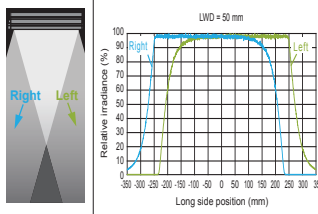
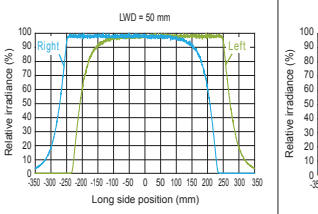
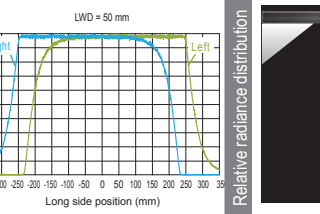
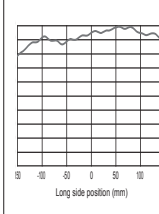
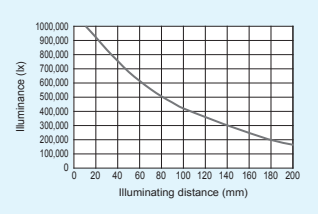
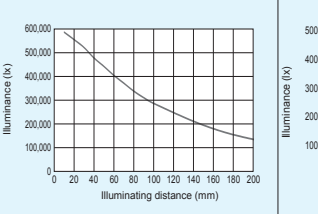
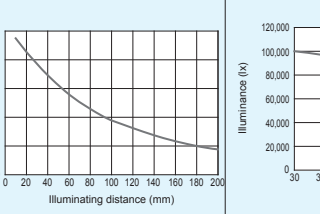
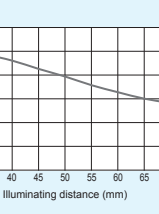
Series name	Brightness	Cooling method	Illum. method	Relative radiance distribution	Graph of the change in illuminance (on the optical axis)
<b>LT Series</b>  *This is a custom order product. ▶ Applicable control unit: PSB4 Series <b>Refer to: P.237</b>	63,000 lx Emitting width (Short side): 2.8 mm	Natural air	Diffused		
<b>LFXV Series (Rectangular Type)</b>  ▶ Applicable control unit: PD3 / POD Series <b>Refer to: P.240</b>	48,000 lx Emitting width (Short side): 100 mm	Natural air	Diffused		
<b>LND2 Series</b>  ▶ Recommended control units: PD3 Series, PSB4 Series <b>Refer to: P.233</b>	25,000 lx Emitting width (Short side): 18.2 mm	Natural air	Diffused		

The brightness is actual measurement value at the illuminating distance of 50 mm. The data included is for reference only. Actual values may vary.

(By brightness)

Series name	 <p><b>LN-HK Series</b></p> <p>▶ Applicable control units: PD3 Series</p> <p>Refer to: <b>P.228</b></p>	 <p><b>TH2 Series (Rectangular Type)</b></p> <p>▶ Recommended control units: PD3-10024-8 / PSB4 Series</p> <p>Refer to: <b>P.93</b></p>	 <p><b>LNSD Series (High Luminance Type)</b></p> <p>▶ Recommended control units: PD3-10024-8 / PSB4 Series</p> <p>Refer to: <b>P.229</b></p>	 <p><b>LNSD Series (High Uniformity Type)</b></p> <p>▶ Recommended control units: PD3-10024-8 / PSB4 Series</p> <p>Refer to: <b>P.229</b></p>
Brightness	170,000 lx Emitting width (Short side): 16.5 mm	150,000 lx Emitting width (Short side): 75 mm	128,000 lx Emitting width (Short side): 15 mm	58,000 lx Emitting width (Short side): 15 mm
Cooling method	Natural air	Natural air	Natural air	Natural air
Illum. method	Convergent	Diffused	Diffused	Diffused
Relative irradiance distribution				
Graph of the change in illuminance (on the optical axis)				

(By brightness)

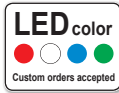
Series name	 <p><b>LNIS-FN Series</b></p> <p>▶ Applicable control units: PSSC Series</p> <p>Refer to: <b>P.255</b></p>	 <p><b>LNIS2 Series</b></p> <p>▶ Recommended control units: PD3-10024-8 / PSB4 Series</p> <p>Refer to: <b>P.247</b></p>	 <p><b>LNIS Series</b></p> <p>▶ Applicable control unit: PSB4 Series</p> <p>Refer to: <b>P.251</b></p>	 <p><b>LNDG Series</b></p> <p>▶ Applicable control unit: PSSC Series</p> <p>Refer to: <b>P.243</b></p>
Brightness	678,000 lx Emitting width (Short side): 23 mm	440,000 lx Emitting width (Short side): 25 mm	310,000 lx Emitting width (Short side): 21 mm	80,000 lx Emitting width (Short side): 10 mm
Cooling method	Forced air (Fan)	Natural air	Natural air	Natural air
Illum. method	Oblique angled (bi-directional)	Oblique angled (bi-directional)	Oblique angled (bi-directional)	Oblique angled (mono-directional)
Relative irradiance distribution				
Graph of the change in illuminance (on the optical axis)				

The brightness is actual measurement value at the illuminating distance of 50 mm. The data included is for reference only. Actual values may vary.

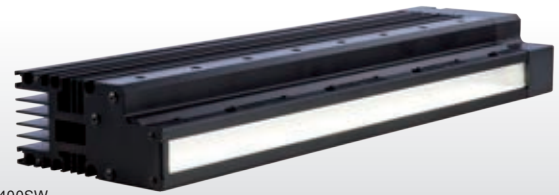


1,000,000 lx or more in illuminance

High-illuminance fan-less (natural air-cooling) line lights



LNLP-400SW



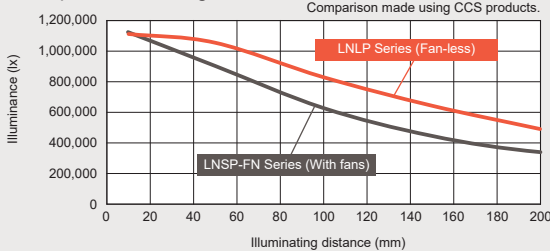
**Applications**

Inspection for scratches on plate glass, inspection for scratches and dents on sheet metal, inspection for scratches and foreign materials on transparent films, inspection of printing on paper, inspection of the appearance of plastic components, etc.

**1,000,000 lx or More in Illuminance**

The high-illuminance line lights brighter than the conventional fan-type units, despite being fan-less.

**Graph of the change in illuminance**



Actual measurement values at the center of the emitting surface, at each illuminating distance, 100% intensity. Results for individual products may vary.

**Controlling each light unit circuit**

The light intensity value for each light unit circuit can be set through the external control. Also, burn-out errors in LED circuits can be detected.

- The light intensity value can be set for each light unit circuit.
- Burn-out in LED circuits and other errors can be detected.

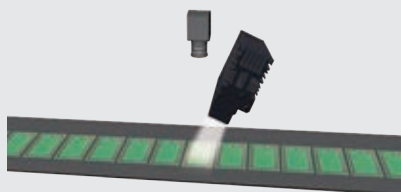


Control units for LED Lights PSCC Series

For detailed information on the applicable PSCC Series control units, refer to the product page (P.365).

**Applications**

**Inspecting the appearance of film substrates**



**Housing shape that suits the site environment**

For use at the site of inspection, the light unit shape is optimized with its light emitting tip shifted to one side of the light unit body. As a result, the camera view is not blocked during illumination, and the light unit can be installed close to the workpiece.

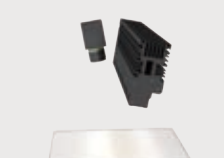
Close-up illumination from a low angle



Workpiece: Printed material

When you configure the system at a shallow angle to the horizontal plane, you can emphasize and take advantage of the marginal difference in reflectivity between the white paper and the ink.

Semi-coaxial illumination from a high angle



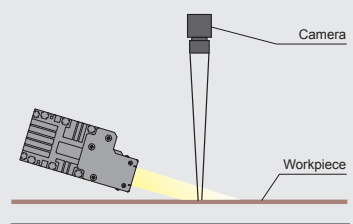
Workpiece: Clear file

It is possible to take advantage of surface reflection of a clear file; scratches and finger prints, which have a low reflectivity, can be imaged as black.

**Example Configuration**

Achieves high-illuminance despite being fan-less. The constant-current drive system allows for even imaging with a high degree of uniformity.

**LNLP Series**

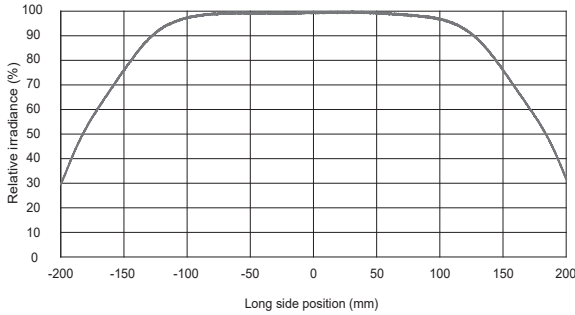


**Data** (Representative Example)

The graph included is for reference only. Actual values may vary.

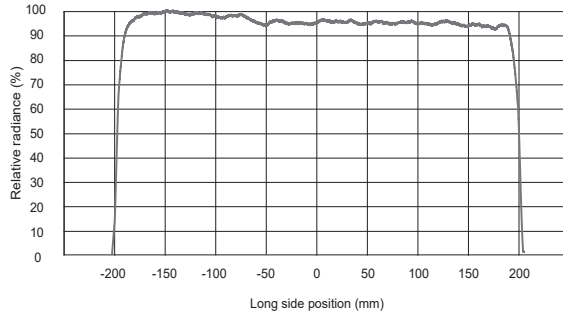
**LNLP-400SW**

Relative irradiance distribution



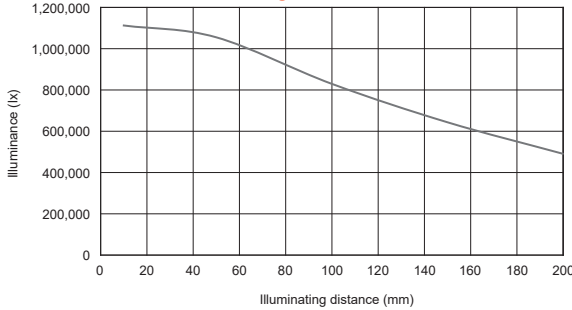
Actual measurement values at 100% intensity in 100 mm illuminating distance. Results for individual products may vary.

Relative radiance distribution



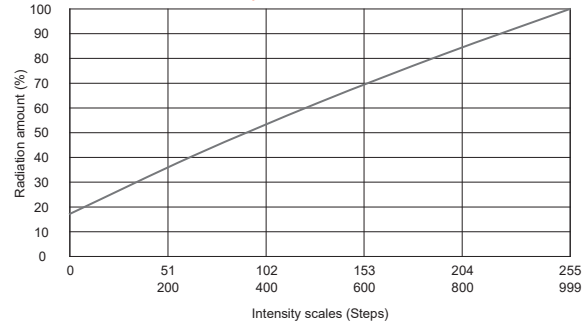
The graph included is for reference only. Actual values may vary.

Change in illuminance



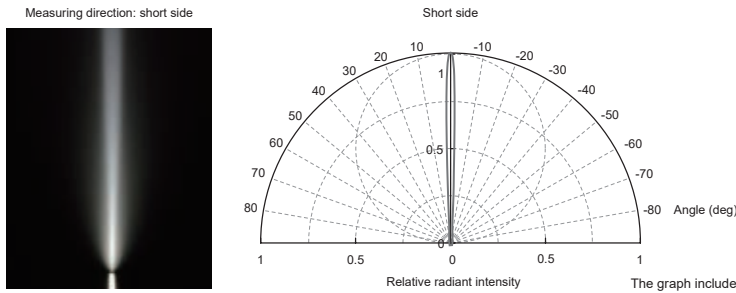
Actual measurement values at 100% intensity in each illuminating distance. Results for individual products may vary.

Output characteristics



Actual measurement values when using analog control unit, PSCC-30048(A). Results for individual products may vary.

Illumination distribution characteristics

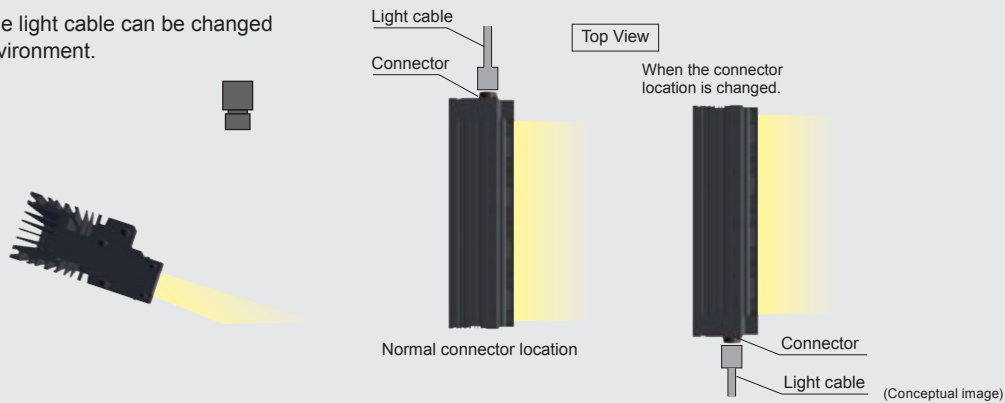


The graph included is for reference only. Actual values may vary.

**Custom Order Example**

E.g.: Changes the location of the connector on the light unit case.

The location of the light cable can be changed to match your environment.



LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNLP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNLP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



CCS LNLP

Search



Lineup

Model Name	LED Color	Power Consumption	Correlated Color Temperature	Extension Cables*1	Recommended Control Units*1	Weight
Standard products	White	LNLP-100SW	5,800 K			1,400 g
		LNLP-200SW				2,200 g
		LNLP-300SW				3,000 g
		LNLP-400SW				3,800 g
		LNLP-500SW				4,600 g
		LNLP-600SW				5,400 g
		LNLP-700SW				6,200 g
		LNLP-800SW				7,000 g
		LNLP-900SW				7,800 g
		LNLP-1000SW				8,600 g
Special orders	White	LNLP-1100SW	5,800 K			9,400 g
		LNLP-1200SW				10,200 g
		LNLP-1300SW				11,000 g
		LNLP-1400SW				11,800 g
		LNLP-1500SW				12,600 g
		LNLP-1600SW				13,800 g
		LNLP-1700SW				14,800 g
		LNLP-1800SW				15,800 g
		LNLP-1900SW				16,800 g
		LNLP-2000SW				17,800 g
		LNLP-2100SW				18,800 g
		LNLP-2200SW				19,800 g
		LNLP-2300SW				20,800 g
		LNLP-2400SW				21,800 g
		LNLP-2500SW				22,800 g
		LNLP-2600SW				23,800 g
		LNLP-2700SW				24,800 g
		LNLP-2800SW				25,800 g
		LNLP-2900SW				26,800 g
		LNLP-3000SW				27,800 g

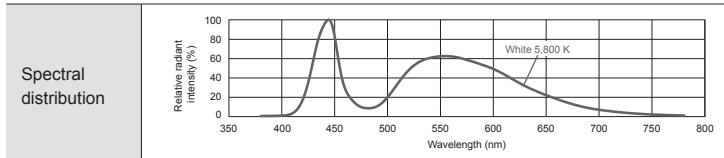
Extension Cables ▶ P.214

PSCC Series Product Page ▶ P.365

\*1 Make sure to connect the appropriate extension cables to the control unit.  
 \*2 For sizes 1,600 mm (emitting surface) or longer, a cable connector is located at each end of the light unit.

We accept custom orders, such as changes to the LED color (red/blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

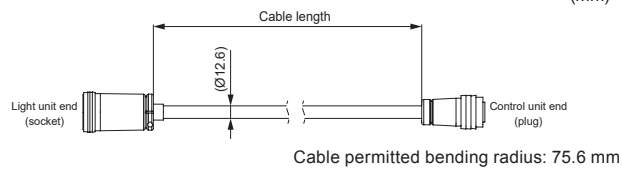
- Ring (Direct)
  - LDR2
  - LDR2-LA
  - LDR-LA1
  - SQR
  - SQR-TP
- Ring (Convergent / Diffused)
  - HLDR3
  - HPR2
  - LFR
  - LKR
  - FPR
- Square
  - FPQ3
- Bar
  - LDL2
  - LDLB
  - HLDL3
  - LB
- Flat (5 types)
  - TH2
  - LFL
- Dome
  - HPD2
  - LDM2
  - LAV
  - PDM
  - LFXV
  - LFX3
  - LFX3-PT
- Coaxial
  - LFV3
  - LFV3-G
- Strobe Coaxial
  - MSU
  - MFU
- Water-proof
  - HLDR-IP
  - HSL-PCL
- UV / Violet
  - UV3/VL3
  - UV
  - LNSP-UV3-FN
- Infrared
  - IR2 (Under 1000-nm Type)
  - IR (Over 1000-nm Type)
  - CIR
- Reference Light Source
  - LDF-RLS
- Intensity Control
  - IU
- Spot, Etc.
  - HLV3
  - LV
  - HFS/HFR
  - HLV3-22-4-NR
  - HLV3-3M-RGB-4
  - PFBR-600SW2
  - PFBR-150
  - SLG-150V-CCS
  - PFBR3(A)
- Line (Convergent)
  - LNLP**
  - LNSP2
  - Coaxial Units
  - LNSP-FN
  - LN/LN-HK
- Line (Diffused)
  - LNSD
  - LND2
  - LT
  - LNV
  - LFXV (Rectangular Type)
  - TH2 (Rectangular Type)
- Line (Oblique Angled)
  - LNDG
  - LNIS2
  - LNIS
  - LNIS-FN
- Lenses
  - Telecentric Lens
  - Macro Lens
- Other Products
  - LDF-NB

## Extension Cables

Necessary when connecting the light unit to the recommended PSCC Series control unit. Make sure to connect the appropriate extension cables to the control unit.

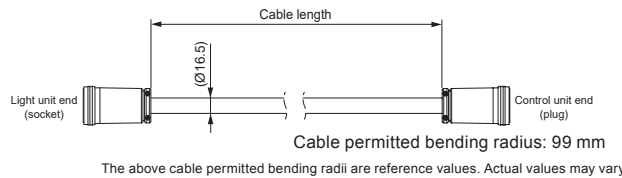
### QCBM-DA

Model Name	Cable Length	Weight	Applicable Control Unit
QCBM-2-DA	2 m	800 g	PSCC-30048(A)
QCBM-3-DA	3 m	1,000 g	
QCBM-5-DA	5 m	1,500 g	
QCBM-10-DA	10 m	2,700 g	
QCBM-20-DA	20 m	5,000 g	



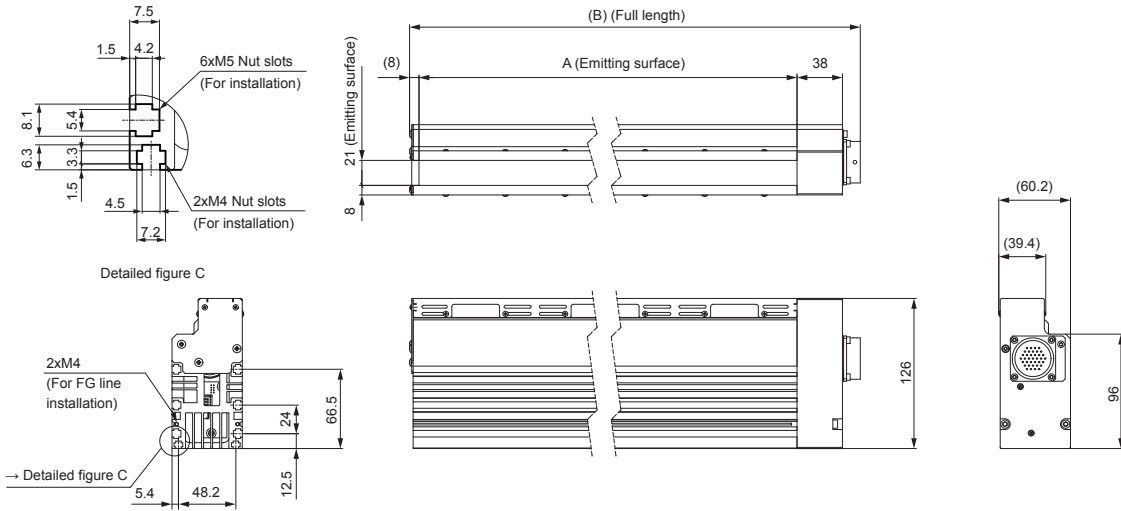
### QCB-DA

Model Name	Cable Length	Weight	Applicable Control Unit
QCB-2-DA	2 m	1,100 g	PSCC-60048(A)
QCB-3-DA	3 m	1,500 g	
QCB-5-DA	5 m	2,400 g	
QCB-10-DA	10 m	4,600 g	
QCB-20-DA	20 m	8,900 g	

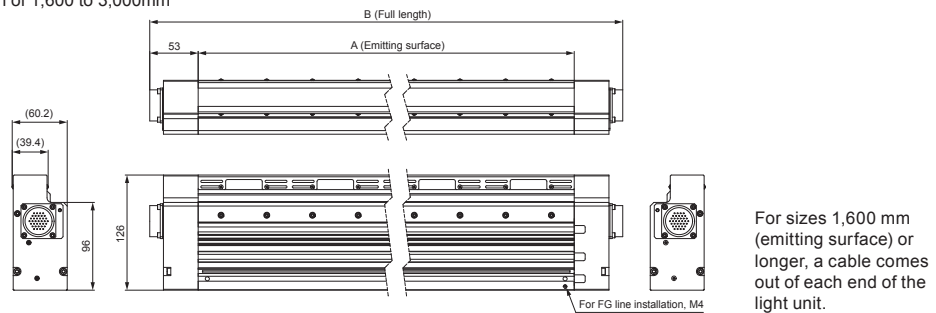


## Dimensions (mm)

● For the emitting surface length of 100 to 1,500mm



● For the emitting surface length of 1,600 to 3,000mm



	Standard products			Special orders			
	Model Name	A (Emitting surface)	B (Full length)	Model Name	A (Emitting surface)	B (Full length)	
Standard products	LNLN-100SW	100	161	Special orders	LNLN-1600SW	1,600	1,706
	LNLN-200SW	200	261		LNLN-1700SW	1,700	1,806
	LNLN-300SW	300	361		LNLN-1800SW	1,800	1,906
	LNLN-400SW	400	461		LNLN-1900SW	1,900	2,006
	LNLN-500SW	500	561		LNLN-2000SW	2,000	2,106
	LNLN-600SW	600	661		LNLN-2100SW	2,100	2,206
	LNLN-700SW	700	761		LNLN-2200SW	2,200	2,306
	LNLN-800SW	800	861		LNLN-2300SW	2,300	2,406
	LNLN-900SW	900	961		LNLN-2400SW	2,400	2,506
	LNLN-1000SW	1,000	1,061		LNLN-2500SW	2,500	2,606
Special orders	LNLN-1100SW	1,100	1,161	LNLN-2600SW	2,600	2,706	
	LNLN-1200SW	1,200	1,261	LNLN-2700SW	2,700	2,806	
	LNLN-1300SW	1,300	1,361	LNLN-2800SW	2,800	2,906	
	LNLN-1400SW	1,400	1,461	LNLN-2900SW	2,900	3,006	
	LNLN-1500SW	1,500	1,561	LNLN-3000SW	3,000	3,106	

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLN	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products

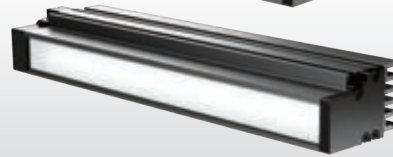


## High-illuminance compact line lights

The light emitting tip is shifted to one side of the light unit body



LNSP2-300SW-NDF



LNSP2-300SW

### Applications

Inspection for stains and scratches on glass; visual inspection of films, circuit boards, and electronic parts; inspection for stains on non-woven fabrics; visual inspection of non-woven fabrics and textured metal surface; etc.

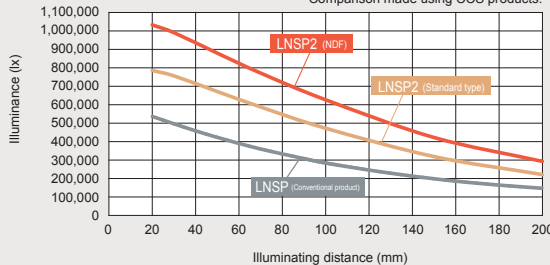
### Achieves an Illuminance of Approx. 900,000 lx\*

\* Measured using NDF type

This high-illuminance line light (NDF type) achieves an illuminance of approx. 900,000 lx.

#### Graph of the change in illuminance

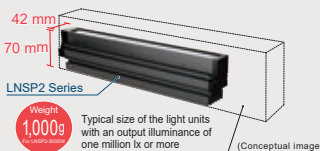
Comparison made using CCS products.



Actual measurement values at the center of the emitting surface, at each illuminating distance, 100% intensity. Results for individual products may vary.

#### Achieving both high output and compact space

We achieved a compact design compared to general, high output (one million lx or more) LED lights for line sensors.

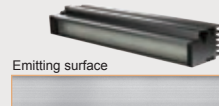


### Two Types Are Available to Match Your Needs

A standard type that supports a wide range of applications and the NDF type that is suitable for dark field applications are available.

Standard type

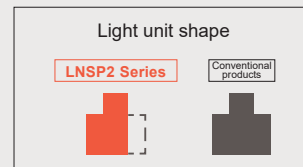
NDF type



A diffusion sheet is included. Diffusion sheet is not included.

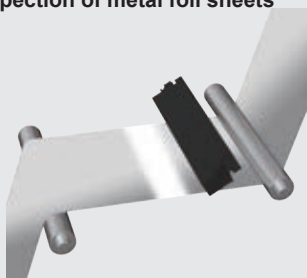
#### Housing shape that suits the site environment

For use at the site of inspection, the light unit shape is optimized with its light emitting tip shifted to one side of the light unit body. As a result, the camera view is not blocked during illumination, and the light unit can be installed close to the workpiece.



### Applications

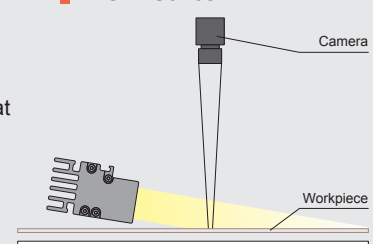
#### Visual inspection of metal foil sheets



### Example Configuration

The light emitting surface had been moved to one side to create a housing shape that matches the on-site environment. High-illuminance and compact line lights

#### LNSP2 Series





## Different Imaging Results of the Typical Workpieces

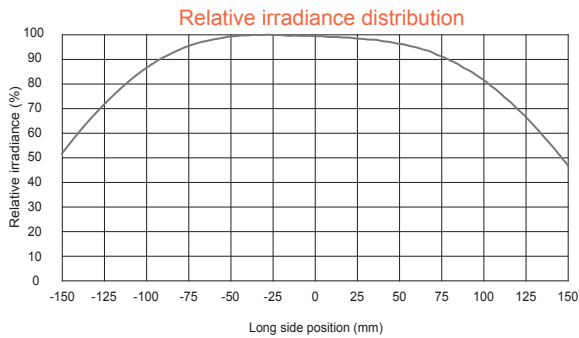
These workpieces were processed by CCS for sample imaging.

The figure shows imaging results for two types of line lights: Standard type and NDF type. For each type, there are two field types: Bright field and Dark field. The materials tested are Non-woven fabrics, Textured metal surface, and Glass. A horizontal arrow at the top indicates the lighting direction from 'Light dispersing' to 'Glaring (reflective)'. For the Standard type, the Dark field images show 'Foreign material', 'Scratches', and a 'Scratch' (a vertical line). For the NDF type, the Dark field images also show 'Foreign material', 'Scratches', and a 'Scratch'. A note at the bottom states: 'Note: The vertical lines in the above images with an asterisk (\*) were caused by reflections of light from LEDs.'

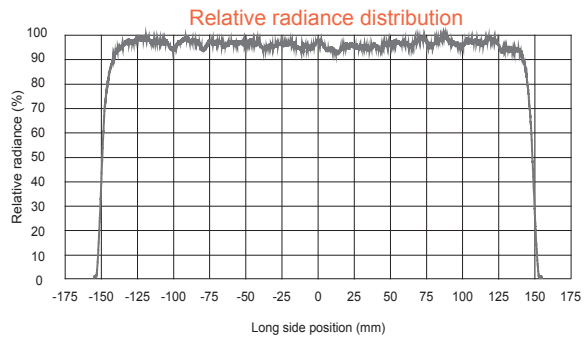
## Data (Representative Example)

The graph included is for reference only. Actual values may vary.

### LNSP2-300SW

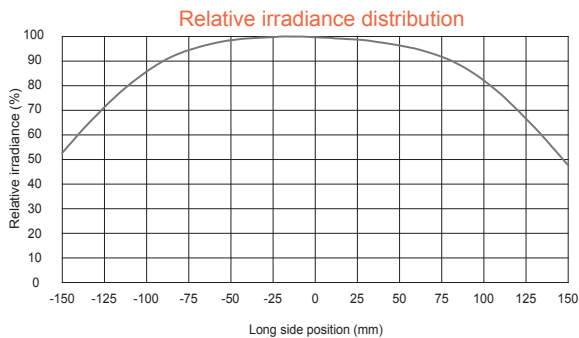


Actual measurement values at 100% intensity in 100 mm illuminating distance. Results for individual products may vary.

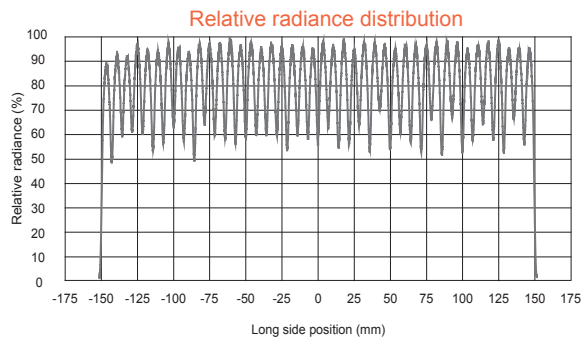


The graph included is for reference only. Actual values may vary.

### LNSP2-300SW-NDF



Actual measurement values at 100% intensity in 100 mm illuminating distance. Results for individual products may vary.



The graph included is for reference only. Actual values may vary.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe Coaxial
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLN	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Lenses
Macro Lens	Other Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LNSP2 Series



Refer to our website for product details.

CCS LNSP2

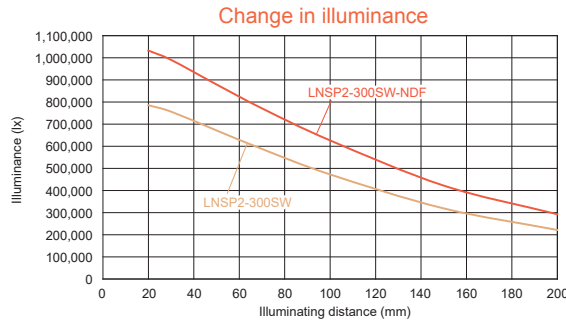
Search



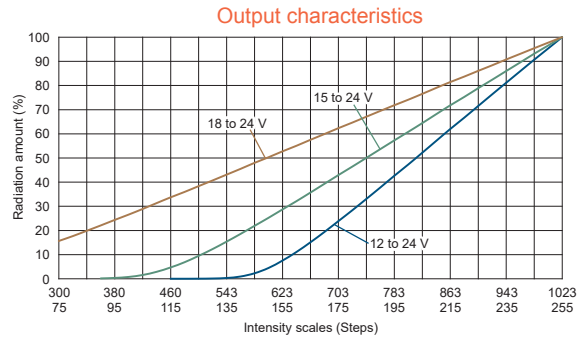
## Data (Representative Example)

The graph included is for reference only. Actual values may vary.

### LNSP2-300SW / LNSP2-300SW-NDF



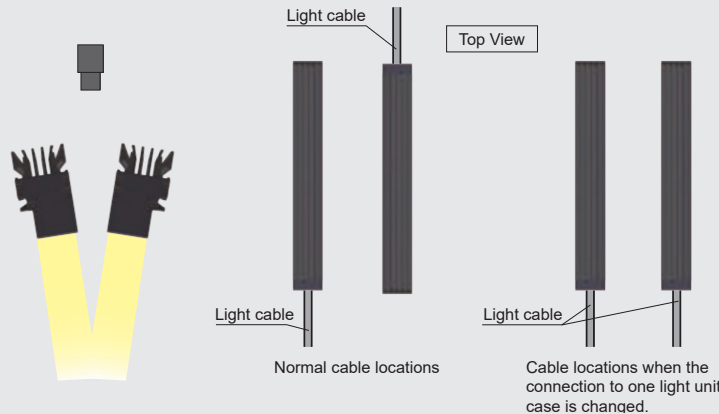
Actual measurement values at 100% intensity in each illuminating distance. Results for individual products may vary.



Actual measurement values using the PSB4-30024-PEI analog control unit. Results for individual products may vary. Measured in each voltage range because the PSB4-30024-PEI analog control unit has a switching function for the lower limit of the output voltage.

## Custom Order Example

E.g.: The location where the light cable comes out of the light unit case can be changed to match your environment.



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent / Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Strobe	MSU MFU
Water-proof	PF
UV / Violet	HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP <b>LNSP2</b> Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNS2 LNS LNS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



Model Name	LED Color	Power Consumption	Correlated Color Temperature	Extension Cables	Recommended Control Units	Weight
Standard type (Standard products)	White	24 V / 20 W	6,600 K	FCB-EL2	PSB4	400 g
		24 V / 40 W			PD4-12024	700 g
		24 V / 60 W			PD3-10024-8 *1	1,000 g
		24 V / 80 W			PSB4 PD4-12024	1,300 g
		24 V / 100 W				1,600 g
		24 V / 120 W				1,900 g
		24 V / 140 W			FCB-1.25SQ-ME7	2,200 g
		24 V / 160 W			FCB-20-2.0SQ-ME7	2,500 g
		24 V / 180 W				2,800 g
		24 V / 200 W				3,100 g
Standard type (Special order)	White	24 V / 220 W	6,600 K	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7 x 2 *2	PSB4	3,400 g
		24 V / 240 W				3,700 g
		24 V / 260 W				4,000 g
		24 V / 280 W				4,300 g
		24 V / 300 W				4,600 g
		24 V / 320 W				4,900 g
		24 V / 340 W				5,200 g
		24 V / 360 W				5,500 g
		24 V / 380 W				5,800 g
		24 V / 400 W				6,100 g
		24 V / 420 W				6,400 g
		24 V / 440 W				6,700 g
		24 V / 460 W				7,000 g
		24 V / 480 W			PSB4-60024-2-PEI	7,300 g
		24 V / 500 W				7,600 g
		24 V / 520 W				7,900 g
		24 V / 540 W				8,200 g
		24 V / 560 W				8,500 g
		24 V / 580 W				8,800 g
		24 V / 600 W				9,100 g
NDF type (Standard products)	White	24 V / 24 W	6,600 K	FCB-EL2	PSB4	400 g
		24 V / 48 W			PD4-12024	700 g
		24 V / 72 W			PD3-10024-8 *1	1,000 g
		24 V / 96 W			PSB4	1,300 g
		24 V / 120 W			PD4-12024	1,600 g
		24 V / 144 W				1,900 g
		24 V / 168 W			FCB-1.25SQ-ME7	2,200 g
		24 V / 192 W			FCB-20-2.0SQ-ME7	2,500 g
		24 V / 216 W				2,800 g
		24 V / 240 W				3,100 g
NDF type (Special orders)	White	24 V / 264 W	6,600 K	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7 x 2 *2	PSB4	3,400 g
		24 V / 288 W				3,700 g
		24 V / 312 W				4,000 g
		24 V / 336 W				4,300 g
		24 V / 360 W				4,600 g
		24 V / 384 W				4,900 g
		24 V / 408 W				5,200 g
		24 V / 432 W				5,500 g
		24 V / 456 W				5,800 g
		24 V / 480 W				6,100 g
		24 V / 504 W				6,400 g
		24 V / 528 W				6,700 g
		24 V / 552 W				7,000 g
		24 V / 576 W				7,300 g
		24 V / 600 W				7,600 g
		24 V / 624 W				7,900 g
		24 V / 648 W				8,200 g
		24 V / 672 W				8,500 g
		24 V / 696 W				8,800 g
		24 V / 720 W				9,100 g

Extension Cables ▶ P.219

List of Control Unit Specifications ▶ P.311

\*1 Custom products with a PWM frequency of 500 kHz are available for PD3 Series digital control unit  
 \*2 For sizes 1,000 mm (emitting surface) or longer, a cable comes out of each end of the light unit.  
 The products with a model name in red letters require the custom control unit. Contact your CCS sales representative for details.

In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SOR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

# LNSP2 Series



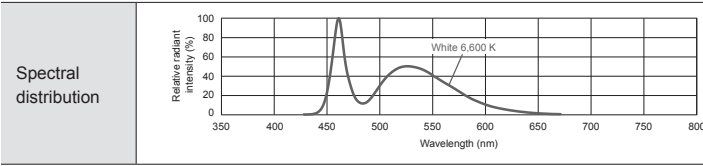
Refer to our website for product details.

CCS LNSP2

Search



## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Options



Coaxial Unit

Allows for imaging with illumination on the same axis as the camera.

Model Name	Applicable Light Unit
CU-LNSP2-100-GL	LNSP2-100SW (-NDF)
CU-LNSP2-200-GL	LNSP2-200SW (-NDF)
CU-LNSP2-300-GL	LNSP2-300SW (-NDF)
CU-LNSP2-400-GL	LNSP2-400SW (-NDF)
CU-LNSP2-500-GL	LNSP2-500SW (-NDF)

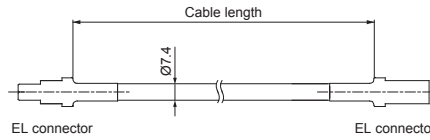
CU-LNSP2 Product Page ▶ P.221

## Extension Cables

Necessary when connecting the light unit to the recommended control unit.

### FCB-EL2

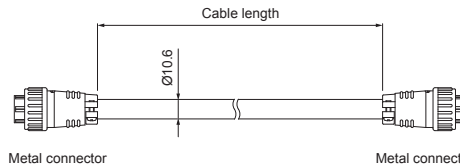
Model Name	Cable Length	Weight
FCB-1-EL2	1 m	85 g
FCB-2-EL2	2 m	165 g
FCB-3-EL2	3 m	245 g
FCB-5-EL2	5 m	405 g
FCB-10-EL2	10 m	805 g
FCB-15-EL2	15 m	1,205 g



Cable permitted bending radius: 29.6 mm

### FCB-1.25SQ-ME7

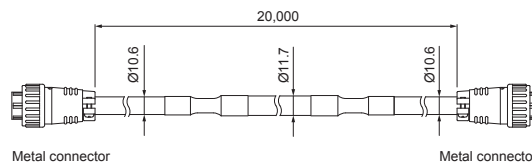
Model Name	Cable Length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g



Cable permitted bending radius: 63.6 mm

### FCB-20-2.0SQ-ME7

Model Name	Cable Length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



Cable permitted bending radius: 63.6 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

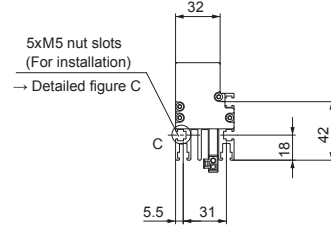
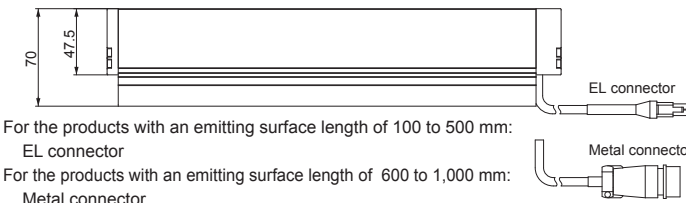
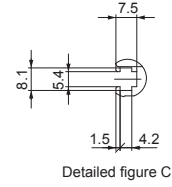
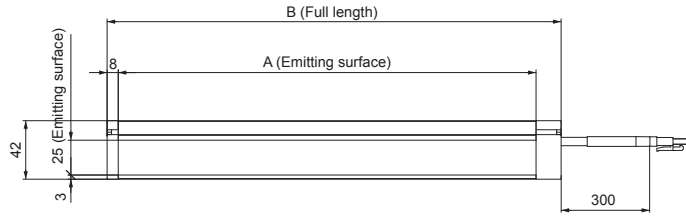
Imaging Examples

Digital Catalogs

Register to use them.

## Dimensions (mm)

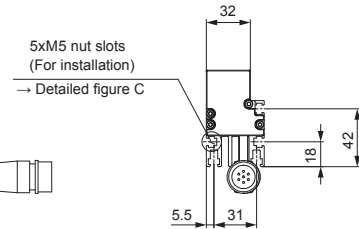
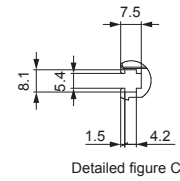
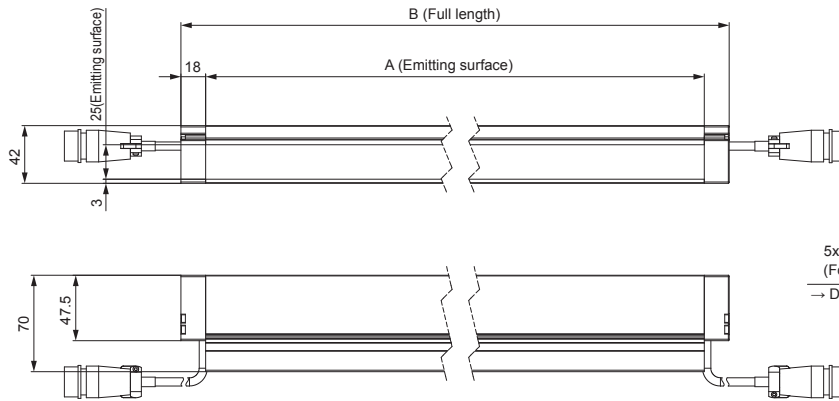
● Emitting surface length: 100 to 1,000 mm



For the products with an emitting surface length of 100 to 500 mm:  
EL connector  
For the products with an emitting surface length of 600 to 1,000 mm:  
Metal connector

CCS accepts custom orders for such as the position where the light cable comes out of the case. Please contact your CCS sales representative for details.

● Emitting surface length: 1,100 to 3,000 mm



For sizes 1,100 mm (emitting surface) or longer, a cable comes out of each end of the light unit.

	Model Name	A (Emitting surface)	B (Full length)	Connector	Model Name	A (Emitting surface)	B (Full length)	Connector
Standard products	LNSP2-100SW (-NDF)	100	126	EL connector	Special orders	LNSP2-1600SW (-NDF)	1,600	1,636
	LNSP2-200SW (-NDF)	200	226			LNSP2-1700SW (-NDF)	1,700	1,736
	LNSP2-300SW (-NDF)	300	326			LNSP2-1800SW (-NDF)	1,800	1,836
	LNSP2-400SW (-NDF)	400	426			LNSP2-1900SW (-NDF)	1,900	1,936
	LNSP2-500SW (-NDF)	500	526			LNSP2-2000SW (-NDF)	2,000	2,036
	LNSP2-600SW (-NDF)	600	626			LNSP2-2100SW (-NDF)	5,100	2,136
	LNSP2-700SW (-NDF)	700	726			LNSP2-2200SW (-NDF)	2,200	2,236
	LNSP2-800SW (-NDF)	800	826			LNSP2-2300SW (-NDF)	2,300	2,336
	LNSP2-900SW (-NDF)	900	926			LNSP2-2400SW (-NDF)	2,400	2,436
	LNSP2-1000SW (-NDF)	1,000	1,026			LNSP2-2500SW (-NDF)	2,500	2,536
Special orders	LNSP2-1100SW (-NDF)	1,100	1,136	Metal connector	LNSP2-2600SW (-NDF)	2,600	2,636	
	LNSP2-1200SW (-NDF)	1,200	1,236		LNSP2-2700SW (-NDF)	2,700	2,736	
	LNSP2-1300SW (-NDF)	1,300	1,336		LNSP2-2800SW (-NDF)	2,800	2,836	
	LNSP2-1400SW (-NDF)	1,400	1,436		LNSP2-2900SW (-NDF)	2,900	2,936	
	LNSP2-1500SW (-NDF)	1,500	1,536		LNSP2-3000SW (-NDF)	3,000	3,036	

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLN LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lens
LDF-NB	Other Products

# Options

## LNSP2 Series Dedicated Coaxial Units

# CU-LNSP2 Series

Refer to our website for product details.

CCS CU-LNSP2

Search



## Achieves high output with coaxial illumination



CU-LNSP2-200-GL

With light unit installed.  
The light unit is sold separately.

### Applications

Inspection of electronic parts on circuit boards, visual inspection of secondary battery separators, inspection for damage and dents on touch panels, etc.

### Features

■ When imaging with V-shaped reflection: Only the LNSP2 light unit

Conveyor direction ↑

Because the camera is diagonal with respect to the line sensor viewpoint, when capturing objects with protrusions, such as electronic parts on circuit boards, some parts enter the camera's blind spot, limiting the inspected areas.

There is a shadow in the space between electronic parts, preventing visual inspection.

15° 15°

Circuit board

Electronic parts

Conveyor direction ←

Camera's capturing angle

Illuminating angle

In the camera's blind spot

■ When imaging with coaxial illumination: CU-LNSP2 mounted

Conveyor direction ↑

Because the camera is directly vertical with respect to the line sensor viewpoint, it is not affected by protrusions and can capture the image.

There is no shadow in the space between electronic parts, allowing for visual inspection.

CU-LNSP2

LNSP2

Circuit board

Electronic parts

Conveyor direction ←

Camera's capturing angle

Illuminating angle

Not in the camera's blind spot

### Information about Custom Ordered Products

We also customize coaxial units compatible with the following products. Inquire at your CCS sales representative for details.

■ LN-HK-STK Series ▼ P.228



A cylindrical lens allows for illumination with a convergent line of light. By changing the position of the lens unit on the tip, you can freely set the converging length or the width of emitting light.

■ LNSD Series ▼ P.229



High-luminance, high-uniformity and versatile line sensor light that can be used for various applications. Can be manufactured from 100 mm to 3,000 mm and is recommended as a replacement for fluorescent lamps.

■ LT Series ▼ P.237

\* Can be manufactured with the light emitting surface of 10 mm wide



Achieve both high uniformity and high brightness through this unique optical system. It can perform highly-accurate inspections and also supports high-speed scan rates.

Various technical documents available.

- PDF Drawings
- DXF Drawings
- Product Brochures
- Instruction Guides
- 3D CAD
- Data Sheets
- Imaging Examples
- Digital Catalogs

Register to use them.

**Lineup**

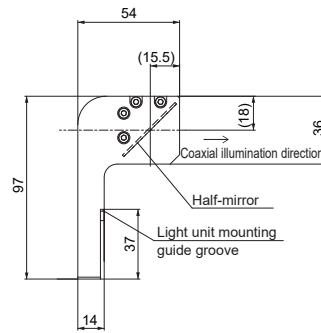
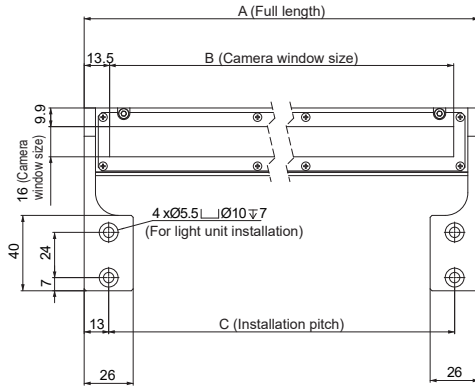
CU-LNSP2

Model Name	Weight	Applicable Light Unit
CU-LNSP2-100-GL	250 g	LNSP2-100SW
CU-LNSP2-200-GL	350 g	LNSP2-200SW
CU-LNSP2-300-GL	450 g	LNSP2-300SW
CU-LNSP2-400-GL	550 g	LNSP2-400SW
CU-LNSP2-500-GL	650 g	LNSP2-500SW

LNSP2 Series  
Product Page  
▼ P.215

**Dimensions (mm)**

CU-LNSP2-100-GL / -200-GL / -300-GL / -400-GL / -500-GL



Four M5 screws and nuts are included for installing the coaxial unit on the light unit.

For a custom order, we can change the location where the light cable comes out of the light unit (LNSP2) case on which the coaxial unit is installed. Please contact your CCS sales representative for details.

Model Name	Dimension A	Dimension B	Dimension C	Model Name	Dimension A	Dimension B	Dimension C
CU-LNSP2-100-GL	112	85	86	CU-LNSP2-400-GL	412	385	386
CU-LNSP2-200-GL	212	185	186	CU-LNSP2-500-GL	512	485	486
CU-LNSP2-300-GL	312	285	286				

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL LNSP2 LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

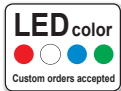
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



Uses original converging technology to achieve illumination with reduced diffusion

High output line lights with forced air cooling (fan cooling)



LNSP-400SW-FN

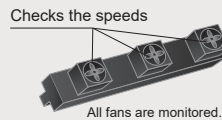
**Applications**

Inspection of parts mounted on circuit boards, inspection for scratches on clear film, inspecting sheet alignment, inspection for unevenness in sheet metal, visual inspection of plastic products, etc.

**Avoid Trouble with Error Detection**

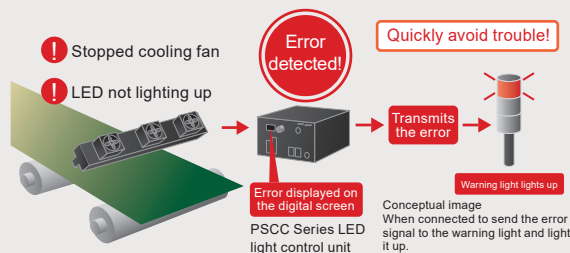
**1) Error detection for cooling fans**

An error is detected should a fault occur, such as insufficient speed or a stop in the cooling fans.



**2) Error detection for the LEDs**

Detects dead LEDs due to an open in the light unit circuit or a shorted LED.



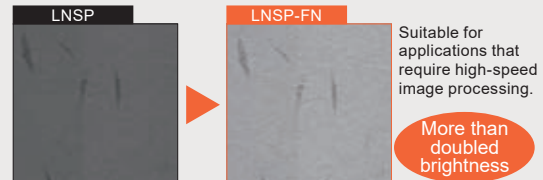
Error detection is a function included with the PSCC Series, the recommended control units.

**Illuminance of 900,000 lx with Forced Air Cooling (Fan)**

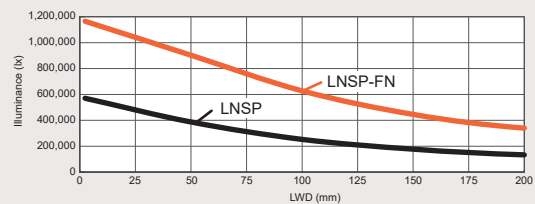
Suitable for applications that require high-speed image processing. Also allows for even imaging with a high degree of uniformity.

**Comparison of illuminance for the LNSP and LNSP-FN**

Comparison of imaging of paper (Japanese paper)



Brightness varies based on the camera's spectral sensitivity.

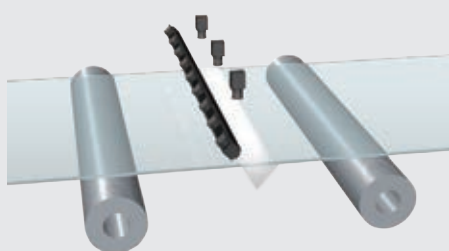


Actual measurement values at 100% intensity in each illuminating distance. Results for individual products may vary. LWD is the distance from the light unit to the workpiece.

The graph included is for reference only. Actual values may vary.

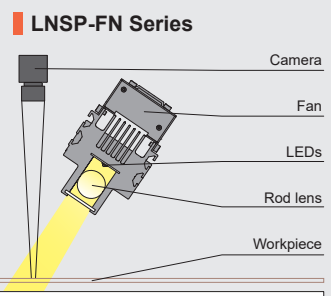
**Applications**

**Inspection for damage on glass**



**Example Configuration**

High-output line lights with forced air cooling (fan cooling). Because light does not easily diffuse, there is little loss for the amount of light, allowing for illumination over long distances.

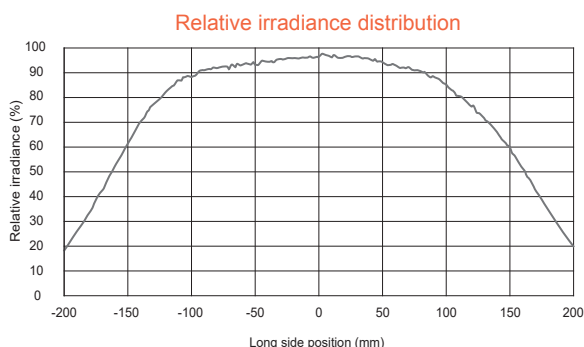




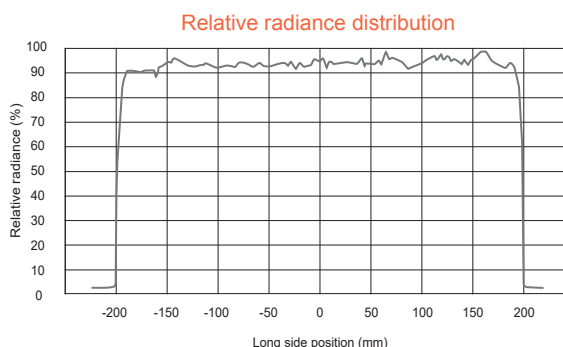
## Data (Representative Example)

The graph included is for reference only. Actual values may vary.

### LNSP-400SW-FN

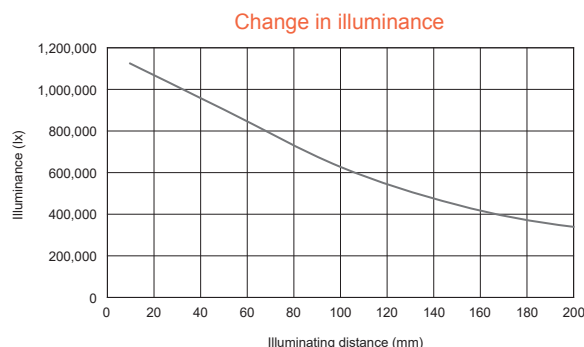


Actual measurement values at 100% intensity in 100 mm illuminating distance. Results for individual products may vary.

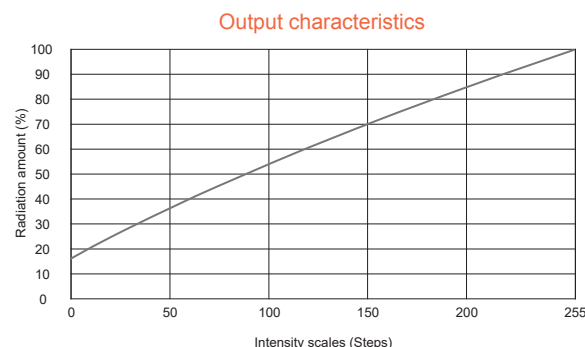


The graph included is for reference only. Actual values may vary.

### LNSP-1500SW-FN



Actual measurement values at 100% intensity in each illuminating distance. Results for individual products may vary.



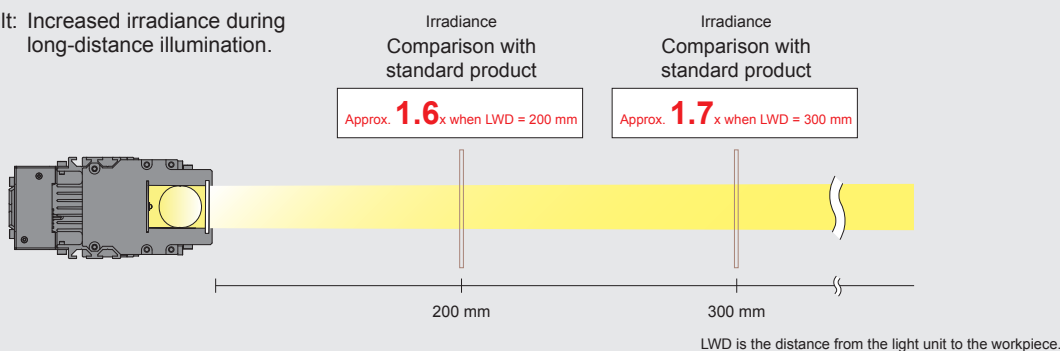
Actual measurement values using the PSCC-60048(A) analog control unit. Results for individual products may vary.

## Custom Order Example

Please contact your CCS sales representative.

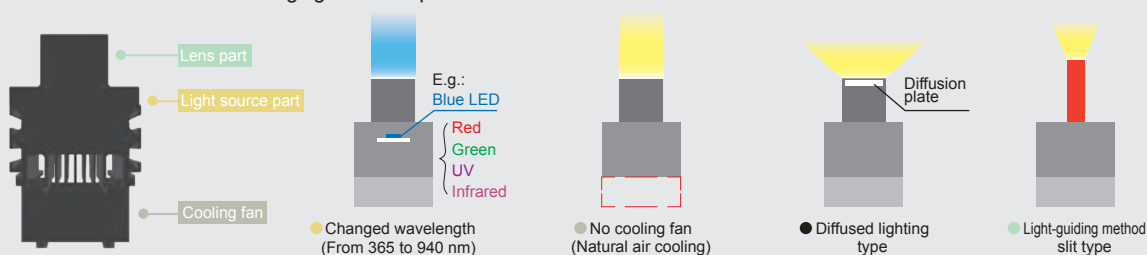
Example 1: Changes specifications for the rod lens diameter

Result: Increased irradiance during long-distance illumination.



Example 2: Changes specifications to match application

Allows for customization including light source part



LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LNSP-FN Series



Refer to our website for product details.

CCS LNSP-FN

Search



## Lineup

Model Name	LED Color	Power Consumption*1 (Including the fan)		Correlated Color Temperature	Extension Cables*2	Recommended Control Units*2	Weight													
		June 2017 or earlier	July 2017 or later																	
Standard products	White	5,800 K	LNSP-100SW-FN	41 W	41 W	5,800 K	900 g													
			LNSP-200SW-FN	81 W	82 W			1,400 g												
			LNSP-300SW-FN	117 W	118 W				1,900 g											
			LNSP-400SW-FN	157 W	158 W					PSCC-30048(A) PSCC-60048(A)										
			LNSP-500SW-FN	192 W	194 W						2,400 g									
			LNSP-600SW-FN	233 W	235 W							2,900 g								
			LNSP-700SW-FN	268 W	270 W								3,400 g							
			LNSP-800SW-FN	309 W	311 W									3,900 g						
			LNSP-900SW-FN	345 W	348 W										QCBM QCB					
			LNSP-1000SW-FN	384 W	387 W											4,400 g				
			LNSP-1100SW-FN	425 W	428 W												4,900 g			
			LNSP-1200SW-FN	460 W	464 W													5,500 g		
			LNSP-1300SW-FN	501 W	504 W														PSCC-60048(A)	
			LNSP-1400SW-FN	536 W	540 W															6,000 g
			LNSP-1500SW-FN	576 W	581 W															
Special orders	LNSP-1600SW-FN	613 W	618 W	5,800 K	8,800 g															
	LNSP-1700SW-FN	652 W	658 W			9,300 g														
	LNSP-1800SW-FN	689 W	695 W				9,800 g													
	LNSP-1900SW-FN	728 W	734 W					10,300 g												
	LNSP-2000SW-FN	768 W	775 W						10,900 g											
	LNSP-2100SW-FN	804 W	811 W							11,400 g										
	LNSP-2200SW-FN	844 W	851 W								11,900 g									
	LNSP-2300SW-FN	881 W	888 W									12,400 g								
	LNSP-2400SW-FN	920 W	928 W										QCB x 2 *3							
	LNSP-2500SW-FN	956 W	964 W											PSCC-60048(A) x 2 *3						
	LNSP-2600SW-FN	996 W	1,004 W												12,900 g					
	LNSP-2700SW-FN	1,032 W	1,041 W													13,400 g				
	LNSP-2800SW-FN	1,071 W	1,080 W														13,900 g			
	LNSP-2900SW-FN	1,108 W	1,117 W															14,400 g		
	LNSP-3000SW-FN	1,148 W	1,158 W																14,900 g	
				Extension Cables ▶ P.226																PSCC Series Product Page ▶ P.365

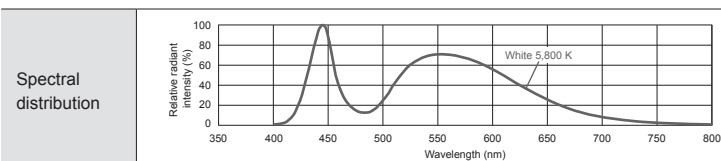
\*1 The power consumption varies according to the production data. Refer to the power consumption given by the label tag of the product.

\*2 Make sure to connect the appropriate extension cables to the control unit.

\*3 For sizes 1,600 mm (emitting surface) or longer, a cable comes out of each end of the light unit.

We accept custom orders, such as changes to the LED color (red/blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

Digital Catalogs

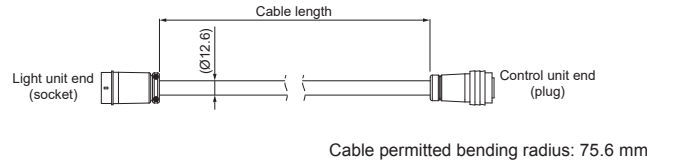
Register to use them.

## Extension Cables

Necessary when connecting the light unit to the recommended PSCC Series control unit.  
Make sure to connect the appropriate extension cables to the control unit.

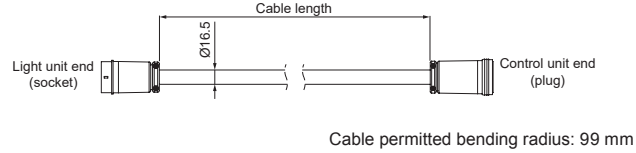
### QCBM

Model Name	Cable Length	Weight	Applicable Control Unit
QCBM-2	2 m	800 g	PSCC-30048(A)
QCBM-3	3 m	1,000 g	
QCBM-5	5 m	1,500 g	
QCBM-10	10 m	2,700 g	
QCBM-20	20 m	5,000 g	



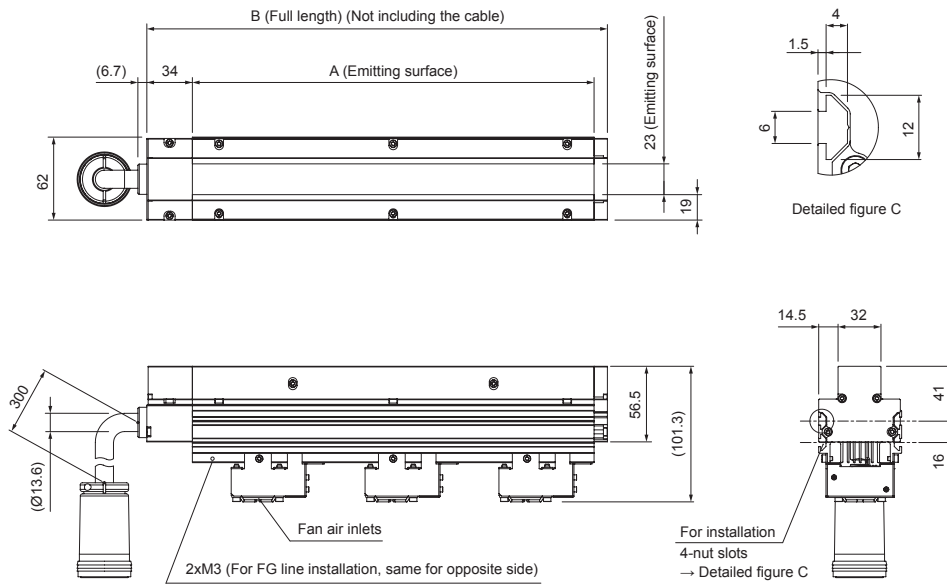
### QCB

Model Name	Cable Length	Weight	Applicable Control Unit
QCB-2	2 m	1,100 g	PSCC-60048(A)
QCB-3	3 m	1,500 g	
QCB-5	5 m	2,400 g	
QCB-10	10 m	4,600 g	
QCB-20	20 m	8,900 g	



The above cable permitted bending radii are reference values. Actual values may vary.

## Dimensions (mm)



For sizes 1,600 mm (emitting surface) or longer, a cable comes out of each end of the light unit.

Model Name	A (Emitting surface)	B (Full length)	Model Name	A (Emitting surface)	B (Full length)
LNSP-100SW-FN	100	144	LNSP-1600SW-FN	1,600	1,668
LNSP-200SW-FN	200	244	LNSP-1700SW-FN	1,700	1,768
LNSP-300SW-FN	300	344	LNSP-1800SW-FN	1,800	1,868
LNSP-400SW-FN	400	444	LNSP-1900SW-FN	1,900	1,968
LNSP-500SW-FN	500	544	LNSP-2000SW-FN	2,000	2,068
LNSP-600SW-FN	600	644	LNSP-2100SW-FN	2,100	2,168
LNSP-700SW-FN	700	744	LNSP-2200SW-FN	2,200	2,268
LNSP-800SW-FN	800	844	LNSP-2300SW-FN	2,300	2,368
LNSP-900SW-FN	900	944	LNSP-2400SW-FN	2,400	2,468
LNSP-1000SW-FN	1,000	1,044	LNSP-2500SW-FN	2,500	2,568
LNSP-1100SW-FN	1,100	1,144	LNSP-2600SW-FN	2,600	2,668
LNSP-1200SW-FN	1,200	1,244	LNSP-2700SW-FN	2,700	2,768
LNSP-1300SW-FN	1,300	1,344	LNSP-2800SW-FN	2,800	2,868
LNSP-1400SW-FN	1,400	1,444	LNSP-2900SW-FN	2,900	2,968
LNSP-1500SW-FN	1,500	1,544	LNSP-3000SW-FN	3,000	3,068

You can inquire using our website.

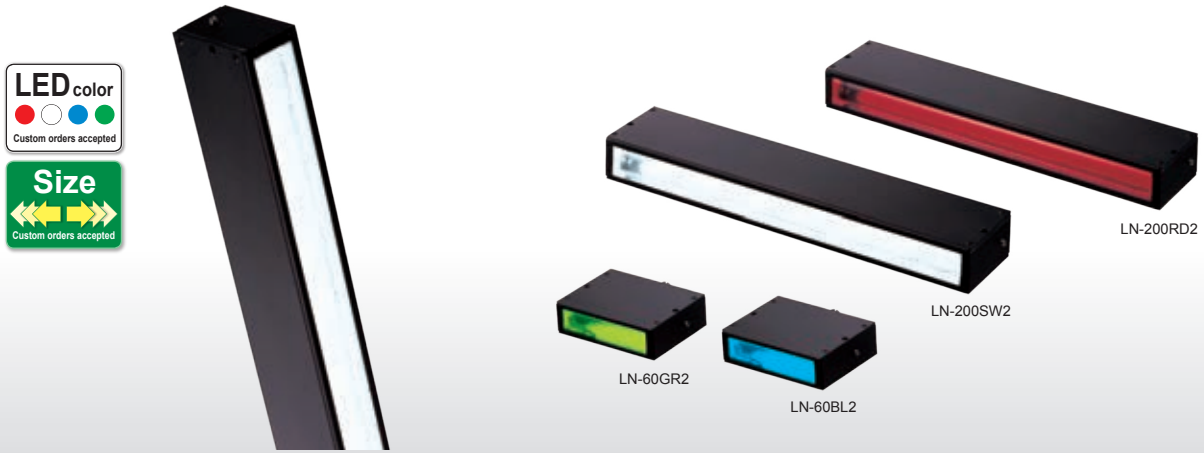
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Line Lenses
LDF-NB	Other Products



Provides converged line lighting



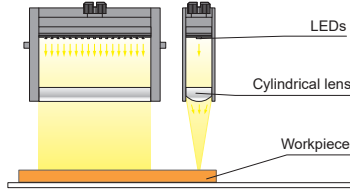
Applications

Visual inspection of film circuit boards, inspection for faults in non-woven fabrics, inspection of parts mounted on circuit boards, visual inspection of printed objects, visual inspection of plastic products, etc.

Features

Emits light from the LEDs through the cylindrical lens on the tip and enables converged line-shape light.

Example configuration (LN-60)



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging the side of a coin



Imaging for measuring width of a connector pin



Imaging of damage on glass



Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight
LN-60RD2	Red	24 V / 2.1 W	630 nm	-	FCB Straight Cable*3 FCB-W 2-branch Cable*4 FCB-F 4-branch Cable FRCB Robot Cable	PD4 CC-ST-1024	130 g
LN-60SW2	White		5,500 K				
LN-60BL2	Blue	24 V / 1.0 W	470 nm				
LN-60GR2	Green		525 nm				
LN-200RD2	Red	24 V / 3.1 W	630 nm				
LN-200SW2	White		5,500 K				
LN-200BL2	Blue		470 nm				
LN-200GR2	Green		525 nm				

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

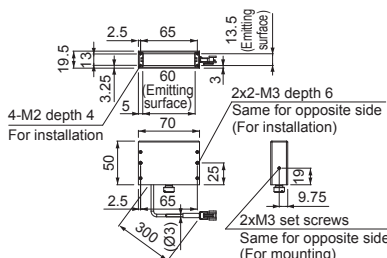
Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

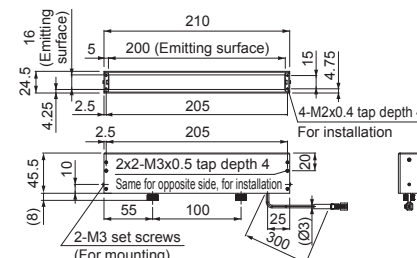
\*1 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

Dimensions (mm)

LN-60RD2/SW2/BL2/GR2



LN-200RD2/SW2/BL2/GR2



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Various technical documents available.

- PDF Drawings
- DXF Drawings
- Product Brochures
- Instruction Guides
- 3D CAD
- Data Sheets
- Imaging Examples
- Digital Catalogs

Register to use them.



## Provides converged line lighting (High output type)



LN-200SW2-HK-STK



LN-60SW2-HK-STK

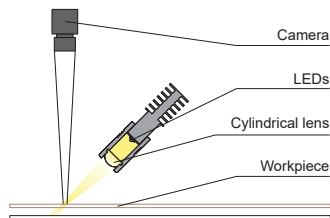
### Applications

Visual inspection of film circuit boards, inspection for faults in non-woven fabrics, inspection of parts mounted on circuit boards, visual inspection of printed objects, visual inspection of plastic products, etc.

### Features

Emits light from the LEDs through the cylindrical lens on the tip and enables converged line-shape light.

#### Example configuration (LN-60SW2-HK-STK)

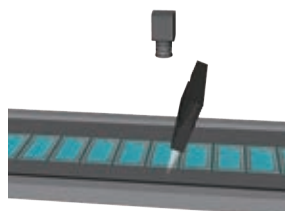


We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

#### Applications

Visual inspection of film-circuit boards



Inspection for faults in non-woven fabrics



### Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight	
LN-60SW2-HK-STK	White	24 V / 6.1W	5,500 K	-	FCB*3 Straight Cable	FCB-W*4 2-branch Cable	PD4	
LN-200SW2-HK-STK		24 V / 22 W			FCB-F 4-branch Cable	FCRB Robot Cable	CC-ST-1024*1	250 g
							*1 Cannot be used with LN-200SW2-HK-STK.	750 g

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

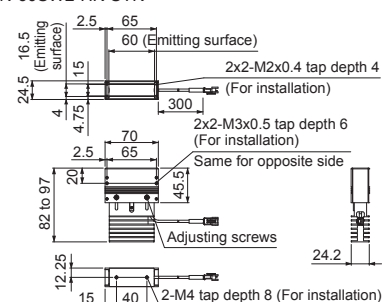
List of Control Unit Specifications ▶ P.311

\*2 Custom products with a PWM frequency of 500 kHz are available for PD3 Series digital control unit. Please contact your CCS sales representative for details.

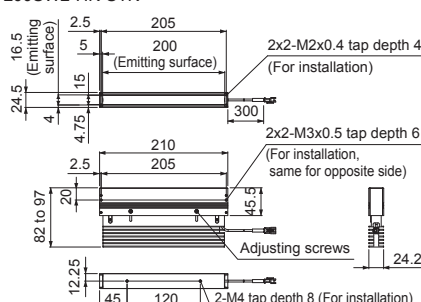
\*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. \*4 The cables with a model name that ends with "-EL2" are not included.

### Dimensions (mm)

LN-60SW2-HK-STK



LN-200SW2-HK-STK



You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFX3	Coaxial
LFX3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL1P	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products



## Highly-versatile Line Lights with a variety of uses

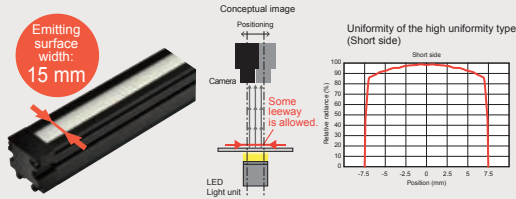


LNSD-400SW(A) LNSD-400SW-HU(A) LNSD-600RD LNSD-800BL

**Applications** Inspection for dents, foreign-material, or fish-eye-holes on clear film; inspection for blots, unevenness, or scratches on metallic foil; inspection for oil-sots, holes, or edge-breaking on paper; inspection for blots, mixing-of-hairs, or crude-density on non-woven fabric; etc.

### Easy-to-Setup, Compact, and Lightweight

The wide and uniform emitting surface facilitates the positioning of the camera. You can improve the efficiency of the setting work.



**Compact and lightweight**



**Stable quality even in a harsh environment**



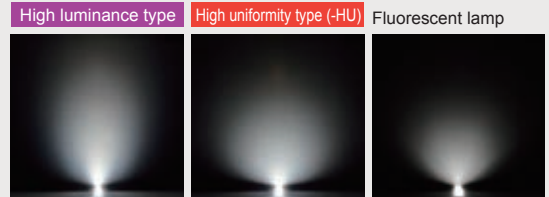
**Heat resistant design for a high temperature environment**

- Optimized case design for heat dissipation
- Heat resistant cable and diffusion plate
- Other components for thorough heat resistance

Also make sure the operating temperature of the control unit and the optional accessories.

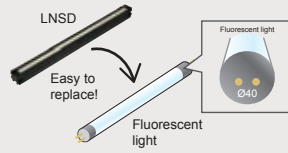
### Can replace fluorescent lights

Excellent brightness and the same uniformity as a fluorescent light

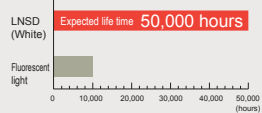


Measurement condition: 100% intensity, short side

**Great for replacing fluorescent lights due to the equal size**

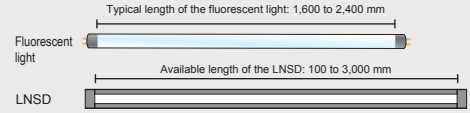


**Life time comparison**



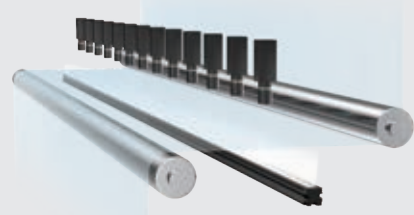
Light intensity: 70%. Operation temperature: 50°C. Calculated value where the light output drops to 50%. Actual values may vary. The life time of the fluorescent light is estimated as 10,000 hours according to CCS's research.

**Supports 1,600 to 2,400 mm length as with the fluorescent light**



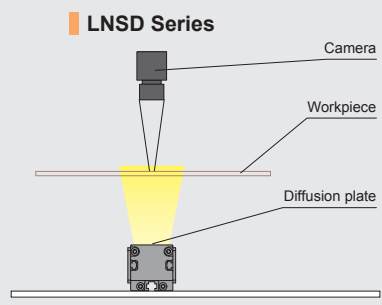
### Applications

**Inspection for foreign material on clear films**

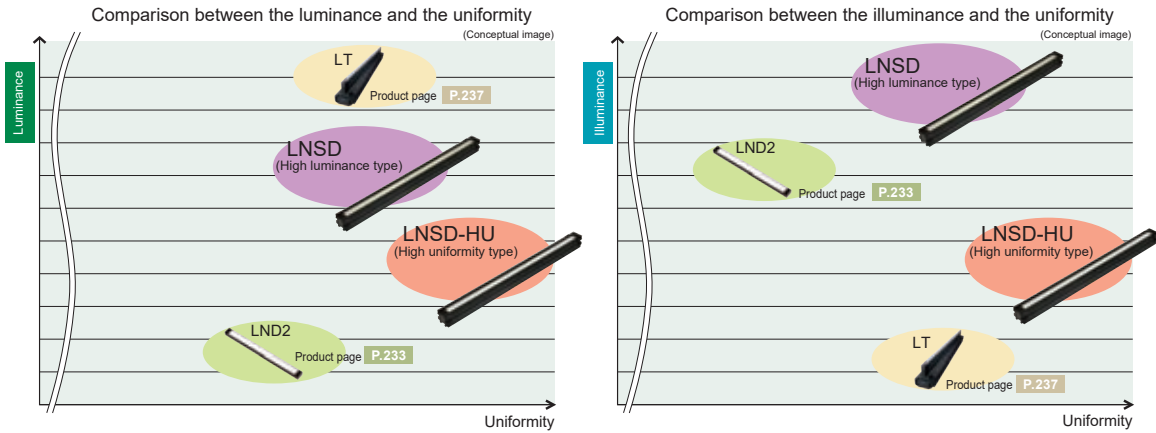


### Example Configuration

Light from the chip LEDs on the flat boards passes through a diffusion plate to produce a band of diffused illumination.



## Comparing Performance of the LNSD with Other CCS Line Lights



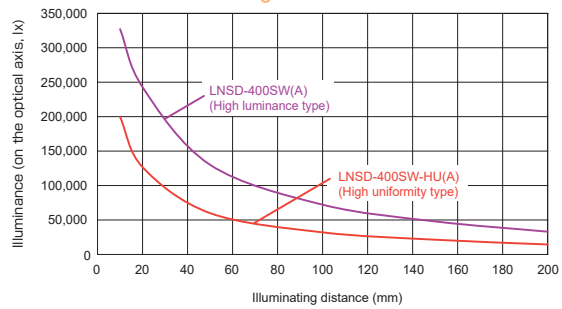
## Data (Representative Example)

The graph included is for reference only. Actual values may vary.

### Brightness

Series name	Luminance	Illuminance
LNSD-400SW(A) (High luminance type)	328,000 cd/m <sup>2</sup>	128,000 lx LWD=50 mm
LNSD-400SW-HU(A) (High uniformity type)	117,000 cd/m <sup>2</sup>	58,000 lx LWD=50 mm

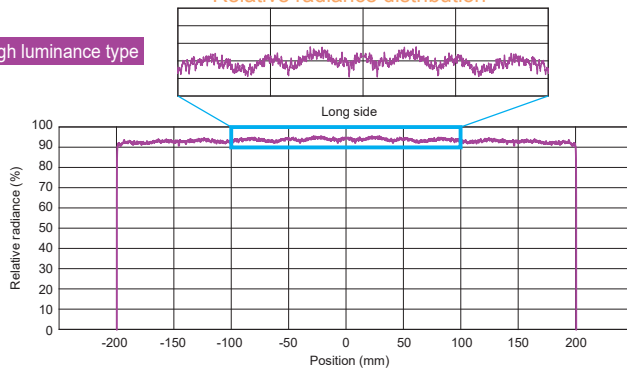
### Change in illuminance



### LNSD-400SW(A)

#### Relative radiance distribution

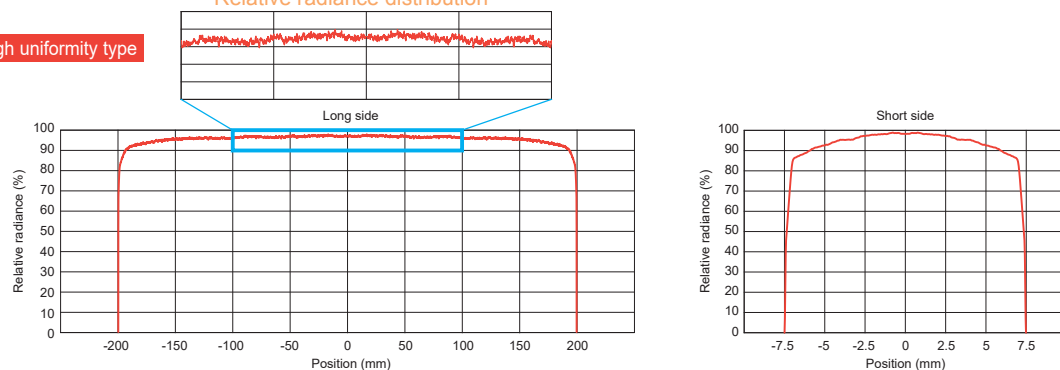
High luminance type



### LNSD-400SW-HU(A)

#### Relative radiance distribution

High uniformity type



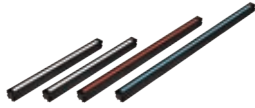
LDR2	Ring (Direct)
LDR-LA	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFBV3	Coaxial
LFBV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
LFX3 (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LNSD Series



Refer to our website for product details.

CCS LNSD

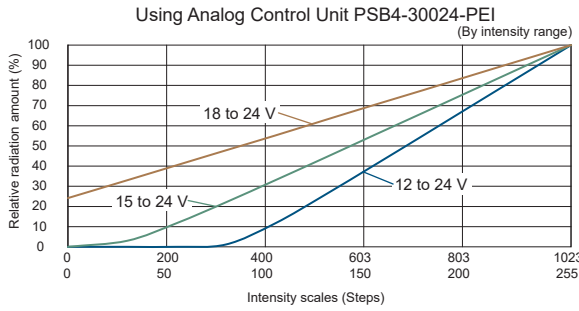
Search



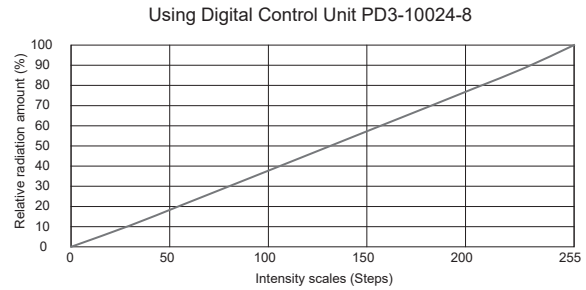
## Data (Representative Example)

The graph included is for reference only. Actual values may vary.

### LNSD-400SW(A) / LNSD-400SW-HU(A) Output characteristics



Actual measurement values using the PSB4-30024-PEI analog control unit. Results for individual products may vary.



Actual measurement values using the PD3-10024-8 digital control unit. Results for individual products may vary.

## Lineup

Model Name: High Luminance Type LNSD-□□□□□□□□□□ LED Color High Uniformity Type LNSD-□□□□□□□□□□ HU LED Color

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Extension Cables	Recommended Control Units	Weight
LNSD-100SW(A)/RD/BL	White (SW) Red (RD) Blue (BL)	24 V / 11 W	White: 6,000 K Red: 631 nm Blue: 470 nm	FCB-EL2	PSB4 PD4-12024 PD3-10024-8*	200 g
LNSD-200SW(A)/RD/BL		24 V / 21 W				320 g
LNSD-300SW(A)/RD/BL		24 V / 31 W				460 g
LNSD-400SW(A)/RD/BL		24 V / 41 W				590 g
LNSD-500SW(A)/RD/BL		24 V / 51 W				720 g
LNSD-600SW(A)/RD/BL		24 V / 61 W				860 g
LNSD-700SW(A)/RD/BL		24 V / 71 W				990 g
LNSD-800SW(A)/RD/BL		24 V / 81 W				1,120 g
LNSD-900SW(A)/RD/BL		24 V / 91 W				1,240 g
LNSD-1000SW(A)/RD/BL		24 V / 101 W				1,370 g
LNSD-1100SW(A)/RD/BL		24 V / 111 W		1,500 g		
LNSD-1200SW(A)/RD/BL		24 V / 121 W		1,640 g		
LNSD-1300SW(A)/RD/BL		White, Blue: 131 W / Red: 132 W		1,770 g		
LNSD-1400SW(A)/RD/BL		White, Blue: 141 W / Red: 142 W		1,910 g		
LNSD-1500SW(A)/RD/BL		White, Blue: 151 W / Red: 152 W		2,040 g		
LNSD-1600SW(A)/RD/BL		White, Blue: 161 W / Red: 162 W		2,170 g		
LNSD-1700SW(A)/RD/BL		White, Blue: 171 W / Red: 172 W		2,300 g		
LNSD-1800SW(A)/RD/BL		White, Blue: 181 W / Red: 182 W		2,440 g		
LNSD-1900SW(A)/RD/BL		24 V / 192 W		2,570 g		
LNSD-2000SW(A)/RD/BL		24 V / 202 W		2,700 g		
LNSD-2100SW(A)/RD/BL	24 V / 212 W	2,830 g				
LNSD-2200SW(A)/RD/BL	24 V / 222 W	2,960 g				
LNSD-2300SW(A)/RD/BL	24 V / 232 W	3,090 g				
LNSD-2400SW(A)/RD/BL	24 V / 242 W	3,220 g				
LNSD-2500SW(A)/RD/BL	White, Blue: 230 W / Red: 227 W	3,350 g				
LNSD-2600SW(A)/RD/BL	White, Blue: 239 W / Red: 236 W	3,480 g				
LNSD-2700SW(A)/RD/BL	White, Blue: 248 W / Red: 245 W	3,610 g				
LNSD-2800SW(A)/RD/BL	White, Blue: 257 W / Red: 255 W	3,740 g				
LNSD-2900SW(A)/RD/BL	White, Blue: 267 W / Red: 264 W	3,870 g				
LNSD-3000SW(A)/RD/BL	White, Blue: 276 W / Red: 273 W	4,000 g				

High luminance type / High uniformity type (Add "-HU" at the end of the model name.)

\*1 The light units with an emitting surface length more than 1,200 mm have two input connectors. To install the light unit, use two extension cables of the same length. Using the cables of different length may cause uneven emission due to a difference in voltage drop caused by the DC resistance of the cables.

\*2 Custom products with a PWM frequency of 500 kHz are available for PD3 Series digital control unit. Please contact your CCS sales representative for details.

### Change in model names "A" is added to the end of select model names e.g. LFX3-25SW → LFX3-25SW(A)

Reason	Effect on functions and performance
LEDs have been changed due to the discontinuation of the LEDs used.	Lower correlated color temperature (more yellow) Conventional product: 6000 K New product: 6000 K

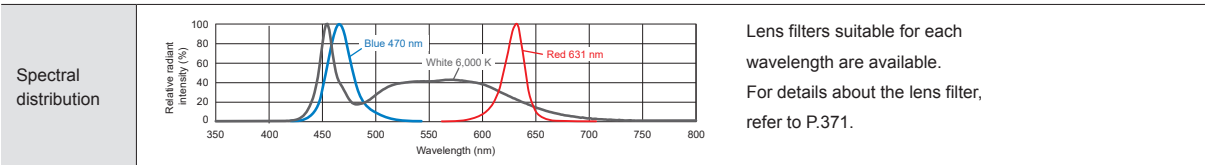
We accept custom orders, such as changes to the LED color (green/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

Extension Cables ▶ P.232

List of Control Unit Specifications ▶ P.311



## LED Properties



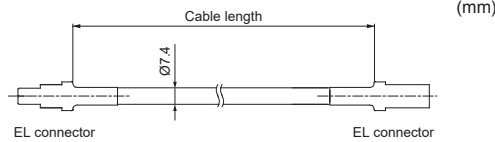
Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Extension Cables

### FCB-EL2

Model name	Cable length	Model name	Cable length
FCB-1-EL2	1 m	FCB-5-EL2	5 m
FCB-2-EL2	2 m	FCB-10-EL2	10 m
FCB-3-EL2	3 m	FCB-15-EL2	15 m



Cable permitted bending radius: 29.6 mm

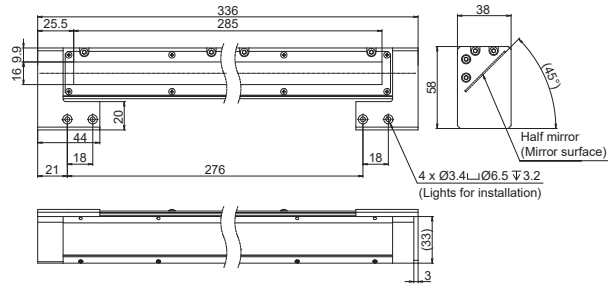
The above cable permitted bending radius is a reference value. Actual value may vary.

## Option (mm)

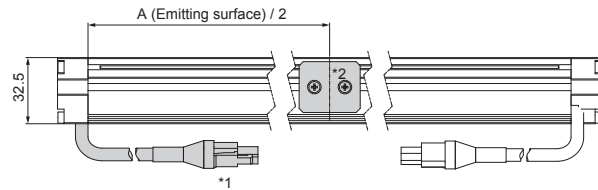
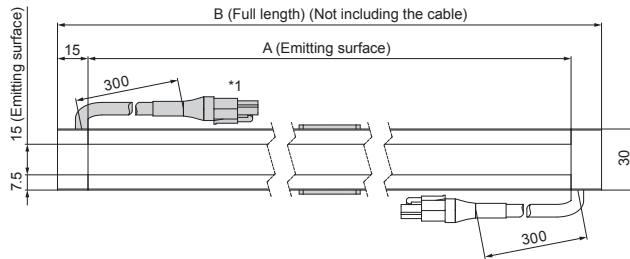
Coaxial unit: CU-LNSD-300-GL

Capable of imaging by illumination from the same axis as the camera.

\*This is a custom-order product. Contact our local sales office for details.

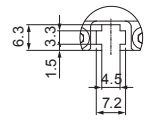


## Dimensions (mm)

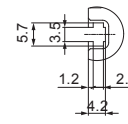


\*1 Only the light units with an emitting surface length more than 1,200 mm have two connectors.

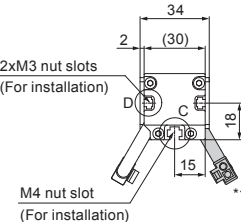
\*2 Only the light units with an emitting surface length more than 1,600 mm have reinforcing metal fittings.



Detailed figure C



Detailed figure D



	Model Name	A (Emitting surface)	B (Full length)	Model Name	A (Emitting surface)	B (Full length)
High luminance type / Add "HL" at the end of the model name.)	LNSD-100SW(A)/RD/BL	100	130	LNSD-1600SW(A)/RD/BL	1,600	1,630
	LNSD-200SW(A)/RD/BL	200	230	LNSD-1700SW(A)/RD/BL	1,700	1,730
	LNSD-300SW(A)/RD/BL	300	330	LNSD-1800SW(A)/RD/BL	1,800	1,830
	LNSD-400SW(A)/RD/BL	400	430	LNSD-1900SW(A)/RD/BL	1,900	1,930
	LNSD-500SW(A)/RD/BL	500	530	LNSD-2000SW(A)/RD/BL	2,000	2,030
	LNSD-600SW(A)/RD/BL	600	630	LNSD-2100SW(A)/RD/BL	2,100	2,130
	LNSD-700SW(A)/RD/BL	700	730	LNSD-2200SW(A)/RD/BL	2,200	2,230
	LNSD-800SW(A)/RD/BL	800	830	LNSD-2300SW(A)/RD/BL	2,300	2,330
	LNSD-900SW(A)/RD/BL	900	930	LNSD-2400SW(A)/RD/BL	2,400	2,430
	LNSD-1000SW(A)/RD/BL	1,000	1,030	LNSD-2500SW(A)/RD/BL	2,500	2,530
	LNSD-1100SW(A)/RD/BL	1,100	1,130	LNSD-2600SW(A)/RD/BL	2,600	2,630
	LNSD-1200SW(A)/RD/BL	1,200	1,230	LNSD-2700SW(A)/RD/BL	2,700	2,730
	LNSD-1300SW(A)/RD/BL	1,300	1,330	LNSD-2800SW(A)/RD/BL	2,800	2,830
	LNSD-1400SW(A)/RD/BL	1,400	1,430	LNSD-2900SW(A)/RD/BL	2,900	2,930
	LNSD-1500SW(A)/RD/BL	1,500	1,530	LNSD-3000SW(A)/RD/BL	3,000	3,030

You can inquire using our website.

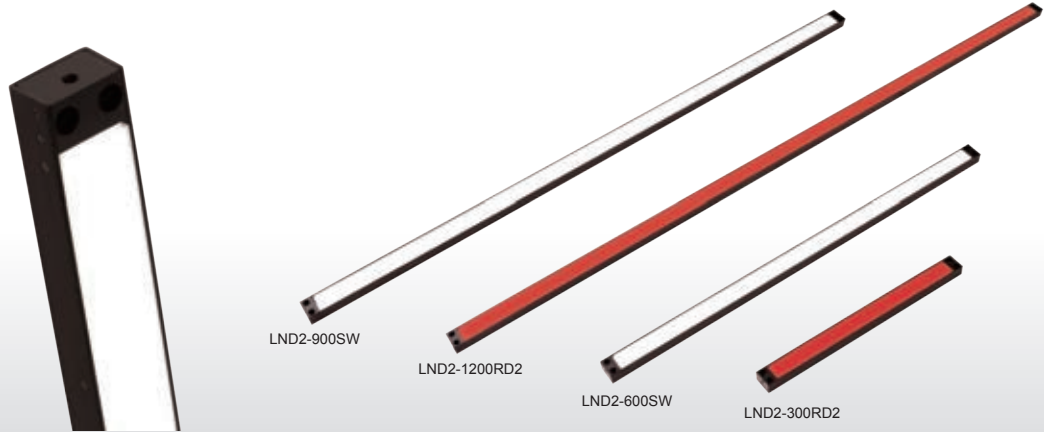
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNL2	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Other Products
Macro Lens	Other Products
LDF-NB	Other Products



Provides diffused light from an emitting surface equipped with LEDs in straight lines



Applications

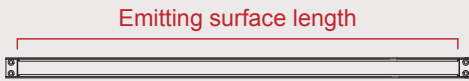
Inspection for damage or dents in metal cylindrical parts, inspection for damage or dents in motor shafts, inspection for foreign material on clear film, etc.

Suitable for All Types of Line Sensor Inspections

This line light achieves brightness equivalent to a fluorescent lamp while keeping the price down.

Emitting surface length

You can select from 101 mm, 201 mm, 301 mm, 401 mm, 503 mm, 603 mm, 703 mm, 803 mm, 903 mm, 1003 mm, 1103 mm and 1,203 mm.



For a custom order, we can create an emitting surface with a length with a 100 mm pitch.

LED color

For emitted LED color, we have a lineup consisting of:

Red and White

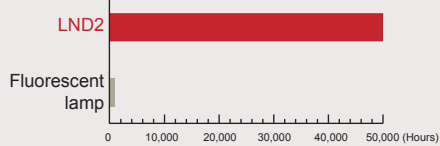
Select your light unit based on the details of your inspections.

For a custom order, we can create LEDs that emit blue, green, IR, or UV.

Can replace fluorescent lights

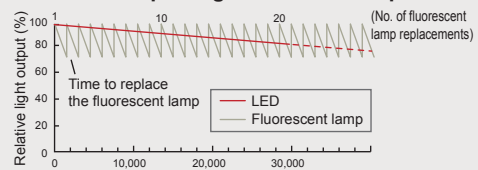
LEDs have a long service life, so the bulbs don't burn out like fluorescent lamps, thus reducing costs for lamp replacement and work hours.

Comparison of service life between the LND2 (red) and a fluorescent lamp



Calculated values with an intensity of 100%, ambient temperature of 25°C and a light output drop of up to 50%. Actual values may vary. Assuming the service life of a fluorescent lamp is 1,500 hours.

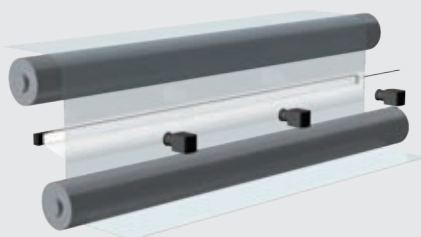
Change in the amount of light from the LEDs and work hours for replacing fluorescent lamps



Imaging comparing the change in LED light and a fluorescent lamp that is replaced every 1,500 hours.

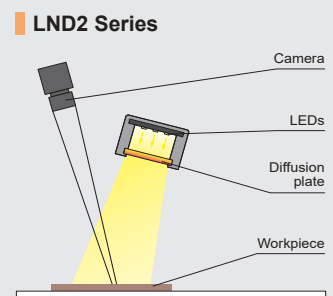
Applications

Inspection for foreign material on clear films



Example Configuration

Provides diffused light with a high degree of uniformity by mounting LEDs with high density.



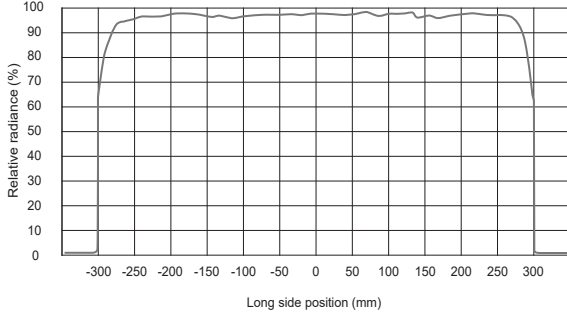
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

**Data** (Representative Example)

The graph included is for reference only. Actual values may vary.

**LND2-600SW**

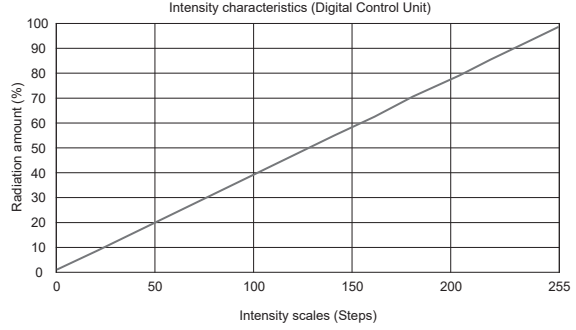
Relative radiance distribution



The graph included is for reference only. Actual values may vary.

**LND2-300SW**

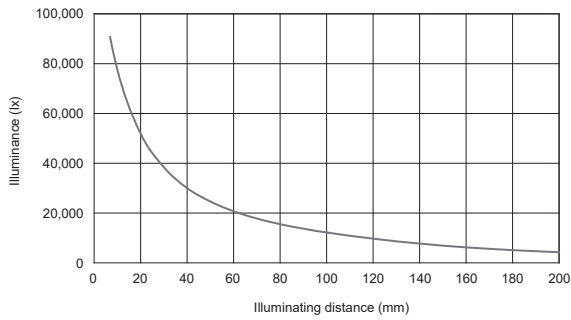
Output characteristics



Actual measurement values using the PD3 Series digital control unit. Results for individual products may vary.

**LND2-300SW**

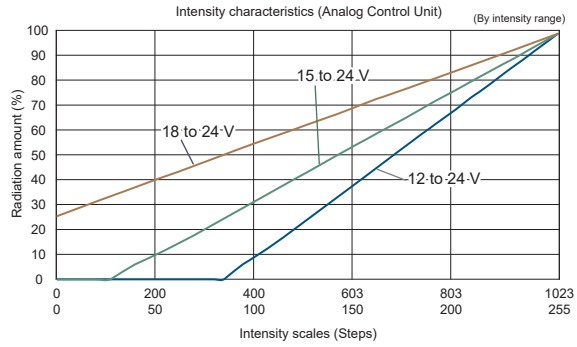
Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance. Results for individual products may vary.

**LND2-900SW**

Output characteristics



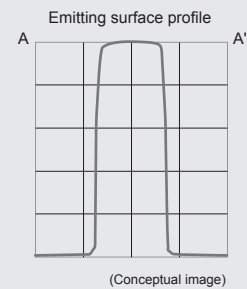
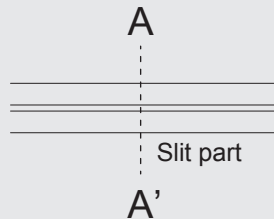
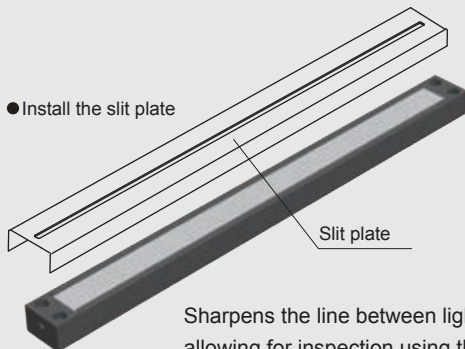
Actual measurement values using the PSB4-30024-PEI analog control unit. Results for individual products may vary. Measured in each voltage range because the PSB4-30024-PEI analog control unit has a switching function for the lower limit of output voltage.

**Custom Order Example**

Please contact your CCS sales representative.

E.g.: Slit specifications (Install a slit plate on the emitting surface)

Result: Uses the edge of the emitting surface, effective for inspections for dents and fish eyes where the change in the surface shape is slight.



Sharpens the line between light and dark for the light unit, allowing for inspection using the emitting surface's edge.

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFXV3	Coaxial
LFXV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LN	Line (Diffused)
LN	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

# LND2 Series



Refer to our website for product details.

CCS LND2

Search



## Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Extension Cables	Recommended Control Units	Weight
LND2-100SW	White	24 V / 5.8 W	5,500 K	FCB** Straight Cable  FRCB Robot Cable  <small>*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.</small>	PD4    PD3**  POD**1	140 g
LND2-200SW		24 V / 12 W				170 g
LND2-300SW		24 V / 18 W				200 g
LND2-400SW		24 V / 24 W				250 g
LND2-500SW		24 V / 29 W				300 g
LND2-600SW		24 V / 35 W				360 g
LND2-700SW		24 V / 41 W				405 g
LND2-800SW		24 V / 47 W				455 g
LND2-900SW		24 V / 53 W				505 g
LND2-1000SW		24 V / 58 W				560 g
LND2-1100SW		24 V / 64 W				615 g
LND2-1200SW		24 V / 70 W				670 g
LND2-100RD2*3	Red	24 V / 7.6 W	630 nm	FCB** Straight Cable  FRCB Robot Cable  <small>*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.</small>	PD4    PD3**  POD	140 g
LND2-200RD2*3		24 V / 16 W				170 g
LND2-300RD2		24 V / 23 W				200 g
LND2-400RD2*3		24 V / 31 W				250 g
LND2-500RD2*3		24 V / 38 W				300 g
LND2-600RD2		24 V / 46 W				360 g
LND2-700RD2*3		24 V / 53 W				405 g
LND2-800RD2*3		24 V / 61 W				455 g
LND2-900RD2		24 V / 69 W				505 g
LND2-1000RD2*3		24 V / 76 W				560 g
LND2-1100RD2*3		24 V / 84 W				615 g
LND2-1200RD2		24 V / 91 W				670 g

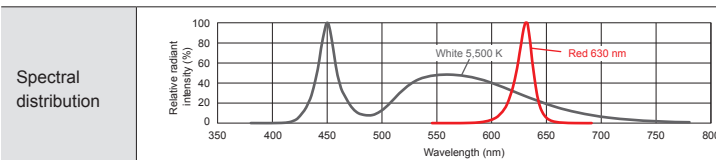
Extension Cables ▶ P.236

List of Control Unit Specifications ▶ P.311

\*1 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/gr/pod>  
 \*2 Custom products with a PWM frequency of 500 kHz are available for PD3 Series digital control unit. Please contact your CCS sales representative for details.  
 \*3 This is a custom order product. Contact your local sales office for details.

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative. In addition, we accept custom orders, such as changes to the LED color (blue/green/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

## LED Properties



Lens filters suitable for each wavelength are available. For details about the lens filter, refer to P.371.

Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

## Extension Cables

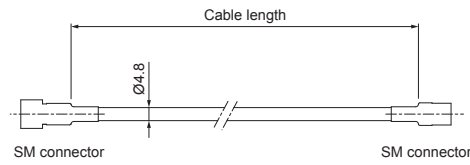
### FCB

Model Name	Cable Length
FCB-1	1 m
FCB-2	2 m
FCB-3	3 m
FCB-5	5 m

### FRCB

Model Name	Cable Length
FRCB-1	1 m
FRCB-2	2 m
FRCB-3	3 m
FRCB-5	5 m

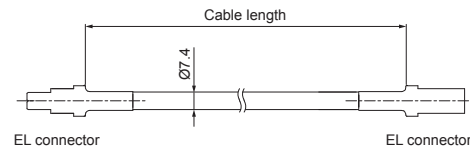
(mm)



Cable permitted bending radius: 28.8 mm

### FCB-EL2

Model Name	Cable Length
FCB-1-EL2	1 m
FCB-2-EL2	2 m
FCB-3-EL2	3 m
FCB-5-EL2	5 m
FCB-10-EL2	10 m
FCB-15-EL2	15 m

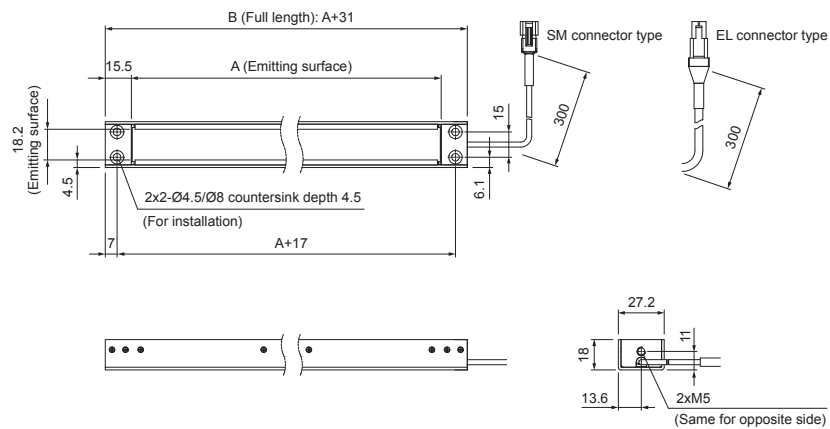


Cable permitted bending radius: 29.6 mm

The above cable permitted bending radii are reference values. Actual values may vary.

## Dimensions (mm)

Model Name	
SM connector type	LND2-100
	LND2-200
	LND2-300
	LND2-400
	LND2-500
	LND2-600
EL connector type	LND2-700
	LND2-800
	LND2-900
	LND2-1000
	LND2-1100
	LND2-1200



Model name		A (Emitting surface)	B (Full length)	Model name		A (Emitting surface)	B (Full length)
White	LND2-100SW	101	132	Red	LND2-100RD2	101	132
	LND2-200SW	201	232		LND2-200RD2	201	232
	LND2-300SW	301	332		LND2-300RD2	301	332
	LND2-400SW	401	432		LND2-400RD2	401	432
	LND2-500SW	503	534		LND2-500RD2	503	534
	LND2-600SW	603	634		LND2-600RD2	603	634
	LND2-700SW	703	734		LND2-700RD2	703	734
	LND2-800SW	803	834		LND2-800RD2	803	834
	LND2-900SW	903	934		LND2-900RD2	903	934
	LND2-1000SW	1,003	1,034		LND2-1000RD2	1,003	1,034
	LND2-1100SW	1,103	1,134		LND2-1100RD2	1,103	1,134
	LND2-1200SW	1,203	1,234		LND2-1200RD2	1,203	1,234

You can change the connectors of the light unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website.

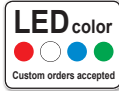
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNLP2 Coaxial Units LNFP-FN LNLN-HK	Line (Convergent)
LNLD LND2 LNV LNFV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products



Provides diffused light evenly using an original optical design



Built to order

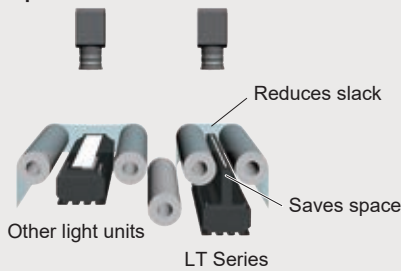
This is a made-to-order product. For quotes and details, contact your CCS sales representative.

Applications

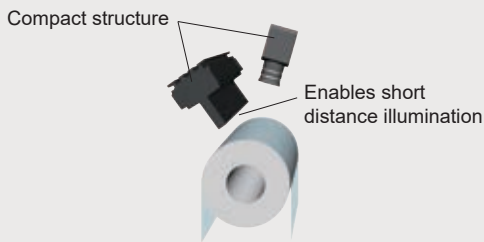
Fish eye inspection on clear film, scratch inspection on film sheets, inspection for cracks or damage on wafers, visual inspection of metal foil sheets, shrinkage inspection of resin, etc.

Imaging with a unique illumination structure

By reducing the space between rolls, you can improve inspection speed



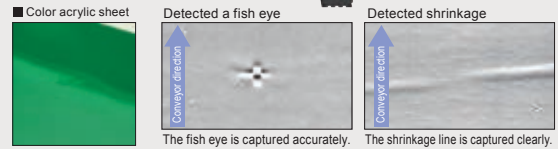
Allows for inspections where the light is installed at a narrow angle with the camera



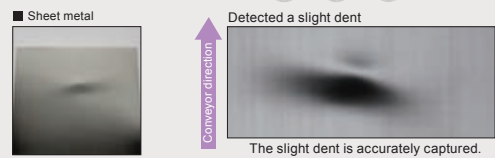
Achieves Both High Uniformity and High Brightness

We achieved both high uniformity and high brightness through our unique optical system. It can perform highly-accurate inspections depending on the scan rate, and supports a wide range of uses.

Transmission imaging



Imaging using specular reflection



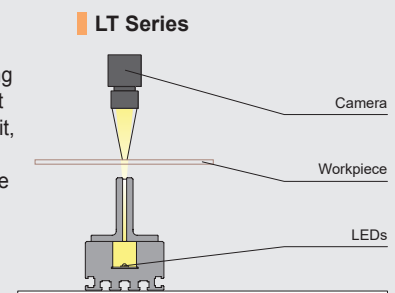
Applications

Inspection for fish eyes, scratches, and foreign materials on clear films



Example Configuration

By employing a mechanism where the emitting surface sticks out from the main unit, it's possible to place the tip close to the workpiece, even in a narrow space.

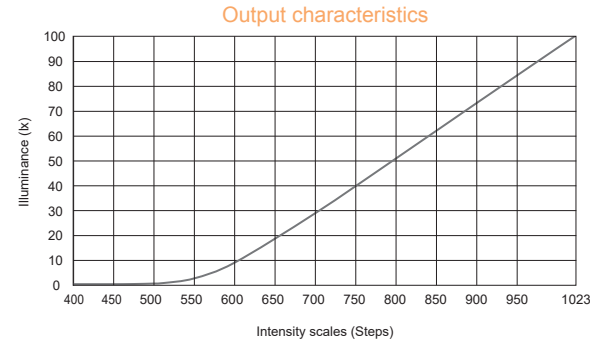
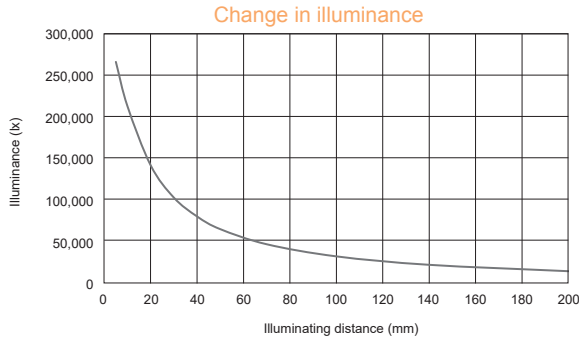
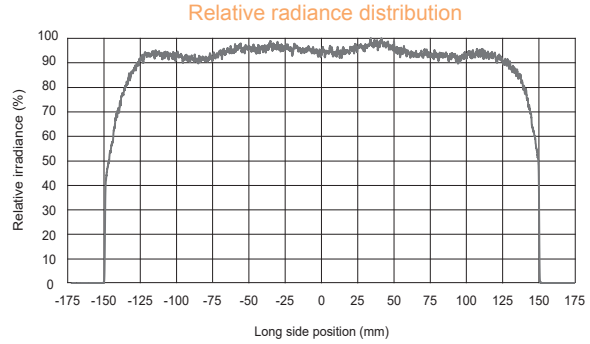
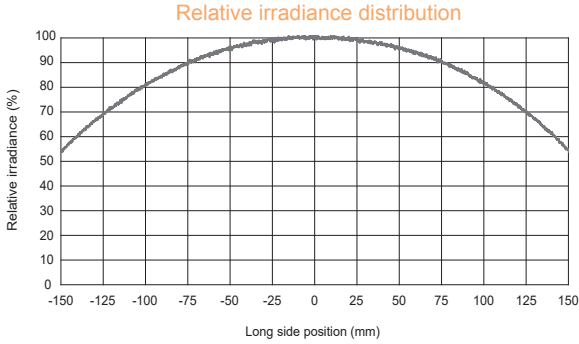


Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

**Data** (Representative Example)

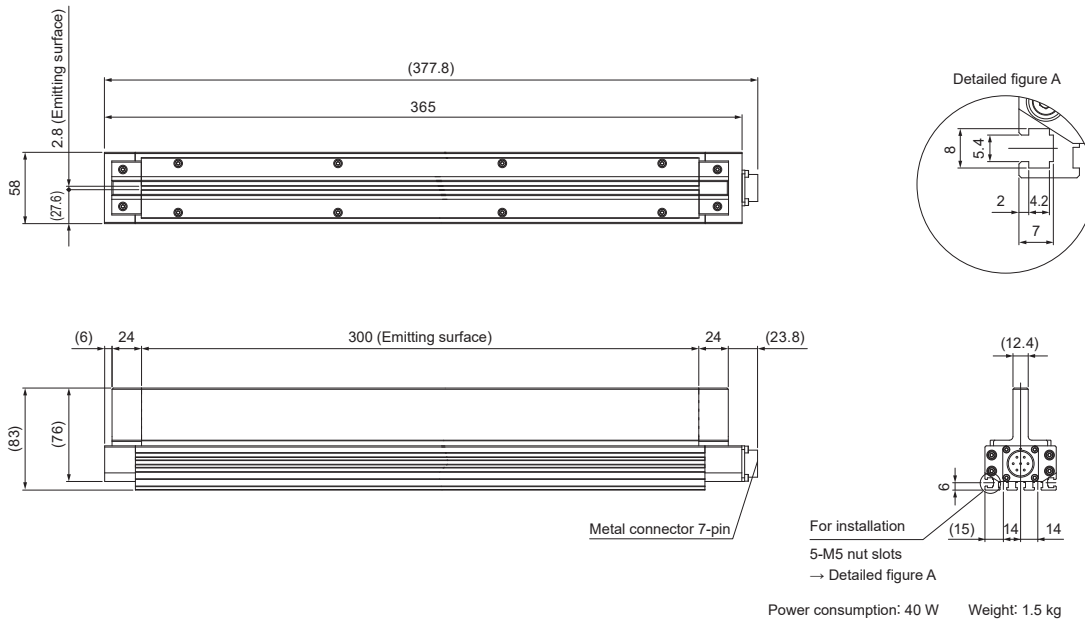
The graph included is for reference only. Actual values may vary.

**LT-300SW-BTMI**



**Dimensions (mm)**

**LT-300SW-BTMI**



The emitting surface is available in sizes of 100 mm units. It is also possible to make other customized requests including changes to the LED colors (Red, Blue, IR, UV, etc.) and changes to the size of the width of the light emitting surface. Contact your local sales office for details.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses Macro Lens
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Provides diffused light from the same axis as the camera

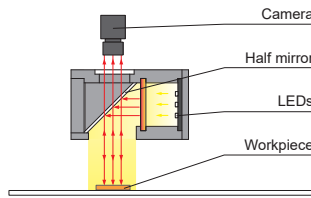


**Applications** Inspection for gaps between electronic parts on circuit boards, inspection for faults in lead frames, inspection for stains attached to sheet metal, etc.

Features

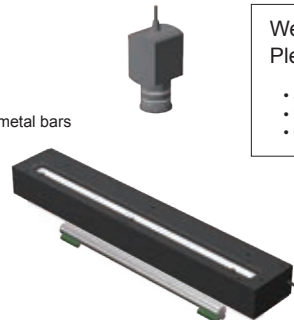
Line coaxial illumination. Allows for imaging with a line sensor camera.

Example configuration (LNV-300 Series)



Applications

Inspection for dents on metal bars



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight								
LNV-300RD2	Red	24 V / 19 W	630 nm	-	<table border="1"> <tr> <td>FCB*4 Straight Cable</td> <td>FCB-W*5 2-branch Cable</td> </tr> <tr> <td>FCB-F 4-branch Cable</td> <td>FRCB Robot Cable</td> </tr> </table>	FCB*4 Straight Cable	FCB-W*5 2-branch Cable	FCB-F 4-branch Cable	FRCB Robot Cable	<table border="1"> <tr> <td>PD4</td> <td>PD3*1</td> </tr> <tr> <td>CC-ST-1024*3</td> <td>POD*2</td> </tr> </table> <p>*3 Can only use green.</p>	PD4	PD3*1	CC-ST-1024*3	POD*2	550 g
FCB*4 Straight Cable	FCB-W*5 2-branch Cable														
FCB-F 4-branch Cable	FRCB Robot Cable														
PD4	PD3*1														
CC-ST-1024*3	POD*2														
LNV-300SW2	White	24 V / 13 W	5,500 K												
LNV-300BL2	Blue	24 V / 13 W	470 nm												
LNV-300GR2	Green	24 V / 9.9 W	525 nm												

LED Properties: Spectral Distribution ▶ P.408

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

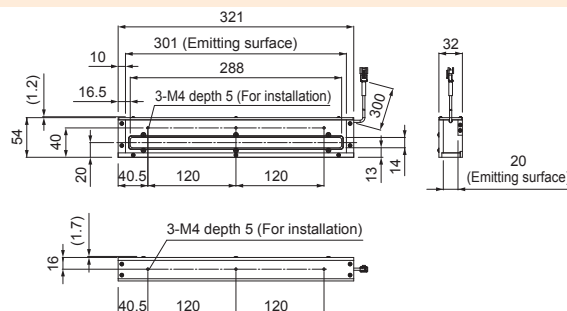
\*1 Custom products with a PWM frequency of 500 kHz are available for PD3 Series digital control unit. Please contact your CCS sales representative for details.

\*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. \*5 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

LNV-300RD2/SW2/BL2/GR2



You can change the connectors of the LightUnit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.



Refer to our website for product details.

CCS LFXV



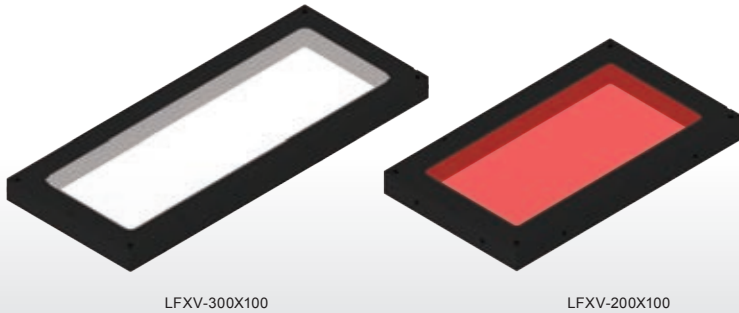
Diffused Lighting

Flat Dome Lights

LFXV Series Rectangular Type

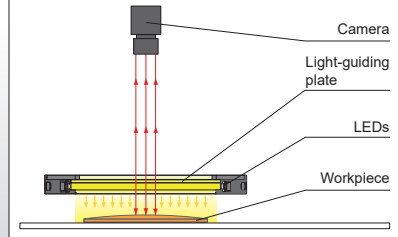
Flat Dome Lights

Recreates the effect of dome lights using thin case design  
Long type compatible with line sensor camera applications



**Example Configuration (LFXV-300X100)**

Dimples added to the light-guiding plate disperse light over the workpiece



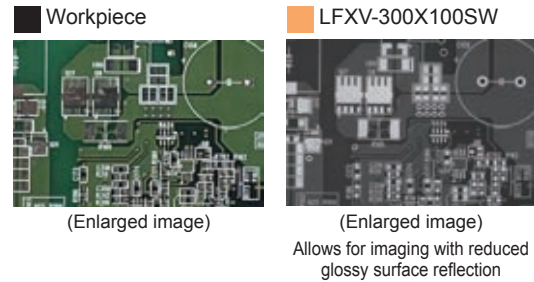
**Applications** PCB exterior inspection, metal plate defect inspection, non-woven fabric cleanliness inspection, etc.

**Features**

**16 mm thick housing helps reduce the size of equipment designs**



**Imaging example (PCB exterior inspection)**



**Lineup**

Model Name*1	Input Voltage	Power Consumption				Options	Extension Cables	Recommended Control Units	Weight
		RD (Red)	SW (White)	BL (Blue)	IR860 (Infrared)				
LFXV-200X100□□	24 V	23 W	30 W	28 W	17 W	—	FCB*3 Straight Cable FCB-W*4 2-Branch Cable FCB-F 4-Branch Cable FRCB Robot Cable	PD4 PD3 POD*2	870 g
LFXV-300X100□□		31 W	40 W	38 W	23 W				1,300 g

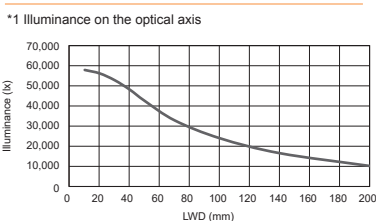
\*1 □□ in the model name contains the LED color. (RD: Red, SW: White, BL: Blue, IR860: Infrared)  
 \*2 For information on the combination of light units and POD Series control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>  
 \*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.  
 \*4 The cables with a model name that ends with "-EL2" are not included.  
 Extension Cables ▶ P.383    Control Unit Selection Guide ▶ P.309    List of Control Unit Specifications ▶ P.311  
 Refer to P.116 for external dimensions diagrams.

**Data: Graph of the Change in Illuminance and Uniformity (Representative Example)**

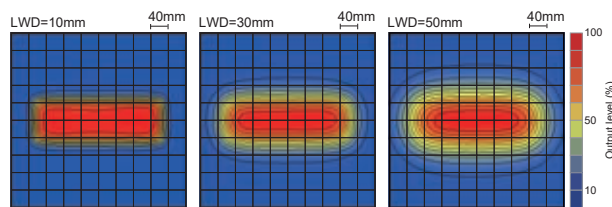
**LFXV-300X100SW**

The data included is for reference only. Actual values may vary.

**Graph of the change in illuminance\*1**



**Uniformity (Relative irradiance)**



You can inquire using our website.

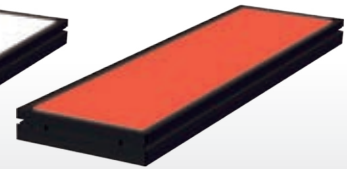
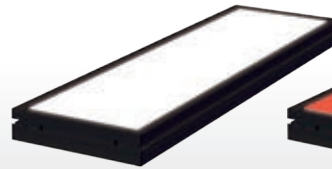
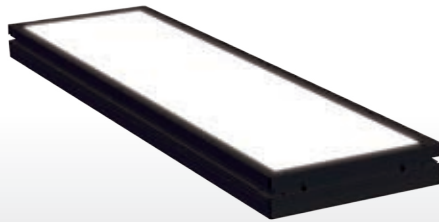
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL2 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products



Flat light units with a 300 x 75 mm emitting surface  
Applicable to inspection of rectangular workpieces  
and imaging with a line sensor camera



TH2-300X75SW

TH2-300X75RD

Applications

Inspection of the appearance of cylindrical containers or square-shaped workpieces, inspection for stains and foreign material on non woven fabrics, fault inspection of films, inspection of the appearance of glass, etc.

Features

Flat light suitable for rectangular workpieces.  
Also applicable to inspections with a line sensor camera.



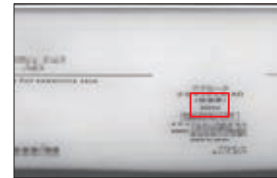
Inspection with a line sensor camera

Imaging example:  
Imaging the appearance  
of a cylindrical container



Workpiece:  
Cylindrical container (cosmetics)

TH2-300X75SW



The state of the surface can be imaged. Also the printed text is clearly recognized.

Lineup

Model Name	LED Color	Power Consumption	Peak Wavelength / Correlated Color Temperature	Options	Extension Cables	Recommended Control Units	Weight
TH2-300X75RD	Red	24 V / 54 W	635 nm	-	FCB-EL2 Straight Cable  FCB-W-EL2 2-Branch Cable	PD4-12024 PD3-10024-8 POD-22024-4-PEI* PSB4	650 g
TH2-300X75SW	White	24 V / 68 W	5,800 K				

\*1 For information on the combination of light units and POD Series control unit, please refer to our website.  
<https://www.ccs-grp.com/lnk/qr/pod>

Extension Cables ▶ P.383

Control Unit Selection Guide ▶ P.309

List of Control Unit Specifications ▶ P.311

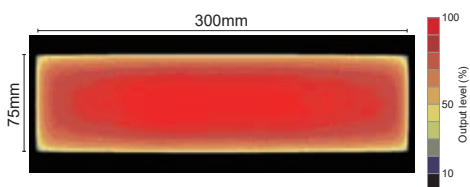
Refer to P.94 for external dimensions diagrams.

Data (Representative Example)

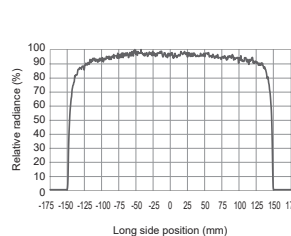
The data included is for reference only. Actual values may vary.

TH2-300X75SW

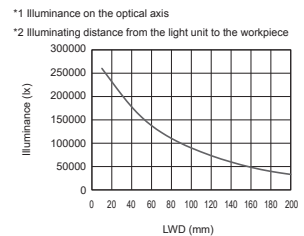
Uniformity (Relative irradiance)



Relative radiance distribution



Illuminance graph (LWD characteristics)

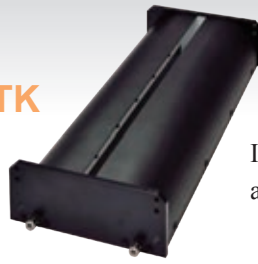


\*1 Illuminance on the optical axis

\*2 Illuminating distance from the light unit to the workpiece

# High Power Dome Line Light

**HLDN-600BLTN55ARELTK**

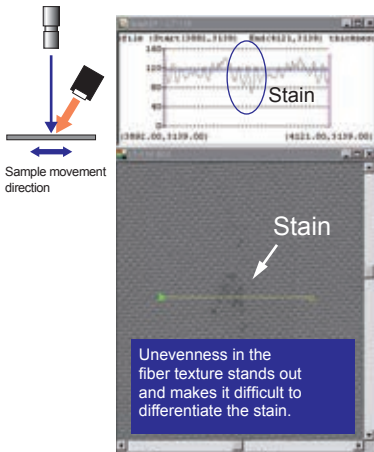


**Built to order**  
This is a made-to-order product. For quantities and details, contact your CCS sales representative.

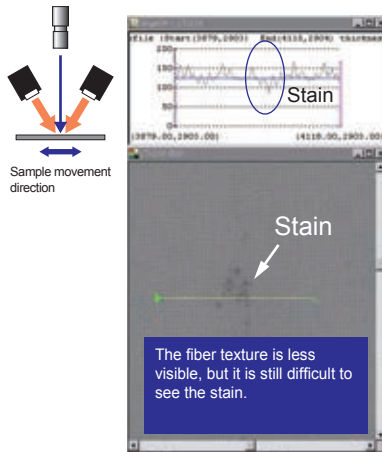
Increased light output by adding forced air cooling.

## Example 1: Detecting Stains on Fibers

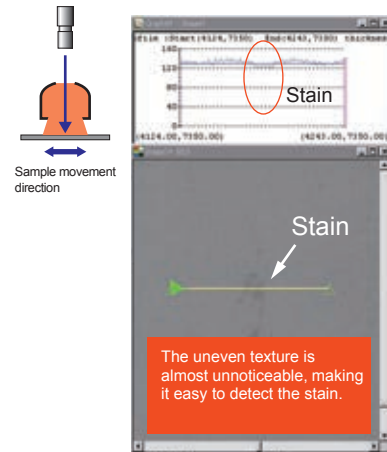
**Diffused Reflection: One Side**



**Diffused Reflection: Both Sides**

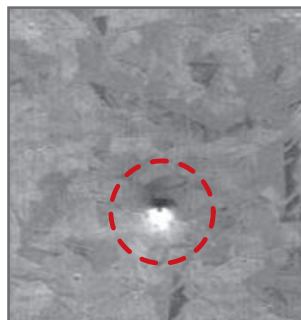


**High Power Dome Line Light**



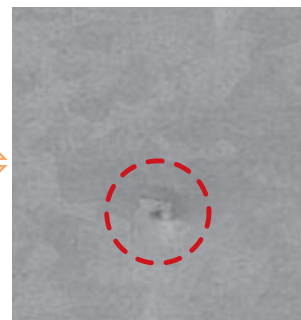
## Example 2: Imaging the Appearance of Galvanized Sheet Steel

**Line Light**



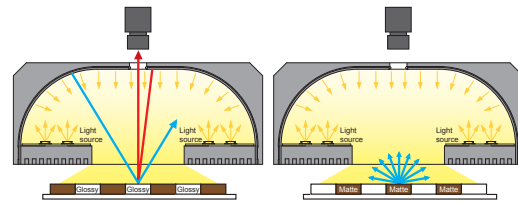
It's difficult to differentiate between minute defects and surface differences.

**High Power Dome Line Light**



The diffused light from the dome light negates differences in the surface pattern, making it possible to notice defects.

Surface imaging of galvanized sheet steel using a high power dome line light



**Glossy section**

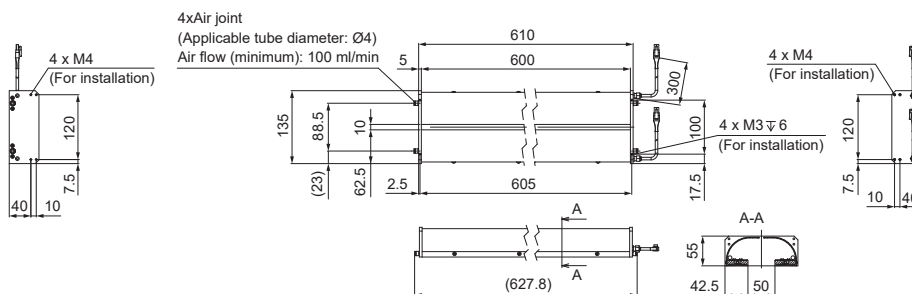
Only the light emitted from near the roof of the reflective panel is reflected on the glossy section of the inspected item with semi-specular reflection and is captured by the camera.

**Matte section**

The matte section has a lower reflection rate compared to the glossy section. The light emitted from the whole reflective panel is diffused on the matte section and is captured by the camera.

## Dimensions (mm)

HLDN-600BLTN55ARELTK



**Other Examples**

- HLDN-150SW-TN55AREL
- HLDN-300SW-TN55AREL
- HLDN-400SW-TN55ARDV4

Custom orders for size and emitting color are available. Please feel free to contact us.

You can inquire using our website.

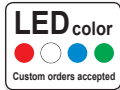
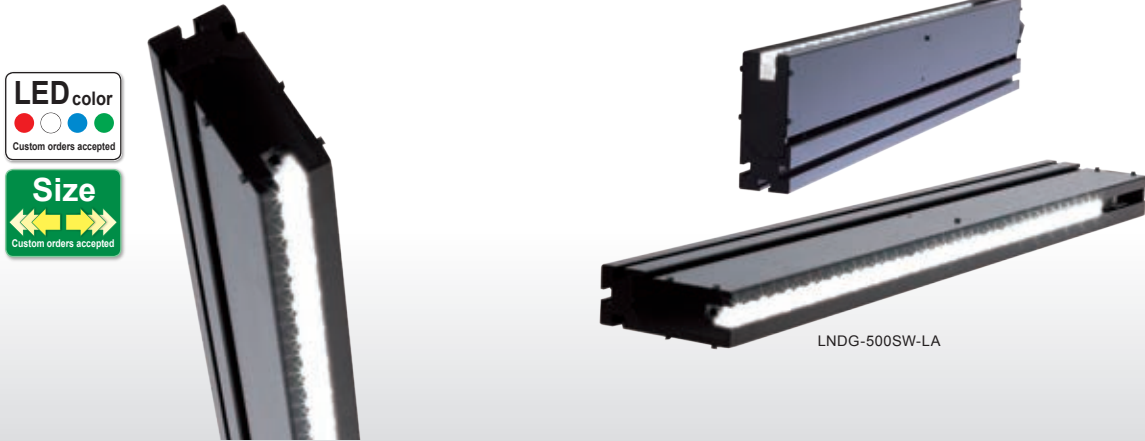
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNLD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNLDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
Other Products	Products
LDF-NB	Products



Achieves angled illumination using an original optical design  
Bumps and subtle vertical wrinkles can be detected

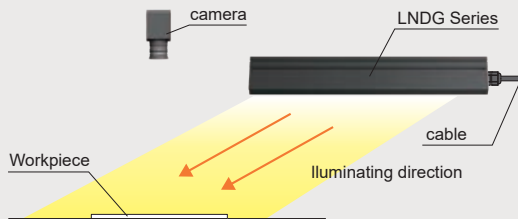


**Applications** Inspection for vertical wrinkles in paper, vertical striations in cardboard, vertical wrinkles and folding in non-woven fabric, wrinkles in bonded sheets, etc

**Achieves Angled Illumination**

The LNDG Series enables detection of bumps and subtle vertical wrinkles, which were difficult to detect with conventional line sensor lights, in paper or non-woven fabric that disperses light.

**Conceptual image of angled illumination**

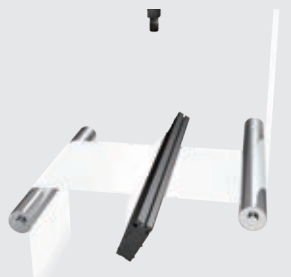


**Other features**

- 1) Fan-less (Natural air cooling)
  - 2) Error detection support
  - 3) Emitting surface 300 to 3,000 mm long (can be made in units of 100 mm)
- Error detection is a function included with the PSCC Series, the recommended control units.

**Applications**

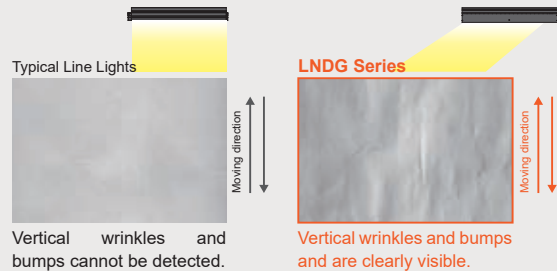
**Inspection for vertical wrinkles in paper labels**



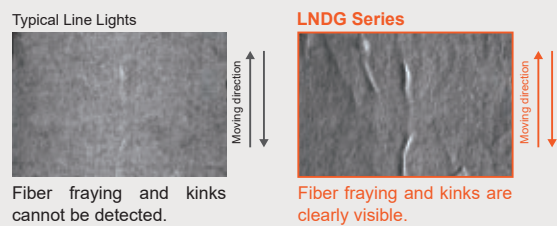
**Bumps and Subtle Vertical Wrinkles Can Be Detected**

**Imaging samples**

**Inspections for vertical wrinkles in paper labels**



**Inspecting non-woven fabric for defects**



**Example Configuration**

Achieves angled illumination using an original optical design. Lights for line sensors suitable for detecting irregularities and vertical wrinkles in the flow direction in a workpiece that diffuses light.



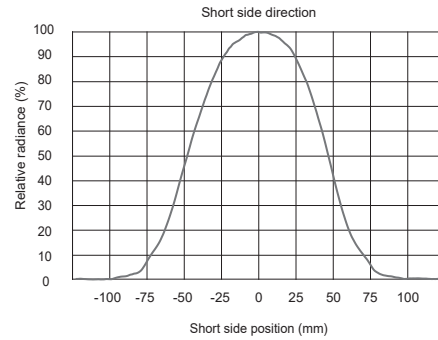
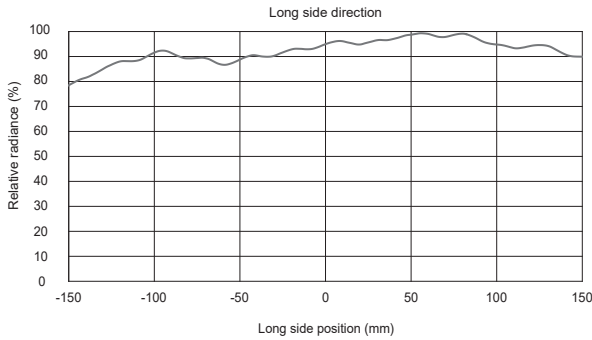
Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	<b>LNDG</b> LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

**Data** (Representative Example)

The graph included is for reference only. Actual values may vary.

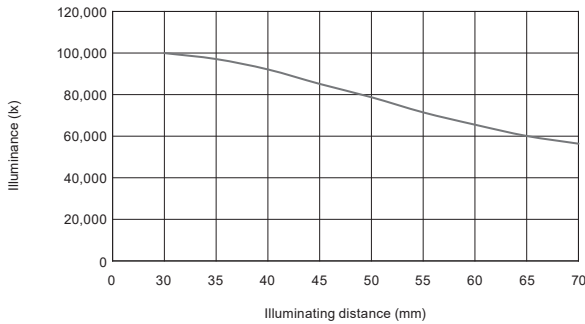
**LNDG-500SW-LA**

Relative radiance distribution



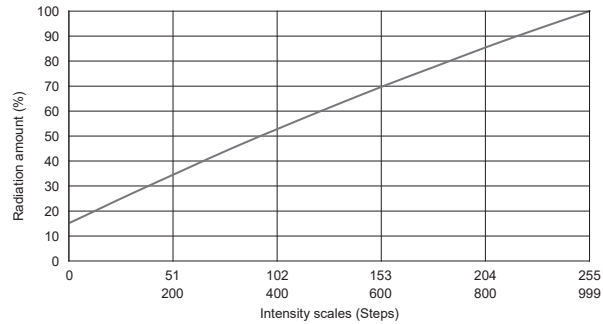
The graph included is for reference only. Actual values may vary.

Change in illuminance



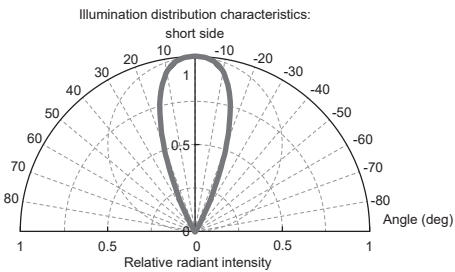
Actual measurement values at 100% intensity, in the center part of emission in each illuminating distance. Results for individual products may vary.

Graph of the correlation between intensity and output



Actual measurement values using the PSCC-30048(A) analog control unit. Results for individual products may vary.

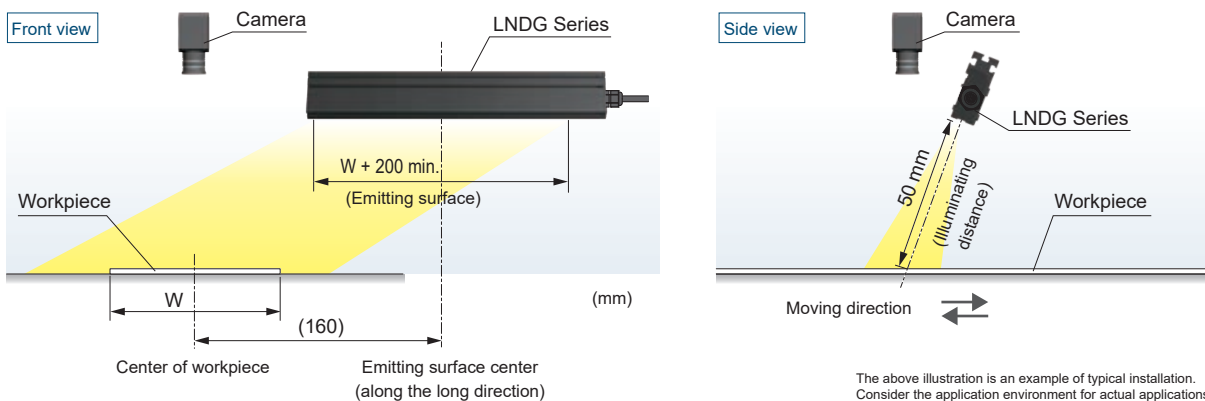
Characteristic of the illumination distribution



These graphs are for reference only. Actual values may vary.

**Select a Light Unit That Is Longer Than the Width of the Workpiece.**

The LNDG Series light unit emits light at an angle to enable detecting "vertical wrinkles and bumps." When you select a light unit, select one that is at least 200 mm longer than the width of the workpiece to be inspected. We recommend a illuminating distance of 50 mm to obtain sufficient illumination.



The above illustration is an example of typical installation. Consider the application environment for actual applications.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL3 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LNV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNSI2 LNSI LNSI-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products



Refer to our website for product details.

CCS LNDG

Search



Lineup

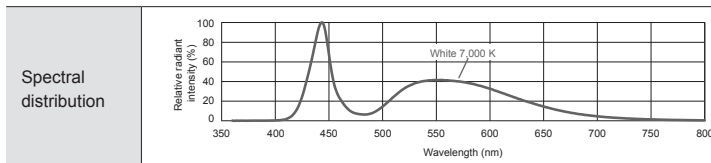
Model Name	LED Color	Power Consumption	Correlated Color Temperature	Extension Cables	Recommended Control Units	Weight
LNDG-300SW-LA	White	39 W	7,000 K			1,600 g
LNDG-400SW-LA		52 W				2,000 g
LNDG-500SW-LA		65 W				2,400 g
LNDG-600SW-LA		78 W				2,800 g
LNDG-700SW-LA		91 W				3,200 g
LNDG-800SW-LA		104 W				3,600 g
LNDG-900SW-LA		117 W				4,000 g
LNDG-1000SW-LA		130 W				4,400 g
LNDG-1100SW-LA		143 W				4,800 g
LNDG-1200SW-LA		156 W				5,200 g
LNDG-1300SW-LA		169 W				5,500 g
LNDG-1400SW-LA		182 W				5,900 g
LNDG-1500SW-LA		195 W				6,300 g
LNDG-1600SW-LA		208 W				6,700 g
LNDG-1700SW-LA		221 W				7,100 g
LNDG-1800SW-LA		234 W				7,500 g
LNDG-1900SW-LA		247 W				7,900 g
LNDG-2000SW-LA		260 W				8,300 g
LNDG-2100SW-LA		273 W				8,700 g
LNDG-2200SW-LA		286 W				9,100 g
LNDG-2300SW-LA		299 W				9,500 g
LNDG-2400SW-LA		312 W				9,900 g
LNDG-2500SW-LA		325 W				10,300 g
LNDG-2600SW-LA		338 W				10,700 g
LNDG-2700SW-LA		351 W				11,100 g
LNDG-2800SW-LA		364 W				11,500 g
LNDG-2900SW-LA		377 W				11,900 g
LNDG-3000SW-LA		390 W				12,300 g

Extension Cables ▶ P.246

PSCC Series Product Page ▶ P.365

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative. In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.). Inquire at your CCS sales representative for details.

LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

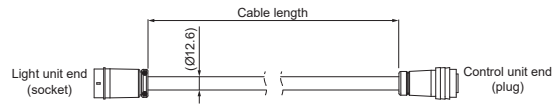
- Ring (Direct)
  - LDR2
  - LDR2-LA
  - LDR-LA1
  - SQR
  - SQR-TP
- Ring (Convergent/Diffused)
  - HLDR3
  - HPR2
  - LFR
  - LKR
  - FPR
- Square
  - FPQ3
- Bar
  - LDL2
  - LDLB
  - LDL3
  - LB
- Flat
  - TH2 (5 types)
  - LFL
- Dome
  - HPD2
  - LDM2
  - LAV
  - PDM
  - LFXV
  - LFX3
  - LFX3-PT
- Coaxial
  - LFV3
  - LFV3-G
- Strobe Coaxial
  - MSU
  - MFU
- Water-proof
  - HLDR-IP
  - HSL-PCL
- UV / Violet
  - UV3/VL3
  - UV
  - LNSP-UV3-FN
- Infrared
  - IR2 (Under 1000-nm Type)
  - IR (Over 1000-nm Type)
  - CIR
- Reference Light Source
  - LDF-RLS
- Intensity Control
  - IU
- Spot, Etc.
  - HLV3
  - LV
  - HFS/HFR
  - HLV3-22-4-NR
  - HLV3-3M-RGB-4
  - PFBR-600SW2
  - PFBR-150
  - SLG-150V-CCS
  - PFBR3(A)
- Line (Convergent)
  - LNLP
  - LNSP2
  - Coaxial Units
  - LNSP-FN
  - LN/LN-HK
- Line (Diffused)
  - LNSD
  - LND2
  - LT
  - LNV
  - LFXV (Rectangular Type)
  - TH2 (Rectangular Type)
- Line (Oblique Angle)
  - LNDG
  - LNIS2
  - LNIS
  - LNIS-FN
- Lenses
  - Telecentric Lens
  - Macro Lens
- Other Products
  - LDF-NB

## Extension Cables

Necessary when connecting the light unit to the recommended control unit, the PSCC Series. Make sure to connect the appropriate extension cables to the control unit.

### QCBM

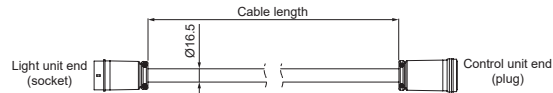
Model name	Cable length	Weight	Applicable Control Unit
QCBM-2	2 m	800 g	PSCC-30048(A)
QCBM-3	3 m	1,000 g	
QCBM-5	5 m	1,500 g	
QCBM-10	10 m	2,700 g	
QCBM-20	20 m	5,000 g	



Cable permitted bending radius: 75.6 mm

### QCB

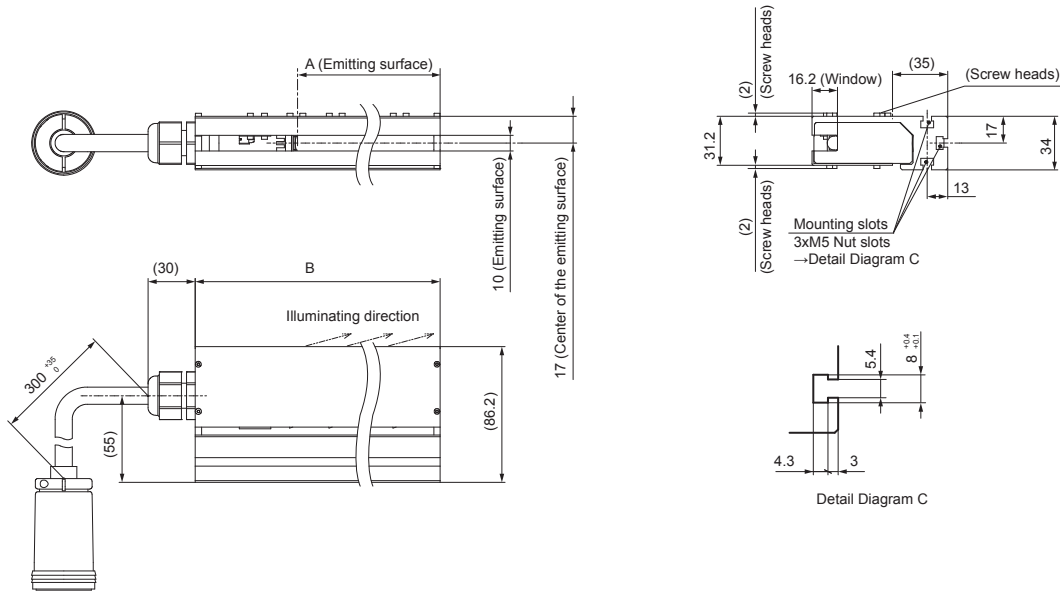
Model name	Cable length	Weight	Applicable Control Unit
QCB-2	2 m	1,100 g	PSCC-60048(A)
QCB-3	3 m	1,500 g	
QCB-5	5 m	2,400 g	
QCB-10	10 m	4,600 g	
QCB-20	20 m	8,900 g	



Cable permitted bending radius: 99 mm

The above cable permitted bending radii are reference values. Actual values may vary.

## Dimensions (mm)



Model name	A (Emitting surface)	B (Full length)	Model name	A (Emitting surface)	B (Full length)
LNDG-300SW-LA	300	365	LNDG-1700SW-LA	1,700	1,765
LNDG-400SW-LA	400	465	LNDG-1800SW-LA	1,800	1,865
LNDG-500SW-LA	500	565	LNDG-1900SW-LA	1,900	1,965
LNDG-600SW-LA	600	665	LNDG-2000SW-LA	2,000	2,065
LNDG-700SW-LA	700	765	LNDG-2100SW-LA	2,100	2,165
LNDG-800SW-LA	800	865	LNDG-2200SW-LA	2,200	2,265
LNDG-900SW-LA	900	965	LNDG-2300SW-LA	2,300	2,365
LNDG-1000SW-LA	1,000	1,065	LNDG-2400SW-LA	2,400	2,465
LNDG-1100SW-LA	1,100	1,165	LNDG-2500SW-LA	2,500	2,565
LNDG-1200SW-LA	1,200	1,265	LNDG-2600SW-LA	2,600	2,665
LNDG-1300SW-LA	1,300	1,365	LNDG-2700SW-LA	2,700	2,765
LNDG-1400SW-LA	1,400	1,465	LNDG-2800SW-LA	2,800	2,865
LNDG-1500SW-LA	1,500	1,565	LNDG-2900SW-LA	2,900	2,965
LNDG-1600SW-LA	1,600	1,665	LNDG-3000SW-LA	3,000	3,065

LDR2	Ring (Direct)	
LDR2-LA		
LDR-LA1		
SQR		
SQR-TP	Ring (Convergent/Diffused)	
HLDR3		
HPR2		
LFR		
LKR	Square	
FPR		
FPQ3		
LDL2		Bar
LDLB		
HLDL3		
LB	Flat	
TH2 (5 types)		
LFL		
HPD2		Dome
LDM2		
LAV		
PDM		
LFXV		
LFX3	Coaxial	
LFX3-PT		
LFV3	Coaxial	
LFV3-G		
MSU	Strobe	
MFU		
PF	Water-proof	
HLDR-IP		
HSL-PCL	UV / Violet	
UV3/VL3		
UV	Infrared	
LNSP-UV3-FN		
IR2 (Under 1000-nm Type)		
IR (Over 1000-nm Type)		
CIR	Reference Light Source	
LDF-RLS		
IU	Spot, Etc.	
HLV3		
LV		
HFS/HFR		
HLV3-22-4-NR		
HLV3-3M-RGB-4	Line (Convergent)	
PFBR-600SW2		
PFBR-150		
SLG-150V-CCS	Line (Diffused)	
PFB3(A)		
LNSD		
LND2		
LT	Line (Oblique Angled)	
LNV		
LFXV (Rectangular Type)		
TH2 (Rectangular Type)		
LNDG	Line Lenses Macro Lens	
LNIS2		
LNIS		
LNIS-FN		
Telecentric Lens	Other Products	
LDF-NB		

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



# Achieves bi-directional angled illumination using an original optical design



LNIS2-300SW

**Applications**

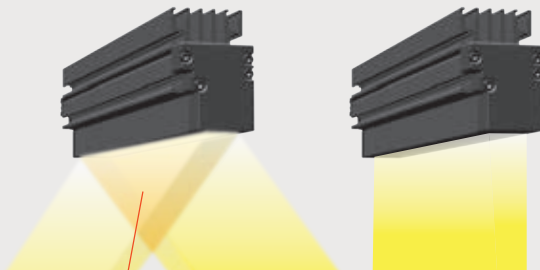
Streak inspection of sheet surfaces, scratch inspection on clear film, scratch inspection on glass panels, damage inspection on sheet metal, etc.

## Achieves Bi-Directional Angled Illumination

The LNIS2 Series is a completely new concept product that was developed to detect "moving-direction scratches," which were difficult to detect with conventional line sensor lights.

### Difference between bi-directional angled illumination and conventional illumination

Cross angled illumination      Conventional illumination



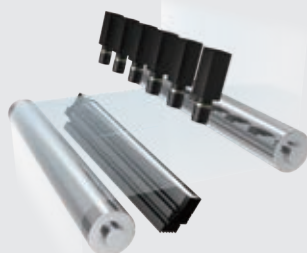
Recommended illuminating range

### Other features

- 1) Fan-less (Natural air cooling)
- 2) Compact design
- 3) Emitting surface 100 to 1,000 mm long (can be made in units of 100 mm)

## Applications

### Inspection for scratches on transparent films

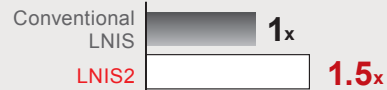


## Brightness Up to 1.5x

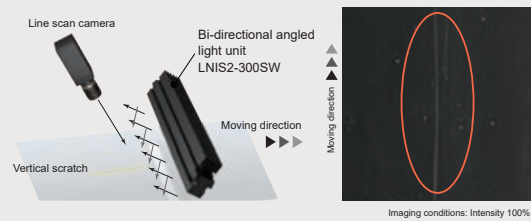
The LNIS2 Series has achieved the brightness up to 1.5x that of the conventional LNIS Series. This expands the range of applications.

### Higher output power than the conventional products

#### Illuminance comparison graph



### Imaging of vertical scratches (moving-direction scratches) on film



Emphasizes only the vertical scratch. Even if you increase the output, the background noise and brightness do not increase.

The data included is for reference only. Actual values may vary.

## Example Configuration

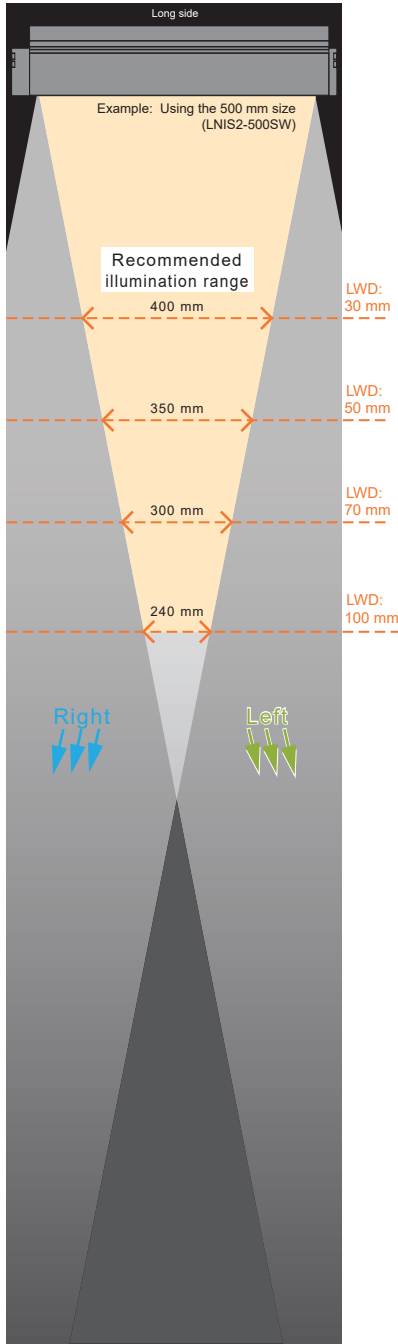
Achieves bi-directional angled illumination using an original optical design. Line sensor light suitable for detecting scratches in the flow direction.



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Strobe	MSU MFU
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFBR3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG <b>LNIS2</b> LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



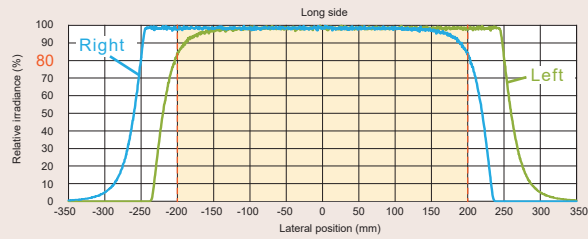
**Recommended Illumination Range** Light unit in use: LNIS2-500SW



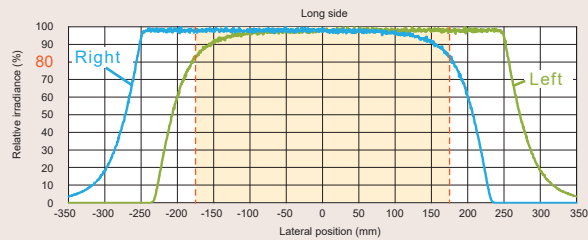
LWD is the distance from the line light to the workpiece.

**Graph of effective illumination range**

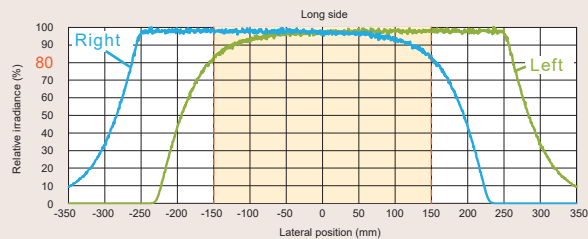
**Illuminating distance: 30 mm** The values are based on the simulation. Actual values may vary.



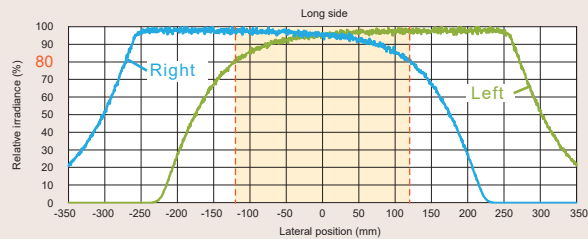
**Illuminating distance: 50 mm** The values are based on the simulation. Actual values may vary.



**Illuminating distance: 70 mm** The values are based on the simulation. Actual values may vary.



**Illuminating distance: 100 mm** The values are based on the simulation. Actual values may vary.



The section on the graph where "Left" and "Right" overlap is the section where light from the left and right sides overlaps. The recommended illumination range is the range in this overlapping section where each illuminance is ensured for 80% or higher of the peak.

These graphs are for reference only. Actual values may vary.

**Table of the recommended illumination range** (Where illuminance of the left/right beam is 80% of the peak value or more.) (mm)

LWD: Illuminating distance	Emitting surface length									
	100	200	300	400	500	600	700	800	900	1,000
10	40	140	240	340	440	540	640	740	840	940
30		100	200	300	400	500	600	700	800	900
50		50	150	250	350	450	550	650	750	850
70			100	200	300	400	500	600	700	800
100			40	140	240	340	440	540	640	740

These values are based on the simulation. Actual range of the effective illumination depends on your imaging environment.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL1 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LNIS2 Series

Refer to our website for product details.



CCS LNIS2

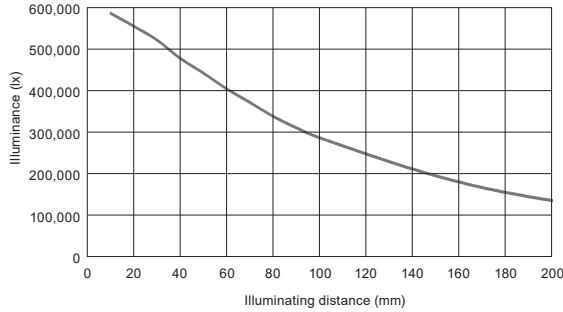
Search



## Data (Representative Example)

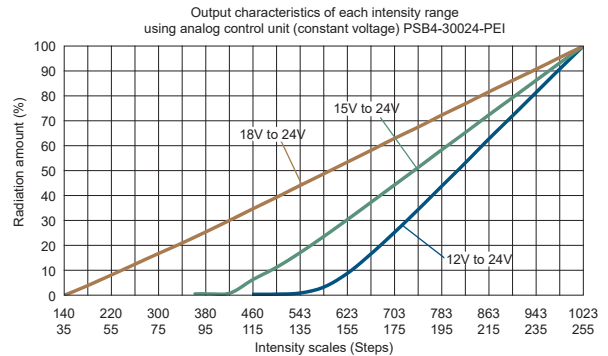
The graph included is for reference only. Actual values may vary.

### LNIS2-500SW Change in illuminance



Actual measurement values at the center of the emitting surface, 100% intensity. Results for individual products may vary.

### Graph of the correlation between intensity and output

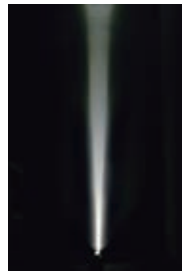
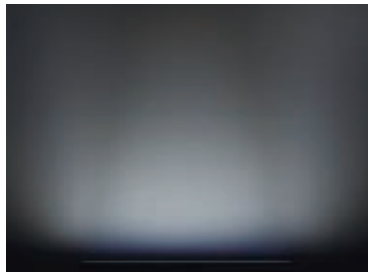


Actual measurement values using PSB4-30024-PEI analog control unit. Results for individual products may vary.

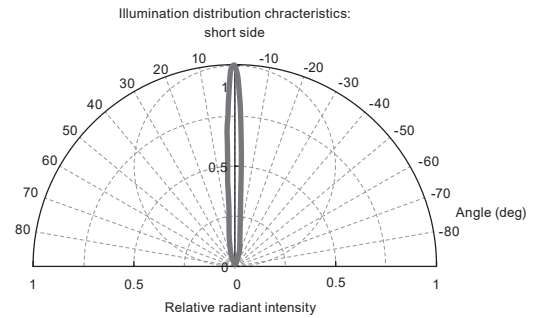
Measured in each voltage range because the PSB4-30024-PEI analog control unit has a switching function for the lower limit of output voltage.

### LNIS2-400SW Characteristics of the illumination distribution

Measuring direction: long side      Measuring direction: short side



These graphs are for reference only. Actual values may vary.



## Lineup

Model Name	LED Color	Power Consumption	Correlated Color Temperature	Extension Cables	Recommended Control Units	Weight
LNIS2-100SW	White	24 V / 18 W	6,500 K	FCB-EL2	PSB4 PD4-12024 PD3-10024-8"	400 g
LNIS2-200SW		24 V / 35 W				700 g
LNIS2-300SW		24 V / 52 W				1,000 g
LNIS2-400SW		24 V / 69 W				1,300 g
LNIS2-500SW		24 V / 86 W				1,600 g
LNIS2-600SW		24 V / 103 W				1,900 g
LNIS2-700SW		24 V / 120 W				2,200 g
LNIS2-800SW		24 V / 138 W				2,500 g
LNIS2-900SW		24 V / 155 W				2,800 g
LNIS2-1000SW		24 V / 172 W				3,100 g

\* Custom products with a PWM frequency of 500 kHz are available for PD3 Series digital control unit. Please contact your CCS sales representative for details.

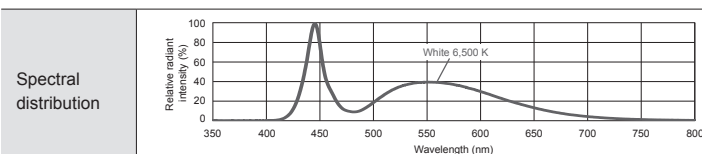
Extension Cables ▶ P.250

List of Control Unit Specifications ▶ P.311

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.

In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

Digital Catalogs

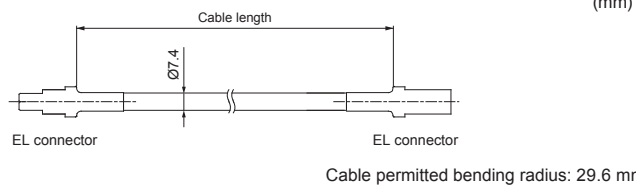
Register to use them.

## Extension Cables

Necessary when connecting the light unit to the recommended control unit.

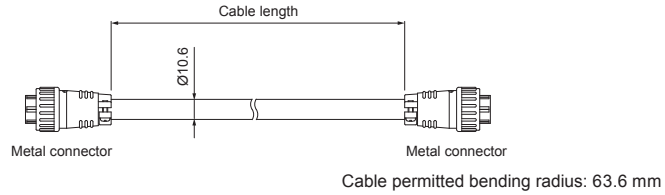
### FCB-EL2

Model Name	Cable Length	Weight
FCB-1-EL2	1 m	85 g
FCB-2-EL2	2 m	165 g
FCB-3-EL2	3 m	245 g
FCB-5-EL2	5 m	405 g
FCB-10-EL2	10 m	805 g
FCB-15-EL2	15 m	1,205 g



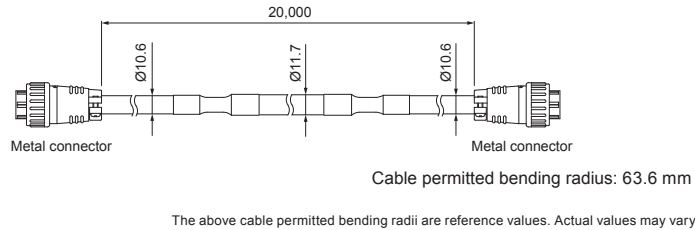
### FCB-1.25SQ-ME7

Model Name	Cable Length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g

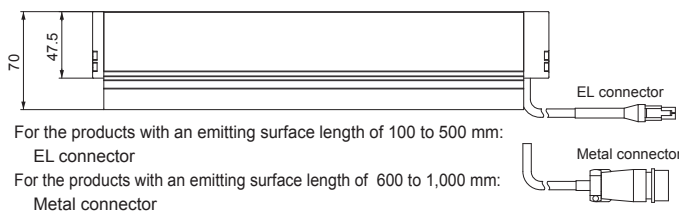
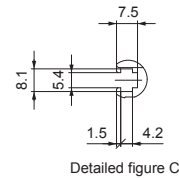
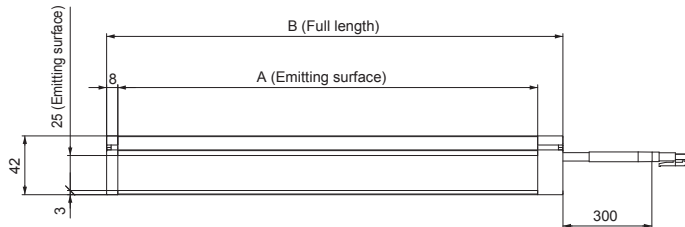


### FCB-20-2.0SQ-ME7

Model Name	Cable Length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



## Dimensions (mm)



For the products with an emitting surface length of 100 to 500 mm:

EL connector

For the products with an emitting surface length of 600 to 1,000 mm:

Metal connector

CCS accepts custom orders for such as the position where the light cable comes out of the case. Please contact your CCS sales representative for details.

Model Name	A (Emitting surface)	B (Full length)	Connector
LNIS2-100SW	100	126	EL connector
LNIS2-200SW	200	226	
LNIS2-300SW	300	326	
LNIS2-400SW	400	426	
LNIS2-500SW	500	526	

Model Name	A (Emitting surface)	B (Full length)	Connector
LNIS2-600SW	600	626	Metal connector
LNIS2-700SW	700	726	
LNIS2-800SW	800	826	
LNIS2-900SW	900	926	
LNIS2-1000SW	1,000	1,026	

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNFP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNLDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



## Achieves bi-directional angled illumination using an original optical design



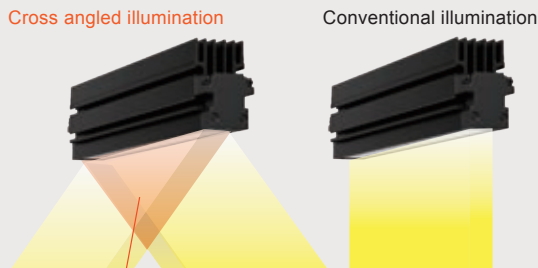
**Applications**

Streak inspection of sheet surfaces, scratch inspection on clear film, scratch inspection on glass panels, damage inspection on sheet metal, etc.

### Achieves Bi-Directional Angled Illumination

The LNIS Series is a completely new concept product that was developed to detect "moving-direction scratches," which were difficult to detect with conventional line sensor lights.

#### Difference between bi-directional angled illumination and conventional illumination



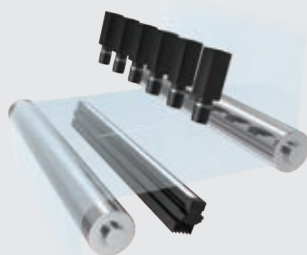
Recommended illuminating range

#### Other features

- 1) Fan-less (Natural air cooling)
- 2) Compact design
- 3) Emitting surface 100 to 1,000 mm long (can be made in units of 100 mm)

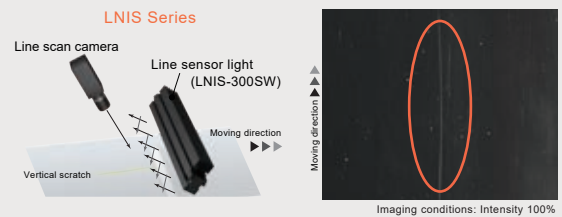
### Applications

#### Inspection for scratches on transparent films



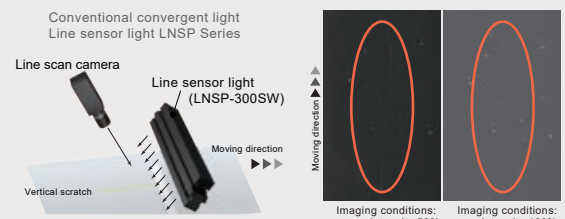
### For detecting scratches in the flow direction such as streaks

#### Imaging of vertical scratches (moving-direction scratches) on film



Imaging conditions: Intensity 100%

Emphasizes only the vertical scratch. Even if you increase the output, the background noise and brightness do not increase.

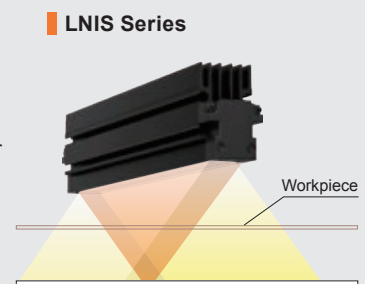


Imaging conditions: Intensity 50%      Imaging conditions: Intensity 100%

It's difficult to highlight only the vertical scratch. If you increase the output, the background noise and brightness increase but the contrast ratio does not.

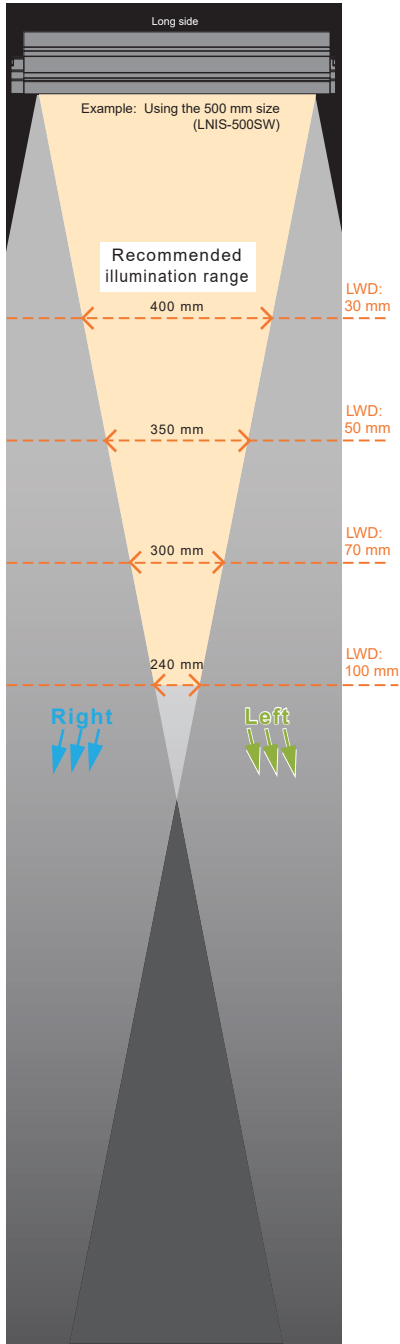
### Example Configuration

Achieves bi-directional angled illumination using an original optical design. Line sensor light suitable for detecting scratches in the flow direction.



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 <b>LNIS</b> LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB

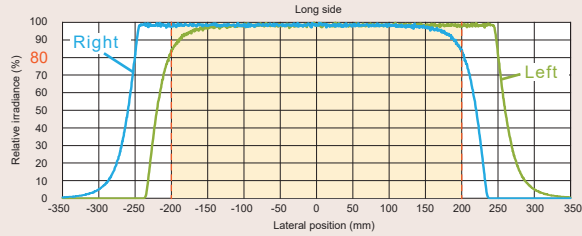
**Recommended Illumination Range** Light unit in use: LNIS-500SW



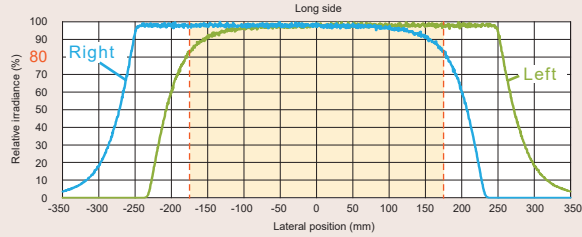
LWD is the distance from the line light to the workpiece.

**Graph of effective illumination range**

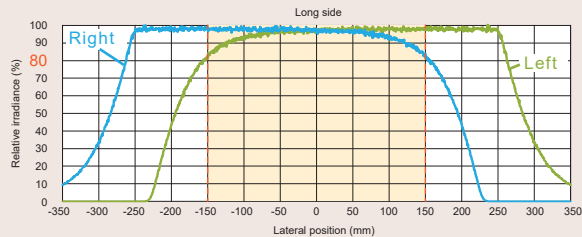
**Illuminating distance: 30 mm** The values are based on the simulation. Actual values may vary.



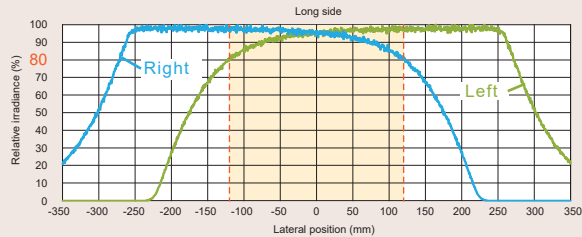
**Illuminating distance: 50 mm** The values are based on the simulation. Actual values may vary.



**Illuminating distance: 70 mm** The values are based on the simulation. Actual values may vary.



**Illuminating distance: 100 mm** The values are based on the simulation. Actual values may vary.



The section on the graph where "Left" and "Right" overlap is the section where light from the left and right sides overlaps. The recommended illumination range is the range in this overlapping section where each illumination is ensured for 80% or higher of the peak.

These graphs are for reference only. Actual values may vary.

**Table of the recommended illumination range** (Where illuminance of the left/right beam is 80% of the peak value or more.) (mm)

LWD: Illuminating distance	Emitting surface length									
	100	200	300	400	500	600	700	800	900	1,000
10	40	140	240	340	440	540	640	740	840	940
30		100	200	300	400	500	600	700	800	900
50		50	150	250	350	450	550	650	750	850
70			100	200	300	400	500	600	700	800
100			40	140	240	340	440	540	640	740

These values are based on the simulation. Actual range of the effective illumination depends on your imaging environment.

LDR2 LDR-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFX3 LFX3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNL1 LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNSI2 LNIS LNSI-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# LNIS Series

Refer to our website for product details.



CCS LNIS

Search

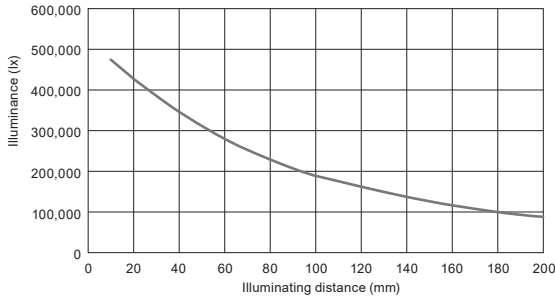


## Data (Representative Example)

The graph included is for reference only. Actual values may vary.

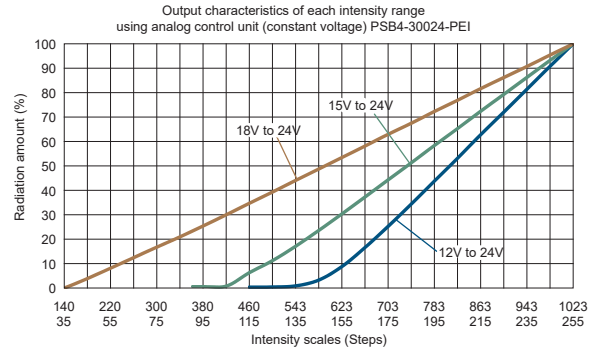
### LNIS-500SW

#### Change in illuminance



Actual measurement values at the center of the emitting surface, 100% intensity. Results for individual products may vary.

#### Graph of the correlation between intensity and output



Actual measurement values using PSB4-30024-PEI analog control unit. Results for individual products may vary.

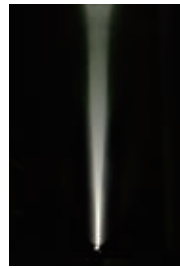
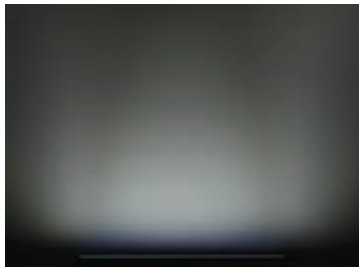
Measured in each voltage range because the PSB4-30024-PEI analog control unit has a switching function for the lower limit of output voltage.

### LNIS-400SW

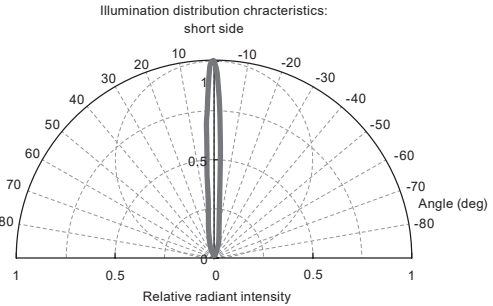
#### Characteristics of the illumination distribution

Measuring direction: long side

Measuring direction: short side



These graphs are for reference only. Actual values may vary.



## Lineup

Model Name	LED Color	Power Consumption	Correlated Color Temperature	Extension Cables	Recommended Control Units	Weight
LNIS-100SW	White	24 V / 21 W	5,800 K	<a href="#">FCB-1.25SQ-ME7</a> <a href="#">FCB-20-2.0SQ-ME7</a>	<a href="#">PSB4</a>	430 g
LNIS-200SW		24 V / 41 W				760 g
LNIS-300SW		24 V / 61 W				1,090 g
LNIS-400SW		24 V / 81 W				1,420 g
LNIS-500SW		24 V / 101 W				1,740 g
LNIS-600SW		24 V / 121 W				2,070 g
LNIS-700SW		24 V / 142 W				2,400 g
LNIS-800SW		24 V / 162 W				2,730 g
LNIS-900SW		24 V / 182 W				3,050 g
LNIS-1000SW		24 V / 202 W				3,380 g

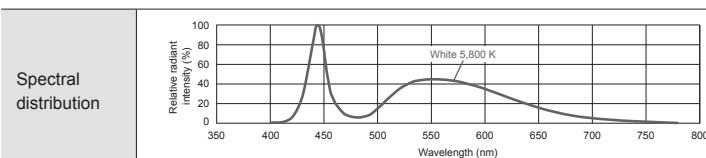
[Extension Cables ▶ P.254](#)

[PSB4 Series Product Page ▶ P.367](#)

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.

In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.

The data included is for reference only. Actual values may vary.

Various technical documents available.

[PDF Drawings](#)

[DXF Drawings](#)

[Product Brochures](#)

[Instruction Guides](#)

[3D CAD](#)

[Data Sheets](#)

[Imaging Examples](#)

[Digital Catalogs](#)

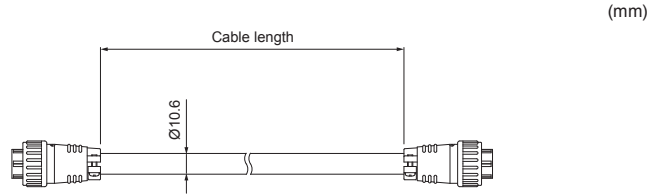
[Register to use them.](#)

## Extension Cables

It is required when connecting the light and recommended control unit PSB4 Series.

### FCB-1.25SQ-ME7

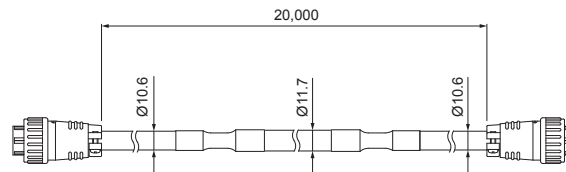
Model Name	Cable Length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g



Cable permitted bending radius: 63.6 mm

### FCB-20-2.0SQ-ME7

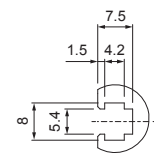
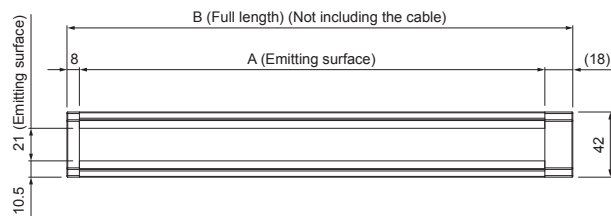
Model Name	Cable Length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



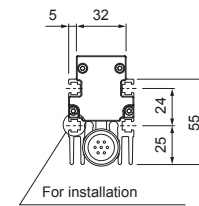
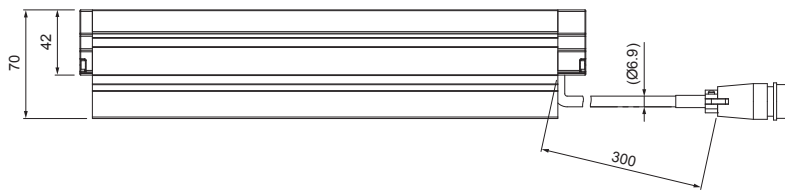
Cable permitted bending radius: 63.6 mm

The above cable permitted bending radii are reference values. Actual values may vary.

## Dimensions (mm)



Detailed figure C



For installation  
4, M5 nut slots  
→ Detailed figure C

Model Name	A (Emitting surface)	B (Full length)	Model Name	A (Emitting surface)	B (Full length)
LNIS-100SW	100	126	LNIS-600SW	600	626
LNIS-200SW	200	226	LNIS-700SW	700	726
LNIS-300SW	300	326	LNIS-800SW	800	826
LNIS-400SW	400	426	LNIS-900SW	900	926
LNIS-500SW	500	526	LNIS-1000SW	1,000	1,026

LDR2	Ring (Direct)
LDR2-LA	
LDR-LA1	
SQR	
SQR-TP	Ring (Convergent/Diffused)
HLDR3	
HPR2	
LFR	
LKR	Square
FPR	
FPQ3	Bar
LDL2	
LDLB	
HLDL3	
LB	Flat
TH2 (5 types)	
LFL	
HPD2	
LDM2	
LAV	Dome
PDM	
LFXV	
LFX3	
LFX3-PT	Coaxial
LFV3	
LFV3-G	Coaxial
MSU	
MFU	Strobe
PF	
HLDR-IP	Water-proof
HSL-PCL	
UV3/VL3	UV / Violet
UV	
LNSP-UV3-FN	Infrared
IR2 (Under 1000-nm Type)	
IR (Over 1000-nm Type)	
CIR	
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	
HFS/HFR	
HLV3-22-4-NR	
HLV3-3M-RGB-4	
PFBR-600SW2	
PFBR-150	
SLG-150V-CCS	Line (Convergent)
PFB3(A)	
LNLP	Line (Diffused)
LNSP2	
Coaxial Units	
LNSP-FN	
LN/LN-HK	Line (Oblique Angled)
LNIS	
LNIS-FN	
Telecentric Lens	
Macro Lens	
LDF-NB	Other Products

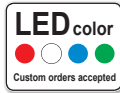
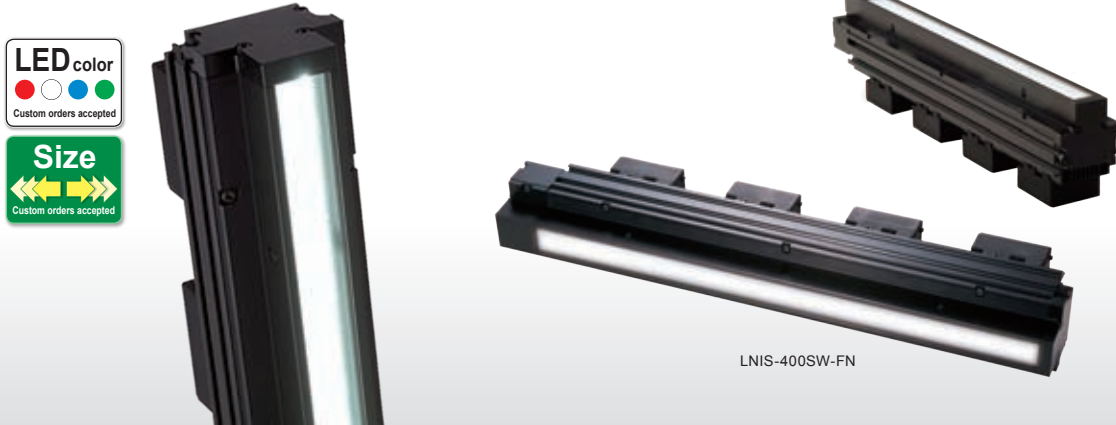
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



Achieves bi-directional angled illumination using an original optical design  
High output type which adopts forced air (fan)

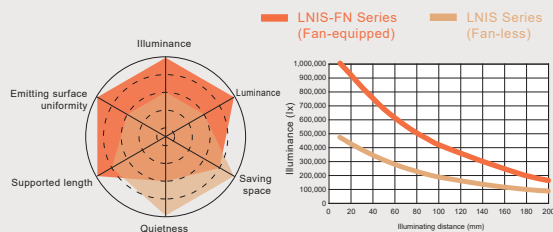


**Applications** Streak inspection on sheet surfaces, scratch inspection on clear film, scratch inspection on glass panels, damage inspection on sheet metal, etc.

**➤ Illuminance of 678,000 lx Using Forced Air (Fan)**

This is a high-output (fan-equipped) type of the LNIS Series, developed to detect moving-direction scratches such as streaks. It meets the needs of customers who require even brighter lights.

**Comparison between LNIS and LNIS-FN**



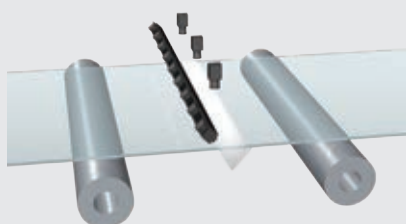
**Other features**

- 1) Emitting surface 100 to 1,500 mm long (can be made in units of 100 mm)
- 2) Due to the constant-current drive system, the emitting surface has uniformity higher than the LNIS Series.

The graph included is for reference only. Actual values may vary.

**➤ Applications**

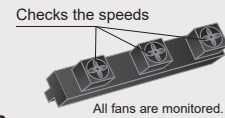
**Inspection for scratches on plate glass**



**➤ Avoid Trouble with Error Detection**

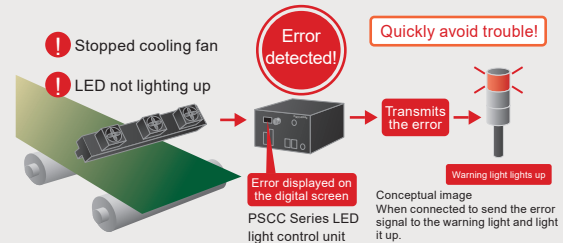
**1) Error detection for cooling fans**

An error is detected should a fault occur, such as insufficient speed or a stop in the cooling fans.



**2) Error detection for the LEDs**

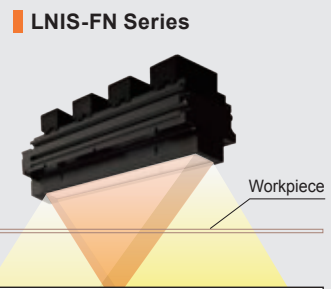
Detects dead LEDs due to an open in the light unit circuit or a shorted LED.



Error detection is a function included with the PSCC Series, the recommended control units.

**➤ Example Configuration**

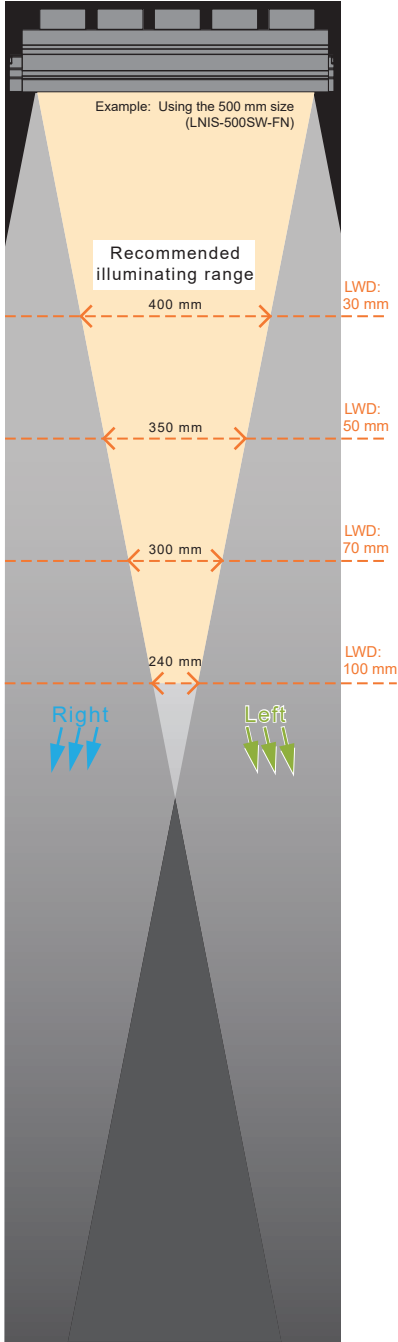
Achieves bi-directional angled illumination using an original optical design. High-output line sensor light (fan air-cooled type) suitable for detecting scratches in the flow direction.



Ring (Direct)	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Ring (Convergent/Diffused)	HLDR3 HPR2 LFR LKR FPR
Square	FPQ3
Bar	LDL2 LDLB HLDL3 LB
Flat	TH2 (5 types) LFL
Dome	HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT
Coaxial	LFV3 LFV3-G
Coaxial	MSU MFU
Strobe	PF
Water-proof	HLDR-IP HSL-PCL
UV / Violet	UV3/VL3 UV LNSP-UV3-FN
Infrared	IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR
Reference Light Source	LDF-RLS
Intensity Control	IU
Spot, Etc.	HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)
Line (Convergent)	LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK
Line (Diffused)	LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)
Line (Oblique Angled)	LNDG LNIS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens
Other Products	LDF-NB



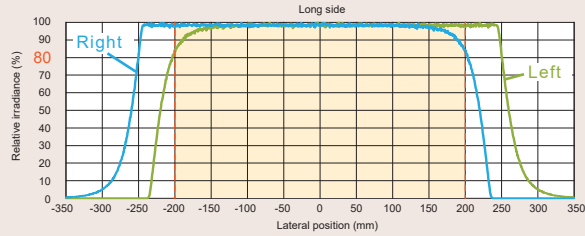
**Recommended Illumination Range** Light unit in use: LNIS-500SW-FN



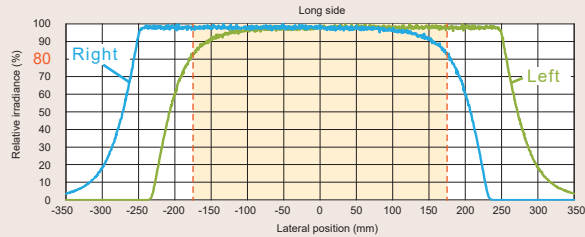
LWD is the distance from the line light to the workpiece.

**Graph of effective illumination range**

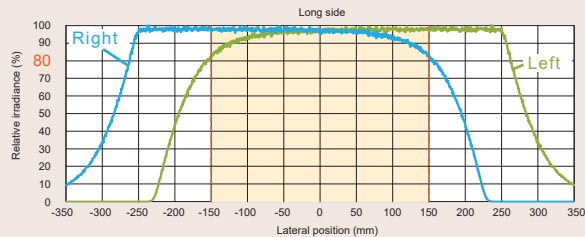
**Illuminating distance: 30 mm** The values are based on the simulation. Actual values may vary.



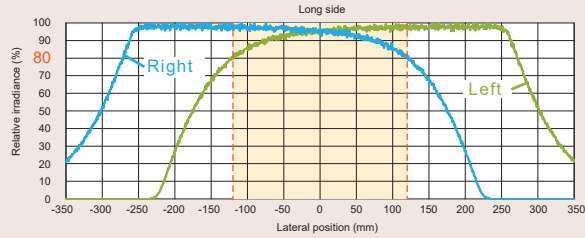
**Illuminating distance: 50 mm** The values are based on the simulation. Actual values may vary.



**Illuminating distance: 70 mm** The values are based on the simulation. Actual values may vary.



**Illuminating distance: 100 mm** The values are based on the simulation. Actual values may vary.



The section on the graph where "Left" and "Right" overlap is the section where light from the left and right sides overlaps. The recommended illumination range is the range in this overlapping section where each illuminance is ensured for 80% or higher of the peak.

These graphs are for reference only. Actual values may vary.

**Table of the recommended illumination range** (Where illuminance of the left/right beam is 80% of the peak value or more.) (mm)

LWD: Illuminating distance	Emitting surface length														
	100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
10	40	140	240	340	440	540	640	740	840	940	1,040	1,140	1,240	1,340	1,440
30		100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
50		50	150	250	350	450	550	650	750	850	950	1,050	1,150	1,250	1,350
70			100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300
100			40	140	240	340	440	540	640	740	840	940	1,040	1,140	1,240

These values are based on the simulation. Actual range of the effective illumination depends on your imaging environment.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL	Water-proof
UV3/VL3 UV LNSP-UV3-FN	UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNLD LNIS2 LNIS	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lens
LDF-NB	Other Products

# LNIS-FN Series



Refer to our website for product details.

CCS LNIS-FN

Search

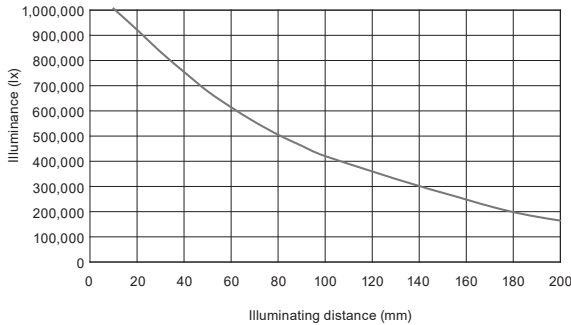


## Data (Representative Example)

The graph included is for reference only. Actual values may vary.

### LNIS-400SW-FN

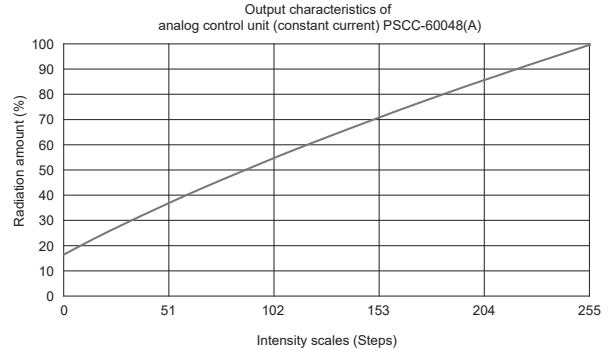
Change in illuminance



Actual measurement values at the center of the emitting surface, 100% intensity. Results for individual products may vary.

### LNIS-1500SW-FN

Graph of the correlation between intensity and output



Actual measurement values using the PSCC-60048(A) analog control unit. Results for individual products may vary.

## Lineup

Model Name	LED Color	Power Consumption*1 (including fans)		Correlated Color Temperature	Extension Cables*2	Recommended Control Units*2	Weight
		June 2017 or earlier	July 2017 or later				
LNIS-100SW-FN	White	41 W	41 W	5,800 K	QCBM QCB	PSCC-30048(A) PSCC-60048(A)	900 g
LNIS-200SW-FN		81 W	82 W				1,400 g
LNIS-300SW-FN		117 W	118 W				1,900 g
LNIS-400SW-FN		157 W	158 W				2,400 g
LNIS-500SW-FN		192 W	194 W				2,900 g
LNIS-600SW-FN		233 W	235 W		3,400 g		
LNIS-700SW-FN		268 W	270 W		3,900 g		
LNIS-800SW-FN		309 W	311 W		4,400 g		
LNIS-900SW-FN		345 W	348 W		4,900 g		
LNIS-1000SW-FN		384 W	387 W		5,500 g		
LNIS-1100SW-FN		425 W	428 W		6,000 g		
LNIS-1200SW-FN		460 W	464 W		6,500 g		
LNIS-1300SW-FN		501 W	504 W		7,000 g		
LNIS-1400SW-FN		536 W	540 W		7,500 g		
LNIS-1500SW-FN		576 W	581 W		8,000 g		

Extension Cables ▶ P.258

PSCC Series Product Page ▶ P.365

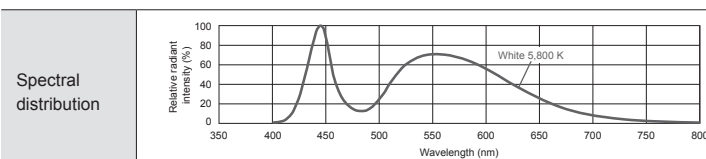
\*1 The power consumption varies according to the production data. Refer to the power consumption given by the label tag of the product.

\*2 Make sure to connect the appropriate extension cables to the control unit.

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.

In addition, we accept custom orders, such as changes to the LED color (red/blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

## LED Properties



Be sure to read the User Manual included with the product before use and follow the safety precautions upon use.

The data included is for reference only. Actual values may vary.

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

Digital Catalogs

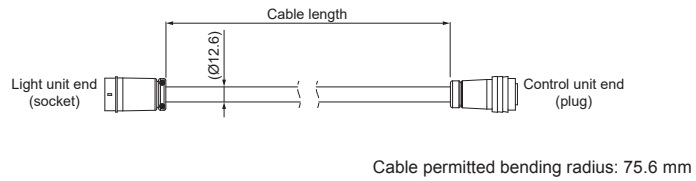
Register to use them.

## Extension Cables

Necessary when connecting the light unit to the recommended control unit, the PSCC Series.  
Make sure to connect the appropriate extension cables to the control unit.

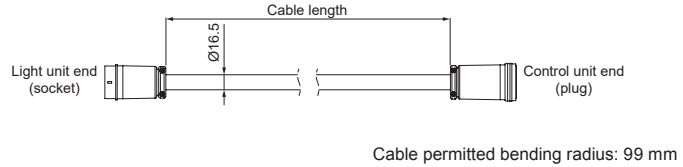
### QCBM

Model Name	Cable Length	Weight	Applicable Control Unit
QCBM-2	2 m	800 g	PSCC-30048(A)
QCBM-3	3 m	1,000 g	
QCBM-5	5 m	1,500 g	
QCBM-10	10 m	2,700 g	
QCBM-20	20 m	5,000 g	



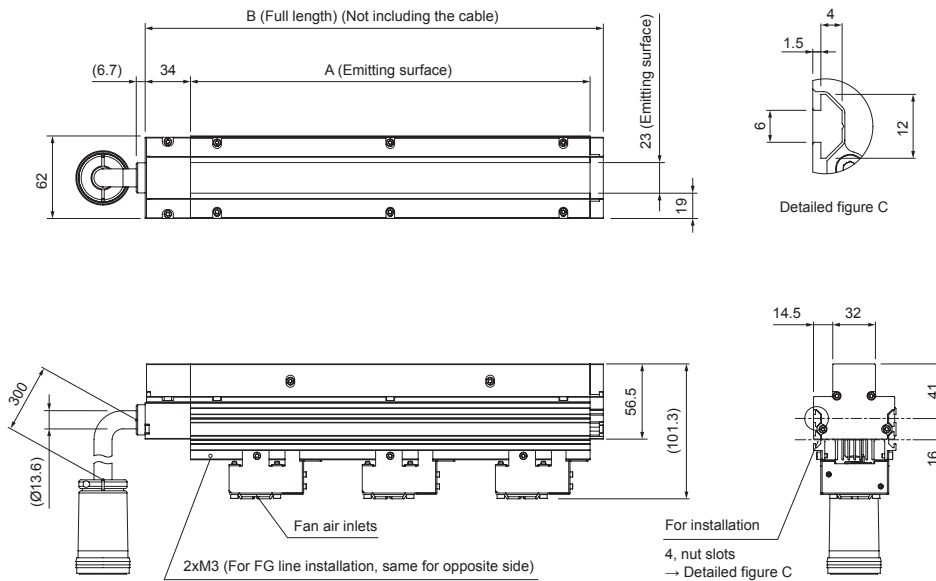
### QCB

Model Name	Cable length	Weight	Applicable Control Unit
QCB-2	2 m	1,100 g	PSCC-60048(A)
QCB-3	3 m	1,500 g	
QCB-5	5 m	2,400 g	
QCB-10	10 m	4,600 g	
QCB-20	20 m	8,900 g	



The above cable permitted bending radii are reference values. Actual values may vary.

## Dimensions (mm)



Model Name	A (Emitting surface)	B (Full length)	Model Name	A (Emitting surface)	B (Full length)
LNIS-100SW-FN	100	144	LNIS-900SW-FN	900	944
LNIS-200SW-FN	200	244	LNIS-1000SW-FN	1,000	1,044
LNIS-300SW-FN	300	344	LNIS-1100SW-FN	1,100	1,144
LNIS-400SW-FN	400	444	LNIS-1200SW-FN	1,200	1,244
LNIS-500SW-FN	500	544	LNIS-1300SW-FN	1,300	1,344
LNIS-600SW-FN	600	644	LNIS-1400SW-FN	1,400	1,444
LNIS-700SW-FN	700	744	LNIS-1500SW-FN	1,500	1,544
LNIS-800SW-FN	800	844			

You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof UV/Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFB3-600SW2 PFB3-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNFP-FN LN/LN-HK	Line (Convergent)
LNLD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNLDG LNIS2 LNIS	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
LDF-NB	Other Products



Compatible with 5-megapixel cameras\*1

For combination with a megapixel camera\*2

\*1 2/3" L (5.98 mm height, 11.26 mm width) and 5.5 μm/pixel, Applicable models: SE-110VT03-5M and SE-110ST03-5M

\*2 Approx. 4.65 μm/pixel min.

Total of **28** Models

**SE-65-M Series (WD 65 mm)**

Coaxial type, 0.5x to 6.0x



Straight type, 0.5x to 6.0x



**SE-110-M Series (WD 110 mm)**

Coaxial type 0.3x to 4.0x



Straight type 0.3x to 4.0x



**Specifications (SE-65-M Series)**

Model name (Coaxial type)	SE-65VT05-M	SE-65VT08-M	SE-65VT10-M	SE-65VT20-M	SE-65VT40-M	SE-65VT60-M
Model name (Straight type)	SE-65ST05-M	SE-65ST08-M	SE-65ST10-M	SE-65ST20-M	SE-65ST40-M	SE-65ST60-M
Optical magnification	0.5x±5%	0.8x±5%	1.0x±5%	2.0x±5%	4.0x±5%	6.0x±5%
WD	65.1±2 mm	65.4±2 mm	65.1±2 mm	65.2±2 mm	65.3±2 mm	64±2 mm
Depth of field <sup>1,2</sup>	2.87 mm	1.18 mm	0.79 mm	0.26 mm	0.08 mm	0.06 mm
Resolution <sup>2,3</sup>	12.0 μm	8.0 μm	6.7 μm	4.4 μm	2.9 μm	2.9 μm
NA <sup>2</sup>	0.028	0.042	0.05	0.076	0.118	0.118
Actual F-number (F <sub>e</sub> ) <sup>2</sup>	9.0	9.4	9.8	12.9	16.9	25.5
TV distortion <sup>2</sup>	-0.001%	+0.006%	-0.023%	+0.021%	-0.003%	-0.026%
Weight (Coaxial)	80 g	62 g	54 g	55 g	85 g	100 g
Weight (Straight)	77 g	57 g	49 g	49 g	83 g	98 g
Mount	C mount					
Maximum applicable image size	2/3 inch (Ø11.00 mm)			2/3 inch L (Ø12.75 mm) <sup>4</sup>		
Physical distance (O/I) <sup>2</sup>	171.1 mm	171.5 mm	161 mm	160.9 mm	184.5 mm	216.7 mm

<sup>1</sup>The depth of field is a value calculated using 40 μm as the permissible circle of confusion.

<sup>2</sup>These are calculated values.

<sup>3</sup>The resolution is a value calculated using a 550 nm wavelength.

<sup>4</sup>2/3 inch L (Length: 5.98 mm, Width: 11.26 mm) The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

**Field of Vision Chart (SE-65-M Series)**

These values are for reference.

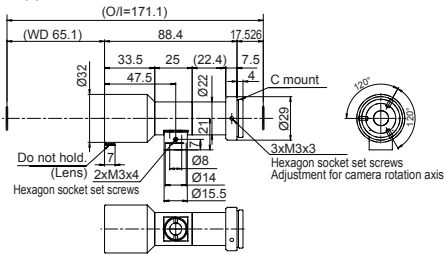
Model name (Coaxial type)	SE-65VT05-M	SE-65VT08-M	SE-65VT10-M	SE-65VT20-M	SE-65VT40-M	SE-65VT60-M
Model name (Straight type)	SE-65ST05-M	SE-65ST08-M	SE-65ST10-M	SE-65ST20-M	SE-65ST40-M	SE-65ST60-M
Optical magnification	0.5x	0.8x	1.0x	2.0x	4.0x	6.0x
Sensor size	2/3 inch			2/3 inch L		
Length	13.20 mm	8.25 mm	6.60 mm	2.99 mm	1.50 mm	1.00 mm
Width	17.60 mm	11.0 mm	8.80 mm	5.63 mm	2.82 mm	1.88 mm
Diagonal	22.00 mm	13.75 mm	11.00 mm	6.38 mm	3.19 mm	2.13 mm

For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.414

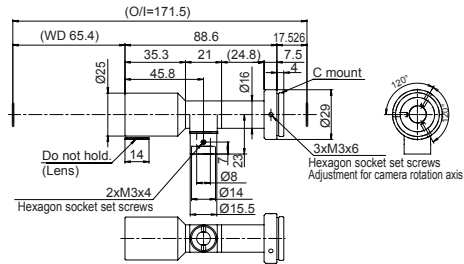
➤ **Dimensions (SE-65-M Series, mm)**

**Coaxial type**

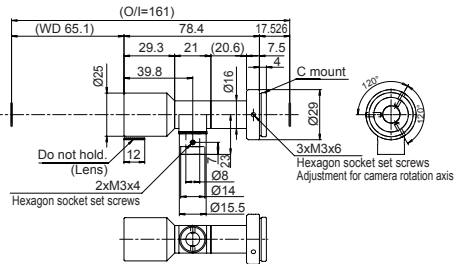
**SE-65VT05-M**



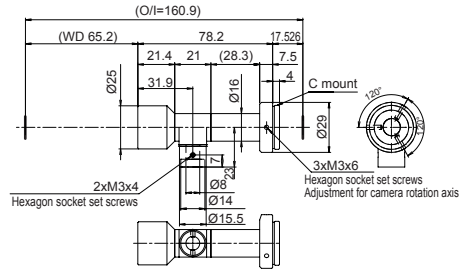
**SE-65VT08-M**



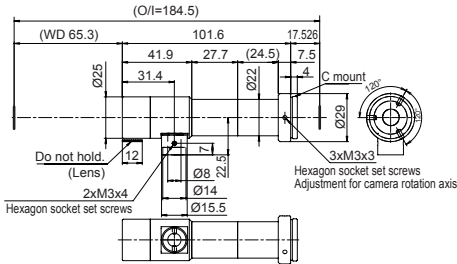
**SE-65VT10-M**



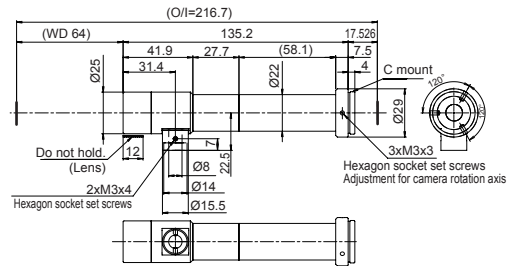
**SE-65VT20-M**



**SE-65VT40-M**

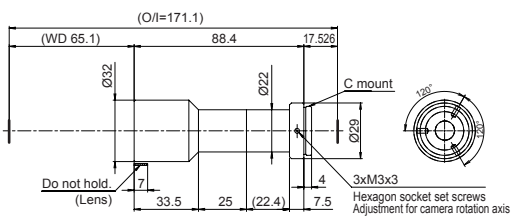


**SE-65VT60-M**

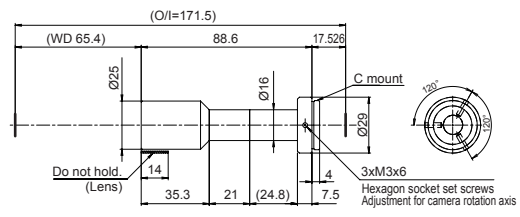


**Straight type**

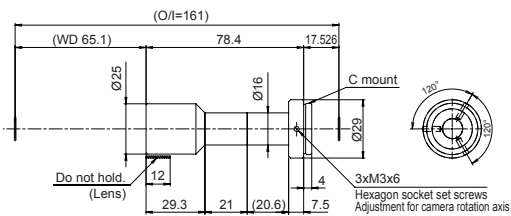
**SE-65ST05-M**



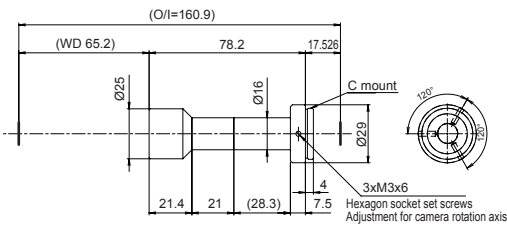
**SE-65ST08-M**



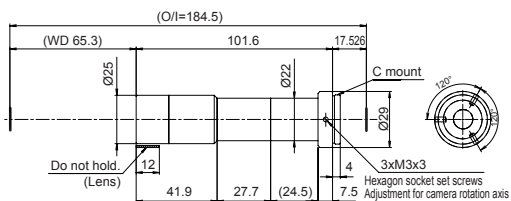
**SE-65ST10-M**



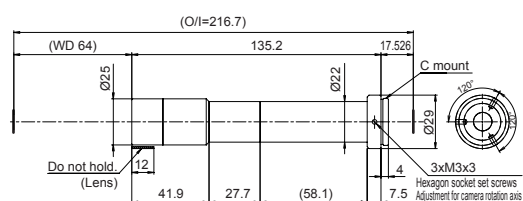
**SE-65ST20-M**



**SE-65ST40-M**



**SE-65ST60-M**



LDR2	Ring	(Direct)
LDR2-LA	Ring	(Direct)
LDR-LA1	Ring	(Direct)
SQR	Ring	(Direct)
SQR-TP	Ring	(Direct)
HLDR3	Ring	(Convergent/Diffused)
HPR2	Ring	(Convergent/Diffused)
LFR	Ring	(Convergent/Diffused)
LKR	Ring	(Convergent/Diffused)
FPR	Ring	(Convergent/Diffused)
FPQ3	Square	
LDL2	Bar	
LDLB	Bar	
HLDL3	Bar	
LB	Bar	
TH2 (5 types)	Flat	
LFL	Flat	
HPD2	Dome	
LDM2	Dome	
LAV	Dome	
PDM	Dome	
LFXV	Dome	
LFX3	Dome	
LFX3-PT	Dome	
LFV3	Coaxial	
LFV3-G	Coaxial	
MSU	Coaxial	
MFU	Coaxial	
PF	Strobe	
HLDR-IP	Water-proof	
HSL-PCL	Water-proof	
UV3/VL3	UV / Violet	
UV	UV / Violet	
LNSP-UV3-FN	UV / Violet	
IR2	Infrared	(Under 1000-nm Type)
IR	Infrared	(Over 1000-nm Type)
CIR	Infrared	
LDF-RLS	Reference Light Source	
IU	Intensity Control	
HLV3	Spot, Etc.	
LV	Spot, Etc.	
HFS/HFR	Spot, Etc.	
HLV3-22-4-NR	Spot, Etc.	
HLV3-3M-RGB-4	Spot, Etc.	
PFBR-600SW2	Spot, Etc.	
PFBR-150	Spot, Etc.	
SLG-150V-CCS	Spot, Etc.	
PF3(A)	Spot, Etc.	
LNLP	Line (Convergent)	
LN2P2	Line (Convergent)	
Coaxial Units	Line (Convergent)	
LN2P-FN	Line (Convergent)	
LN/LN-HK	Line (Convergent)	
LN2D	Line (Diffused)	
LND2	Line (Diffused)	
LT	Line (Diffused)	
LNV	Line (Diffused)	
LFXV (Rectangular Type)	Line (Diffused)	
TH2 (Rectangular Type)	Line (Diffused)	
LN2G	Line (Oblique Angled)	
LNIS2	Line (Oblique Angled)	
LNIS	Line (Oblique Angled)	
LNIS-FN	Line (Oblique Angled)	
Telecentric Lens	Macro Lenses	
Other Products		
LDF-NB		

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

# SE-65-M/ SE-110-M Series



Refer to our website for product details.

CCS telecentric lens

Search



## Specifications (SE-110-M Series)

5 M

Model name (Coaxial type)	SE-110VT03-5M	SE-110VT05-5M	SE-110VT08-5M	SE-110VT10-5M	SE-110VT15-5M	SE-110VT20-5M	SE-110VT30-5M	SE-110VT40-5M
Model name (Straight type)	SE-110ST03-5M	SE-110ST05-5M	SE-110ST08-5M	SE-110ST10-5M	SE-110ST15-5M	SE-110ST20-5M	SE-110ST30-5M	SE-110ST40-5M
Optical magnification	0.3x±5%	0.5x±5%	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	3.0x±5%	4.0x±5%
WD	110.3±3.3 mm	110.8±3.3 mm	110.1±3.3 mm	110.5±3.3 mm	110.1±3.3 mm	110.6±3.3 mm	111.4±3.3 mm	110.5±3.3 mm
Depth of field <sup>*1,2</sup>	5.75 mm	3.03 mm	1.31 mm	0.82 mm	0.42 mm	0.27 mm	0.14 mm	0.11 mm
Resolution <sup>*2,3</sup>	14.5 μm	12.7 μm	8.8 μm	6.9 μm	5.2 μm	4.5 μm	3.6 μm	3.7 μm
NA <sup>*2</sup>	0.023	0.026	0.038	0.049	0.064	0.075	0.094	0.091
Actual F-number (F <sub>e</sub> ) <sup>*2</sup>	6.5	9.4	10.3	10.2	11.7	13.0	16.0	21.9
TV distortion <sup>*2</sup>	+0.026%	-0.009%	-0.026%	-0.0007%	+0.024%	-0.018%	+0.008%	-0.004%
Weight (Coaxial)	212 g	131 g	106 g	108 g	110 g	115 g	166 g	121 g
Weight (Straight)	211 g	128 g	103 g	105 g	108 g	113 g	160 g	120 g
Mount	C mount							
Maximum applicable image size	2/3 inch L <sup>*4</sup> (Ø12.75 mm)	2/3 inch (Ø11.00 mm)	2/3 inch L <sup>*4</sup> (Ø12.75 mm)				2/3 inch (Ø11.00 mm)	
Physical distance (O/I) <sup>*2</sup>	268.2 mm	259.7 mm	254.2 mm	255.8 mm	256.9 mm	255.8 mm	272.9 mm	256.7 mm

\*1 The depth of field is a value calculated using 40 μm as the permissible circle of confusion.

\*2 These are calculated values.

\*3 The resolution is a value calculated using a 550 nm wavelength.

\*4 2/3 inch L (Length: 5.98 mm, Width: 11.26 mm) The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

## Field of Vision Chart (SE-110-M Series)

These values are for reference.

5 M

Model name (Coaxial type)	SE-110VT03-5M	SE-110VT05-5M	SE-110VT08-5M	SE-110VT10-5M	SE-110VT15-5M	SE-110VT20-5M	SE-110VT30-5M	SE-110VT40-5M
Model name (Straight type)	SE-110ST03-5M	SE-110ST05-5M	SE-110ST08-5M	SE-110ST10-5M	SE-110ST15-5M	SE-110ST20-5M	SE-110ST30-5M	SE-110ST40-5M
Optical magnification	0.3x	0.5x	0.8x	1.0x	1.5x	2.0x	3.0x	4.0x
Sensor size	2/3 inch L	2/3 inch	2/3 inch L				2/3 inch	
Length	19.95 mm	13.20 mm	7.48 mm	5.98 mm	3.99 mm	2.99 mm	1.99 mm	1.65 mm
Width	37.55 mm	17.60 mm	14.08 mm	11.26 mm	7.51 mm	5.63 mm	3.75 mm	2.20 mm
Diagonal	42.52 mm	22.00 mm	15.94 mm	12.75 mm	8.50 mm	6.38 mm	4.25 mm	2.75 mm

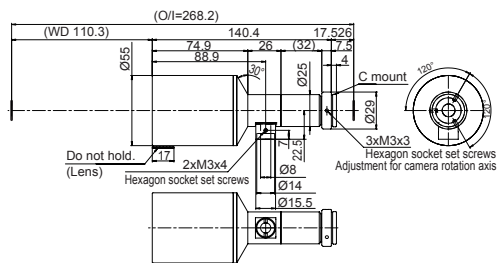
For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.414

## Dimensions (SE-110-M Series, mm)

### Coaxial type

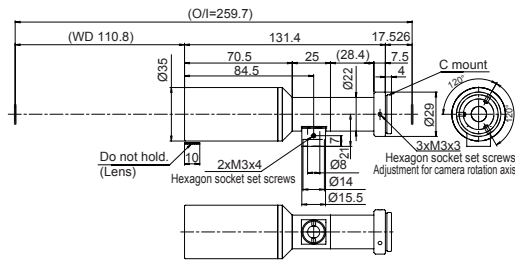
SE-110VT03-5M

5 M



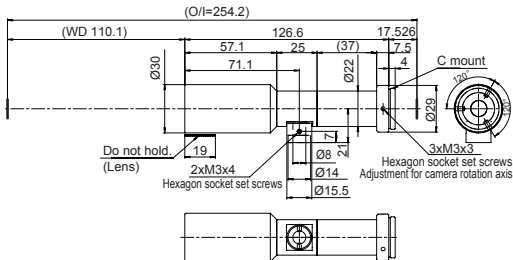
SE-110VT05-5M

(O/I)=259.7



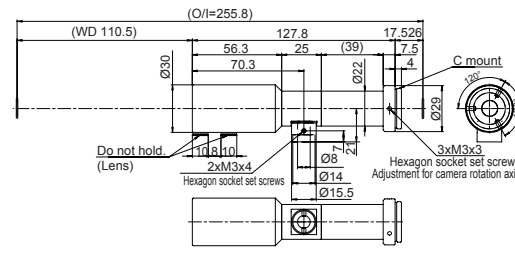
SE-110VT08-5M

(O/I)=254.2



SE-110VT10-5M

(O/I)=255.8

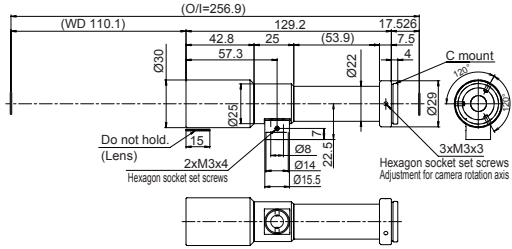


LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	Violet
UV	Violet
LNSP-UV3-FN	Violet
IR2 (Under 1000-nm Type)	Infrared
IR (Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PF3(A)	Spot, Etc.
LNLN	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LNV (Rectangular Type)	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens Macro Lens	Lenses
Other Products	Lenses
LDF-NB	Lenses

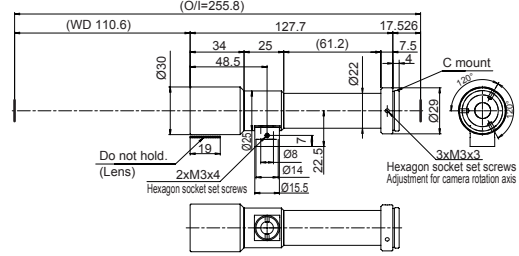
## Dimensions (SE-110-M Series, mm, Continued)

### Coaxial type (continued)

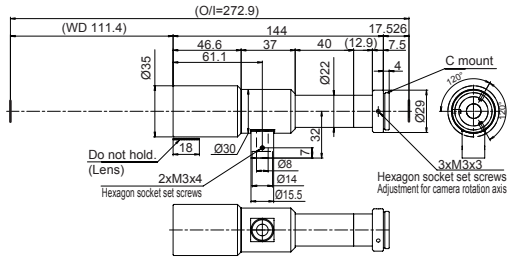
SE-110VT15-M



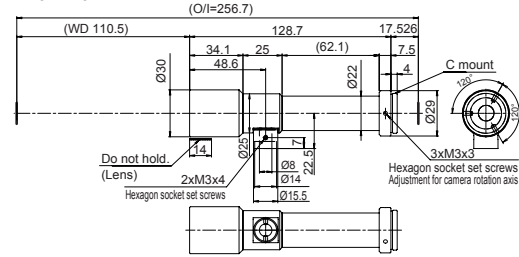
SE-110VT20-M



SE-110VT30-M



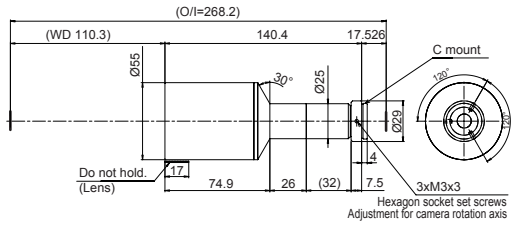
SE-110VT40-M



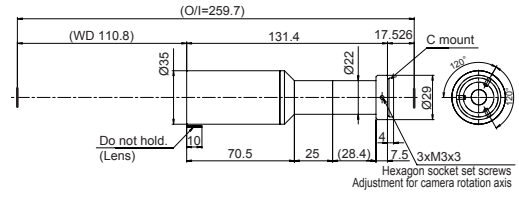
### Straight type

SE-110ST03-5M

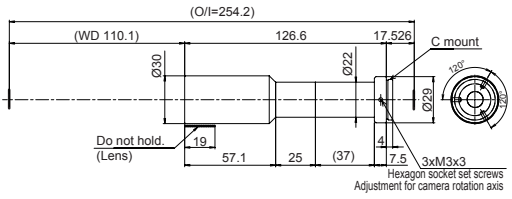
5 M



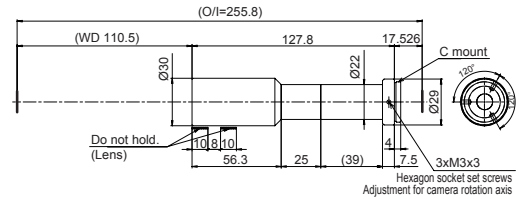
SE-110ST05-M



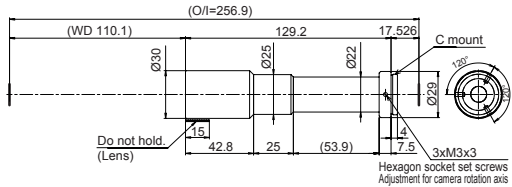
SE-110ST08-M



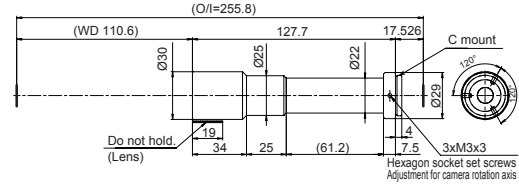
SE-110ST10-M



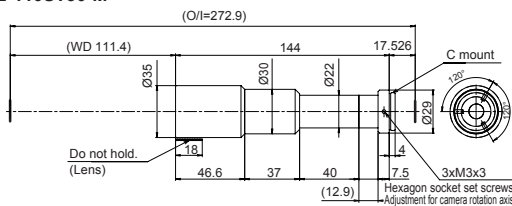
SE-110ST15-M



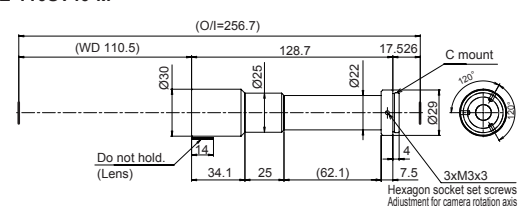
SE-110ST20-M



SE-110ST30-M



SE-110ST40-M



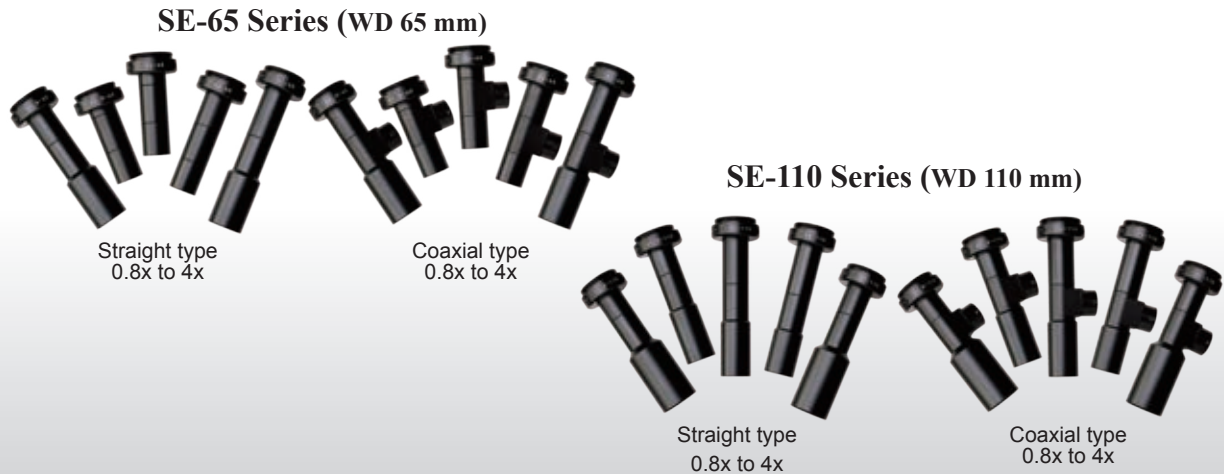
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



## Object-side telecentric lenses supporting a wide variety of applications beyond just dimension measuring



### SE-65/SE-110 Series Specifications

#### Coaxial type

Model name	SE-65VT08	SE-65VT10	SE-65VT15	SE-65VT20	SE-65VT40	SE-110VT08	SE-110VT10	SE-110VT15	SE-110VT20	SE-110VT40
Optical magnification	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%
WD	67.7±2 mm	65.2±2 mm	65.0±2 mm	65.1±2 mm	65.1±2 mm	110.4±3.3 mm	110.0±3.3 mm	114.1±3.4 mm	110.0±3.3 mm	110.0±3.3 mm
Depth of field <sup>*1,2</sup>	1.85 mm	1.33 mm	0.59 mm	0.33 mm	0.13 mm	2 mm	1.6 mm	0.86 mm	0.65 mm	0.2 mm
Resolution <sup>*2,3</sup>	12.4 μm	11.2 μm	7.5 μm	5.6 μm	4.3 μm	13.4 μm	13.4 μm	10.8 μm	10.8 μm	6.6 μm
NA <sup>*2</sup>	0.027	0.030	0.045	0.060	0.078	0.025	0.025	0.031	0.031	0.051
Actual F-number (Fe) <sup>*2</sup>	14.9	16.8	16.7	16.7	25.4	16.0	19.9	24.0	32.0	39.5
TV distortion <sup>*2</sup>	-0.027%	-0.010%	-0.017%	-0.013%	+0.006%	-0.05%	-0.05%	+0.01%	-0.01%	+0.01%
Weight	50 g	54 g	37 g	38 g	40 g	54 g	56 g	48 g	50 g	50 g
Mount	C mount					C mount				
Maximum applicable image size	1/1.8 inch					1/1.8 inch				
Physical distance (O/I) <sup>*2</sup>	164.6 mm	172.1 mm	133.3 mm	135.8 mm	147 mm	211 mm	213.9 mm	208 mm	216.1 mm	212.5 mm

\*1 The depth of field is a value calculated using 40 μm as the permissible circle of confusion.

\*2 These are calculated values.

\*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

#### Straight type

Model name	SE-65ST08	SE-65ST10	SE-65ST15	SE-65ST20	SE-65ST40	SE-110ST08	SE-110ST10	SE-110ST15	SE-110ST20	SE-110ST40
Optical magnification	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%
WD	67.7±2 mm	65.2±2 mm	65.0±2 mm	65.1±2 mm	65.1±2 mm	110.4±3.3 mm	110.0±3.3 mm	114.1±3.4 mm	110.0±3.3 mm	110.0±3.3 mm
Depth of field <sup>*1,2</sup>	1.85 mm	1.33 mm	0.59 mm	0.33 mm	0.13 mm	2 mm	1.6 mm	0.86 mm	0.65 mm	0.2 mm
Resolution <sup>*2,3</sup>	12.4 μm	11.2 μm	7.5 μm	5.6 μm	4.3 μm	13.4 μm	13.4 μm	10.8 μm	10.8 μm	6.6 μm
NA <sup>*2</sup>	0.027	0.030	0.045	0.060	0.078	0.025	0.025	0.031	0.031	0.051
Actual F-number (Fe) <sup>*2</sup>	14.9	16.8	16.7	16.7	25.4	16.0	19.9	24.0	32.0	39.5
TV distortion <sup>*2</sup>	-0.027%	-0.010%	-0.017%	-0.013%	+0.006%	-0.05%	-0.05%	+0.01%	-0.01%	+0.01%
Weight	45 g	49 g	32 g	33 g	35 g	49 g	51 g	43 g	45 g	45 g
Mount	C mount					C mount				
Maximum applicable image size	1/1.8 inch					1/1.8 inch				
Physical distance (O/I) <sup>*2</sup>	164.6 mm	172.1 mm	133.3 mm	135.8 mm	147 mm	211 mm	213.9 mm	208 mm	216.1 mm	212.5 mm

\*1 The depth of field is a value calculated using 40 μm as the permissible circle of confusion.

\*2 These are calculated values.

\*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.



## Field of Vision Chart These values are for reference.

### Coaxial type

Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-65VT08	0.8x	6.65	8.98	11.16
SE-65VT10	1.0x	5.32	7.18	8.93
SE-65VT15	1.5x	3.55	4.78	5.95
SE-65VT20	2.0x	2.66	3.59	4.47
SE-65VT40	4.0x	1.33	1.80	2.23

(Unit: mm)

Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-110VT08	0.8x	6.65	8.97	11.17
SE-110VT10	1.0x	5.32	7.18	8.93
SE-110VT15	1.5x	3.55	4.78	5.95
SE-110VT20	2.0x	2.66	3.59	4.47
SE-110VT40	4.0x	1.33	1.79	2.23

### Straight type

Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-65ST08	0.8x	6.65	8.98	11.16
SE-65ST10	1.0x	5.32	7.18	8.93
SE-65ST15	1.5x	3.55	4.78	5.95
SE-65ST20	2.0x	2.66	3.59	4.47
SE-65ST40	4.0x	1.33	1.80	2.23

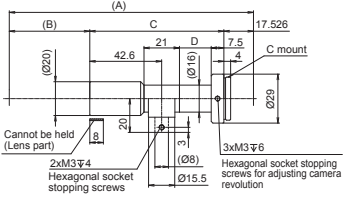
(Unit: mm)

Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-110ST08	0.8x	6.65	8.97	11.17
SE-110ST10	1.0x	5.32	7.18	8.93
SE-110ST15	1.5x	3.55	4.78	5.95
SE-110ST20	2.0x	2.66	3.59	4.47
SE-110ST40	4.0x	1.33	1.79	2.23

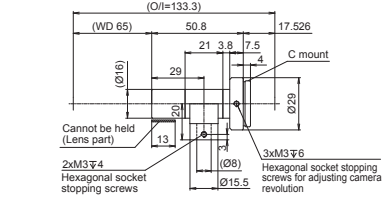
For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.414

## Dimensions (mm)

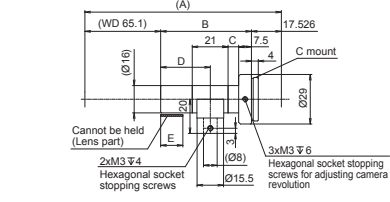
SE-65VT08/SE-65VT10 (Coaxial)



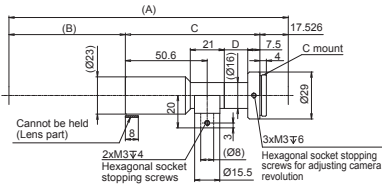
SE-65VT15 (Coaxial)



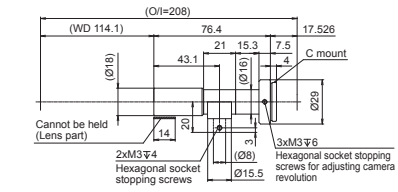
SE-65VT20/SE-65VT40 (Coaxial)



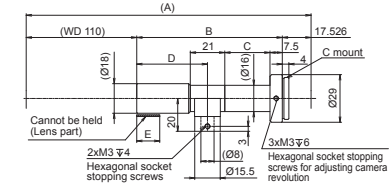
SE-110VT08/SE-110VT10 (Coaxial)



SE-110VT15 (Coaxial)

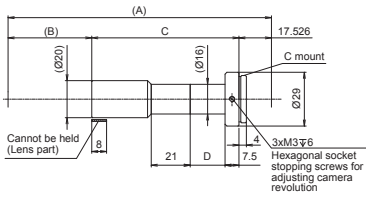


SE-110VT20/SE-110VT40 (Coaxial)

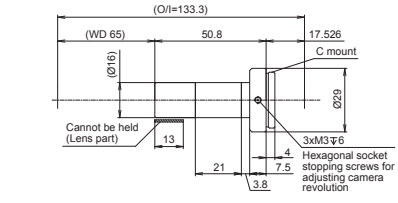


Dimensions chart	SE-65VT08		SE-65VT10		SE-65VT15		SE-65VT20		SE-65VT40		SE-110VT08		SE-110VT10		SE-110VT15		SE-110VT20		SE-110VT40																									
	A	O/I=164.6	O/I=172.1	O/I=135.8	O/I=147	O/I=211	O/I=213.9	O/I=216.1	O/I=212.5	B	WD 67.7	WD 65.2	53.2	64.4	WD 110.4	WD 110	88.6	84.9	C	79.4	89.4	13	11	83.1	86.3	27.5	30.4	D	18.8	28.8	29	27.9	14.5	17.7	43.1	36.5	E	-	-	13	11	-	-	14

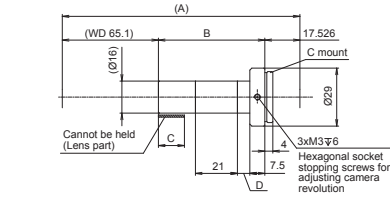
SE-65ST08/SE-65ST10 (Straight)



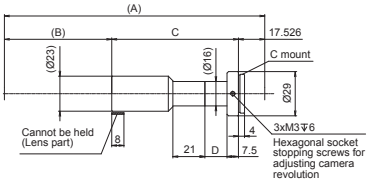
SE-65ST15 (Straight)



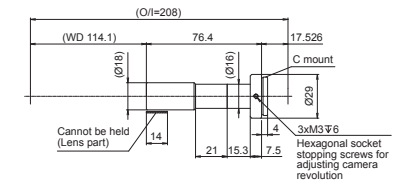
SE-65ST20/SE-65ST40 (Straight)



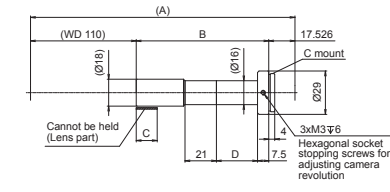
SE-110ST08/SE-110ST10 (Straight)



SE-110ST15 (Straight)



SE-110ST20/SE-110ST40 (Straight)



Dimensions chart	SE-65ST08		SE-65ST10		SE-65ST15		SE-65ST20		SE-65ST40		SE-110ST08		SE-110ST10		SE-110ST15		SE-110ST20		SE-110ST40																
	A	O/I=164.6	O/I=172.1	O/I=135.8	O/I=147	O/I=211	O/I=213.9	O/I=216.1	O/I=212.5	B	WD 67.7	WD 65.2	53.2	64.4	WD 110.4	WD 110	88.6	84.9	C	79.4	89.4	13	11	83.1	86.3	27.5	30.4	D	18.8	28.8	29	27.9	14.5	17.7	43.1

You can inquire using our website.

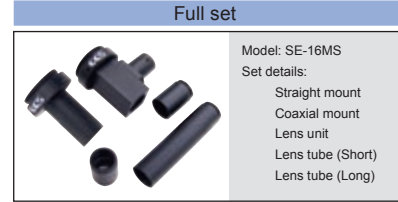
- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



Original macro lenses that achieve both "high performance" and "low cost"

SE-16 Series



SE-18 Series



SE-16/SE-18 Series Specifications

Coaxial type

Model name	SE-16VM05	SE-16VM1	SE-16VM2	SE-18VM2	SE-18VM4	SE-18VM6
Optical magnification	0.5x	1.0x	2.0x	2.0x	4.0x	6.0x
WD	105 mm	66 mm	47 mm	113 mm	109 mm	108 mm
Depth of field <sup>*1,2</sup>	1880 μm	620 μm	240 μm	390 μm	200 μm	140 μm
Resolution <sup>*2,3</sup>	7.9 μm	5.2 μm	4.0 μm	6.7 μm	6.8 μm	7.1 μm
NA <sup>*2</sup>	0.043	0.067	0.091	0.054	0.056	0.057
Actual F-number (Fe) <sup>*2</sup>	5.9	7.8	12.0	19.9	40.7	63.9
Weight	41.9 g	46.3 g	55.8 g	50 g	60 g	65 g
Mount	C mount			C mount		
Maximum applicable image size	1/2 inch			2/3 inch		
Physical distance (O/I) <sup>*2</sup>	178 mm	159 mm	181 mm	202 mm	228 mm	256 mm

\*1 The depth of field is a value calculated using 40 μm as the permissible circle of confusion.

\*2 These are calculated values.

\*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

Straight type

Model name	SE-16SM05	SE-16SM1	SE-16SM2	SE-18SM2	SE-18SM4	SE-18SM6
Optical magnification	0.5x	1.0x	2.0x	2.0x	4.0x	6.0x
WD	104 mm	66 mm	47 mm	113 mm	109 mm	108 mm
Depth of field <sup>*1,2</sup>	1880 μm	620 μm	240 μm	390 μm	200 μm	140 μm
Resolution <sup>*2,3</sup>	7.9 μm	5.2 μm	4.0 μm	6.7 μm	6.8 μm	7.1 μm
NA <sup>*2</sup>	0.043	0.067	0.091	0.054	0.056	0.057
Actual F-number (Fe) <sup>*2</sup>	5.9	7.8	12.0	19.9	40.7	63.9
Weight	29.6 g	34 g	43.5 g	40 g	50 g	55 g
Mount	C mount			C mount		
Maximum applicable image size	1/2 inch			2/3 inch		
Physical distance (O/I) <sup>*2</sup>	177 mm	159 mm	181 mm	200 mm	226 mm	254 mm

\*1 The depth of field is a value calculated using 40 μm as the permissible circle of confusion.

\*2 These are calculated values.

\*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

## Field of Vision Chart

These values are for reference.

### Coaxial type

(Unit: mm)

Model name	Optical magnification	Sensor size: 1/2 inch		
		Length	Width	Diagonal
SE-16VM05	0.5x	9.60	12.80	16.00
SE-16VM1	1.0x	4.80	6.40	8.00
SE-16VM05+SE-EX2 (2x rear converter)				
SE-16VM2	2.0x	2.40	3.20	4.00
SE-16VM1+SE-EX2 (2x rear converter)				
SE-16VM2+SE-EX2 (2x rear converter)	4.0x	1.20	1.60	2.00

Model name	Optical magnification	Sensor size: 2/3 inch		
		Length	Width	Diagonal
SE-18VM2	2.0x	3.30	4.40	5.50
SE-18VM4	4.0x	1.65	2.20	2.75
SE-18VM2+SE-EX2 (2x rear converter)				
SE-18VM6	6.0x	1.10	1.47	1.83

### Straight type

(Unit: mm)

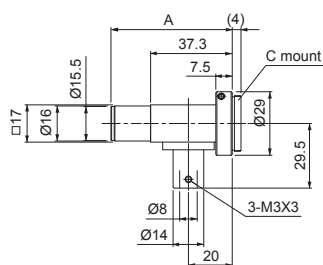
Model name	Optical magnification	Sensor size: 1/2 inch		
		Length	Width	Diagonal
SE-16SM05	0.5x	9.60	12.80	16.00
SE-16SM1	1.0x	4.80	6.40	8.00
SE-16SM05+SE-EX2 (2x rear converter)				
SE-16SM2	2.0x	2.40	3.20	4.00
SE-16SM1+SE-EX2 (2x rear converter)				
SE-16SM2+SE-EX2 (2x rear converter)	4.0x	1.20	1.60	2.00

Model name	Optical magnification	Sensor size: 2/3 inch		
		Length	Width	Diagonal
SE-18SM2	2.0x	3.30	4.40	5.50
SE-18SM4	4.0x	1.65	2.20	2.75
SE-18SM2+SE-EX2 (2x rear converter)				
SE-18SM6	6.0x	1.10	1.47	1.83

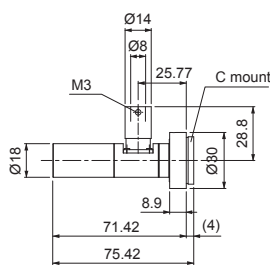
For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.414

## Dimensions (mm)

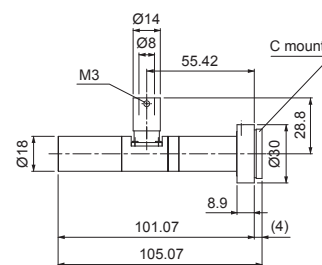
SE-16 (Coaxial)



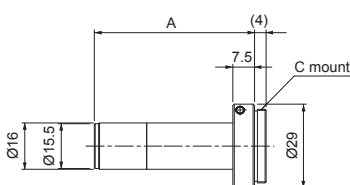
SE-18VM2 (Coaxial)



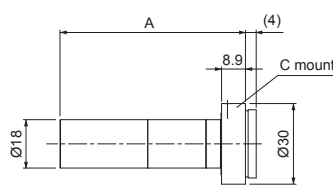
SE-18VM4 (Coaxial)



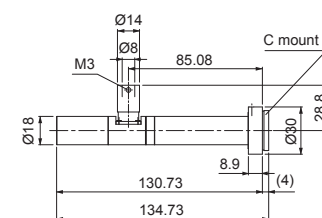
SE-16 (Straight)



SE-18 (Straight)



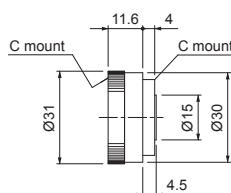
SE-18VM6 (Coaxial)



	Model name	A
Coaxial	SE-16VM05	55.4
	SE-16VM1	75.5
	SE-16VM2	116.1
Straight	SE-16SM05	55.4
	SE-16SM1	75.5
	SE-16SM2	116.1
	SE-18SM2	69.1
	SE-18SM4	98.8
	SE-18SM6	128.4

### Options

SE-EX2 (2x rear converter)



Mount between the lens and camera to double the magnification. Be aware this will reduce the brightness and resolution.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP	Ring (Direct)
HLDR3 HPR2 LFR LKR FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2 LDLB HLDL3 LB	Bar
TH2 (5 types) LFL	Flat
HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT	Dome
LFV3 LFV3-G	Coaxial
MSU MFU	Coaxial
PF	Strobe
HLDR-IP HSL-PCL UV3/VL3 UV LNSP-UV3-FN	Water-proof UV / Violet
IR2 (Under 1000-nm Type) IR (Over 1000-nm Type) CIR	Infrared
LDF-RLS	Reference Light Source
IU	Intensity Control
HLV3 LV HFS/HFR HLV3-22-4-NR HLV3-3M-RGB-4 PFBR-600SW2 PFBR-150 SLG-150V-CCS PFB3(A)	Spot, Etc.
LNLP LNSP2 Coaxial Units LNSP-FN LN/LN-HK	Line (Convergent)
LNSD LND2 LT LNV LFXV (Rectangular Type) TH2 (Rectangular Type)	Line (Diffused)
LNDG LNIS2 LNIS LNIS-FN	Line (Oblique Angled)
	Telecentric Lens Macro Lens
LDF-NB	Other Products

# Organic LED (OLED) Products

CCS OLF-LT

Search



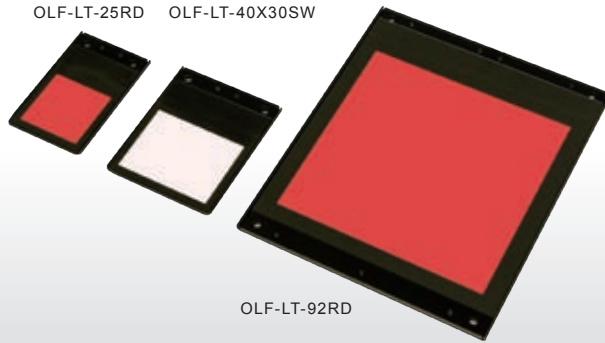
Warranty

Warranty for this product differs from standard CCS lights. Contact our local sales office for details.

CCS-LT Products

## Organic LED Lights for Machine Vision

Brightness required for machine vision applications



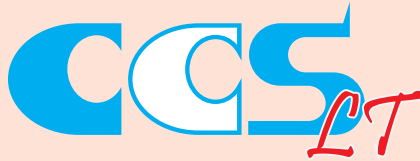
*Unprecedented thin design!*



(example)

Applications Visual inspections, dimension measuring, foreign material inspection, etc.

## A New CCS Brand, "CCS-LT"



"CCS-LT" ("CCS Leading Technology") is a new CCS product brand providing advanced technologies. Its purpose is to introduce newly developed technologies to the market early and to broaden our range of solution proposals.

\* The warranty period for lighting products is for 1 year from when the product ships from CCS. Emission amounts not guaranteed. Contact our local sales office for details.

## Features

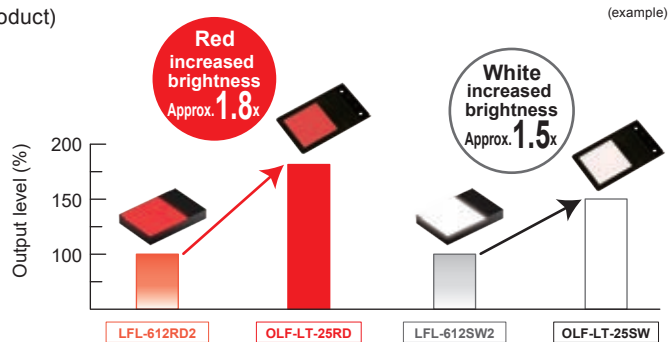
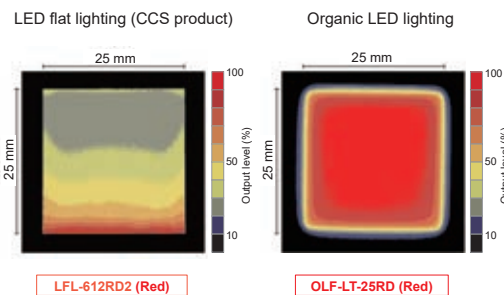
- Available in 3 sizes, for a total lineup of 6 models
- Uniform light emitting surface
- Expands the possibilities for lighting installation with a 3 mm-thin design
- Thin, lightweight, and low heat next-generation light source\* \* Comparison with CCS LED lighting.
- Red and white light emitting colors
- Notifies the user regarding recommended lighting replacement periods through a dedicated controller

Guidance for lighting service lifetime status is provided in three stages: (1) Good (no problems), (2) Lifetime warning (replacement period approaching), and (3) Lifetime expired (replacement recommended)



## Brightness Required for Machine Vision Applications

- Brightness comparison with LED flat lighting (CCS product)



(The data included is for reference only. Actual values may vary.)

### Warranty

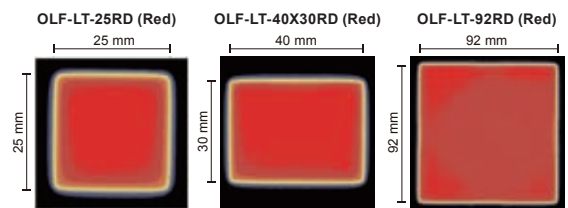
Warranty for this product differs from standard CCS lights. Contact our local sales office for details.

## Specifications by Lighting Model

Model name	LED emitting color	Peak wavelength/ Correlated color temperature (typ.)	Input current (max.)	Power consumption (max.)	Weight (max.)	Expected service life (hours)
OLF-LT-25RD	Red	630 nm	0.019 A	0.40 W	19 g	50,000
OLF-LT-25SW	White	3800 K	0.018 A	0.42 W	19 g	32,000
OLF-LT-40X30RD	Red	630 nm	0.037 A	0.78 W	29 g	50,000
OLF-LT-40X30SW	White	3800 K	0.035 A	0.81 W	29 g	28,000
OLF-LT-92RD	Red	630 nm	0.262 A	5.6 W	102 g	50,000
OLF-LT-92SW	White	3800 K	0.250 A	5.8 W	102 g	19,000

\* Use OC-G-5646-2-ET when using OLF-LT-92 model in overdrive mode.

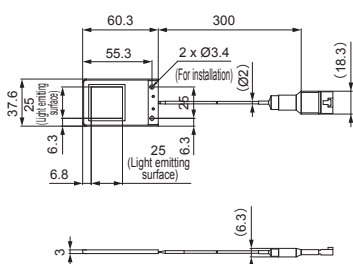
## Uniformity (Relative Irradiance)



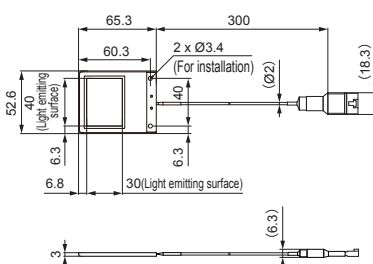
(The data included is for reference only. Actual values may vary.)

## Dimensions (mm)

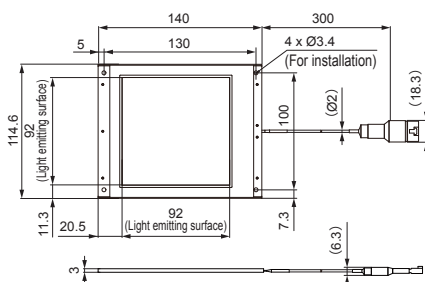
OLF-LT-25RD/SW



OLF-LT-40X30RD/SW



OLF-LT-92RD/SW

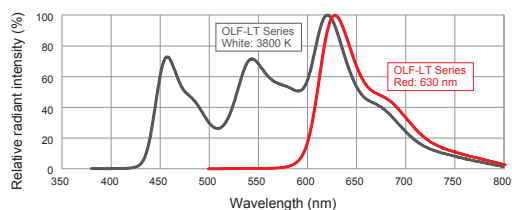


## General Specifications

Cable length	300 mm
Cooling method	Natural air-cooling
Operating environment (indoors only)	Temperature: 5 to 40°C, Humidity: 20% to 85% (with no condensation)
Storage environment	Temperature: -20 to 50°C, Humidity: 20 to 85%RH (with no condensation)
CE marking	Safety standard: Conforms to EN62471
Environmental regulations	RoHS2 compliant
Case material	Aluminum alloy
Accessories	User Manual, Extension Cable (1 m)

\* The warranty period for lighting products is for 1 year from when the product ships from CCS. Emission amounts not guaranteed. Contact our local sales office for details.

## Spectral Distribution Comparison



(The data included is for reference only. Actual values may vary.)

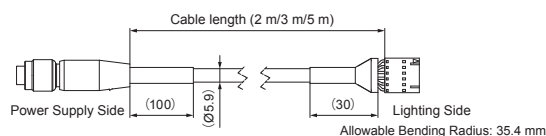
## Optional Extension Cable

Model name	OLCB-2	OLCB-3	OLCB-5
Cable length	2 m	3 m	5 m
Weight	127 g max.	182 g max.	292 g max.

\* A 1 m cable is supplied with this light.

## OLCB Dimensions (mm)

Extension cable: OLCB

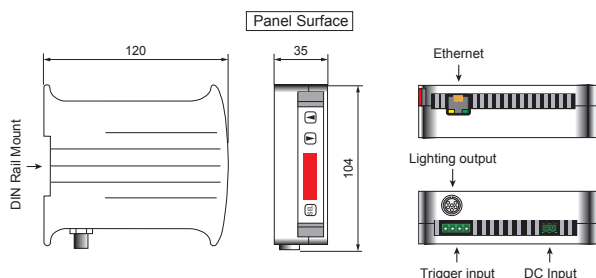


## OC-0736-1-ET Specifications

Input voltage	24 VDC (21.6 to 26.4 V)
Drive method	Constant-current system
Light emission mode	Regular Emission [Continuous], ON/OFF Emission [Switch], Strobe Emission (With Overdrive Mode) [Pulse]
Setting method	Ethernet, Panel Surface Button Operation
Number of channels	1
Input current peak	1 A
Power consumption (typ.)	12 W (Continuous light emission at time of maximum load)
Trigger cycle	Max. 100 Hz
Trigger input	3 to 24 VDC input TTL, NPN, and PNP Input impedance (nominal) 8 kΩ
Strobe light emission time setting	100 μs to 10 ms (100 μs units)
Light emission delay time setting	2 μs to 10 ms (100 μs units)
Strobe emission response speed	Max. 10 μs
ON/OFF emission response speed	Max. 100 μs
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85% RH (with no condensation)
CE marking	EMC standard: Conforms to EN61000-6-2, EN61000-6-4
Environmental regulations	RoHS2 compliant
Weight	300 g max.
Accessories	Würth 351 Series 2 pins x1, Würth 361 Series 4 pins x1

## OC-0736-1-ET Dimensions (mm)

Controller: OC-0736-1-ET



\* Use OC-G-5646-2-ET when using OLF-LT-92 model in overdrive mode. Contact our local sales office for details.

### Regarding the recommended lighting replacement period

Expected Service Life (Hours until radiant quantity drops to 50% when used at intensity: 100%, ambient temperature: 40°C) \* Not a guaranteed value.

When the expected service life is at 20%, the "Lifetime warning" is displayed, and when at 0%, the "Lifetime expired" notice is displayed.

\*See the specifications of each light for its expected service life.

\* Settings can be verified using a web browser while the lights are connected to the controller and the controller is connected to a PC via LAN connection.

# Organic LED (OLED) Products

CCS OLB-LT

Search



Warranty

Warranty for this product are not the same as CCS standard lighting. Contact our local sales office for details.

CCS-LT Products

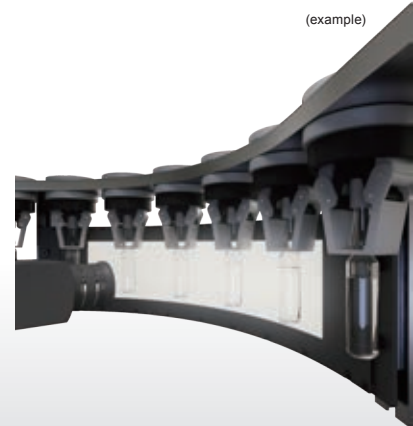
## Organic LED Lights for Machine Vision



Special Order Products

### Thin! Light! Bendable!\*

\* Design of minimum bending radius 100 mm is available. Bending radius cannot be altered after production.



**Applications** Exterior inspection of cylindrical workpieces, liquid surface inspection (such as for chemical ampoules moving along an arc rail)

## Features

- Bending radius can be freely designed upon request<sup>\*1</sup>
- Achieves the brightness and uniformity required for machine vision applications
- Thin, lightweight, and low heat next-generation light source
- Two types of light emitting surfaces: internal light emitting and external light emitting
- Notifies the user regarding recommended lighting replacement periods by connecting to a dedicated controller<sup>\*2</sup>



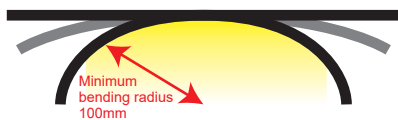
\*1 Designs of up to a minimum bending radius 100 mm are possible (special order).

\*2 Guidance for lighting service lifetime status is provided in three stages: (1) Good (no problems), (2) Lifetime warning (replacement period approaching), and (3) Lifetime expired (replacement recommended)

## Bending radius can be freely designed upon request

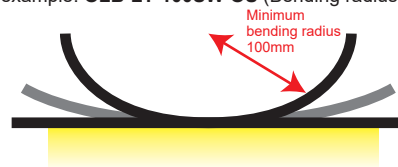
### Inner surface emission Type

Model example: OLB-LT-100SW-IS (Bending radius: 100mm)



### Outer surface emission Type

Model example: OLB-LT-100SW-OS (Bending radius: 100mm)

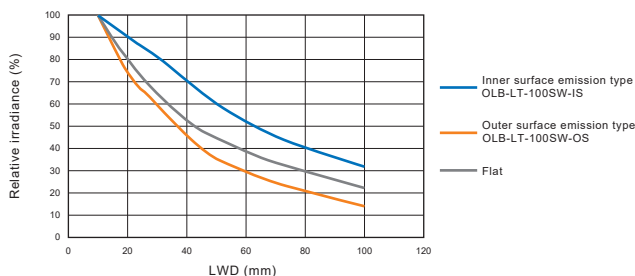


## Achieves the brightness and uniformity required for machine vision applications

### Relative Irradiance Graph<sup>\*1</sup> (LWD Characteristics)<sup>\*2</sup>

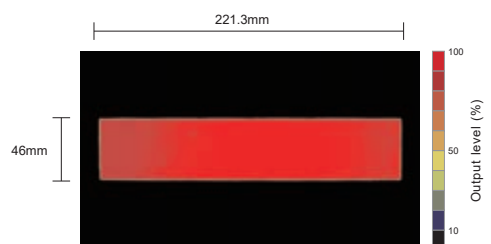
\*1 Irradiance on the optical axis

\*2 Illuminating distance between the light unit and the workpiece



### Uniformity (Relative radiance)

\* Measured in a flat state



**Warranty**

Warranty for this product are not the same as CCS standard lighting. Contact our local sales office for details.

## Specifications

Model name <sup>1</sup>	OLB-LT-□SW-△
LED Color	White
Correlated Color Temperature	4000 K
Input current <sup>2</sup>	0.295 A (Power supply: when using OC-G-5646-2-ET) 0.250 A (Power supply: when using OC-0736-1-ET)
Power consumption	7.0 W
Weight	190 g
Designed life expectancy <sup>3</sup>	14,000 hours (at 40°C ambient temperature)

\*1 □ in the model name contains the bending radius. Minimum bending radius: 100 mm.  
△ contains OS (Outer surface emission) or IS (Inner surface emission).  
\*2 Use an OC-G-5646-2-ET power source during use at the maximum luminance listed in the lighting specifications.  
\*3 Continuous Lighting, Dimmer 100%, Ambient Temperature 40°C, Design Value Until Irradiation Amount Drops to 50%

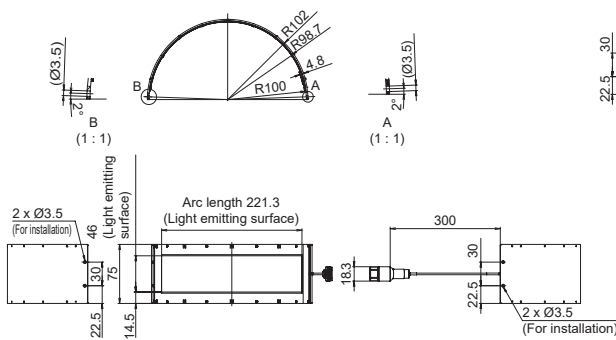
## Common Specifications

Cable length	300 mm
Cooling method	Natural air-cooling
Operating environment (indoors only)	Temperature: 5 to 40°C, Humidity: 20% to 85% (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85% RH (with no condensation)
CE marking	Safety standard: Conforms to EN 62471 EMC standard: Conforms to EN61000-6-2, EN61000-6-4
Environmental regulations	RoHS and REACH compliant
Case material	Aluminum alloy/SUS
Accessories	User Manual, Extension Cable (1 m)

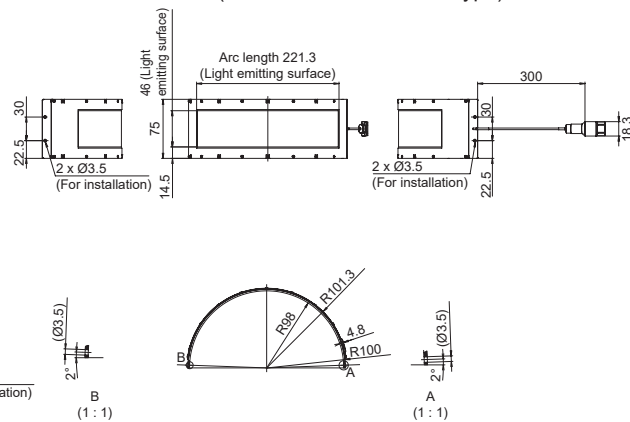
\* The warranty period of lights is for one year following shipment by CCS. Irradiation amounts are not guaranteed.  
Contact our local sales office for details.

## Dimensions (mm)

### OLB-LT-100SW-IS (Inner surface emission Type)

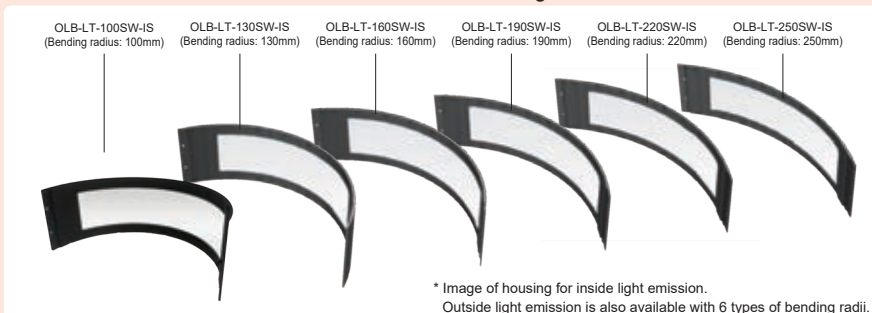


### OLB-LT-100SW-OS (Outer surface emission Type)



## Demo kit that allows you to try bending radii according to the installation environment

A demo kit is available for you to choose from 2 types of light emission, i.e. Inner surface emission and Outer surface emission, and also 6 bending radii.



\* Image of housing for inside light emission. Outside light emission is also available with 6 types of bending radii.

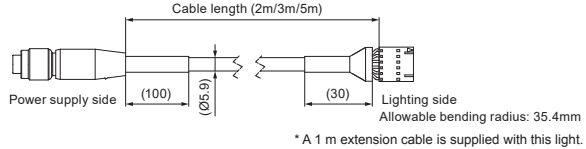
You can apply for the demo kit via your sales representative or our website.



## Optional Extension Cable

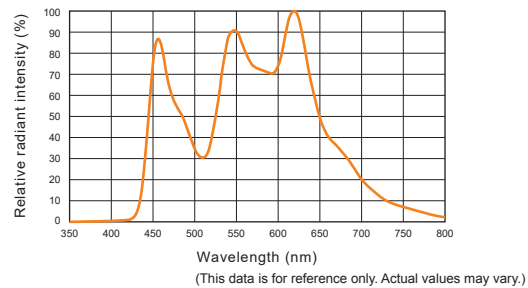
Model name	OLCB-2	OLCB-3	OLCB-5
Cable length	2 m	3 m	5 m
Weight	127 g or less	182 g or less	292 g or less

### External dimensions: OLCB (mm)



\* A 1 m extension cable is supplied with this light.

## Spectral Distribution

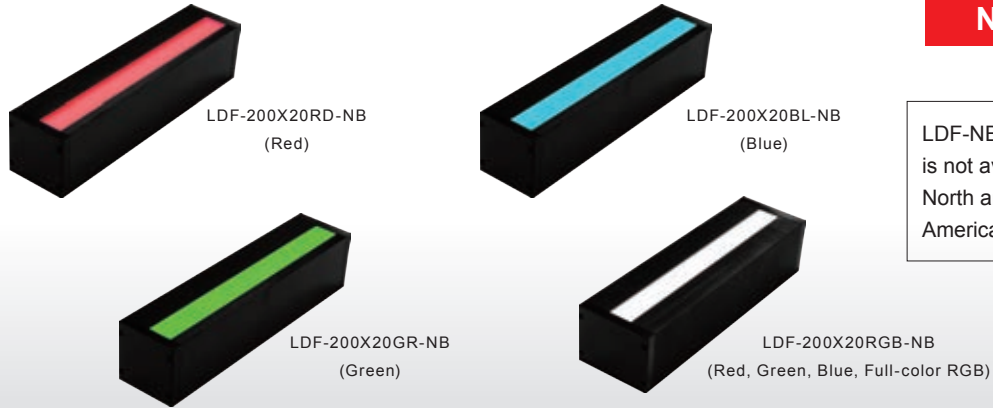




Lights that make coating presence or uneven thickness on thin films visible



**NEW**



LDF-NB Series is not available in North and South America.

**Applications** Inspecting uneven coatings on films and glass / Inspecting laminated glass for irregularities / Inspecting wafer coatings for defects, etc.

**Features**

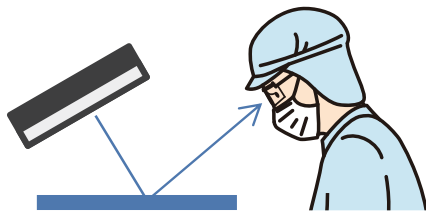
- Replacement for fluorescent lights and sodium vapor lamps
- CCS unique optical technology enables lower speckle noise<sup>\*1</sup>
- Four emission colors (red, green, blue, full-color RGB) available to suit individual needs

<sup>\*1</sup> Speckle noise is a typical phenomenon associated with laser diodes.

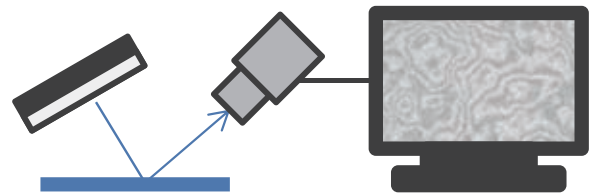
Interference fringes happen when light is reflected from the top and bottom boundaries of a thin film. Alternating bright and dark bands are observed.

**Applications**

Visual inspection



Camera inspection



**Imaging Example**

Glass Lamination Inspection

■ General white LED



Interference fringes and their pattern anomaly are not visible with general white LED

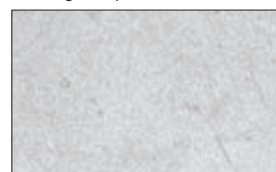
■ RGB light for interference fringe inspection



Visualized lamination anomaly with light for interference fringe inspection

Film Coating Presence Inspection\*

■ Red light for interference fringe inspection



Interference fringes are not visible when there is no coating

■ Red light for interference fringe inspection



Interference fringes are visible with coating

\* Imaged with a monochrome camera

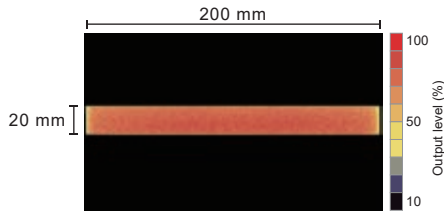


## Data (Representative Example)

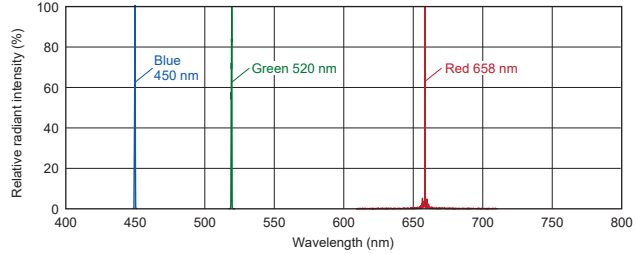
The graph included is for reference only. Actual values may vary.

### Uniformity (Relative radiance)

LDL-200X20RD-NB (red type)



### Spectral distribution



## Lineup

Model Name	LED Color	Power Consumption	Peak wavelength (typ.)	Extension cables	Recommended Control Units <sup>2</sup>	Weight
LDF-200X20RD-NB	Red	3.75 W	658 nm	FCB <sup>1</sup> Straight Cable FRCB Robot Cable	PD4 PD3	770 g
LDF-200X20GR-NB	Green	9.60 W	520 nm		CC-ST-1024 <sup>3</sup>	
LDF-200X20BL-NB	Blue	7.97 W	450 nm			
LDF-200X20RGB-NB	Red / Green / Blue	12.0 W	658 nm / 520 nm / 450 nm		*3 Cannot be used in RGB (red/green/blue).	

<sup>1</sup> Except for FCB straight cables whose model names end with "-ME7", "-EL2", "-PF", or "-PF-EL9".

<sup>2</sup> Use three or more power supply channels for LDF-200X20RGB-NB.

Coaxial types, flat types, and other shapes and sizes are available for **custom order**.  
Production example: Surface type, light emitting surface measures 300 mm × 300 mm

## Common Specifications

Input Voltage	24 VDC
Connector	SMR-03V-B
Cooling method	Natural air-cooling
Operating environment <sup>1</sup>	Temperature: 0 to 35 °C, Humidity: 20 to 80% RH
Storage environment <sup>1</sup>	Temperature: -20 to 60 °C, Humidity: 20 to 80% RH

Applicable standards	Safety standard: Conforms to EN60825-1, BS EN60825-1, GB7247.1, IEC60825-1, and IEC62471
Laser classification	Class 1 <sup>2</sup>
Environmental regulations	RoHS compliant
Case material	Aluminum alloy

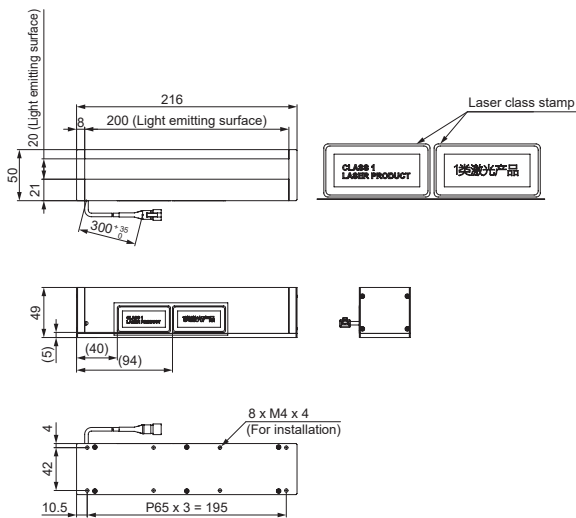
<sup>1</sup> Light output may vary depending on the ambient temperature. Do not expose to freezing temperatures, condensation, or sudden temperature changes.

<sup>2</sup> A laser product that remains safe even when directly observing the inside of the beam for extended periods or when using telephoto optical systems.

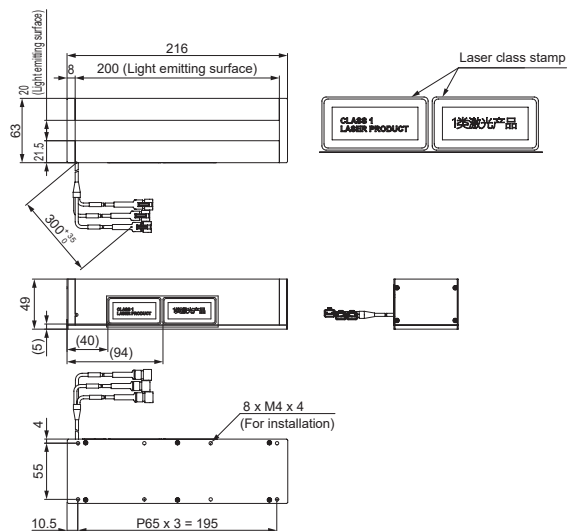
\* The warranty period is for half a year from when the product ships. Emission amounts not guaranteed.

## Dimensions (mm)

LDF-200X20RD/GR/BL-NB



LDF-200X20RGB-NB



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

LDR2	Ring (Direct)
LDR2-LA	Ring (Direct)
LDR-LA1	Ring (Direct)
SQR	Ring (Direct)
SQR-TP	Ring (Direct)
HLDR3	Ring (Convergent/Diffused)
HPR2	Ring (Convergent/Diffused)
LFR	Ring (Convergent/Diffused)
LKR	Ring (Convergent/Diffused)
FPR	Ring (Convergent/Diffused)
FPQ3	Square
LDL2	Bar
LDLB	Bar
HLDL3	Bar
LB	Bar
TH2 (5 types)	Flat
LFL	Flat
HPD2	Dome
LDM2	Dome
LAV	Dome
PDM	Dome
LFXV	Dome
LFX3	Dome
LFX3-PT	Dome
LFV3	Coaxial
LFV3-G	Coaxial
MSU	Coaxial
MFU	Coaxial
PF	Strobe
HLDR-IP	Water-proof
HSL-PCL	Water-proof
UV3/VL3	UV / Violet
UV	UV / Violet
LNSP-UV3-FN	UV / Violet
IR2	Infrared
(Under 1000-nm Type)	Infrared
IR	Infrared
(Over 1000-nm Type)	Infrared
CIR	Infrared
LDF-RLS	Reference Control Light Source
IU	Intensity Control
HLV3	Spot, Etc.
LV	Spot, Etc.
HFS/HFR	Spot, Etc.
HLV3-22-4-NR	Spot, Etc.
HLV3-3M-RGB-4	Spot, Etc.
PFBR-600SW2	Spot, Etc.
PFBR-150	Spot, Etc.
SLG-150V-CCS	Spot, Etc.
PFB3(A)	Spot, Etc.
LNLP	Line (Convergent)
LNSP2	Line (Convergent)
Coaxial Units	Line (Convergent)
LNSP-FN	Line (Convergent)
LN/LN-HK	Line (Convergent)
LNSD	Line (Diffused)
LND2	Line (Diffused)
LT	Line (Diffused)
LNV	Line (Diffused)
LFXV (Rectangular Type)	Line (Diffused)
TH2 (Rectangular Type)	Line (Diffused)
LNDG	Line (Oblique Angled)
LNIS2	Line (Oblique Angled)
LNIS	Line (Oblique Angled)
LNIS-FN	Line (Oblique Angled)
Telecentric Lens	Lenses
Macro Lens	Lenses
LDF-NB	Other Products

## High-Level Intensity for the Machine Vision Industry

### High-Illuminance Tunnel-Dome Lights LN-EAA / LN-EBA Series



### Light Units for Line Sensors LN-GA / LN-HA Series



**Applications** Visual inspections, dimension measuring, foreign material inspection, etc.

## A New Brand, "CCS Altec"

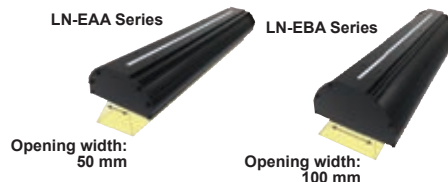


CCS Altec, a new brand offering long and high-illuminance line lights, provides a wide product lineup applicable to various kinds of inspections such as glass, film, liquid crystal and metal inspection.

### Features \*LN-EAA / LN-EBA Series

- Light from the LEDs is scattered inside the light unit to evenly illuminate the whole surface of the workpiece, reducing overexposure and underexposure
- Light emitting surface length up to 1,600 mm
- Fan-less cooling system suitable for use in a clean room environment such as for printed circuit board production

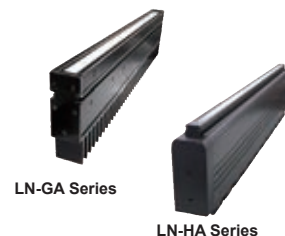
### 2 types of Opening width



Available in a lineup of light emitting surface opening width of 50 mm and 100 mm

### Features \*LN-GA / LN-HA Series

- Provides high output to easily replace metal halide lamp sources \*LN-GA Series
- Industry-leading high illuminance with slim and fan-less case design \*LN-HA Series
- Light emitting surface length up to 3 m for standard products
- \* For sizes longer than 3 m, please contact us



## Dedicated Control Units for LN-GA and LN-HA Series

### PSCC-J1A Series

- Constant-current power system
- Light intensity can be set in 256 or 1000 levels with digital setting.
- Provides external light intensity control through parallel, RS-232C, and Ethernet communications.
- Detects errors, such as LED burnout, LED overheat, power unit overheat, control unit fan stoppage, and abnormal voltage in LED power supply.

Note: The light intensity for the parallel communications can be set only in 256 steps.



See the website for the product details.  
<https://www.ccs-grp.com/aitec/>

# Basler Camera Light Products

CCS BCL

Search



Warranty

Warranty for this product differs from standard CCS lights. Contact our local sales office for details.

## LET THERE BE LIGHT. WHENEVER YOU NEED IT. CAMERA AND LIGHT – EASILY SYNCED WITH BASLER SLP.



**Applications** Visual inspections, dimension measuring, foreign material inspection, etc.

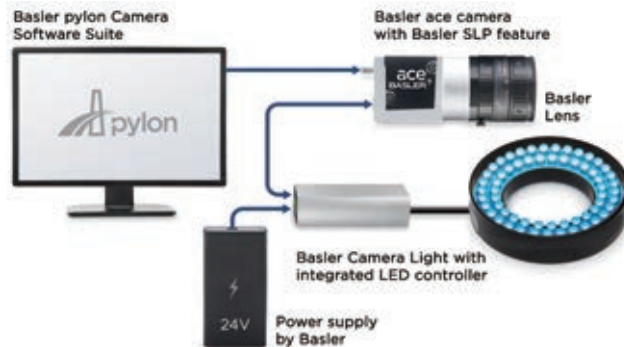
Basler Camera Light Products

### Basler Camera Light Series

An intelligent lighting solution for easy integration of lighting and camera in one environment. By using a Basler camera with SLP feature and a Basler Camera Light with an integrated controller, the light can be controlled directly from the camera.

### Plug and play without complicated calculation or lighting setup

- Parameterization of light and camera via one software interface only (Basler pylon Camera Software Suite)
- One power supply only to reduce the number of devices for system construction and reduce costs
- Automatic synchronization and configuration between light and camera (current limiting, timings, etc.)
- Save time and costs for consultation, evaluation, integration, and parametrization
- One-click strobe or overdrive mode while optimizing lifetime



### Lineup

	Ring Light	Bar Light	Back Light	Flood Light
LED Color	Red, White, Blue	Red, White, Blue	Red, White, Blue	Red, White, Blue
Dimensions	50, 70, 90 mm-OD	100, 150, 200 mm	60×60 mm 120×120 mm	255 mm
Input voltage	24 VDC (+/-10%)			
Lighting modes	Continuous: Strobe incl. overdrive mode			
Pulse width	50 µs-100 ms			
Pulse step size	10 µs			
Conformity	Lighting: CE, RoHS, IEC 62471 Compliant Product Controller: CE: EN61000-6-2, EN61000-6-4			

### CCS Lighting + Basler SLP Controller



The Basler SLP controller enables direct communication between controller, camera, and any light source. CCS offers the industry's widest range of lights compatible with the SLP controller. Choose from hundreds of lights to suit your application's specific needs

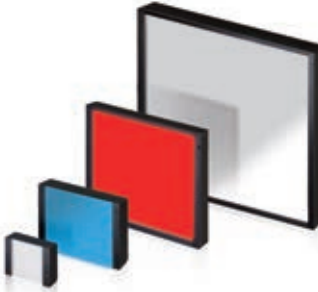
See the website for the product details.  
<https://www.ccs-grp.com/product/vision/BCL/>



# CCS FASTUS

realizes long-term stable

New brand offering new value



CCS + FASTUS = CCS FASTUS

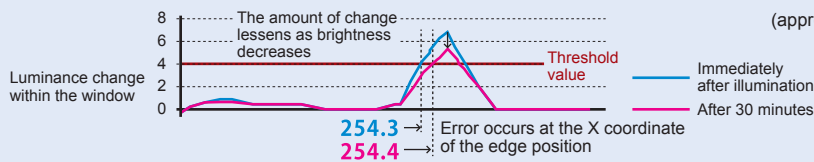
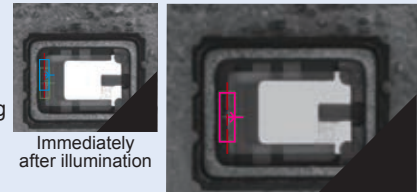
**Problem 1**

## Temperature changes influence brightness.

Increased temperature due to self-heating and changes in ambient temperature as air conditioning equipment starts up can affect the brightness of LED lighting.

**Inspection example: Extraction of the liquid crystal edge of liquid crystal elements**

Liquid crystal blank edge extraction is difficult to detect due to transparency, but if the brightness decreases as a result of heating due to lighting, the contrast will be further lowered and a sub-pixel error will occur at the detection position.



**Solution 1**

*Our FALUX technology automatically compensates for brightness fluctuations due to temperature changes.*

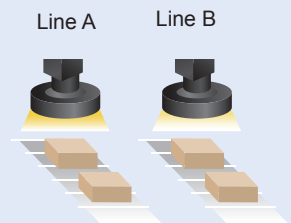


**Problem 3**

## Need consistent level of brightness across multiple light units.

Actual brightness of light unit is different on each inspection line even though the setting is the same.

	Line A	Line B
Modulated light level	500	500
Brightness	500	475



**Solution 3**

*Solved by using an absolute brightness monitor + copying setting values across all units.*



# sensing lighting

## inspection environments



CCS FASTUS Sensing Lighting

Sensing

Monitoring

Feedback

Problem  
2

### Need consistent brightness for long-term use.

On a fully operational 24-hour line, LEDs begin to lose brightness after about 1,000 hours, causing costly inspection failures.



Solution  
2

*Brightness is automatically adjusted to maintain initial settings after receiving a low brightness alarm.*



► P.278

Problem  
4

### Different settings are needed one after another

Different settings or programs must be used depending on the camera, requiring extra time and cost.



Software A



Software B



Software C



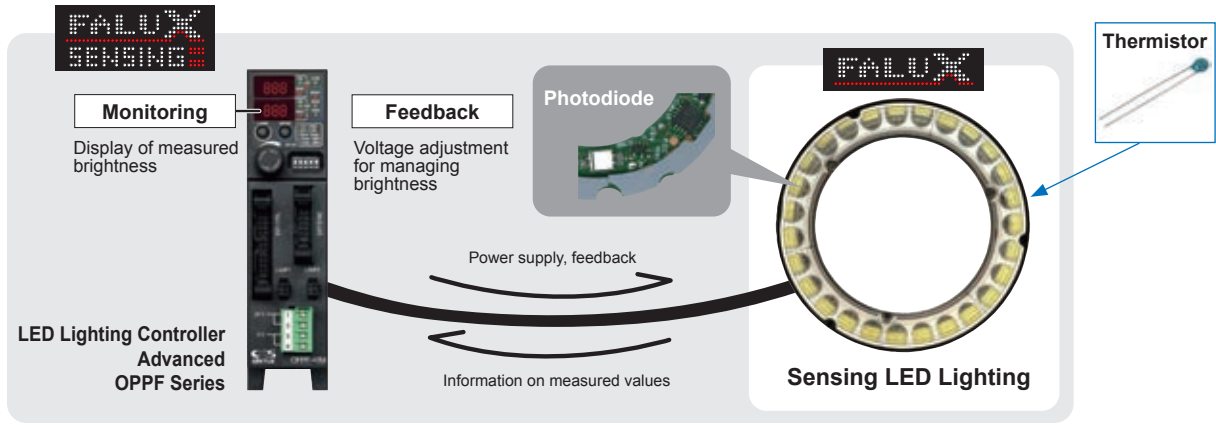
Solution  
4

*Easy configuration with our original controllers.*

► P.279

# CCS FASTUS Sensing Lighting

## Outline of FALUX and FALUX Sensing



**Built-in “FALUX” circuit to correct variations in brightness**



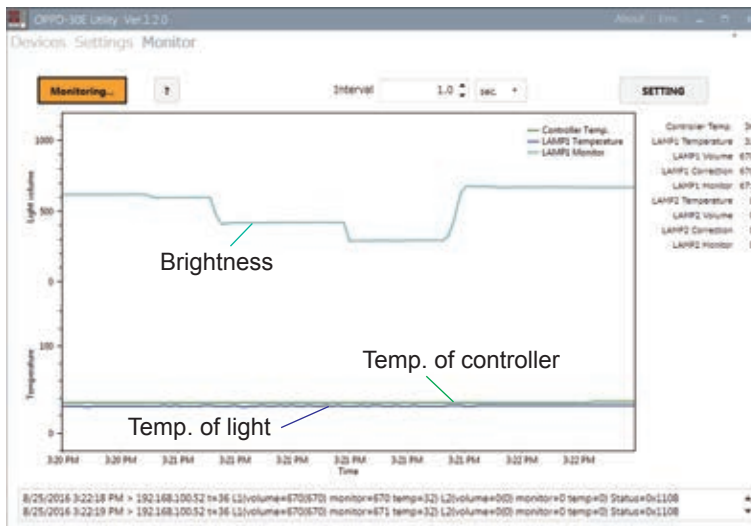
**FALUX SENSING for monitoring brightness and temperature to maintain the default brightness**

## Data Logging and Predictive Maintenance



**Measured values can be displayed and recorded.**

- ✓ Measure brightness
- ✓ Output an alarm when brightness decreases to a predetermined value
- ✓ Measure internal temperatures



Monitoring changes in brightness is useful for predictive maintenance

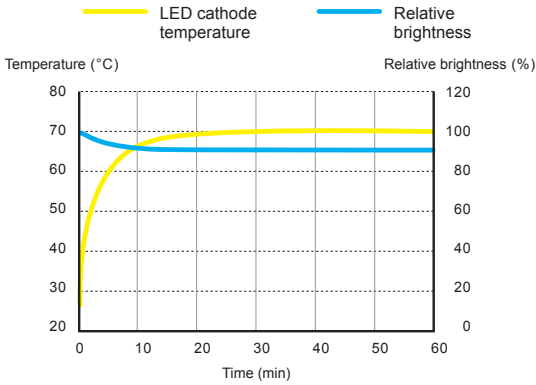
Note: The above graph is displayed using dedicated software for the OPPD-30E controller.

# 'FALUX' Technology

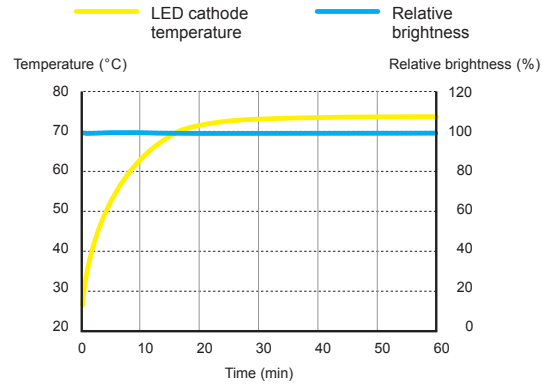


**Did you know the LED brightness varies depending on ambient temperature?**

## FALUX not included

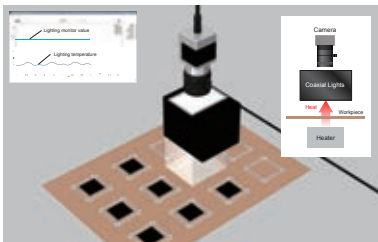


## FALUX included



Using the constant current circuit dependent on the input voltage, variations in the forward current of individual LEDs are corrected for uniform brightness. The temperature compensation circuit compensates for fluctuations in brightness due to changes in temperature.

## Application Example: Chip positioning in a high temperature environment



Controller: OPPD-30E / Lighting units: OPX Series

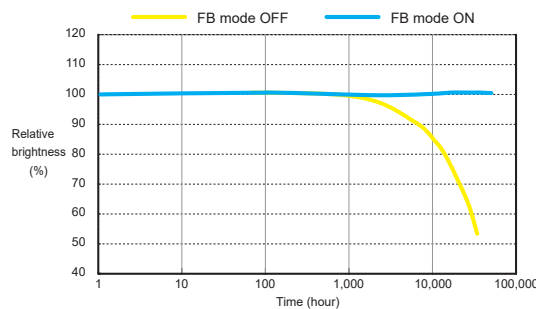
Before placing the chip on the lead frame, positioning is performed using a camera and coaxial illumination.

Because it is heated from below for bonding, the brightness of the lighting fluctuates due to an increase in the ambient temperature, which results in variations in positioning accuracy. If using sensing coaxial illumination, the OPPD-30E controller can not only monitor the illumination temperature, but the feedback function also adjusts the brightness to remain constant even if the brightness varies as the temperature rises. This enables variations to be minimized.

# 'FALUX Sensing' Technology



**Did you know the LED brightness decreases after 1,000 hours of operation?**



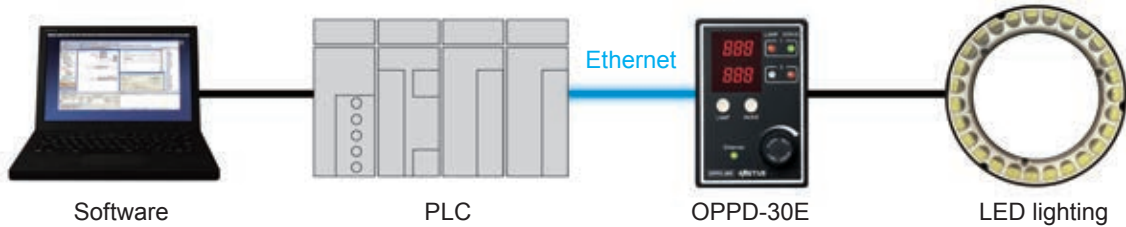
### FB control

- ✓ Eliminates variations over long periods
- ✓ FB control fine tunes the output voltage to match the standard brightness
- ✓ Output as a feedback error when the upper or lower output voltage adjustment limit is reached

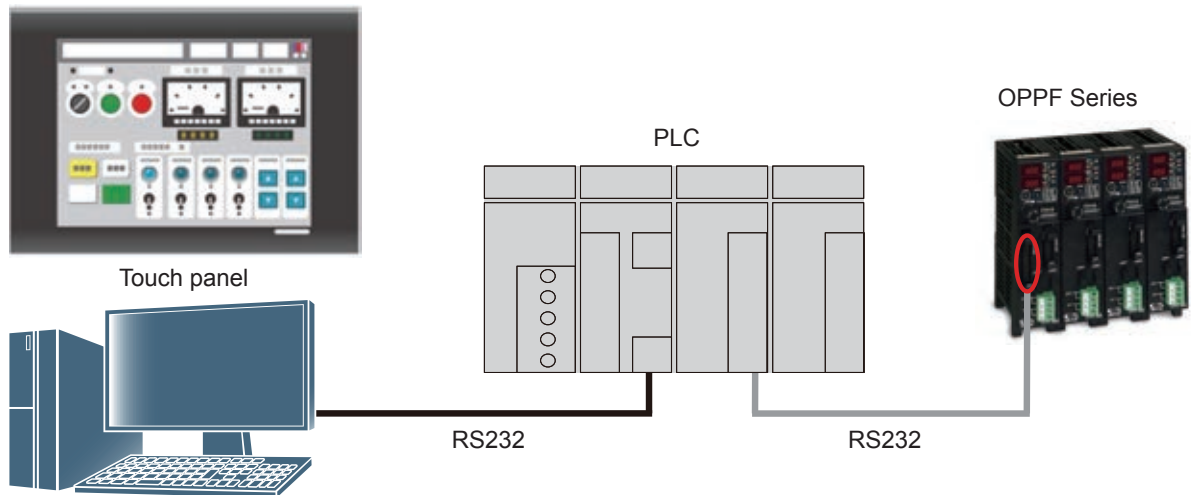
# CCS FASTUS Sensing Lighting

## Connection Example

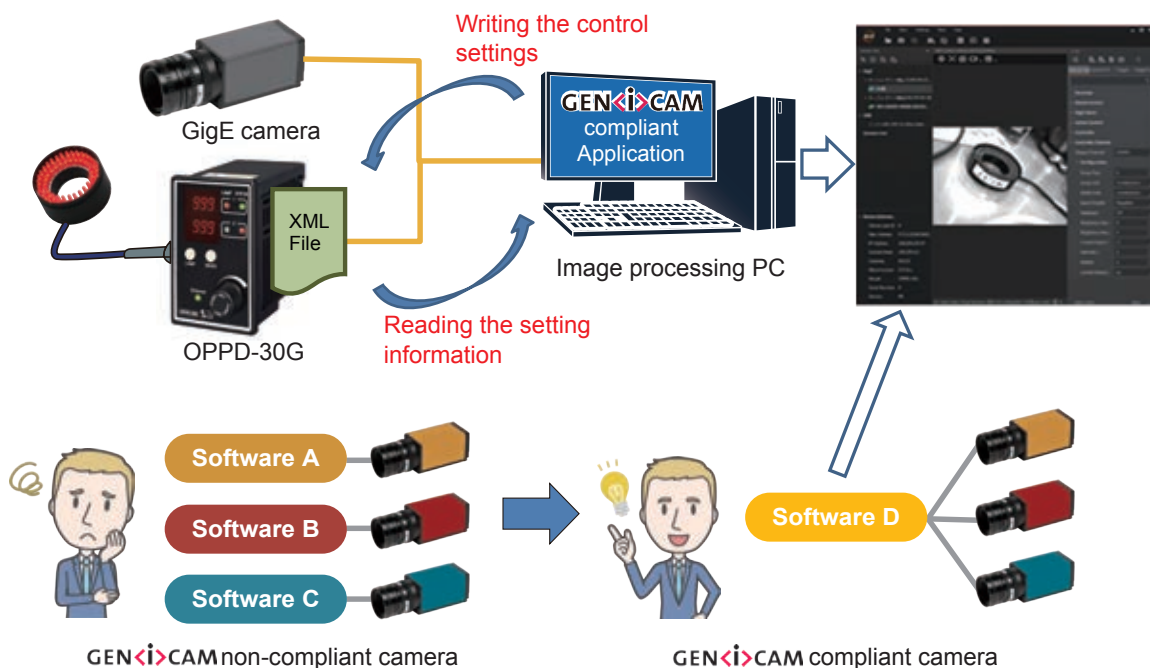
### Connection example (Ethernet / OPPD-30E)



### Connection example (RS232 / OPPF Series)



### Connection example (GEN<i>CAM / OPPD-30G)



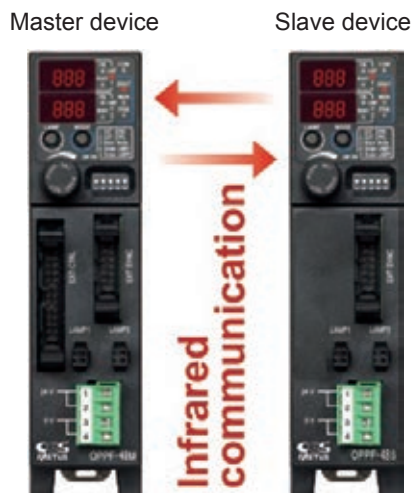


# Fastus Controllers



Comparison of Fastus Controllers				
Model	OPPD-15	OPPD-30E	OPPD-30G	OPPF Series
Capacity	15 W	30 W	30 W	48 W
Number of channels	1	2	2	2
External control	---	Ethernet	GiGE Vision (Gen<l>Cam)	Parallel/RS232 0-5 V analog input
Sensing	×	○	○	○
Monitoring	×	○	○	○
Feedback	×	○	○	○
Alarm	×	○	○	○
Overdrive	×	×	×	○ (Max 18 V)
PWM frequency	100 kHz	100 kHz	100 kHz	100 kHz

## Multi Channel Support (OPPF)



- With 2 channels per unit, support for up to 8 channels is possible by linking (DIN mounting) 3 master and slave devices.
- Communication between units is connector-less and uses infrared.
- A setting copy function allows settings to be batch copied to all channels.
- Connecting a single slave device or just a slave device is possible.

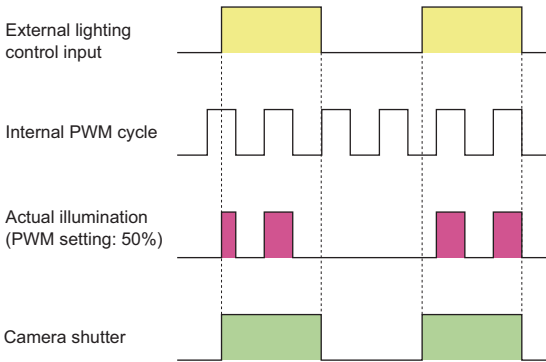
# CCS FASTUS Sensing Lighting

## ■ No changes in brightness thanks to full synchronization between illumination control input and PWM

Even with fast shutter speeds, illumination is synchronized when using external input lighting, eliminating variations in brightness.

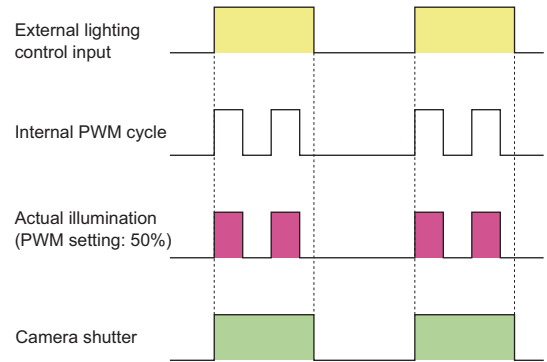
### Conventional control

The internal input for external control and the PWM frequency are not synchronized, so brightness will vary with every illumination.



### Full synchronization between illumination control input and PWM

The external control input and PWM are synchronized before starting, preventing variations in the cumulative illumination times of each light.



## Lighting control sequence

An industry first!

With the OPPD-30E, up to four illumination setting patterns including light intensity values can be configured.

Each pattern can be configured in an illumination control sequence with ordered switching for each illumination control input. (Lighting delay time settings are shared.)

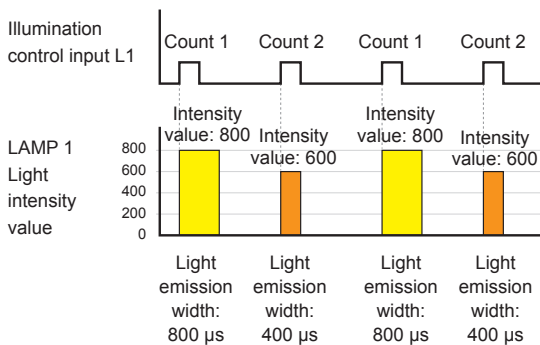
With intensity values and illumination widths set in advance, automatic switching is only performed for illumination control input, allowing the time required for changing settings to be kept to a minimum.

With conventional models, control is not possible without using a PLC and setting up complex ladders.

With the OPPD-30E, such control can be achieved with no other equipment required.

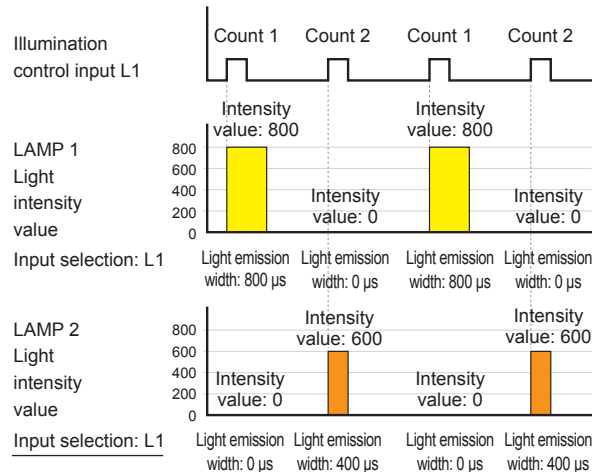
### Ex. 1: Light intensity value and emission width switching

Lighting control sequence: 2-count setting



### Ex. 2: Lighting switching

Lighting control sequence: 2-count setting



# Fastus Lighting Products



Fastus Lighting Products				
Category	Ring Lights	Ring Lights	Bar Lights	Back Lights
Model	OPR	OPR-SF	OPB-S	OPF-PS/DF
<b>FALUX SENSING</b>				
Monitoring	○	○	○	○
Feedback	○	×	○	○
<b>FALUX</b>	○	× <sup>*1</sup>	○	○
<b>Advantages</b>	3 way illumination 	High brightness		PS - Narrow directivity DF - Wide directivity

\*1 Instead of FALUX, this series has an automatic shutoff function which works if the internal temperature reaches a specific temperature or higher (SF55 - 80°C, SF70, 85 - 60°C).



Fastus Lighting Products				
Category	Coaxial Lights	Spot Lights	Ring Lights	Dome Lights
Model	OPX-S / M	OPS / -U / -ST	HPRS	HPDS
<b>FALUX SENSING</b>				
Monitoring	○	○	○	○
Feedback	○ / ×	○	○	○
<b>FALUX</b>	×	○	○	○
<b>Advantages</b>		OPS - High brightness -U - High uniformity -ST - For overdrive use		

For more details, please visit our website.

<https://www.ccs-grp.com/fastus/>



## What is Computational Imaging?

Computational Imaging (CI) refers to digital image capture and processing techniques that combine computation and optical encoding. Relying on data extracted and computed from a series of input images captured under different lighting or optical conditions, CI can improve the capability of a camera or introduce new features not previously possible. By creating an output image focused on the image properties most important to a particular machine vision task, CI offers powerful advantages over traditional one-shot imaging. Within this summary, we introduce the concept of CI with an analogy from an every day trend in the consumer environment, and then explain how this technology is making an ever greater impact in high performance Machine Vision (MV) applications.

### Analogy with the Consumer Environment

Consumers want functionality such as the ability to hold up their cell phones and snap the perfect selfie with the sun setting over the beach behind them; they want to sweep them left to right in order to create panorama shots that challenge even the best of wide angle lenses!

In the case of the setting sun, the sun and sky are often thousands of times brighter than the subject of the selfie. The dynamic range of the small imagers used in cell phones is easily exceeded, yet the consumer expects to clearly see both their face and the brilliantly lit sky. To meet this expectation, many of the top cell phones now snap 2 or 3 pictures in rapid succession, each with a different exposure level. Invisible to the user, an algorithm in the background picks the most usable pixels in each image, weights them relative to each exposure level, and combines them into one single high dynamic range (HDR) image with a total dynamic range greater than possible with a single image capture.

Wide angle panorama images are created by grabbing many shots as the camera is swept left to right. An algorithm aligns each image to the last, merges the border between the two, and then repeats this for the next image in the sequence. The final wide angle panorama is a composite image created from the best pixels of all the aligned images and with a wider field-of-view (FOV) than would be possible with a single shot from a fixed imager and lens.

These techniques and many more are part of a trend to use multiple images to create a single computed output image and fit into an area called computational imaging. Computational imaging has slowly crept its way into the cameras on smart phones and other portable devices.

### Computational Imaging in Machine Vision

Advances in technology and the latest high speed CMOS cameras are making many computational imaging techniques viable for machine vision applications. With CI, system designers can start to think in new ways about creating solutions to difficult imaging problems. Unlike traditional image acquisition, which often requires substantial post-capture image processing and still falls short in producing the optimal image, CI — with its targeted feature extraction — directly outputs the image you need, allowing for more robust MV solutions. Better or previously impossible images for machine vision systems can be created at a lower cost.

By using multiple image captures and processing the computed “super image”, computational imaging directly outputs the image you need, shortening development time and allowing for more robust MV solutions.

Computational imaging is easier than ever to implement into almost any vision system. In the following pages we outline some of the typical functions that can be accomplished with applications that previously would have been difficult.

### Illumination for Computational Imaging

Computational illumination is a necessary component of computational imaging. It refers to controlling illumination in a structured fashion, to encode the relevant information needed for digital processing. Typically, programmable lighting systems are used to create lighting sequences that vary application-specific parameters such as illumination direction or angle, wavelength, intensity, or focus.

Fundamental techniques include image-based relighting, image enhancement, image deblurring, geometry/material recovery and others. These methods are applied in numerous practical ways to enhance machine vision solutions.



## Principle of Operation

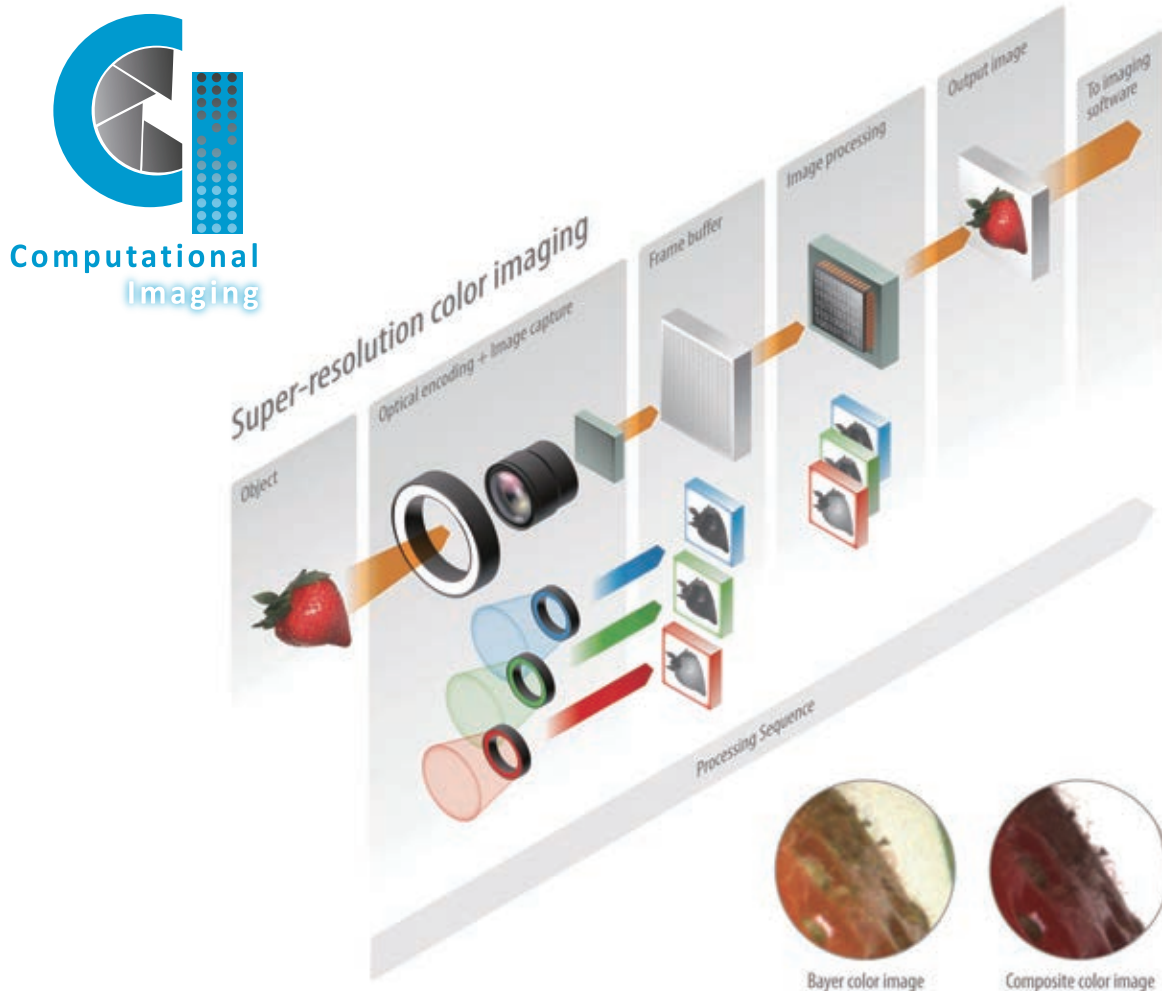
In this section we introduce the principle of computational imaging. The key principles of CI are:

- Computation is inherent in the image formation process
- Combines special optics and/or lighting along with image processing during image capture
- Typically involves a sequence of images with different illumination for each frame
- Covers a wide variety of techniques, all designed to output better images or images with unique characteristics
- Ends with the image acquisition process — does not involve image analysis

The illustrated example below uses super-resolution color image capture as its theme. With this example, we can show the practical elements that comprise the steps of computational imaging. These steps can be generalized as computational illumination/optical encoding, image capture and image processing/decoding.

### Example Using Super-Resolution Color Imaging

Using a monochrome camera with a CCS full-color ring light, which has 3-channel control of red, green, and blue output, the user can generate full resolution RGB color images at practical data rates. By grabbing a sequence of 3 monochrome images correlated to red, green, and blue strobes, a full color composite image at the full monochrome resolution can be created by aligning the images and using the red, green, and blue values for each pixel to create the color pixel.



### Advantages of Composite Images

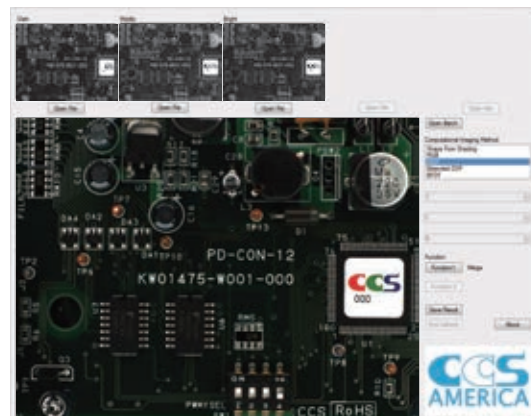
In this illustrated example, the resulting composite color images are much sharper than that of a single image capture with a Bayer or mosaic color camera. The images are similar to those from 3-CCD cameras without the expense, special prism or lens limitations, and at much higher resolutions than that of available 3-CCD cameras. The advantage of this method is the ability to have the best of both worlds; complete color information at the full pixel resolution of the imager. Due to the spatial effects of interpolation, Bayer color imagers capture the color information, but lose spatial resolution across several pixels.

## Practical Application Examples

### High Resolution Color (RGB)

Here we take a look at a practical example of the concept outlined in the previous section on the principle of computational imaging.

Three monochrome full resolution images are captured. To get the color information, each image is strobed with a single color; Red, Green, or Blue. A color image with the full resolution of the monochrome camera can be created from the data of the 3 input images. In this example, 3 monochrome 8-bit 1600 x 1200 images are combined to make a 24-bit color 1600 x 1200 image.

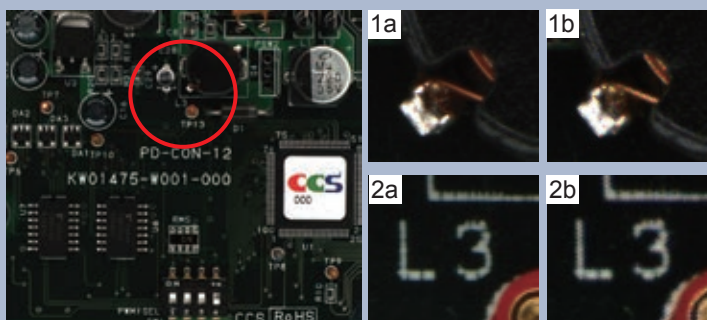


### Composite color image

The advantages of this method to create composite color images becomes apparent as you zoom into feature details, as you might in a machine vision inspection.

In the zoomed image 1a, you can see the two exposed layers of the coil wire and the exit wire to the solder point. The edges are sharp and transitions are smooth with good contrast. In image 1b, the Bayer interpolation artifacts cause the wire to alias red + green along its length. Contrast to the background and between wire layers is reduced and noisy.

You can see similar effects in the 2a + 2b zoomed images. In the Bayer image 2b, the white silkscreen is almost completely Bayer noise. The red/gold/black boundaries of the test point in the lower corner become blurred and wider. In the 2a equivalent image, the silkscreen and test point are sharper, with good contrast and color.



### Bright Field + Dark Field

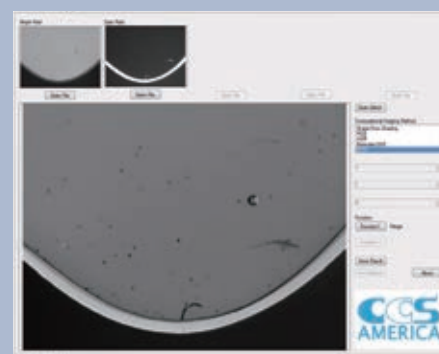
Bright field and dark field are two common methods of illumination for machine vision inspection. Normally, they are used independently, as most samples image best using one method or the other. But what if your sample contains some features that can only be seen with bright field, and other features that can only be seen with dark field?

Multishot imaging nicely solves this problem through the use of a combined bright field/dark field illuminator. The bright field image is combined with the dark field image to generate an output image which contains the features or defects found in both input images.

### Oil drop on scratched glass plate

The piece of glass in this example contains several types of common defects — microscopic particles, fine scratches, pits, and oil droplets on the surface.

Bright field imaging shows the droplets and larger particles, but not the fine surface details. Dark field imaging highlights all the surface details, readily showing the scratches, pits and microscopic particles. While neither bright field nor dark field lighting show everything, a CI process can produce an output image that does.



## Photometric Stereo (PMS)

Photometric stereo allows the user to separate the shape of an object from its 2D texture. It works by firing segmented light arrays from multiple angles and then processing the resulting shadows in a process called “shape from shading.” It is useful for the detection of small surface defects and 3D surface reconstruction. PMS is a height driven process which can enhance surface details like scratches, dents, pin holes, raised printing, or engraved characters. Because the final image is a computed surface based on the shading information surface coloring or features without height are removed. This can make visually noisy or highly reflective surfaces easier to inspect. This capability is rapidly becoming popular in the MV market. Numerous machine vision suppliers are offering photometric stereo tools.

A basic PMS system uses a ring light with four 90 degree quadrants to cast a directional shadow around raised features on an object. The feature map can be applied through different algorithms to show surface details that are hard to find or can't be detected in pure visual images.

### Tire inspection with PMS

The images in this example were captured with a ring light with four 90 degree quadrants. The quadrants were fired in sequence to create the West, North, South, and East images as shown on the right.

Images of the tire texture and tire shape are then created by combining these images in software as shown. The PMS routine removes the visual noise and leaves only the features of interest.



## CCS Illumination for Computational Imaging Systems

Computational illumination from CCS provides illumination in a structured format — enabling high quality image capture in a controlled fashion. These systems are open-architecture so that they can be integrated with any GenICam cameras and many smart cameras.

CCS provide computational illumination components and kits to allow for easy implementation. Please contact your CCS sales representative if you require any assistance in selecting relevant cameras and imaging software.



## LSS-2404 and Segmented HPR2 Ring Light

The LSS-2404 Light Sequencing Switch is a special-purpose programmable LED lighting controller designed to switch external +24 VDC power for up to 4 channels of lights. Upon receiving an external system trigger, the LSS-2404 executes a pre-programmed sequence of lighting on the 4 channels and outputs a set of correlated camera triggers, automatically synchronizing a series of external camera exposures to the programmed lighting sequence. Arbitrarily complex lighting sequences are possible to support any combination of computational imaging (multi-shot) and conventional (single-shot) image capture. Bundled software allows the user to configure the controller and update the firmware.

CCS also offers a range of segmented ring lights. The special version of HPR2 Series is available in 4 segments, which is ideal in combination with the LSS-2404 for photometric stereo applications. All standard sizes are available in segmented form.

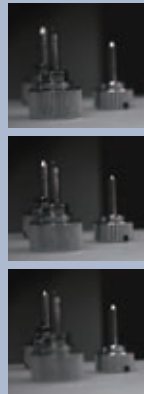
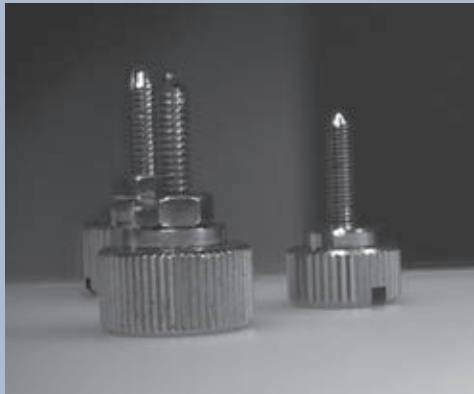
For more information, please contact your local CCS representative.



## Extended Depth of Field (EDOF)

All images have a Depth of Field (DOF), a distance over which objects appear in sharp focus. In any single image, DOF is limited by the magnification and aperture size used. In some machine vision applications, the DOF may not be great enough to focus sharply on all the objects in a scene. Conventional solutions for increasing DOF such as closing the aperture (higher f/#) come with substantial tradeoffs such as decreased light and less resolution.

The EDOF technique allows an image to be created with a DOF greater than any of the single images. Using EDOF image processing software and the CCS computational illumination kit, multiple images with various depths of field can be merged to return a clear, sharp result - without loss of light or resolution.



### How to get a lot more Depth of Field

To extend DOF, several input images captured at different focal planes are necessary. While there are a number of methods for EDOF imaging, two common ones are:

- Using motorized or liquid lenses to vary the focal point
- Using a chromatically uncorrected lens along with multiple wavelengths of light to induce focal plane shifts

The example to the left merged three separately focused images to produce an EDOF image with all three fasteners in sharp focus.

## High Dynamic Range (HDR)

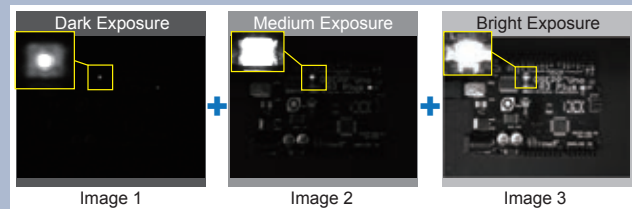
All imagers have a limit to the ratio of the brightest object to the darkest object that can be distinguished in a single image. This is called the dynamic range. Many machine vision applications involve bright, shiny, or dark objects that challenge the dynamic range of the camera. To solve these cases, a series of images with different exposure levels can be captured to create a single HDR image with all the detail that needs to be included for the inspection.



### HDR imaging

This HDR image is created from 3 images with different exposures. Image 1 lets you see the LED die and surrounding package, but no other details are visible. Image 2 exposure allows the silkscreen and brightest parts of the components to be seen, but the LED is oversaturated.

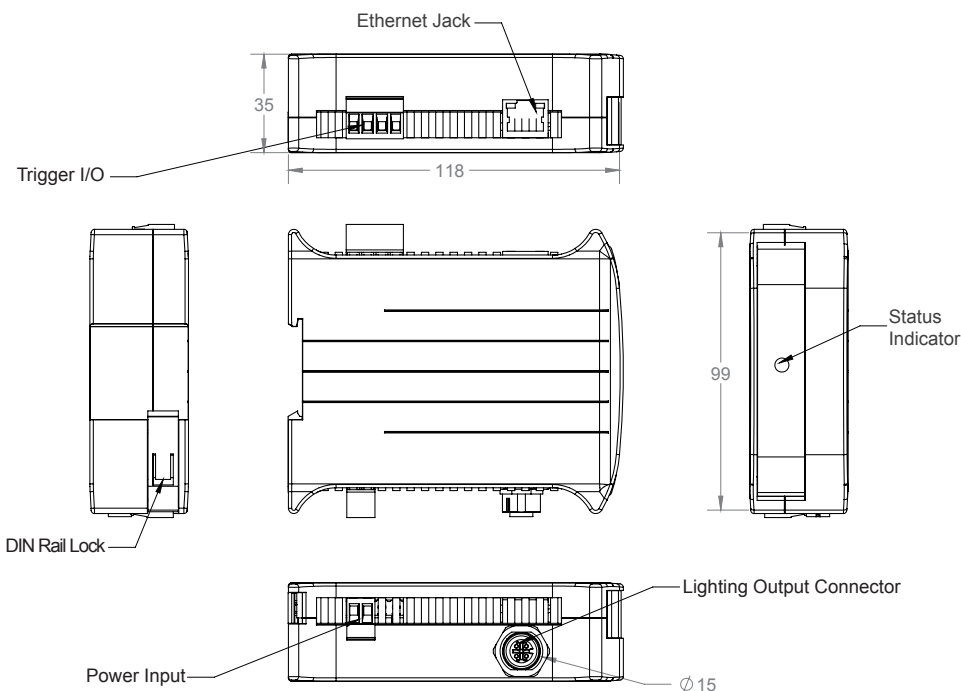
Image 3 allows the barrel connector and other dark components to be seen, but the text and component leads are oversaturated; the LEDs are completely washed out. The HDR image allows correct exposure of the bright LEDs, proper saturation of the silkscreen and component leads, yet the dark components can still be seen.





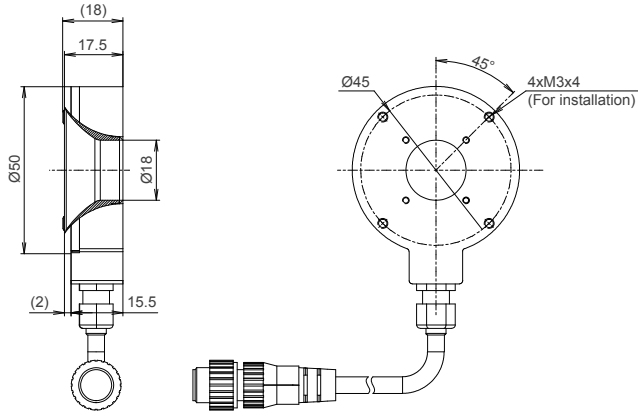
## Relevant Products

<b>LSS-2404 Specifications</b>	
<b>Description</b>	The LSS-2404 Light Sequencing Switch is designed to be the heart of any CI system and can switch external +24 VDC power for up to 4-channels of lights. Upon receiving an external system trigger, the LSS-2404 executes a pre-programmed sequence of lighting on the 4-channels and outputs a correlated camera trigger, automatically timing an external camera exposure to the programmed lighting sequence. May be set-up as master or slave in a system.
<b>Number of lighting channels</b>	4
<b>Input voltage</b>	10.8 – 28.8 VDC (absolute range); suitable for either 12 V or 24 V DC lighting.
<b>Power consumption</b>	5W maximum internal dissipation; excluding attached lighting and dependent on configuration.
<b>Trigger Out (to camera)</b>	Selectable to 5 V, 12 V, or 24 V via software. Voltage level tolerance +/- 15%. Maximum limited to ~93% Vin
<b>Trigger Input</b>	Voltage mode: Accepts 3.3 – 24 VDC logic level voltage with adjustable trigger level Switched ground mode: Use opto-isolators or closed contacts via direct connection without external components.
<b>Trigger Threshold</b>	Software programmable 1 - 24 VDC trigger level in 100 mV increments Default = 9.6 V threshold to work with 12 V or 24 V trigger logic
<b>Maximum Current Rating</b>	1 A/ch x 4-channels; 4 A maximum all channels.
<b>Communication Port</b>	RJ45 connector. 100BaseT Ethernet. TCP/IP protocol. Control via web-based GUI or TCP/IP command set.
<b>Firmware</b>	User upgradeable via GUI (included).
<b>Sequence Timing</b>	User programmable via GUI (included).
<b>Timing Resolution</b>	Maximum trigger rate: 10,000 fps (100 $\mu$ S) Minimum output signal width: 100 $\mu$ S Timing resolution: 1 $\mu$ S Channel skew + jitter: <= 10 $\mu$ S
<b>Operating Temperature Range</b>	Range 0 to 40 °C
<b>Storage Temperature Range</b>	Range -10 to 50 °C
<b>Cooling</b>	Free air cooling (standard model)
<b>Dimensions</b>	4.13 x 6.15 x 1.57 inches L x W
<b>Weight</b>	442g

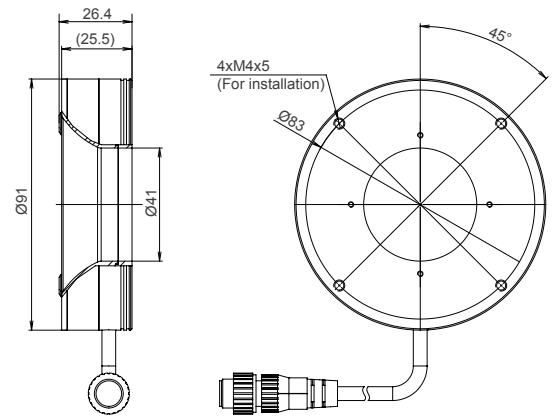


## Dimensions Segmented Ring Lights

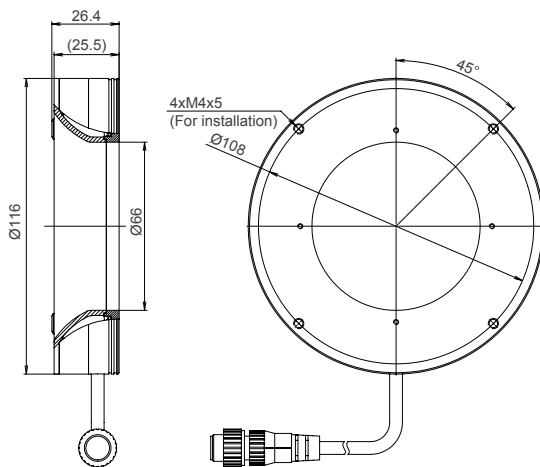
HPR2-50SW-DV04M12-5



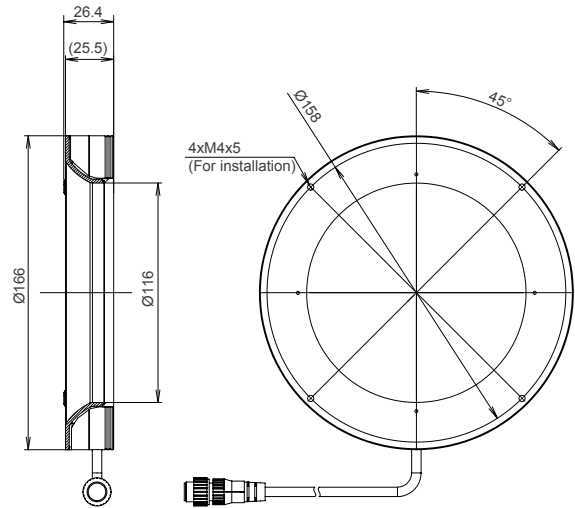
HPR2-75SW-DV04M12-5



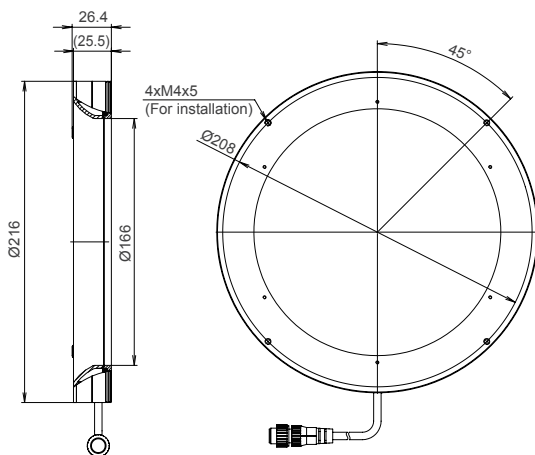
HPR2-100SW-DV04M12-5



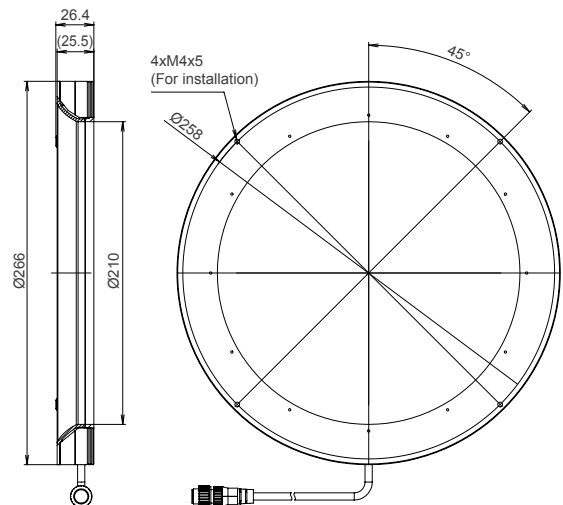
HPR2-150SW-DV04M12-5



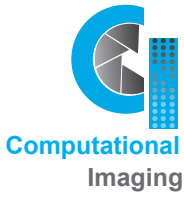
HPR2-200SW-DV04M12-5



HPR2-250SW-DV04M12-5



## CCS Illumination for Computational Imaging Systems



Computational illumination from CCS provides illumination in a structured format – enabling high quality multi-shot image capture in a controlled fashion. These components are open-architecture so that they can be integrated with any machine vision camera and many smart cameras.

CCS provides a number of computational illumination products to allow for easy implementation. Please contact your local CCS sales office, or CCS partners, if you require any assistance in selecting compatible components, such as cameras, lenses and imaging software.

### CCS Computational Illumination Kit Components

Item	Size	Part Number	Key Specification	Photo
Light Sequencing Switch	1.5x DIN Module	LSS-2404	The LSS-2404 Light Sequencing Switch is a programmable LED lighting controller designed to manage multi-shot image capture sequences for computational imaging.	
Ring Light (4 Quadrant)	50 mm 75 mm 100 mm 150 mm 200 mm 250 mm	HPR2-YYYxx-DV04M12-5  YYY=size: 50,75,100,150,200,250 mm xx=color: BL, RD, SW, IR	PMS - Photometric Stereo HDR - High Dynamic Range	
Bar Lights (4 Quadrant)	33-509 mm 300 mm 150-1500 mm  Universal	LDL2 Series LDLB Series HLDL2 Series  BK-QUADBAR-4C	PMS - Photometric Stereo HDR - High Dynamic Range  Corner Bracket Assembly w/mounting - Fits all sizes	
Full Color	33-509 mm 50-400 mm 27-500 mm 50-400 mm 13-200 mm	LDL2 Bar Lights HPR2 Ring Lights TH2 Panel Lights HPD2 Dome Lights LFV3(A) Coaxial Lights	URC - Ultra-Resolution Color CHDR - Color HDR EDOF - Extended DOF (chromatic dispersion)	
Multi-spectral	Wide Range	UV Series NIR Series Full Color Series	Wide range of form factors and sizes in UV, NIR, visible, and Full Color (RGB) lights available for any multi-spectral application.	
Segmented Full Color Light	50 mm 75 mm 100 mm 150 mm 200 mm 250 mm	HPR2 Series	Combo 4-segment + Full Color RGB 12-channel input for ultimate flexibility	
Breakout Cable	300 mm 900 mm	FCB-F-0.3-XS2-zzz FCB-F-0.9-XS2-zzz  zzz=Light Connector type: Blank=M12 (default) or SM3	4-way branch, 0.3 meters total length 4-way branch, 0.9 meters total length  Allows any four CCS lights to connect to the LSS-2404 controller.	
Extension Cables M12	1,3,5, or 9 meters	FCB-X-0.5SQM12-5M5F X=length of 1,3, 5, or 9 m	Straight extension cables for use between the LSS-2404 controller and breakout cables or lights with M12 connector.	
Extension Cables SM3	1,2,3,5, or 10 meters	FCB-XX XX=Length: 1,2,3,5, or 10 m	Straight extension cables for use between FCB-F-X-X-XS2 branches and CCS lights with SM3 connectors only.	
Adjustable Bracket	150 mm  Other sizes available	BK-HPR2-150-IS	Mounting bracket for camera and segmented or standard HPR2 ring light. The bracket has a slider mechanism, allowing for the camera working distance to be adjusted. Bracket mountable at either camera or light position.	

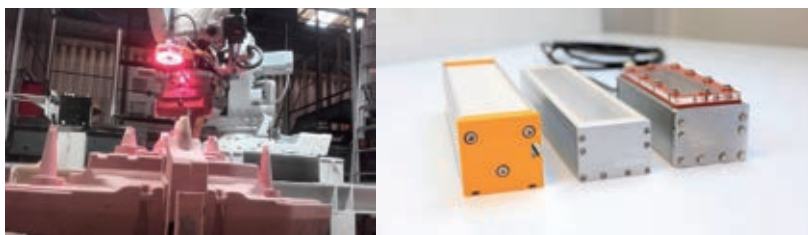
Depending on the particular CI process, any standard light may be incorporated. CCS can create custom products such as integrated multi-spectral lights in one unit. Contact CCS for additional details.

# Flood lights, 3D Pattern Projector,

CCS introduces a new range of high-quality plug & play lighting that achieves an innovative advancement in flexible design. This comprehensive range of lighting innovations includes Flood Lights, 3D Pattern Projector, Hyperspectral & Multispectral, SWIR, and more.

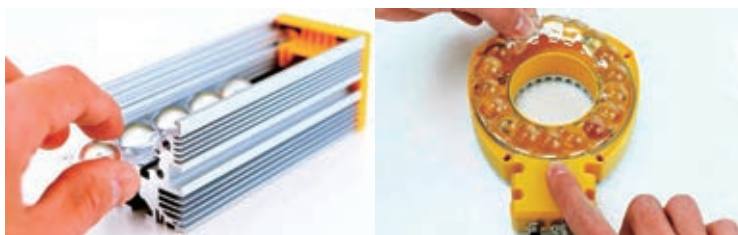
## ■ HIGHLIGHTS

### Flood light



Specialised in high-power LED lights for wide field of view inspection.

### Flexibility



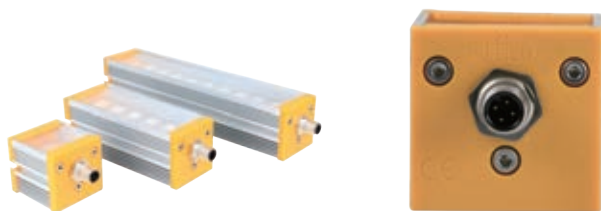
Do it yourself! Lights with adjustable wavelength, lens position, diffusers, drivers, and optical accessories delivers a new level of flexibility and convenience.

### IP standard compliance



IP options are available to overcome challenges in industrial applications such as food processing and pharmaceuticals, where equipment is exposed to water, dust or other contaminants.

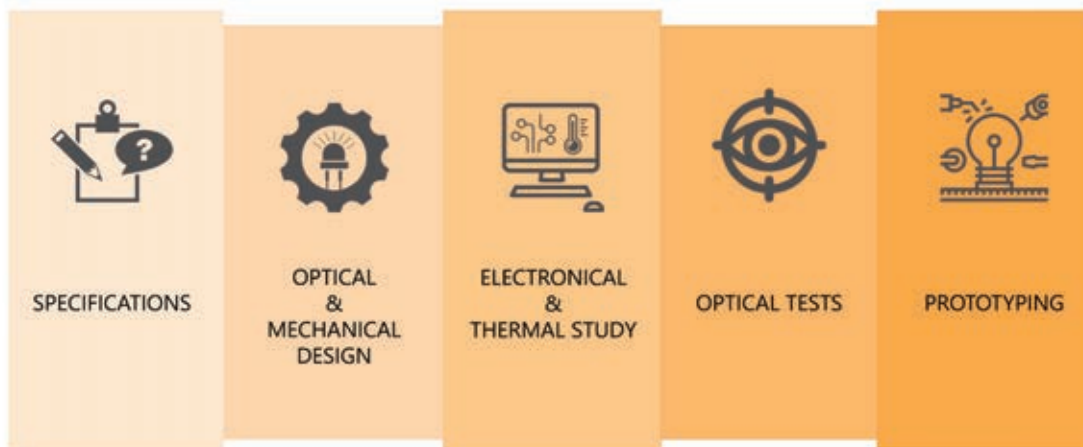
### Built-in controller with M12 cable



Space & cost-saving built-in controller with M12 cable is a standard feature, allowing easy overdrive, auto-strobe, dimming, and current control.

# Hyperspectral & Multispectral, SWIR

## Customization and OEM solutions



### MECHANICAL SETTINGS



Dimensions



Shape



Thin edge(s)



Attachments



Additional camera holes



Waterproof

### OPTICAL SETTINGS



Illumination angle



Light output



Wavelength

### ELECTRONIC SETTINGS



Number, type & connector position



Cable length

## CUSTOM



### Back light

Backlight custom form with 2 connectors.



### Bar light

Tri-color LED bar - 3 wavelengths.



### Bar light

Multiple LED bars  
(more luminance and greater illuminated area).

## OEM



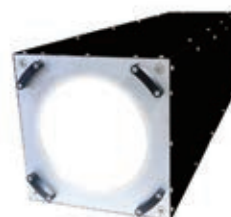
### Light sheet

Visualization of airflow.



### Projector

12 focus light solution for xenon flash replacement.



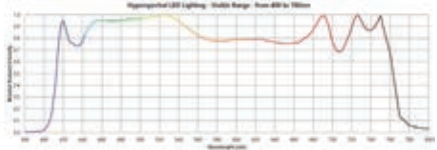
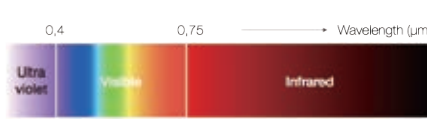
### "L" projector (50m distance)

Safety markings Ø300 mm.

# Flood lights, 3D Pattern Projector,

## COMPREHENSIVE PRODUCT RANGE

### Wavelength



From UV to IR

Hyper & Multispectral

### Size

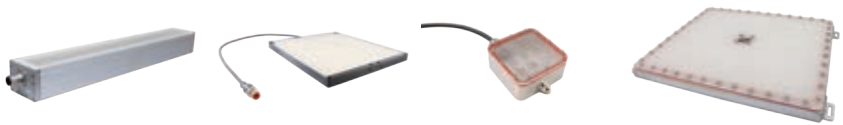


Any size upon request

### Protection

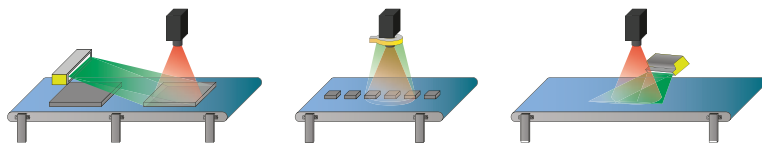


WATERPROOF



UP to IP69K Standard

### Camera type



3D, Area scan, Line scan, SWIR, NIR, Board, Smart, Hyperspectral, Multispectral, UV, High-speed

### Standard Custom

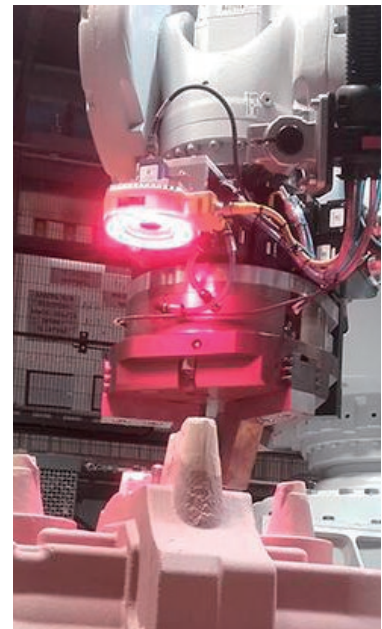
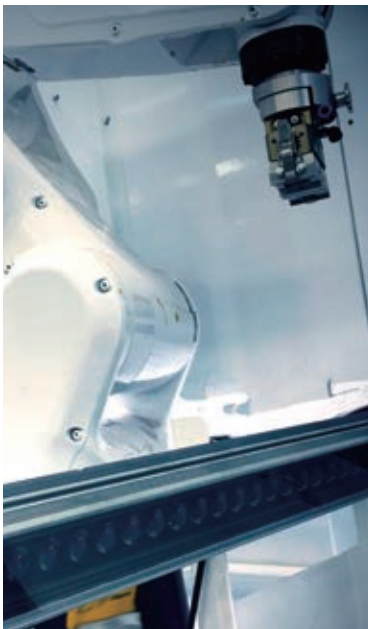


Standard

Custom

## APPLICATIONS

Best suited for robotics, logistics, biomedical, F&B, automotive, 3D, pharmaceuticals, packaging, cosmetics and many other machine vision applications.



## FLOOD TYPE BAR LIGHT



High-power user adjustable bar light featuring high intensity and uniformity offers 24 possible configurations in just one light. The innovative design, maximum optical, electronic, and mechanical flexibility allow users to easily adapt to any application requirements.

- 3 diffuser plates (Clear, Semi-diffuse, Diffuse) are included to create a suitable balance between power and homogeneity.
- 4 adjustable lens positions to easily change the emission angle from 90° to 10° to provide the optimal amount of coverage.
- Integrated controller with Auto-strobe feature that automatically illuminates at 300% increased intensity in strobe mode as compared to continuous operation.
- Easy-to-use standard M12 connector.
- Easy to open to make optical adjustments (lens position, diffuser, optical accessories).
- Robust design for challenging inspection environments.

**Common uses:** Most machine vision inspection applications with large FOV.

Color	UV	Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)	Position	P0	P1	P2	P3	
Wavelength (nm)	365	405	465	525	625	850	000					
	Transparent		Semi-diffuse			Opaline		Angle				
									90° Without lens	45°	25°	10°

Camera  
EFFI-Flux

Camera  
EFFI-Flux

## FLOOD TYPE RING LIGHT



High-power adjustable ring light with changeable diffuser plates and lens positions offers 24 possible configurations in just one light. It includes a smart Auto-strobe driver and IP65 rating for dust & water protection.

- 3 diffuser plates (Clear, Semi-diffuse, Diffuse) are included to create a suitable balance between power and homogeneity.
- 4 adjustable lens positions to easily change the emission angle from 90° to 10° to adapt from flood lighting to a spotlight.
- Integrated controller with Auto-strobe feature allows for automatic 700% increased intensity in strobe mode as compared to continuous operation.
- Easy-to-use standard M12 connector.
- Easy to open to make optical adjustments and easy to mount on the end of a robotic arm.
- Compatible with most lenses (58 mm camera hole).

**Common uses:** Robot guidance, pick & place and any large FOV inspection.

Color	UV	Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)	Full Color	Position	P0	P1	P2	P3
Wavelength (nm)	405	465	525	625	850	000	RGB					
	Transparent		Semi-diffuse			Opaline		Angle				
									90° Without lens	45°	25°	10°

Camera  
EFFI-Ring

# Flood lights, 3D Pattern Projector,

## FLOOD TYPE BRICK LIGHT



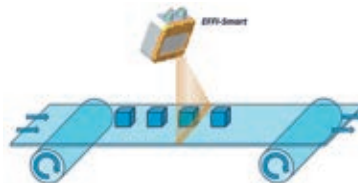
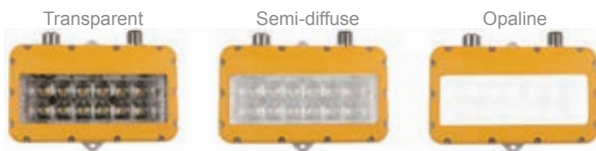
High-power brick light with 2 rows of LEDs. Highly flexible design which allows user to easily adjust lens positioning and diffuser plates when necessary.

- 3 diffuser plates (Clear, Semi-diffuse, Diffuse) are included to create a suitable balance between power and homogeneity.
- 4 adjustable lens positions to easily change the emission angle from 90° to 10°.
- Integrated controller for dimming or auto-strobe functionality. In case of Auto-strobe, it offers 700% increased intensity in strobe mode as compared to continuous operation.
- Easy-to-use standard M12 connector.
- Robust design with IP67 rating to overcome challenging working environments.

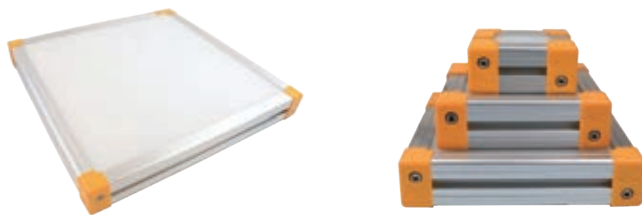
**Common uses:** Harsh working environments, where dust and water are constant factors.

Color	UV	Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	405	465	525	625	850	000

Position	P0	P1	P2	P3
Angle	90° Without lens	45°	25°	10°



## FLOOD TYPE BACK LIGHT

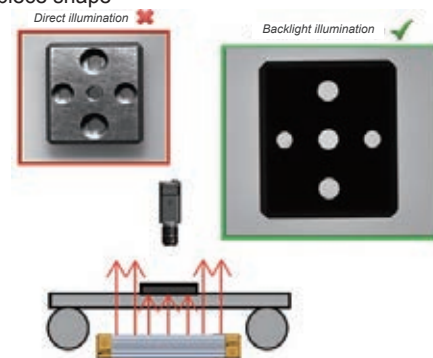
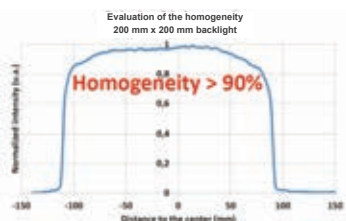


High performance back light offers exceptional contrast, high intensity & uniformity to provide a superior solution for strobed or continuous backlight inspections.

- Excellent uniformity (>90%).
- Anti-reflection system to absorb unwanted reflections from interfering light.
- Built-in dimming controller offers convenient and precise Analog Intensity Control.
- Easy-to-use M12 connector.
- Easy to mount with the built-in T-slot profile.
- Robust design for challenging inspection environments.

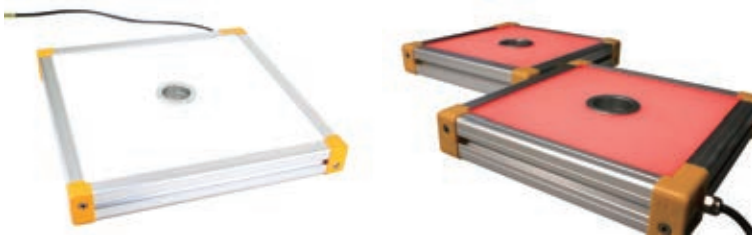
**Common uses:** Inspection which requires high accuracy measurement of work piece shape

Color	Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	465	525	625	850	000





## FLAT LIGHT WITH CAMERA HOLE

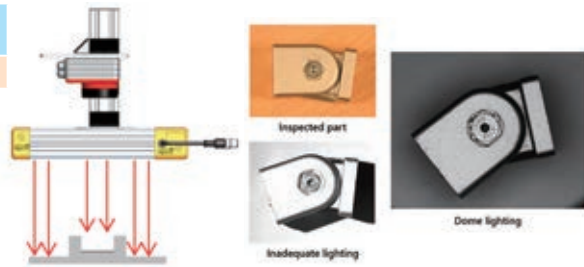
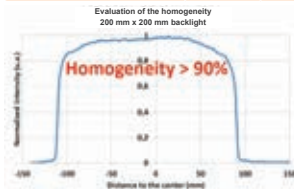


High-power flat light with camera hole offers high uniformity plus an integrated intensity controller. This light is an ideal front light for highly reflective work pieces and applications with a large field of view or mechanical constraints.

- Excellent uniformity (>90%).
- Anti-reflection system to absorb unwanted reflections from interfering light.
- Built-in dimming controller offers convenient and precise Analog Intensity Control.
- Strobe or Continuous use.
- Easy-to-use M12 connector.
- 39 mm standard size camera hole.

**Common uses:** Inspection with large FOV on reflective surfaces.

Color	Blue	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	465	625	850	000



## 3D PATTERN PROJECTOR



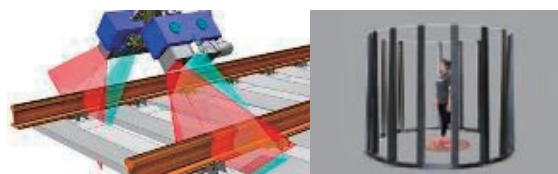
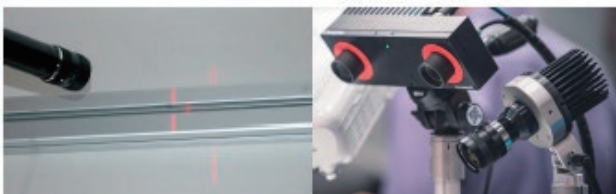
LED based structured LED pattern projector retains all the advantages of LEDs compared to laser sources (e.g. pattern uniformity and sharpness, eye safety, lifetime issues).

- Ultra-high power, superior homogeneity, sharp edges, speckle-free.
- Multiple interchangeable patterns with wide depth of field.
- Dedicated cloud of dots pattern mask for body scanning and stereo vision.
- Compatible with most lenses (C-Mount, E-Mount) to change the size of the projection area.
- Strobe mode and trigger mode are customizable to fit application needs.
- Full range of wavelengths (UV, visible, IR).

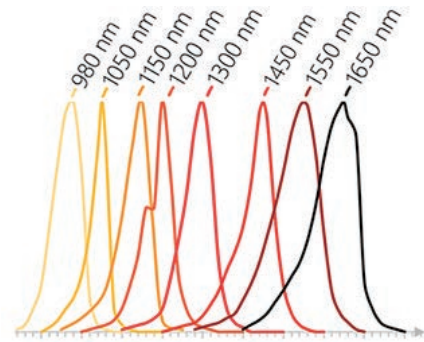
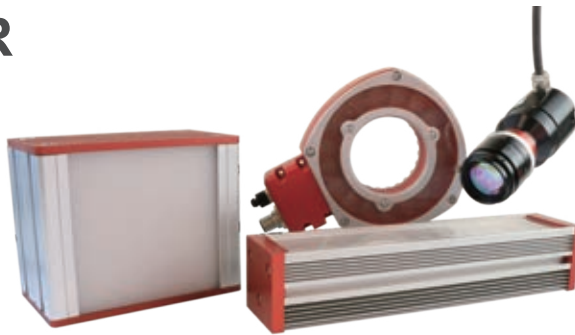
**Common uses:** 3D profilometry, body scanning, stereo vision, bin picking in robotics, alignment applications

Color	UV			Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	365	395	405	465	525	625	850	000

Name	Line	Cloud	Grid
Mask			



# Flood lights, 3D Pattern Projector,



Thanks to the innovative high-power LED SWIR source developed by EFFILUX, our full range of SWIR lighting solutions can be well adapted to different cameras, overcoming the current limitations of common lighting and taking machine vision inspection to the next level.

- Great lifetime and no excessive warm up.
- Perfect stability and reliability for repetitive tasks and measurements.
- Speckle free light source, thanks to LED-based technology.
- Quick pulse is achievable as a result of quick response time.
- Fully safe for human eyes, in contrast to laser source.
- Low power consumption as a result of great energy efficiency design.

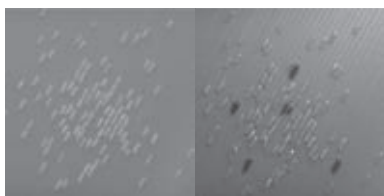


In partnership with the French Institute of Optics, EFFILUX developed an innovative LED SWIR source - SWIR H.O.P. (High Optical Power) Technology, based on a proprietary material that emits SWIR light, which is designed to deliver high output power.

The SWIR H.O.P. Technology retains all the advantages of LEDs compared to halogen or laser sources, with huge improvements in power and the flexibility to create both highly focused SWIR beams, as well as large area uniform SWIR illumination. In fact, one "chip" of the H.O.P. Technology emits a luminous flux comparable to a 50 W halogen source.

- Cost efficient: many expensive SWIR LEDs can be replaced by a single H.O.P. "chip" to achieve the same output power, resulting in lower costs for system builders.
- Superior optical performances and flexibility: User can project any pattern required on illuminated objects from short working distances (focused light) to far working distances (5 meters)
- Compact size with high level of adaptability: Can be integrated easily into a variety of illuminators.
- Exceptionally powerful LED SWIR source: To reveal the invisible phenomena that usual LED systems could not.

**Common uses:** Water detection (agriculture, food, medical/biotech), opaque materials inspection (plastics, silicon, solar cells etc), fill level, security, see through smoke, fog, dust, etc.



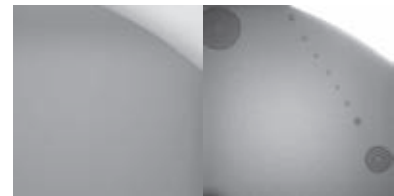
Visible SWIR

Dry vs Wet rice



Visible SWIR

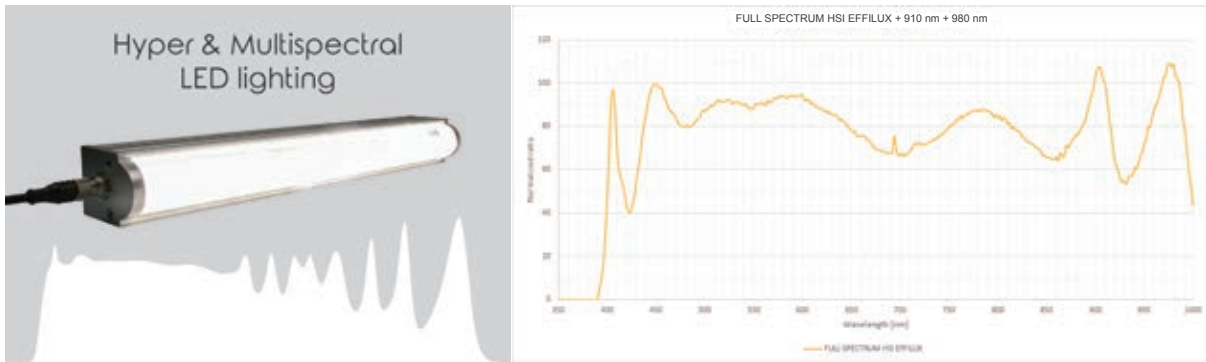
Isopropanol / Water / Acetone



Visible SWIR

Wafer Bonding Inspection

## ■ HYPERSPECTRAL & MULTISPECTRAL



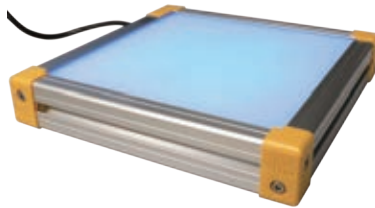
With CCS & EFFILUX combined expertise in optics & LEDs and a close collaboration with hyperspectral camera manufacturers, EFFILUX offers the best solution to fit any specific need.

- Single LED technology with the most broadband spectrum (400 - 1000 nm).
- Highly flexible and can be integrated for any lighting solution.
- Ideal for collimated line light bar for line scan hyperspectral cameras, backlight or spotlight for area scan sensors.
- Excellent uniformity both spectrally and spatially.

**Common uses:** Quality control, information transmission to robotic actuators, automated picking and sorting of commodities.



Collimated line light bar for line scan hyperspectral cameras



Backlight for area scan sensors



"Spot" concept for area scan sensors

## ■ MANUFACTURER



EFFILUX, a member of the CCS Group with headquarters in Paris, specializes in the design, manufacturing and sales of powerful, flexible and easy-to-use LED lighting solutions for machine vision applications. EFFILUX differentiates itself through cutting-edge flexible LED lighting design, more than

35 years of optical experience, extensive technical expertise, strong customization capabilities, and comprehensive lighting solutions with superior quality.

## ■ TALK TO THE EXPERTS

For more information about EFFILUX's products and solutions, please contact your nearest CCS sales representative or check the relevant product pages on [ccs-grp.com](http://ccs-grp.com).

**Warranty**

Warranty for this product differs from standard CCS lights. Contact our local sales office for details.



Gardasoft Vision design and manufacture high-performance lighting pulse controllers, LED strobe controllers, liquid lens controllers and timing controllers for machine vision applications. Our products include stand-alone units and embedded solutions to lighting control, lens control and timing control and we offer a custom design service.

## Constant Current Lighting Controllers and Machine Vision Component Controllers

The Gardasoft Vision range of controllers for machine vision includes a large range of LED lighting controllers as well as machine vision timing controllers and controllers for associated machine vision components such as deformable (liquid) lenses.

### Lighting control

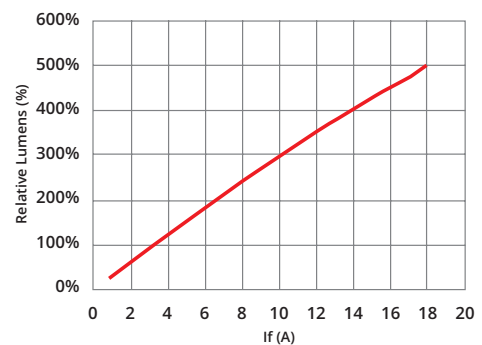
Gardasoft controllers are uniquely versatile and every unit can drive a wide range of LED types including 24V and 12V lights. There are suitable controllers for end users, system integrators and OEMs. All controllers are based on an advanced, current-drive technology and provide a versatile alternative to controllers based on voltage drive or voltage drive with pulse width modulation (PWM). The constant-current drive creates a very stable and dependable brightness and some ranges have additional safety functionality to protect the light from misuse.

All Gardasoft lighting controllers provide three modes of operation

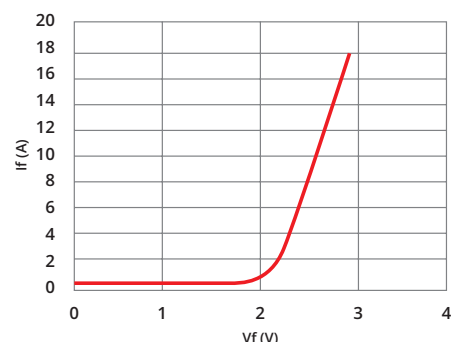
- constant (always on) mode
- switched mode, where the light is turned on and off by a precise external signal
- strobed (pulsed) mode, where the light is briefly turned on with a specific timing, sometimes at very high speed. Overdriving, by pulsing under specific conditions, provides the ability to get extra brightness from the light

Many of the controllers offer Ethernet and GigE Vision connectivity for simple external control and set-up and easy networking with other machine vision components. Specialist applications may require the additional capabilities provided by some controllers in the range. For example, the FP, HT, RTCC controllers have extra timing & sequencing capability for cases when user wants to include encoders, reject gates, variable timing or logic in their application and the FP controller is also designed for very fast, transient lighting pulses.

Relative Output Flux vs. Forward Current  
20ms, single pulse, Tj-25C

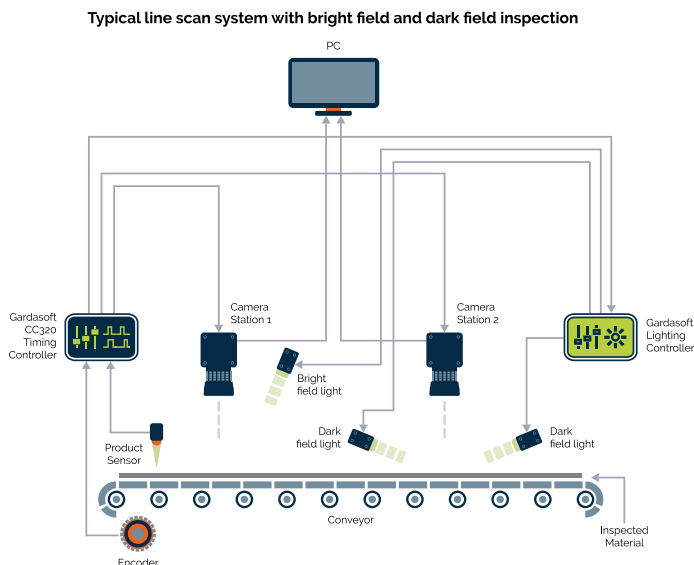


Forward Current vs. Forward Voltage  
20ms, single pulse, Tj-25C



## Machine vision sequencing and control

When a number of devices must be accurately sequenced in a machine vision system, the CC320 timing controller provides an easy, effective solution for accurate timing of machine vision components. It offers the functionality of a high-performance PLC and allows devices such as lighting, cameras, proximity sensors, reject gates and encoders to be configured with precise timings or on exact conveyor belt travel without expensive and complex PLC products. Trigger timing capability has also been incorporated into many lighting controllers.



## High-speed liquid lens focusing

Liquid, or focus-tunable lenses are able to focus very rapidly. They have clear advantages over traditional optics and are suitable for diverse applications including robotics, packaging equipment, logistics and unmanned vehicles (UAVs). The TR-CL lens controllers are suitable for both machine vision and traffic applications and are designed specifically for Optotune liquid lenses. They allow precise change of focus over a wide range of distances in under 10ms.

## Lighting Controllers

Gardasoft constant current lighting controllers provide direct control of LED illumination intensity from a steady, controllable current flow through the light. This precise control of current enables consistent light levels to be achieved which help guarantee accurate, repeatable machine vision measurements.

All lighting controllers can drive both 24V and 12V LEDs. In addition to continuous operation and an on/off switched mode using an external trigger signal, all controllers can also operate in pulsed mode:

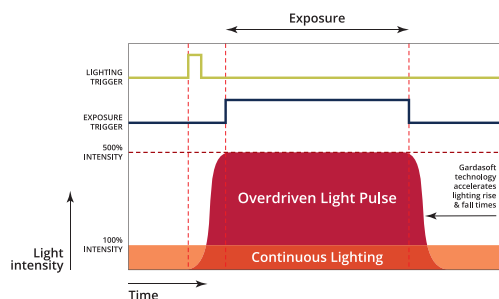
- Accurate, high-speed pulsing (strobing) of light enables objects moving at high speed to be frozen in time. The fine timing adjustment of the controllers is normally far more precise than internal camera timing.
- Precise control of the pulse width, frequency and intensity of illumination enables the light to safely be "overdriven". This can create short pulses of illumination that are up to 5x brighter than the manufacturer's specified maximum for that light.

Controllers are available with up to sixteen lighting output channels and a choice of other parameters such as external communication interface and maximum current rating per channel. Pulse widths down to 1µs and maximum trigger frequencies up to 100kHz can be achieved. Multi-channel controllers have internal sequencing capabilities to enable multiple lights to be triggered individually at different intensities and durations in a pre-defined sequence. This permits multiple quality measures at a single camera station.

These features make these lighting controllers extremely adaptable and an excellent choice for almost every application, including line scan imaging. For line scan imaging, the controller can enable capture information from two different illumination schemes simultaneously, so saving costs and improving throughput.

### Gardasoft Lighting Controllers

Obtain 5x LED Intensity With Strobed Lighting



## Gardasoft Lighting Controllers

Gardasoft is the world's leading provider of precision control for machine vision applications. Since the company launched the first machine vision lighting controller with LED overdrive in 2001, Gardasoft has grown to become the global supplier of machine vision lighting control equipment.

The versatile Gardasoft lighting controllers are compatible with all major brands of illumination and include sequencing capability. The controllers are powerful and conform to the popular machine vision communications protocols, including GigE Vision, GenICam, I2C, SPI, UART and other embedded serial protocols.

Gardasoft custom designs can be embedded inside lighting, vision systems, robotics and other automation and industrial equipment. Gardasoft collaborates with equipment manufacturers throughout the world to provide custom solutions which are powerful and compact, and help create unique solutions for the end user.

### RC/RT controllers

The RC is an entry level single channel controller while the RT Series is available with 2, 4 and 8 channel versions. All RT controllers have a maximum trigger frequency of 1 kHz and a minimum pulse width of 1 or 20  $\mu$ s. RTCC versions have integrated trigger timing and sequencing capabilities to provide trigger outputs where encoders, reject gates, variable timing or logic need to be included.



### HT high power controllers

HT controllers are designed for driving high power LED area and bar lights. With unique switching technology, these controllers have 2 independent output channels, each rated at 150W and each capable of driving 50A in pulsed mode and 5A in continuous mode. These controllers also have integrated trigger timing and sequencing capabilities.

### FP high-speed controller

The FP220 2-channel controller features a unique output drive technology which can create very fast, accurate light pulses. It provides high-speed, high-power pulsing with low power dissipation, as well as very stable low-current performance down to less than 1mA. It has particular benefits in high-speed pulsing applications such as line scan and high-power, long-pulse systems such as UV curing. This controller also has integrated trigger timing and sequencing capabilities.



### PP lighting controllers

The PP range of high performance lighting controllers are designed for volume applications for OEMs. Appropriate power supplies for the application can be designed into the machine itself, removing the need for power management in the controller, making the PP Series highly cost-competitive per channel. PP Series controllers are available in 2, 4, 8 and 16 channel versions with a maximum output of 96 W/channel and maximum trigger frequency of 100 kHz. These versatile controllers also offer special firmware options for advanced sequencing of multiple lights.



### PPCC controllers

PPCC versions have integrated trigger timing and sequencing capabilities to provide trigger outputs where encoders, reject gates, variable timing or logic need to be included in the application.

### SafeSense™

SafeSense™ technology accurately calculates the maximum overdrive that's available, depending on the type of light, the frequency and the duty cycle. The controller automatically imposes safe working limits to prevent possible damage to the LED while delivering the maximum light possible for the application.

### SafePower™

SafePower™ technology makes installation very easy by removing the need of having to use a bespoke DC power supply or heat sinking the controller. SafePower™ allows any light to be operated via a standard 24 VDC power supply and allows LEDs to be overdriven without having to increase the input power supply voltage.

## Sequence Control

### CC320 timing controller

The CC320 trigger timing controller enables high speed synchronization and sequencing of machine vision devices through flexible triggering of lights, lighting controllers, cameras, proximity sensors, encoders and reject gates to generate an automated production line solution without the need for expensive PLC solutions. The ultra-high-speed triggering and sequencing design allows the CC320 to achieve response times far exceeding the performance of standard PLCs.



- Eight digital inputs and eight digital outputs
- Each output can be individually configured to create precision triggers based on a combination of input signals.
- Timing can be based on precise delays or on an exact conveyor belt travel by using an encoder to measure belt movement. A trigger delay is available in case it's necessary to filter noisy trigger signals.
- Multiple cameras can be triggered at different times with the duration of the trigger signal controlling the illumination time and camera exposure time.
- Ethernet enabled. An internal web server allows the CC320 to be fully controlled via image processing software on a remote PC.

## Lens Control

### TR-CL180 industrial lens controller

The TR-CL180 single-channel industrial liquid lens controller, developed in close collaboration with Optotune, provides very accurate and repeatable control of Optotune tunable lenses. Liquid lenses can easily be added to a standard imaging system to increase the versatility of the system eliminating the need for multiple objectives and cameras.



- Compatible with Optotune EL-10-30-Ci and EL-16-40-TC and EL-3-10 lenses
- No need to adjust focus manually
- Lens adjustment in less than 10 ms
- Includes constant current Lens drive and Lens EEPROM data communications
- -400mA to +400mA in 0.1mA steps
- Full current calibration with lens temperature compensation



Applications include postal sorting, robotics, packaging equipment, logistics and unmanned vehicles (UAVs) and microscopy and life sciences.

A National Instruments LabVIEW Utility available for the TR-CL Series is particularly relevant for applications in these sectors such as Z slices, Light sheet imaging, In vivo (live tissue) imaging, and many types of automated imaging.

# GARDASOFT Products

## Warranty

Warranty for this product differs from standard CCS lights.  
Contact our local sales office for details.

## GARDASOFT Products Controller Selection Guide

Product	CHANNELS AND TRIGGERING			OUTPUT & PULSING						ADVANCED FEATURES SafeSense™ SafePower™	COMMUNICATION INTERFACES				
	Channels	Advanced Trigger Timing	Trigger o/ps	Maximum Current Rating Per Channel			Power		Pulsing		P-Button	Ethernet	RS232	GigE Vision	
				Continuous (A)	Pulsed (A)	Resolution (mA)	Max o/p Power per Channel (W)	Max o/p Power per Controller (W)	Min pulse width (µS)						Max Trigger Frequency
<b>RC Series Entry-Level Controllers</b>															
RC100	1	-	-	1	1	3	25	25	100	100 Hz	•	•	-	-	-
RC120	1	-	-	1.2	2	3	25	25	100	100 Hz	•	•	•	-	•

### TR-RC Trinitri Controllers

TR-RC120	1	-	-	1.2	2	3	25	25	100	100 Hz	•	•	•	-	•
TR-RC122	1	-	-	1.2	7	3	30	30	100	100 Hz	•	•	•	-	•

### RT Series Versatile Lighting Controllers

RT200-2	2	-	-	2	2	1	30	40	20	1 kHz	•	•	-	-	-
RT200-20	2	-	-	3	20	5	30	40	20	1 kHz	•	•	-	-	-
RT200F-2	2	-	-	2	2	1	30	40	1	1 kHz	•	•	-	-	-
RT200F-20	2	-	-	3	20	5	30	40	1	1 kHz	•	•	-	-	-
RT220-2	2	-	-	2	2	1	30	40	20	1 kHz	•	-	•	-	•
RT220-20	2	-	-	3	20	5	30	40	20	1 kHz	•	-	•	-	•
RT220F-2	2	-	-	2	2	1	30	40	1	1 kHz	•	-	•	-	•
RT220F-20	2	-	-	3	20	5	30	40	1	1 kHz	•	-	•	-	•
RT260-2	2	-	-	2	2	1	30	40	20	1 kHz	•	-	-	•	-
RT260-20	2	-	-	3	20	5	30	40	20	1 kHz	•	-	-	•	-
RT260F-2	2	-	-	2	2	1	30	40	1	1 kHz	•	-	-	•	-
RT260F-20	2	-	-	3	20	5	30	40	1	1 kHz	•	-	-	•	-
RT420-2	4	-	-	2	2	1	30	50	20	1 kHz	•	-	•	-	•
RT420-20	4	-	-	3	20	5	30	50	20	1 kHz	•	-	•	-	•
RT420F-2	4	-	-	2	2	1	30	50	1	1 kHz	•	-	•	-	•
RT420F-20	4	-	-	3	20	5	30	50	1	1 kHz	•	-	•	-	•
RT460-2	4	-	-	2	2	1	30	50	20	1 kHz	•	-	-	•	-
RT460-20	4	-	-	3	20	5	30	50	20	1 kHz	•	-	-	•	-
RT460F-2	4	-	-	2	2	1	30	50	1	1 kHz	•	-	-	•	-
RT460F-20	4	-	-	3	20	5	30	50	1	1 kHz	•	-	-	•	-
RT820F-2	8	-	-	2	2	1	30	100	1	1 kHz	•	-	•	-	-
RT820F-20	8	-	-	3	20	5	30	100	1	1 kHz	•	-	•	-	-
RT860F-2	8	-	-	2	2	1	30	100	1	1 kHz	•	-	-	•	-
RT860F-20	8	-	-	3	20	5	30	100	1	1 kHz	•	-	-	•	-

### TR-RT Trinitri Lighting Controllers

TR-RT220-2	2	-	-	2	2	1	30	40	20	1 kHz	•	-	•	-	•
TR-RT220-20	2	-	-	3	20	5	30	40	20	1 kHz	•	-	•	-	•
TR-RT220F-2	2	-	-	2	2	1	30	40	1	1 kHz	•	-	•	-	•
TR-RT220F-20	2	-	-	3	20	5	30	40	1	1 kHz	•	-	•	-	•
TR-RT420-2	4	-	-	2	2	1	30	50	20	1 kHz	•	-	•	-	•
TR-RT420-20	4	-	-	3	20	5	30	50	20	1 kHz	•	-	•	-	•
TR-RT420F-2	4	-	-	2	2	1	30	50	1	1 kHz	•	-	•	-	•
TR-RT420F-20	4	-	-	3	20	5	30	50	1	1 kHz	•	-	•	-	•

### RTCC Versatile Lighting Controllers with Trigger Timing Control

RTCC420-2	4	•	4	2	2	1	30	50	20	1 kHz	•	-	•	-	•
RTCC420-20	4	•	4	3	20	5	30	50	20	1 kHz	•	-	•	-	•
RTCC420F-2	4	•	4	2	2	1	30	50	1	1 kHz	•	-	•	-	•
RTCC420F-20	4	•	4	3	20	5	30	50	1	1 kHz	•	-	•	-	•
RTCC460-2	4	•	4	2	2	1	30	50	20	1 kHz	•	-	-	•	-
RTCC460-20	4	•	4	3	20	5	30	50	20	1 kHz	•	-	-	•	-
RTCC460F-2	4	•	4	2	2	1	30	50	1	1 kHz	•	-	-	•	-
RTCC460F-20	4	•	4	3	20	5	30	50	1	1 kHz	•	-	-	•	-



CHANNELS AND TRIGGERING			OUTPUT & PULSING							ADVANCED FEATURES	COMMUNICATION INTERFACES			
Channels	Advanced Trigger Timing	Trigger o/ps	Maximum Current Rating Per Channel			Power		Pulsing		SafeSense™ SafePower™	P-Button	Ethernet	RS232	GigE Vision
			Continuous (A)	Pulsed (A)	Resolution (mA)	Max o/p Power per Channel (W)	Max o/p Power per Controller (W)	Min pulse width (µS)	Max Trigger Frequency					

### PP Series Lighting Controllers for Volume Applications

#### PP4, PP5 OEM Lighting Controllers

PP420	4	-	-	2	10	3	96*	96	20	25 kHz	SafeSense	-	•	-	-
PP420F	4	-	-	2	10	3	96*	96	1	50 kHz	SafeSense	-	•	-	-
PP500	2	-	-	2	10	3	96*	96	20	25 kHz	SafeSense	•	-	-	-
PP500F	2	-	-	2	10	3	96*	96	1	50 kHz	SafeSense	•	-	-	-
PP520	2	-	-	2	10	3	96*	96	20	25 kHz	SafeSense	•	•	-	-
PP520F	2	-	-	2	10	3	96*	96	1	50 kHz	SafeSense	•	•	-	-

#### PP8, PP16 High Performance, 8-channel & 16-channel controllers for fast applications

PP820	8	-	-	2	20	100	96*	576	1	100 kHz	-	-	•	-	-
PP820C	8	-	-	2	20	5	96*	576	1	100 kHz	-	-	•	-	-
PP821	8	-	-	2	2	10	96*	576	1	100 kHz	-	-	•	-	-
PP821C	8	-	-	2	2	0.5	96*	576	1	100 kHz	-	-	•	-	-
PP822	8	-	-	2	5	25	96*	576	1	100 kHz	-	-	•	-	-
PP822C	8	-	-	2	5	1.5	96*	576	1	100 kHz	-	-	•	-	-
PP860	8	-	-	2	20	100	96*	576	1	100 kHz	-	-	-	•	-
PP860C	8	-	-	2	20	5	96*	576	1	100 kHz	-	-	-	•	-
PP861	8	-	-	2	2	10	96*	576	1	100 kHz	-	-	-	•	-
PP861C	8	-	-	2	2	0.5	96*	576	1	100 kHz	-	-	-	•	-
PP862	8	-	-	2	5	25	96*	576	1	100 kHz	-	-	-	•	-
PP862C	8	-	-	2	5	1.5	96*	576	1	100 kHz	-	-	-	•	-
PP1620	16	-	-	2	20	5	96*	576	1	100 kHz	-	-	•	-	-
PP1621	16	-	-	2	2	1	96*	576	1	100 kHz	-	-	•	-	-
PP1660	16	-	-	2	20	5	96*	576	1	100 kHz	-	-	-	•	-
PP1661	16	-	-	2	2	1	96*	576	1	100 kHz	-	-	-	•	-

#### PPCC16 High Performance, 16-channel controllers with trigger timing control

PPCC1620	16	•	8	2	20	5	96*	576	1	100 kHz	-	-	•	-	-
PPCC1621	16	•	8	2	2	1	96*	576	1	100 kHz	-	-	•	-	-
PPCC1660	16	•	8	2	20	5	96*	576	1	100 kHz	-	-	-	•	-
PPCC1661	16	•	8	2	2	1	96*	576	1	100 kHz	-	-	-	•	-

\*Theoretical output

#### High Speed and High-Power Controllers

FP220	2	•	4	3	20	0.1/5	30	60	1	10 kHz	•	-	•	-	•
TR-HT220-50	2	•	4	5	50	0.6/15	150	300	1	30 kHz	•	-	•	-	•
TR-HT260-50	2	•	4	5	50	0.6/15	150	300	1	30 kHz	•	-	-	•	-

#### Trigger Timing Controller

	Digital Inputs	Digital Outputs													GigE Vision
CC320	8	8	-	-	-	-	-	-	-	-	•	•	-	-	-

#### Optotune Liquid Lens Controllers

	Input	Output													GigE Vision
TR-CL180	Digital (3V-24V) Analogue (0-10V)	-400mA to +400mA	-	-	-	-	-	-	-	-	•	•	•	•	-

# triniti-enabled LED Lights

triniti-enabled LED Lights



## triniti™ technology

Expert control of Machine Vision lighting... made easy

triniti™ is a new, enabling technology from Gardasoft, which provides expert control, operational intelligence and full integration of Machine Vision Lighting — all within a 'plug-&-play' environment.

With triniti, Machine Vision systems with LED Lighting are now much easier to create, configure and commission, while, at the same time, offering increased functionality.

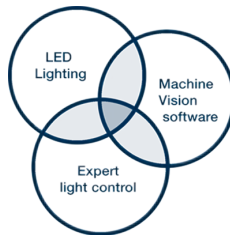
This is because complex control techniques have now been made very easy to implement.

triniti delivers many benefits to users, including that it:

- enables non-expert users to use expert Machine Vision lighting techniques
- revolutionises the integration of lighting parameters right through to application level software
- addresses the industry's identified need for a highly flexible system that is also readily 'plug-&-play'
- provides a stability of brightness, long-term, that helps to enhance the reliability of Machine Vision systems, over many years.

## Interworking between Machine Vision product manufacturers

As a system-enabling technology, triniti embraces a collaborative approach with leading manufacturers of LED Lighting and providers of Machine Vision software.



**LED Lighting** - CCS is one of the world's most prominent Machine Vision product manufacturers; CCS is also one of the leading triniti partners for LED Lighting.



**Machine Vision APIs** - The triniti API is compatible with Image Processing Software from leading suppliers.

## triniti™ comprises three key technological elements:

### 1 Integration of Lights into software

triniti-enabled LED lights are seamlessly integrated into Machine Vision networks, providing diagnostic and configuration benefits through imaging and application processing software.



### 2 Expert Light Control

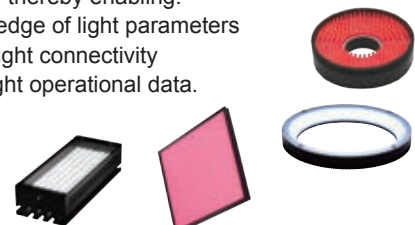
triniti systems incorporate the control functionality of Gardasoft Vision's patented LED light controller technology, in either discrete or embedded form.



### 3 Light Identification and Operational Data

triniti chips are mounted into partner lights or light cabling, thereby enabling:

- knowledge of light parameters
- easy light connectivity
- and light operational data.



## A Collaboration of Machine Vision manufacturers: LED lighting; image processing software; expert light control

### triniti™ products and developments

As part of the collaborative development programme, **triniti** deliverables include core hardware and software elements that are integrated with, or embedded into, products from leading LED Light hardware and Machine Vision software manufacturers.

**triniti** also exploits standard Machine Vision networking and communication architectures such as **GigE Vision** and **GenICam**, in order to ensure that the resulting solutions are fully integrated as follows:



#### a) triniti Machine Vision Software Interface (API)

**triniti**-enabled LED lights are seamlessly integrated into Machine Vision networks and provide diagnostic and configuration benefits through Image Processing Software.

#### b) triniti Protocols

The **GigE Vision** protocol has been implemented in the **triniti** controllers so that intelligent cameras and applications and libraries which support **GigE Vision** or GenICam can interface directly to **triniti** controllers.

#### c) triniti Controller

These are LED light controllers which inherit the patented Gardasoft functionality, and combine this with **triniti** communication and GigE Vision compatibility.

#### d) triniti Chip

The **triniti** chip has been built into partners' lights or light cabling. It holds manufacturer's data on the lights, stores dynamic usage data and can return measurements from sensors within the light.

# triniti-enabled LED Lights

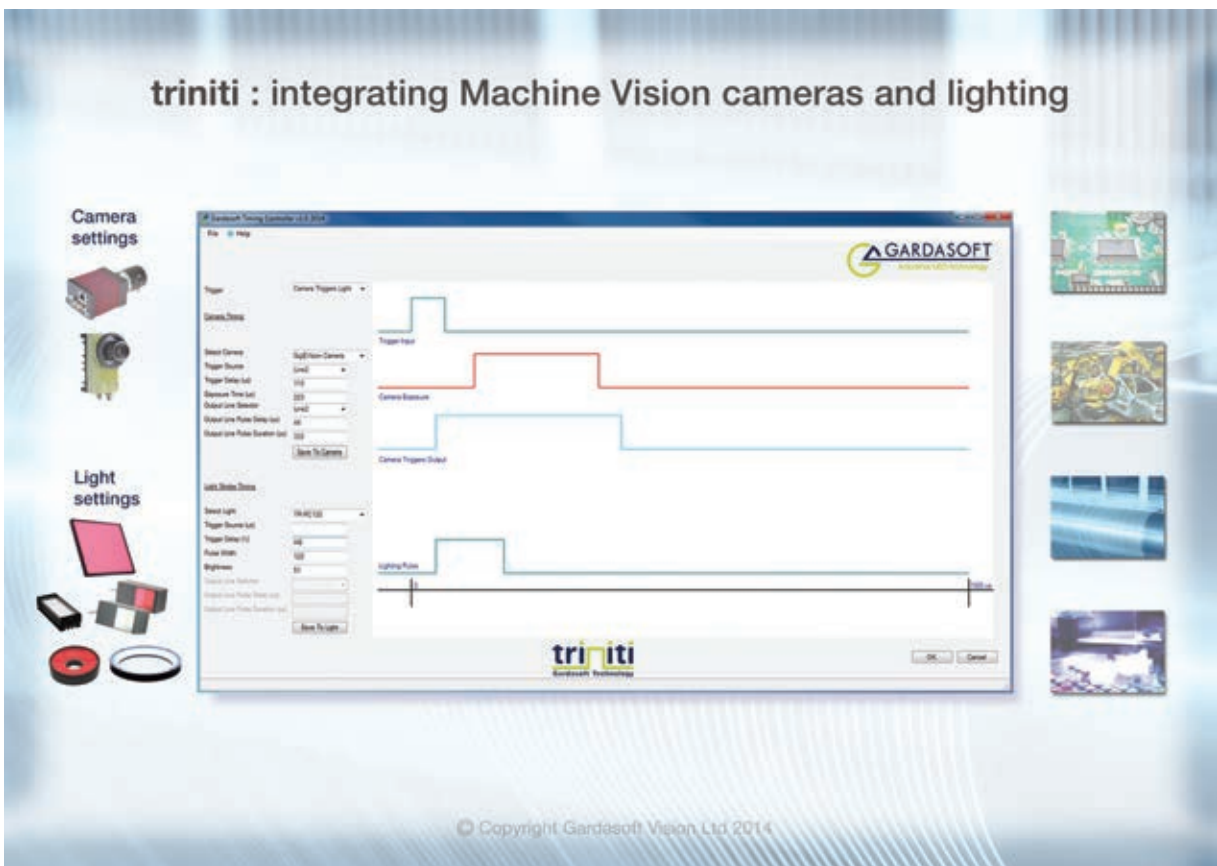
## triniti™ provides APIs for integration with Image Processing Software

triniti offers much closer integration of lighting to the application level. This is done by providing links from the applications to the light through industry-standard protocols and software APIs for specific environments.

triniti API extensions are available for leading Machine Vision software for Image Processing and System configuration — with the result that a full graphical interface is provided to the user for configuration and synchronisation between GigE Vision (and other cameras) and lighting.

By integrating camera and lighting configuration and control at the application level, the operation of the system as a whole can be more visible.

For example, a timing diagram (like the below example) showing the timing of the trigger source, camera exposure time and lighting pulses, can be shown on-screen, to make it much easier for both development and diagnostics.



## triniti™ gives expert control

With triniti-enabled lighting, users benefit from having expert control techniques for their lighting systems readily available — with an ease-of-use more typically associated with 'plug-&-play' products.

Functional advantages include enhanced overdrive and pulse control, and flexible light switching and synchronisation. (Note: refer to **CCS** – [www.ccs-grp.com](http://www.ccs-grp.com) – for specific details.)

### 'Plug-&-play' customer benefits include:

Optimum application settings for lighting are easy to configure, multiple light systems are easy to manage, and automatic adjustment can maintain more stable brightness over many years of operation.

### Expert customer benefits include:

Machine Vision functionality is increased, as performance is improved, and the potential of camera and lighting equipment can be fully exploited. This means that system reliability is maximised, and at the same time, services to end users can be extended and enhanced.

Model Name	Led Color	Wavelength/ Correlated Color temp.	Options		Weight (g)
<b>Ring Lights</b>					
LDR2-32RD2-TR	Red	630 nm	Diffusion plate Polarization plate	Lens attachment ring	30
LDR2-32SW2-TR	White	5,500 K	Diffusion plate Polarization plate	Lens attachment ring	30
LDR2-42RD2-TR	Red	630 nm	Diffusion plate Polarization plate	Adapter	50
LDR2-42SW2-TR	White	5,500 K	Diffusion plate Polarization plate	Adapter	50
LDR2-50RD2-TR	Red	630 nm	Diffusion plate Polarization plate	Lens attachment ring	50
LDR2-50SW2-TR	White	5,500 K	Diffusion plate Polarization plate	Lens attachment ring	50
LDR2-70RD2-TR	Red	630 nm	Diffusion plate	Polarization plate	110
LDR2-70SW2-TR	White	5,500 K	Diffusion plate Polarization plate		120
LDR2-74RD2-LA-TR	Red	630 nm	Diffusion plate		90
LDR2-74SW2-LA-TR	White	5,500 K	Diffusion plate		90
LDR2-100RD2-LA-TR	Red	630 nm	Diffusion plate		170
LDR2-100SW2-LA-TR	White	5,500 K	Diffusion plate		170
LDR2-132RD2-LA-TR	Red	630 nm	Diffusion plate		270
LDR2-132SW2-LA-TR	White	5,500 K	Diffusion plate		270
HPR2-50RD-TR	Red	635 nm	Bracket		46
HPR2-50SW-TR	White	6,000 K	Bracket		46
HPR2-50BL-TR	Blue	470 nm	Bracket		46
HPR2-75RD-TR	Red	635 nm	Bracket		160
HPR2-75SW-TR	White	6,000 K	Bracket		160
HPR2-75BL-TR	Blue	470 nm	Bracket		160
HPR2-100RD-TR	Red	635 nm	Bracket		170
HPR2-100SW-TR	White	6,000 K	Bracket		170
HPR2-100BL-TR	Blue	470 nm	Bracket		170
<b>Square Lights</b>					
FPQ3-32RD-TR	Red	630 nm	-		50
FPQ3-32SW-TR	White	6,000 K	-		50
FPQ3-48RD-TR	Red	630 nm	-		85
FPQ3-48SW-TR	White	6,000 K	-		85
<b>Bar Light</b>					
LDL2-33X8RD-TR	Red	635 nm	Diffusion plate Polarization plate	Bracket	20
LDL2-33X8SW-TR	White	6,600 K	Diffusion plate Polarization plate	Bracket	20
LDL2-41X16RD-NR-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-41X16SW-NR-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-41X16RD-WD-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-41X16SW-WD-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-119X16RD-NR-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	95
LDL2-119X16SW-NR-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	95

Model Name	Led Color	Wavelength/ Correlated Color temp.	Options		Weight (g)
LDL2-119X16RD-WD-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	95
LDL2-119X16SW-WD-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	95
LDL2-74X30RD-NR-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	100
LDL2-74X30SW-NR-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	100
LDL2-74X30RD-WD-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	100
LDL2-74X30SW-WD-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	100
<b>Flat Lights</b>					
TH2-27X27RD-TR	Red	635 nm	Light control film	Bracket	30
TH2-27X27SW-TR	White	5,800 K	Light control film	Bracket	30
TH2-43X35RD-TR	Red	635 nm	Light control film	Bracket	40
TH2-43X35SW-TR	White	5,800 K	Light control film	Bracket	40
TH2-51X51RD-TR	Red	635 nm	Light control film	Bracket	60
TH2-51X51SW-TR	White	5,800 K	Light control film	Bracket	60
TH2-63X60RD-TR	Red	635 nm	Light control film	Bracket	100
TH2-63X60SW-TR	White	5,800 K	Light control film	Bracket	100
TH2-83X75RD-TR	Red	635 nm	Light control film	Bracket	140
TH2-83X75SW-TR	White	5,800 K	Light control film	Bracket	140
TH2-100X100RD-TR	Red	635 nm	Light control film	Bracket	200
TH2-100X100SW-TR	White	5,800 K	Light control film	Bracket	200
<b>Dome Lights</b>					
HPD2-75RD-TR	Red	635 nm	Bracket		140
HPD2-75SW-TR	White	6,500 K	Bracket		140
HPD2-75BL-TR	Blue	470 nm	Bracket		140
HPD2-100RD-TR	Red	635 nm	Bracket		160
HPD2-100SW-TR	White	6,500 K	Bracket		160
HPD2-100BL-TR	Blue	470 nm	Bracket		160
<b>Coaxial Lights</b>					
LFV3-CP-18RD2-TR	Red	635 nm	-		80
LFV3-CP-18SW-TR	White	6,000 K	-		80
LFV3-35RD-TR (A)	Red	630 nm	Diffusion plate Polarization plate	Light control film	175
LFV3-35SW-TR (A)	White	6,500 K	Diffusion plate Polarization plate	Light control film	175
LFV3-50RD-TR (A)	Red	630 nm	Diffusion plate Polarization plate	Light control film	335
LFV3-50SW-TR (A)	White	6,500 K	Diffusion plate Polarization plate	Light control film	335

## Guide to Selecting Control Units According to Functions

You can easily find and select the control unit you need.

Excluding the PSCC Series, PSB4 Series, and PSB3-30024.



### ► Search by Power Supply

★ Control units recommended by CCS

<p><b>AC input</b></p> <p>★ PD4 Series ★ PD3 Series PD2 Series</p>	<p><b>DC input</b></p> <p>★ PD3 Series ★ CD-VA Series CC-ST-1024 CN-4024-2-EIPT PB-2430-1</p>	<p><b>PoE input</b></p> <p>★ CN-EPOE Series</p>	<p><b>PC-mounted board type</b></p> <p>★ CX-PV Series</p>
--	---	---	---

### ► Search by Capacity

Actual capacity varies depending on the product. Refer to the corresponding product specifications for details.

100 W	★ PD4 Series ★ PD3 Series
50 W	★ PD4 Series PD3/PD2 Series CD-VA Series
40 W	CN-4024-2-EIPT
30 W	★ PD3 Series PD2 Series PB-2430-1
10 W <small>(Capacity)</small>	★ CC-ST-1024 CN-EPOE Series PD2 Series

### ► Search by Number of Channels

1 2 3 4 5 6 7 8	★ PD3 Series
1 2 3 4	★ PD4 Series PD3 Series PD2 Series CD-VA Series CN-EPOE Series
1 2	★ PD4 Series CD-VA Series CN-4024-2-EIPT
1 <small>(Number of channels)</small>	★ CC-ST-1024 PB-2430-1

### ► Search by External Control

If you want prompt control by receiving set values in a batch:

If you want to individually manage multi-drop wiring:

If you want to manage the control units from an upper level network:

<p><b>Parallel communication</b></p> <p>★ PD4 Series PD3 Series PD2 Series CD-VA Series</p>	<p><b>Serial communication</b> EIA-485 PD3 Series</p>	<p><b>Ethernet communication</b> TCP/IP UDP/IP</p> <p>★ PD4 Series PD3 Series CD-VA Series CN-EPOE Series</p>	<p><b>Ethernet communication</b> EtherNet/IP TCP/IP CN-4024-2-EIPT</p>
---	---	---	--

### ► Search by ON/OFF Control

Use when continuously emitting light:

Use for emitting light only when necessary:

Use for emitting light momentarily:

<p style="text-align: center;"><b>Continuous lighting</b></p> <p>★ PD4 Series PD3 Series PD2 Series CD-VA Series CC-ST-1024 CN-EPOE Series CN-4024-2-EIPT PB-2430-1</p>	<p style="text-align: center;"><b>ON/OFF lighting</b></p> <p>★ PD4 Series PD3 Series PD2 Series CD-VA Series CC-ST-1024 CN-4024-2-EIPT</p>	<p style="text-align: center;"><b>Strobe lighting</b></p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;"><b>No overdrive</b></p> <p>★ PD4 Series PD3 Series CC-ST-1024 CN-EPOE Series CN-4024-2-EIPT <small>(Continuous emitting type)</small></p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;"><b>Overdrive specifications</b></p> <p>Light emission is made even brighter by increasing the output to light units for a short time.</p> <p>★ POD Series CD-VA Series CN-4024-2-EIPT PTU2 Series PF Series <small>(Used with dedicated light units ▶ P.141 for strobe emitting)</small></p> </div>
---	--	--

If you want to emit light brighter than ON/OFF lighting or strobe lighting without overdrive:

# Guide to Selecting Control Units for the Spot Lights HLV Series



Refer to P. 321 .      Refer to P. 359 .      Refer to P. 361 .      Refer to P. 363 .

## Search by Output Voltage

Selection is not necessary.

## Search by Capacity

If you want to use the HLV3 Series, check the input current of the spot light and select the applicable control unit. Also note that you cannot connect multiple spot lights with a branch cable.

If you are connecting any light units other than the spot lights HLV Series to the PD3 Series, be sure to check that the total power consumption of the light unit is within the output power of the control unit before using.

★ Control units recommended by CCS      \*1 The PD3-3024-3 and PD3-5024-3 Series are not applicable to the spot lights HLV Series.  
 \*2 The HLV3-4M/HLV3-4S/HLV3-22-4-NR/HLV3-3M-RGB-4 must be used with the PJ2 Series.

## ▶ Search by Power Supply      ▶ Search by Number of Channels

**AC input**

- ★ PD3 Series<sup>\*1</sup>
- ★ PJ2 Series<sup>\*2</sup>
- PJ Series

**DC input**

- ★ PD3 Series<sup>\*1</sup>
- PJ Series
- CC-PJ-0707

1	2	3	4	5	6	7	8	★ PD3 Series <sup>*1</sup>
1	2	3	4	★ PJ2 Series <sup>*2</sup>				
1	2	3	PJ Series					
1	★ CC-PJ-0707							

(Number of channels)

## ▶ Search by External Control      ▶ Search by Intensity Control Method

If you want to individually manage IP addresses from an upper level network:

**Ethernet communication**  
TCP/IP UDP/IP

- ★ PD3 Series<sup>\*1</sup>
- ★ PJ2 Series<sup>\*2</sup>

If you want prompt control by receiving set values in a batch:

**Parallel communication**

- ★ PD3 Series<sup>\*1</sup>
- ★ PJ2 Series<sup>\*2</sup>

If you want to control intensity by analog voltage:

**Analog input**

- ★ PJ Series

If you want to individually manage multi-drop wiring:

**Serial communication**  
EIA-485

- ★ PD3 Series<sup>\*1</sup>

**Variable-current control**

- ★ PD3 Series<sup>\*1</sup>
- ★ PJ2 Series<sup>\*2</sup>
- PJ Series
- CC-PJ-0707

## ▶ Search by ON/OFF Control

Use when continuously emitting light:	Use for emitting light only when necessary:	Use for emitting light momentarily:
<p style="text-align: center; color: green;"><b>Continuous lighting</b></p> <ul style="list-style-type: none"> <li>★ PD3 Series<sup>*1</sup></li> <li>★ PJ2 Series<sup>*2</sup></li> <li>PJ Series</li> <li>CC-PJ-0707</li> </ul>	<p style="text-align: center; color: green;"><b>ON/OFF lighting</b></p> <ul style="list-style-type: none"> <li>★ PD3 Series<sup>*1</sup></li> <li>★ PJ2 Series<sup>*2</sup></li> <li>PJ Series</li> <li>CC-PJ-0707</li> </ul>	<p style="text-align: center; color: green;"><b>Strobe lighting</b></p> <ul style="list-style-type: none"> <li>★ CC-PJ-0707</li> <li>No overdrive</li> </ul>

Refer to the Technical Guide on P. 412 for details regarding the technical structure and meanings of terminology for PWM, variable voltage and other types of control.

	Digital Control Units				Analog Control Units				Excluding the PF Series, PJ2 Series, PJ Series, and CC-PJ-0707.			
Model name	PD4-6024-2-P	PD4-6024-2-E	PD4-6024-4-P	PD4-6024-4-E	PD4-12024-2-P	PD4-12024-2-E	PD4-12024-4-P	PD4-12024-4-E	PD3-3024-3-PI	PD3-3024-3-SI(A)	PD3-3024-3-EI(A)	
Output voltage	24 V											
Output power	60 W				120 W				28 W			
No. of channels	2		4		2		4		3			
Lighting method	Continuous / Strobe lighting											
Intensity control method	PWM control / Lighting time control											
PWM frequency	125 kHz											
Intensity value	1,024 steps								256 steps			
Input voltage	100 to 240 VAC											
Frequency	50/60 Hz											
Power consumption	155 VA	152 VA	155 VA	152 VA	170 VA	168 VA	170 VA	168 VA	78 VA			
Parallel communication	○	—	○	—	○	—	○	—	○	—	—	
EIA-485 communication	—	—	—	—	—	—	—	—	—	○	—	
Ethernet	—	○	—	○	—	○	—	○	—	—	○	
Analog input	—	—	—	—	—	—	—	—	—	—	—	
Manual control	○	○	○	○	○	○	○	○	○	○	○	
ON/OFF lighting	○	○	○	○	○	○	○	○	○	○	○	
Strobe lighting	○ No overdrive											
Lighting time	0~992 μs (8 μs steps) or 0~40 ms (1 ms steps)								40 μs / 80 μs / 120 μs / 200 μs / 600 μs / 1 ms / 4 ms / 10 ms / 20 ms / 40 ms			
Lighting delay time	0~999 μs or 0~1,000 ms								10 μs max.			
CE marking	○											
Weight	1.5 kg								600 g			
Cooling method	Natural air cooling											
Mounting method	Bottom and DIN rail mounting											
Relevant page	P.313								P.321			

	PD3-5024-4-PI(A)	PD3-5024-4-SI(A)	PD3-5024-4-EI(A)	PD3-10024-8-PI	PD3-10024-8-SI(A)	PD3-10024-8-EI(A)	PD3-3024-3-PT	PD3-3024-3-ET(A)	PD3-5024-3-PT	PD3-5024-3-ET(A)	PD3-5024-4-PT(A)	PD3-5024-4-ET(A)	
Output voltage	24 V												
Output power	46 W			95 W			28 W		48 W		46 W		
No. of channels	4			8			3		3			4	
Lighting method	Continuous / Strobe lighting												
Intensity control method	PWM control / Lighting time control												
PWM frequency	125 kHz												
Intensity value	256 steps												
Input voltage	100 to 240 VAC						24 VDC						
Frequency	50/60 Hz						—						
Power consumption	70 VA			130 VA			32 W		52 W			52 W	
Parallel communication	○	—	—	○	—	—	○	—	○	—	○	—	
EIA-485 communication	—	○	—	—	○	—	—	—	—	—	—	—	
Ethernet	—	—	○	—	—	○	—	○	—	○	—	○	
Analog input	—	—	—	—	—	—	—	—	—	—	—	—	
Manual control	○	○	○	○	○	○	○	○	○	○	○	○	
ON/OFF lighting	○	○	○	○	○	○	○	○	○	○	○	○	
Strobe lighting	○ (No overdrive)												
Lighting time	40 μs / 80 μs / 120 μs / 200 μs / 600 μs / 1 ms / 4 ms / 10 ms / 20 ms / 40 ms												
Lighting delay time	20 μs max.						10 μs max.			20 μs max.			
CE marking	○												
Weight	1.2kg			1.5kg			400 g			850 g			
Cooling method	Forced air cooling						Natural air cooling			Forced air cooling			
Mounting method	Bottom and DIN rail mounting												
Relevant page	P.321												



Model name	PD2-1024(A)	PD2-3024(A)	PD2-3024-2(A)	PD2-3024-4(A)	PD2-3024-8(A)	PD2-5024(A)	POD-5024-2-PEI	POD-22024-4-PEI	CN-4024-2-EIPT
Output voltage	24 V						24 to 48 V (Overdrive mode)		24 to 48 V (Overdrive)
Output power	9 W	28 W		27 W	25 W	46 W	Refer to the spec. table on P.341 <sup>*1</sup>		Spec. table on P.354 <sup>*2</sup>
No. of channels	1		2	4	8	1	2	4	2
Lighting method	Continuous						Strobe lighting / Continuous		Strobe lighting / Continuous
Intensity control method	PWM control						Variable voltage control / PWM control		Lighting time control / PWM control
PWM frequency	62.5 kHz						125 kHz		125 kHz
Intensity value	256 steps						512 steps		512 steps
Input voltage	100 to 120 VAC	100 to 240 VAC						24 VDC	
Frequency	50/60 Hz						50/60 Hz		—
Power consumption	27 VA	78 VA			122 VA		65 VA	260 VA	45W (average), 71.3W (peak)
Parallel communication	○	○	○	○	○	○	○		—
EIA-485 communication	—	—	—	—	—	—	—		—
Ethernet	—	—	—	—	—	—	○		○ <sup>*3</sup>
Analog input	—	—	—	—	—	—	—		—
Manual control	○	○	○	○	○	○	○		—
ON/OFF lighting	○	○	○	○	○	○	○		○
Strobe lighting	—						○ (With overdrive)		○ (With overdrive)
Lighting time	—						1~1,000μs (1μs steps)	1~3,000μs (See the spec. table.)	Refer to the user manual.
Lighting delay time	—						0~1,000μs (1μs steps)		0~10,000μs (1μs steps)
CE marking	○								
Weight	700 g	1.1 kg		1.2 kg	1.5 kg	1.3 kg	1.5 kg	3.3 kg	500 g
Cooling method	Natural air cooling				Forced air cooling		Forced air cooling		Natural air cooling
Mounting method	Bottom mounting	Bottom and Side mounting				Bottom mounting		DIN rail mounting	
Relevant page	P.329						P.339		P.353

\*1, \*2 Confirm the peak current of the light units and use them within the output current of the control unit. For information on possible combinations of light units with a control unit, please refer to our website. <https://www.ccs-grp.com/lnk/qr/pod>

\*3 EtherNet/IP and TCP/IP interfaces support

Model name	PTU2-3024(A)	CN-1024-2-EPOE	CN-1024-4-EPOE	CC-ST-1024	PSCC-30048(A)	PSCC-60048(A)	PSB4-30024-PEI	PSB4-60024-2-PEI	PSB3-30024
Output voltage	48 V	24 V		24 V	43 V		24 V		24 V
Output power	27 W	10W for total		10 W	300 W	600 W	300 W	300 W (Total for 1 ch)	300 W
No. of channels	2	2	4	1	1		1	2	1
Lighting method	Strobe lighting	Continuous / Strobe lighting		Continuous / Strobe lighting	Continuous lighting		Continuous lighting		Continuous lighting
Intensity control method	Lighting time control	PWM control / Lighting time control		PWM control / Lighting time control	Variable current control		Variable voltage control		Variable voltage control
PWM frequency	—	125 kHz		100 kHz	—		—		—
Intensity value	10%~100% (10% steps)	256 steps		100 steps	256 or 1,000 steps		256 or 1,024 steps		256 steps
Input voltage	100 to 240 VAC	RJ-45 connector (based on PoE)		24 VDC	100 to 240 VAC		100 to 240 VAC		100 to 240 VAC
Frequency	50/60 Hz	—		—	50/60 Hz		50/60 Hz		50/60 Hz
Power consumption	78 VA	13.9 W		11 W	360 VA	750 VA	388 VA	765 VA	410 VA
Parallel communication	○	—		—	○	○	○		○
EIA-485 communication	—	—		—	○	○	—		○
Ethernet	—	○		—	○	○	○		—
Analog input	—	—		—	—	—	—		○
Manual control	○	—		○	○	○	○		○
ON/OFF lighting	—	○		○	○	○	○		○
Strobe lighting	○ (With overdrive)	○ (No overdrive)		○ (No overdrive)	—		—		—
Lighting time	10~990μs (10μs steps)	8μs~100 ms (8μs steps)		50μs/100μs/250μs/500μs/1 ms/4 ms/10 ms/40 ms	—		—		—
Lighting delay time	15μs max.	0μs~100 ms (10μs steps)		3μs max.	—		—		—
CE marking	○	○		○	○		○		○
Weight	1.2 kg	140 g		80 g	3.1 kg	7.0 kg	2.4 kg	4.1 kg	2.3 kg
Cooling method	Natural air cooling	Natural air cooling		Natural air cooling	Forced air cooling		Forced air cooling		Forced air cooling
Mounting method	Bottom mounting	DIN rail mounting, Bottom mounting		DIN rail mounting	Bottom mounting		Bottom mounting		Bottom mounting
Relevant page	P.343	P.351		P.357	P.365		P.367		P.369



## Digital power supply with enhanced lighting control functions

### AC Input Types



PD4-12024 Series

PD4-6024 Series

### Features

- Continuous lighting, ON/OFF mode, or strobe mode
- Lighting output of 60 W/120 W available
- Number of channels: 2 channels / 4 channels
- Ethernet / parallel external control
- Parallel type supports both NPN and PNP connections
- 1,024 steps of precise intensity settings
- All types have natural air cooling for easier installation

### Various Lighting Control Functions

- Turn lights on in desired pattern with sequence control function
- Supports PLC link function for easy integration with PLCs
- Trigger output function simplifies the synchronization of the camera and lighting
- With Recipes setting, save lighting settings in a maximum of 8 recipes
- Real-time information monitoring from applications, such as operating status and operation logs



# PD4 Series



Refer to our website for product details.

CCS PD4

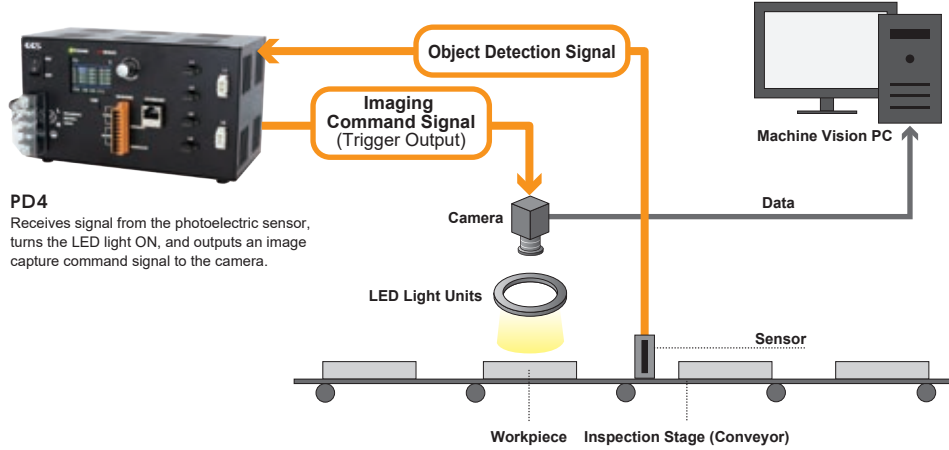
Search



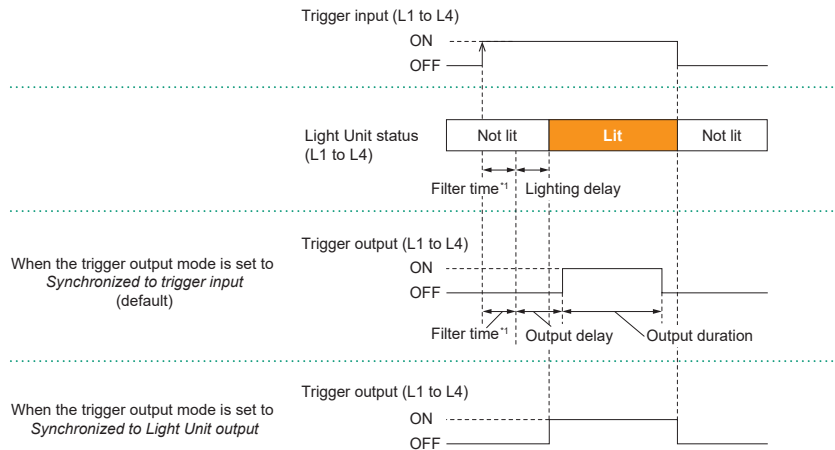
## Trigger Output Mode

Sends an output trigger signal to the camera so the timing of the light and camera can be synchronized.

### Trigger Output Application Example



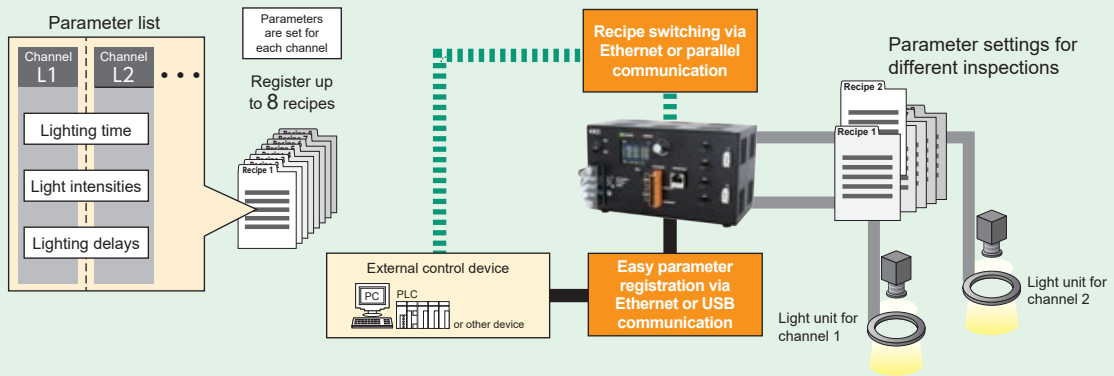
### Trigger Output Signal Connection Example



\*1 Filter time can be set when noise is mixed in with the signal input from the trigger pin.

## Recipes

Save lighting settings in a maximum of 8 recipes. Parameter settings such as intensity values for each channel and other inspection-specific parameter settings can be registered in advance, allowing for easy setting changes simply by recalling recipes.



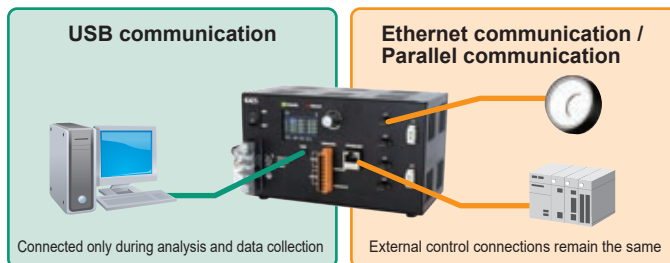
## ➤ USB Communication

Equipped with a USB connector (Mini-B) to enable data communication with a PC while connected to external control devices.

Various settings and operations can be verified via USB communication.

Use a USB cable with a ferrite core.

### ■ USB Connection Image

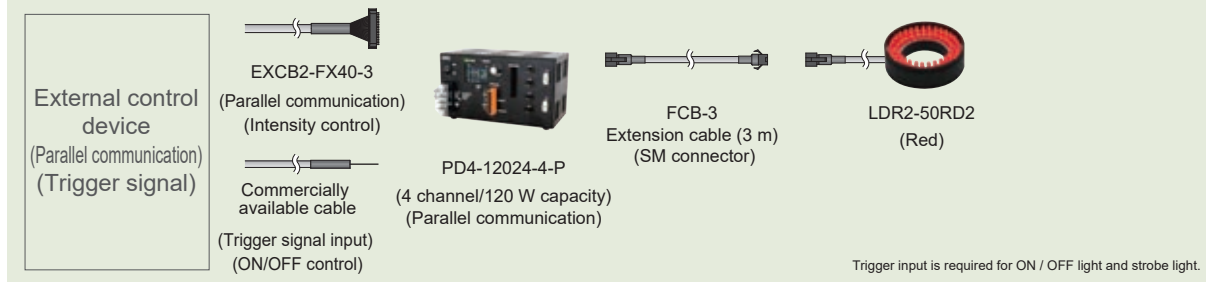


## ➤ Example System Configuration

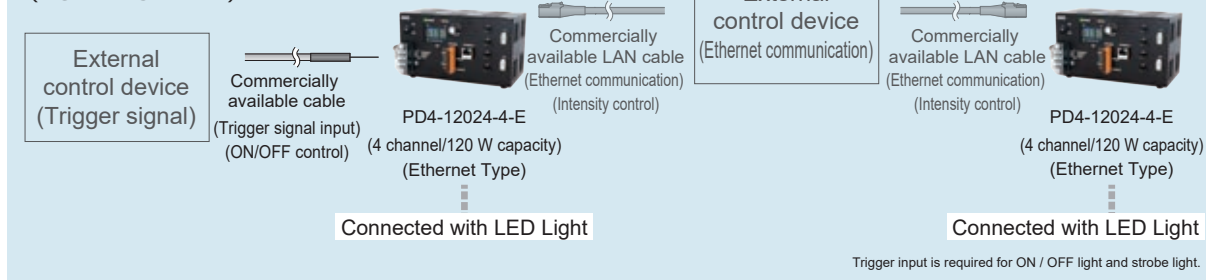
Example:

External control device — External control cables — Control unit — Extension cables — LED light

### ● Parallel Type



### ● Ethernet Type (TCP/IP UDP/IP)



## ➤ Light and power adapter compatibility table (example)

To connect to the HLV3 Series, use a power adapter (sold separately).

Light Model Name	Emitting Color					Power Adapter Model Name (Custom Order)
HLV3-14	RD	SW	BL	GR	—	Model Name: RB-82-24-15SP Quantity of Light: 0.9X, Power Consumption: 7.3W <sup>*1</sup>
HLV3-22-1 / -1C	RD	SW	BL	GR	—	Model Name: RB-56-24 Quantity of Light: 0.8X, Power Consumption: 11W <sup>*1</sup>
HLV3-22-2 / -2C	RD	SW	BL	GR	—	Model Name: RB-56-24 Quantity of Light: 0.8X, Power Consumption: 18W <sup>*1</sup>
HLV3-22-4S / 4M /-4C HLV3-22-NR-4 HLV3-22IR860	RD	SW	BL	GR	IR	Model Name: RB-56-24 Quantity of Light: 0.7X, Power Consumption: 25W <sup>*1</sup>

<sup>\*1</sup> Power consumption is the total value of the applicable light and power adapter. *Note) Quantity of light will be lower than when using the PJ Series control unit dedicated for spot lights.*

# PD4 Series



Refer to our website for product details.

CCS PD4

Search



## Common Specification: Parallel Type Model numbers ending with -NC: AC cable not included

Model name	PD4-6024-2-P (-NC)	PD4-6024-4-P (-NC)	PD4-12024-2-P (-NC)	PD4-12024-4-P (-NC)
Input power supply	100 to 240 VAC (±10%), 50/60 Hz			
Lighting method	Continuous / Strobe lighting (no overdrive)			
Drive method	Constant-voltage system			
Intensity control method	PWM control			
No. of channels	2 channels	4 channels	2 channels	4 channels
Applicable light unit (rated)	Light units with 24 VDC input, Total channels: 60 W (SM connector: one 60 W connector)		Light units with 24 VDC input, Total channels: 120 W (SM connector: one 60 W connector, EL connector: one 120 W connector) *When using EL connector: L1 (CH1), L2(CH2)	
PWM frequency	125 kHz			
Overcurrent Protection	Operates at 109% min. of output current (per channel) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.			
Overpower Protection	Operates at 120% min. of rated output power (channel total) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.			
Overvoltage category	Category II			
Power consumption (max.)	155 VA		170 VA	
Inrush current (typ.) From a cold start	27 A (at 100 VAC), 63 A (at 240 VAC)		14 A (at 100 VAC), 34 A (at 240 VAC)	
Intensity setting	1,024 step			
External control	Parallel control			
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation) Altitude: 2,000 m max., protective ground class: class I, pollution degree: 2, indoor use only			
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)			
Cooling method	Natural air cooling			
Applicable standards	CE, UKCA, KC (model number ending with *-NC* only), RoHS compliant			
Material/Surface processing	Steel sheet, cover thickness: 1.6 mm, chassis thickness: 1.0 mm, black (leather satin)			
Weight	1.5 kg max.			
Accessories	One hardware manual, one Power Terminal Block Cover, two M4 screws for the cover, one 2-m-long 3-prong AC power cable with ground terminal *1, one Trigger Terminal Block			

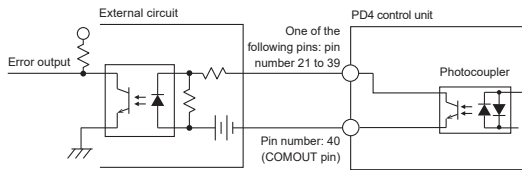
\*1 Model numbers ending with -NC do not include an AC cable. Example model number: PD4-6024-4-P-NC

The model number of the AC cable alone is ACC-JIS-125-7-M4-2.

## External Signal Connection Example (Supports Both PNP / NPN Connections) Refer to the User Manual for details.

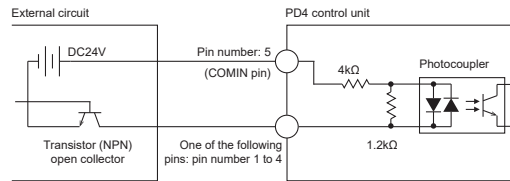
### External Signal Connection Example (Parallel Type)

#### Sinking (NPN)

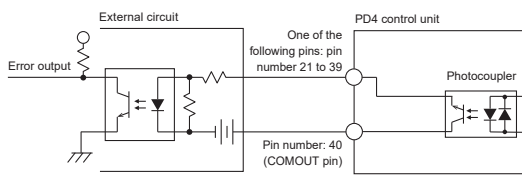


### External Trigger Input Signal Connection Example

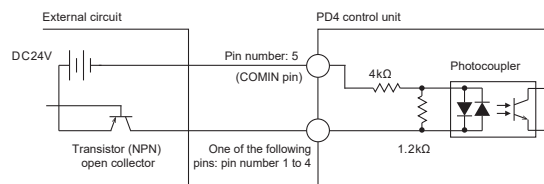
#### Sinking (NPN)



#### Sourcing (PNP)



#### Sourcing (PNP)



Connection Specifications (Per 1 Terminal)			
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current
DC24V ±10%	DC26.4V	DC21.6V min./ 1.4mA min.	DC1.5V max./ 0.05mA max.

Connection Specifications (Per 1 Terminal)			
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current
DC24V ±10%	DC26.4V	DC21.6V min./ 3mA min.	DC1.5V max./ 1mA max.

Set Values	Photocoupler	Data	Signal input through the write pin
ACTIVE HI (default)	OFF	0	OFF
	ON	1	ON
ACTIVE LO	OFF	1	ON
	ON	0	OFF

Set Values	Photocoupler	When in ON/OFF Mode	When in Strobe Mode
ACTIVE HI (default)	OFF	Light Unit OFF	When the photocoupler switches from OFF to ON, the light comes on with the specified ON time
	ON	Light Unit ON	
ACTIVE LO	OFF	Light Unit ON	When the photocoupler switches from ON to OFF, the light comes on with the specified ON time
	ON	Light Unit OFF	

## Common Specification: Ethernet Type Model numbers ending with -NC: AC cable not included

Model name	PD4-6024-2-E (-NC)	PD4-6024-4-E (-NC)	PD4-12024-2-E (-NC)	PD4-12024-4-E (-NC)
Input power supply	100 to 240 VAC (±10%), 50/60 Hz			
Lighting method	Continuous / Strobe lighting (no overdrive)			
Drive method	Constant-voltage system			
Intensity control method	PWM control			
No. of channels	2 channels	4 channels	2 channels	4 channels
Applicable light unit (rated)	Light units with 24 VDC input, Total channels: 60 W (SM connector: one 60 W connector)		Light units with 24 VDC input, Total channels: 120 W (SM connector: one 60 W connector, EL connector: one 120 W connector) *When using EL connector: L1 (CH1), L2(CH2)	
PWM frequency	125 kHz			
Overcurrent Protection	Operates at 109% min. of output current (per channel) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.			
Overpower Protection	Operates at 120% min. of rated output power (channel total) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.			
Overvoltage category	Category II			
Power consumption (typ.)	152 VA		168 VA	
Inrush current (typ.) From a cold start	27 A (at 100 VAC), 63 A (at 240 VAC)		14 A (at 100 VAC), 34 A (at 240 VAC)	
Intensity setting	1,024 step			
External control	Ethernet comm. TCP/IP UDP/IP (CCS Command Comm, PLCCOM Comm (MC Protocol · FINS Command))			
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation) Altitude: 2,000 m max., protective ground class: class I, pollution degree: 2, indoor use only			
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)			
Cooling method	Natural air cooling			
Applicable standards	CE, UKCA, KC (model number ending with "-NC" only), RoHS compliant			
Material/Surface processing	Steel sheet, cover thickness: 1.6 mm, chassis thickness: 1.0 mm, black (leather satin)			
Weight	1.5 kg max.			
Accessories	One hardware manual, one Power Terminal Block Cover, two M4 screws for the cover, one 2-m-long 3-prong AC power cable with ground terminal *1, one Trigger Terminal Block			

\*1 Model numbers ending with -NC do not include an AC cable. Example model number: PD4-6024-4-E-NC  
The model number of the AC cable alone is ACC-JIS-125-7-M4-2.

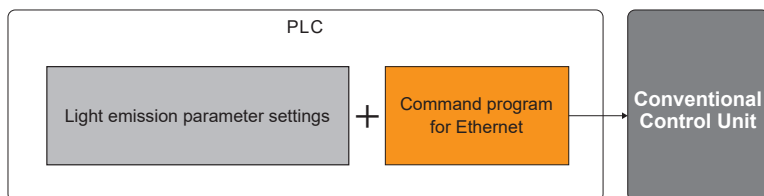
## PLCCOM Communication

Easily control lighting and read/write data without creating complicated programs for Ethernet.

### Without PLCCOM Communication <For Conventional Control Units>

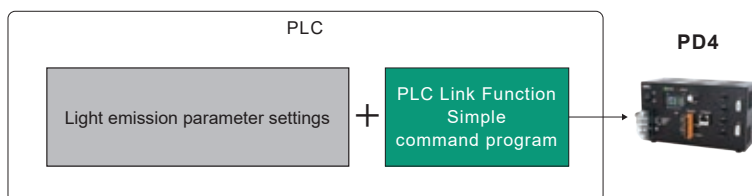


Complex command programs are required to set various lighting parameters.



### With PLCCOM Communication <For PD4>

Set and control various lighting parameters with a simple command program thanks to the PLC link function.



### PLCCOM Communication Specifications

For PLCs supporting MC protocol	For PLCs supporting FINS commands
<ul style="list-style-type: none"> <li>●Device : Data register</li> <li>●Protocol : MC protocol for MELSEC-Q Series</li> <li>●Frame : 3E frame</li> <li>●Transmission code : Binary</li> <li>●Transport : TCP or UDP</li> </ul>	<ul style="list-style-type: none"> <li>●I/O Memory : DM Area</li> <li>●Protocol : FINS Commands</li> <li>●Transmission code : Binary</li> <li>●Transport : TCP or UDP</li> <li>●FINS node address : For the TCP setting, specify the address that is automatically assigned by the PLC. For the UDP setting, specify the 4th octet of the IP address of the control unit. (Eg. When the IP address is 192.168.0.123, specify 123.)</li> </ul>

For details, see "Overview of PLCCOM Communication" on page 37 of the operation manual.  
Can be downloaded from the web page. <https://www.ccs-grp.com/products/series/371>

# PD4 Series



Refer to our website for product details.

CCS PD4

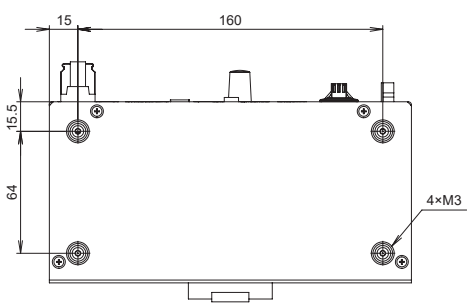
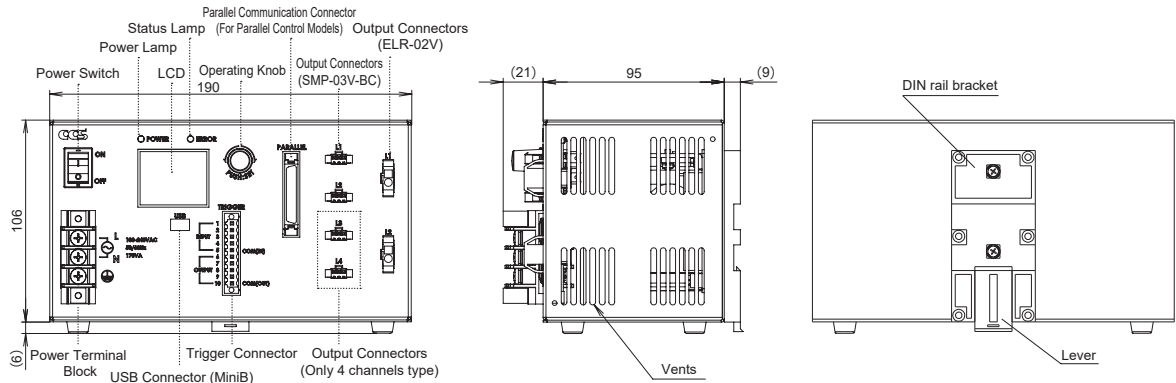
Search



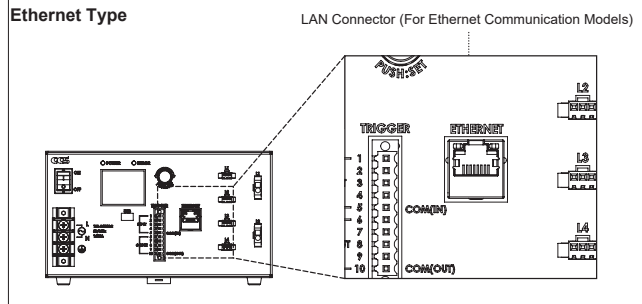
## Dimensions (mm)

PD4-12024-4-E / PD4-12024-4-P / PD4-12024-2-E / PD4-12024-2-P

### Parallel Type

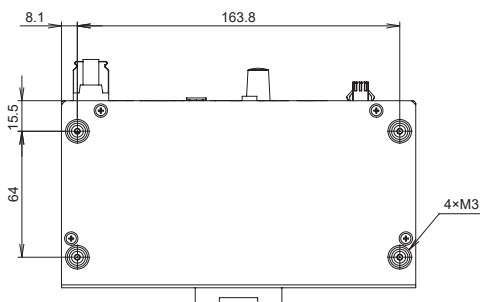
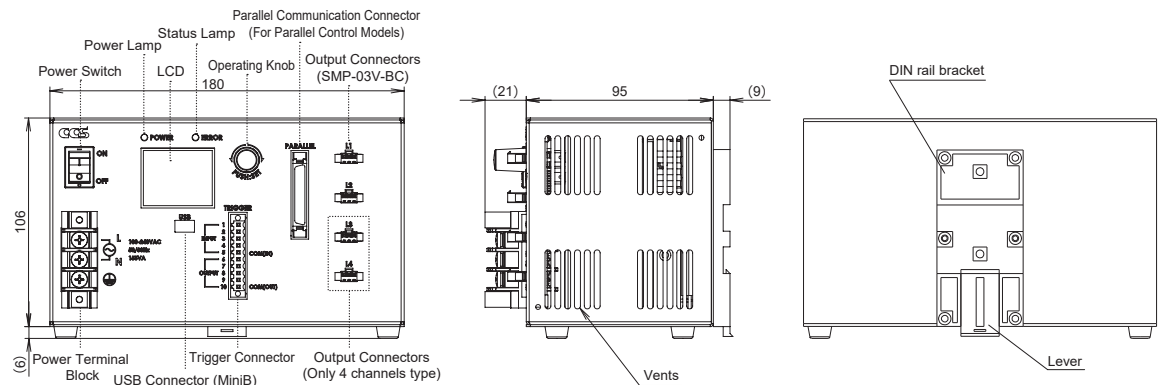


### Ethernet Type

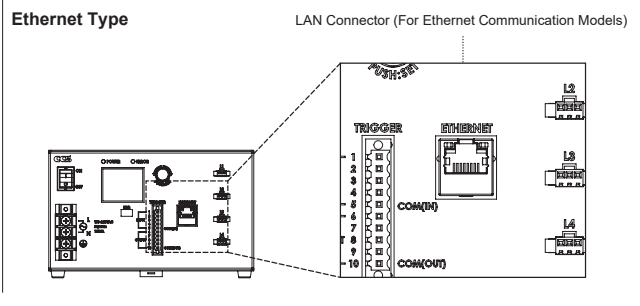


PD4-6024-4-E / PD4-6024-4-P / PD4-6024-2-E / PD4-6024-2-P

### Parallel Type



### Ethernet Type



Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

Digital Catalogs

Register to use them.

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024

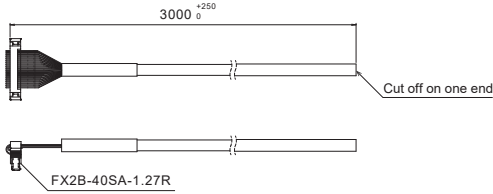
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables



## Options

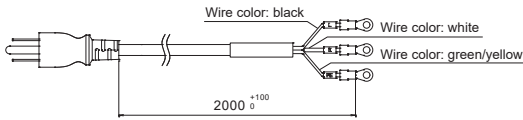
Parallel Communication Cable Model Name: EXCB2-FX40-3  
 Used for performing external control via parallel communication.

Dimensions (mm)



PIN No	Line Color	Marking	PIN No	Line Color	Marking	PIN No	Line Color	Marking	PIN No	Line Color	Marking
1	Orange	Red 1	11	Orange	Red 2	21	Orange	Red 3	31	Orange	Red 4
2	Orange	Black 1	12	Orange	Black 2	22	Orange	Black 3	32	Orange	Black 4
3	Gray	Red 1	13	Gray	Red 2	23	Gray	Red 3	33	Gray	Red 4
4	Gray	Black 1	14	Gray	Black 2	24	Gray	Black 3	34	Gray	Black 4
5	White	Red 1	15	White	Red 2	25	White	Red 3	35	White	Red 4
6	White	Black 1	16	White	Black 2	26	White	Black 3	36	White	Black 4
7	Yellow	Red 1	17	Yellow	Red 2	27	Yellow	Red 3	37	Yellow	Red 4
8	Yellow	Black 1	18	Yellow	Black 2	28	Yellow	Black 3	38	Yellow	Black 4
9	Pink	Red 1	19	Pink	Red 2	29	Pink	Red 3	39	Pink	Red 4
10	Pink	Black 1	20	Pink	Black 2	30	Pink	Black 3	40	Pink	Black 4

AC Power Cable Model Name: ACC-JIS-125-7-M4-2



## Application

You can choose between the basic version and the standard version. \*The application can be downloaded from the web page.

System Requirements: Windows 10 / NET Framework 4.7.2 <https://www.ccs-grp.com/products/series/371>

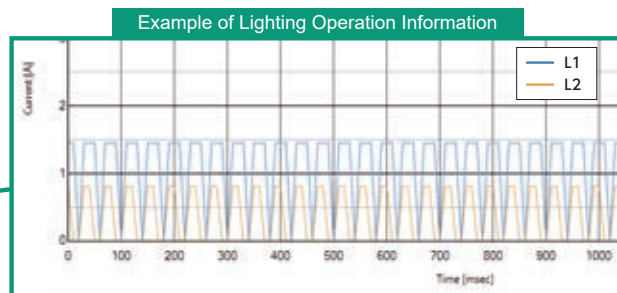
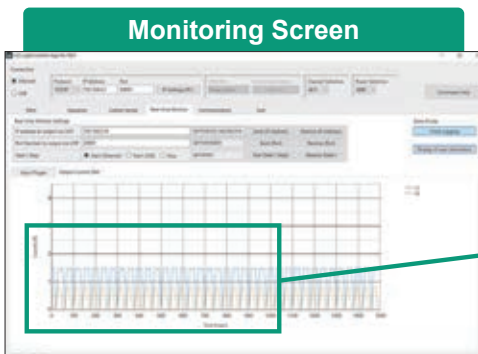


Basic lighting settings such as intensity value and light emission time, as well as trigger input / output settings.



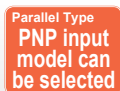
In addition to the functions of the basic version, all functions of the PD4 Series can be configured, including sequence control, real-time monitoring functions, etc.

Review lighting operation information for verifying lighting status during operation and for cause analysis when a problem occurs.





## Select digital control units matching your network



AC Input Types

DC Input Types



The supplied AC cord is for use with 100 to 120 VAC. If you want to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

For information on change in model names, refer to P.327.

### Features

- Each single unit is compatible with continuous, ON/OFF and strobe lighting. (Spot Light HLV Series cannot emit strobe.)
- Digital display enables set values to be easily checked. Spot Light HLV3 Series Product Page ▶ P. 187
- 256 stage dimmer settings.
- Select from 3 types of external control.
- AC input types and DC input types available.
- DIN rail installation is standard.
- Select from 3 channel, 4 channel or 8 channel models.
- There are four types of capacity: 3 channel/28 W<sup>\*1</sup>, 3 channel/48 W<sup>\*2</sup>, 4 channel/46 W<sup>\*3</sup>, and 8 channel/95 W<sup>\*3</sup>.  
 \*1: Can be connected only with 24 V Light.      \*2: Lineup includes only DC-input control units.  
 \*3: Can be connected with both 24 V Light and Spot Light HLV Series.

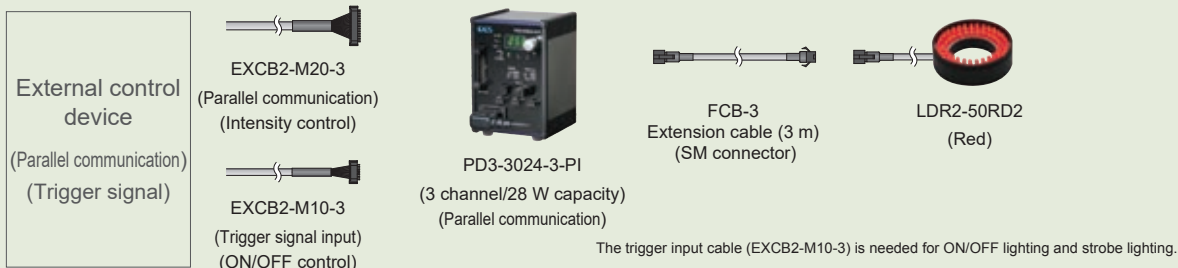
### A Wide Ranging Lineup is Available and Custom Orders are Accepted

- The parallel type has the fastest switching for settings. Perform high-speed control through batch transmission. (External trigger signal input is available as an NPN input model (standard) or PNP input model (custom order product: PD3-PNP)) See ▶ P.323 for details
- Ethernet types support standard TCP/IP and UDP/IP protocols. (Models with keep-alive functions (custom order: PD3-EIK) are available) See ▶ P.324 for details  
 Keep-alive functions monitor the validity of the connection of the machine to the network, wherein to prevent the connection from dropping, a signal is periodically sent between machines.
- The EIA-485 type can individually manage units using multi-drop wiring. Can manage up to 4 units. See ▶ P.325 for details
- PWM frequency is available in 125 kHz (standard) and 500 kHz (custom order: PD3-500). See ▶ P.324 for details

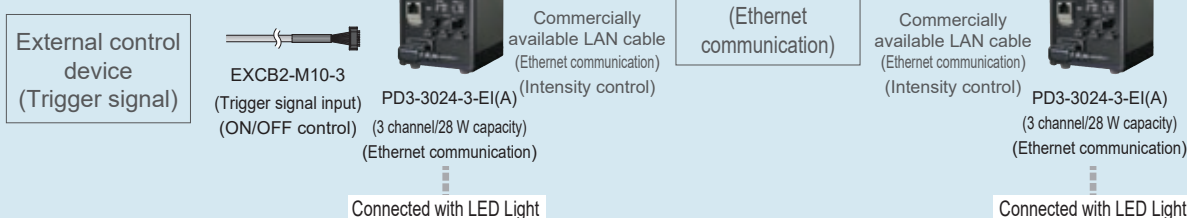
## Example System Configuration

Example:  
External control device — External control cables — Control unit — Extension cables — LED light

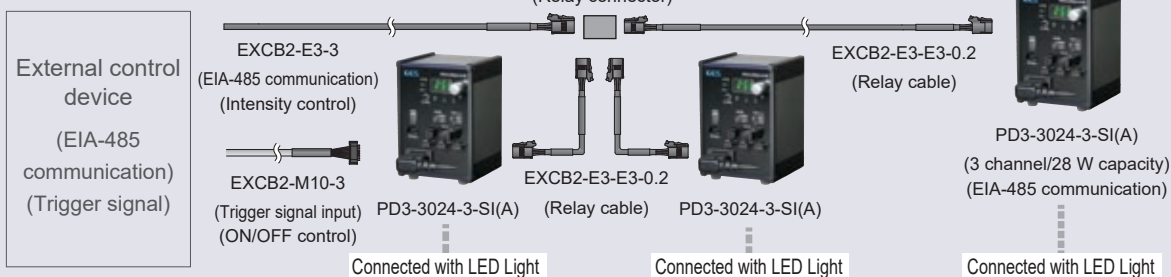
### ● Parallel type



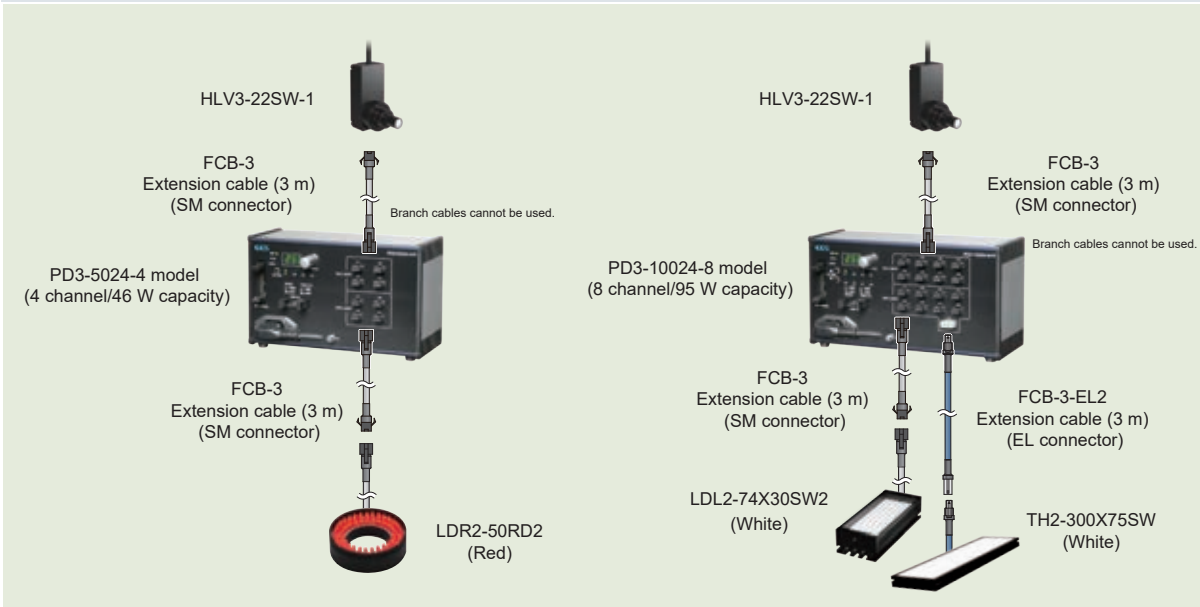
### ● Ethernet type (TCP/IP UDP/IP)



### ● EIA-485 type



## Fixture Connection Example



# PD3 Series



Refer to our website for product details.

CCS PD3

Search



## Common Specifications: Parallel Types

External trigger signal input is also available as a PNP input (custom order).

Model	NPN Input Model	PD3-3024-3-PI	PD3-5024-4-PI(A)	PD3-10024-8-PI	PD3-3024-3-PT	PD3-5024-3-PT	PD3-5024-4-PT(A)
Input voltage (rated)	PNP Input Model	PD3-3024-3-PI-PNP	PD3-5024-4-PI-PNP(A)	PD3-10024-8-PI-PNP	PD3-3024-3-PT-PNP	PD3-5024-3-PT-PNP	PD3-5024-4-PT-PNP(A)
Input voltage (rated)	100 to 240 VAC (+10% -15%)			24 VDC (21.6 to 26.4 V)			
Lighting method	Continuous / Strobe lighting (no overdrive)						
Drive method	Constant-voltage system	24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system		Constant-voltage system		24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system	
Intensity control method	PWM control and lighting time control	24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control		PWM control and lighting time control		24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control	
No. of channels	3 channels		4 channels	8 channels	3 channels		4 channels
Applicable light unit (rated)	Light units with 24 VDC input Total for 3 channels: 28 W		Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 8 channels: 96 W (EL connector: one 96 W connector) *When using EL connector: L1 (CH1)	Light units with 24 VDC input Total for 3 channels: 28 W	Light units with 24 VDC input Total for 3 channels: 48 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W
PWM frequency	125 kHz						
Error detection display	"OCP" displayed on front digital display: Overcurrent error	"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)		"OCP" displayed on front digital display: Overcurrent error		"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)	
Overcurrent protection	Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. <small>Do not create an intentional short circuit between the positive (+) and negative (-) outputs.</small>						
Power consumption (typ.)	78 VA	70 VA	130 VA	32 W	52 W		
Frequency	50/60 Hz			-			
Output voltage (rated)	24 VDC						
Intensity setting	Manual: 256-step using the front setting switch External: 8-bit input (B0 to B7), write pulse (BRTWR), and channel selection (CHSEL0 to CHSEL2)						
ON/OFF setting	External trigger input						
Lighting mode setting	Manual: 11-step using the front setting switch External: 4-bit input (M0 to M3), write pulse (TRGWR), and channel selection (CHSEL0 to CHSEL2)						
Error detection output	External control connector 19(OC)-20(OE) pin with transistor output When normal: Non-conducting, With overcurrent output detected: Conducting						
External control connector	Trigger input: MIL connector, 10-pin Intensity/Lighting mode setting: MIL connector, 20-pin						
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85%RH (with no condensation)						
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85%RH (with no condensation)						
Cooling method	Natural air cooling	Forced air cooling		Natural air cooling		Forced air cooling	
Applicable standards	CE, UKCA, RoHS compliant						
Material/Surface processing	Material: aluminum and resin, Surface processing: blue alumite						
Weight	600 g max.	1,200 g max.	1,500 g max.	400 g max.		850 g max.	
Accessories	3-prong AC cord with ground terminal (2 m) x 1, User Manual x 1, Base Brackets x 1 set (PD3-5024-4-PI(A)/PI-PNP(A), PD3-10024-8-PI/PI-PNP)			User Manual x 1, Base Brackets x 1 set (PD3-5024-4-PT(A)/PT-PNP(A))			

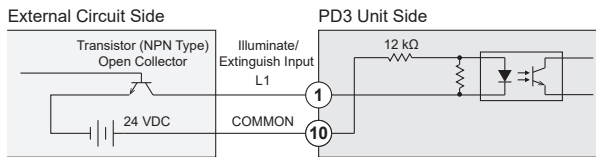
## Connection Example

Refer to the User Manual for more information.

### External Trigger Signal Connection Example

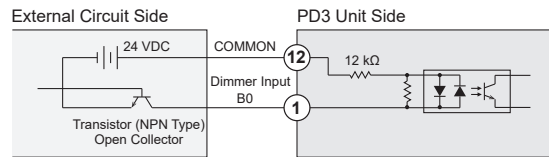
#### NPN Input Model

Sink Type (NPN)



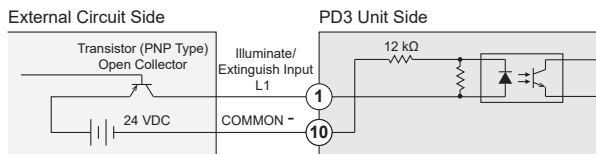
### External Signal Connection Example (Parallel Type)

Sink Type (NPN)

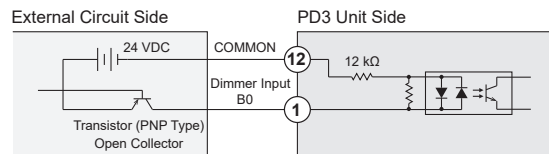


#### PNP Input Model

Source Type (PNP)



Source Type (PNP)



Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
24 VDC	26.4 VDC	14.4 VDC or more/1 mA or more	5 VDC or less/0.4 mA or less

Trigger Principle Setting Switch	Input Signal	Photocoupler	ON/OFF Mode	Strobe Mode
HIGH	HIGH	OFF	LED ON	LED ON for Set Time
	LOW	ON	LED OFF	No Change
LOW	HIGH	OFF	LED OFF	No Change
	LOW	ON	LED OFF	LED ON for Set Time

Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
24 VDC	26.4 VDC	14.4 VDC or more/1 mA or more	5 VDC or less/0.4 mA or less

	Input Signal	Photocoupler	Data
Sink Type	HIGH	OFF	1
	LOW	ON	0
Source Type	HIGH	ON	0
	LOW	OFF	1

## Common Specifications: Ethernet Type

External trigger signal input PNP input model (custom order) and model with keep alive function (custom order) are also available.

Model name	-	PD3-3024-3-EI(A)	PD3-5024-4-EI(A)	PD3-10024-8-EI(A)	PD3-3024-3-ET(A)	PD3-5024-3-ET(A)	PD3-5024-4-ET(A)
PNP Input Model		PD3-3024-3-EI-PNP(A)	PD3-5024-4-EI-PNP(A)	PD3-10024-8-EI-PNP(A)	PD3-3024-3-ET-PNP(A)	PD3-5024-3-ET-PNP(A)	-
With Keep-Alive Function		PD3-3024-3-EIK	PD3-5024-4-EIK	PD3-10024-8-EIK	PD3-3024-3-ETK	PD3-5024-3-ETK	PD3-5024-4-ETK
Input voltage (rated)	100 to 240 VAC (+10% -15%)				24 VDC (21.6 to 26.4 V)		
Lighting method	Continuous / Strobe lighting (no overdrive)						
Drive method	Constant-voltage system	24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system			Constant-voltage system		24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system
Intensity control method	PWM control and lighting time control	24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control			PWM control and lighting time control		24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control
No. of channels	3 channels	4 channels	8 channels		3 channels		4 channels
Applicable light unit (rated)	Light units with 24 VDC input Total for 3 channels: 28 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 8 channels: 95 W (EL connector: one 95 W connector) *When using EL connector: L1 (CH1)		Light units with 24 VDC input Total for 3 channels: 28 W	Light units with 24 VDC input Total for 3 channels: 48 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W
PWM frequency	125 kHz						
Error detection display	"OCP" displayed on front digital display: Overcurrent error	"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)			"OCP" displayed on front digital display: Overcurrent error		"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)
Overcurrent protection	Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. Do not create an intentional short circuit between the positive (+) and negative (-) outputs.						
Power consumption (typ.)	78 VA	70 VA	130 VA		32 W	52 W	
Frequency	50/60 Hz				-		
Output voltage (rated)	24 VDC						
Intensity setting	Manual: 256-step using the front setting switch						
	External: Command input via TCP/IP or UDP/IP communication						
ON/OFF setting	External trigger input or command input via TCP/IP or UDP/IP communication						
Lighting mode setting	Manual: 11-step using the front setting switch						
	External: Command input via TCP/IP or UDP/IP communication						
Error detection output	Command sent when overcurrent output is detected.						
External control connector	Trigger input: MIL connector, 10-pin						
	Intensity/Lighting mode setting: RJ-45 connector						
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation)						
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85% RH (with no condensation)						
Cooling method	Natural air cooling	Forced air cooling		Natural air cooling		Forced air cooling	
Applicable standards	CE, UKCA, RoHS compliant						
Material/Surface processing	Material: Aluminum and resin, Surface processing: Blue alumite						
Weight	600 g max.	1,200 g max.	1,500 g max.		400 g max.		850 g max.
Accessories	3-prong AC cord with ground terminal (2 m) x 1, User Manual x 1, Base Brackets x 1 set (PD3-5024-4-EI(A)/-EI-PNP(A)/-EIK, PD3-10024-8-EI(A)/-EIPNP(A)/-EIK)				User Manual x 1, Base Brackets x 1 set (PD3-5024-4-ET(A)/-ET-PNP(A)/-ETK)		

Keep-alive functions monitor the validity of the connection of the machine to the network to prevent the connection from dropping, a signal is periodically sent between machines.


## Lineup of Models with 500 kHz PWM Frequency <Custom Order Products>

When selecting a digital power supply, consider using the higher frequency type. Power supplies with a PWM frequency of 500 kHz can be made to order. Contact our local sales office for details.


### Introducing High Frequency Power Supplies (Custom Order)

#### PD3-10024-8 Series


- PWM Dimmer Control (500 kHz)
- 95 W Capacity (EL Connector: 1 Channel)
- AC Input
- 3 types of external control
  - Parallel communication
  - Ethernet communication
  - EIA-485 communication



PD3-10024-8-SI-500  
(EIA-485 type)



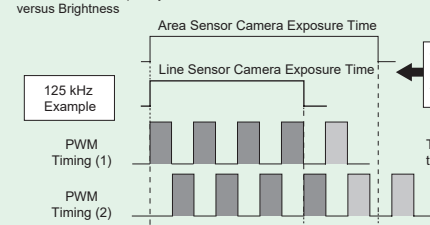
PD3-10024-8-PI-500  
(Parallel type)



PD3-10024-8-EI-500  
(Ethernet type)  
(TCP/IP UDP/IP)

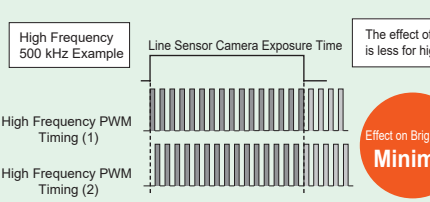
● Effect of PWM Frequency versus Brightness (Example)

125 kHz Example



Timing (1) is 25% brighter than timing (2)

High Frequency 500 kHz Example



Timing (1) is 6% brighter than timing (2)

Minimal

The exposure time of a line sensor camera is generally shorter than that of area sensor cameras.

The effect of exposure timing on brightness is less for high frequency types.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

# PD3 Series



Refer to our website for product details.

CCS PD3

Search



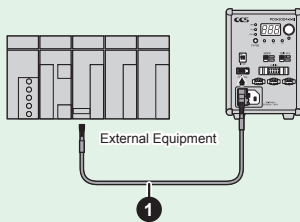
## Common Specifications: EIA-485 Type

Model name	PD3-3024-3-SI(A)	PD3-5024-4-SI(A)	PD3-10024-8-SI(A)
Input voltage	100 to 240 VAC (+10% -15%)		
Lighting method	Regular Emission/Strobe Emission (Without Overdrive)		
Drive method	Constant-voltage system	24 V LIGHT: Constant-voltage system	HLV LIGHT: Constant-current system
Intensity control method	PWM Control Or Light Emission Time Control	24 V LIGHT: PWM control or light emission time control HLV LIGHT: Variable-current control	
No. of channels	3 channels	4 channels	8 channels
Applicable light units (rated)	24 VDC Input Lights, 3 Channel Total: 28 W	24 VDC Input Lights, HLV Series (Spot Lighting) 4 Channel Total: 46 W	24 VDC Input Lights, HLV Series (Spot Lighting) 8 Channel Total: 95 W (EL connector: 1 connector 95 W)
PWM frequency	125 kHz		
Error detection display	Front Digital "OCP" Display: Overcurrent Error	Front Digital "OCP" Display: Overcurrent error "EFN" Display: Fan stop error "EID" Display: ID error (HLV Series only)	
Overcurrent protection	Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. Do not create an intentional short circuit between the positive (+) and negative (-) outputs.		
Power consumption (typ.)	78 VA	70 VA	130 VA
Frequency	50/60 Hz		
Output voltage (rated)	24 VDC		
Dimmer setting	Manual: 256 stages via front setting switch External: Command input via EIA-485 communication		
ON/OFF setting	External: Trigger input or command input via EIA-485 communication		
Emission mode setting	Manual: 11 stages via front setting switch External: Command input via EIA-485 communication		
Error detection output	Command Sending for Overcurrent Detection		
External control connector	Trigger Input: MIL connector 10-pole Dimmer/Emission Mode Setting: e-Con Connector 3-Pole		
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85% (with no condensation)		
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85% (with no condensation)		
Cooling method	Natural air-cooling	Forced cooling	
Applicable standards	CE, UKCA, RoHS compliant		
Electrical appliance and Material safety law	Specified electrical equipment (DC power supply) compliant with technical standards		
Material/Surface processing	Material: Aluminum, resin, Surface processing: Navy anodizing		
Weight	600 g max.	1,200 g max.	1,500 g max.
Accessories	2 m 3-prong AC power cable with ground terminal, User Manual x 1, Bottom installation bracket x 1 set (PD3-5024-4-SI(A)/10024-8-SI(A))		

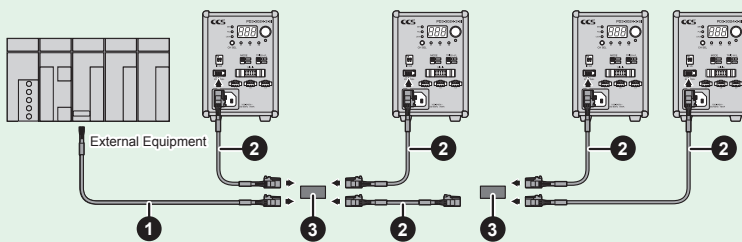
## EIA-485 Communication Cable Connection Method

EIA-485 communication types identify based on ID switch settings, enables up to 4 units to be connected on one signal line. The options differ depending on the number of units to be connected. Refer to the following connection diagram.

### For 1 connected unit



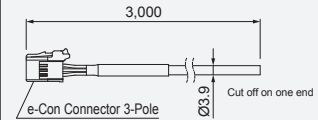
### For 4 connected units



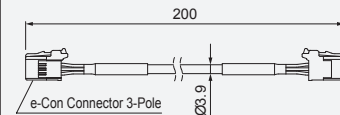
\* illustration shows PD3-3024-3-SI

### Options

#### 1 EXCB2-E3-3



#### 2 EXCB2-E3-E3-0.2

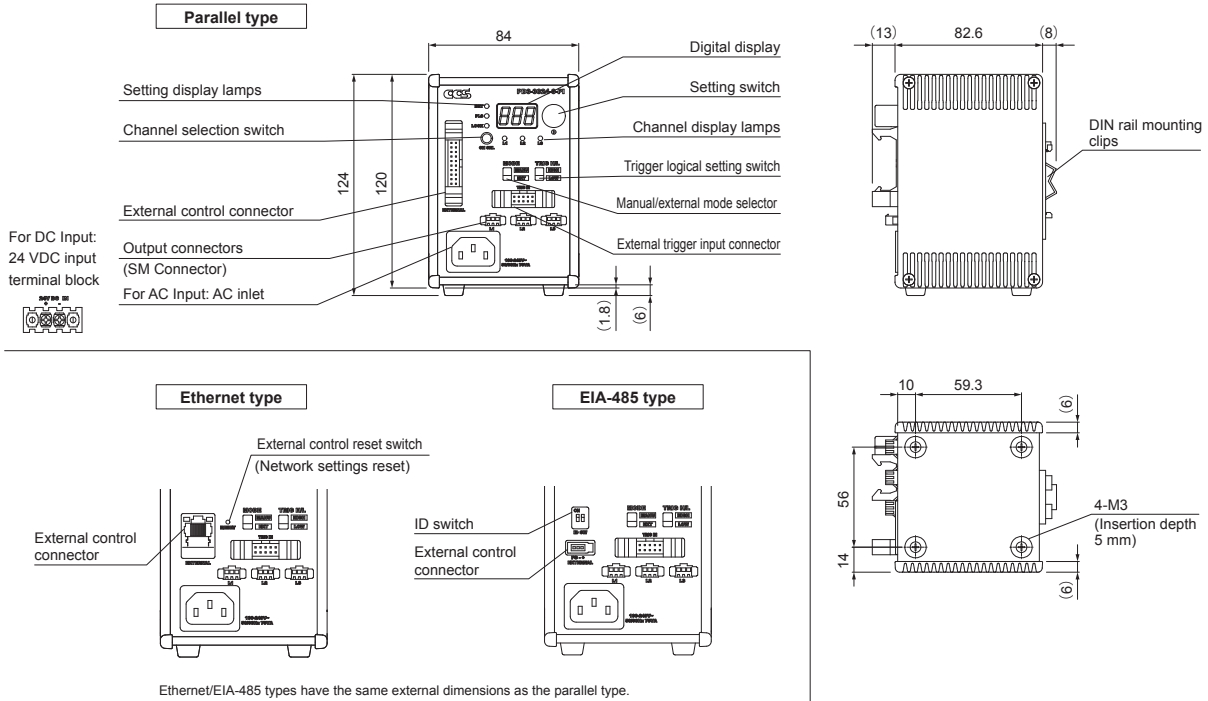


#### 3 ECNR-E3CN4



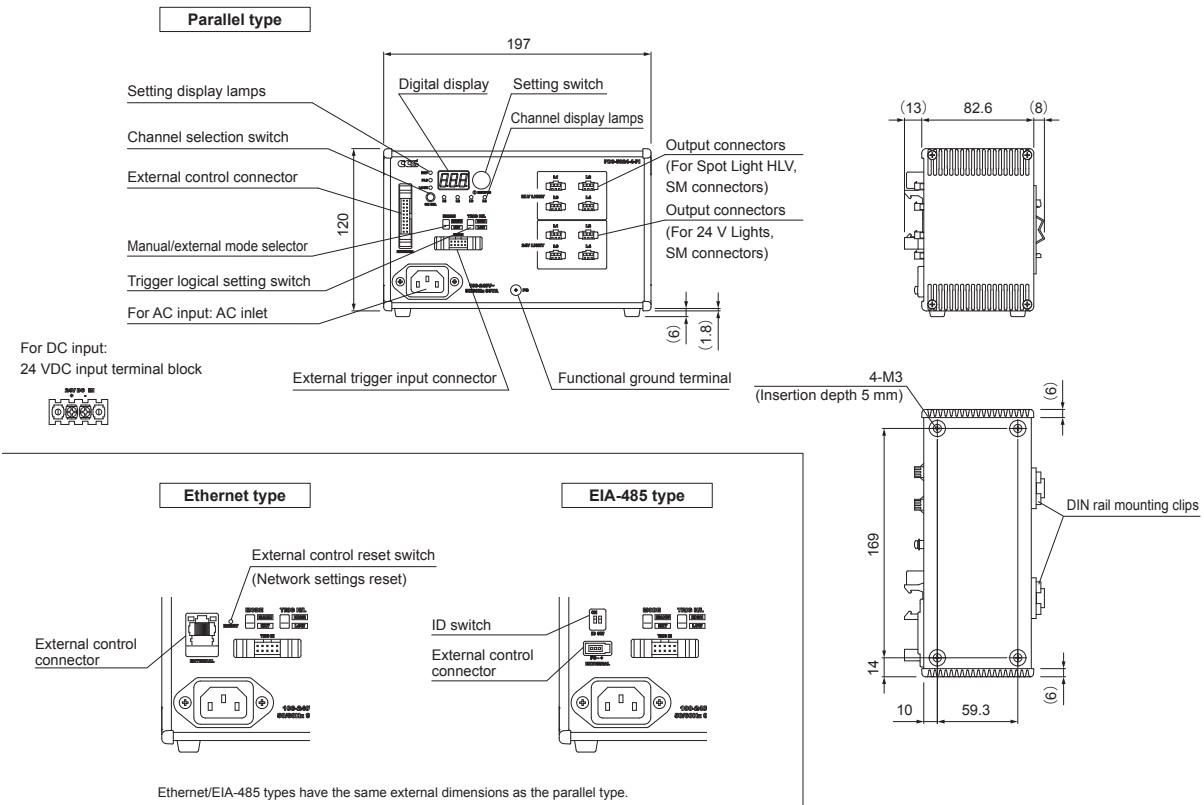
## Dimensions (mm)

PD3-3024-3-PI / PD3-3024-3-EI(A) / PD3-3024-3-SI(A) / PD3-3024-3-PT / PD3-3024-3-ET(A) / PD3-5024-3-PT / PD3-5024-3-ET(A)



## Dimensions (mm)

PD3-5024-4-PI(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-PT(A) / PD3-5024-4-ET(A)



# PD3 Series



Refer to our website for product details.

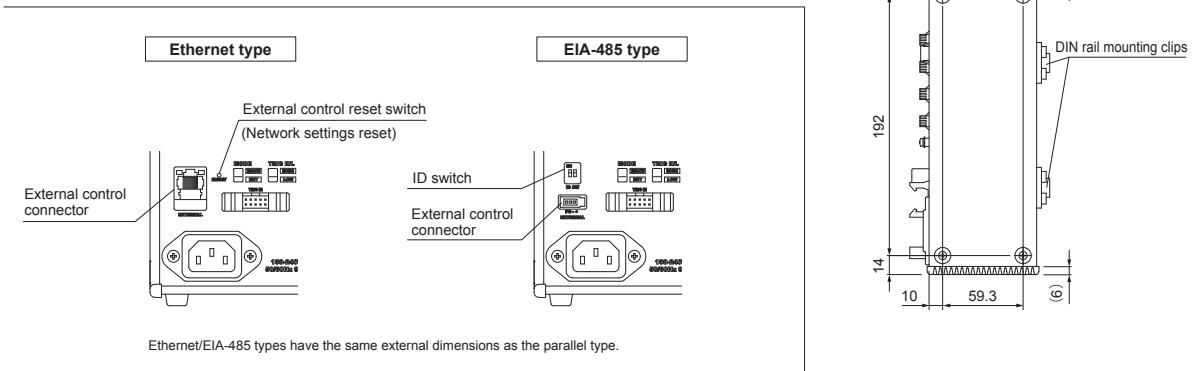
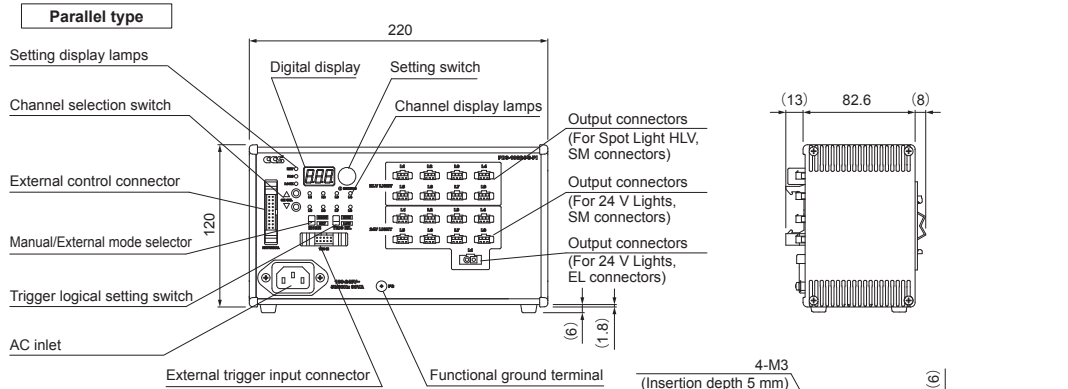
CCS PD3

Search



## Dimensions (mm)

PD3-10024-8-PI / PD3-10024-8-EI(A) / PD3-10024-8-SI(A)



## Differences Between Specifications and Models

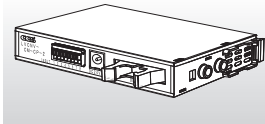
[ (A) attached to end of model number ] Ex.: PD3-3024-3-EI → PD3-3024-3-EI(A)

	Contents Changed	Applicable Models
Software Change	<ul style="list-style-type: none"> <li>Command specifications for changing the setting values for dimmer control commands (F commands) as a batch have been added.</li> <li>Command specifications for changing the status of each channel for ON/OFF commands (L commands) as a batch have been added.</li> </ul>	PD3-3024-3-EI(A) / PD3-3024-3-SI(A) / PD3-3024-3-ET(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-ET(A) / PD3-5024-3-ET(A) / PD3-10024-8-EI(A) / PD3-10024-8-SI(A)
DIN Rail Mount Added	<ul style="list-style-type: none"> <li>The number of DIN rail mounts for 50 W power supplies has increased from 1 to 2.</li> </ul>	PD3-5024-4-PI(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-PT(A) / PD3-5024-4-ET(A)

## Options

### Trigger Voltage Level Conversion Unit

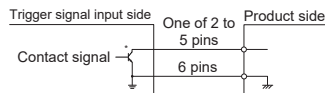
- Can be used when performing trigger input from a device with 3.3 V, 5 V or 12 V output (PCB, etc.).
- It can also be used when performing trigger input using a contact signal such as a relay.



Be sure to prepare an AC adapter with 24 V output separately as a control unit source.

### Connection Example

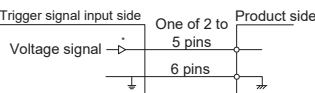
When driving with non-voltage contact



\* Elements used: Photocoupler, open collector or driver IC

Trigger signal input	Trigger signal output	Photocoupler inside the control unit for LED lights
Open	ON	ON
Short	OFF	OFF

When driving with high voltage signal



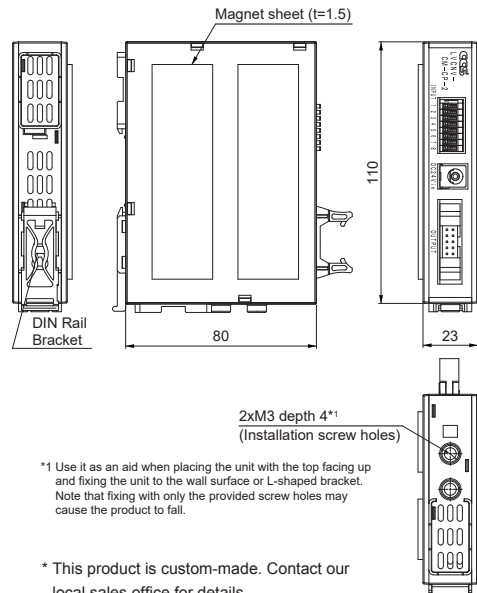
\* Elements used: Buffer, HS-CMOS or driver IC

Trigger signal input	Trigger signal output	Photocoupler inside the control unit for LED lights
High	ON	ON
Low	OFF	OFF

Trigger signal output	Trigger signal input	Description
ON	High	Input voltage range: +3 to 13.2 VDC, input current: Approximately 8 mA (at 12 VDC input, per terminal)
	Open	Terminal voltage: Approx. 2.9 V
OFF	Low/Short	Input voltage range: 0.0 to +0.5 VDC, input current: Approximately -3 mA (at 0 VDC input, per terminal)

When the trigger signal to this product is set to High or Open (non-conducting), the trigger signal output from this product turns ON. When it is set to Low or Short (conducting), the trigger signal output is turned OFF.

Model Name: LVCNV-CM-CP-2-MG-WOC



\*\*1 Use it as an aid when placing the unit with the top facing up and fixing the unit to the wall surface or L-shaped bracket. Note that fixing with only the provided screw holes may cause the product to fall.

\* This product is custom-made. Contact our local sales office for details.



## Options

### External control cables

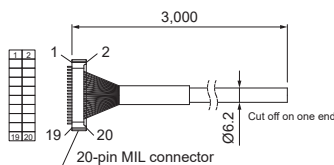
#### Parallel communication cable

Used for performing external control via parallel communication. You can select the channel, intensity setting and lighting mode (continuous, ON/OFF and strobe modes).

The trigger input cable shown (EXCB2-M10-3) below is needed for ON/OFF lighting and strobe lighting.



Model name: EXCB2-M20-3

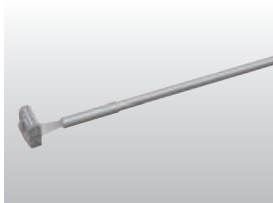


PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1	19	Pink	Black2
10	Pink	Red1	20	Pink	Red2

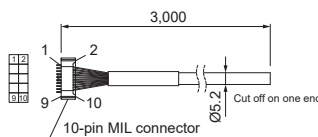
Dimensions (mm)

#### Trigger input cable

Cable through which external trigger signals are input by parallel bit method. Used when performing ON/OFF or strobe lighting using an external trigger signal.



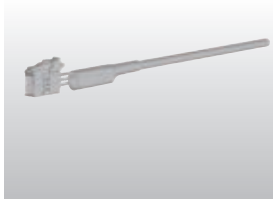
Model name: EXCB2-M10-3



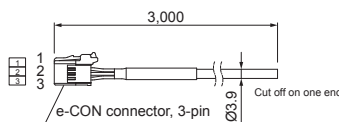
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

#### EIA-485 communication cable

Used for performing external control via EIA-485 communication. You can select the channel, intensity setting, ON/OFF setting and lighting mode (continuous, ON/OFF and strobe modes).



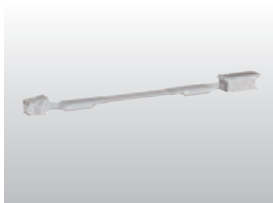
Model name: EXCB2-E3-3



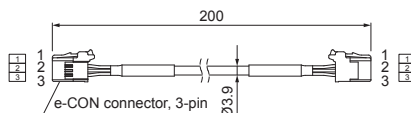
PIN No.	Line color	Embedded line color
1	Black	None
2	Black	White
3 (shielded)	Drain wire	None

#### EIA-485 communication relay cable

Relay cable necessary if using with two or more PD3 Series units connected for EIA-485 communication.



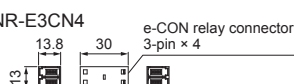
Model name: EXCB2-E3-E3-0.2



Refer to the material "Connecting EIA-485 Communications Cables" on the CCS website for information on multi-drop wiring connections. You can download this information from the product website page.

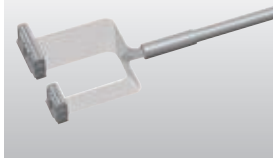
#### EIA-485 communication relay connector

Model name: ECNR-E3CN4

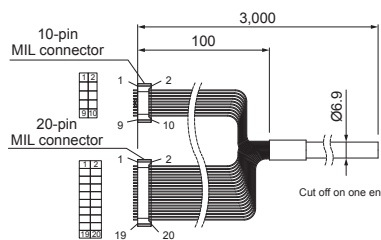


#### Parallel communication/Trigger input branch cable

Branch cable that combines parallel communication and trigger input cables into a single cable.



Model name: EXCB2-M10M20-3



20-pin MIL connector		
PIN No.	Line color	Marking
1	Orange	Black2
2	Orange	Red2
3	Gray	Black2
4	Gray	Red2
5	White	Black2
6	White	Red2
7	Yellow	Black2
8	Yellow	Red2
9	Pink	Black2
10	Pink	Red2

10-pin MIL connector		
PIN No.	Line color	Marking
1	Orange	Black3
2	Orange	Red3
3	Gray	Black3
4	Gray	Red3
5	White	Black3
6	White	Red3
7	Yellow	Black3
8	Yellow	Red3
9	Pink	Black3
10	Pink	Red3

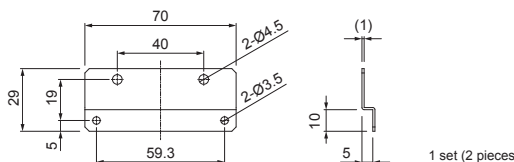
### Base brackets

Bracket for securing PD3 Series units to the floor, shelving and similar locations.

Base Brackets are included with PD3-5024-4 and PD3-10024-8 models.



Model name: BK-PD3





## Intensity control to 256-step Compatible with a wide range of uses



PD2-3012-4(A) / PD2-3024-4(A)



PD2-3012-8(A) / PD2-3024-8(A)



PD2-1012(A) / PD2-1024(A)



PD2-3012(A) / PD2-3024(A)



PD2-5012(A) / PD2-5024(A)



PD2-3012-2(A) / PD2-3024-2(A)



Compliant model(s)

PD2-3012(A) / PD2-3024(A) / PD2-5012(A) / PD2-5024(A) / PD2-3012-2(A) / PD2-3024-2(A) / PD2-3012-4(A) / PD2-3024-4(A) / PD2-3012-8(A) / PD2-3024-8(A)

The supplied AC cord is for use with 100 to 120 VAC. If you want to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

### Features

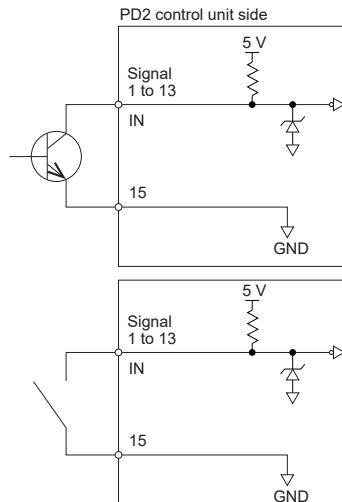
- Can be selected from 12 V and 24 V types according to the input voltage of your LED lights.
- Can be selected from 10 W, 30 W and 50 W types according to the total power consumption of your LED lights.
- You can select from 2, 4 and 8-channel types if you are using individual intensity settings for multiple light units.
- You can select an optional external control cable if you are using external control (refer to P.332).

### Example Connection

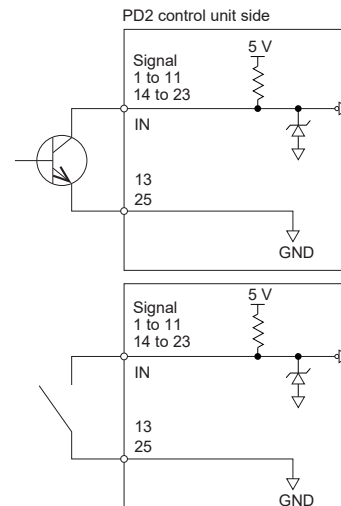
Refer to the User Manual for details.

Example connections of external control signal

#### ■ 1, 2 channels



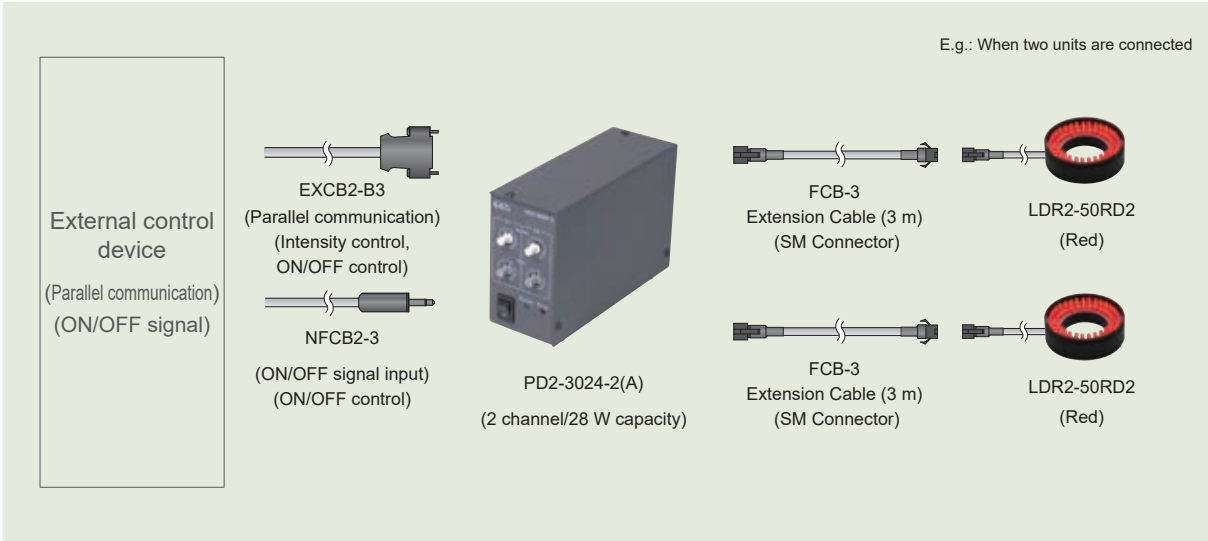
#### ■ 4, 8 channels



Drive using driver IC or NPN open-collector. Drive is possible if there is a device through which flows an approximately 10 mA current from signal to ground.

## Example System Configuration

Example:  
External control device — External control cables — Control unit — Extension cables — LED lights (two units connected)



## Specifications

Model name	PD2-1012(A)	PD2-1024(A)	PD2-3012(A)	PD2-3024(A)	PD2-5012(A)	PD2-5024(A)	PD2-3012-2(A)	PD2-3024-2(A)	PD2-3012-4(A)	PD2-3024-4(A)	PD2-3012-8(A)	PD2-3024-8(A)
Input voltage	100 to 120 VAC		100 to 240 VAC									
Input current*1	0.25 A typ.		0.78 A typ.		1.3 A typ.		0.78 A typ.					
Frequency	50/60 Hz											
Inrush current	15 A typ.											
No. of channels	1 channel	1 channel	1 channel	1 channel	1 channel	1 channel	2 channels	2 channels	4 channels	4 channels	8 channels	8 channels
DC output voltage	12 V	24 V	12 V	24 V	12 V	24 V	12 V	24 V	12 V	24 V	12 V	24 V
Output power	9.5 W max.	9.0 W max.	28 W max.	28 W max.	46 W max.	46 W max.	28 W max.	28 W max.	27 W max.	27 W max.	25 W max.	25 W max.
Intensity control	Intensity control method: 62.5 kHz PWM control Manual: 16-step intensity control using coarse and fine rotary switches on the front panel External: Intensity control using 8-bit parallel signal											
External control input	Input circuit: Pull-up of +5.0 V internally by use of resistor (4.7 kΩ)						Input circuit: Pull-up of +5.0 V internally by use of resistor (2.2 kΩ)					
	HS-CMOS input: Low level of max. 1.0 V, high level of 3.5 V or more											
External control connector	D-sub 15-pin (plug)						D-sub 25-pin (plug)					
Lights ON/OFF control	ON/OFF control during manual intensity control: Ø3.5 mm microphone jack ON/OFF control during external intensity control: D-sub 15-pin ON signal (not synchronized with writing sequence)						Manual/External: D-sub 25-pin ON signal (not synchronized with writing sequence)					
Light ON/OFF response time	OFF→ON: 10 μs typ., ON→OFF: 10 μs typ.											
Startup time	0.5 sec typ.											
Output overcurrent protection	Operates at 107% of the output current. Reset by turning the power off and then on again.											
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)											
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)											
Weight	0.7 kg max.	1.1 kg max.	1.3 kg max.	1.3 kg max.	1.1 kg max.	1.2 kg max.	1.2 kg max.	1.2 kg max.	1.2 kg max.	1.2 kg max.	1.5 kg max.	1.5 kg max.
Accessories	3-prong AC cord with ground terminal*2 (2 m) x 1, User Manual x 1											

\*1 For 100 VAC  
\*2 Except for PD2-1012(A) / 1024(A)

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

# PD2 Series



Refer to our website for product details.

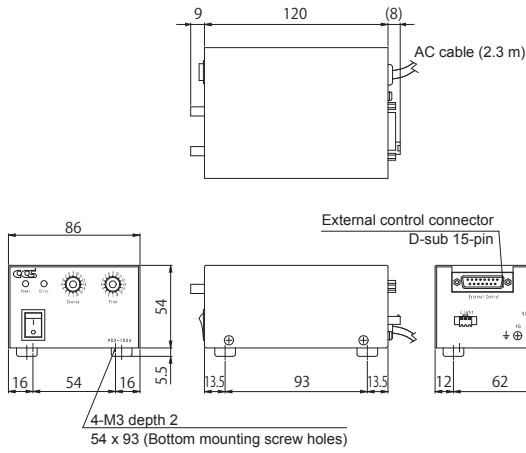
CCS PD2

Search

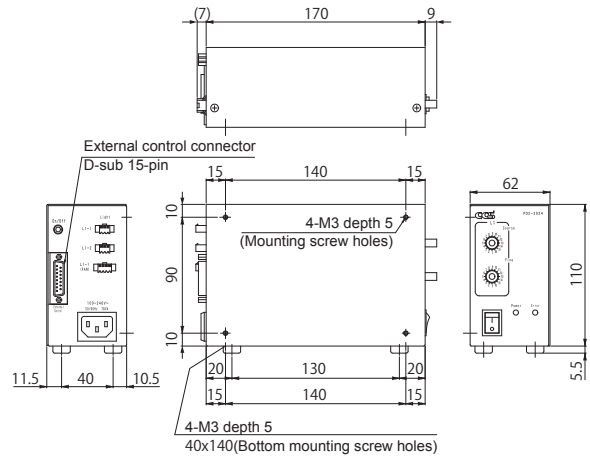


## Dimensions (mm)

PD2-1012(A) / PD2-1024(A)



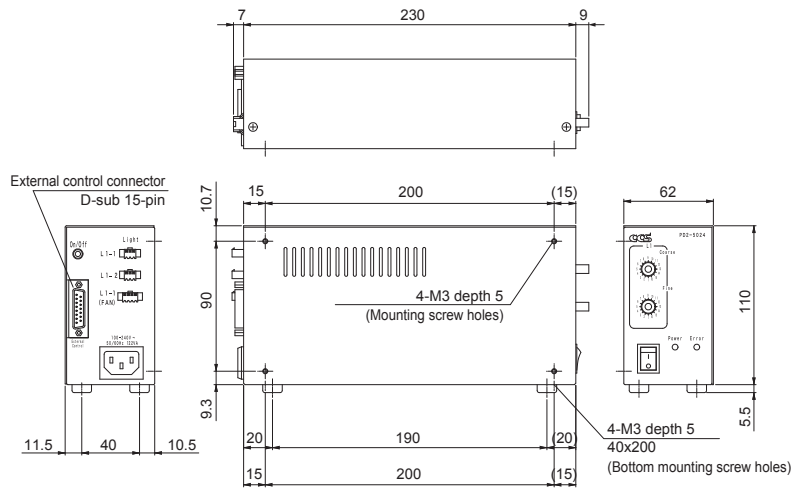
PD2-3012(A) / PD2-3024(A)



\*For the 12 V type PD2-1012(A), the light connector is 2-pin.

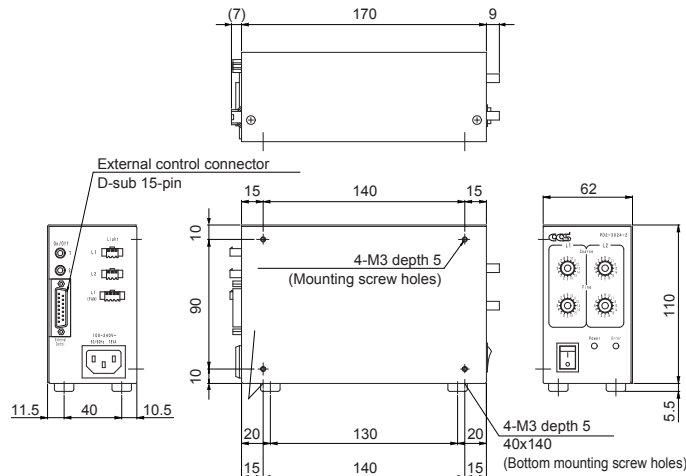
\*For the 12 V type PD2-3012(A), the light connector is 2-pin.

PD2-5012(A) / PD2-5024(A)



\*For the 12 V type PD2-5012, the light connector is 2-pin.

PD2-3012-2(A) / PD2-3024-2(A)

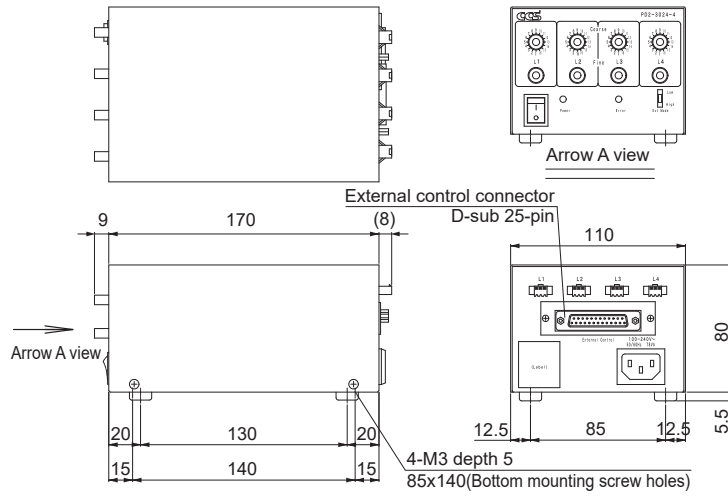


\*For the 12 V type PD2-3012-2(A), the light connector is 2-pin.

- Control Units and Controllers
- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables
- Options

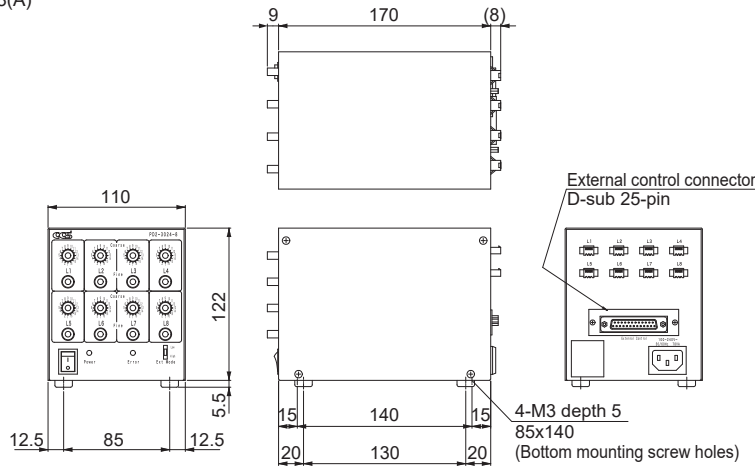
## Dimensions (mm, Continued)

PD2-3012-4(A) / PD2-3024-4(A)



\*For the 12 V type PD2-3012-4(A), the light connector is 2-pin.

PD2-3012-8(A) / PD2-3024-8(A)



\*For the 12 V type PD2-3012-8(A), the light connector is 2-pin.

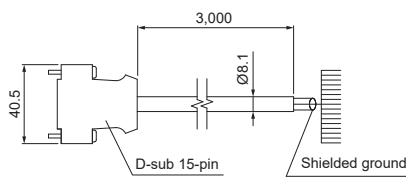
## Options

### External control cable

Dimensions (mm)

Corresponding control unit: PD2 (1 and 2 channels) Series

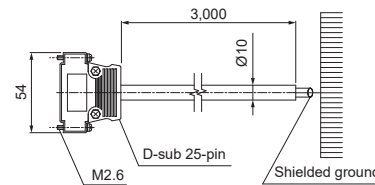
EXCB2-B3 (3 m): D-sub 15-pin



No.	Line color	No.	Line color
1	Black	9	Gray
2	White	10	Pink
3	Red	11	White/Black
4	Green	12	Red/Black
5	Yellow	13	Green/Black
6	Brown	14	Yellow/Black
7	Blue	15	Brown/Black
8	Purple	NC	(Blue/Black)

Corresponding control unit: PD2 (4 and 8 channels) Series

EXCB2-25-3 (3 m): D-sub 25-pin

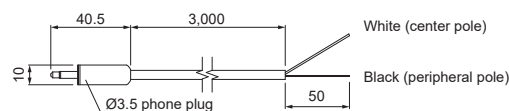


No.	Line color	No.	Line color	No.	Line color	No.	Line color
1	Black	9	Gray	17	Purple/Black	25	Brown/White
2	White	10	Pink	18	Grey/Black	NC	(Blue/White)
3	Red	11	White/Black	19	Pink/Black	NC	(Purple/White)
4	Green	12	Red/Black	20	Light green/Black	NC	(Grey/White)
5	Yellow	13	Green/Black	21	Black/White	NC	(Pink/White)
6	Brown	14	Yellow/Black	22	Red/White	NC	(Light green/White)
7	Blue	15	Brown/Black	23	Green/White		
8	Purple	16	Blue/Black	24	Yellow/White		

### External ON/OFF control cable

Corresponding control unit: PD2 (1 and 2 channels) Series

NFCB2-3 (3 m)

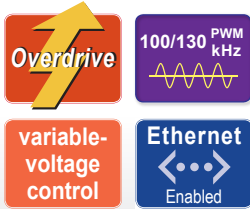


Line color	Signal
White	ON/OFF
Black	GND (-)



## Compact and multi-functional DC input type power supply

NEW



Non-Ethernet communication type



CD-VA10024-2P

CD-VA20024-4P

Ethernet communication type



CD-VA10024-2PE

CD-VA20024-4PE

## Features

- Supports 3 intensity control methods (PWM control, variable-voltage control, strobe overdrive\*), which can be configured per channel.

\* See the URL below for the combinations of LED lighting available when using strobe overdrive.  
<https://www.ccs-grp.com/support/matching/check/>

- Lighting output of 100 W with 2 channels and 200 W with 4 channels available. (Max. 50 W for each channel).
- Up to 4 units can be connected via infrared communication and maximum 16-channel control is available<sup>\*1</sup>.
- Supports four communication methods: Ethernet communication<sup>\*2</sup>, parallel communication, USB communication, and RS-232C communication<sup>\*3</sup>.
- Supports both NPN and PNP connections and allows for logic switching.
- Clear and visible display screen and high operability.

<sup>\*1</sup> With 4 units of the 4-channel model connected.

<sup>\*2</sup> Ethernet communication is supported only by model numbers ending with PE.

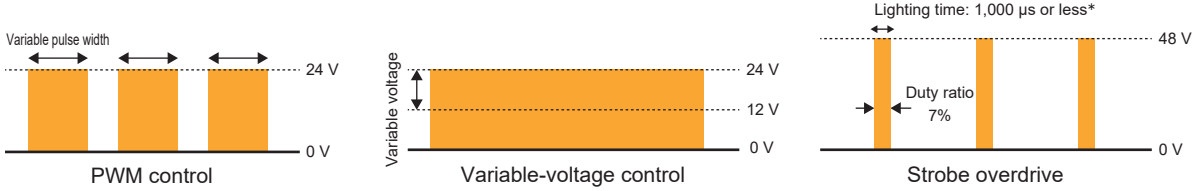
<sup>\*3</sup> RS-232C communication uses parallel terminals.

## Various Lighting Control Functions

- Equipped with a sequence control function that allows for light emitting in any pattern.
- Available with a recipe setting function that can save up to 16 lighting setting parameters.
- Control ON/OFF of multiple lights with 1 trigger input.
- Status of the control unit and light (errors, ON/OFF, etc.) can be confirmed using the output function.
- USB connector (Type-C) for data communication with a PC even while connected to external control devices.

## Supports 3 Intensity Control Methods

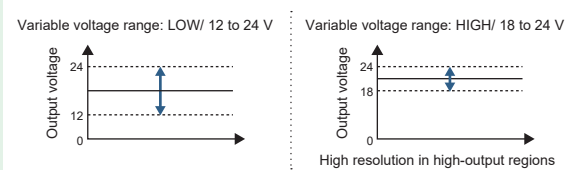
Choose the control method between general PWM (pulse width modulation), variable-voltage control suited to line scan camera inspections, and strobe overdrive allowing brighter lighting. A single power supply can accommodate a wide range of inspection conditions.



\* Operates when lighting time is 1,000 μs or less. When the lighting time is set in units of ms, the strobe overdrive does not operate. Operation is at normal voltage (24 V).

### Intensity range of variable-voltage control

Intensity range can be switched between 2 steps. Select in accordance with lighting characteristics or applications.



Depending on the characteristics of the lighting in use, the light intensity when lighting starts may vary and lights may turn ON even at a light intensity of 0.

## Up to 4 Units Can be Connected Via Infrared Communication

### Maximum 16-channel control is available\*1

\*1: With 4 units of the 4-channel model connected

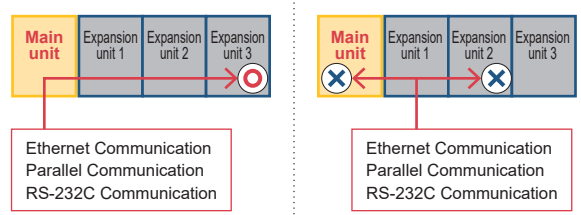
Up to 4 units can be connected to control via infrared communication. For example, with 4 units of the 4-channel type connected, the lighting parameters can be set for up to 16 channels. External control cables for each unit are unnecessary as the parent unit can control settings on the connected units. By using the setting copy function, setting can be easily reflected to each channel, allowing for reduced workload.



Caution: For ON/OFF control via trigger input, individual connection to power supply and control is required.

### Control to expansion units

Only the main unit can control the connected expansion units. Setting controls on an expansion unit does not apply the same changes to the main unit and the other expansion units.



Can also be connected with the OPTEX FA OPX Series.



\* When using CD-VA as a main unit, OPX Series, FALUX sensing+ function is unavailable.

# CD-VA Series

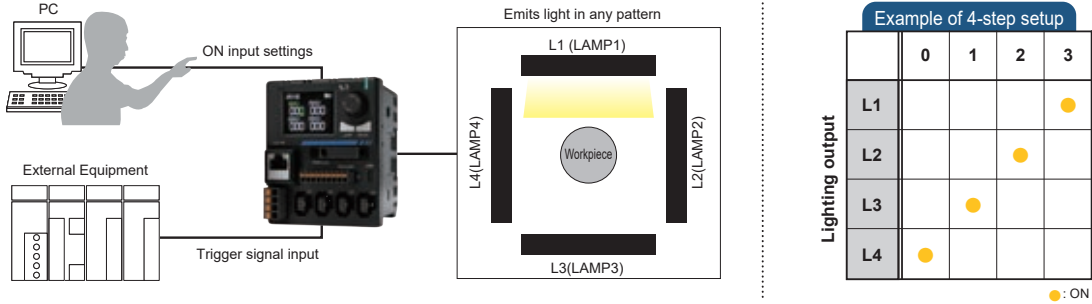


Refer to our website for product details.


## Sequence Control

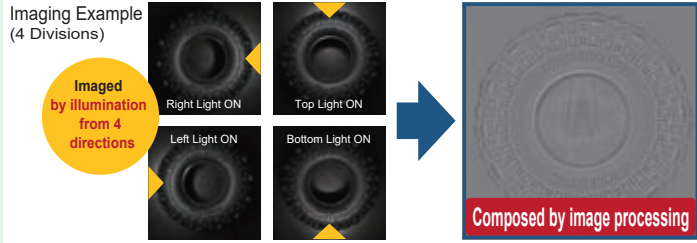
Program up to 16 steps of ON input for a pattern of light emission with desired intensity and emission time. For example, when using 4-quadrant bar lights or segmented lights to illuminate from multiple directions, the emission patterns for each channel can be stored and switched ON/OFF by trigger input.



### Sequence Control Application Examples

#### Photometric stereo imaging

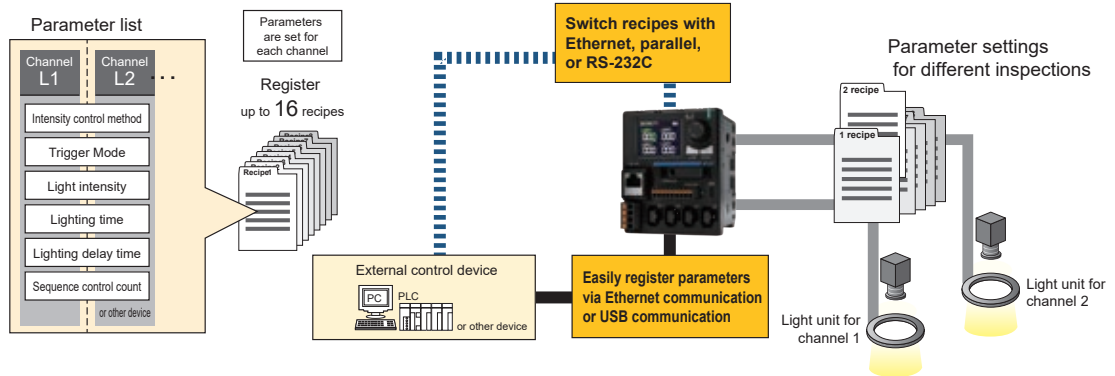
The workpiece is illuminated and imaged from multiple directions. It is possible to generate images that highlight only the unevenness or extract only the pattern by using the differences of each captured image.



## Recipe Setting Function

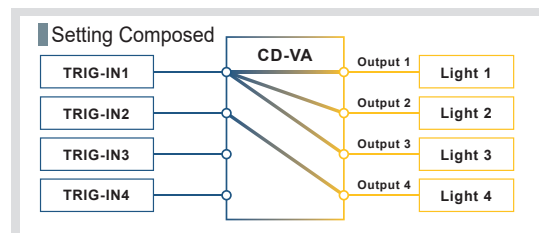
### Up to 16 lighting setting parameters can be saved

Parameter settings such as intensity values for each channel and other inspection-specific parameter settings can be registered in advance, allowing for easy setting changes simply by recalling recipes.



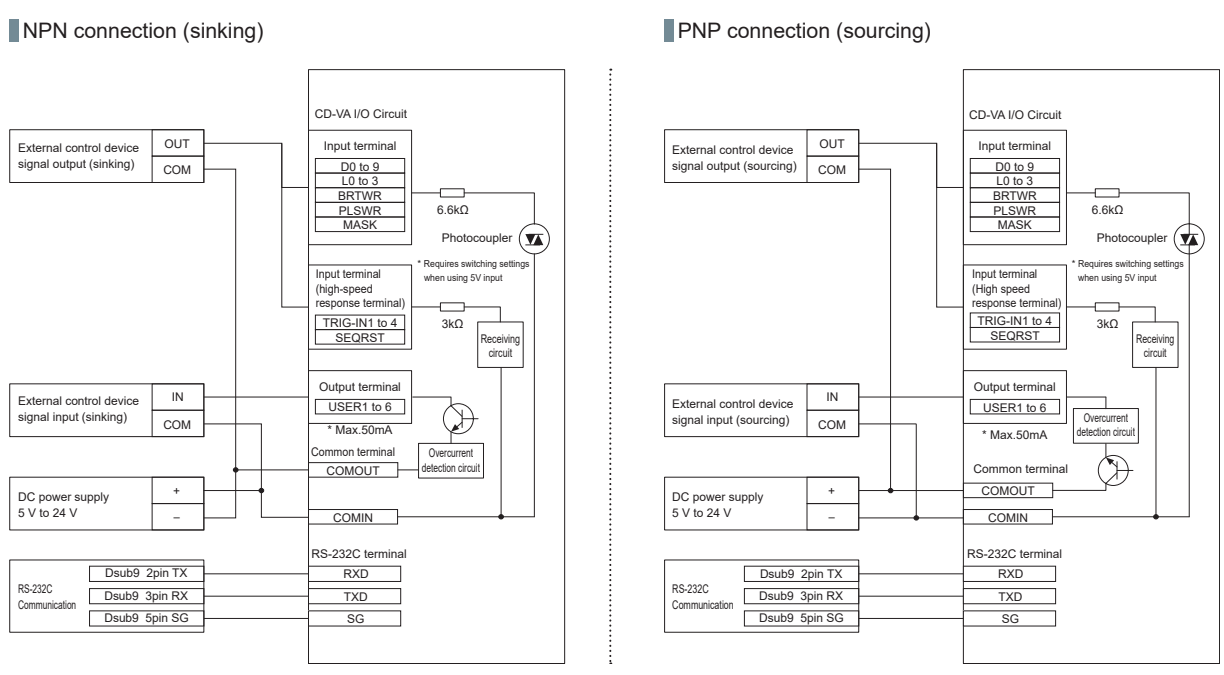
## Trigger Input Assignment Function

Control ON/OFF of multiple lights with 1 trigger input. Change assignments even after wiring.





**External Signal Connection Example (Both NPN and PNP connections are supported and logic switching is possible.)**



\* Refer to the instruction guide for more information.

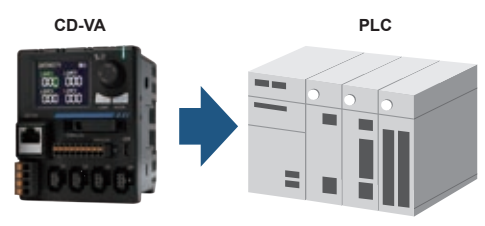
**Enhanced Status Confirmation Functions**

Status of the control unit and light (errors, ON/OFF, etc.) can be confirmed using the output \*function

\* There are two types of output system: parallel and trigger pin.

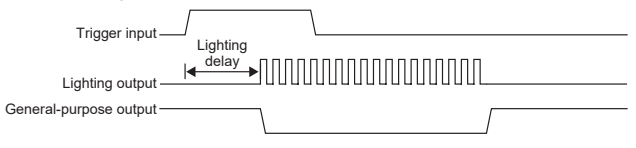
**Usage example: Trigger input ready status confirmation**

Output ON: each channel can accept a trigger input. Output OFF: light in operation (ON, strobe, etc.).



Operation	Output
Trigger input ready	ON
Trigger input will not be accepted while light is on	OFF

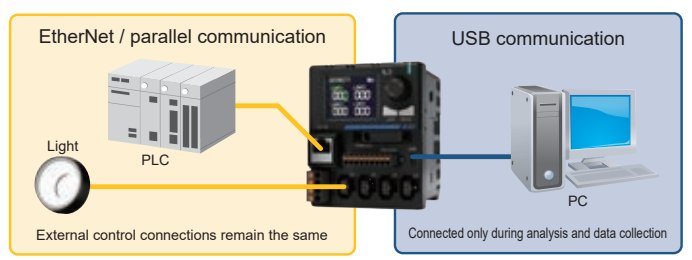
**Output timing example**



**USB connector (Type-C) for data communication with a PC even while connected to external control devices**

**USB Connection Image**

Check settings and verify operation using the CD-VA dedicated app (utility software).



# CD-VA Series



Refer to our website for product details.

CCS CD-VA

Search



## Common Specifications

Model Name	CD-VA10024-2P	CD-VA20024-4P	CD-VA10024-2PE	CD-VA20024-4PE
Input power	24 VDC ±10 %			
Lighting method	Continuous lighting, strobe lighting (overdrive when emission time is 1000 µs or less)			
Drive method	Constant-voltage system			
Intensity control method	PWM control (frequency: 100 kHz, 130 kHz), variable-voltage control			
Number of channels	2 channels	4 channels	2 channels	4 channels
Applicable Light Units (rated)	24 VDC light units 2 channels total: 100 W (1 channel: 50 W or less)	24 VDC light units 4 channels total: 200 W (1 channel: 50 W or less)	24 VDC light units 2 channels total: 100 W (1 channel: 50 W or less)	24 VDC light units 4 channels total: 200 W (1 channel: 50 W or less)
Lighting Output Voltage	PWM Mode	24 VDC		
	Strobe Mode <sup>1,2</sup>	48 VDC		
	Variable-voltage mode <sup>3</sup>	*1 Automatically switches to 24 VDC drive when strobe emission time exceeds 1 ms. LOW : 12 to 24 V, HIGH : 18 to 24 V		
Lighting output current	Strobe Mode	5.0 A/Channel (Duty 7 %)		
	PWM Frequency: 100 kHz	Lighting time: 10 µs to 9,990 µs (in steps of 10 µs), 1 ms to 999 ms (in steps of 1 ms)		
Strobe lighting time	PWM Frequency: 130 kHz	Lighting time: 7.7 µs to 7684.6 µs (in steps of 7.7 µs), 1 ms to 999 ms (in steps of 1 ms)		
	Lighting Cycle limit	Duty 7% (requires a cycle at least 14.3× that of the pulse width)		
External Control Method	USB communication (full-speed, Type C connector), parallel communication, RS-232C communication		Ethernet communication (10BASE-T/100BASE-TX), USB communication (full-speed, Type C connector), parallel communication, RS-232C communication	
Communication Interface	USB Communication	Serial communication via virtual COM port		
	RS-232C Communication	4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps		
	Ethernet Communication	UDP, TCP, DHCP Client		
Operating environment	Temperature: 0 to 40 °C, Humidity: 20 to 85%RH (with no condensation)			
Storage environment	Temperature: -20 to 60 °C, Humidity: 20 to 85%RH (with no condensation)			
Cooling method	Natural air-cooling			
Vibration resistance	10 to 55 Hz, Double amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions			
Impact resistance	Approx. 10 G, 3 times in each of the X, Y, and Z directions			
Protective rating	IP20 (IEC 60529)			
Environmental regulations	RoHS, REACH			
Applicable standards	CE, UKCA (Non-compliant with KC)			
Material/surface processing	Polycarbonate			
Weight	260 g	360 g	260 g	360 g
Accessories	Hardware manual × 1, Trigger connector × 1, Power connector × 1			

<sup>2</sup> See the URL below for the combinations of LED lighting available when using strobe overdrive.

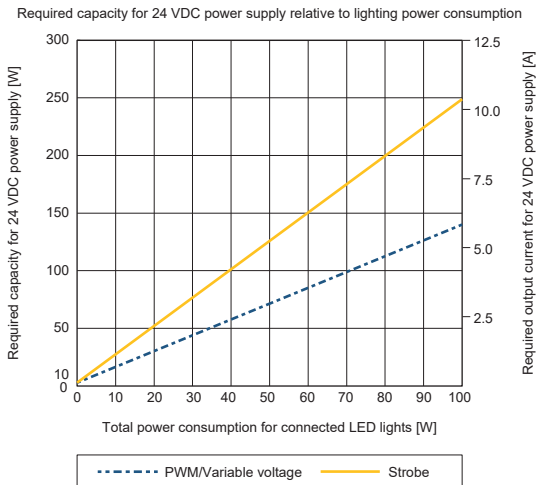
<https://www.ccs-grp.com/support/matching/check/>

<sup>3</sup> Overdrive is unavailable in variable-voltage mode.

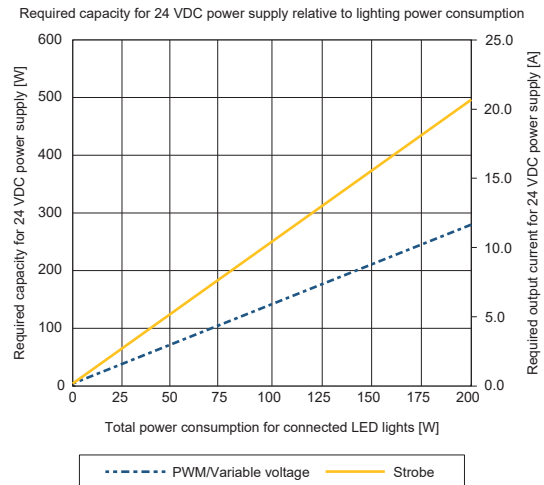
### 24 VDC capacity

The 24 VDC control unit should be selected according to the total power consumption of the light to be connected by referring to the graph below.

#### CD-VA10024-2P / 10024-2PE



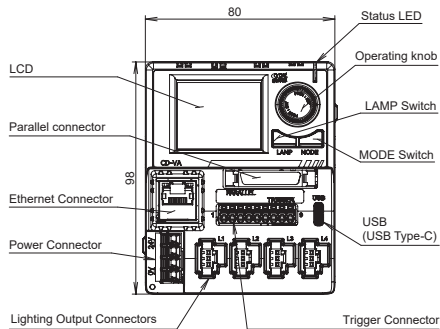
#### CD-VA20024-4P / 20024-4PE



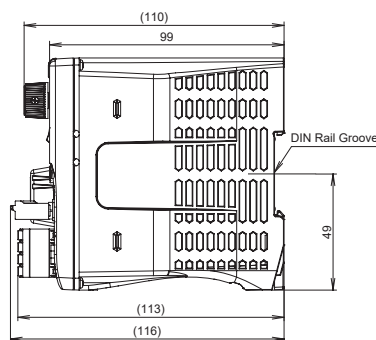
Note: Please choose a power supply with plenty of margin (about double) than what the graph shows when using with other device since controllers depend fully on the characteristics of those devices.

## ➤ Dimensions (mm)

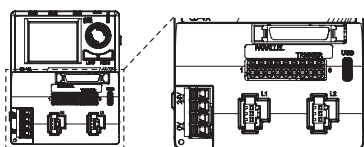
CD-VA20024-4PE (with Ethernet communication) \*Same dimensions apply for all models



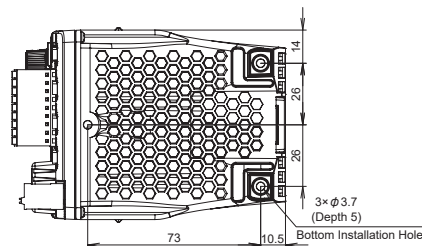
\* CD-VA10024-2PE has 2 lighting output connectors.



CD-VA10024-2P/CD-VA20024-4P (without Ethernet communication)



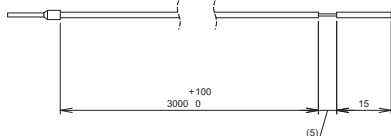
\* CD-VA20024-4P has 4 output connectors.



## ➤ Options (Purchased Products)

### Trigger input cable

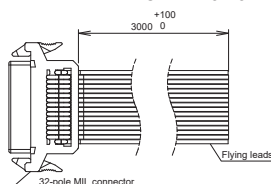
Model name: EXCB2-FER08-22-3-9CL  
(This product comes with 9 wires / set)



Marking tube number	Signal name	Line color
1	Trigger input 1	Brown
2	Trigger input 2	Red
3	Trigger input 3	Orange
4	Trigger input 4	Yellow
5	Sequence reset input	Green
6	Input COM	Blue
7	General-purpose output 1	Purple
8	General-purpose output 2	Gray
9	Output COM	White

### External control cable

Model name: EXCB2-FX32-3



PIN No.	Signal name	Line color
1	Dimming bit 0	Brown
2	Dimming bit 1	Red
3	Dimming bit 2	Orange
4	Dimming bit 3	Yellow
5	Dimming bit 4	Green
6	Dimming bit 5	Blue
7	Dimming bit 6	Purple
8	Dimming bit 7	Gray
9	Dimming bit 8	White
10	Dimming bit 9	Black
11	LAMP switching 0	Brown

PIN No.	Signal name	Line color
12	LAMP switching 1	Red
13	LAMP switching 2	Orange
14	LAMP switching 3	Yellow
15	Light intensity writing	Green
16	Input COM	Blue
17	RS-232C receiving input	Brown
18	RS-232C sending output	Red
19	RS-232C common terminal	Orange
20	Lighting time writing	Yellow
21	Writing mask	Green
22	General-purpose output 1	Blue

### Ferrite core

Model name: OP-NFT-13S  
Recommended installation location:  
Lighting output cable termination of CD-VA

### RS-232C cable

Model name: EXCB2-FX32-9F-3

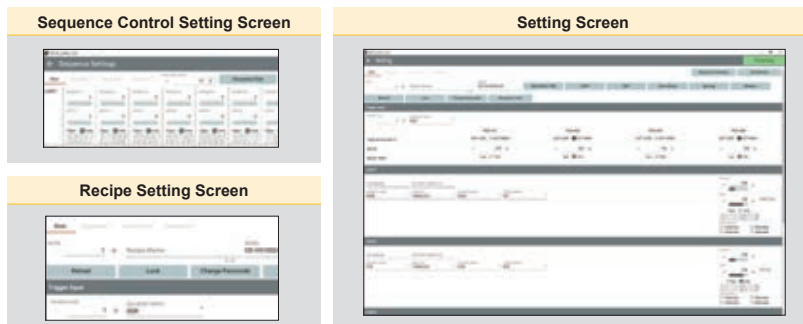
PIN No.	Signal name	Line color
23	General-purpose output 2	Purple
24	General-purpose output 3	Gray
25	General-purpose output 4	White
26	General-purpose output 5	Black
27	General-purpose output 6	Brown
28	Output COM	Red
29	Trigger input 1	Orange
30	Trigger input 2	Yellow
31	Trigger input 3	Green
32	Trigger input 4	Blue

## ➤ Setting Application (CD-VA Utility Software)

A Utility software to easily set lighting parameters can be downloaded from the website.

<https://www.ccs-grp.com/products/series/386>

Set each channel's dimming value and ON/OFF control, as well as sequence control, recipe setting, ON/OFF input assignment, etc. The app also monitors operation status.



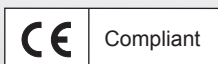
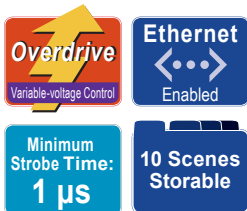
You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



## Multi-functional and fine-tunable control units



The supplied AC cord is for use with 100 to 120 VAC. If you would like to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

POD-5024-2-PEI  
(2 channel model)

POD-22024-4-PEI  
(4 channel model)

### Features

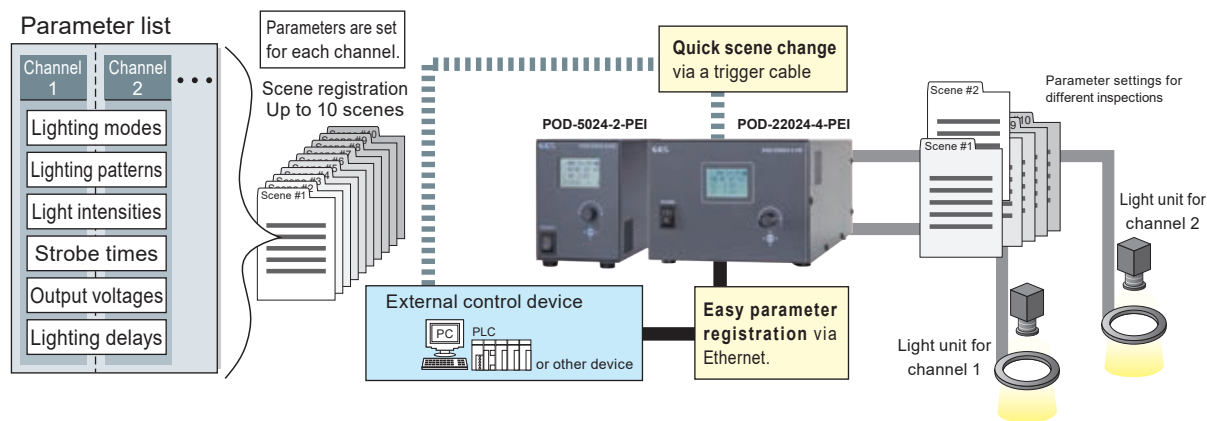
- Strobe lighting. Overdrive specifications.
- Voltage control during overdrive operation.
- Ethernet and parallel communications.
- Continuous lighting under PWM control.
- Sets of parameters related to light control can be registered.
- The light intensity can be set to one of 512 levels.
- Output voltage: 24 to 48 VDC
- Minimum strobe time of 1 μs.
- Strobe delay: 0 to 1,000 μs (in steps of 1 μs)
- 2 channels (POD-5024-2-PEI), 4 channels (POD-22024-4-PEI).
- Trigger link function (POD-22024-4-PEI).

You can make the light units on multiple channels turn ON (or OFF) with a single trigger signal that is input through one of the pins of the trigger input connector.

#### A Specification Difference between POD-5024-2-PEI and POD-22024-4-PEI

In POD-22024-4-PEI (4-channel model), the lighting mode setting (Overdrive or PWM) is applied to all channels. Please note that the setting cannot be individually specified for each channel as in POD-5024-2-PEI (2-channel model).

#### ● Registering Scenes (sets of parameters)



You can register sets of parameters called scenes that consist of the light control settings for all channels. By just applying a scene to the channels, you can easily change the settings. Up to 10 scenes can be registered. Refer to the User Manual for details.

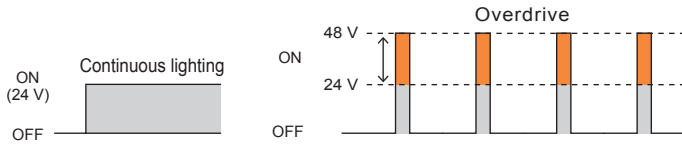
For information on possible combinations of light units with a POD Series control unit, refer to our website.

<https://www.ccs-grp.com/lnk/qrcode>

● What Is "Overdriving"?

Overdriving is used to emit brighter light by applying a high voltage to an LED light unit.

This voltage exceeds the voltage for continuous lighting.

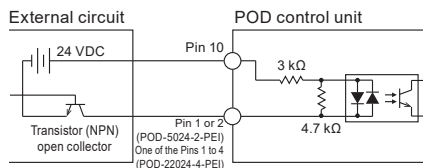


\*The output characteristics and light intensity setting values for starting light emission vary with the combinations of light units and power supplies.

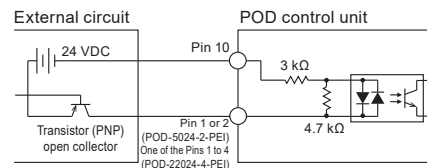
➤ **Example Connections** Refer to the User Manual for details.

**Example connections of external trigger signal**

■ Sink type (NPN)



■ Source type (PNP)

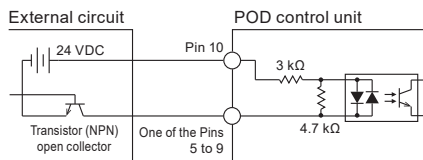


Connection specifications (for each terminal)				
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 VDC min. / 6 mA min.	1.5 VDC max. / 1 mA max.	Refer to the sequence diagrams on the User Manual.

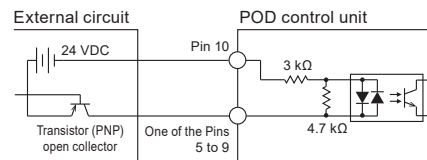
Setting of the LCG-TRG item on the COM Menu	Photocoupler	When lighting mode is set to O/D Mode, or when lighting mode is set to PWM Mode and lighting pattern is set to Strobe Lighting Pattern		When lighting mode is set to PWM Mode and lighting pattern is set to Continuous Lighting Pattern
		ON	OFF	Light Unit OFF
ACTIVE HI	ON	No change		Light Unit OFF
	OFF	Light unit flashes for the strobe time.		Light Unit ON
ACTIVE LO	ON	Light unit flashes for the strobe time.		Light Unit ON
	OFF	No change		Light Unit OFF

**Example connections of external trigger signal (Applying scenes)**

■ Sink type (NPN)



■ Source type (PNP)

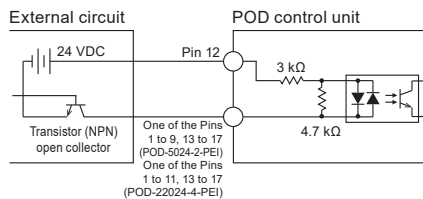


Photocoupler	Data	
	When the LGC-PAR item on the COM Menu is set to ACTIVE HI	When the LGC-PAR item on the COM Menu is set to ACTIVE LO
ON	1	0
OFF	0	1

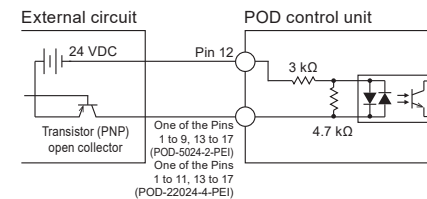
Scene number	Data				LCD
	SC3	SC2	SC1	SC0	
00	0	0	0	0	S01
01	0	0	0	1	S02
02	0	0	1	0	S03
03	0	0	1	1	S04
04	0	1	0	0	S05
05	0	1	0	1	S06
06	0	1	1	0	S07
07	0	1	1	1	S08
08	1	0	0	0	S09
09	1	0	0	1	S10

**Example connections of external signal (Parallel communications)**

■ Sink type (NPN)



■ Source type (PNP)



Photocoupler	Data		Connection specifications (for each terminal)				
	When the LGC-PAR item on the COM Menu is set to ACTIVE HI	When the LGC-PAR item on the COM Menu is set to ACTIVE LO	Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
ON	1	0	24 VDC	26.4 VDC	21.6 VDC min. / 6 mA min.	1.5 VDC max. / 1 mA max.	Refer to the sequence diagrams on the User Manual.
OFF	0	1					

# POD Series



Refer to our website for product details.

CCS POD

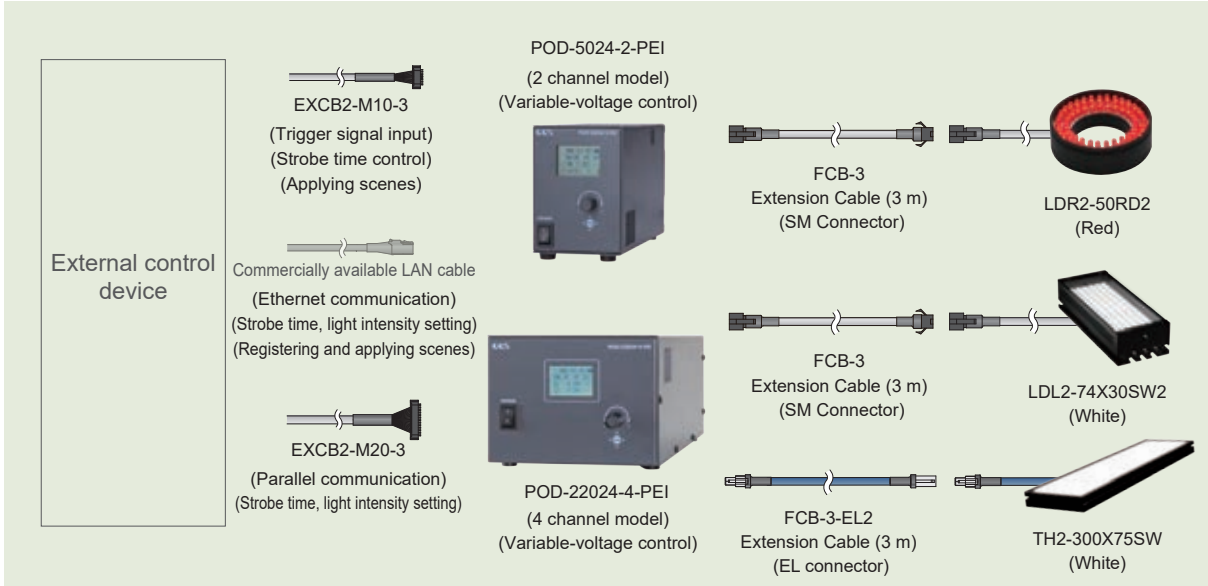
Search



## Example System Configuration

Example:

External control device — External control cable — Control unit — Extension cables — LED light



## Specifications

Model name	POD-5024-2-PEI / POD-22024-4-PEI		
Lighting method	Strobe lighting (Overdrive mode), continuous lighting (PWM mode)		
Drive method	Constant-voltage system		
Intensity control method	Variable-voltage control or PWM control		
Number of channels	POD-5024-2-PEI: 2 channels / POD-22024-4-PEI: 4 channels		
Number of output connectors	POD-5024-2-PEI	L1: 1 (SM connector), L2: 1 (SM connector)	
	POD-22024-4-PEI	L1: 2 (EL connectors, SM connectors), L2: 2 (EL connector, SM connector), L3: 1 (SM connector), L4: 1 (SM connector)	
Output ratings*1	POD-5024-2-PEI		POD-22024-4-PEI
	When both channels are in O/D Mode	Output current: 10 A max. (total for 2 channels)	O/D Mode (peak) <b>Total for 4 channels: 50 A max.</b> L1, L2: 15 A max./channel (EL connector: 15 A max./channel) (SM connector: 10 A max./channel) L3, L4: 10 A max./channel
	When both channels are in PWM Mode	Output power: 45 W max. (total for 2 channels)	
When the channels are used together with different lighting modes	Output current: 6.3 A max. and Output power: 36 W max. (total for 2 channels)	PWM Mode <b>Total for 4 channels: 200 W max.</b> L1, L2: 100 W max./channel (EL connector: 100 W max./channel) (SM connector: 60 W max./channel) L3, L4: 60 W max./channel	
Output voltage (ratings)	Overdrive (O/D) mode: 24 to 48 VDC, PWM mode: 24 VDC		
PWM frequency	125 kHz		
Light control settings	Manual	Operation on the front panel	
	External	Command input via TCP/IP or UDP/IP communications Signal input through parallel port	
Strobe time settings	Manual	Operation on the front panel	
	External	Command input via TCP/IP or UDP/IP communications Signal input through parallel port	
Lighting delay settings	Manual	Operation on the front panel	
	External	Command input via TCP/IP or UDP/IP communications Signal input through parallel port	
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz		
Power consumption (typ.)	POD-5024-2-PEI: 65 VA, POD-22024-4-PEI: 260 VA		
Inrush current (typ.)	POD-5024-2-PEI: 15 A (at 100 VAC), 36 A (at 240 VAC) from a cold start		
	POD-22024-4-PEI: 17 A (at 100 VAC), 40.8 A (at 240 VAC) from a cold start		
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)		
Insulation withstand voltage (input-output, input-FG)	1,500 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 MΩ min.		
Overvoltage category	Category II		
Overcurrent Protection	PWM control: Operates at 110% min. of output current; Strobe lighting: Operates at 120% min. of output current		
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation), Altitude: 2,000 m max., Protective ground class: Class I, Pollution degree: 2, Indoor use only		
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)		
Cooling method	Forced air cooling		
Applicable standards	CE, UKCA, RoHS compliant		
Material, coating, and surface processing	Steel sheet, Cover thickness: 1.6 mm, Chassis thickness: 1.0 mm, N3 (leather tone)		
Weight	POD-5024-2-PEI: 1,500 g max., POD-22024-4-PEI: 3,300 g max.		
Accessories	User Manual x1, 2-m-long 3-prong AC power cord with ground terminal x1		

\*1 For information on possible combinations of light units with a POD Series control unit, refer to our website. <https://www.ccs-grp.com/lnk/gr/pod>

\*2 For manual control and Ethernet communications: 1 to 1,000 μs (in steps of 1 μs), 1,002 to 3,000 μs (in steps of 3 μs)

For parallel communications: 3 to 3,000 μs (in steps of 3 μs) for high strobe time range, 1 to 1,000 (in steps of 1 μs) for low strobe time range

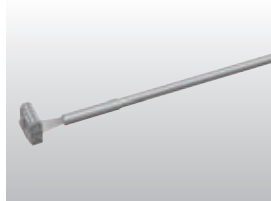
## Options

### External control cables

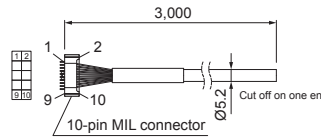
Dimensions (mm)

#### Trigger input cable

Used to input an external trigger signal of parallel bits. Used for performing strobe lighting and scene application.



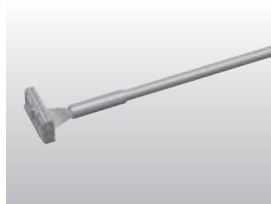
Model name: EXCB2-M10-3



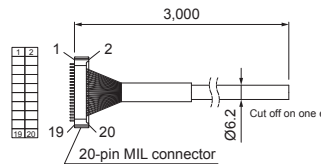
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

#### Parallel communication cable

Used for performing external control via parallel communication.



Model name: EXCB2-M20-3



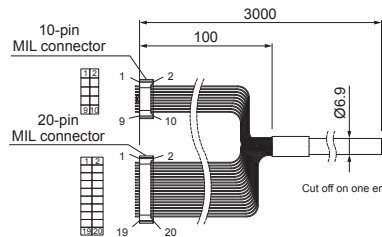
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1	19	Pink	Black2
10	Pink	Red1	20	Pink	Red2

#### Parallel communication/Trigger input branch cable

Branch cable that combines parallel communication and trigger input cables into a single cable.



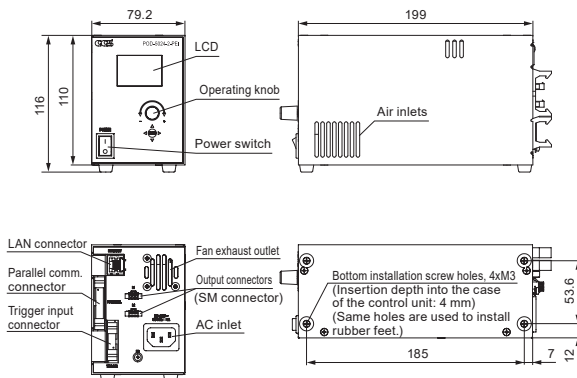
Model name: EXCB2-M10M20-3



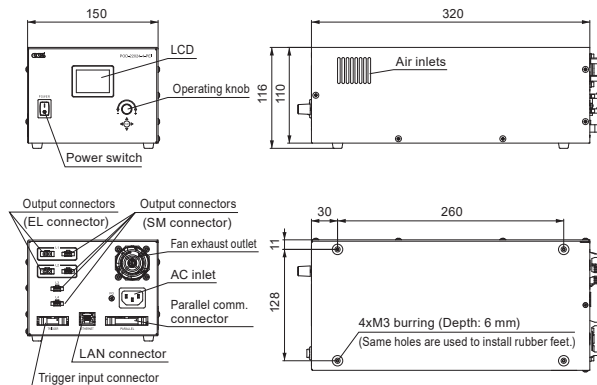
10-pin MIL connector			20-pin MIL connector		
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	1	Orange	Black2
2	Orange	Red1	2	Orange	Red2
3	Gray	Black1	3	Gray	Black2
4	Gray	Red1	4	Gray	Red2
5	White	Black1	5	White	Black2
6	White	Red1	6	White	Red2
7	Yellow	Black1	7	Yellow	Black2
8	Yellow	Red1	8	Yellow	Red2
9	Pink	Black1	9	Pink	Black2
10	Pink	Red1	10	Pink	Red2
			11	Orange	Black3
			12	Orange	Red3
			13	Gray	Black3
			14	Gray	Red3
			15	White	Black3
			16	White	Red3
			17	Yellow	Black3
			18	Yellow	Red3
			19	Pink	Black3
			20	Pink	Red3

## Dimensions (mm)

### POD-5024-2-PEI

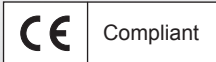


### POD-22024-4-PEI





## Overdrive strobe control units Enables even brighter emission of light units



The supplied AC cord is for use with 100 to 120 VAC. If you want to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

The PTU2 Series enables strobe lighting with overdrive. Overdrive refers to brighter than normal emission of light by increasing the voltage and current supplied to the light unit.

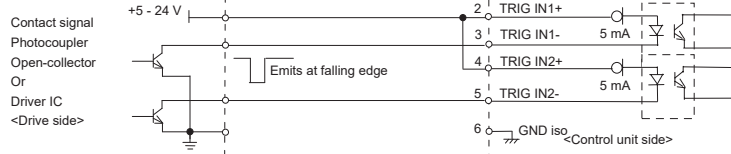
### Features

- The PTU2 Series enables the lights to emit several times brighter than the conventional control units.
- The two independent channels allow for setting each channel to emit for 10 to 990  $\mu$ s.

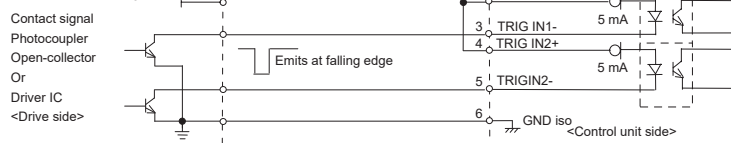
### Example Connections

Refer to the User Manual for details.

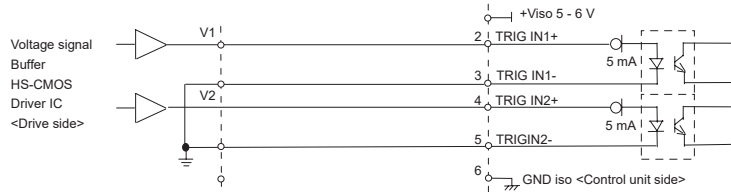
(1) Non-voltage contact drive 1  
(using drive-side power supply)



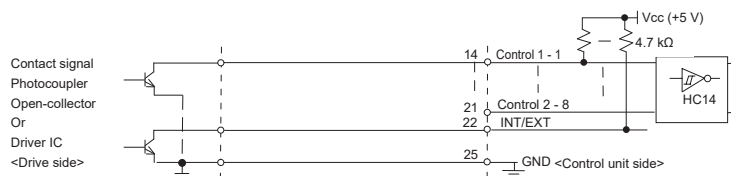
(2) Non-voltage contact drive 2  
(using insulation power supply)



(3) If driven by the high-pulse voltage output signal



(4) External intensity input



Low: 0 V or more 1.13 V max. High: 3.15 V or more 5 V max.

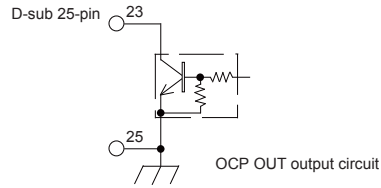


**Overcurrent protection function**

PTU2 control units forcibly stop the power output when the current consumption in the light unit exceeds the value shown below. The error lamp (red) on the front of the unit also flashes. Stopping of output is not released until the control unit is restarted.

Model name	PTU2-3012(A)	PTU2-3024(A)
Power consumption	8.5 A peak min	6.0 A peak min

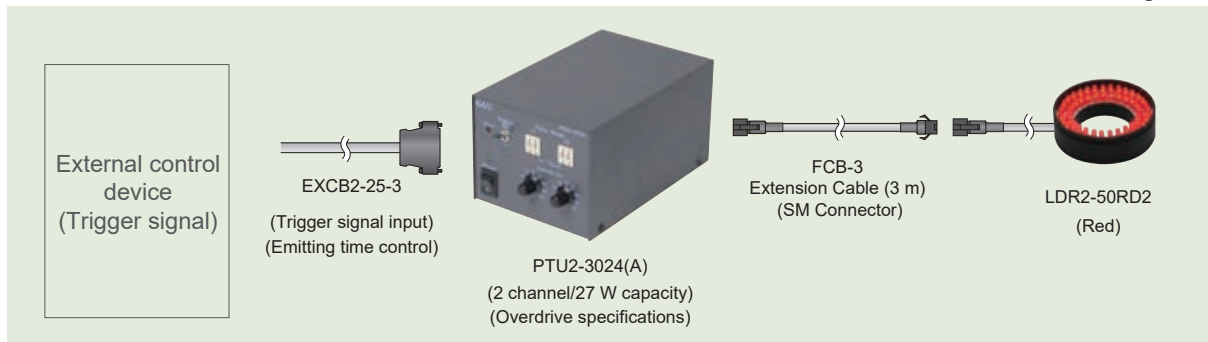
Use 24 VDC and 20 mA max. for the OCP OUT load in order to obtain a margin.



**Example System Configuration**

Example:

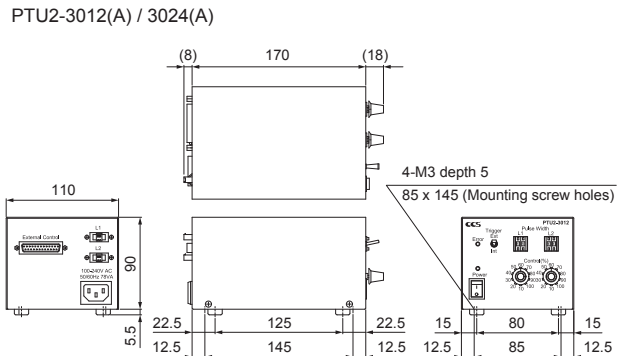
External control device — External control cable — Control unit — Extension cables — LED light



**Specifications**

Model name	PTU2-3012(A)	PTU2-3024(A)
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz	
Inrush current (typ.)	26 A (for 100 VAC) 63 A (for 240 VAC) at cold start	15 A (for 100 VAC) 30 A (for 240 VAC) at cold start
Output	18 VDC, 8.1 A max. (Peak value when connected to max. load)	48 VDC, 4.3 A max. (Peak value when connected to max. load)
Applicable light unit (rated)	Total for 2 channels: 27 W max.	
Lighting time	Lighting time = Pulse Width [x10 μs] x Control (10 to 100%) Pulse Width: 0 to 99 x 10 μs Control: 10 to 100% (10% steps)	
Lighting delay	15 μs max.	
Output connector	SMP-02V-BC	SMP-03V-BC
External control connector	D-sub 25-pin (plug), M2.6 screw	
Overcurrent protection	Output shutdown: 107% min. of rated load Reset by clearing the cause, and then turning the power off and on again.	
Applicable standards	CE, UKCA, RoHS compliant	
Material/Surface processing	Thickness of steel plate: 1.0, N3 leather tone finish	
Weight	1.2 kg max.	
Accessories	3-prong AC cord with ground terminal (2 m) x 1, External control connector x 1, User Manual x 1	

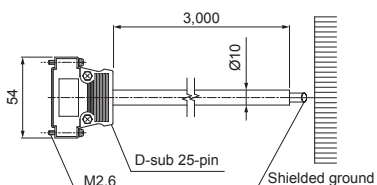
**Dimensions (mm)**



**Options**

**External control cable**

EXCB2-25-3 (3 m)  
D-sub 25-pin



Dimensions (mm)

No.	Line color	No.	Line color	No.	Line color	No.	Line color
1	Black	9	Gray	17	Purple/Black	25	Brown/White
2	White	10	Pink	18	Grey/Black	NC	(Blue/White)
3	Red	11	White/Black	19	Pink/Black	NC	(Purple/White)
4	Green	12	Red/Black	20	Light green/Black	NC	(Grey/White)
5	Yellow	13	Green/Black	21	Black/White	NC	(Pink/White)
6	Brown	14	Yellow/Black	22	Red/White	NC	(Light green/White)
7	Blue	15	Brown/Black	23	Green/White		
8	Purple	16	Blue/Black	24	Yellow/White		

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

- Control Units and Controllers
- PD4
  - PD3
  - PD2
  - CD-VA
  - POD
  - PTU2
  - PF
  - CX
  - CN-EPOE
  - CN-4024-2-EIPT
  - PB-2430-1
  - CC-ST-1024
  - PJ2
  - PJ
  - CC-PJ-0707
  - PSCC
  - PSB4
  - PSB3-30024
  - Options
  - Lens Filters
  - Diffusion Plates
  - Polarizing Plates
  - Light Control Films
  - Fixtures, etc.
  - Brackets
  - SM/EL Cables



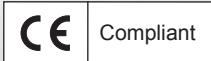
## Enables “extreme power” strobe lights Dedicated for the high power strobe light units

Light intensity  
**512**  
levels

Ethernet  
enabled

Available Strobe time  
**1**  $\mu$ s min.

Lighting delay time  
**0 to 100**  $\mu$ s



The supplied AC cord is for use with 100 to 120 VAC.  
If you would like to use the control unit with 200 to 240 VAC,  
you must procure another appropriate AC power cord.

PF-A4048-2  
(2 channel model)

PF-A16048-4  
(4 channel model)

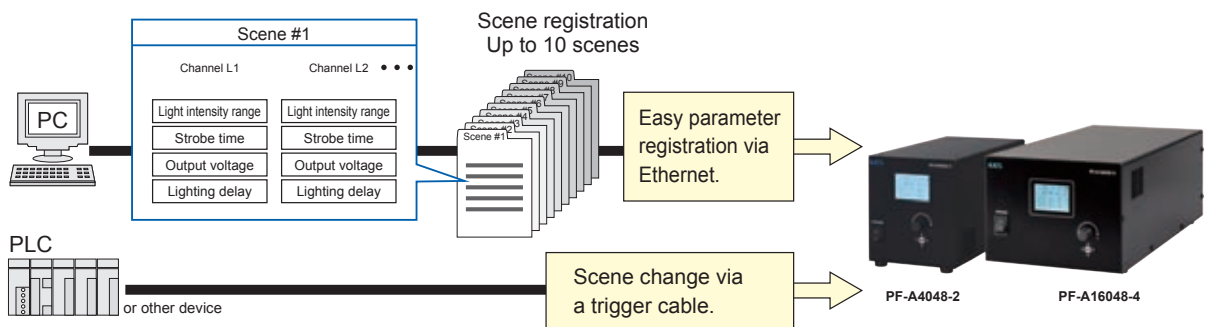
High Power Strobe Lights  
PF Series

Product Page ▼ P.141

### Features

- Dedicated control unit for the high power strobe lights PF Series. PF Series Product Page ▼ P.141
- Light intensity: 512 levels
- Minimum strobe time of 1  $\mu$ s.
- Lighting delay time: 0 to 100  $\mu$ s (in steps of 0.1  $\mu$ s)
- 2 channels (PF-A4048-2), 4 channels (PF-A16048-4).
- Ethernet and parallel communications.
- Sets of parameters related to light control can be registered.
- Trigger link function (PF-A16048-4)  
You can make the light units on multiple channels turn ON (or OFF) with a single trigger signal that is input through one of the pins of the trigger input connector.

#### ● Registering Scenes (sets of parameters)



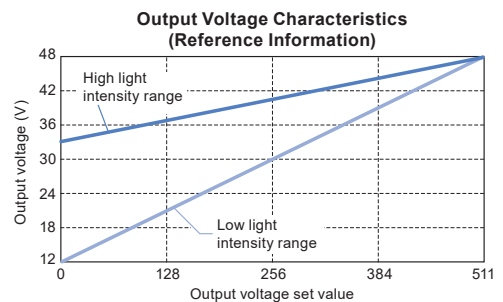
You can register sets of parameters called scenes that consist of the light control settings for all channels. By just applying a scene to the channels, you can easily change the settings. Up to 10 scenes can be registered. Refer to the User Manual for operation details.

#### ● Light Intensity Ranges

Each channel can be set to either of the light intensity ranges below. The output voltage of the output connectors varies depending on the light intensity range.

High light intensity range (default)	33 to 48 VDC
Low light intensity range	12 to 48 VDC

\*The output characteristics and light intensity setting values for starting light emission vary with the combinations of light units and power supplies. Set the intensity range in accordance with the application.

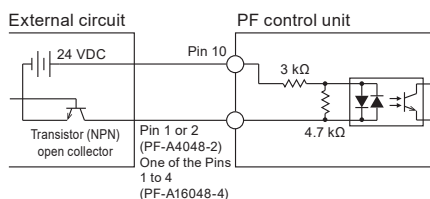


## Example Connections

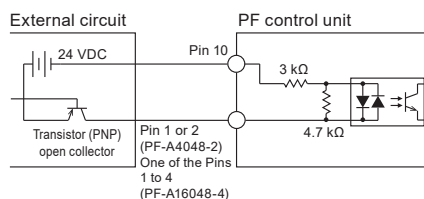
Refer to the User Manual for details.

### Example connections of external trigger signal

#### ■ Sink type (NPN)



#### ■ Source type (PNP)

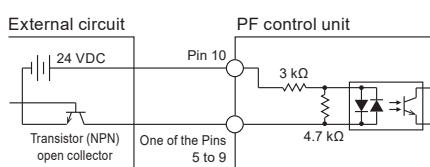


Connection specifications for each terminal				
Rated input voltage	Maximum input voltage	Photocopier ON voltage / ON current	Photocopier OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 V DC min. / 7 mA min.	1.5 V DC max. / 1 mA max.	Refer to the sequence diagrams on the User Manual.

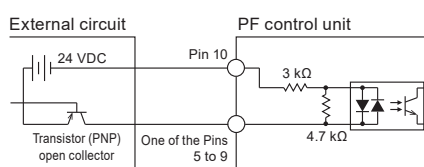
Setting of the LCG-TRG item on the COM Menu	Photocopier	Light unit status
ON	ON	No change
OFF	OFF	Light unit flashes for the strobe time.
ON	OFF	Light unit flashes for the strobe time.
OFF	ON	No change

### Example connections of external trigger signal (Applying scenes)

#### ■ Sink type (NPN)



#### ■ Source type (PNP)

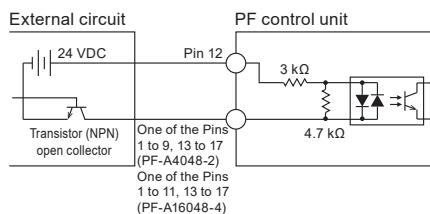


Photocopier	Data	
	When the LGC-PAR item on the COM Menu is set to ACTIVE HI	When the LGC-PAR item on the COM Menu is set to ACTIVE LO
ON	1	0
OFF	0	1

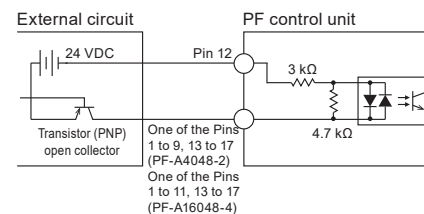
Scene number	Data				LCD
	SC3	SC2	SC1	SC0	
00	0	0	0	0	S01
01	0	0	0	1	S02
02	0	0	1	0	S03
03	0	0	1	1	S04
04	0	1	0	0	S05
05	0	1	0	1	S06
06	0	1	1	0	S07
07	0	1	1	1	S08
08	1	0	0	0	S09
09	1	0	0	1	S10

### Example connections of external signal (Parallel communications)

#### ■ Sink type (NPN)



#### ■ Source type (PNP)



Photocopier	Data	
	When the LGC-PAR item on the COM Menu is set to ACTIVE HI	When the LGC-PAR item on the COM Menu is set to ACTIVE LO
ON	1	0
OFF	0	1

Connection specifications for each terminal				
Rated input voltage	Maximum input voltage	Photocopier ON voltage / ON current	Photocopier OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 V DC min. / 7 mA min.	1.5 V DC max. / 1 mA max.	Refer to the sequence diagrams on the User Manual.

# PF Series



Refer to our website for product details.

CCS PF

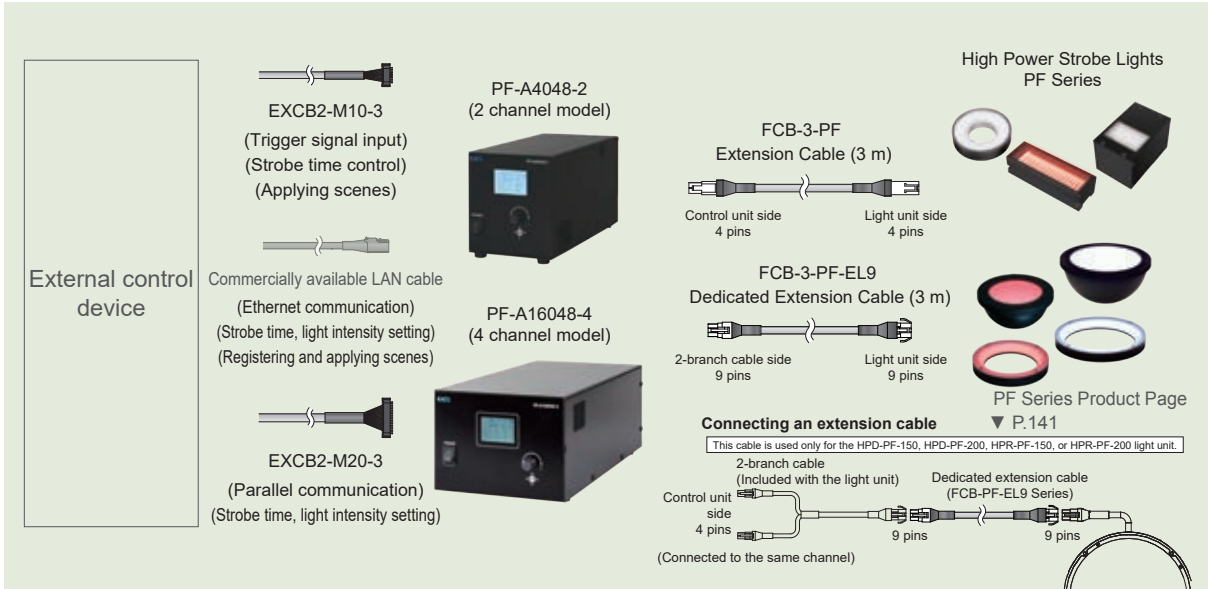
Search



## Example System Configuration

Example:

External control device — External control cable — Control unit — Extension cables — LED light



## Specifications

Model name	PF-A4048-2, PF-A16048-4	
Lighting method	Strobe lighting	
Drive method	Constant-voltage system	
Intensity control method	Variable-voltage control, Strobe time control	
Number of channels	PF-A4048-2	2 channels
	PF-A16048-4	4 channels
Number of output connectors	PF-A4048-2	L1: 2, L2: 1
	PF-A16048-4	L1: 2, L2: 2, L3: 2, L4: 2
Applicable light unit (ratings)	CCS high power strobe light units	
Output voltage settings	Manual	Operation on the front panel
	External	Command input via TCP/IP or UDP/IP communications
		Signal input through parallel port
512 levels		
Strobe time settings	Manual	Operation on the front panel
	External	Command input via TCP/IP or UDP/IP communications
		Signal input through parallel port
PF-A4048-2: 1 to 100 $\mu$ s (in steps of 0.1 $\mu$ s) PF-A16048-4: 1 to 500 $\mu$ s <sup>*1</sup>		
Lighting delay settings	Manual	Operation on the front panel
	External	Command input via TCP/IP or UDP/IP communications
		Signal input through parallel port
0 to 100 $\mu$ s (in steps of 0.1 $\mu$ s)		
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz	
Power consumption (typ.)	PF-A4048-2	65 VA
	PF-A16048-4	140 VA
Inrush current (typ.)	PF-A4048-2	15 A (at 100 VAC), 36 A (at 240 VAC) from a cold start
	PF-A16048-4	17 A (at 100 VAC), 40.8 A (at 240 VAC) from a cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)	
Output voltage (ratings)	High light intensity range: 33 to 48 VDC Low light intensity range: 12 to 48 VDC	
Output current (peak)	PF-A4048-2	Total for 2 channels: 43.2 A (21.6 A/connector)
	PF-A16048-4	Total for 4 channels: 172.8 A (21.6 A/connector)
Insulation withstand voltage (input-output, input-FG)	1500 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 M $\Omega$ min.	
Overcurrent Protection	Operates at 107% min. of output current *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.	
Overvoltage category	Category II	
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)	
	Altitude: 2,000 m max., Protective ground class: Class I, Pollution degree: 2, Indoor use only	
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)	
Cooling method	Forced air cooling	
Applicable standards	CE, UKCA, RoHS compliant	
Material/surface processing	Steel sheet, Cover thickness: 1.6 mm, Chassis thickness: 1.0 mm, Black (half matte)	
Weight	PF-A4048-2	1,900 g max.
	PF-A16048-4	3,300 g max.
Accessories	User manual, 2-m-long 3-prong AC power cord with ground terminal	

<sup>\*1</sup> For Ethernet communications: 1 to 100  $\mu$ s (in steps of 0.1  $\mu$ s), 100.5 to 500  $\mu$ s (in steps of 0.5  $\mu$ s)

For parallel communications: High strobe time range (5 to 500  $\mu$ s, in steps of 0.5  $\mu$ s), Low strobe time range (1 to 100  $\mu$ s, in steps of 0.1  $\mu$ s)

Various technical documents available.

PDF Drawings

DXF Drawings

Product Brochures

Instruction Guides

3D CAD

Data Sheets

Imaging Examples

Digital Catalogs

Register to use them.

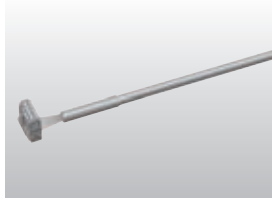
## Options

### External control cables

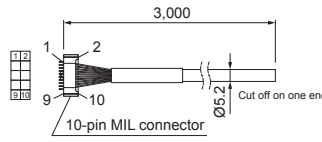
Dimensions (mm)

#### Trigger input cable

Used to input an external trigger signal of parallel bits. Used for performing strobe lighting and scene application.



Model name: EXCB2-M10-3



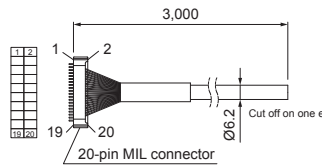
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

#### Parallel communication cable

Used for performing external control via parallel communication.



Model name: EXCB2-M20-3



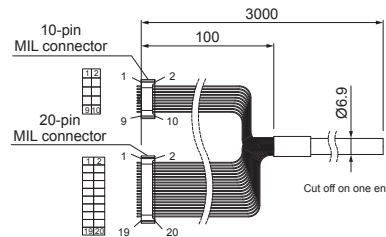
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1	19	Pink	Black2
10	Pink	Red1	20	Pink	Red2

#### Parallel communication/Trigger input branch cable

Branch cable that combines parallel communication and trigger input cables into a single cable.



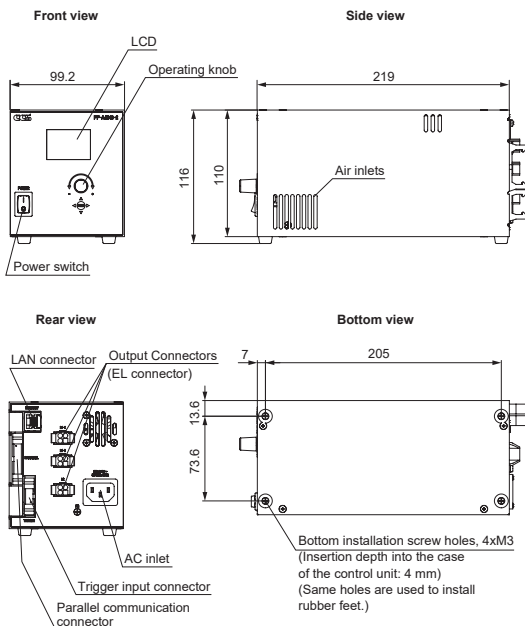
Model name: EXCB2-M10M20-3



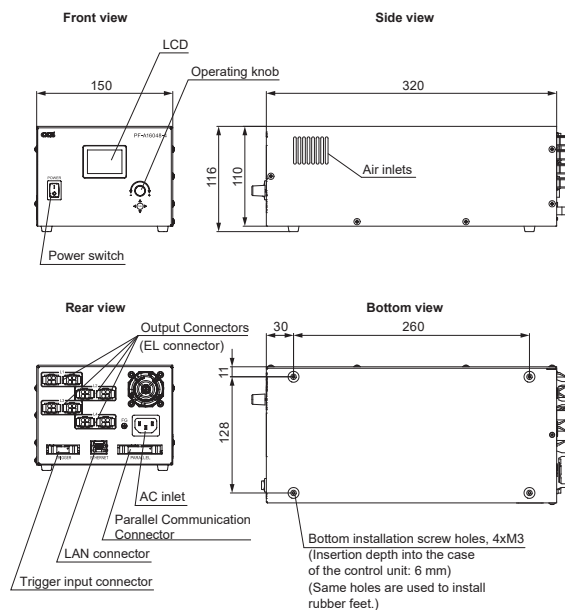
20-pin MIL connector			10-pin MIL connector		
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black2	1	Orange	Black1
2	Orange	Red2	2	Orange	Red1
3	Gray	Black2	3	Gray	Black1
4	Gray	Red2	4	Gray	Red1
5	White	Black2	5	White	Black1
6	White	Red2	6	White	Red1
7	Yellow	Black2	7	Yellow	Black1
8	Yellow	Red2	8	Yellow	Red1
9	Pink	Black2	9	Pink	Black1
10	Pink	Red2	10	Pink	Red1
			11	Orange	Black3
			12	Orange	Red3
			13	Gray	Black3
			14	Gray	Red3
			15	White	Black3
			16	White	Red3
			17	Yellow	Black3
			18	Yellow	Red3
			19	Pink	Black3
			20	Pink	Red3

## Dimensions (mm)

### PF-A4048-2



### PF-A16048-4



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

Board type controller that can be directly mounted into a PC

NEW



CX-PV6024-4X  
(Lighting output of 60 W for 4 channels)



CX-PV12024-4X  
(Lighting output of 120 W for 4 channels)

PC mounted image



This is not compliant with CE. Not available in Europe and the Americas.

Warranty

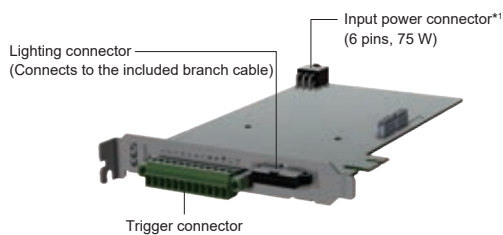
Warranty for this product is not the same as CCS standard lighting. Contact our local sales office for details.

### Features

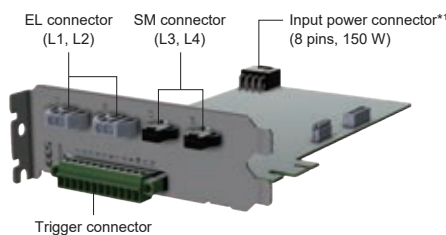
- Compared with conventional framed power supplies, it can be mounted into an image processing PC to save space and minimize wiring.
- In addition to conventional lighting controls, it also comes with new functions such as sequence control and trigger output.
- In addition to general PWM control, it is also available with variable-voltage intensity control that is ideal for line inspection.

### Lineup

#### CX-PV6024-4X



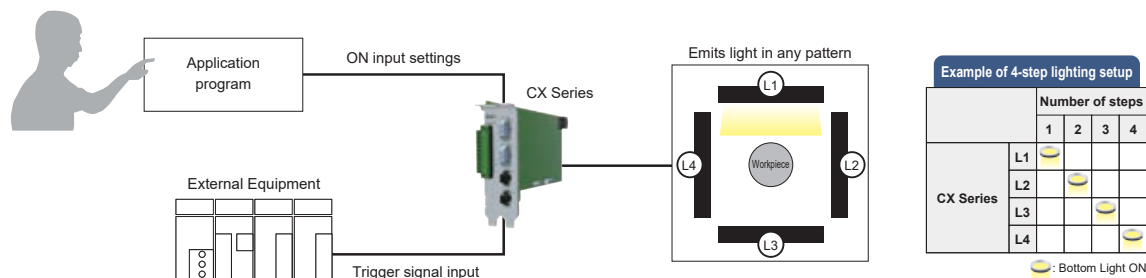
#### CX-PV12024-4X



\*1 Use a PCI Express auxiliary power supply compatible with the input power supply connector.

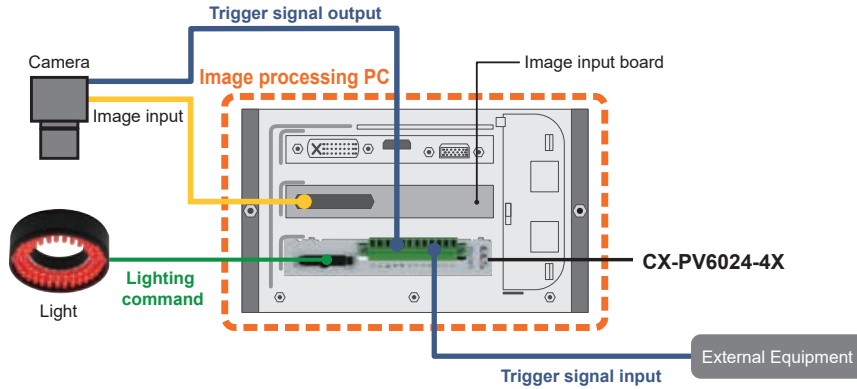
### Sequence Control

Can register maximum 16 steps of lighting outputs, and create pattern emissions.



## System Configuration Example

Example of CX-PV6024-4X



## Specifications

Model Name	CX-PV6024-4X	CX-PV12024-4X
Lighting method	Continuous lighting/Strobe lighting (Without Overdrive)	
Drive method	Constant-voltage system	
Intensity control method	PWM control, variable-voltage control *When using variable-voltage control, the intensity value settings are shared across all channels. Voltage range: HIGH: 18 to 24 V, MEDIUM: 15 to 24 V, LOW: 12 to 24 V	
PWM Frequency	125 kHz	
Number of light intensity levels	1,024 levels	
Number of channels	4 channel <sup>1)</sup> (SM 4 channel)	4 channel (EL 2 channel, SM 2 channel)
Input power connector <sup>2)</sup>	PCI Express auxiliary power supply (6-pin)	PCI Express auxiliary power supply (8-pin)
Applicable Light Units (rated)	24 VDC input lighting All connectors total: 60 W or less	24 VDC input lighting All connectors total: 120 W or less
Trigger Input Voltage	24 VDC ±10 %	
Power consumption (max.)	75 W	150 W
Parameter settings	Virtual COM port (command communication) and API control using device driver Supported OS: Windows 10 64-bit	
Number of occupied slots	1	2
Extended path requirements	PCI Express 2.0 (Gen2) / lane x1 or more	
Operating environment	Temperature: 0 to 50 °C, Humidity: 20 to 85% RH (with no condensation)	
Storage environment	Temperature: -20 to 60 °C, Humidity: 20 to 85% RH (with no condensation)	
Cooling method	Natural air-cooling	
Applicable standards	RoHS compliant	
Weight	200 g	230 g
Accessories	Startup manual × 1, Trigger terminal block × 1 4-branch cable (model number: CN-1024-4-CABLE) × 1	Startup manual × 1 Trigger terminal block × 1

\*1 Requires connection to the included 4-branch cable.

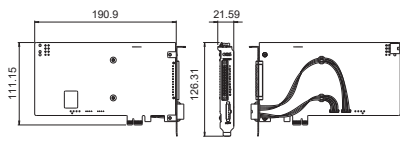
\*2 Prepare a PCI Express auxiliary power supply compatible with the input power supply connector.

Note: A PCI Express auxiliary power supply is required to operate this product. Check the power capacity of the PC to be connected before use.

Dedicated driver software is required to use the CX Series. Supported OS: Windows 10 64-bit  
Contact our local sales office for details.

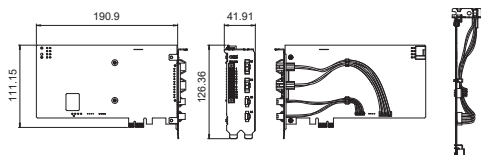
## Dimensions (mm)

### CX-PV6024-4X



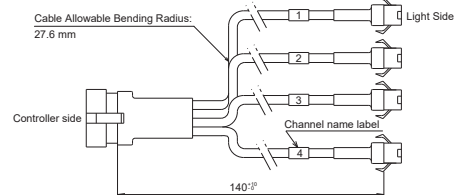
\* Supported size: Full-height

### CX-PV12024-4X



\* Supported size: Full-height

### Branch cable (CX-PV6024-4X accessory) CN-1024-4-CABLE



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

# Controllers

## PoE Enabled Light Controller

# CN-EPOE Series

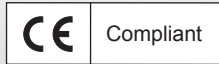
Refer to our website for product details.

CCS CN-PoE

Search



## Using a single LAN cable for power receiving and communication



Front Panel  
CN-1024-2-EPOE / CN-1024-4-EPOE Common



Rear Panel  
CN-1024-2-EPOE (2 channel model)



CN-1024-2-EPOE

Rear Panel  
CN-1024-4-EPOE (4 channel model)



CN-1024-4-EPOE

\*4-branch cable supplied

Note: The CN controller is operated only through external control, and cannot be controlled manually.

### Features

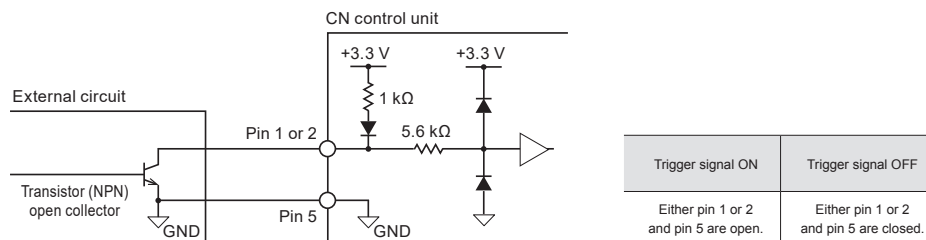
- Reduce the number of cables in your system by using a single LAN cable for power receiving and communication.
- Light control via Ethernet communication from your machine vision device or PC.
- Compact case design
- Can be installed apart from the control panel and close to the inspection site.
- Models equipped with 2 channels and 4 channels are available.
- Selectable continuous and strobe lighting with a single unit
- Trigger sequencing mode enables all channels to be simultaneously controlled with 1 trigger.  
(both 2 channel model/4 channel model)
- Trigger circulation mode enables channels to be turned on in sequence with each trigger input.  
(4 channel models only)
- Provides accumulated values of controller power ON duration, total light ON time, and other operation data.
- 256 levels of light intensity.
- Compatible with approx. 350 models of CCS LED lights up to 10 W.

### Example Connection

Refer to the User Manual for details.

#### Example connection of external trigger signal

When the transistor shown below is turned ON, the trigger signal will be turned OFF.  
Ensure that the external circuit allows the current of 3.1 mA to flow.

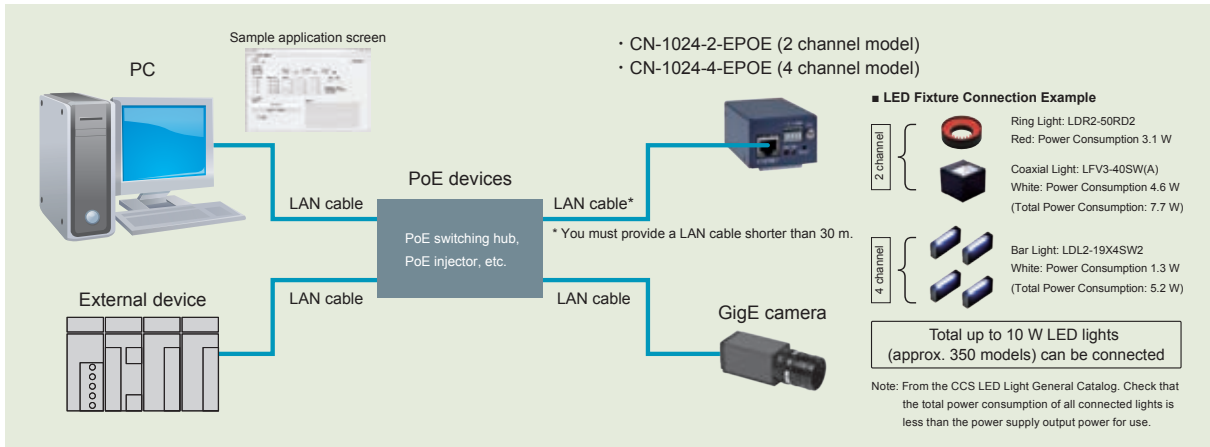


Note: Do not use the 3.3 V power supply provided in the control unit for different purposes other than trigger input.  
Also, do not apply the voltage exceeding the rating to the pins.



PD4
PD3
PD2
CD-VA
POD
PTU2
PF
CX
CN-EPOE
CN-4024-2-EIPT
PB-2430-1
CC-ST-1024
PJ2
PJ
CC-PJ-0707
PSCC
PSB4
PSB3-30024
Lens Filters
Diffusion Plates
Polarizing Plates
Light Control Films
Fixtures, etc.
Brackets
SMEL Cables

## Example System Configuration



PoE (Power over Ethernet) is a technology that uses a LAN cable used for Ethernet to simultaneously deliver signaling and supply power to PoE compatible equipment connected.

Two standards, IEEE802.3af and IEEE802.3at are defined. (As of August 2019) Connect a PoE compatible device compliant with these standards to this product.

## Specifications

Model name	CN-1024-2-EPOE	CN-1024-4-EPOE
Applicable light units (ratings)	24 VDC 10 W (2 channels total)	24 VDC 10 W (4 channels total)
Number of channels	2 channels	4 channels
Lighting method	Strobe Mode: Strobe lighting, Continuous Mode: Continuous lighting	
Drive method	Constant-voltage system	
Intensity control method	Strobe Mode: Lighting time control, Continuous Mode: PWM control	
PWM frequency	125 kHz	
Power input	RJ-45 connector (based on PoE)	
Power consumption (typ.)	13.9 W	
External control protocol	TCP/IP, UDP/IP	
Strobe time setting (Strobe mode)	8 μs to 100 ms (Must be a multiple of 8 μs)	
Lighting delay setting (Strobe mode)	Strobe mode: 0 to 100 ms (Must be a multiple of 10 μs)	
Light intensity setting	256 levels (including 0: Not lit.)	
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85% (with no condensation)	
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85% (with no condensation)	
Cooling method	Natural air cooling	

Applicable standards	CE, UKCA, RoHS compliant	
Output connectors	SMP-03V-BC x 2 pcs.	SMP-08V-BC
Trigger input	Screw-less terminal block, 5-pin, Solid wires or stranded wires AWG 28 to 22	
Trigger input voltage (range)	24 VDC	
Material and surface processing	Aluminum alloy, thickness: 1.5 mm, navy-blue, leather tone	
Weight	140 g max.	
Accessories	User manual	User manual, 4-branch cable

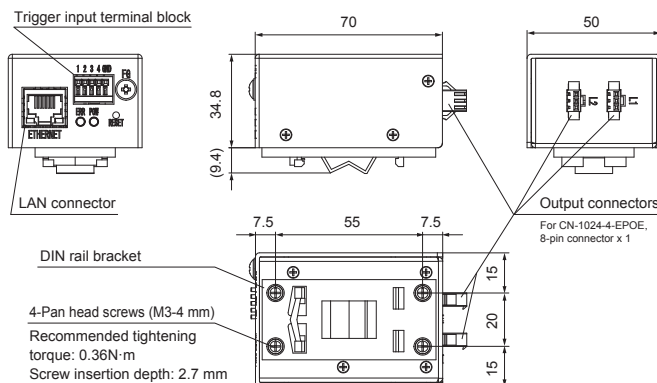
A sample application that demonstrates the initial settings including IP address and the light control settings is available on our website. Please download it as required.



Sample application screen

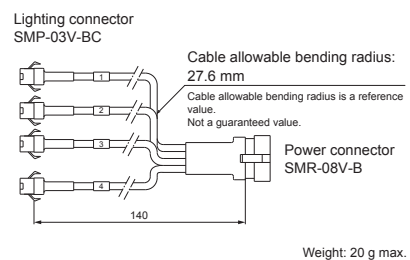
## Dimensions (mm)

■ CN-1024-2-EPOE  
(CN-1024-4-EPOE is the same size except for the output connector)



• Turn OFF the power source when you remove and attach the DIN rail bracket.  
• Do not reverse the position when attaching the DIN rail bracket.

■ For CN-1024-4-EPOE 4-branch cable (supplied)  
Model name: CN-1024-4-CABLE



- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

## Controllers

### Controller with EtherNet/IP Interface

# CN-4024-2-EIPT

Refer to our website for product details.

CCS CN-EIPT

Search



## Light Control through an EtherNet/IP Network



CN-4024-2-EIPT



"EtherNet/IP" is a trademark of ODVA, Inc.

Note: The CN controller is operated only through external control, and cannot be controlled manually.

### Features

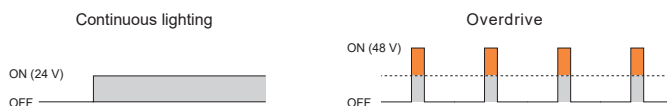
- Operated only through external control.
- Light intensity and other settings can be controlled with explicit messages via EtherNet/IP communications and with I/O commands via TCP/IP communications.

Device classification	Message type	Connection type for implicit messaging	Requested packet interval	DLR function
Adapter	Explicit (UCMM, Class 3), Implicit	Exclusive owner, Input only	10 to 3200 ms	Available
Port number to use (TCP)	Port number to use (UDP)	DHCP	Conformity	
44818	2222, 44818	Available (Default: fixed IP address)	ODVA Composite Conformance Test Revision CT15	

### ■ Three selectable lighting modes:

#### 1. Overdrive Mode (48 VDC output, Strobe time control: 1 to 1,000 μs, Maximum duty ratio: 7%)

When an external trigger signal is input to the CN controller, the corresponding light unit flashes. By overdriving the voltage that is applied to the light unit, you can make the light unit flash a few times brighter than when the light units operate in any other lighting modes.



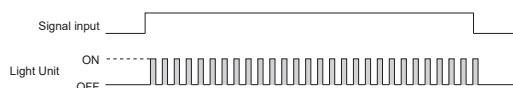
#### 2. Strobe Mode (24 VDC Output, Strobe time control: 1 to 10,000 μs)

When an external trigger signal is input to the CN controller, the corresponding light unit flashes. LED lights can withstand being turned on and off frequently. Turning on the light unit only when taking images will reduce heat generation, provide a more stable radiation output, and increase the service life of the light unit.

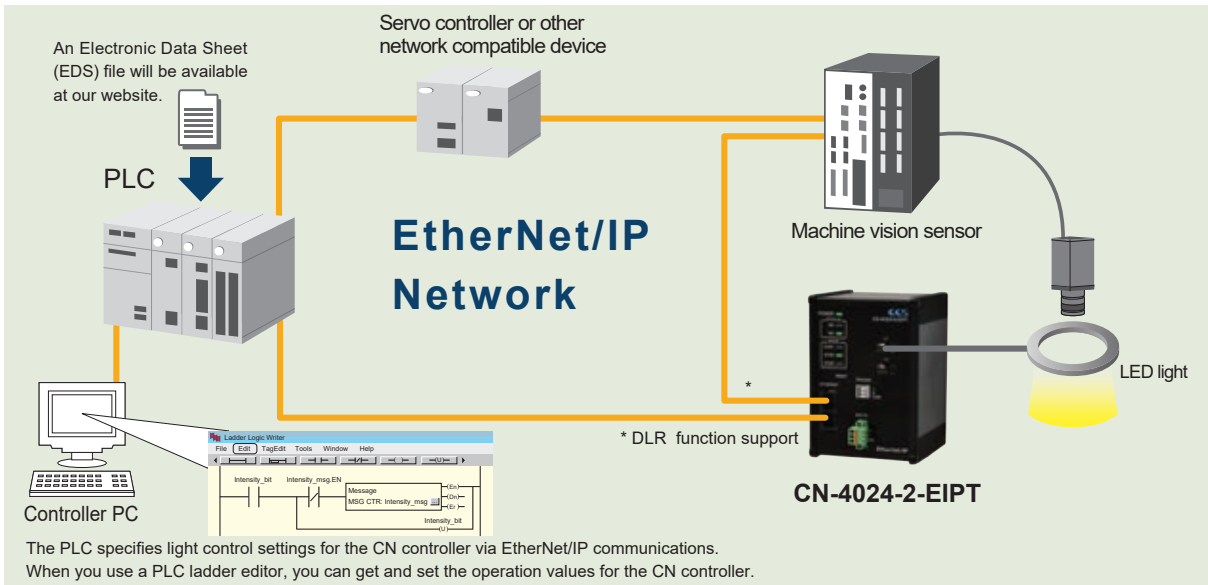


#### 3. Continuous Mode (24 VDC Output, PWM Control: the light intensity can be set to any of 512 levels.)

The light unit will be ON (or OFF) as long as there is an external trigger signal input to the CN controller.



## Example System Configuration



You can get the following values through an EtherNet/IP network:

**Accumulated trigger count, accumulated lighting duration, and error status**

Additionally, you can set and check the following values:

Lighting mode, trigger logic, ON/OFF setting for the light unit, light intensity, strobe time, and lighting delay

The CN controller also provides TCP/IP commands for the same operations.

## Specifications

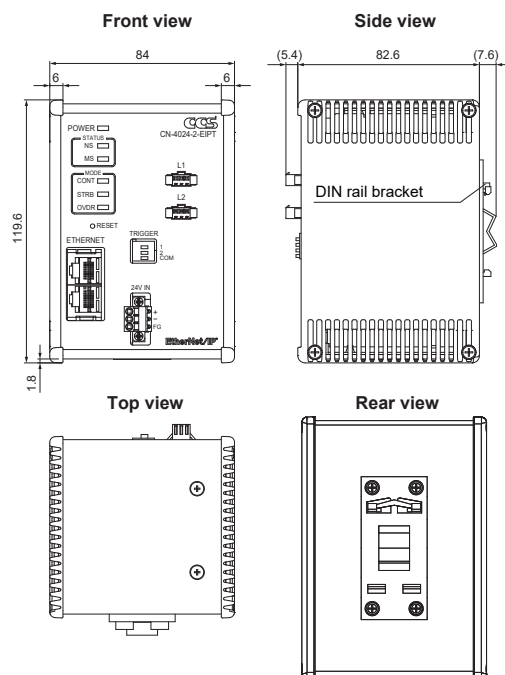
Model name	CN-4024-2-EIPT
Lighting method	Overdrive (O/D) Mode, Strobe Mode: Strobe lighting Continuous Mode: Continuous lighting
Drive method	Constant-voltage system
Intensity control method	O/D Mode, Strobe Mode: Lighting time control Continuous Mode: PWM control
PWM frequency	125 kHz
Number of channels	2 channels
Output ratings (O/D Mode)	48 VDC 5 A max./connector, Total for 2 channels: 7 A max.*1
Output ratings (Strobe Mode, Continuous Mode)	24 VDC 40 W max./connector, Total for 2 channels: 40 W max.
External control protocol	EtherNet/IP, TCP/IP
Strobe time	O/D Mode: 1 to 1,000 $\mu$ s (in steps of 1 $\mu$ s) Strobe Mode: 1 to 10,000 $\mu$ s (in steps of 1 $\mu$ s)
Lighting delay	O/D Mode, Strobe Mode: 0 to 10,000 $\mu$ s (in steps of 1 $\mu$ s)
Light intensity	Continuous Mode: Set any of 512 levels
Trigger input	Terminal block, 3 poles, Solid wires or stranded wires AWG 28 to 22 Maximum duty ratio (O/D Mode): 7%
Trigger input voltage (rating)	24 VDC
Power input	Terminal block, 3 poles, Solid wires or stranded wires AWG 24 to 16
Power input voltage (rating)	24 VDC
Power input voltage (range)	21.6 to 26.4 VDC
Average power consumption (typ.)	45 W
Peak power consumption (max.)	71.3 W *2
Inrush current (typ.)	6.9 A, 21.4 $\mu$ s (reference values)
Insulation withstand voltage, Insulation resistance (I/O-FG)	250 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 M $\Omega$ min.
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation), Indoor use only
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)
Cooling method	Natural air cooling

\*1 Confirm the peak current of the LED Lights and use them within the above output current. For information on the availability of your LED Lights, refer to our website. <https://www.ccs-grp.com/lnk/qtr/pod>

\*2 When you select a power supply, the rated output power must be larger than the above peak power consumption.

Applicable standards	CE, UKCA, RoHS compliant
Material and surface processing	Material: Aluminum and resin, Surface processing: Black alumite
Weight	500 g max.
Accessories	User Manual

## Dimensions (mm)



You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here. <https://www.ccs-grp.com/contact/>



## Low-price DC input controller contributing to cost reductions

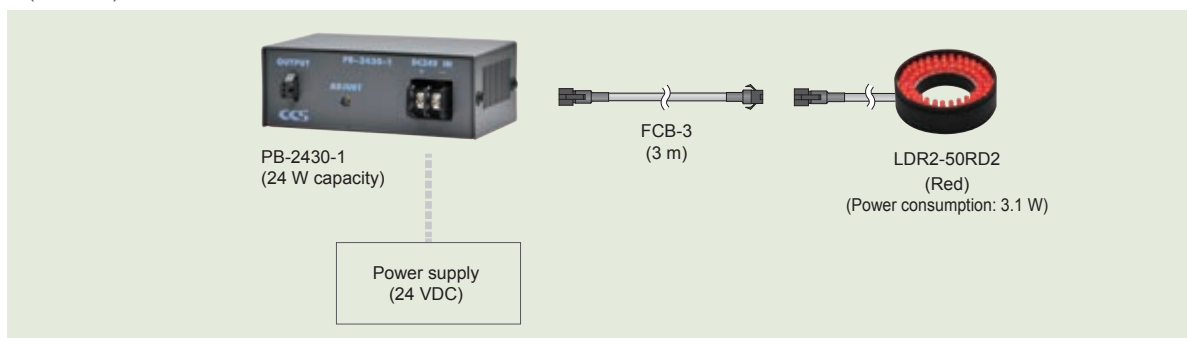
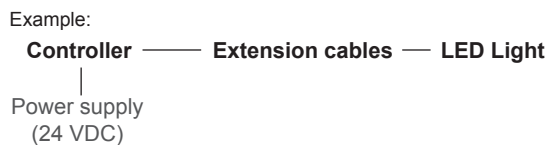


### Features

- 24 VDC input
- 24 V / 24 W rating
- 1 channel model
- DIN rail installation
- Intensity control with variable voltage
- Lightweight, compact design



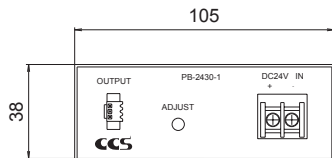
### Example System Configuration



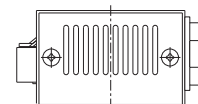
## Specifications

Model name	PB-2430-1
Lighting method	Constant lighting
Drive method	Constant-voltage system
Light control method	Variable voltage control
No. of channels	One channel
Applicable light units (rating)	24 V 24 W
Over current protection	Built in (input section, with poly-switch), 5.0 A, 20°C during continuous operation
Input voltage (rating)	24 VDC
Input voltage (range)	21.6 to 26.4 VDC
Power consumption (typ.)	30 W
Output voltage (range)	15.0 to 23.0 VDC ( $\pm 10\%$ ) (for 24 VDC input)
Insulation resistance, dielectric strength (Input/output - housing)	50 VDC, 20 M $\Omega$ min. 250 VAC for one minute 1 mA cutoff current
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (No condensation)
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20 to 85% RH (No condensation)
Cooling method	Natural air cooling
CE marking	EMC standard: Complies with EN61000-6-2, EN61000-6-4
Environmental regulation	RoHS compliant
Input connector	Input terminal block, use M3 screws with 7.62 mm pitch
Output connector	SMP-03V-BC (JST)
Material, coating, surface processing	Steel plate, Thickness: 1.0, N3, Matt finish
Weight	270 g

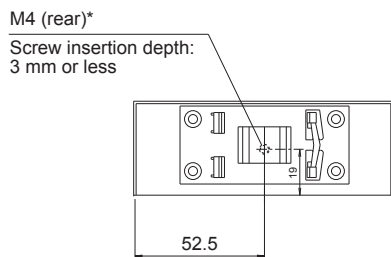
## Dimensions (mm)



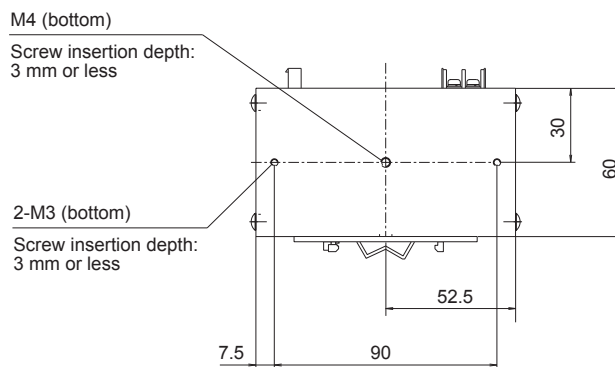
Front



Side



Rear

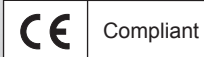


Bottom

\* Remove the DIN rail bracket to find the hole.



## Compact, lightweight LED Light-dedicated controller



Installation inside the device  
Mount it on a compact device or single devices



Installation inside a control panel to centrally manage other instruments



Installation next to the camera or near the light for a compact configuration



These are conceptual images.

### Features

- This LED Light-dedicated controller has the same size as a sensor amp.
- DIN rail installation
- Can be installed in various locations such as inside a control panel or next to any type of sensor amp inside a device.
- Power supply is 24 VDC, optimal for on-site usage.

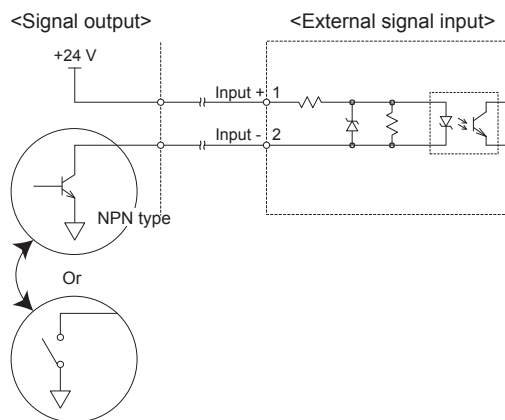
### Example Connections

Refer to the User Manual for details.

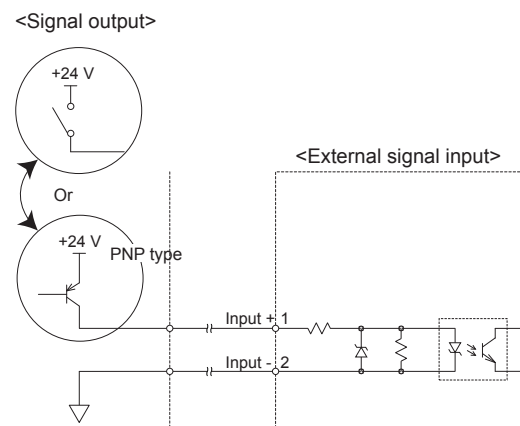
#### External signal

#### Example connections

##### ■ Sink type (NPN)



##### ■ Source type (PNP)



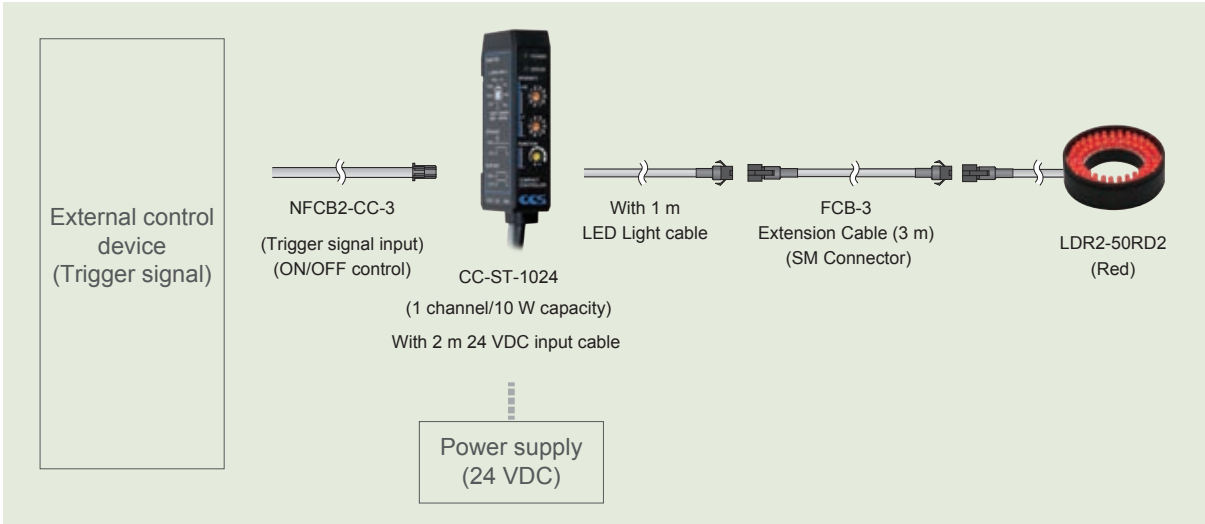
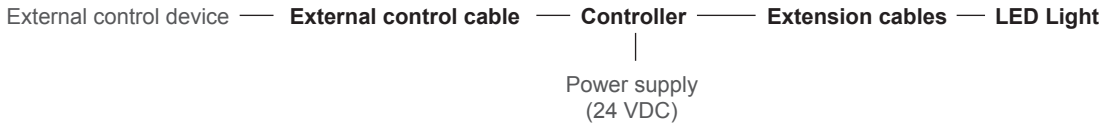
Becomes HIGH when 24 V is applied to input+ and 0 V is applied to input-.

Apply a current using the open-collector circuit, high-speed photocoupler, semiconductor relay, or others. (We recommend 10 mA or less.) The pulse width must be 10  $\mu$ s or more (Applied voltage 24 V $\pm$ 10%).

If using in an environment where noise is likely to occur, we recommend isolating the signal line and GND line from the drive device using a photocoupler or semiconductor relay.

## Example System Configuration

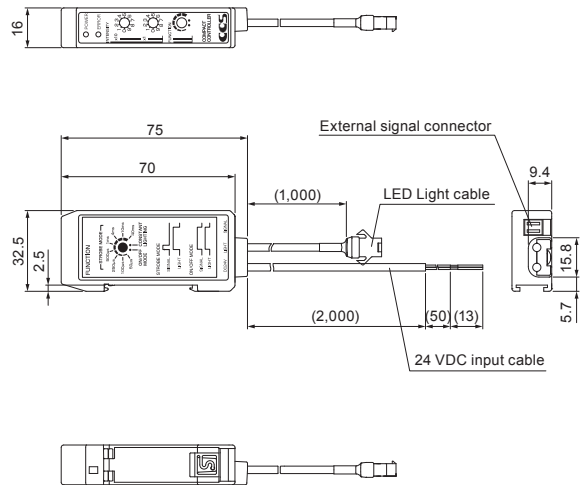
Example:



## Specifications

Model name	CC-ST-1024
Drive method	Constant-voltage system
Intensity control method	PWM control and lighting time control
No. of channels	1 channels
Applicable light unit (rated)	24 V 10 W
PWM frequency	100 kHz
Input overcurrent protection	Overcurrent protection is provided by fuse interruption.
Input voltage	24 VDC±10%
Power consumption (typ.)	11.0 W (with 10 W LED Light during max. intensity drive)
Output voltage (rated)	24 VDC
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Vibration resistance	Acceleration: 19.6 m/sec <sup>2</sup> , Frequency: 10 to 55 Hz, Cycle: 3 min., Sweep cycle: Each hour in the X, Y, and Z directions
Impact resistance	Acceleration: 49.0 m/sec <sup>2</sup> , Operation time: 30 m sec, Repetitions: Three times for each of the six directions
Cooling method	Natural air cooling
Applicable standards	CE, UKCA, RoHS compliant
Material/Surface processing	ABS
Weight	80 g
Accessories	User Manual x 1, flat-head screwdriver x 1

## Dimensions (mm)



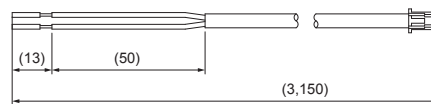
## Options

### External signal cable

NFCB2-CC-3 (3 m)



This cable is for use with external signals. It is used for intaking HIGH signals (during ON/OFF mode) and trigger signals (during strobe mode) into this product.



Dimensions (mm)



1: White (Input+)  
2: Black (Input-)

Housing: PAP-02V-K (JST)  
Contact: BPHD-002T-P0.5 (JST)

You can inquire using our website.

Sample Testing

Light Unit Selection

Free Product Trial

Custom Orders

Product Details

Pricing/Quotation

Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

# Control Units

## Spot Light Dedicated Control Units

### PJ2 Series

Refer to our website for product details.

CCS PJ2

Search



## External control compatible with Ethernet and parallel communications



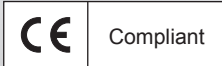
Adjust light intensity to **1,024** levels



PJ2-1505-2CA-PE  
(2 channel model)



PJ2-3005-4CA-PE  
(4 channel model)



The supplied AC cord is for use with 100 to 120 VAC. If you want to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

### Features

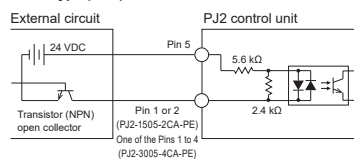
- Dedicated Analog control units for the spot light HLV Series. (Spot Light HLV3 Series Product Page ▼ P. 187)
- Easily check and set operation of light units with the built-in LCD.
- Light intensity can be set in 1,024 steps.
- Available in 2-channel and 4-channel light unit output types.
- Can be controlled manually or via Ethernet or parallel communications.

### Example Connection

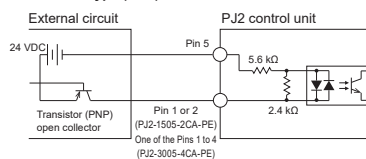
Refer to the User Manual for details.

#### Example connections of external trigger signal

##### ■ Sink type (NPN)



##### ■ Source type (PNP)

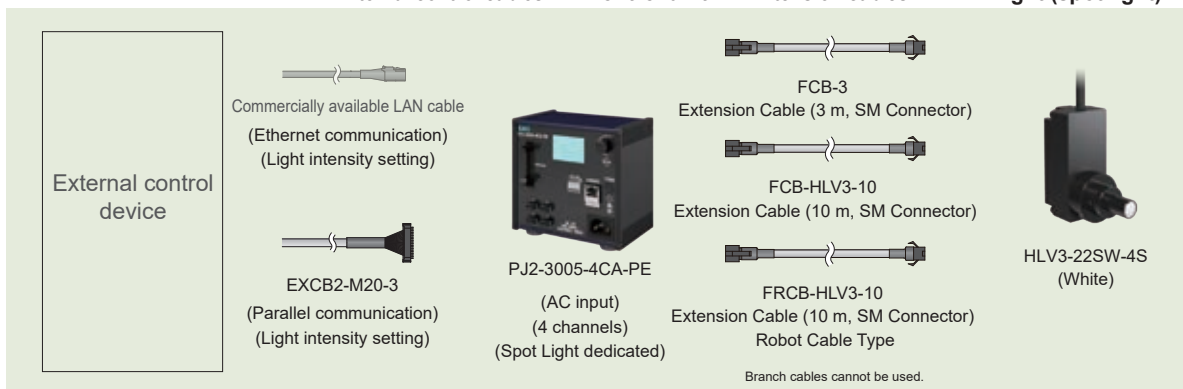


Connection specifications (for each terminal)				
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 VDC min. / 4 mA min.	1.5 VDC max. / 1 mA max. or open-circuit	Refer to the User Manual.

### Example System Configuration

Example:

External control device — External control cables — Control unit — Extension cables — LED light (spot light)



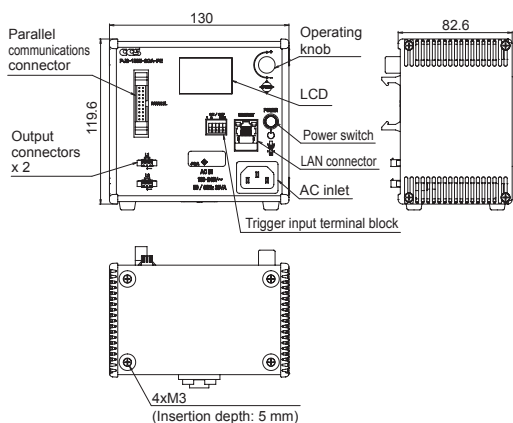


## Specifications

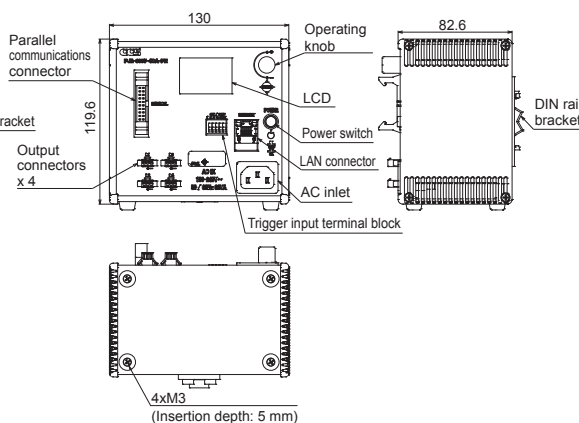
Model name	PJ2-1505-2CA-PE	PJ2-3005-4CA-PE
Lighting method	Continuous lighting	
Drive method	Constant-voltage system	
Intensity control method	Variable-current control	
Number of channels	2 channels	4 channels
Applicable light units	HLV Series Spot Lights (The type of Spot Light is automatically detected.)	
Output voltage (ratings)	5.5 VDC	
Output current	1,000 mA max./channel (Depends on the maximum input current of the Spot Light.)	
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz	
Power consumption	38 VA max.	68 VA max.
Inrush current (typ.)	15 A (at 100 VAC), 36 A (at 240 VAC) from a cold start	
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)	
Insulation withstand voltage (input-output, input-FG)	1500 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 MΩ min.	
Overvoltage category	Category II	
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation), Altitude: 2,000 m max., Protective ground class: Class I, Pollution degree: 2, Indoor use only	
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)	
Cooling method	Natural air cooling	Forced air cooling
Applicable standards	CE, UKCA, RoHS compliant	
Material/surface processing	Material: Aluminum and resin, Surface processing: Blue alumite	
Weight	700 g max.	
Accessories	User Manual, 2-m-long 3-prong AC power cord with ground terminal	

## Dimensions (mm)

PJ2-1505-2CA-PE



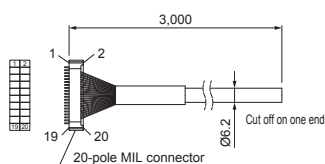
PJ2-3005-4CA-PE



## Options

### Parallel communication cable

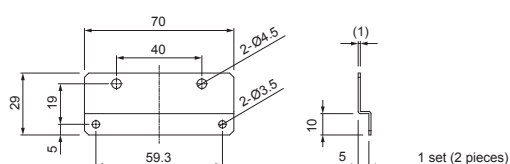
EXCB2-M20-3



Pin No.	Wire color	Marks	Pin No.	Wire color	Marks
1	Orange	Black 1	11	Orange	Black 2
2	Orange	Red 1	12	Orange	Red 2
3	Gray	Black 1	13	Gray	Black 2
4	Gray	Red 1	14	Gray	Red 2
5	White	Black 1	15	White	Black 2
6	White	Red 1	16	White	Red 2
7	Yellow	Black 1	17	Yellow	Black 2
8	Yellow	Red 1	18	Yellow	Red 2
9	Pink	Black 1	19	Pink	Black 2
10	Pink	Red 1	20	Pink	Red 2

### Base brackets

BK-PD3



You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>



## Four types to match your use environment

### AC Input Types



PJ-1505-2CA  
(2 channel model)



PJ-1505-3CA  
(3 channel model)

### 24 VDC Input Types



PJ-1505-2CD24  
(2 channel model)



PJ-1505-3CD24  
(3 channel model)



Compliant model(s)  
PJ-1505-2CA / PJ-1505-3CA / PJ-1505-2CD24 / PJ-1505-3CD24

The supplied AC cord is for use with 100 to 120 VAC.  
If you want to use the control unit with 200 to 240 VAC,  
you must procure another appropriate AC power cord.

## Features

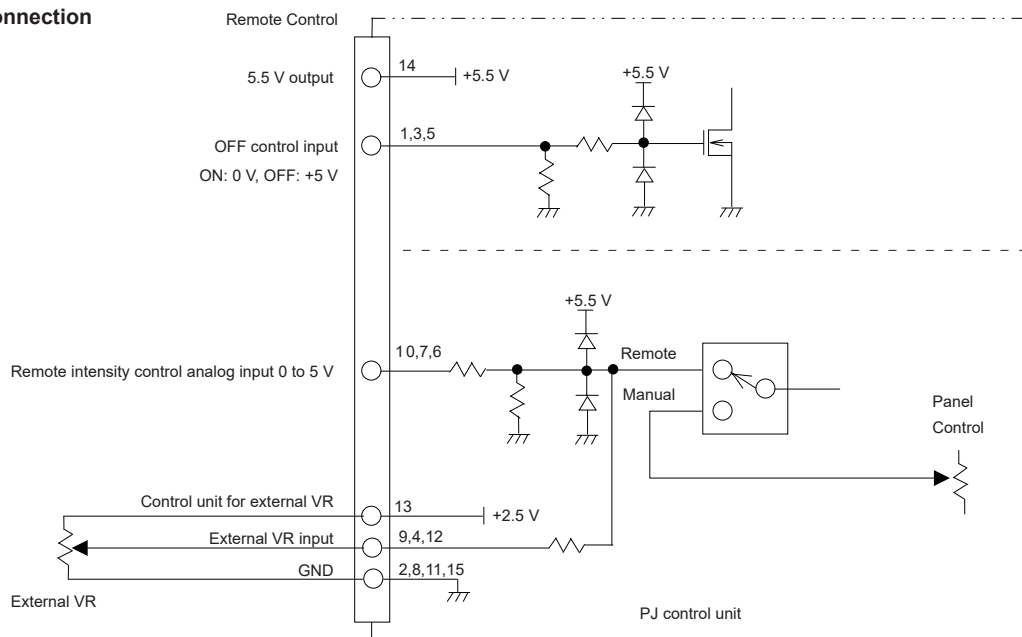
- Dedicated Analog control units for the spot light HLV Series.
- Stepless intensity control is performed by varying the current.
- There are 2 and 3-channel light unit output types.
- You can select AC or DC power supply types.

(Spot Light HLV3 Series Product Page ▼ P. 187)

## Example Connection

Refer to the User Manual for details.

### PJ Series Example connection

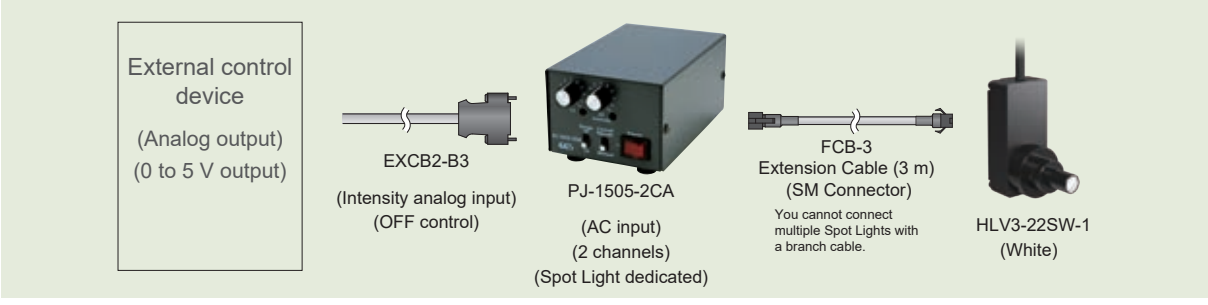


Remote intensity control or external VR can be used. (Cannot be used at same time.)

## Example System Configuration

Example:

External control device — External control cable — Control unit — Extension cables — LED light (spot light)

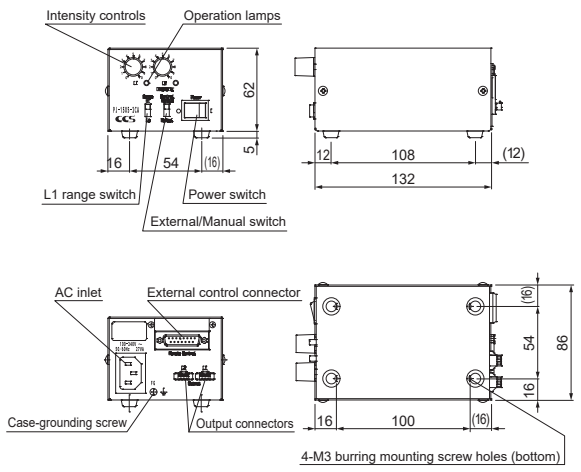


## Specifications

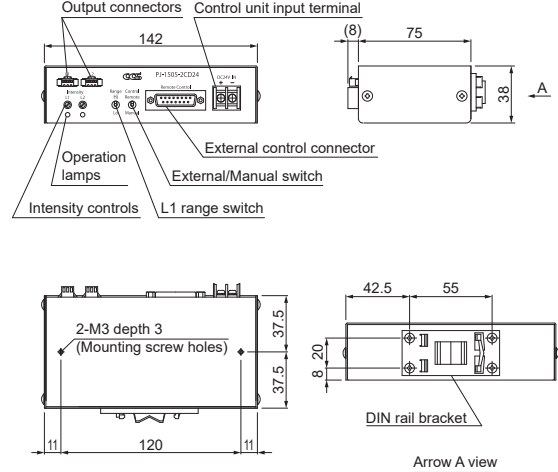
Model name	PJ-1505-2CA	PJ-1505-3CA	PJ-1505-2CD24	PJ-1505-3CD24
Lighting method	Continuous lighting			
Drive method	Constant-current system			
Intensity control method	Variable-current control			
No. of channels	2	3	2	3
Applicable Light Unit	Spot lighting with input current of 700 mA or less			
Output voltage (max. rating)	5.5 VDC			
Input power	AC100 to 240 V (+10% -15%), 50/60 Hz		DC24 V (+10% -10%)	
Power consumption	27 VA typ.	37 VA typ.	10 W typ.	14.5 W typ.
Lighting method	Manual: Intensity control on front of unit Remote: Analog input voltage of 0 to 5 V (5.25 V max.)			
ON/OFF control	OFF: 2.5 to 5.0 V (24 V max.), ON: 0.8 to 0 V (pull-down with 4.7 kΩ resistance)			
External control connector	D-sub 15-pin (plug), Optional external control cable: EXCB2-B3 (3 m)			
Applicable standards	CE, UKCA, RoHS compliant			
Weight	640 g	660 g	380 g	
Accessories	AC cord with ground wire (2 m), User Manual x 1		Rubber feet x 4, User Manual x 1	

## Dimensions (mm)

■ PJ-1505-2CA (PJ-1505-3CA is also the same size.)



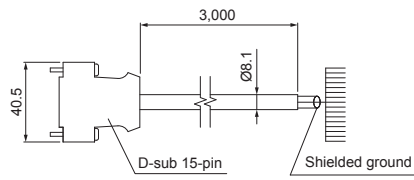
■ PJ-1505-2CD24 (PJ-1505-3CD24 is also the same size.)



## Options

### External control cable

EXCB2-B3 (3 m)



No.	Line color	No.	Line color
1	Black	9	Gray
2	White	10	Pink
3	Red	11	White/Black
4	Green	12	Red/Black
5	Yellow	13	Green/Black
6	Brown	14	Yellow/Black
7	Blue	15	Brown/Black
8	Purple	NC	(Blue/Black)

Dimensions (mm)

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here. <https://www.ccs-grp.com/contact/>

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707**
- PSCC
- PSB4
- PSB3-30024
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

# Controllers

## Spot Light Dedicated Controller

# CC-PJ-0707

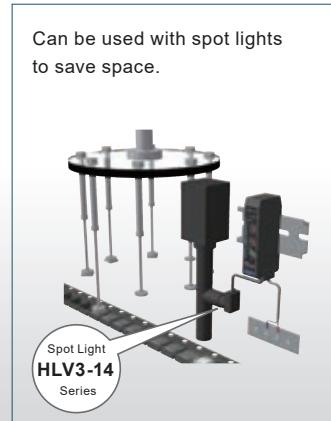
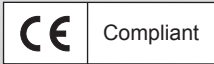
Refer to our website for product details.

CCS CC-PJ-0707

Search



A single unit compatible with continuous, ON/OFF and strobe lighting



Can be used with spot lights to save space.

Spot Light HLV3-14 Series

This is a conceptual image.

### Features

- Dedicated control unit for the spot light HLV Series.
- The compact size allows installation in a limited space.
- Intensity value can be adjusted in 100 steps.
- Power supply is 24 VDC, optimal for on-site usage.

(Spot Light HLV3 Series Product Page ▼ P. 187)

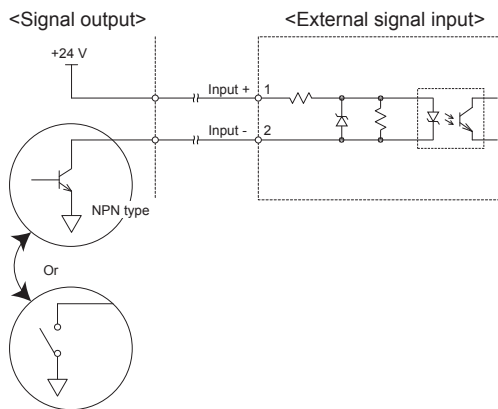
### Example Connections

Refer to the User Manual for details.

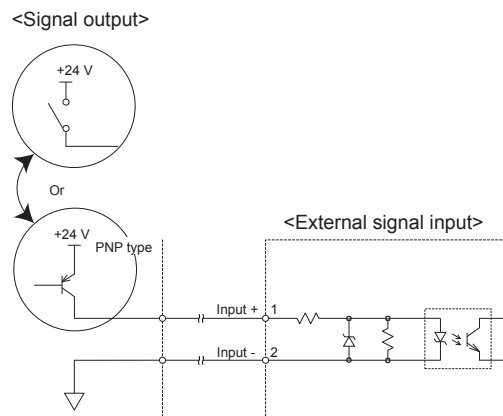
#### External signal

#### Example connections

##### ■ Sink type (NPN)



##### ■ Source type (PNP)

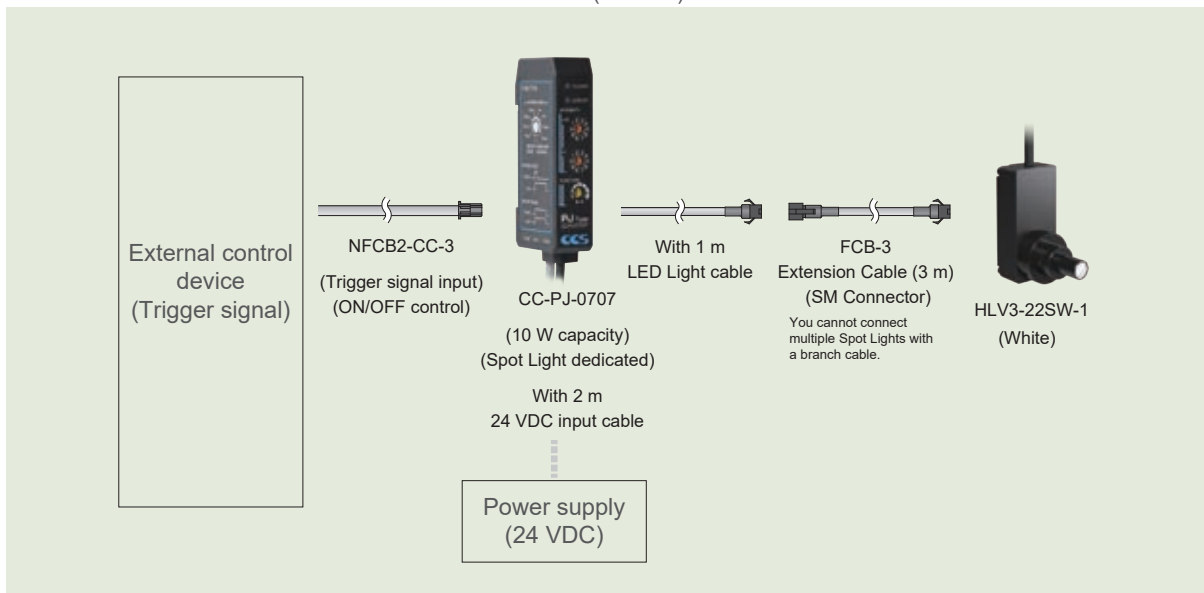
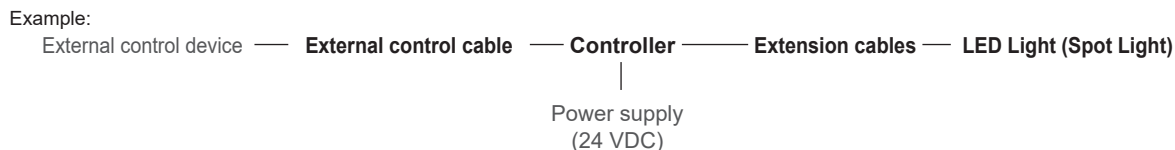


Becomes HIGH when 24 V is applied to input + and 0 V is applied to input - (applied voltage is 24 V±10%).

Apply a current using the open-collector circuit, high-speed photocoupler, semiconductor relay, or others. (We recommend 10 mA or less.)

If using in an environment where noise is likely to occur, we recommend isolating the signal line and GND line from the drive device using a photocoupler or semiconductor relay.

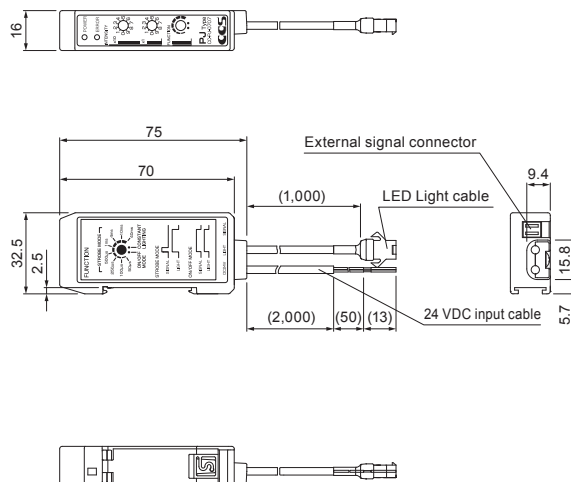
## Example System Configuration



## Specifications

Model name	CC-PJ-0707
Drive method	Constant-current system
Intensity control method	Variable-current control method and lighting time control
Input overcurrent protection	Overcurrent protection is provided by fuse interruption.
Input voltage	24 VDC±10%
Power consumption (typ.)	7 W
Output voltage (max.)	7 VDC
Output current (rated)	700 mA
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Vibration resistance	Acceleration: 19.6 m/sec <sup>2</sup> , Frequency: 10 to 55 Hz, Cycle: 3 min., Sweep cycle: each hour in the X, Y, and Z directions
Impact resistance	Acceleration: 49.0 m/sec <sup>2</sup> , Operation time: 30 m sec, Repetitions: three times for each of the six directions
Cooling method	Natural air cooling
Applicable standards	CE, UKCA, RoHS compliant
Material/surface processing	ABS
Weight	100 g
Accessories	User Manual x 1, flat-head screwdriver x 1

## Dimensions (mm)



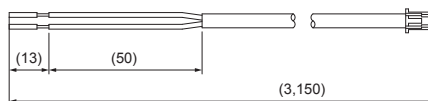
## Options

### External signal cable

NFCB2-CC-3 (3 m)



This cable is for use with external signals. It is used for intaking HIGH signals (during ON/OFF mode) and trigger signals (during strobe mode) into this product.



Dimensions (mm)



1: White (Input+)  
2: Black (Input-)

Housing: PAP-02V-K (JST)  
Contact: BPHD-002T-P0.5 (JST)

You can inquire using our website.

Sample Testing

Light Unit Selection

Free Product Trial

Custom Orders

Product Details

Pricing/Quotation

Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC**
- PSB4
- PSB3-30024
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

# Control Units

## Analog Control Units (Constant Current)

### PSCC Series

Refer to our website for product details.

CCS PSCC

Search



## High-capacity constant current analog control units

With error detection function

(Common for PSCC Series)

- Stopped cooling fan
- LED not lighting up



PSCC-30048(A)  
(300 W capacity)



PSCC-60048(A)  
(600 W capacity)

With key-lock function  
(PSCC-60048(A) only)

The supplied AC cord is for use with 100 to 120 VAC.  
If you want to use the control unit with 200 to 240 VAC,  
you must procure another appropriate AC power cord.

### Features

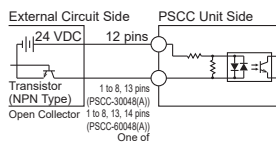
- The light intensity can be set to any of 256 or 1,000 different levels. (For parallel communications: Set to any of 256 levels)
- You can adjust the light intensity separately for each light unit circuit. (With Ethernet or EIA-485 communication)
- External control compatible with parallel, EIA-485 and Ethernet communication using a single unit.
- The error detection function is able to detect insufficient speed or stopping of the light unit cooling fan and bulb burn-out errors by disconnected or shorted LED circuit.

### Example Connections

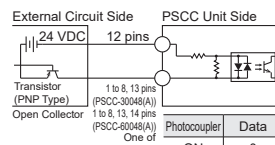
Refer to the User Manual for details.

#### Parallel Communication External Signal Connection Example

##### ■ Sink Type (NPN)



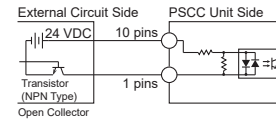
##### ■ Source Type (PNP)



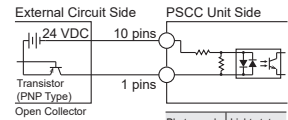
#### ON/OFF input External Signal Connection Example

The behavioral logic can be inverted.

##### ■ Sink Type (NPN)



##### ■ Source Type (PNP)



When making settings with the ON/OFF input connector, EIA-485 communication and Ethernet communication, the light turns OFF (ON) when any one of them is set to OFF (ON) signal.  
The numbers in parentheses are for logical inversion

Photocoupler	Light status
ON	OFF (ON)
OFF	ON (OFF)

Connection specifications					
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current	Response Time	Input Impedance
24 VDC	26.4 VDC	20 VDC or more/6 mA or more	3 VDC or less/1 mA or less	Approx. 100 ms	6.8 kΩ (Per 1 Terminal)

Connection specifications					
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current	Response Time	Input Impedance
24 VDC	26.4 VDC	20 VDC or more/6 mA or more	3 VDC or less/1 mA or less	Approx. 100 ms	6.8 kΩ (Per 1 Terminal)

### Example System Configuration

(Example)

External Control Devices — External Control Cables — Control Unit — Extension Cables — LED Lights

<p><b>Ethernet Communication</b></p> <p>Commercial LAN Cable (Ethernet communication) (Dimmer control)</p>	<p>PSCC-30048(A) (300 W capacity)</p> <p>PSCC-60048(A) (600 W capacity)</p>	<p><b>QCBM-DA Extension Cables</b></p>	<p><b>LNLP Series (100-700 mm size)</b></p>		
<p><b>Parallel Communication</b></p> <p>EXCB2-M20-3 (Parallel communication) (Dimmer control)</p>		<p><b>QCBM Extension Cables</b></p>	<p><b>LNFP-FN Series (100 to 700 mm size)</b></p>	<p><b>LNDG Series (300 to 1900 mm size)</b></p>	<p><b>LNIS-FN Series (100 to 700 mm size)</b></p>
<p><b>EIA-485 communication</b></p> <p>EXCB2-E3-3 (EIA-485 communication) (Dimmer control)</p>		<p><b>QCB-DA Extension Cables</b></p>	<p><b>LNLP Series (800-1500 mm size)</b></p>		
<p><b>Trigger signal</b></p> <p>EXCB2-M10-3 (Trigger signal input) (Lighting control)</p>		<p><b>QCB Extension Cables</b></p>	<p><b>LNFP-FN Series (800 to 1500 mm size)</b></p>	<p><b>LNDG Series (2000 to 3000 mm size)</b></p>	<p><b>LNIS-FN Series (800 to 1500 mm size)</b></p>

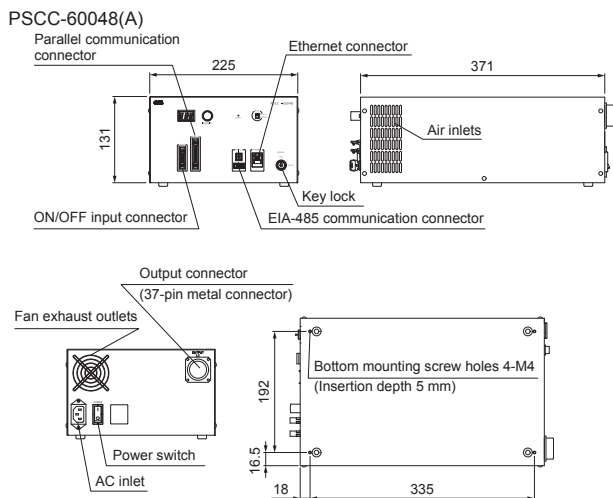
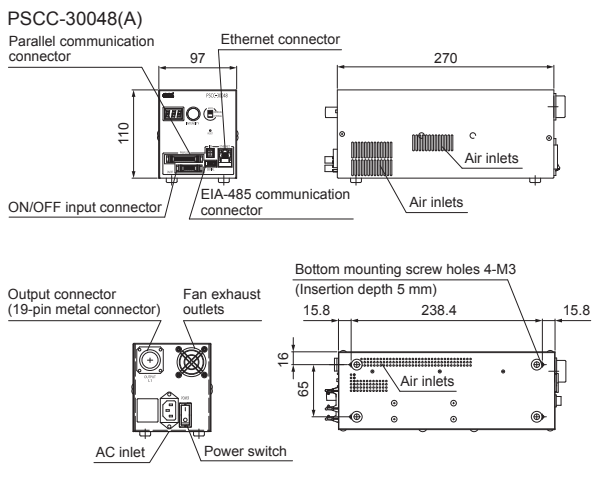
## Specifications

Model name	PSCC-30048(A) / PSCC-60048(A)						
Lighting method	Continuous lighting						
Drive method	Constant-current system						
Intensity control method	Variable-current control						
Number of channels	1 channel						
Number of circuits	PSCC-30048(A): 7 circuits max. (Light intensity can be adjusted for each light unit circuit.)						
	PSCC-60048(A): 15 circuits max. (Light intensity can be adjusted for each light unit circuit.)						
Applicable light unit (rated)	PSCC-30048(A): 43 VDC or less and 293 W max. (36 W max. of which is for the fan)						
	PSCC-60048(A): 43 VDC or less and 602 W max. (50 W max. of which is for the fan)						
Intensity control	Manual and external intensity						
	Front manual/external switch (MODE)						
	Manual	Set any of 256 or 1,000 steps via the setting switch. Press and hold the switch for 2 seconds to lock the intensity value.					
	External	<table border="1"> <tr> <td>Parallel communication<sup>*1</sup></td> <td>8-bit intensity value setting (B0 to B7) and write signal (WR)</td> </tr> <tr> <td>EIA-485 communication</td> <td>Command input via EIA-485 communication</td> </tr> <tr> <td>Ethernet communication</td> <td>Command input via TCP/IP or UDP/IP communication</td> </tr> </table> <p>External control mode can be selected by pushing the setting switch while turning ON the power.</p>	Parallel communication <sup>*1</sup>	8-bit intensity value setting (B0 to B7) and write signal (WR)	EIA-485 communication	Command input via EIA-485 communication	Ethernet communication
Parallel communication <sup>*1</sup>	8-bit intensity value setting (B0 to B7) and write signal (WR)						
EIA-485 communication	Command input via EIA-485 communication						
Ethernet communication	Command input via TCP/IP or UDP/IP communication						
ON/OFF control	Parallel bit input	OFF signal (ON/OFF)					
	EIA-485 communication	Command input via EIA-485 communication					
	Ethernet communication	Command input via TCP/IP or UDP/IP communication					
	ON/OFF logic can be selected by pushing the setting switch while turning ON the power. 25H or 99H: Normal logic (default)    25L or 99L: Reversed logic						
EIA-485 communication settings	ID	Set via the front ID switch (00 to 03). Maximum of 4 connected units.					
	Terminating resistance	Set via the front ID switch (terminating resistance is ON only when the ID is 00).					

\*1 Parallel communications: Adjustment to 256 levels only

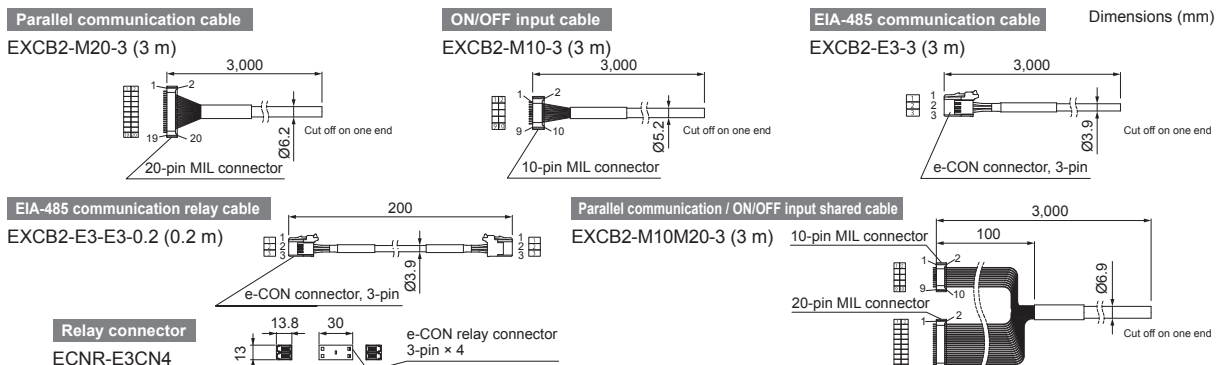
Error detection display	Burnt-out LED detection (open circuit)	"E01" is displayed on the front-panel digital display.
	Burnt-out LED detection (short circuit)	"E02" is displayed on the front-panel digital display.
	Light unit fan speed decrease/stop detection	"F01 to F07" is displayed on the front-panel digital display (PSCC-30048(A)). "F01 to F15" is displayed on the front-panel digital display (PSCC-60048(A)).
	Control unit fan speed decrease/stop detection	"E03" is displayed on the front-panel digital display.
	Light unit communication error detection	"E04" is displayed on the front-panel digital display.
	Connector disconnection detection	"E04" is displayed on the front-panel digital display.
Error detection output	Internal control unit error detection	"E05" is displayed on the front-panel digital display (PSCC-60048(A) only).
	Parallel communication	Output at pins 19 and 20: Photocoupler insulation, open collector output, short circuit at alert (load current of 10 mA or less)
Input power supply	EIA-485 communication	Checked by using a status command through EIA-485 communication
	Ethernet communication	Checked by using a status command through TCP/IP or UDP/IP communication
Power consumption (typ.)	100 to 240 VAC (+10% - 15%), 50/60 Hz	
Operating environment	PSCC-30048(A): 360 VA, PSCC-60048(A): 750 VA	
Storage environment	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)	
Cooling method	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)	
Applicable standards	CE, UKCA, RoHS compliant	
Material/ Surface processing	Forced air cooling	
Weight	Steel plate, Thickness of cover: 1.0, Thickness of chassis: 1.6 (PSCC-30048(A)), 2.0 (PSCC-60048(A)), N3 leather tone finish	
Accessories	PSCC-30048(A): 3,100 g max., PSCC-60048(A): 7,000 g max.	
	PSCC-30048(A): 3-prong AC cord with ground terminal (2 m) x 1, User Manual x 1, PSCC-60048(A): 3-prong AC cord with ground terminal (2 m) x 1, User Manual x 1, key x 2	

## Dimensions (mm)



## Options

These are cables for parallel and EIA-485 communication. Select yours to match your control method.



Refer to the material "Connecting EIA-485 Communications Cables" on the CCS website for information on multi-drop wiring connections. You can download this information from the product website page.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4**
- PSB3-30024
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

# Control Units

## Analog Control Units (Constant Voltage)

# PSB4 Series

Refer to our website for product details.

CCS PSB4

Search



## High-capacity constant current analog control units Ethernet functionality enabled



PSB4-30024-PEI  
(1 channel model)



PSB4-60024-2-PEI  
(2 channel model)

The supplied AC cord is for use with 100 to 120 VAC. If you want to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

### Features

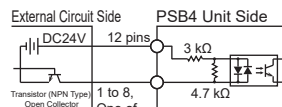
- LCD for improved legibility.
- Dimmer range can be switched between 3 levels.
- Uses an operating knob for intuitive operation.
- External control via EtherNet / parallel communication.
- Dimmer value can be set to 256 or 1,024 levels.
- Equipped with a metal connector and EL connector.

### Example Connection

Refer to the User Manual for details.

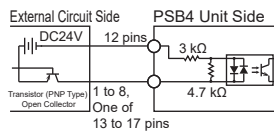
#### Parallel Communication External Signal Connection Example

##### ■ Sink Type (NPN)



Photocoupler	Data	
	When COM menu LGC-PAR is "ACTIVE HI"	When COM menu LGC-PAR is "ACTIVE LO"
ON	1	0
OFF	0	1

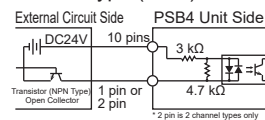
##### ■ Source Type (PNP)



Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
DC24V	DC26.4V	21.6 VDC or more/ 6 mA or more	1.5 VDC or less/ 1 mA or less

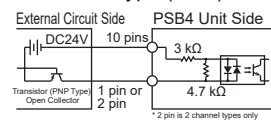
#### ON/OFF input External Signal Connection Example

##### ■ Sink Type (NPN)



COM Menu LGC-TRG Setting Value	Photocoupler	Light status
ACTIVE HI	ON	OFF
	OFF	ON
ACTIVE LO	ON	ON
	OFF	OFF

##### ■ Source Type (PNP)

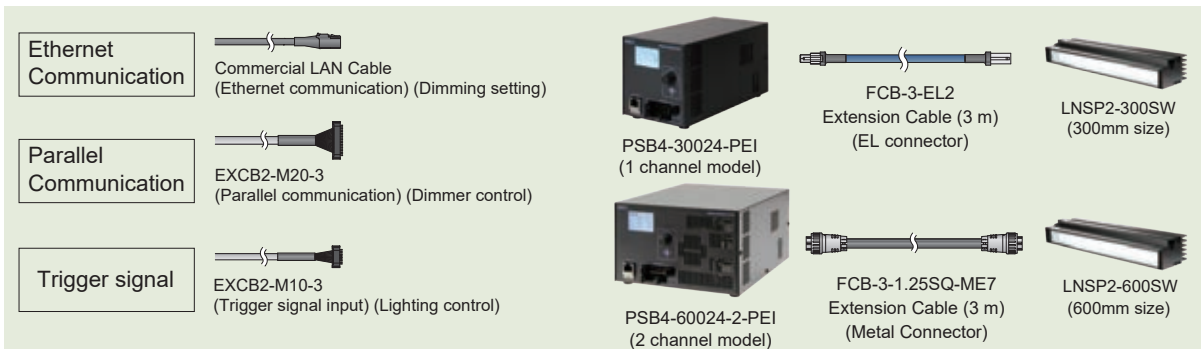


Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
DC24V	DC26.4V	21.6 VDC or more/ 6 mA or more	1.5 VDC or less/ 1 mA or less

### Example System Configuration

(Example)

External Control Devices — External Control Cables — Control Unit — Extension Cables — LED Lights





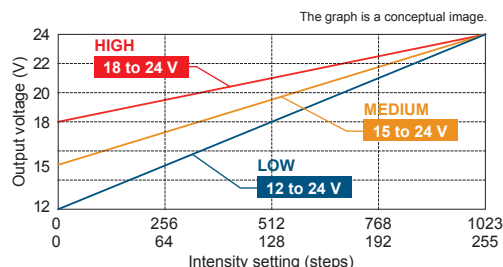
## Specifications

Model name	PSB4-30024-PEI	PSB4-60024-2-PEI
Lighting method	Continuous lighting	
Drive method	Constant-voltage system	
Intensity control method	Variable voltage control	
Number of channels	1 channel	2 channels (L1, L2)
Applicable light unit (rated)	Metal connector: 24 V, 300 W (300 W max. per connector) EL connector: 24 V, 300 W (150 W max. per connector) Total for all connectors: 300 W max.	Metal connector (L1-1, L1-2/ L2-1, L2-2): 24 V 300 W (1 connector 300 W or less) EL connector (L1-3, L1-4/L2-3, L2-4): 24 V 300 W (1 connector 150 W or less) All L1 connectors total: 300 W or less (same as L2 connectors)
Intensity control	Manual Operation on the front panel, 256 or 1,024 levels	External Command input via TCP/IP or UDP/IP communications Signal input through parallel port
ON/OFF control	External Command input via TCP/IP or UDP/IP communications Signal input through parallel port	
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz	
Output current (rating)	12.5 A	12.5 A/channel, 2 channels total: 25 A
Power consumption (typ.)	388 VA	765 VA
Inrush current (typ.)	55 A (at 100 VAC), 84 A (at 240 VAC) from a cold start	55 A/95 A (primary/secondary value, at 100 VAC), 132 A/132 A (primary/secondary value, at 240 VAC) during cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)	
Insulation withstand voltage (input-output, input-FG)	1500 VAC for one minute, Cutoff current: 20 mA, 500 VDC, 20 MΩ or more	
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)	
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)	

Cooling method	Forced air cooling	
Applicable standards	CE, UKCA, RoHS compliant	
Material/ Surface processing	Steel sheet, Cover thickness: 1.0 mm, Chassis thickness: 1.6 mm, N3 (leather tone)	
Weight	2,400 g max.	4,100 g max.
Accessories	User Manual, 2-m-long 3-prong AC power cord with ground terminal	

## Intensity Range

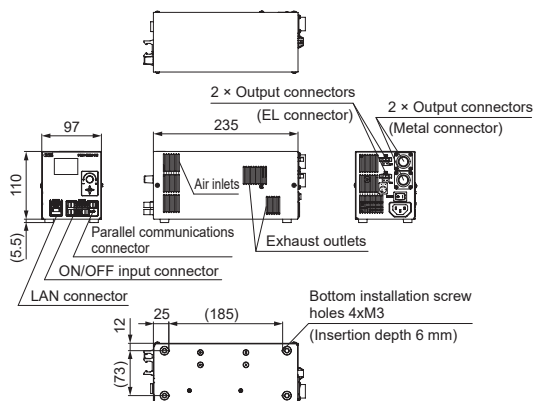
Dimmer range can be switched between 3 levels. Select based on lighting characteristics or to suit the application.



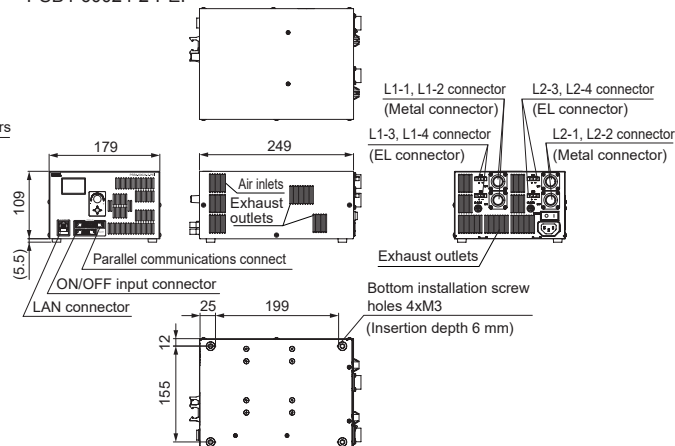
\* While the dimmer control is set to 256 steps, even if the dimmer value is 0 the light will illuminate.

## Dimensions (mm)

PSB4-30024-PEI



PSB4-60024-2-PEI

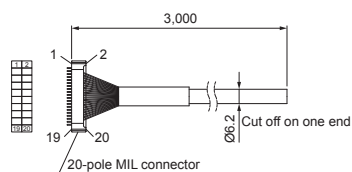


## Options

Dimensions (mm)

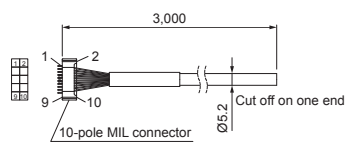
Parallel communications cable

EXCB2-M20-3 (3 m)



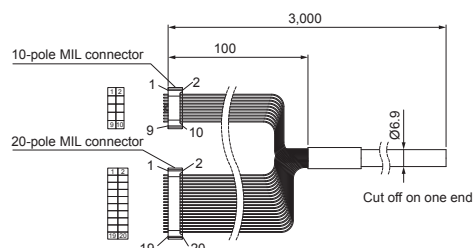
ON/OFF input cable

EXCB2-M10-3 (3 m)



Parallel communication / ON/OFF input cable

EXCB2-M10M20-3 (3 m)



You can inquire using our website.

Sample Testing	Light Unit Selection	Free Product Trial	Custom Orders	Product Details	Pricing/Quotation	Discontinued Products
----------------	----------------------	--------------------	---------------	-----------------	-------------------	-----------------------

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024**
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

# Control Units

## Analog Control Unit (Constant Voltage)

# PSB3-30024

Refer to our website for product details.

CCS PSB3-30024

Search



High-capacity 300 W constant voltage analog control units adjustable in 256-step intensity settings



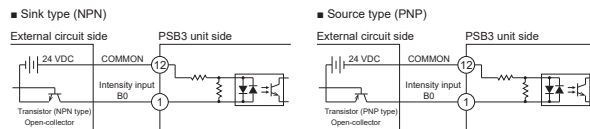
The supplied AC cord is for use with 100 to 120 VAC. If you want to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

### Features

- Light unit output is compatible with 1 channel / 4 connectors (metal connector x 2, EL connector x 2).
- Each single unit is equipped with parallel, serial and analog control for external control.
- You can select the optimal output according to the light unit and optimize the intensity setting by switching the intensity range.

### Example Connections Refer to the User Manual for details.

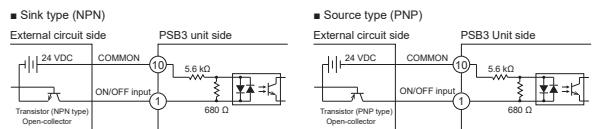
#### Parallel communication Example connections of external signal



Connection specifications					
Rated input voltage	Maximum input voltage	Photocoupler ON voltage/current	Photocoupler OFF voltage/current	Response time	Input impedance
24 VDC	26.4 VDC	20 VDC min. / 6 mA min.	3 VDC max. / 1 mA max.	Approx. 100 ms	5.6 kΩ (per terminal)

	Input signal	Photocoupler	Data
Sink type	HIGH	OFF	1
	LOW	ON	0
Source type	HIGH	ON	0
	LOW	OFF	1

#### ON/OFF input Example connections of external signal

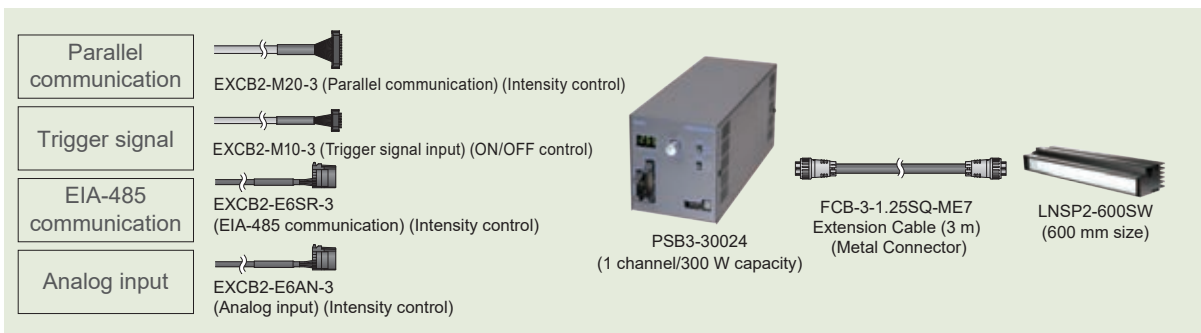


Connection specifications					
Rated input voltage	Maximum input voltage	Photocoupler ON voltage/current	Photocoupler OFF voltage/current	Response time	Input impedance
24 VDC	26.4 VDC	20 VDC min. / 6 mA min.	3 VDC max. / 1 mA max.	Approx. 100 ms	5.6 kΩ (per terminal)

	Input signal	Photocoupler	Light unit status
Sink type	HIGH	OFF	On
	LOW	ON	Off
Source type	HIGH	ON	Off
	LOW	OFF	On

### Example System Configuration

Example:  
External control devices — External control cables — Control unit — Extension cable — LED light

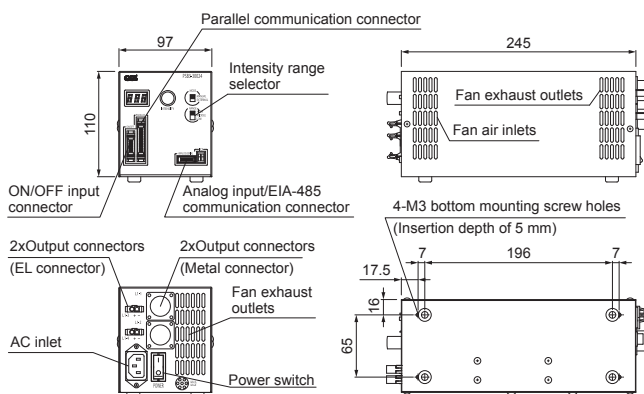


## Specifications

Model name	PSB3-30024		
Lighting method	Continuous lighting		
Drive method	Constant-voltage system		
Intensity control method	Variable voltage control		
Number of channels	1 channel		
Applicable light unit (rated)	24 V 300 W		
Intensity control	Manual and external intensity	Manual/External switch (MODE)	
	Variable output voltage range	Select between 3 steps by using the intensity range selector (RANGE).	
	Manual	Set any of 256 steps via the setting switch. Press and hold the switch for 2 seconds to lock the intensity value.	
	External	Parallel communication	8-bit intensity value setting (B0 to B7) and write signal (WR)
		Serial communication	Command input via EIA-485 communication
		Analog input	Analog voltage (0 V to +5 V)
External control mode can be selected by pushing the setting switch while turning ON the power.			
ON/OFF control	Parallel bit input	Lighting signal (OFF)	
	Serial communication	Command input via EIA-485 communication	
EIA-485 communication settings	ID	Set by using the ID switch (00 to 03) Connect up to four units	
	Terminating resistance	Set by using the ID switch (Terminating resistance is ON only when ID = 00)	
Lighting delay (typ.)	0.1 s		
Error detection display	"Err" is displayed on the digital display. Errors are output and light output is stopped for an internal AC power error.		
Error detection output	External control Connector	Error output terminal (OC, OE), photocoupler insulation, open-collector output, alert open (load current of 10 mA or less), and error status (serial communication)	

Overcurrent protection	Operates at 105% of the rated current or higher. Resets by cycling the control unit.
Overvoltage protection	Operates at 120% to 155% of the rated voltage. Resets by cycling the control unit.
Input voltage (rated)	100 to 240 VAC (+10% - 15%), 50/60 Hz
Power consumption (typ.)	410 VA
Frequency	50/60 Hz
Inrush current (typ.)	40 A at cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)
Output voltage variation range (typ.)	Select between 3 steps by using the intensity range selector. 12 V to 24 V with no load 15 V to 24 V with no load 18 V to 24 V with no load
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Vibration resistance	Acceleration: 19.6 m/sec <sup>2</sup> , Frequency: 10 to 55 Hz, Cycle: 3 min., Sweep cycle: each hour in the X, Y, and Z directions
Cooling method	Forced air cooling
Applicable standards	CE, UKCA, RoHS compliant
Material/Surface processing	Steel plate, Thickness of cover: 1.0, Thickness of chassis: 1.6, N3 leather tone finish
Weight	2,300 g max.
Accessories	3-prong AC cord with ground terminal (2 m) x 1, User Manual x 1

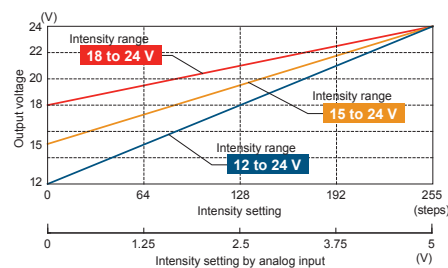
## Dimensions (mm)



## Intensity Range

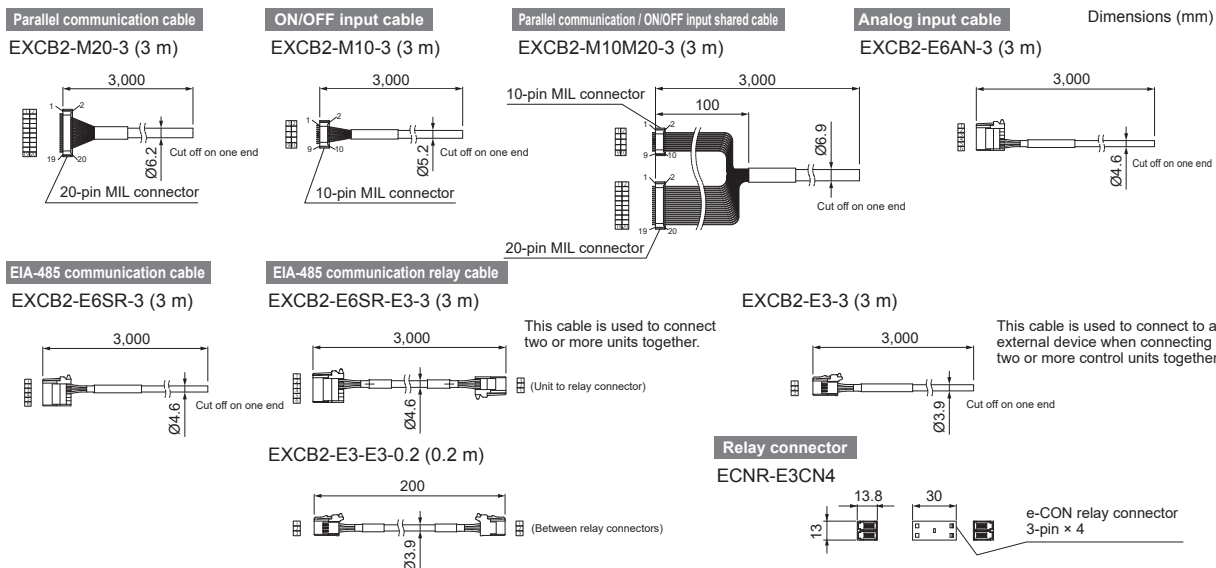
Optimize your intensity setting with the intensity lower limit selection function.

You can choose an intensity range to match the light unit.



## Options

These are cables for parallel communication, EIA-485 communication, and analog input. Select yours to match your control method.



Refer to the material "Connecting EIA-485 Communications Cables" on the CCS website for information on multi-drop wiring connections. You can download this information from the product website page.

You can inquire using our website.

- Sample Testing
- Light Unit Selection
- Free Product Trial
- Custom Orders
- Product Details
- Pricing/Quotation
- Discontinued Products

Inquire on our website here.  
<https://www.ccs-grp.com/contact/>



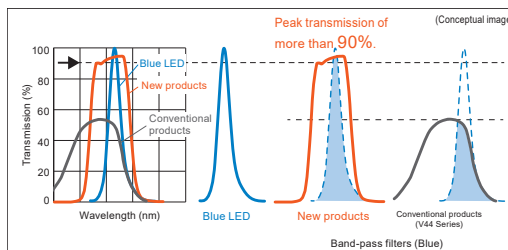
## Band-pass Filters

These camera lens filters transmit light in a specific wavelength region and prevent the influence of ambient light.



### Features

- Highly transmissive
- Hard-coated filters with superior durability
- 12 different models
- Each filter available in 25 sizes
- Total of 300 Models



### Model Name

Example:

**F-BP470-** □

Wavelength Filter size

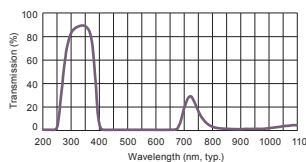
BP: Band-pass filter  
LP: Sharp-cut filter or protective filter  
SP: Short-pass filter

## For Ultraviolet Light Units

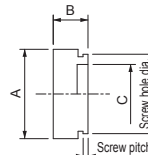
### F-BP324-□



Filter color	Ultraviolet
Lens material	Glass
Useful range	290 to 365 nm
Full width at half max	105 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.



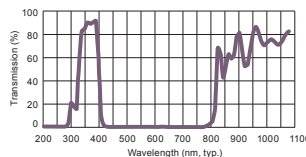
### Dimensions (mm)



### F-BP365-□



Filter color	Ultraviolet
Lens material	Glass
Useful range	335 to 400 nm
Full width at half max	80 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>85%
Filter size	Refer to Table of Filter Dimensions.

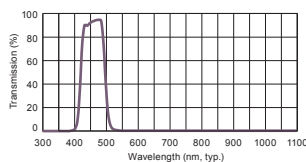


## For Blue Light Units

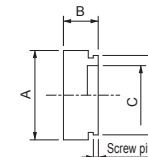
### F-BP470-□



Filter color	Blue
Lens material	Glass
Useful range	425 to 495 nm
Full width at half max	85 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.



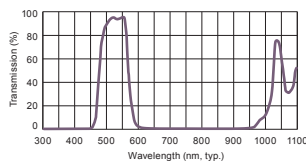
### Dimensions (mm)



### F-BP505-□



Filter color	Cyan
Lens material	Glass
Useful range	485 to 550 nm
Full width at half max	90 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.

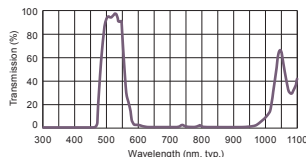


## For Green Light Units

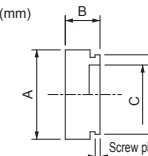
### F-BP525-□



Filter color	Light green
Lens material	Glass
Useful range	500 to 555 nm
Full width at half max	80 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.



### Dimensions (mm)

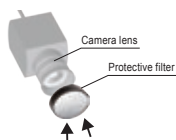


## Protective Filter

### F-LP340-□



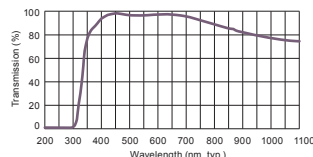
Anti-reflection coating glass is used.



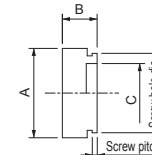
Protects the camera lens from scratches and dust.

Lens material	Glass
Useful range	350 to 800 nm
Cut-on wavelength (50% transmission)	340 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	98%
Filter size	Refer to Table of Filter Dimensions.

Note: Please contact your CCS sales representative for information on acrylic protective filters.



### Dimensions (mm)



Control Units and Controllers  
PD4  
PD3  
PD2  
CD-VA  
POD  
PTU2  
PF  
CX  
CN-EPOE  
CN-4024-2-EIPT  
PB-2430-1  
CC-ST-1024  
PJ2  
PJ  
CC-PJ-0707  
PSCC  
PSB4  
PSB3-30024

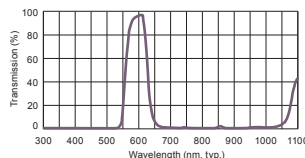
Options  
Diffusion Plates  
Polarizing Plates  
Light Control Films  
Fixtures, etc.  
Brackets  
SM/EL Cables

➤ For Red Light Units

F-BP590-□



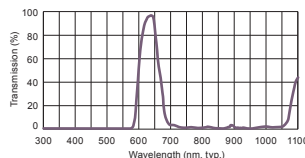
Filter color	Orange
Lens material	Glass
Useful range	560 to 600 nm
Full width at half max	70 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.



F-BP635-□



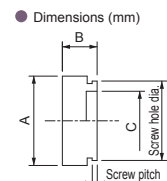
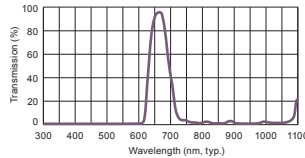
Filter color	Light red
Lens material	Glass
Useful range	615 to 645 nm
Full width at half max	60 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.



F-BP660-□



Filter color	Dark red
Lens material	Glass
Useful range	640 to 680 nm
Full width at half max	65 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.

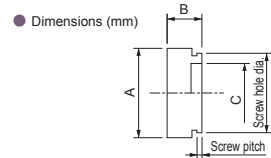
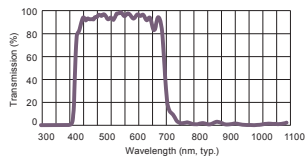


➤ Short-Pass Filter

F-SP700-□



Lens material	Glass
Useful range	410 to 690 nm
Cut-on wavelength (50% transmission)	400/700 nm (Cut-on / cut-off)
Wavelength tolerance	+/- 10 nm
Peak transmission	>90 %
Filter size	Refer to Table of Filter Dimensions.

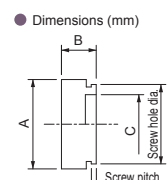
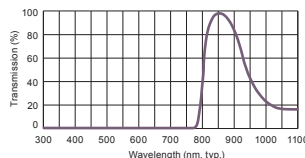


➤ For Infrared Light Units

F-BP850-□



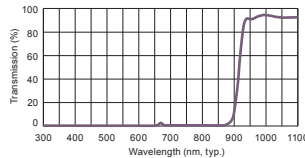
Filter color	Infrared
Lens material	Glass
Useful range	820 to 910 nm
Full width at half max	160 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.



F-LP920-□ (sharp-cut filter)



Filter color	Infrared (sharp-cut)
Lens material	Glass
Useful range	930 to 1,100 nm
Cut-on wavelength (50% transmission)	920 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	90%
Filter size	Refer to Table of Filter Dimensions.



➤ Table of Filter Dimensions (mm)

End of the model name (- □)	Notes		Dimensions		
	Screw hole diameter	Screw pitch	A	B	C
13.25	M13.25	P0.5	Ø14.75	7.5	Ø10.5
22.5	M22.5		Ø24		Ø18.5
25.5	M25.5		Ø27.5		Ø21
27	M27.0		Ø29		Ø22.5
30.5	M30.5		Ø32.5		Ø25.5
34	M34		Ø36		Ø29
35.5	M35.5	P0.75	Ø37.5	7	Ø30.5
37	M37		Ø39		Ø32.5
37.5	M37.5		Ø39.5		Ø32.5
39	M39		Ø41		Ø34
40.5	M40.5		Ø42.5		Ø35.5
43	M43		Ø45		Ø38
46	M46	P0.75	Ø48	8.3	Ø41
49	M49		Ø51		Ø44
52	M52		Ø54		Ø47
55	M55		Ø57		Ø50
58	M58		Ø60		Ø53
62	M62		Ø64		Ø57
67	M67	P1.0	Ø70	8.5	Ø62.5
72	M72		Ø75		Ø67.5
77	M77		Ø80		Ø73
82	M82		Ø84		Ø77.5
86	M86		Ø89		Ø81.7
95	M95		Ø98.2		Ø89.9
105	M105		Ø107.8		Ø100

➤ Test Kit



This Kit includes various filters.  
 Model name: F-FK-10

Contents (total of 12 models)

- Ultraviolet (F-BP324-27)
- Blue (F-BP470-27)
- Cyan (F-BP505-27)
- Light green (F-BP525-27)
- Orange (F-BP590-27)
- Light red (F-BP635-27)
- Dark red (F-BP660-27)
- Infrared: band-pass (F-BP850-27)
- Infrared: sharp-cut (F-LP920-27)
- Protective filter (F-LP340-27)
- Step adapter  
 M25.5-M27 (F-SU25.5-27)  
 M30.5-M27 (F-SD30.5-27)



Sharp-cut filter



Blue filter



Polarizing filter



Ultraviolet cutting filter



Ultraviolet transmission filter

## Sharp-Cut Filters

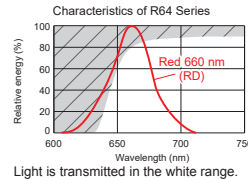
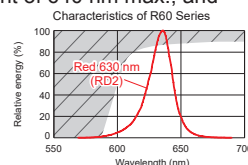
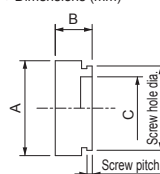
Mounted in front of a lens, the R60 Series blocks light of 600 nm max., and the R64 Series blocks light of 640 nm max., and both transmit the light in a wavelength longer than these.

### R60 Series

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R60-16	M16.0	P0.5	Ø18	7	Ø12
R60-25	M25.5		Ø27.5		Ø21
R60-27	M27.0		Ø28.5		Ø23
R60-30	M30.5		Ø32		Ø27

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R60-40	M40.5	P0.5	Ø42	7	Ø36.5
R60-46	M46.0	P0.75	Ø48		Ø41.5
R60-C	For C-mount attachment		Ø30	9	Ø20.1

• Dimensions (mm)



Light is transmitted in the white range.

### R64 Series

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R64-16	M16.0	P0.5	Ø18	7	Ø12
R64-25	M25.5		Ø27.5		Ø21
R64-27	M27.0		Ø28.5		Ø23
R64-30	M30.5		Ø32		Ø27

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R64-40	M40.5	P0.5	Ø42	7	Ø36.5
R64-46	M46.0	P0.75	Ø48		Ø41.5
R64-C	For C-mount attachment		Ø30	9	Ø20.1

### Example of usage

External imaging of candy box

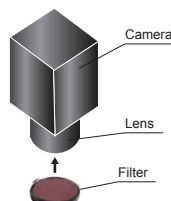


Sharp cut no filter



Sharp cut using filter

### Example installation



## Blue Filters

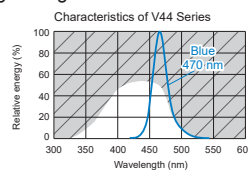
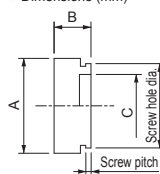
Mounted in front of a lens, the V44 Series transmits the light in a band centered on 440 nm in a blue wavelength range from 350 to 520 nm.

### V44 Series

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
V44-25	M25.5	P0.5	Ø27.5	7	Ø21
V44-27	M27.0		Ø28.5		Ø23
V44-30	M30.5		Ø32		Ø27

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
V44-40	M40.5	P0.5	Ø42	7	Ø36.5
V44-46	M46.0	P0.75	Ø48		Ø41.5
V44-C	For C-mount attachment		Ø30	9	Ø20.1

• Dimensions (mm)



Light is transmitted in the white range.

## Polarizing Filters

These filters are attached to the filter thread part of lens. They are used together with a polarizing plate attached to the light unit for the purpose of eliminating surface glare.

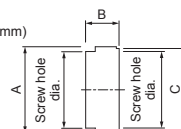
### PL Series / PL2 Series

\*-NL\* models have a locking mechanism.

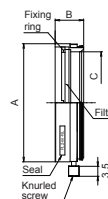
Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
PL-25	M25.5	P0.5	Ø27.4	9.3	Ø27.0
PL-25-NL	M25.5		Ø30.5	12	
PL-27	M27.0		Ø29.4	9.3	Ø28.5
PL-27-NL	M27.0		Ø32	12	
PL-30	M30.5	P0.5	Ø32.4	9.3	Ø32.0
PL-30-NL	M30.5		Ø32.0	12	
PL-40	M40.5	P0.75	Ø43.0	6.95	Ø42.5
PL-40-NL	M40.5		Ø42.0	12	
PL-46	M46.0	P0.75	Ø48.5	6.95	Ø48.0
PL2-35.5-NL	M35.5		Ø37	9.6	
PL2-37.5-NL	M37.5	P0.5	Ø39	9.5	Ø33
PL2-43-NL	M43		Ø45	10	
PL2-46-NL	M46	P0.75	Ø48	10	Ø41.7

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
PL2-48-NL	M48	P0.75	Ø50	10	Ø43.7
PL2-49-NL	M49		Ø51	10	
PL2-52-NL	M52		Ø54	10	Ø47.8
PL2-55-NL	M55		Ø57	10	
PL2-58-NL	M58	P0.75	Ø60	10	Ø53.7
PL2-62-NL	M62		Ø65	11	
PL2-67-NL	M67	P0.75	Ø70	11	Ø62.8
PL2-72-NL	M72		Ø75	11	
PL2-77-NL	M77	P0.75	Ø80	11	Ø72.4
PL2-82-NL	M82		Ø85	11	
PL2-86-NL	M86	P1.0	Ø90	12.5	Ø80
PL2-95-NL	M95		Ø100	14	
PL2-105-NL	M105	P1.0	Ø109.7	14	Ø99.05

• PL Series dimensions (mm)



• PL2 Series dimensions (mm)

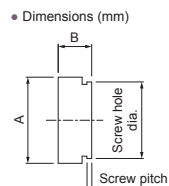


## Ultraviolet Cutting Filters

The L42 Series blocks light of 420 nm max. and transmits the light in a wavelength longer than this.

### L42 Series

Model name	Notes		Dimensions	
	Screw hole dia.	Screw pitch	A	B
L42-25	M25.5	P0.5	Ø27.5	6.5
L42-27	M27.0		Ø28.5	
L42-30	M30.5		Ø32	
L42-40	M40.5		Ø42	
L42-46	M46.0	P0.75	Ø48	7.2

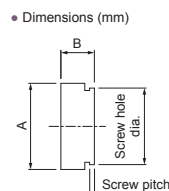


## Ultraviolet Transmission Filters

The U-340 Series transmits light in a wavelength range from approximately 280 to 380 nm centered on 340 nm.

### U-340 Series

Model name	Notes		Dimensions	
	Screw hole dia.	Screw pitch	A	B
U340-25	M25.5	P0.5	Ø27.5	6.5
U340-27	M27.0		Ø28.5	
U340-30	M30.5		Ø32	
U340-40	M40.5		Ø42	
U340-46	M46.0	P0.75	Ø48	7.2



### UV Transmission Filter, UV Cut Filter Usage Example

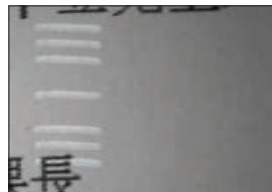
Imaging Invisible Ink on Postcard

Workpiece



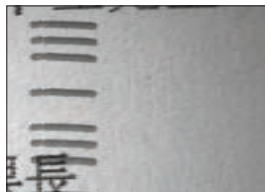
Postcard

No Filter



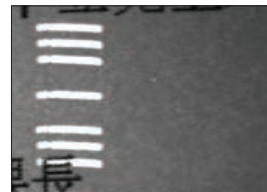
Without a filter, both UV and visible light are captured.

With UV Transmission Filter



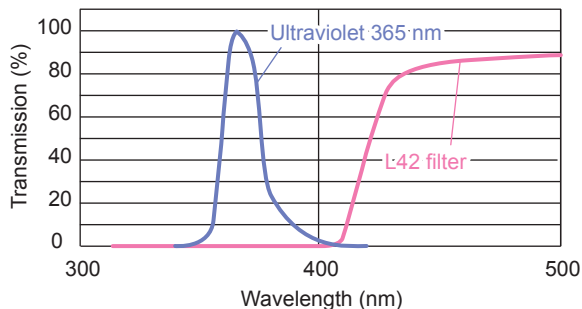
By using a UV transmission filter, it is possible to capture only wavelengths in the UV region.

With UV Cut Filter

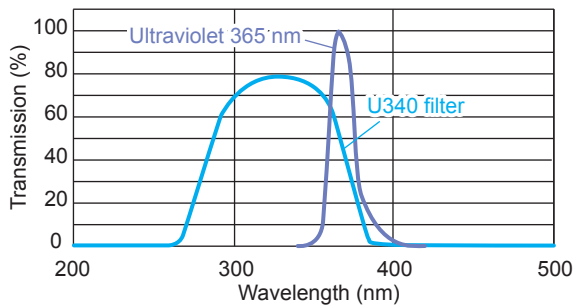


By using a UV cut filter, only the excited scattering light from the ink will be captured.

Comparison of characteristics of ultraviolet cutting filter and light spectrum of ultraviolet LED



Comparison of characteristics of ultraviolet transmission filter and light spectrum of ultraviolet LED



# Diffusion Plates

Refer to our website for product details.

CCS diffusion plates

Search



Can prevent glare, which is a problem when making images of glossy workpieces.



For the Ring Lights  
LDR2 / LDR-PF Series



For the Low-angle Ring Lights  
LDR2-LA Series



For the Bar Lights  
LDL2-19X4 Series  
LDL2-33X8 Series



LDL2 Series  
LDL-PF Series



Control Units and Controllers  
PD4  
PD3  
PD2  
CD-VA  
POD  
PTU2  
PF  
CX  
CN-EPOE  
CN-4024-2-EIPT  
PB-2430-1  
CC-ST-1024  
PJ2  
PJ  
CC-PJ-0707  
PSCC  
PSB4  
PSB3-30024  
Lens Filters  
Diffusion Plates  
Polarizing Plates  
Light Control Films  
Fixtures, etc.  
Brackets  
SM/EL Cables

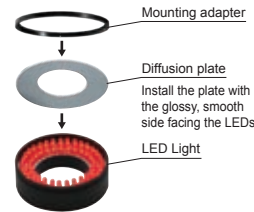
## For the Ring Lights LDR2 / SQR / LDR-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
DF-LDR-32*1	LDR2-32	Ø32	Ø9	(2)
DF-LDR-42*1	LDR2-42	Ø42	Ø14	
DF-LDR-50*1	LDR2-50	Ø50	Ø25	
DF-LDR-70	LDR2-70	Ø66	Ø35	
DF-LDR-90*1	LDR2-90	Ø90	Ø40	
DF-LDR-90-H28*2	LDR2-90-30	Ø90	Ø28	
DF-LDR-120-45*1	LDR2-120	Ø120	Ø45	
DF-SQR-56	SQR-56	Refer to the drawing		
DF-LDR-PF-36*1	LDR-PF-36	Ø36	Ø10	
DF-LDR-PF-54*1	LDR-PF-54	Ø54	Ø22	
DF-LDR-PF-75*1	LDR-PF-75	Ø75	Ø35	

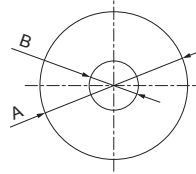
\*1 An AD Series adapter is needed when installing light units. (Product Page ▼ P. 380)  
\*2 This is a custom order product. Contact our local sales office for details.

### Example installation

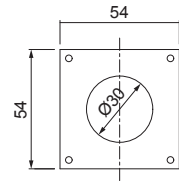
Example: Attachment of Ring Lights  
LDR2 Series



• Dimensions (mm)  
DF-LDR-□□□  
DF-LDR-PF-□□□



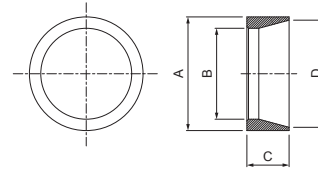
DF-SQR-56



## For the Low-Angle Ring Lights LDR2-LA / LDR-PF-LA Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions			
		A	B	C	D
DF-LDR-48LA	LDR2-48-LA	Ø22	Ø13	18.5	Ø21.77
DF-LDR-74LA	LDR2-74-LA	Ø48	Ø40	24	Ø50
DF-LDR-100LA	LDR2-100-LA	Ø70	Ø56	26	Ø66
DF-LDR-132LA	LDR2-132-LA	Ø98	Ø82		Ø92
DF-LDR-170LA	LDR2-170-LA	Ø133.5	Ø120	32	Ø130
DF-LDR-208LA	LDR2-208-LA	Ø173.5	Ø152		Ø174.3
DF-LDR-PF-75-LA	LDR-PF-75-LA	Please check the web page for details.			
DF-LDR-PF-100-LA	LDR-PF-100-LA				
DF-LDR-PF-150-LA	LDR-PF-150-LA				

• Dimensions (mm)

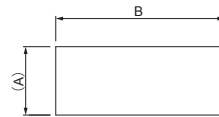


## For the Bar Lights LDL2 / LDL-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
DF-LDL2-19X4	LDL2-19X4	6.4	28
DF-LDL2-33X8	LDL2-33X8	10.4	44
DF-LDL2-41X16	LDL2-41X16	23.2	46
DF-LDL2-80X16	LDL2-80X16		84.7
DF-LDL2-119X16	LDL2-119X16		123.7
DF-LDL2-158X16	LDL2-158X16		162.7
DF-LDL-PF-52X18	LDL-PF-52X18	22	58
DF-LDL-PF-102X18	LDL-PF-102X18		108
DF-LDL-PF-152X18	LDL-PF-152X18		158

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	
DF-LDL2-26X30	LDL2-26X30	37.2	30.7	
DF-LDL2-50X30	LDL2-50X30		54.7	
DF-LDL2-74X30	LDL2-74X30		79	
DF-LDL2-98X30	LDL2-98X30		102.7	
DF-LDL2-122X30	LDL2-122X30		126.7	
DF-LDL2-146X30	LDL2-146X30		150.7	
DF-LDL2-218X30	LDL2-218X30		222.7	
DF-LDL2-266X30	LDL2-266X30		270.7	
DF-LDL-PF-52X30	LDL-PF-52X30		34	58
DF-LDL-PF-102X30	LDL-PF-102X30			108
DF-LDL-PF-152X30	LDL-PF-152X30	158		

• Dimensions (mm)



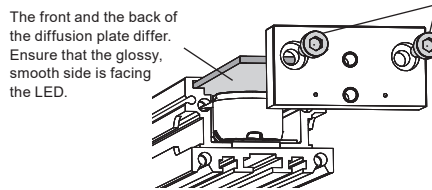
## For the Bar Lights HLDL3 Series

Lights are shipped with a low-uniformity, high-transmissivity diffusion plate mounted. Light characteristics can be changed by changing the diffusion plate. \* White wide-type lights are shipped with the DF-HLDL3 Series diffusion plate mounted.

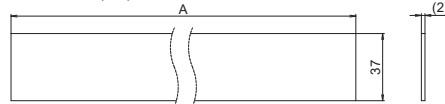
Model name	Applicable Light Unit (Common for all colors)	Dimension A
DF-HLDL3-150(-HU)	HLDL3-150X28	154
DF-HLDL3-300(-HU)	HLDL3-300X28	304
DF-HLDL3-450(-HU)	HLDL3-450X28	454
DF-HLDL3-600(-HU)	HLDL3-600X28	604
DF-HLDL3-750(-HU)	HLDL3-750X28	754
DF-HLDL3-900(-HU)	HLDL3-900X28	904
DF-HLDL3-1050(-HU)	HLDL3-1050X28	1054
DF-HLDL3-1200(-HU)	HLDL3-1200X28	1204
DF-HLDL3-1350(-HU)	HLDL3-1350X28	1354
DF-HLDL3-1500(-HU)	HLDL3-1500X28	1504
DF-HLDL3-1650(-HU)	HLDL3-1650X28	1654
DF-HLDL3-1800(-HU)	HLDL3-1800X28	1804

Series	Uniformity	Transmissivity
DF-HLDL3 Series	Medium	Medium
DF-HLDL3-HU Series	High	Low

M4 screw (recommended screw tightening torque: 0.6 N·m)

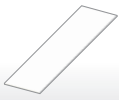


• Dimensions (mm)





Can prevent glare, which is a problem when making images of glossy workpieces.



Diffused Bar Lights  
LB Series



For the Coaxial Lights  
LFBV3 / LFBV-PF Series



For the Coaxial Lights  
LFBV3 / LFBV-PF Series  
(End of the model name: -UF)

## For Diffused Lighting Bar Lights LB Series

Light characteristics can be changed by changing the diffusion plate.

The DF-LB Series diffusion plates have lower uniformity and higher transmissivity than the standard type diffusion plates installed at the time of shipment.

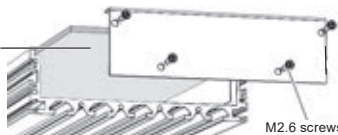
For high power type lighting, DF-LB Series diffusion plates are installed at the time of shipment.

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
DF-LB-200X50	LB-200X50	214	55
DF-LB-300X50	LB-300X50	314	
DF-LB-400X50	LB-400X50	414	
DF-LB-500X50	LB-500X50	514	
DF-LB-600X50	LB-600X50	614	
DF-LB-700X50	LB-700X50	714	
DF-LB-800X50	LB-800X50	814	
DF-LB-900X50	LB-900X50	914	
DF-LB-1000X50	LB-1000X50	1014	
DF-LB-1100X50	LB-1100X50	1114	
DF-LB-1200X50	LB-1200X50	1214	
DF-LB-1300X50	LB-1300X50	1312	
DF-LB-1400X50	LB-1400X50	1412	
DF-LB-1500X50	LB-1500X50	1512	
DF-LB-1600X50	LB-1600X50	1612	
DF-LB-1700X50	LB-1700X50	1712	
DF-LB-1800X50	LB-1800X50	1812	
DF-LB-1900X50	LB-1900X50	1912	
DF-LB-2000X50	LB-2000X50	2012	
DF-LB-2100X50	LB-2100X50	2111	
DF-LB-2200X50	LB-2200X50	2211	
DF-LB-2300X50	LB-2300X50	2311	
DF-LB-2400X50	LB-2400X50	2411	
DF-LB-2500X50	LB-2500X50	2510.5	
DF-LB-2600X50	LB-2600X50	2610.5	
DF-LB-2700X50	LB-2700X50	2710.5	

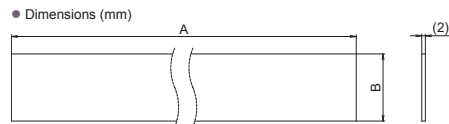
Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
DF-LB-200X100	LB-200X100	214	105.5
DF-LB-300X100	LB-300X100	314	
DF-LB-400X100	LB-400X100	414	
DF-LB-500X100	LB-500X100	514	
DF-LB-600X100	LB-600X100	614	
DF-LB-700X100	LB-700X100	714	
DF-LB-800X100	LB-800X100	814	
DF-LB-900X100	LB-900X100	914	
DF-LB-1000X100	LB-1000X100	1014	
DF-LB-1100X100	LB-1100X100	1114	
DF-LB-1200X100	LB-1200X100	1214	
DF-LB-1300X100	LB-1300X100	1312	
DF-LB-1400X100	LB-1400X100	1412	
DF-LB-1500X100	LB-1500X100	1512	
DF-LB-1600X100	LB-1600X100	1612	
DF-LB-1700X100	LB-1700X100	1712	
DF-LB-1800X100	LB-1800X100	1812	
DF-LB-1900X100	LB-1900X100	1912	
DF-LB-2000X100	LB-2000X100	2012	
DF-LB-2100X100	LB-2100X100	2111	
DF-LB-2200X100	LB-2200X100	2211	
DF-LB-2300X100	LB-2300X100	2311	
DF-LB-2400X100	LB-2400X100	2411	
DF-LB-2500X100	LB-2500X100	2510.5	
DF-LB-2600X100	LB-2600X100	2610.5	
DF-LB-2700X100	LB-2700X100	2710.5	

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
DF-LB-200X150	LB-200X150	214	155.5
DF-LB-300X150	LB-300X150	314	
DF-LB-400X150	LB-400X150	414	
DF-LB-500X150	LB-500X150	514	
DF-LB-600X150	LB-600X150	614	
DF-LB-700X150	LB-700X150	714	
DF-LB-800X150	LB-800X150	814	
DF-LB-900X150	LB-900X150	914	
DF-LB-1000X150	LB-1000X150	1014	
DF-LB-1100X150	LB-1100X150	1114	
DF-LB-1200X150	LB-1200X150	1214	
DF-LB-1300X150	LB-1300X150	1312	
DF-LB-1400X150	LB-1400X150	1412	
DF-LB-1500X150	LB-1500X150	1512	
DF-LB-1600X150	LB-1600X150	1612	
DF-LB-1700X150	LB-1700X150	1712	
DF-LB-1800X150	LB-1800X150	1812	
DF-LB-1900X150	LB-1900X150	1912	
DF-LB-2000X150	LB-2000X150	2012	
DF-LB-2100X150	LB-2100X150	2111	
DF-LB-2200X150	LB-2200X150	2211	
DF-LB-2300X150	LB-2300X150	2311	
DF-LB-2400X150	LB-2400X150	2411	
DF-LB-2500X150	LB-2500X150	2510.5	
DF-LB-2600X150	LB-2600X150	2610.5	
DF-LB-2700X150	LB-2700X150	2710.5	

For sizes  $\geq 1000$ , the diffusion plate has a front side and a back side. Install it with the glossy, smooth side facing the LEDs.



M2.6 screws  
(Recommended tightening torque: 0.2 N·m)

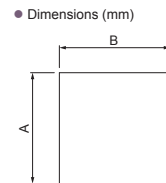


## For the Coaxial Lights LFBV3 / LFBV-PF Series

Model name	Transmission	Applicable Light Unit (Common for all colors)	Dimensions		
			A	B	Thickness
DF-LFBV3-35	High	LFBV3-35 / LFBV-PF-35	34	42	(2)
DF-LFBV3-35-UF	Low				
DF-LFBV3-50	High	LFBV3-50 / LFBV-PF-50	52	56	(2)
DF-LFBV3-50-UF	Low				
DF-LFBV3-50X100	High	LFBV3-50X100		106	
DF-LFBV3-50X100-UF	Low				
DF-LFBV3-70	High	LFBV3-70 / LFBV-PF-70	73	80	
DF-LFBV3-70-UF	Low				

Model name	Transmission	Applicable Light Unit (Common for all colors)	Dimensions		
			A	B	Thickness
DF-LFBV3-100	High	LFBV3-100 / LFBV-PF-100	100	106	(2)
DF-LFBV3-100-UF	Low				
DF-LFBV3-130	High	LFBV3-130	130	138	
DF-LFBV3-130-UF	Low				
DF-LFBV3-200	High	LFBV3-200	202	222	
DF-LFBV3-200-UF	Low				

Transmission High: Standard for red and white  
Transmission Low (End of the model name: -UF): Standard for blue



### Example of usage

Imaging of can from above



No diffusion plate

Using diffusion plate

There are two types of diffusion plates with different transmission for the Coaxial Lights LFBV3 Series. Select one to match your work environment.

E.g.: If changing from a low transmission diffusion plate to a high one:



E.g.: If changing from a high transmission diffusion plate to a low one:



**Caution** Diffusion plates are consumables. Heat may cause deformation or discoloring depending on the use environment. Make sure that countermeasures against overheating are implemented and that the temperature does not exceed the operating limit.

# Polarizing Plates

Refer to our website for product details.

CCS polarizing plates

Search



These are used together with a polarizing filter attached to the camera lens for the purpose of eliminating surface glare.



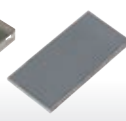
For the Ring Lights  
LDR2 / LDR-PF Series



For the Bar Lights  
LDL2-19X4 Series  
LDL2-33X8 Series



LDL2 Series  
LDL-PF Series



For the Spot Lights  
LSP Series

## For the Ring Lights LDR2 / SQR / LDR-PF Series

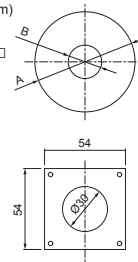
Model name	Applicable Light Unit (Common for all colors)	Dimensions			
		A	B	Thickness	
PL-LDR-32*1	LDR2-32	Ø32	Ø9	0.8	
PL-LDR-42*1	LDR2-42	Ø42	Ø14		
PL-LDR-50*1	LDR2-50	Ø50	Ø26		
PL-LDR2-70	LDR2-70	Ø76*2	Ø35		
PL-LDR-90*1	LDR2-90	Ø90	Ø40		
PL-LDR-90-H28**3	LDR2-90-30	Ø90	Ø28		
PL-LDR-120-40*1	LDR2-120	Ø120	Ø40		
PL-SQR-56	SQR-56	Refer to the drawing			
PL-LDR-PF-36*1	LDR-PF-36	Ø36	Ø10		(2)
PL-LDR-PF-54*1	LDR-PF-54	Ø54	Ø22		
PL-LDR-PF-75*1	LDR-PF-75	Ø75	Ø35		

• Dimensions (mm)

PL-LDR-□□

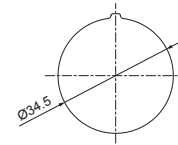
PL-LDR-PF-□□

PL-SQR-56



## For the Spot Lights LSP Series

Model name	Applicable Light Unit (Common for all colors)
PL-LSP-41	LSP-41



## For the Bar Lights LDL2 / LDL-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
PL-LDL2-19X4-HO	LDL2-19X4	6.4	28
PL-LDL2-19X4-VE			
PL-LDL2-33X8-HO	LDL2-33X8	10.4	44
PL-LDL2-33X8-VE			
PL-LDL2-41X16	LDL2-41X16	23.2	46
PL-LDL2-41X16-VE			
PL-LDL2-80X16	LDL2-80X16	23.2	84.7
PL-LDL2-80X16-VE			
PL-LDL2-119X16	LDL2-119X16	23.2	123.7
PL-LDL2-119X16-VE			
PL-LDL2-158X16	LDL2-158X16	23.2	162.7
PL-LDL2-158X16-VE			
PL-LDL-PF-52X18-HO	LDL-PF-52X18	22	58
PL-LDL-PF-52X18-VE			
PL-LDL-PF-102X18-HO	LDL-PF-102X18	22	108
PL-LDL-PF-102X18-VE			

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
PL-LDL-PF-152X18-HO	LDL-PF-152X18	22	158
PL-LDL-PF-152X18-VE			
PL-LDL2-26X30	LDL2-26X30	30.7	79
PL-LDL2-26X30-VE			
PL-LDL2-50X30	LDL2-50X30	30.7	79
PL-LDL2-50X30-VE			
PL-LDL2-74X30	LDL2-74X30	30.7	79
PL-LDL2-74X30-VE			
PL-LDL2-98X30	LDL2-98X30	37.2	102.7
PL-LDL2-98X30-VE			
PL-LDL2-122X30	LDL2-122X30	37.2	126.7
PL-LDL2-122X30-VE			
PL-LDL2-146X30	LDL2-146X30	37.2	150.7
PL-LDL2-146X30-VE			
PL-LDL2-218X30	LDL2-218X30	37.2	222.7
PL-LDL2-218X30-VE			

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
PL-LDL2-266X30	LDL2-266X30	37.2	270.7
PL-LDL2-266X30-VE			
PL-LDL-PF-52X30-HO	LDL-PF-52X30	34	58
PL-LDL-PF-52X30-VE			
PL-LDL-PF-102X30-HO	LDL-PF-102X30	34	108
PL-LDL-PF-102X30-VE			
PL-LDL-PF-152X30-HO	LDL-PF-152X30	34	158
PL-LDL-PF-152X30-VE			

• Dimensions (mm)



## For the Bar Lights HLDL3 Series

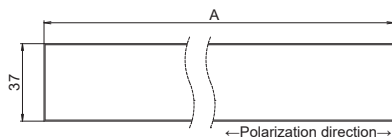
Model name	Applicable Light Unit (Excluding infrared)	Dimensions	
		A	B
PL-HLDL3-150-HO	HLDL3-150X28	154	—
PL-HLDL3-150-VE			
PL-HLDL3-300-HO	HLDL3-300X28	304	—
PL-HLDL3-300-VE			
PL-HLDL3-450-HO	HLDL3-450X28	454	—
PL-HLDL3-450-VE			
PL-HLDL3-600-HO	HLDL3-600X28	604	—
PL-HLDL3-600-VE			
PL-HLDL3-750-HO	HLDL3-750X28	754	(377)
PL-HLDL3-750-VE			
PL-HLDL3-900-HO	HLDL3-900X28	904	(452)
PL-HLDL3-900-VE			

Model name	Applicable Light Unit (Excluding infrared)	Dimensions		
		A	B	C
PL-HLDL3-1050-HO	HLDL3-1050X28	1054	(527)	—
PL-HLDL3-1050-VE				
PL-HLDL3-1200-HO	HLDL3-1200X28	1204	(602)	—
PL-HLDL3-1200-VE				
PL-HLDL3-1350-HO	HLDL3-1350X28	1354	(451.5)	(451)
PL-HLDL3-1350-VE				
PL-HLDL3-1500-HO	HLDL3-1500X28	1504	(501.5)	(501)
PL-HLDL3-1500-VE				
PL-HLDL3-1650-HO	HLDL3-1650X28	1654	(551.5)	(551)
PL-HLDL3-1650-VE				
PL-HLDL3-1800-HO	HLDL3-1800X28	1804	(601.5)	(601)
PL-HLDL3-1800-VE				

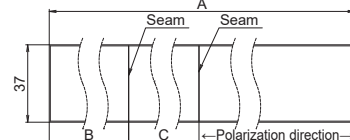
\* Remove the diffusion plate to mount the polarizing plate. If you want to use both the polarizing plate and diffusion plate, contact us for custom orders.  
Note: There may be some lifting between the film and resin plate due to environmental changes. However, this will not affect functionality and performance.

• Dimensions (mm)

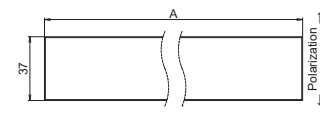
PL-HLDL3-n-HO  
(n = 150 to 600)



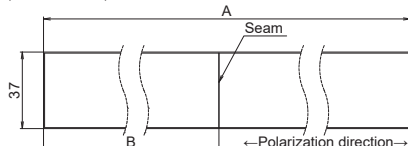
PL-HLDL3-n-HO  
(n = 1350 to 1800)



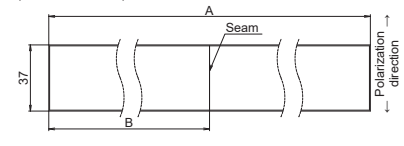
PL-HLDL3-n-VE  
(n = 150 to 900)



PL-HLDL3-n-HO  
(n = 750 to 1200)



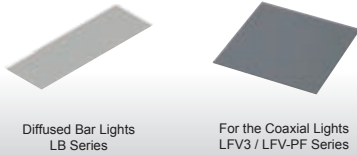
PL-HLDL3-n-VE  
(n = 1050 to 1800)



Caution

Polarizing plates are consumables. Heat may cause deformation or discoloring depending on the use environment. Make sure that countermeasures against overheating are implemented and that the temperature does not exceed the operating limit.

These are used together with a polarizing filter attached to the camera lens for the purpose of eliminating surface glare.



Diffused Bar Lights  
LB Series

For the Coaxial Lights  
LFV3 / LFV-PF Series

## For Diffused Lighting Bar Lights LB Series

Model name	Dimensions		Model name	Dimensions		Model name	Dimensions	
	A	B		A	B		A	B
PL-LB-200X50-HO/VE	214	55	PL-LB-200X100-HO/VE	214	105.5	PL-LB-200X150-HO/VE	214	155.5
PL-LB-300X50-HO/VE	314		PL-LB-300X100-HO/VE	314		PL-LB-300X150-HO/VE	314	
PL-LB-400X50-HO/VE	414		PL-LB-400X100-HO/VE	414		PL-LB-400X150-HO/VE	414	
PL-LB-500X50-HO/VE	514		PL-LB-500X100-HO/VE	514		PL-LB-500X150-HO/VE	514	
PL-LB-600X50-HO/VE	614		PL-LB-600X100-HO/VE	614		PL-LB-600X150-HO/VE	614	
PL-LB-700X50-HO/VE	714		PL-LB-700X100-HO/VE	714		PL-LB-700X150-HO/VE	714	
PL-LB-800X50-HO/VE	814		PL-LB-800X100-HO/VE	814		PL-LB-800X150-HO/VE	814	
PL-LB-900X50-HO/VE	914		PL-LB-900X100-HO/VE	914		PL-LB-900X150-HO/VE	914	
PL-LB-1000X50-HO/VE	1014		PL-LB-1000X100-HO/VE	1014		PL-LB-1000X150-HO/VE	1014	
PL-LB-1100X50-HO/VE	1114		PL-LB-1100X100-HO/VE	1114		PL-LB-1100X150-HO/VE	1114	
PL-LB-1200X50-HO/VE	1214		PL-LB-1200X100-HO/VE	1214		PL-LB-1200X150-HO/VE	1214	
PL-LB-1300X50-HO/VE	1312		PL-LB-1300X100-HO/VE	1312		PL-LB-1300X150-HO/VE	1312	
PL-LB-1400X50-HO/VE	1412		PL-LB-1400X100-HO/VE	1412		PL-LB-1400X150-HO/VE	1412	
PL-LB-1500X50-HO/VE	1512		PL-LB-1500X100-HO/VE	1512		PL-LB-1500X150-HO/VE	1512	
PL-LB-1600X50-HO/VE	1612		PL-LB-1600X100-HO/VE	1612		PL-LB-1600X150-HO/VE	1612	
PL-LB-1700X50-HO/VE	1712		PL-LB-1700X100-HO/VE	1712		PL-LB-1700X150-HO/VE	1712	
PL-LB-1800X50-HO/VE	1812		PL-LB-1800X100-HO/VE	1812		PL-LB-1800X150-HO/VE	1812	
PL-LB-1900X50-HO/VE	1912		PL-LB-1900X100-HO/VE	1912		PL-LB-1900X150-HO/VE	1912	
PL-LB-2000X50-HO/VE	2012		PL-LB-2000X100-HO/VE	2012		PL-LB-2000X150-HO/VE	2012	
PL-LB-2100X50-HO/VE	2111		PL-LB-2100X100-HO/VE	2111		PL-LB-2100X150-HO/VE	2111	
PL-LB-2200X50-HO/VE	2211		PL-LB-2200X100-HO/VE	2211		PL-LB-2200X150-HO/VE	2211	
PL-LB-2300X50-HO/VE	2311		PL-LB-2300X100-HO/VE	2311		PL-LB-2300X150-HO/VE	2311	
PL-LB-2400X50-HO/VE	2411		PL-LB-2400X100-HO/VE	2411		PL-LB-2400X150-HO/VE	2411	
PL-LB-2500X50-HO/VE	2510.5		PL-LB-2500X100-HO/VE	2510.5		PL-LB-2500X150-HO/VE	2510.5	
PL-LB-2600X50-HO/VE	2610.5		PL-LB-2600X100-HO/VE	2610.5		PL-LB-2600X150-HO/VE	2610.5	
PL-LB-2700X50-HO/VE	2710.5		PL-LB-2700X100-HO/VE	2710.5		PL-LB-2700X150-HO/VE	2710.5	

\* When n ≥ 700 for the PL-LB-HO Series or n ≥ 1000 for the PL-LB-VE Series, the film on the polarizing plate has seams. For detailed information, please visit our website.  
 \* Remove the diffusion plate to mount the polarizing plate. If you want to use both the polarizing plate and diffusion plate, contact us for custom orders.  
 \* Infrared models are not available.

There are two types of polarizing plates for the Bar Lights LDL2 Series. They are used together as shown below.

Installation to illuminate the workpiece from all four directions:

Example:  
Four LDL2-41X16 units

There are two types and they should be combined so that they are paired.

Polarization direction is 90° different.

PL-LDL2-41X16 (PL-LDL2-33X8-HO)  
 PL-LDL2-41X16-VE (PL-LDL2-33X8-VE)

• Distinguishing paired polarizing plates

Paired

Appears to be black

Not paired

Does not appear to be black

When the model number ends with or without HO

As shown in the figure, the polarization direction is **horizontal** with respect to the long side of the polarizing plate.

When the model number ends with VE

As shown in the figure, the polarization direction is **perpendicular** with respect to the long side of the polarizing plate.

Refer to the Technical Guide (Glossary) for polarization. ▶P.413

## For the Coaxial Lights LFV3 / LFV-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions			Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness			A	B	Thickness
PL-LFV3-35	LFV3-35 / LFV-PF-35	34	42	0.8	PL-LFV3-100	LFV3-100 / LFV-PF-100	100	106	0.8
PL-LFV3-50	LFV3-50 / LFV-PF-50	52	56		PL-LFV3-130	LFV3-130	130	138	
PL-LFV3-50X100	LFV3-50X100	52	106		PL-LFV3-200	LFV3-200	202	222	
PL-LFV3-70	LFV3-70 / LFV-PF-70	73	80						

**Example of usage**

Imaging of QR code

No polarizing plate

Using a polarizing plate

**Example installation**

Example: Attachment of Ring Lights LDR2 Series

• The polarizing filters and plates are used together.

Adjustment procedures for polarizing plates and polarizing filters

Specular reflective components are cut out and the effects can be observed when the polarization direction of the polarizing plate installed on the light unit and the polarization direction of the filter attached to the camera are at a right angle (90°) to each other.

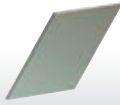
Refer to the Technical Guide (Glossary) for polarization. ▶P.413

**Caution** Polarizing plates are consumables. Heat may cause deformation or discoloring depending on the use environment. Make sure that countermeasures against overheating are implemented and that the temperature does not exceed the operating limit.

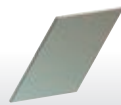


# Light Control (LC) Films

The parallelism of light is improved to reduce light diffraction for performing external inspection of workpieces, and provide sharp imaging of profiles.



For the Flat Lights  
TH2/TH-PF Series



For the Coaxial Lights  
LFV3 / LFV-PF Series

## For the Flat Lights TH2/TH-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
LC-TH-27X27-HO	TH2-27X27	39	29	0.5
LC-TH-27X27-VE				
LC-TH-43X35-HO		TH2-43X35	47	
LC-TH-43X35-VE				
LC-TH-51X51-HO	TH2-51X51	63	53	
LC-TH-51X51-VE				
LC-TH-63X60-HO	TH2-63X60	72	75	
LC-TH-63X60-VE				
LC-TH-83X75-HO	TH2-83X75	87	95	
LC-TH-83X75-VE				
LC-TH-100X100-HO	TH2-100X100 TH-PF-100X100	112	112	
LC-TH-100X100-VE				

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
LC-TH-140X105-HO	TH2-140X105	117	152	0.5
LC-TH-140X105-VE				
LC-TH-160X120-HO	TH2-160X120	132	172	
LC-TH-160X120-VE				
LC-TH-200X150-HO	TH2-200X150	162	212	
LC-TH-200X150-VE				
LC-TH-211X200-HO	TH2-211X200	212	223	
LC-TH-211X200-VE				
LC-TH-224X170-HO	TH2-224X170	182	236	
LC-TH-224X170-VE				

For the TH2: These films are not applicable to the high-directivity, large, rectangular, and camera-window type light units.

The Flat Lights TH2/TH-PF Series offers a selection of long or short louver directions.

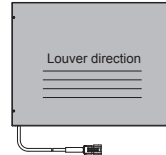
**Model names ending with HO:**

The direction of louvers is horizontal when attaching with the cable outlet facing downwards as shown in the drawing.

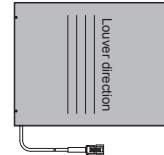
**Model names ending with VE:**

The direction of louvers is vertical when attaching with the cable outlet facing downwards as shown in the drawing.

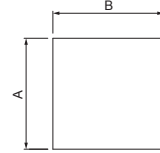
For HO



For VE



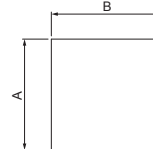
Dimensions (mm)



## For the Flat Lights LFL Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
LC-LFL-100	LFL-100	120	132	0.5
LC-LFL-180	LFL-180	176.8	213.8	
LC-LFL-200	LFL-200	222	234	

Dimensions (mm)

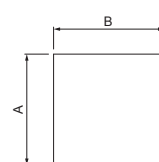


## For the Coaxial Lights LFV3 / LFV-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
LC-LFV3-35	LFV3-35 / LFV-PF-35	34	42	0.5
LC-LFV3-50	LFV3-50 / LFV-PF-50	52	56	
LC-LFV3-50X100	LFV3-50X100	52	106	
LC-LFV3-70	LFV3-70 / LFV-PF-70	73	80	

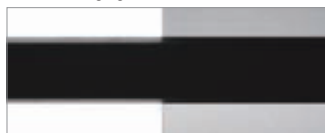
Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
LC-LFV3-100	LFV3-100 / LFV-PF-100	100	106	0.5
LC-LFV3-130	LFV3-130	130	138	
LC-LFV3-200	LFV3-200	202	222	

Dimensions (mm)



**Example of usage**

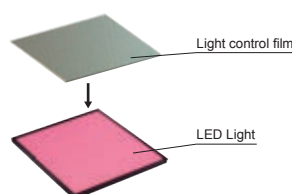
External imaging of a metal rod



No light control film      Using light control film

**Example installation**

Example: Attachment of the Flat Lights TH2/TH-PF Series



**Caution**

LC film is a consumable. Heat may cause deformation or discoloring depending on the use environment. Make sure that countermeasures against overheating are implemented and that the temperature does not exceed the operating limit.

CCS options

▶ Search



# Fixtures, etc.

Fixtures, etc.



Protective plate  
CV Series



Adapter  
AD Series



Lens attachment rings  
MR Series



FA Series  
Fixtures



JP-LDL2

## Protective Plates

Protects the emitting part of the light unit.

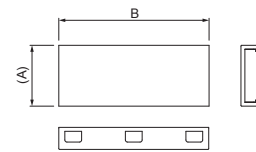
It is not intended to protect against dust or water.

### CV Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
CV-LDL2-41X16	LDL2-41X16	23.2	46
CV-LDL2-80X16	LDL2-80X16		84.7
CV-LDL2-119X16	LDL2-119X16		123.7
CV-LDL2-158X16	LDL2-158X16	37.2	162.7
CV-LDL2-26X30	LDL2-26X30		30.7
CV-LDL2-50X30	LDL2-50X30		79
CV-LDL2-74X30	LDL2-74X30		79

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
CV-LDL2-98X30	LDL2-98X30	37.2	102.7
CV-LDL2-122X30	LDL2-122X30		126.7
CV-LDL2-146X30	LDL2-146X30		150.7
CV-LDL2-218X30	LDL2-218X30		222.7
CV-LDL2-266X30	LDL2-266X30		270.7

• Dimensions (mm)



Refer to the product page for the protective plate PR-LFXV dedicated for the flat dome light LFXV Series. (Product Page ▶ P.115)

Refer to the product page for the protective plate PR-LFV3 for the coaxial light LFXV Series. (Product Page ▶ P.133)

Refer to the product page for the protective plate PR-LB for the diffused bar light LB Series. (Product page ▶ P.75)

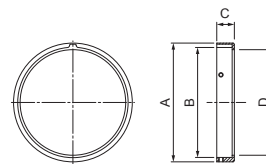
## Adapters

Use when installing a diffusion plate or polarizing plate to the light unit.

### AD Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions			
		A	B	C	D
AD-LDR-32	LDR2-32	Ø36	Ø32.2	7	Ø28
AD-LDR-42	LDR2-42	Ø46	Ø42.2		Ø38
AD-LDR-50	LDR2-50	Ø54	Ø50.2		Ø48
AD-LDR-90	LDR2-90	Ø96	Ø90.2	8	Ø84
AD-LDR-120	LDR2-120	Ø126	Ø120		Ø114
AD-LDR-PF-36	LDR-PF-36	Ø42	Ø36.6		Ø30
AD-LDR-PF-54	LDR-PF-54	Ø60	Ø54.3	12	Ø50
AD-LDR-PF-75	LDR-PF-75	Ø81	Ø75.3		Ø71
AD-LDR-PF-75-LA	LDR-PF-75-LA	Ø75.3	Ø81		Ø69
AD-LDR-PF-100-LA	LDR-PF-100-LA	Ø100.3	Ø106	12	Ø94
AD-LDR-PF-150-LA	LDR-PF-150-LA	Ø142	Ø157		Ø142

• Dimensions (mm)



## Lens Attachment Rings

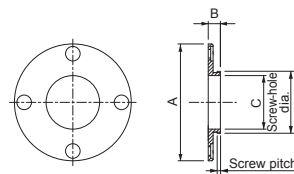
You can directly install the light unit to the filter thread part of lens.

Suitable for environments with limited installation space.

### MR Series

Model name	Applicable Light Unit (Common for all colors)	Notes		Dimensions			
		Screw hole dia.	Screw pitch	A	B	C	
MR-LDR-32-M25	Common for LDR2-32	M25.5	P0.5	Ø36	10	Ø12	
MR-LDR-32-M27		M27					
MR-LDR-32-M30		M30.5					
MR-LDR-50-M25	Common for LDR2-50	M25.5		P0.5	Ø48	5	Ø22
MR-LDR-50-M27		M27					Ø24
MR-LDR-50-M30		M30.5					Ø27

• Dimensions (mm)



## Fixtures

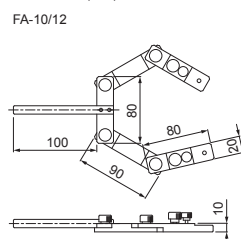


A fixing jig suitable for workpiece tests and temporary settings.

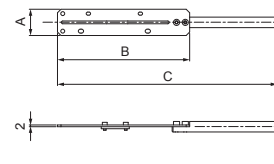
### FA Series

Model name	Notes
FA-10	Rod part Ø10 mm
FA-12	Rod part Ø12 mm

• Dimensions (mm)



JP-LDL2



### JP-LDL2 Series

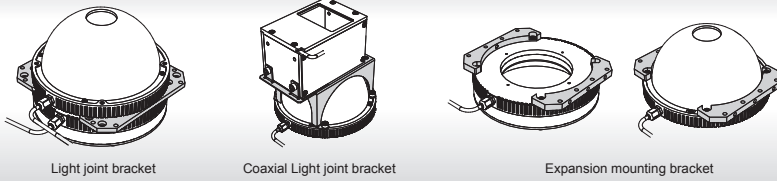
Model name	Notes	Dimensions		
		A	B	C
JP-LDL2-LE70WT20	Rod part Ø12 mm	20	71	171
JP-LDL2-LE100WT30		30	101	201
JP-LDL2-LE150WT30		30	151	251

**Caution** Be sure to read the User Manual included with the product before use and observe cautionary information.

Control Units and Controllers  
 PD4  
 PD3  
 PD2  
 CD-VA  
 POD  
 PTU2  
 PF  
 CX  
 CN-EPOE  
 CN-4024-2-EIPT  
 PB-2430-1  
 CC-ST-1024  
 PJ2  
 PJ  
 CC-PJ-0707  
 PSCC  
 PSB4  
 PSB3-30024  
 Lens Filters  
 Diffusion Plates  
 Polarizing Plates  
 Light Control Films  
**Fixtures, etc.**  
 Brackets  
 SM/EL Cables

Options



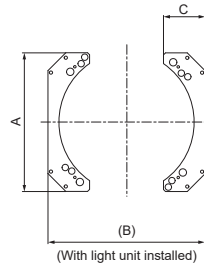


## Light Joint Brackets

You can combine dome and ring lights. Imaging can be performed by lighting switching or simultaneous lighting.

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)	Dimensions			
			A	B	C	Thickness
BK-75-JO	HPD2-75 Series HPD-PF-75 Series	HPR2-75 Series	84	91	35	4
		HPR2-PF-75 Series				
		LDR2-100-LA Series				
		LDR-96-LA1 Series				
BK-100-JO	HPD2-100 Series HPD-PF-100 Series	HPR2-100 Series	106	116	32	
		HPR-PF-100 Series				
		LDR2-132-LA Series				
		LDR-146-LA1 Series				
BK-150-JO	HPD2-150 Series HPD-PF-150 Series	HPR2-150 Series	140	166	42	
		HPR-PF-150 Series				
		LDR2-170-LA Series				
		LDR-176-LA1 Series				
BK-200-JO	HPD2-200 Series HPD-PF-200 Series	HPR2-200 Series	170	216	52	
		HPR-PF-200 Series				
		LDR2-208-LA Series				
		LDR-206-LA1 Series				
BK-250-JO	HPD2-250 Series	HPR2-250 Series	210	266	56	

• Dimensions (mm)

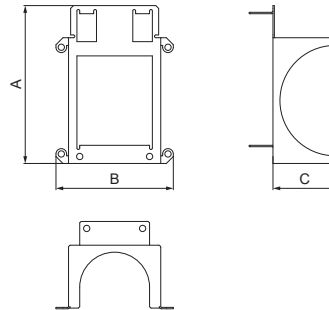


## Coaxial Light Joint Brackets

You can combine dome and coaxial lights. Uniform illumination can be provided from all directions. Illumination irregularities are eliminated.

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)	Dimensions		
			A	B	C
BK-HPD2-75-LFV	HPD2-75 Series HPD-PF-75 Series	LFV3-35 Series LFV-PF-35 Series	95	66	33
BK-HPD2-100-LFV	HPD2-100 Series HPD-PF-100 Series	LFV3-50 Series LFV-PF-50 Series	113	84	45.5
BK-HPD2-150-LFV	HPD2-150 Series HPD-PF-150 Series	LFV3-50 Series LFV-PF-50 Series	129.5	119	70.5
BK-HPD2-200-LFV	HPD2-200 Series	LFV3-70 Series	164	155	95.5
BK-HPD2-250-LFV	HPD2-250 Series	LFV3-70 Series	200	190	116.5

• Dimensions (mm)



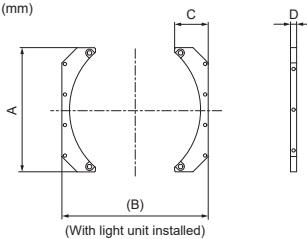
## Expansion Mounting Brackets

These brackets are for expanding the mounting methods of light units. You can mount on horizontal as well as vertical surfaces.

Model name	Applicable Light Unit 1 (Common for all colors)	Dimensions			
		A	B	C	D
BK-50-CI	HPR2-50 Series	40	50	13	5
BK-75-CI	HPR2-75 Series	70	91	22	6
	HPR-PF-75 Series				
	HPD2-75 Series				
	HPD-PF-75 Series				
BK-100-CI	HPR2-100 Series	90	116	25	
	HPR-PF-100 Series				
	HPD2-100 Series				
	HPD-PF-100 Series				

Model name	Applicable Light Unit 1 (Common for all colors)	Dimensions			
		A	B	C	D
BK-150-CI	HPR2-150 Series	122	166	33	6
	HPR-PF-150 Series				
	HPD2-150 Series				
	HPD-PF-150 Series				
BK-200-CI	HPR2-200 Series	160	216	40	
	HPR-PF-200 Series				
	HPD2-200 Series				
	HPD-PF-200 Series				
BK-250-CI	HPD2-250 Series	210	266	60	
	HPR2-250 Series				

• Dimensions (mm)



• Example of the expansion mounting bracket in use



Ring Light: Image of usage with HPR2-200RD

• Example of the expansion mounting bracket in use



Dome Light: Image of usage with HPD2-250SW

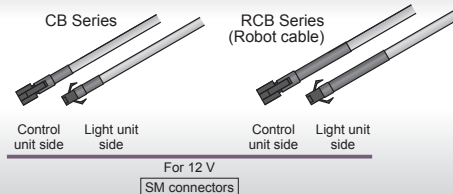
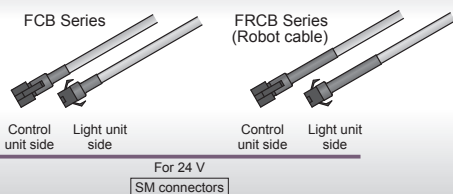
**Caution** Be sure to read the User Manual included with the product before use and observe cautionary information.

Control Units and Controllers

- PD4
- PD3
- PD2
- CD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024

Options

- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables



The cable permitted bending radii shown below are for reference only. Actual values may vary.

**Straight Cables**

This extension cable connects an LED light and control unit.

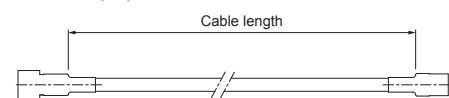
**FCB Series (For 24 V / HLV)**

Model name	Cable length	Notes
FCB-1	1 m	Used for 24 V input LED lights or the HLV Series Spot Lights, and 24 V output control units.
FCB-2	2 m	
FCB-3	3 m	
FCB-4	4 m	
FCB-5	5 m	

**CB Series (For 12 V)**

Model name	Cable length	Notes
CB-1	1 m	Used for 12 V input LED lights and 12 V output control units.
CB-2	2 m	
CB-3	3 m	
CB-4	4 m	
CB-5	5 m	

• Dimensions (mm)



24 V / HLV Series cable permitted bending radius: 28.8 mm  
12 V cable permitted bending radius: 27.6 mm

**2-Branch Cables**

\* Not compatible with HLV Series.

This 2-branch cable connects two LED lights and a control unit.

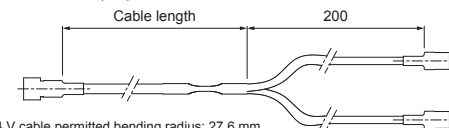
**FCB-W Series (For 24 V)**

Model name	Cable length	Notes
FCB-W-1	1 m	Used for 24 V input LED lights and 24 V output control units.
FCB-W-2	2 m	
FCB-W-3	3 m	
FCB-W-4	4 m	
FCB-W-5	5 m	

**CB-W Series (For 12 V)**

Model name	Cable length	Notes
CB-W-1	1 m	Used for 12 V input LED lights and 12 V output control units.
CB-W-2	2 m	
CB-W-3	3 m	
CB-W-4	4 m	
CB-W-5	5 m	

• Dimensions (mm)



24 V cable permitted bending radius: 27.6 mm  
12 V cable permitted bending radius: 27.6 mm

**4-Branch Cables**

\* Not compatible with HLV Series.

This 4-branch cable connects four LED lights and a control unit.

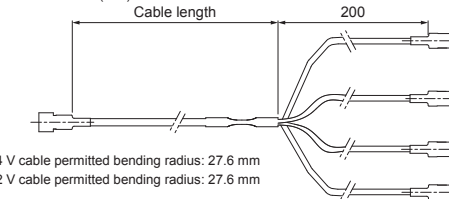
**FCB-F Series (For 24 V)**

Model name	Cable length	Notes
FCB-F-1	1 m	Used for 24 V input LED Lights and 24 V output control units.
FCB-F-2	2 m	
FCB-F-3	3 m	
FCB-F-4	4 m	
FCB-F-5	5 m	

**CB-F Series (For 12 V)**

Model name	Cable length	Notes
CB-F-1	1 m	Used for 12 V input LED Lights and 12 V output control units.
CB-F-2	2 m	
CB-F-3	3 m	
CB-F-4	4 m	
CB-F-5	5 m	

• Dimensions (mm)



24 V cable permitted bending radius: 27.6 mm  
12 V cable permitted bending radius: 27.6 mm

**Robot Cables**

These robot cables have excellent flexibility and durability.

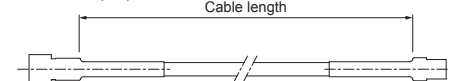
**FRCB Series (For 24 V / HLV)**

Model name	Cable length	Notes
FRCB-1	1 m	Used for 24 V input LED Lights or the HLV Series Spot Lights, and 24 V output control units.
FRCB-2	2 m	
FRCB-3	3 m	
FRCB-4	4 m	
FRCB-5	5 m	

**RCB Series (For 12 V)**

Model name	Cable length	Notes
RCB-1	1 m	Used for 12 V input LED Lights and 12 V output control units.
RCB-2	2 m	
RCB-3	3 m	
RCB-4	4 m	
RCB-5	5 m	

• Dimensions (mm)

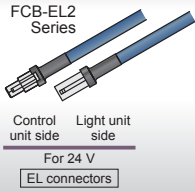


24 V / HLV Series cable permitted bending radius: 29.4 mm  
12 V cable permitted bending radius: 27.6 mm

If using robot cables, affix the cable section on the light unit side (including the connector section).

**Caution** The light intensity might be unstable if you join cables.





The cable permitted bending radii shown below are for reference only. Actual values may vary.

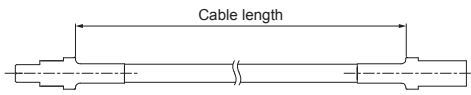
### Straight Cables

This extension cable connects an LED light and control unit.

#### FCB-EL2 Series (For 24 V)

Model name	Cable length	Notes
FCB-1-EL2	1 m	Use for LED lights and control units that have an EL connector.
FCB-2-EL2	2 m	
FCB-3-EL2	3 m	
FCB-5-EL2	5 m	
FCB-10-EL2	10 m	
FCB-15-EL2	15 m	

• Dimensions (mm)



Cable permitted bending radius: 29.6 mm

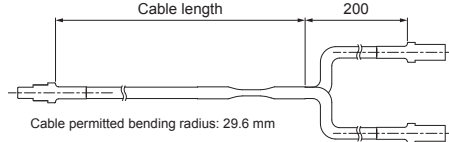
### 2-Branch Cables

This 2-branch cable connects two LED lights and a control unit.

#### FCB-W-EL2 Series (For 24 V)

Model name	Cable length	Notes
FCB-W-1-EL2	1 m	Use for LED lights and control units that have an EL connector.
FCB-W-2-EL2	2 m	
FCB-W-3-EL2	3 m	
FCB-W-5-EL2	5 m	
FCB-W-10-EL2	10 m	
FCB-W-15-EL2	15 m	

• Dimensions (mm)



Cable permitted bending radius: 29.6 mm

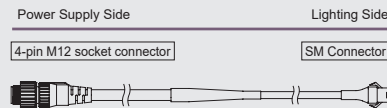
### Guide to Custom Cable Manufacturing

Cables can be custom ordered in accordance with customer requests. Inquiries are welcomed.

(n = Cable length)

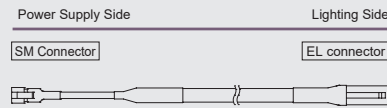
#### • Conversion Cable

Example: FCB-n-M12-OC



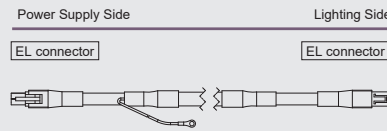
Example: FCB-n-EL2SM3

(Reverse connector specifications type: FCB-n-EL2-SM3-OC)

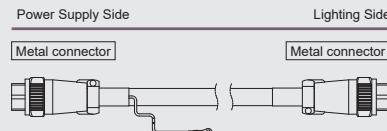


#### • Cable with Ground Terminal

Example: FCB-n-PF-2.0SQ-SH  
(Power Flash Light PF Series Dedicated Cable)



Example: FRCB-n-2SQ-SH-ME7  
(Line Sensor Light Dedicated Cable)

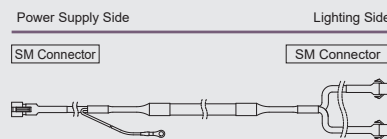


#### • Voltage Drop Countermeasure Cable

Example: FRCB-n-1.25SQ  
(Robot Cable 1.25sq)



Example: FRCB-W-n-1.25SQ-SH  
(2-Branch Robot Cable 1.25sq with Ground Terminal)



As the length of the cable gets longer, the brightness decreases due to voltage drops, potentially causing the dimmer to become unstable.  
In such cases, a wire with a thicker core is needed to reduce the effect of voltage drops.  
If you are having issues, we are happy to consult on a solution to suit your usage conditions.

**Caution** The light intensity might be unstable if you join cables.

- Control Units and Controllers
- PD4
- PD3
- PD2
- PD-VA
- POD
- PTU2
- PF
- CX
- CN-EPOE
- CN-4024-2-EIPT
- PB-2430-1
- CC-ST-1024
- PJ2
- PJ
- CC-PJ-0707
- PSCC
- PSB4
- PSB3-30024
- Options
- Lens Filters
- Diffusion Plates
- Polarizing Plates
- Light Control Films
- Fixtures, etc.
- Brackets
- SM/EL Cables

## Introduction to CCS Custom Ordered Products

Presenting examples of custom ordered light units manufactured by CCS in the past. We can manufacture a wide variety of light units to meet your needs.

### High-Power Dome Light Units for Line Scan Sensors (Tunnel Dome Light Units)

#### HLDN Series



#### HLDN-300SW-TN55AREL

Achieves higher output through the use of compressed air cooling. The light emitting section is configured with white SMD LEDs in a high-density layout.

#### Manufactured Products

- HLDN-200SW
- HLDN-300SW
- HLDN-500SW
- HLDN-600SW
- HLDN-700SW
- HLDN-800SW

#### LDFTP Series



#### LDFTP300X50SWACLMSL4

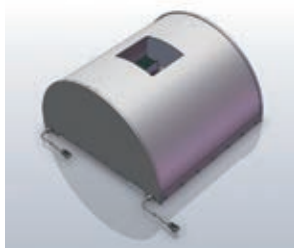
Using two flat lights provided with high output and high uniformity to illuminate the workpiece at the optimum angle from both lateral sides.

**Delivers a long, stable dome effect and uniform diffused light irradiation with high output.**

[Custom Ordered Product Page](#) ▶ P.242

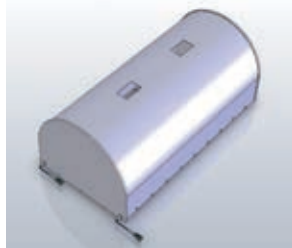
### High-Power Dome Light Units for Area Scan Sensors (Tunnel Dome Light Units)

#### HLDN Series



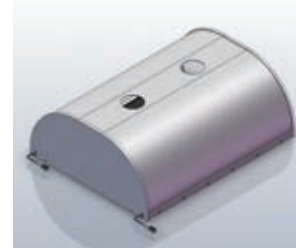
#### HLDN-300RD

Designed with a square opening for the camera. The light emitting section is configured with red bar lights.



#### HLDN-500SW

Designed with two square openings for the cameras. The light emitting section is configured with white SMD LEDs in a high-density layout.



#### HLDN-516X408SW

Designed with two round openings for the cameras. The light emitting section is configured with white COB LEDs in a high-density layout.

#### Manufactured Products

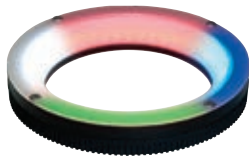
- HLDN-400RD
- HLDN-600SW
- HLDN-500X400SW

**Optimized design for multiple fields of view suited to area scan sensor arrays. Ensures uniform diffused light using the dome effect.**

[Custom Ordered Product Page](#) ▶ P.242

### Multi-Wavelength Split Emission Light Units

#### DV Series



#### HPR2-150FC-DV04

The four segments can be individually controlled. Delivers high-output diffused light irradiation with full-color (RGB) light emissions.

[HPR2 Custom Ordered Base Light Unit Page](#) ▶ P.47

#### Manufactured Products

##### 4-Segment Types

- HPR2-50SW-DV04
- HPR2-50FC-DV04 (full color type)
- HPR2-75SW-DV04
- HPR2-150SW-DV04

##### 8-Segment Types

- HPR2-100SW-DV08
- HPR2-150SW-DV08
- HPR2-100RDBL-DV08 (Mixed two-color type)

##### 12-Segment Types

- LDR2-120SW2-DV12

##### 16-Segment Types

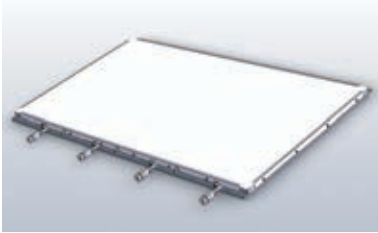
- LDR2-88RD2-DV16

[LDR2 Custom Ordered Base Light Unit Page](#) ▶ P.31

**Efficiently designed to set the light emission area and switch the light emission color. Delivers advanced light unit control in combination with a control unit.**

## Large Flat Light Units

### LDF-TP Series



#### LDF-TP-1100X600SW

Achieves higher output through the use of compressed air cooling. The light emitting section is configured with white SMD LEDs in a high-density layout.

#### Manufactured Products

- LDF-TP-1100X600SW
- LDF-TP-2000X1500SW

Ensures uniformity in the effective range with high output. Implements optimal measures for heat dissipation.

[TH2 Standard Flat Light Unit Page](#) ▶ P.83

## Coaxial Light Units (Changeable Irradiation Port Type)

### LFV3-RA Series

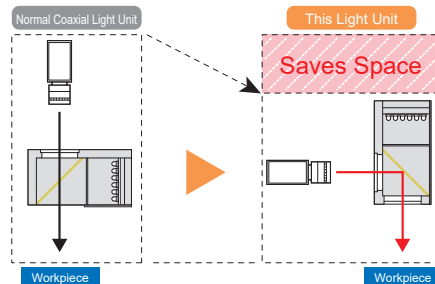


#### LFV3-35SW-RA24

Changes the position of the irradiation port of the normal coaxial light unit by 90°. Optimized products for use in test subject conveyance systems and environments with constrained camera installation conditions.

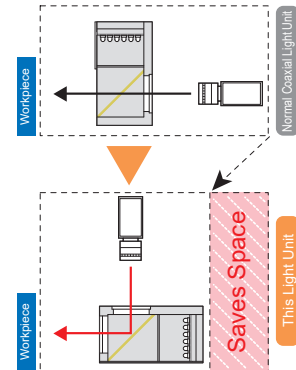
Note: Captured images will be mirrored.

#### 1. Reduces vertical installation space.



When compared to a normal coaxial light unit, this light unit helps reduce vertical installation space.

#### 2. Reduces horizontal installation space.



When compared to a normal coaxial light unit, this light unit helps reduce horizontal installation space.

[LFV3 Custom Ordered Base Light Unit Page](#) ▶ P.125

CCS offers optimal light unit designs for the installation conditions of cameras and light units.

# Examples of Custom Ordered Products

## Introduction to CCS Custom Ordered Products

Presenting examples of custom ordered light units manufactured by CCS in the past. We can manufacture a wide variety of light units to meet your needs.

### Infrared Light Units (1,200 nm / 1,450 nm / 1,550 nm)

#### IR Series



##### Bar type

Uses 1,200, 1,450, and 1,550 nm LEDs.

[LDL2 Custom Ordered Base Light Unit Page](#) ▶ P.61



##### Dome type

Uses 1,200 nm and 1,450 nm LEDs.

[HPD2 Custom Ordered Base Light Unit Page](#) ▶ P.103

#### Manufactured Products

##### Bar Light Units

- LDL-74X27IR1200
- LDL-74X27IR1450
- LDL-74X27IR1550

##### Dome Light Units

- HPD-100IR1450
- HPD-150IR1450
- HPD-400IR1450

CCS offers light units that feature optimal wavelength regions to fully utilize the capabilities of InGaAs cameras.

### Full Color (RGB) Light Units

[HPR2 Standard Full Color Light Units Product Page](#) ▶ P.47

[HPD2 Standard Full Color Light Units Product Page](#) ▶ P.103

#### FC Series



##### LDL2-146X30FC-WD

Bar light unit with a light emission width of 30 mm. Wide and narrow types can be selected for the directional characteristics of the LEDs.

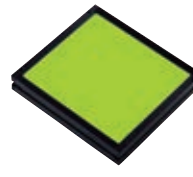
[LDL2 Custom Ordered Base Light Unit Page](#) ▶ P.61



##### LFV3-50FC

Full color coaxial light unit.

[LFV3 Custom Ordered Base Light Unit Page](#) ▶ P.125



##### TH2-100X100FC

Full color flat light unit.

[TH2 Custom Ordered Base Light Unit Page](#) ▶ P.83

#### Manufactured Products

##### Low-Angle Square Light Units

- FPQ3-48FC
- FPQ3-75FC

[FPQ3 Custom Ordered Base Light Unit Page](#) ▶ P.57

##### Coaxial Light Units

- Lfv3-CP-18FC
- Lfv3-34FC(A)
- Lfv3-35FC(A)
- Lfv3-50FC(A)
- Lfv3-70FC(A)
- Lfv3-100FC(A)
- Lfv3-130FC(A)
- Lfv3-200FC(A)
- Lfv3-50X100FC(A)

Single light units that control red, blue, and green to deliver the desired color of irradiated light.

### Special Wavelength Light Units (Yellow Light Units / Orange Light Units)

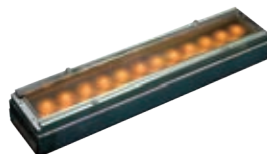
#### OR Series



##### LDR2-74-OR-LA

Low-angle ring light unit that uses LEDs with a peak emission wavelength of 590 nm.

[LDR2-LA Custom Ordered Base Light Unit Page](#) ▶ P.35



##### MLDL-325X70OR

Bar light unit in a IP67-rated waterproof specification.



##### TH2-100X100OR

Yellow flat light unit.

[TH2 Custom Ordered Base Light Unit Page](#) ▶ P.83

#### Manufactured Products

##### Ring Light Units

- LDR2-70-OR

[LDR2 Custom Ordered Base Light Unit Page](#) ▶ P.31

##### Bar Light Units

- LDL2-74X30-OR

[LDL2 Custom Ordered Base Light Unit Page](#) ▶ P.61

##### Spot Lights

- HLv2-22-OR590-3W

##### Line Lights

- LNSP-1000-OR

CCS also offers optimized products that use LEDs of specific wavelengths for special test applications.

## 12-V Light Units

### Ring Lights

#### LDR2 Series

[LDR2 Custom Ordered Base Light Unit Page](#) ▶ P.31



### Low-Angle Ring Lights

#### LDR2-LA Series

[LDR2-LA Custom Ordered Base Light Unit Page](#) ▶ P.35



### Diffused Ring Lights

#### HPR2 Series

[HPR2 Custom Ordered Base Light Unit Page](#) ▶ P.47



### Low-Angle Square Lights

#### FPQ3 Series

[FPQ3 Custom Ordered Base Light Unit Page](#) ▶ P.57



### Bar Lights

#### LDL2 Series

[LDL2 Custom Ordered Base Light Unit Page](#) ▶ P.61



### Flat Lights

#### TH2 Series

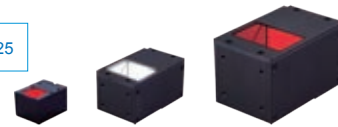
[TH2 Custom Ordered Base Light Unit Page](#) ▶ P.83



### Coaxial Lights

#### LFV3 Series

[LFV3 Custom Ordered Base Light Unit Page](#) ▶ P.125



## Lineup

Series Name	Model Name	LED Color	Power Consumption
LDR2 (8 models)	LDR2-32RD2-12V	Red	1.6 W
	LDR2-32SW2-12V	White	1.9 W
	LDR2-42RD2-12V	Red	2.1 W
	LDR2-42SW2-12V	White	2.7 W
	LDR2-50RD2-12V	Red	3.8 W
	LDR2-50SW2-12V	White	3.8 W
	LDR2-70RD2-12V	Red	6.1 W
	LDR2-70SW2-12V	White	7.6 W
LDR2-LA (6 models)	LDR2-74RD2-LA-12V	Red	4.6 W
	LDR2-74SW2-LA-12V	White	5.7 W
	LDR2-100RD2-LA-12V	Red	9.1 W
	LDR2-100SW2-LA-12V	White	12 W
	LDR2-132RD2-LA-12V	Red	13 W
	LDR2-132SW2-LA-12V	White	16 W
HPR2 (4 models)	HPR2-100RD-12V	Red	20 W
	HPR2-100SW-12V	White	23 W
	HPR2-150RD-12V	Red	28 W
	HPR2-150SW-12V	White	27 W
FPQ3 (3 models)	FPQ3-32RD-12V	Red	3.8 W
	FPQ3-32SW-12V	White	7.1 W
	FPQ3-48RD-12V	Red	5.1 W
LDL2 (14 models)	LDL2-33X8RD-12V	Red	1.0 W
	LDL2-33X8SW2-12V	White	2.6 W
	LDL2-41X16RD-12V	Red	1.9 W
	LDL2-41X16SW2-12V	White	3.8 W
	LDL2-41X16RD-WD-12V	Red	1.9 W
	LDL2-41X16SW2-WD-12V	White	3.8 W

Series Name	Model Name	LED Color	Power Consumption	
LDL2 (14 models)	LDL2-74X30RD-12V	Red	5.7 W	
	LDL2-74X30SW2-12V	White	12 W	
	LDL2-74X30RD-WD-12V	Red	5.7 W	
	LDL2-74X30SW2-WD-12V	White	12 W	
	LDL2-119X16RD-12V	Red	5.7 W	
	LDL2-119X16SW2-12V	White	12 W	
	LDL2-119X16RD-WD-12V	Red	5.7 W	
	LDL2-119X16SW2-WD12V	White	12 W	
	TH2 (6 models)	TH2-27X27SW-12V	White	2.9 W
		TH2-43X35SW-12V	White	4.8 W
TH2-51X51SW-12V		White	8.2 W	
TH2-63X60SW-12V		White	9.7 W	
TH2-83X75SW-12V		White	16 W	
TH2-100X100SW-12V		White	25 W	
LFV3 (6 models)		LFV3-CP-18RD2-12V	Red	3.3 W
	LFV3-CP-18SW-12V	White	3.6 W	
	LFV3-35RD-12V(A)	Red	4.1 W	
	LFV3-35SW-12V(A)	White	3.7 W	
	LFV3-50RD-12V(A)	Red	9.1 W	
	LFV3-50SW-12V(A)	White	11 W	

External dimensions, weight, and options (diffusion plates and polarizing plates) are the same as 24-V light units.

Use 12-V extension cables (CB and RCB Series).

# Examples of Custom Ordered Products

## Recommended Custom Ordered Products

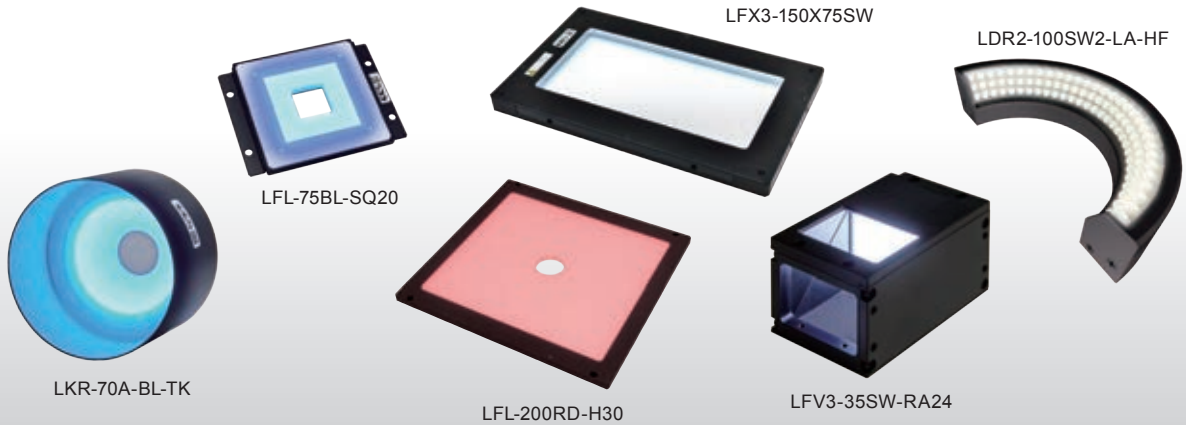
Size Change

Change to Illuminating Angle

Shape Change

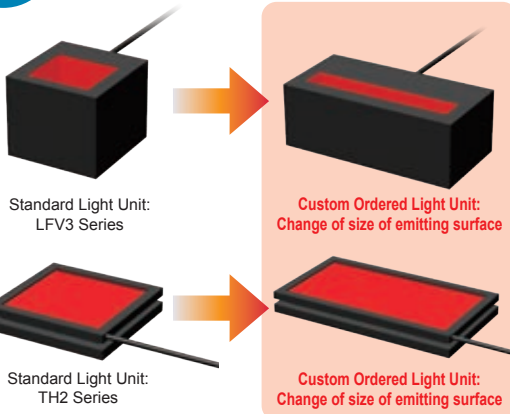
Increased Brightness

Please feel free to consult with us about anything else.



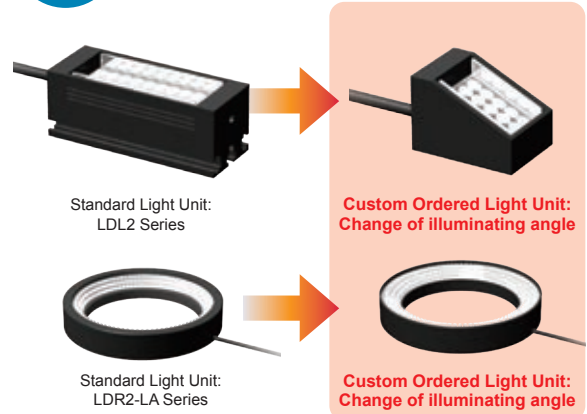
CASE.1

With a standard product, there are no light units with a length or thickness that is suitable for the workpiece or device



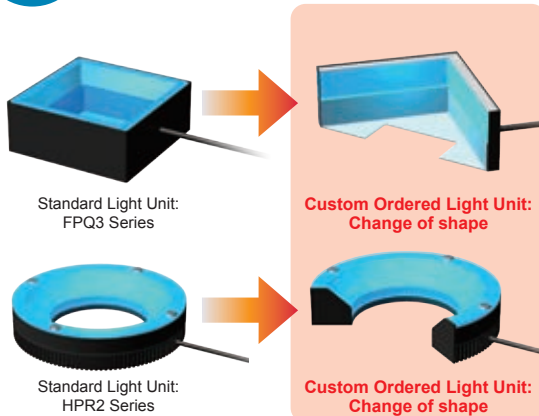
CASE.2

When the size is good but you want to illuminate the workpiece at a different angle



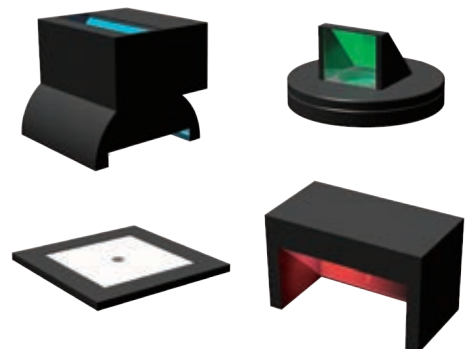
CASE.3

With a standard product, light is irradiated up to the unnecessary part and contrast drops



CASE.4

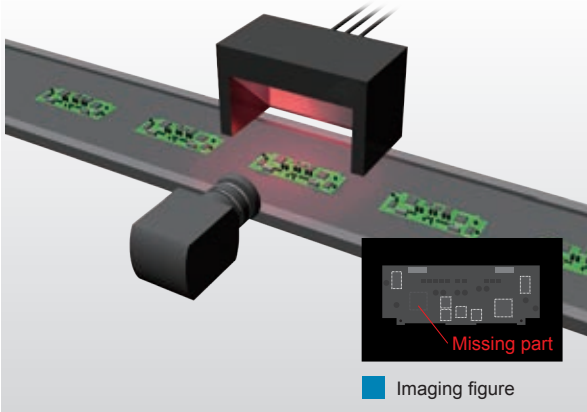
Examples of other custom ordered items



## We Suggest Light Units That Are Optimal for Your Inspection Procedures and Environment

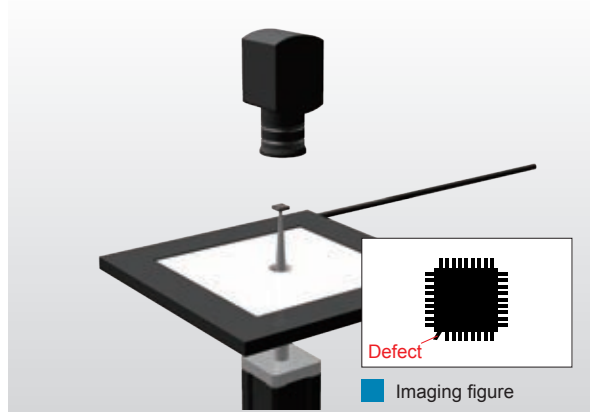
### Light Units for External Inspection of Electronic Parts on Circuit Boards

The light unit design is optimized to match your desired camera position or split imaging. Changing the position of the irradiation port of coaxial lights and distributed control of the emitting surface are achieved.



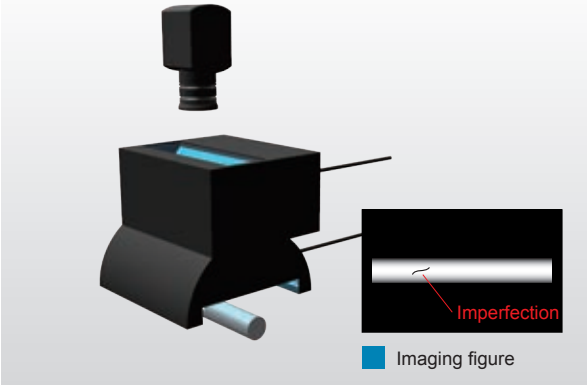
### Light Units for External Inspection of Minute Electronic Parts

Creating a hole in the center of a flat light provides a passage for the operating section of a suction nozzle. This can be used for external inspection of electronic parts held by suction at the tip.



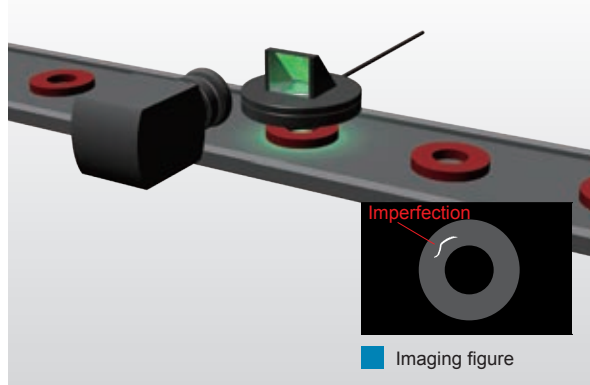
### Light Units for Damage Inspection of Metal Rods

You can combine coaxial and dome lights to create an appropriate configuration for imaging using line sensor cameras. They can be used for damage inspection of metal rods with glossy surfaces.



### Light Units for External Inspection of Metal Parts

Light unit design is optimized to match your camera installation requirements. Allows for the combining of a mirror with a low-angle ring light.



## Examples of Items That Can Be Custom Ordered

### Light Unit

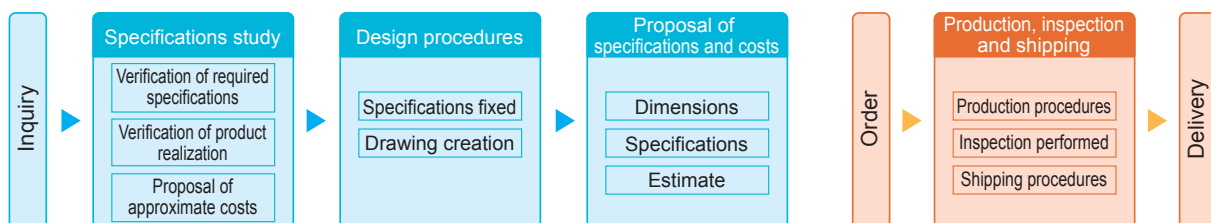
- Size
- Width and thickness
- Brightness
- Illuminating mechanism
- Wavelength and color temperature
- Mounting position and securing method
- Cable length
- Connector format

### Other products

- Changes in specifications of control unit
- Changes in cable specifications
- Optional products can also be custom ordered.

Please feel free to inquire about anything else that is not mentioned above.

## Flow of Custom Orders



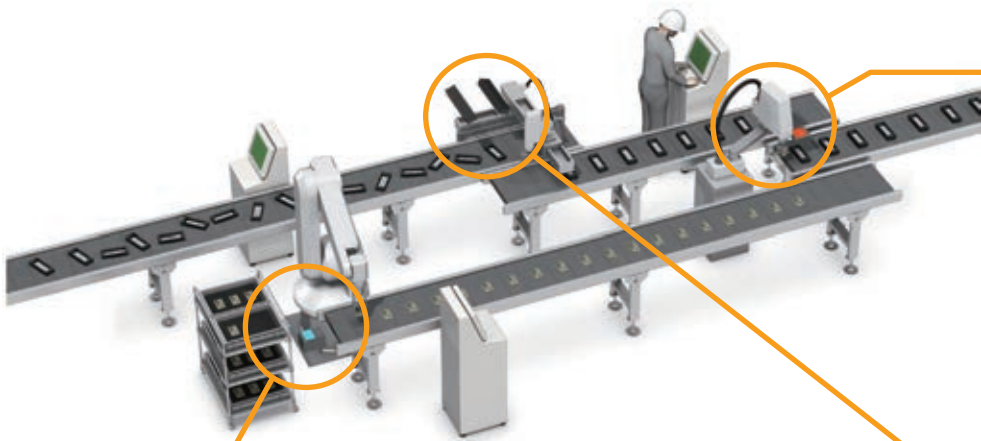
# Examples of Application

## LED lights suitable for robot vision systems



Conceptual image

CCS Light Units for Robot Vision Can Be Used in a Variety of Situations.



### ■ Line-Mounted Light Units

Light units optimized to the type of inspection are indispensable for line-mounted cameras used to inspect the appearance of picked up workpieces.

We offer optimum light units based on our knowledge of lighting cultivated in visual inspections.

Bar Light LDL2



Coaxial Light LFB3



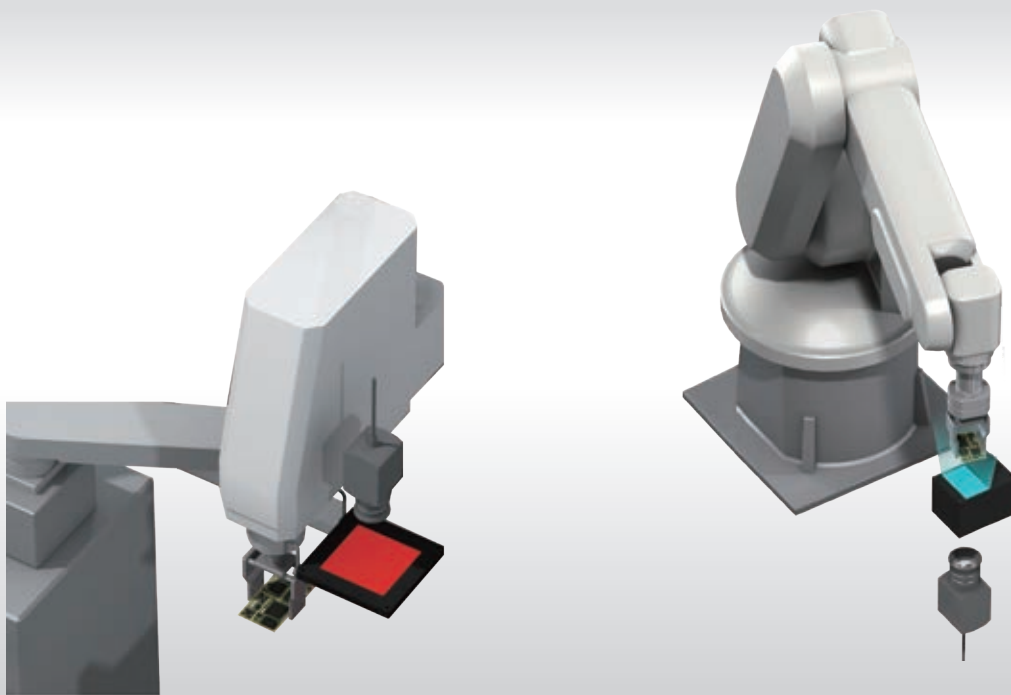
Diffused Ring Light HPR2



Dome Light HPD2

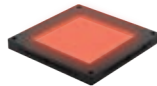






### Hand-Eye Light Units

Compact, light-weight light units that will not interfere with operation are available for hand-eye systems with built-in cameras on robot hands.



**Flat Dome Light LFX3**  
13 mm thick light units with a dome-light effect at short distances and a coaxial-light effect at long distances from workpieces. Works well for imaging glossy workpieces.



**Diffused Ring Light HPR2**  
General-purpose ring lights that achieve brightness and ease-of-use. Easy-to-use diffused light units for a variety of applications, from front/back determination and reading symbols to visual inspections.



### Top-Mounted Light Units

We offer light units for top-mounted cameras frequently used with pick-and-place machines that can brightly illuminate the picking area, even when mounted at the same height as the camera.



**Large Bar Light HLDL3**  
Bar lights that can brightly illuminate a wide area at a distance. Suitable for lines where the operating range of robots is wide and for high-speed lines.



**Long-Distance Light LDLB**  
High-intensity, long-distance light units that can illuminate workpieces at 2 m. Dust-proof IP67 models also available.

## Optimized Solutions with Custom Light Units

- Designs for screw fall prevention
- Use robot cables with superior flexibility and durability
- We can custom build light units for your needs.  
(Emitting surface size, emission wavelength, brightness, illuminating mechanism, cable length, connector shape, mounting method, and other specifications.)

#### HPR2-75SW-QPRCB3



- Measures implemented to prevent screws from falling
- Threaded cover
- Robot cable 3 m

#### HPR2-75SW-QPLMRCB3



- Measures implemented to prevent screws from falling
- Threaded cover
- Robot cable 3 m

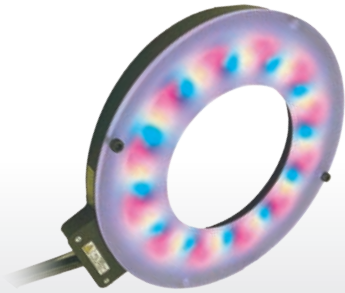
#### Custom Ordered Light Units

We can manufacture custom light units to meet your needs. We can also offer optimum light units from examples of custom ordered light units we have manufactured in the past. Contact your CCS sales representative for more information.

## Imaging solution with 8 types of wavelength

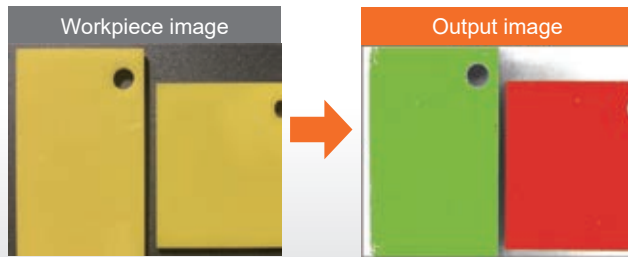
**Built to order**

This is a made-to-order product. For queries and details, contact your CCS sales representative.



HPR2150VL405IR94STSP  
(visible light)

### Imaging picture (resin color plate)



Inspections that are usually difficult such as foreign substance detection and color sorting are possible.

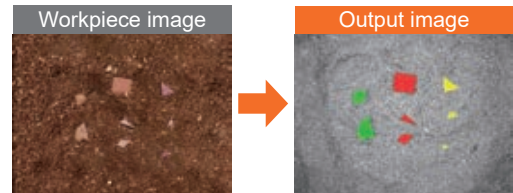
### Features

The use of different wavelengths enables the identification of objects that are difficult to be identified with a single wavelength.

By using sequential LED light with different wavelengths for imaging, it is possible to acquire an image for each wavelength.

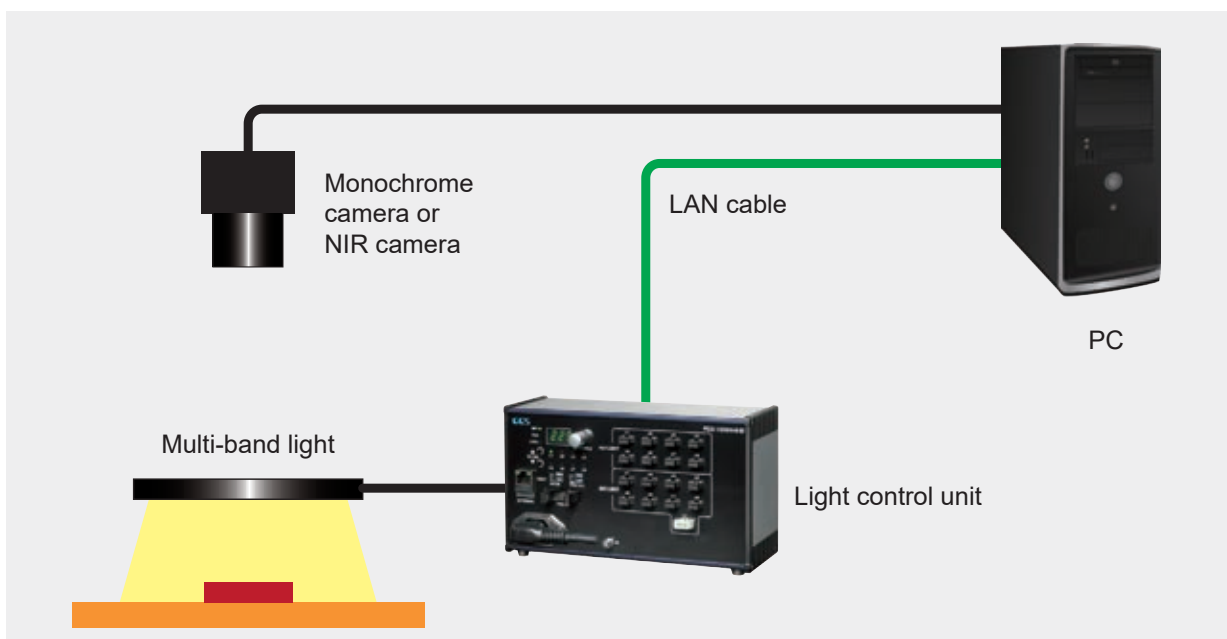
Classification is possible by acquiring multiple images with different illumination wavelengths and performing image processing based on the difference in features.

### Imaging picture (inspection of contaminants in coffee)

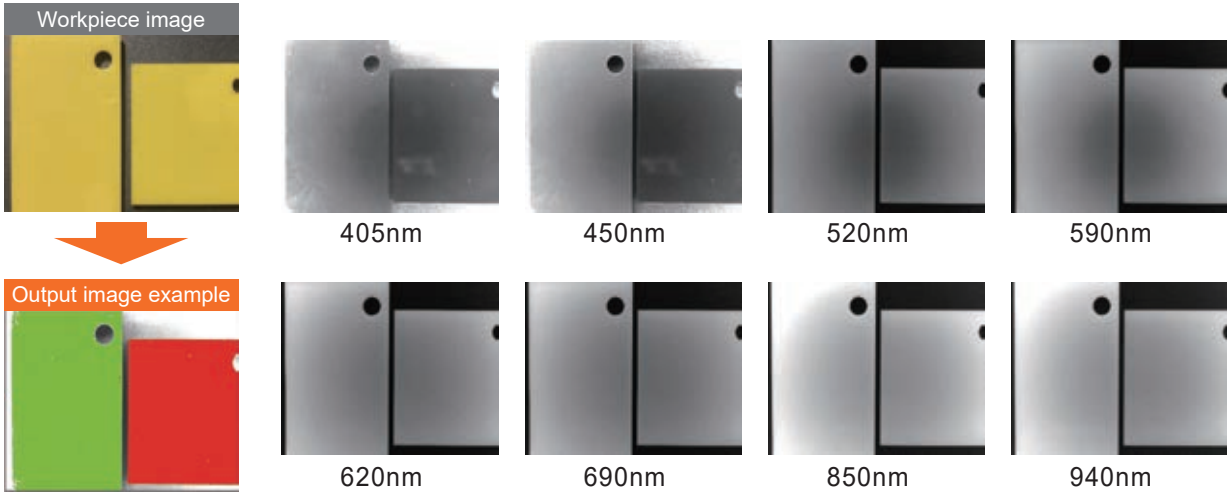


[Red] Paper [Green] Cookie [Yellow] Film

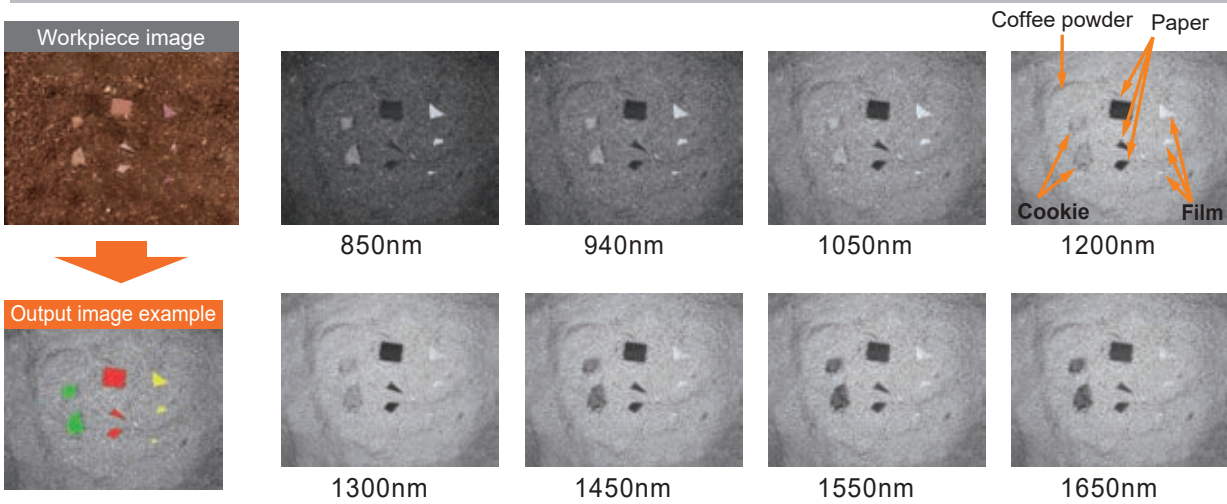
### System Configuration Example



► Imaging Example: Visible Light for Resin Color Plate

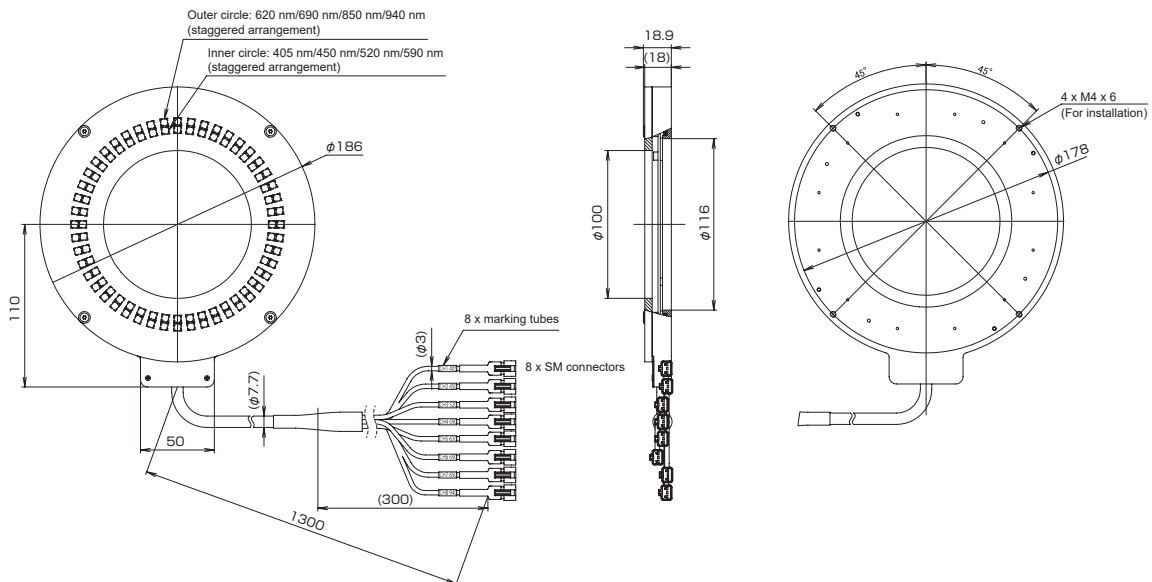


► Imaging Example: NIR/SWIR Light for Contaminants in Coffee Powder (Cookie, Paper, Film)



► Dimensions (mm)

HPR2150VL405IR94STSP



# Hyperspectral Imaging



Analyzes wavelengths to visualize subtle differences in color, materials, and contaminants



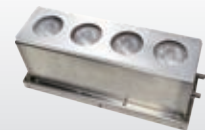
LNSP2-300IRW55-BTSP  
(custom-order product)



EFFI-FLEX-HSI



TH-200X30CIR



LDL-222X42CIR-LACL

## ▶ What is Hyperspectral Imaging

- Hyperspectral imaging is a technology that uses a hyperspectral camera capable of acquiring images with high wavelength resolution and corresponding illumination to acquire images.
- By capturing and visualizing the reflected light of an object, it can perform inspections that are difficult to achieve with conventional cameras, such as component analysis, foreign material detection, and high-precision color identification.

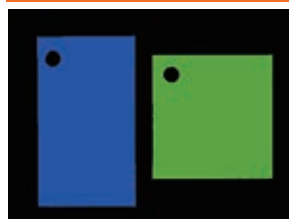
## ▶ Application Example

### Imaging Example: Color Identification of Plastic

Imaging with a color camera

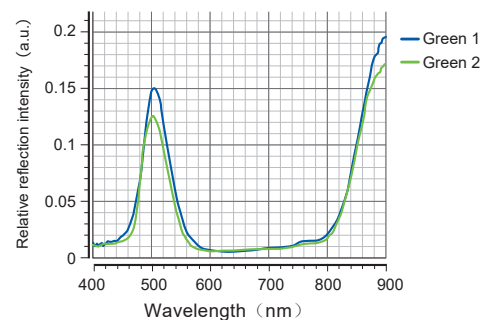


Output image



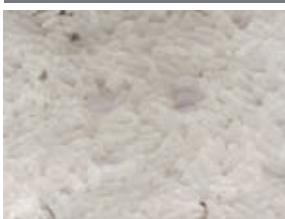
Hyperspectral imaging light classifies subtle color differences.

• Reflection spectrum of each color



### Imaging Example: Inspection of Contaminants in White Rice

Imaging with a color camera



Output image



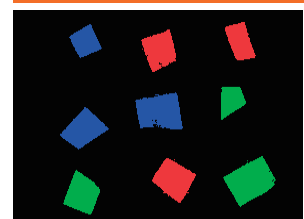
Blue: Rice, Green: Paper, Red: Resin  
Identify similar color contaminants.

### Imaging Example: Color Identification of Plastic

Imaging with a color camera



Output image



Blue: PS, Green: PET, Red: PP  
Identify the difference of three materials.

## ▶ Lineup

- Broadband spectrum from 400 to 1000 nm has been achieved by LED light
- Near-infrared light output is greatly improved to match the sensitivity characteristics of hyperspectral cameras
- Wavelength, shape and size of the lighting can be customized according to the applications

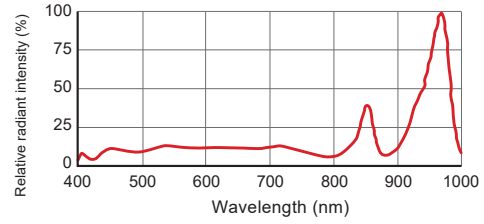


HLDL3-300X28IRFSWDFW  
(custom-order product)



LNSP2-300IRW55-BTSP  
(custom-order product)

- Output wavelength and wavelength range used for imaging



## CIR Series

- Wavelength characteristic from visible to SWIR wavelengths (around 2500 nm)
- The special halogen lamp achieves long life
- Shape and size of the lighting can be customized according to the applications

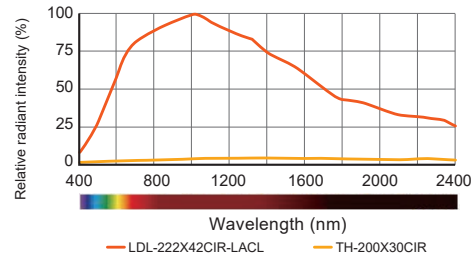


TH-200X30CIR



LDL-222X42CIR-LACL

- Output wavelength and wavelength range used for imaging

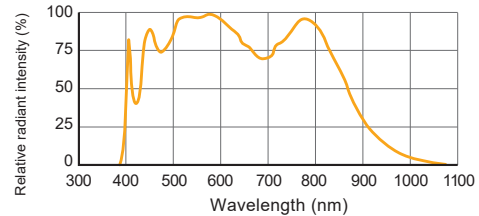


## EFFILUX LED Light

- Entire visible wavelength (400 to 900 nm)
- Illumination ranges can be adjusted by positioning the condenser lens inside the light
- IP67 type and cylindrical lens type are also available



- Output wavelength and wavelength range used for imaging

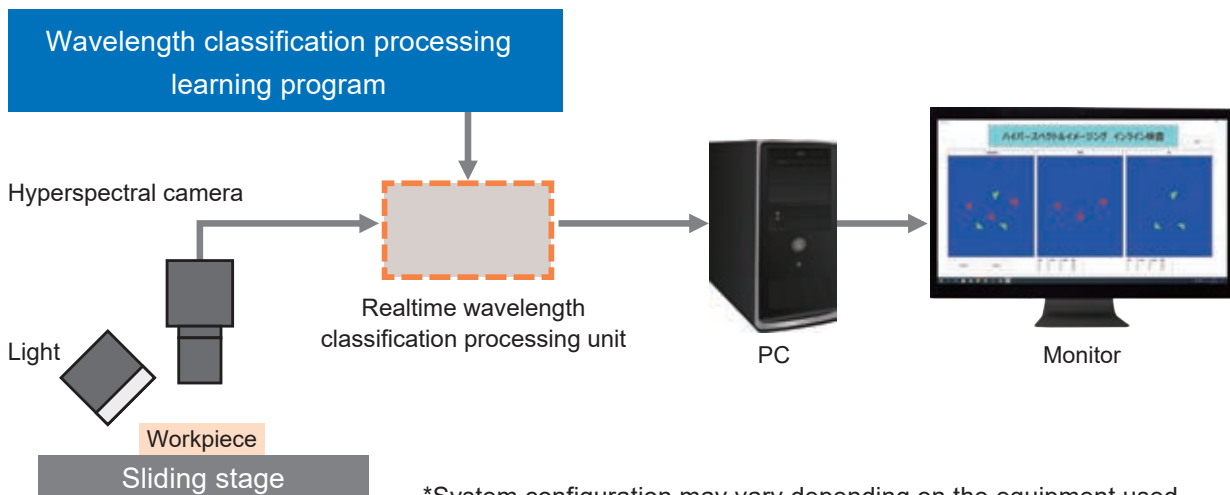


EFFI-FLEX-HSI



EFFI-FLEX-HSI Cylindrical

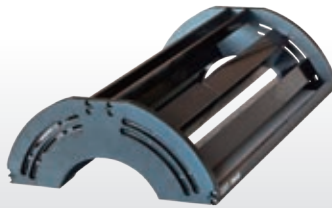
## ▶ Example System Configuration



\*System configuration may vary depending on the equipment used.

# Line Scan Camera + Photometric Stereo

Highlight wrinkles and uneven surfaces in a single stage by imaging light effects from 4 directions and removing patterns on the workpiece



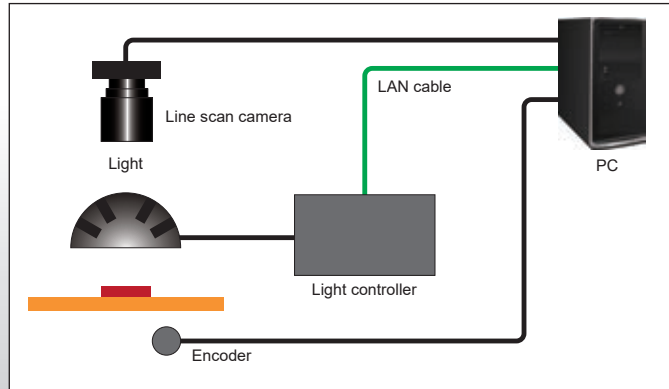
**Angled lighting from 4 directions**

\*Size of the lighting can be customized according to the applications

**Built to order**

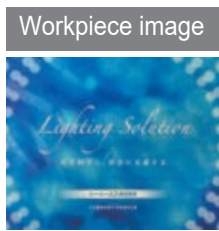
This is a made-to-order product. For queries and details, contact your CCS sales representative.

## System Configuration Example

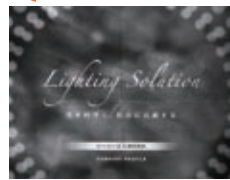


## ► Imaging Example

### Inspection of wrinkles and folds in printed paper



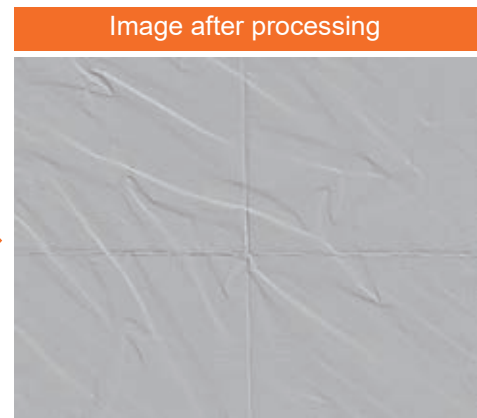
Top Left Light ON



Top Right Light ON

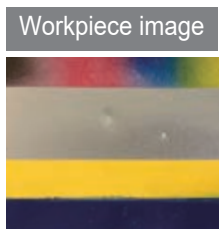


Imaged by illumination from 4 directions  
Bottom Left Light ON Bottom Right Light ON

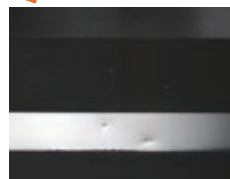


Capable of canceling prints and acquiring images that emphasize wrinkles and uneven surfaces.

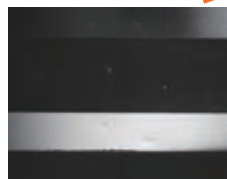
### Inspection of blowholes and dents in metal plates



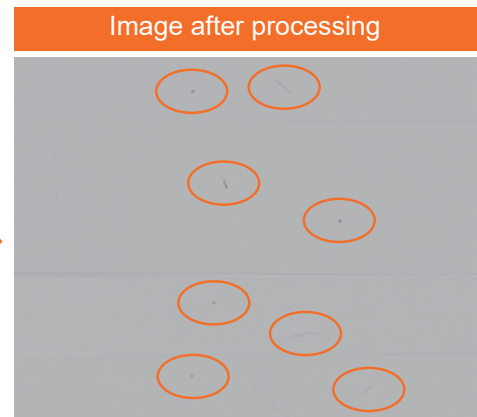
Top Left Light ON



Top Right Light ON



Imaged by illumination from 4 directions  
Bottom Left Light ON Bottom Right Light ON



Capable of canceling surface patterns and acquiring images that emphasize blowholes and dents.

# Visual Inspection Improvement Solution

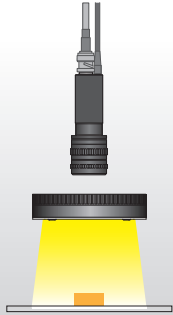
CCS Improved visual inspection

▶ Search

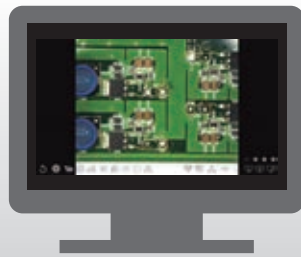


Improves accuracy and efficiency for visual inspection.  
Increases productivity by reducing workload on site.

Imaging with a camera



Checking from the monitor display



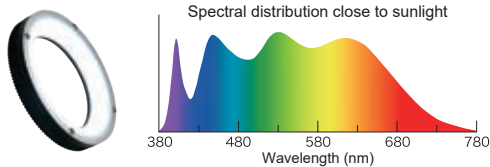
Examples of Application

## ▶ Equipment and expertise for visual inspection

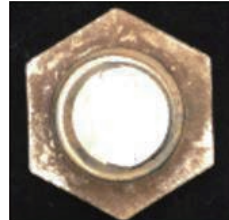
### ● Selection of suitable lights based on the inspection

Wide lighting selection of over 1,600 models are available. Additionally, natural light LED lights are available for more accurate color reproduction than general white LEDs.

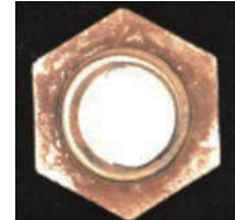
#### ■ Natural Light LED Light



■ General White LED Light

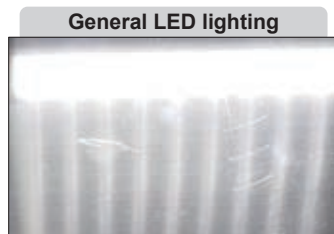


■ Natural Light LED Light



#### ■ Organic LED (OLED) lighting for visual inspection

Example : Inspection of the appearance of a mirror aluminum plate



Because the light is highly uniform and diffused, there is little influence from reflected light, and the scratches are clearly visible.



This light is not compliant with CE and other regulations of Europe and the Americas. Contact our local sales office for details.

### ● Selection of suitable imaging equipment based on the inspection

Testing equipment set  
▶ P.380



Camera



Lens



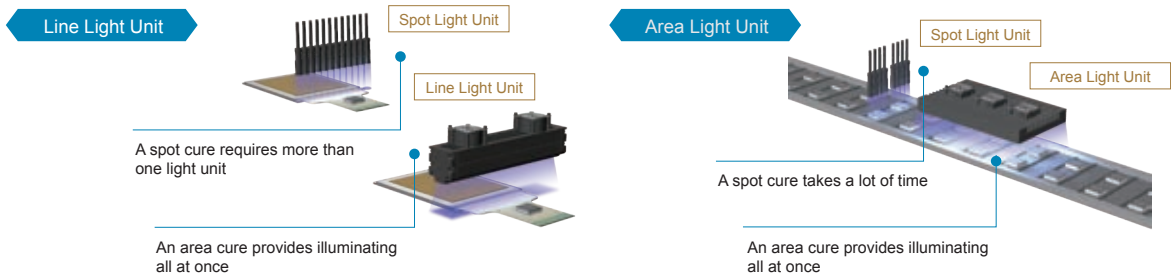
# Information about UV Curing

## High-Output UV-LED Lights



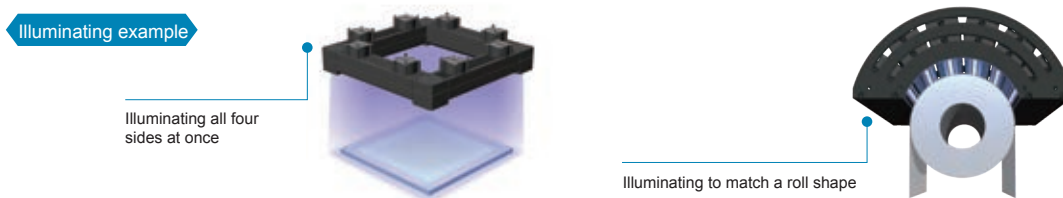
## New Solutions Provided by Area Cures (Wide Range)

You can use area and line lights to efficiently illuminate wide-range areas that are difficult to illuminate using spot lights. The area cure serves to reduce man-hours as well as the number of light unit.



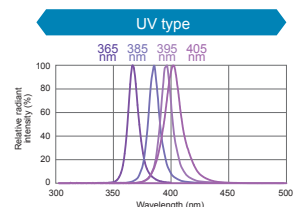
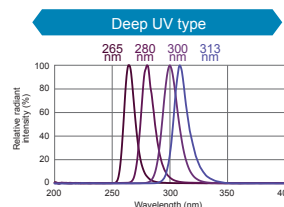
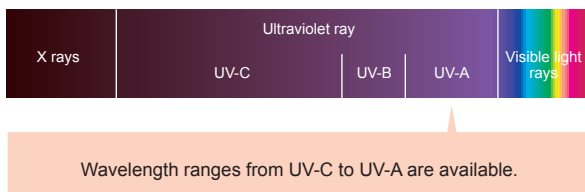
## Custom Orders

Based on the technology we have accumulated producing light units for image processing, we can provide high-output UV-LED lights that meet a wide variety of requirements. To meet those requirements, we have our standard line and area type lights, and can provide any other shape or format by custom order.



## Range Covered by CCS's UV-LED Lights

Various peak wavelength fitting your needs are available. Mixed wavelengths are also available.





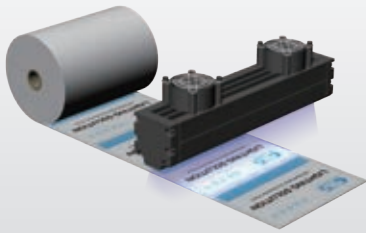
## Examples of Use of Ultraviolet Curing

You can use area and line lights to efficiently illuminate wide-range areas that are difficult to illuminate using spot lights. The area cure serves to reduce man-hours as well as the number of light unit.

### Curing of Label and Sticker Ink

■ UV ink curing

Line type

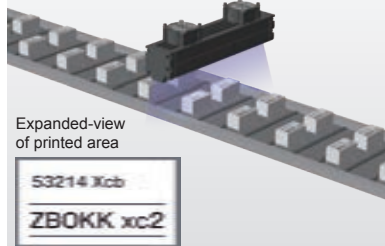


Labels and stickers

### Curing of Electronic Parts Printing

■ Printing ink drying

Line type



Electronic part (relays)

### Curing of Label and Sticker Ink

■ UV ink curing and surface coating

Area type

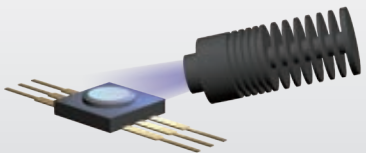


CD and DVD discs

### Camera Lens Adhering

■ Curing adhesive

Spot type

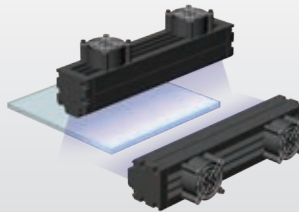


Lens units

### Adhering and Sealing Panels

■ Gluing together of panels

Line type

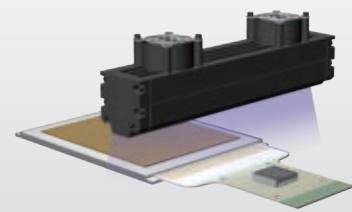


Panels

### Electronic Parts Adhering

■ Adhering of liquid crystals and substrates

Line type



Liquid crystal substrates

## Merits of Ultraviolet Irradiation Using LEDs

### Reduce system size

Our LED systems consist only of LED lights and control units, allowing you to create a compact system.

### Reduced running costs

Due to the long service life of LEDs, lamp replacement costs and replacement labor times are reduced, as well as management man-hours.

### Great responsiveness and stability

The excellent ON/OFF responsiveness of LED lights allow for illuminating control that matches the given medium.

# Information about Natural Light

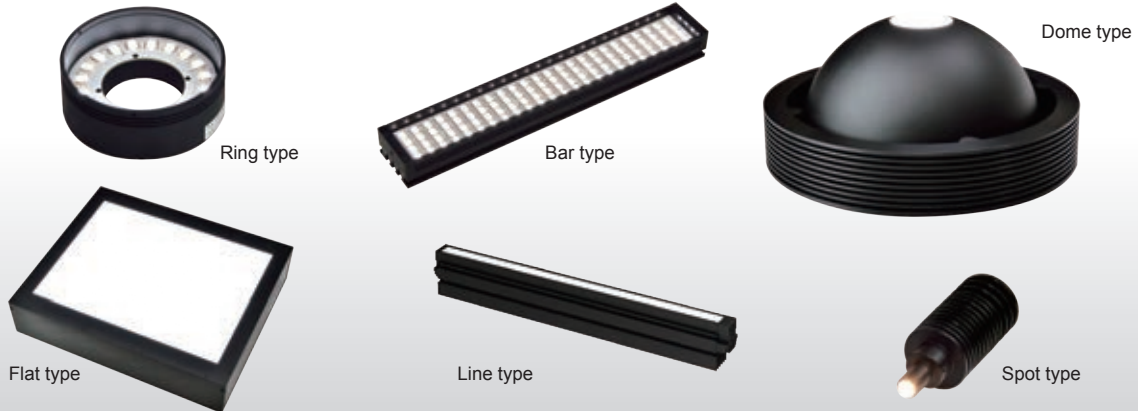
## High Color Rendering (Natural-Light) LED Lights

Color determining inspection

Colorimetric inspection

Color evaluation inspection

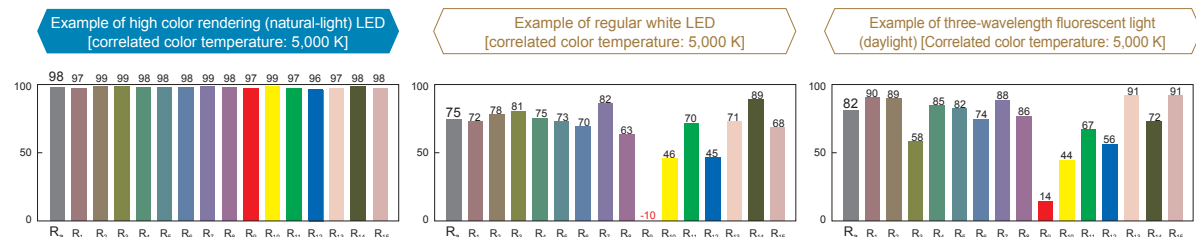
and other applications



## What are High Color Rendering (Natural-light) LED Lights?

### Achievement of the General Color Rendering Index at Ra 98

CCS's high color rendering (natural-light) LED Lights use our specially developed LEDs that reproduce natural-light colors that are close to standard light sources (such as sunlight or white light bulbs). At Ra 98, we have achieved the general color rendering index (CRI), demonstrating just how close the light is to sunlight. Additionally, even when the light color is changed, our unique technology makes it possible to maintain a CRI of 95 or more. In addition to the high general CRI, CCS has also achieved high special CRI values, such as those for primary colors and flesh tones. Specifically for red ( $R_3$ ), yellow ( $R_{10}$ ) and blue ( $R_{12}$ ), you can see colors rendered to a level that was not possible for previous light sources.\*



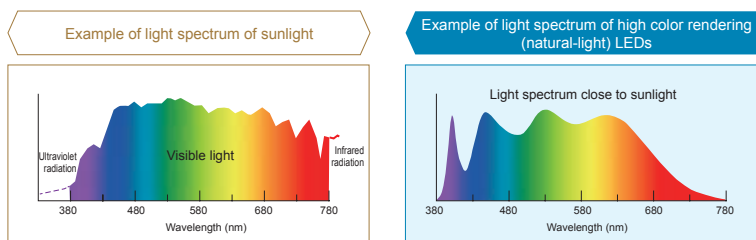
\* A color rendering index is used to evaluate the ability to render each of 15 colors against a standard value of 100.

General color rendering index  $R_a$ : Avg. value of  $R_1$  to  $R_8$

Special color rendering index  $R_i$ : Individual evaluation of colors  $R_1$  to  $R_{15}$  (evaluation gives precedence to  $R_3$  to  $R_{15}$ ). (According to JIS Z 8726, "Method of Specifying Colour Rendering Properties of Light Sources".)

## Light Spectrum Characteristics Close to Sunlight

High color rendering (natural-light) LEDs produce a smooth continuous light spectrum characteristics across all wavelengths that is similar to the light spectrum of sunlight. While normal white LEDs and fluorescent lights have some wavelength regions that are very strong or even missing, CCS's high color rendering LEDs cover almost the entire range of visible light.

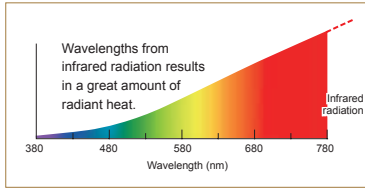


Example of light spectrum of sunlight

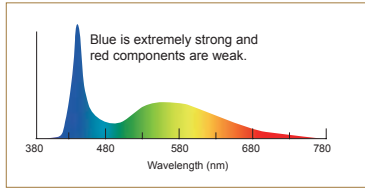
Example of light spectrum of high color rendering (natural-light) LEDs

### Light spectrum of other light sources

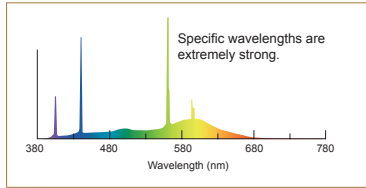
Example of light spectrum of halogen bulb



Example of light spectrum of regular white LED light



Example of light spectrum of three-wavelength fluorescent light



### What are Color Rendering Properties?

“Color rendering” refers to how the way the colors of an object are affected when a light or other light source illuminates said object, and “color rendering properties” are the light source properties that determine how the colors of the object will appear.

In general, a “good light source of color rendering properties” refers to a light source that can faithfully reproduce the color tint when illuminated by a standard light source\* with the same correlated color temperature.

In Japan, the color rendering indices (Ri and Ra) are defined according to JIS standards and the way objects appear are expressed numerically with a maximum of 100. The higher the value is, the closer the colors of the object appear to the natural colors.

\* Refers to sunlight (CIE daylight), white light bulb light and similar types of light.

### Comparison of color rendering properties



High color rendering (natural-light) LED Light



Standard white LED

## Tuning the Correlated Color Temperature and Light Spectrum

CCS's high color rendering (natural light) LED lights can be tuned for correlated color temperature and spectral distribution according to customer requests. We provide appropriate LED lights through a production system that integrates everything from LED device development to commercialization.

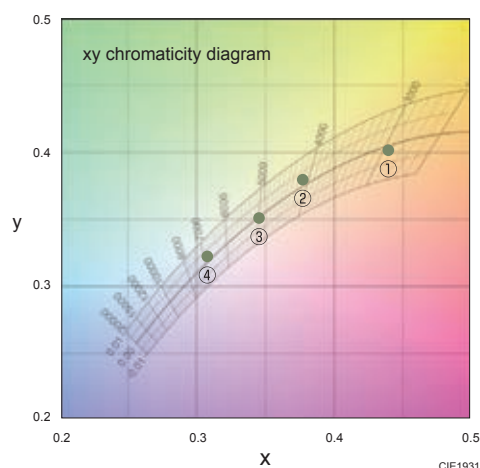
### Tuning Examples

- Correlated color temperature close to illuminant A (2,856 K)
- Correlated color temperature close to illuminant D65 (6,504 K)
- Correlated color temperature of 5,500 K
- Correlated color temperature of 2,700 or 5,000 K
- Light spectrum with few green wavelength components
- Products to prevent variations in chromaticity

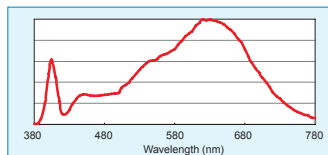
### Our specially developed high color rendering (natural-light) LED devices



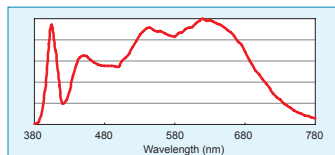
### Example of tuning the correlated color temperature and light spectrum



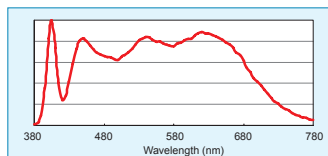
① Correlated color temperature: 2,800 K, General color rendering index: Ra 97



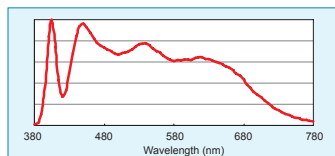
② Correlated color temperature: 4,000 K, General color rendering index: Ra 97



③ Correlated color temperature: 4,700 K, General color rendering index: Ra 97



④ Correlated color temperature: 6,500 K, General color rendering index: Ra 97



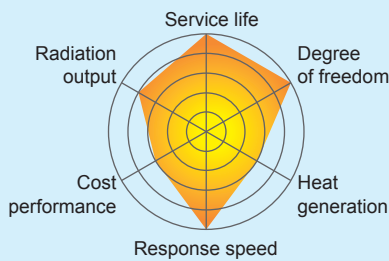
Y axis: Relative radiant intensity

## LED Characteristics

- High degree of freedom in lighting design
- Long service life
- Fast response
- Selectable color
- Low total running cost

## Comparison of Light Sources for Image Processing

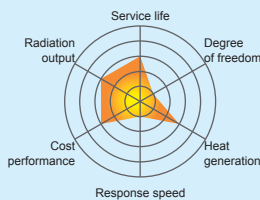
### LED



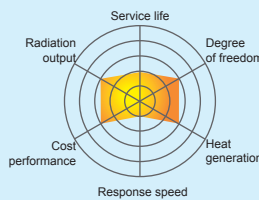
The characteristics of LED Lights are that they are compact, save energy, and have a long service life and a high degree of design freedom. The product can be utilized to design lights suitable for various workpieces (samples).

### Other main light sources

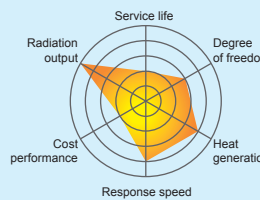
#### Fluorescent lamp



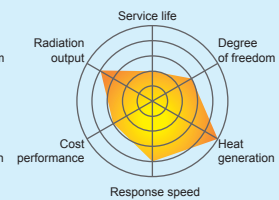
#### Halogen bulb



#### Xenon lamp



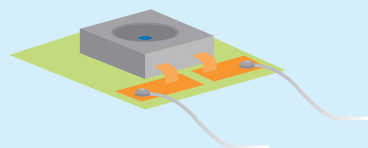
#### Metal halide



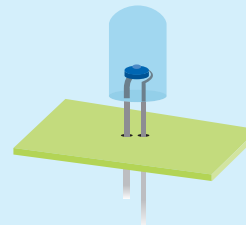
## LED Type

Although the emitting principles are basically the same, they are available in the following types of shapes.

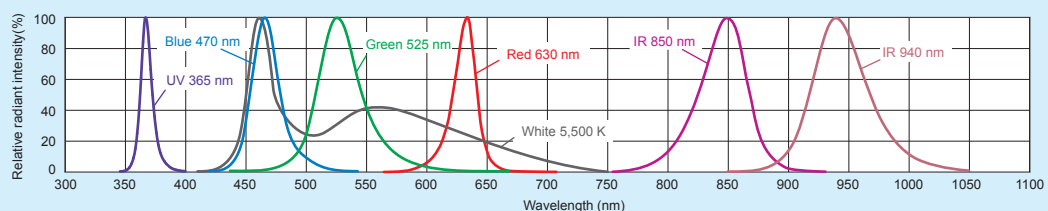
### Surface-mounted (high-watt)



### Cannonball shape (low-watt)



## Light Spectrum (representative sample of the products in this catalog)



## ■ Skillful Use of LED Lights

### The service life of LED Lights is shorter at high temperatures

Using LEDs at high temperatures for an extended period of time will cause them to deteriorate and the radiation output will decline. (The normal radiation output will not return even after they cool down.)

### How to prevent LED deterioration and reduction in radiation output due to heat generated by LEDs

#### Avoid using at the maximum intensity

When used with a low control unit intensity value, the light unit is supplied with a lower amount of current, which therefore reduces the heat given off as well as LED deterioration. As a guideline, we recommend that you set the intensity value low at first and then turn it up gradually as the radiant output of the light unit decreases.

#### Turn on the light only when capturing images

LED lights can withstand being turned on and off frequently. Turning on the light unit only when taking images using a strobe emitting or external signal input will reduce heat generation, provide a more stable radiation output, and increase the service life of the light unit.

## ■ Important Points of LED Lights

#### LED service life

Unlike a light bulb, an LED Light does not burn out suddenly but rather gradually deteriorates. Replace when captured images are dark and increasing the intensity value does not improve the conditions.

#### LED variations

LED Lights have different individual radiant quantities. There are also differences in the emitted color.

#### Wavelength shift

The LED emission spectrum varies due to ambient temperature and heat generated when energized. Temperature rising causes a shift towards the long-wavelength side.

## ■ Items You Must Check When Selecting a Light Unit

#### ■ Workpiece (sample) shape, conditions, color and related items

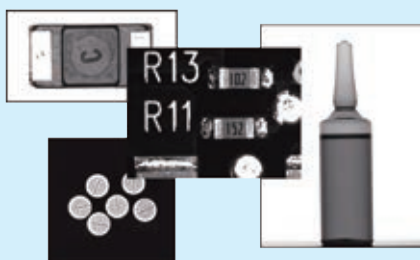


#### ■ Applications

External inspection	Part count inspection
Character recognition	Liquid volume inspection
Foreign material inspection	Detection inspection
Dimension measurement	Code recognition

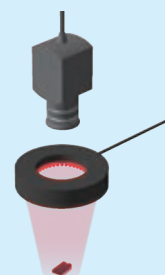
Etc.

#### ■ Large field of view (resolution)



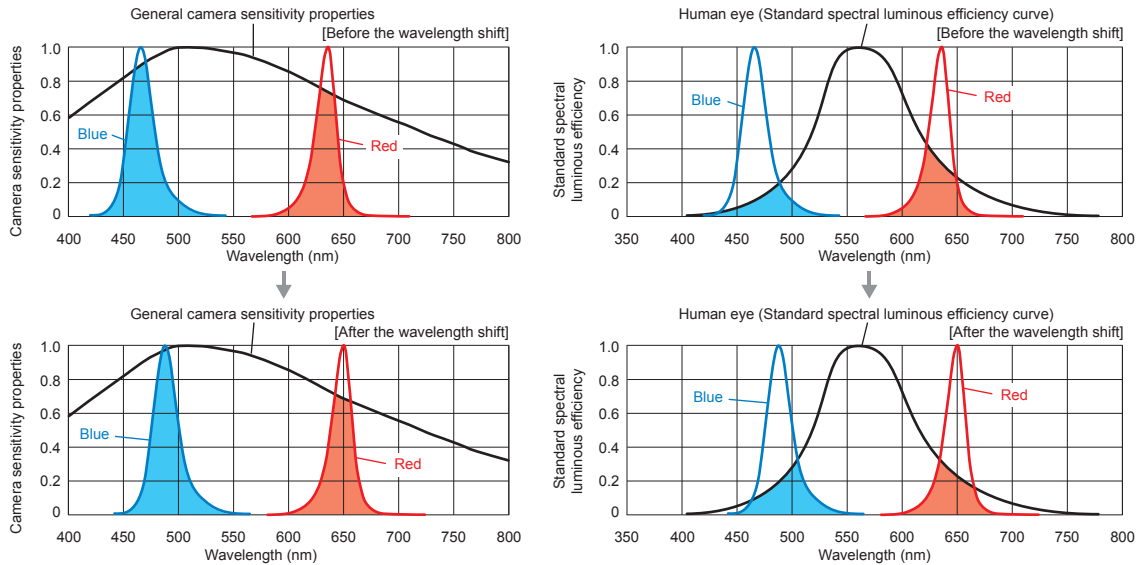
#### ■ Installation conditions and ambient environment

- Production line conveyor speed
- Types of surrounding devices and similar items
- Separation of light units and workpiece



## Changes in Brightness for Camera and the Human Eye

By only slightly shifting the wavelength of blue or red, the value for the human eye (illuminance and luminance) changes greatly.



## Effective Field of View of Coaxial Lights

Figure 1 shows a cross-section of a coaxial light. Light from the LED is reflected using a half-mirror, so that the position of the emitting surface can be treated as if it were directly behind the mirror (See "Virtual emitting surface" in the figure). In this case, the distance from the emitting surface to the workpiece is  $LWD'$ .

The effective field of view of a coaxial light is determined by 1) the LWD (distance from the light unit to the workpiece) and 2) the WD (distance from the workpiece to the camera). Figure 2 shows how to determine the field of view "V" when the WD is held constant and the LWD (distance to the light unit) is varied. The following is an explanation of what the effective field of view will be when the virtual emitting surface is at positions A and B.

In the case of position A, if we assume that the workpiece is a reflecting surface, we can say that there is an emitting surface at A opposite to the workpiece (position A' of the LWD'a distance). Therefore, when the workpiece is viewed through the camera, it appears as if the emitting surface is at A', and thus the effective field of view is  $V_a$ .

In the same way, in the case of B, the emitting surface is at B' and the effective field of view is  $V_b$ . Comparing  $V_a$  to  $V_b$ , we find that  $V_a$ , which has a shorter LWD, has a greater effective field of view. In this way, the effective field of view grows larger as the LWD becomes smaller.

### What is the effective field of view?

For example, when reading characters engraved on a shiny piece of metal, if we assume that the virtual emitting surface is at position B, the effective field of view of  $V_b$  will be determined, in regards to the camera field of view V as shown in Figure 3 below, by the virtual emitting surface position B'. For this reason, only the letters CDEFG will be visible as dark letters against a light background, and the letters AB and HI, which appear dark against a dark background, will not be discernible. In this way, the effective field of view  $V_b$  is smaller than the field of view V.

Figure 1. Cross-section of Coaxial Light

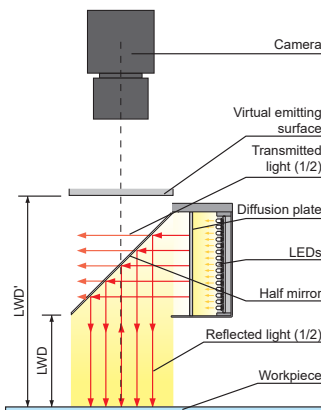


Figure 2. Determining the field of view by LWD

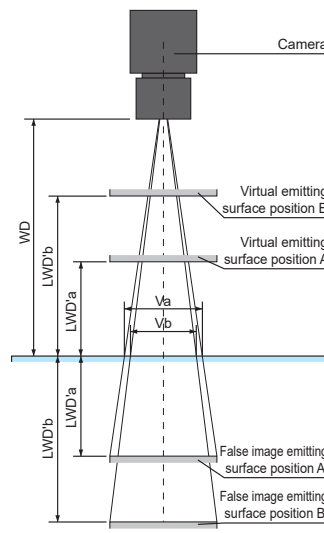
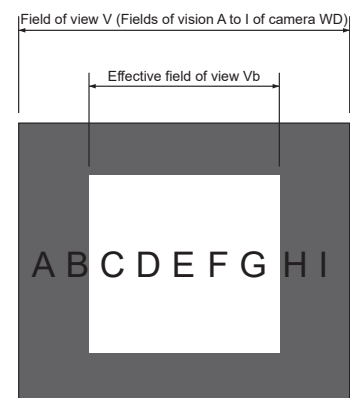


Figure 3. Field of view and effective field of view



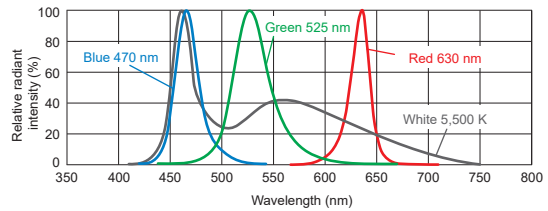
# Objects Appear Differently Depending on the Emitted Color of a Light Unit

## Imaged sample workpiece (printed card)



- Background — Orange
- Left-side C — Red
- Center C — Green
- S — Blue
- Shadow and kana/kanji characters — Black

## Light spectrum of colored LEDs (representative sample)



### Imaging with Blue

If illuminating with blue light, the parts that are of the same color as the light show up white, while all other parts show up gray. The reason for this is the property of “colors reflecting light of similar colors and absorbing light of complementary colors”.



### Imaging with Green

In the case of green, although there are some slight differences in terms of shading, the parts that are of the same color as the light will show up white, similar to when illuminating with blue light, while the rest of the colors will show up as gray or black.



### Imaging with White

As white lighting covers all three primary colors (red, blue and green), color brightness is even resulting in all colors appearing as gray with the same brightness. By comparing with other imaging, it is apparent that there is little strength of color. If using white lighting when imaging with a color camera or when imaging a multicolored workpiece, it is possible to perceive the particularities of the workpiece as there are no effects from color.

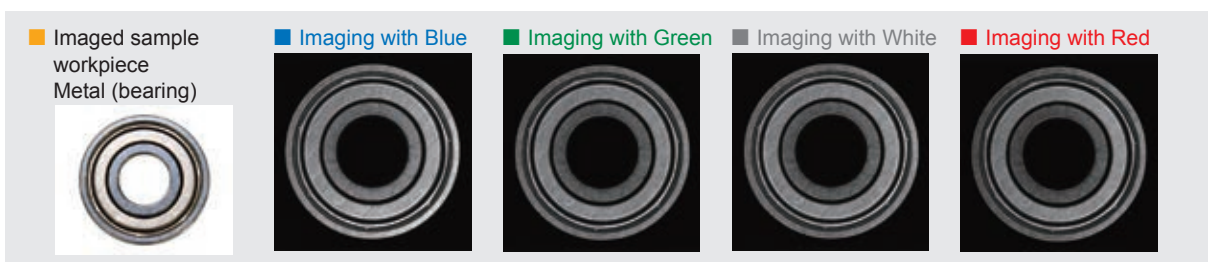


### Imaging with Red

If illuminating with red light, the same color “C” and the background orange show up white, while the other green and blue colors show up gray. Also, any shadows and the black part of the company name will show up black.

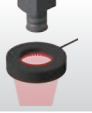

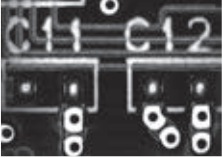



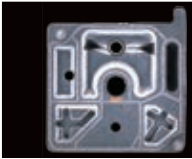







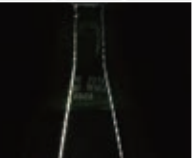




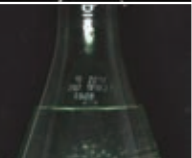















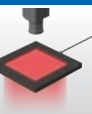



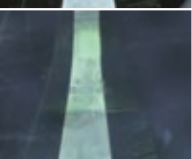
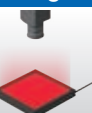




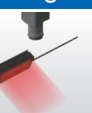




(Using a monochrome camera)

Example of workpieces which don't relate to the emitted color



# Technical Guide (Light Selection)

## Imaging Differs Depending on the Combination of the Light Unit and Workpiece

Imaged workpiece Light unit in use	Metal part (automotive part)	Circuit board (electronic part)	Can (food)	PET bottle (drink)
<b>Ring Lights</b>  <b>LDR2 Series</b> ▼ P.31				
 <b>LDR2-LA Series</b> ▼ P.35				
 <b>LDR-LA1 Series</b> ▼ P.39				
 <b>High-angle HPR2 Series</b> ▼ P.47				
 <b>Low-angle HPR2 Series</b> ▼ P.47				
<b>Coaxial Lights</b>  <b>LFV3 Series</b> ▼ P.125				
<b>Dome Lights</b>  <b>HPD2 Series</b> ▼ P. 103				
<b>Flat Dome Lights</b>  <b>LFX3 Series</b> ▼ P. 117				
<b>Flat Lights</b>  <b>TH2 Series</b> ▼ P. 83				
<b>Bar Lights</b>  <b>LDL2 Series</b> ▼ P.61				

There are great differences in imaging results depending on the shape of the light unit, emitted color, illuminating method and similar conditions.

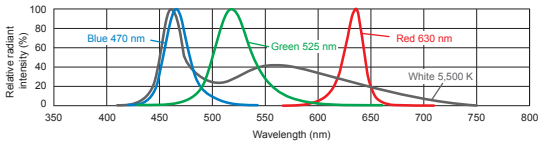
Please inquire with CCS so that we can use our vast knowledge and experience to help you with imaging.



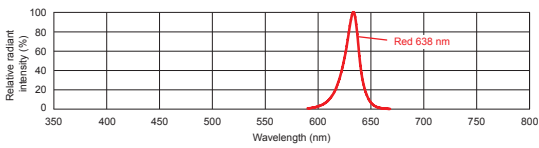
# LED Properties: Spectral Distribution

(part not described on each product page)

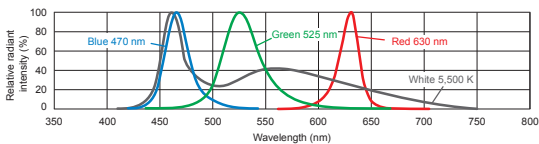
## » SQR Series [Product Page ▶ P. 43](#)



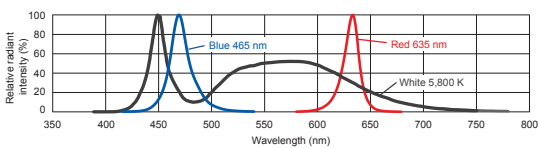
## » SQR-TP Series [Product Page ▶ P. 44](#)



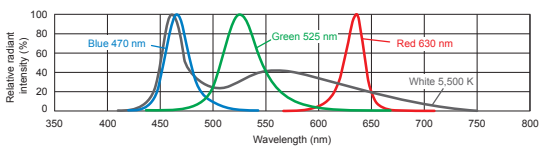
## » LFR Series [Product Page ▶ P. 51](#)



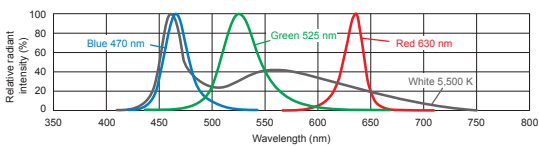
## » TH2 Series [Product Page ▼ P. 83](#)



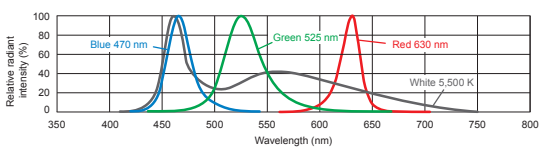
## » LFL Series [Product Page ▶ P. 99](#)



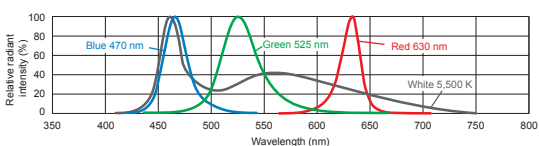
## » LAV Series [Product Page ▶ P. 109](#)



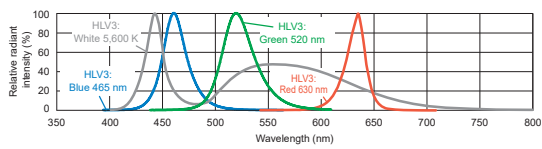
## » PDM Series [Product Page ▶ P. 110](#)



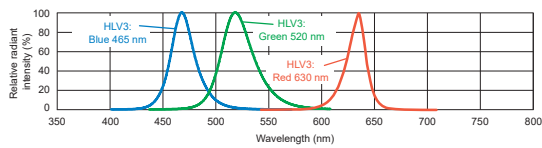
## » MSU Series [Product Page ▶ P. 135](#)



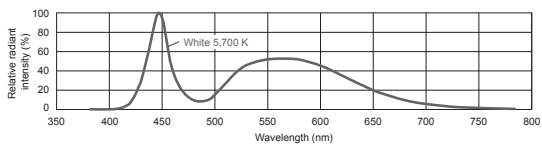
## » HLV3-22-4-NR Series [Product Page ▼ P. 197](#)



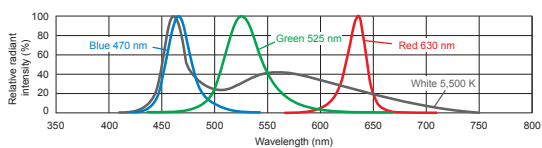
## » HLV3-3M-RGB-4 [Product Page ▼ P. 198](#)



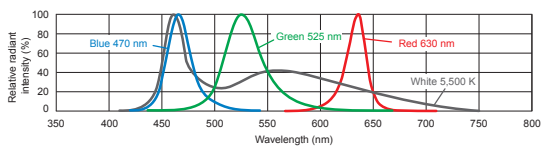
## » PFB3(A) Series [Product Page ▼ P. 207](#)



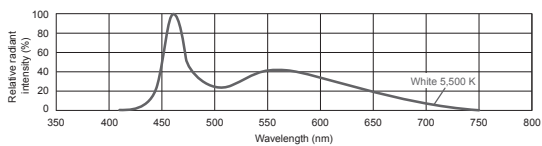
## » LV Series [Product Page ▶ P. 193](#)



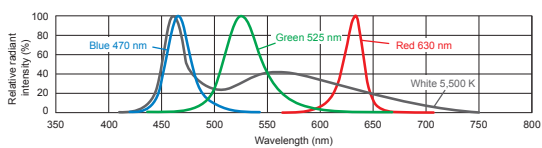
## » LN Series [Product Page ▶ P. 227](#)



## » LN-HK Series [Product Page ▶ P. 228](#)



## » LNV Series [Product Page ▶ P. 239](#)



## How to calculate pixel resolution

When choosing the right camera to use, it is necessary to confirm the size of the defects that you wish to capture on the inspected object and to consider the required pixel resolution accordingly.

\*The number of pixels required for detecting defects varies by inspection.

### How to calculate pixel resolution

Pixel resolution = Field of view in X-direction [mm] ÷ Number of pixels in the X-direction on the image sensor

or

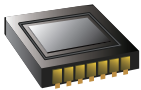
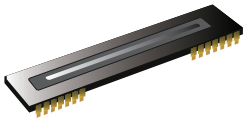
Pixel resolution = Field of view in Y-direction [mm] ÷ Number of pixels in the Y-direction of the image sensor

Example: In case of 100 mm field of view in X-direction (horizontal direction)

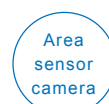
5 million pixel camera: Pixel resolution = 100 mm ÷ 2448 px (effective pixels) = 0.041 mm

## Basic Line Sensor Camera Knowledge

### 1 Differences between area sensor cameras and line sensor cameras

	Area sensor camera	Line sensor camera
Shape of imaging element		
Lens mount	C mount, F mount, etc.	F mount, M72 mount, etc.
Pixel expression	2M (1,600 × 1,200 pix)	8 K (8,192 pix)
Capture expression	Shutter speed 1/4,000 (250 µsec) 1/60 (16.67 msec)	Charge storage time 4,000 Hz (250 µsec) 1,000 Hz (1 msec)

Imaging methods for the area sensor camera and the line sensor camera (Conceptual image)



Make an image of the whole field of vision all at once.



Takes images in lines and makes them one picture.

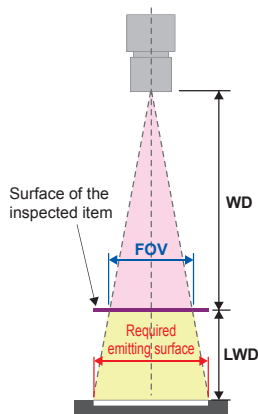
### 2 Pixel count for line cameras

Pixel count	Pixel size	Ratio of receiving surface area
2K (2,048)	14×14 µm	16
4K (4,096)	10×10 µm	8
8K (8,192)	7×7 µm	4
12K (12,228)	5×5 µm	2
16K (16,384)	3.5×3.5 µm	1

Note: Brightness varies based on the wavelength of the light source and the receiving sensitivity of the image sensor. Brightness does not necessarily correspond to the receiving surface area ratio.

### 3 How to find the required emitting surface when selecting a line sensor light

Setup examples



Information required when selecting the length of your light unit

(1) WD (Working distance):

Distance from the camera to the surface of the inspected item

(2) LWD (Light working distance):

Distance from the light unit to the surface of the inspected item

(3) FOV (Field of vision)

Calculate the required emitting surface using the items above

**Solve**

Use the trigonometric ratio and calculate using the following procedure.

$WD : FOV = (WD + LWD) : \text{Required emitting surface}$

$$\text{Required emitting surface} = \frac{FOV \times (WD + LWD)}{WD}$$

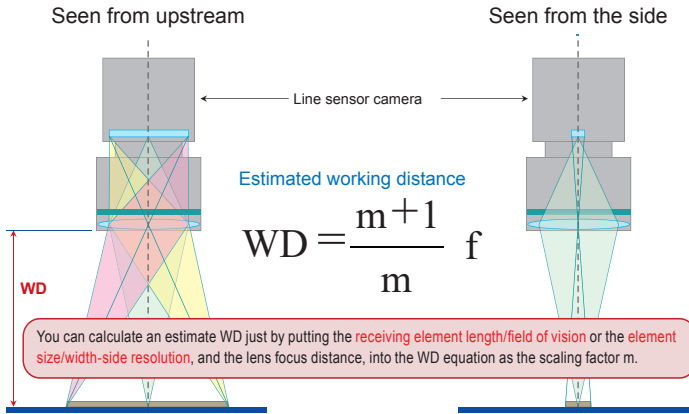
Note: The above is only valid for applications using direct light transmission or direct light reflection. The emitting surface must be uniform. Select a light unit longer than the emitting surface you calculated.

# Setting Optical and Lighting Conditions

## 1 How to find the working distance (WD) (Reference value)

### Optical system for the line sensor camera (Wide-side resolution)

It is necessary to calculate the working distance in advance.



### Method for testing line sensor image input

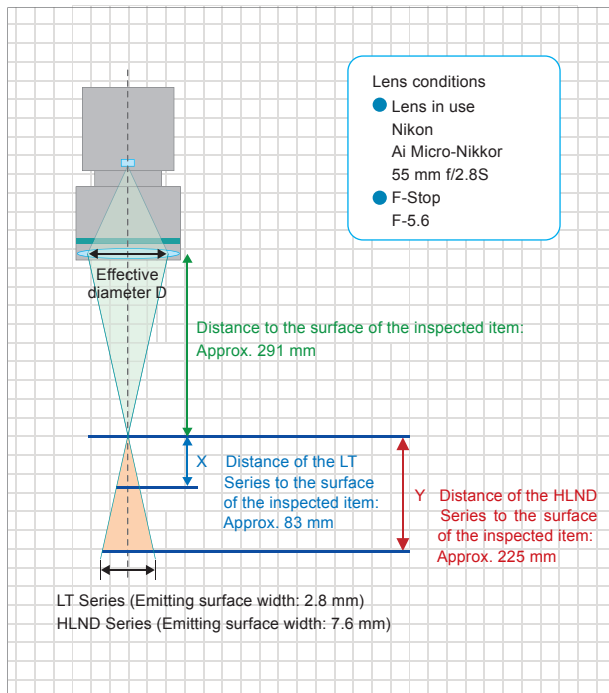
When using a line sensor camera, calculate the working distance (WD), carrying speed, and scan rate before starting the test.

Example calculation with the following camera specs and conditions

Pixel size:  $7\ \mu\text{m} \times 7\ \mu\text{m}$  (Pixel count: 8,192)  
 The scan rate and working distance when performing an image input test with the following conditions for a lens where focus distance  $f = 55\ \text{mm}$  is calculated as follows:  
 Cond. 1 Carrying speed: 200 mm/sec  
 Cond. 2 Resolution:  $30\ \mu\text{m}$  (Moving direction)  $\times$   $30\ \mu\text{m}$  (Lateral direction)

Scan rate =  $0.03\ \text{mm} \div 200\ \text{mm/sec} = 0.00015\ \text{sec}$   
 = **150  $\mu\text{sec}$**   
 Working distance =  $\{(7/30 + 1) / (7/30)\} \times 55\ \text{mm}$   
 = **Approx. 291 mm**

## 2 Relationship between the lens' effective diameter and the light unit's installation distance (Reference value)



What is the effective diameter for the lens in the conditions on the left?  
 $D = \text{Lens focus distance} \div \text{F-stop} = 55 \div 5.6 = 9.8$

What is the longest distance where the most efficient brightness can be achieved for the emitting width (short side) of each light unit?  
 ⇒ Find it using similar relationships

### 1) If using the LT Series

$$9.8 : 291 = 2.8 : X$$

$$X = (291 \times 2.8) \div 9.8 = \text{Approx. } 83\ \text{mm}$$

### 2) If using the HLND Series

$$9.8 : 291 = 7.6 : Y$$

$$Y = (291 \times 7.6) \div 9.8 = \text{Approx. } 225\ \text{mm}$$

For both the above light units, if the light unit is farther than the distance above, it will be darker, but if the light unit is closer than the distance above, there will be virtually no change in the brightness. (However, this assumes that the inspected item is limited to something transparent where the illuminated light can be observed directly. This cannot be applied to an inspected item with a possibility for diffusion.) Also, if the lens in use or the F-stop changes, various conditions such as the effective diameter and WD change. Therefore, please consider this only as a reference value under certain conditions. Furthermore, the camera's pixel size is a large factor regarding brightness.

## 3 Comparison of the images for the area sensor camera and the line sensor camera

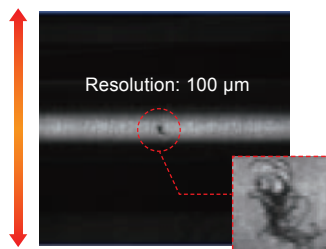
### Imaging sample (Metal bar)



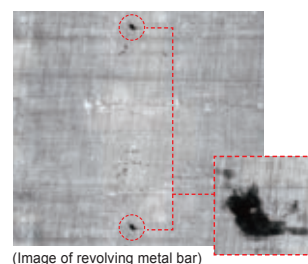
#### Image of scratches on a metal bar

- Sample size: Length 150 mm,  $\varnothing 20\ \text{mm}$
- Resolution:  $100\ \mu\text{m}$
- Pixels of the camera in use
  - Line camera: 8,192 pixels
  - Area camera: 300,000 pixels

### Imaging with the area sensor camera



### Imaging with the line sensor camera



## ■ Maintenance and Inspection

### LED Lights (Be careful not to touch the casing during or after use as the temperature is high and can cause burns.)

Use a dry soft cloth to wipe away any dust, grime or other foreign material from the emitting surface. If there is any oil or similar substance adhering, use a soft cloth that has been dampened with a neutral cleaner to wipe it off. Do not use thinner, benzene or any similar liquids. Doing so could result in discoloration and deformation.

### Control Units for LED Lights (Always be sure that the control unit is turned off before cleaning.)

Use a dry soft cloth to wipe away any dust, grime or other foreign material from the electrodes. If there is any oil or similar substance adhering, use a soft cloth that has been dampened with a neutral cleaner to wipe it off. Do not use thinner, benzene or any similar liquids. Doing so could result in discoloration and deformation.

### Options

Periodically inspect option parts such as polarizing and diffusion plates as all of these are consumables. Replace any parts that show discoloration or deformation during inspection. CCS recommends maintaining extra option parts on-hand in order to be prepared for replacement.

Always be sure to consult the User Manual when performing maintenance and inspection.

## ■ Operating and Storage Environments

These products are LED Lights that are mainly used for image processing and industrial inspection. Do not use these for other purposes. Always be sure to obey the following precautions.

### **Absolutely never use under the following conditions.**

- Use under conditions or in an environment not described in the User Manual
- Use for nuclear power control, railroads, aircraft, automobiles, combustion devices, medical equipment, home entertainment equipment, safety equipment, or any similar devices or equipment
- Use where it is thought that human life or property will be greatly affected, especially application where safety is required

### **Install in a location that satisfies the following conditions. An improper installation location can result in product malfunction.**

- Low vibration and stable
- Water, oil, liquid, chemicals, steam or similar substances cannot contact or otherwise affect the product\*
- Low level of dust and good ventilation
- No corrosive or flammable gases
- No sudden changes in temperature
- Far away from water lines, water heaters, humidifiers, air conditioners, heaters and similar equipment

\* Install IP-compatible products in a range that permits performance.


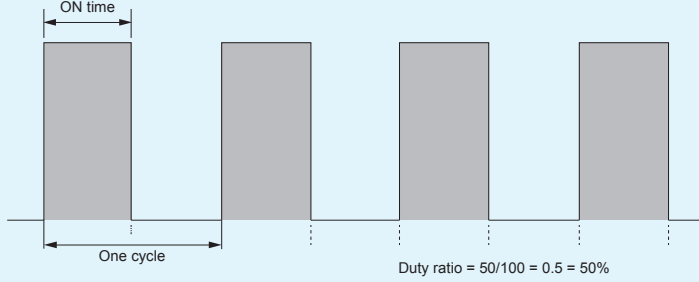
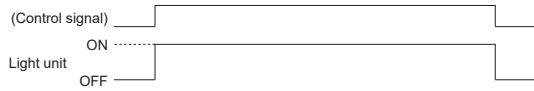
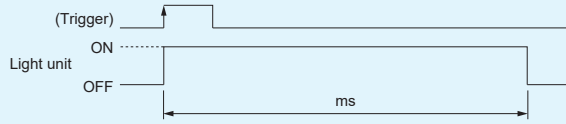

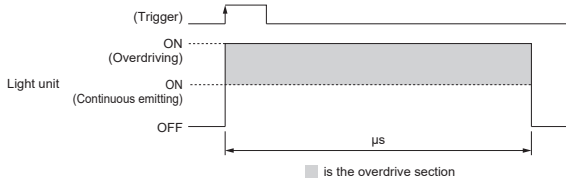
### **Use in the following environments.**

#### **An improper operating environment can result in product malfunction.**

- Operating temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
- Storage temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)

Operating and storage environments of products that are different from these are described on the corresponding product page.

# Glossary

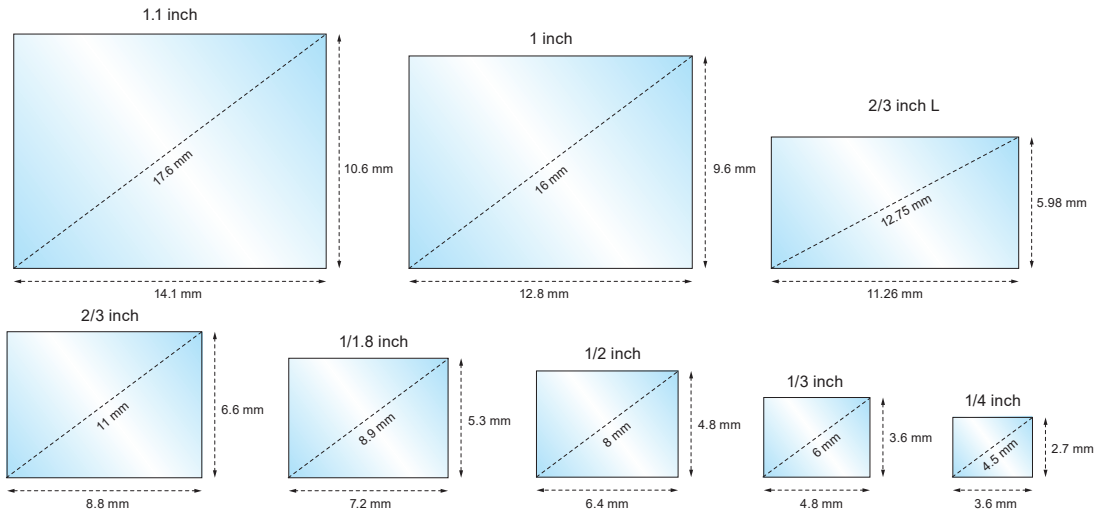
No.	Classification	Term	Explanation of Terminology
1	Control Unit	Digital control (Duty control)	This is a method of intensity control of the PD Series. Intensity control is performed by varying the duty of the pulse on (proportion of time it is on (lit up) during a single pulse). With 8-bit control, you can perform 256-step linear intensity control. If using a high-speed shutter, you must be careful of frequency interference.
2	Control Unit	PWM control	<p>PWM: An abbreviation of pulse width modulation, one pulse modulation method in which the period and amplitude are maintained at a constant, and only the pulse width is changed.</p> <p>Duty ratio: Expresses the amount of time a pulse wave is ON during a cycle as a ratio.</p> <p>Relational expression: Duty ratio = ON time/Period</p>  <p>Products with this mark at the top of their product introduction page can be customized for a PWM frequency of 500 kHz.</p> 
3	Control Unit	External ON/OFF control (ON/OFF emitting)	 <p>A method for emitting light for the time during which the ON signal of an ON/OFF signal is received.</p>
4	Control Unit	Strobe emitting	<p>"Strobe" refers to light being emitted for a specified amount of time in synchronization with a trigger signal. This additionally includes emitting light for a fixed amount of time after a delay has been applied for a fixed amount of time.</p> 
5	Control Unit	Overdrive	<p>"Overdrive" is a use method for emitting brighter light by applying a large current to an LED light for a fixed amount of time. This current exceeds the current during continuous ON/OFF emitting.</p>  <p>Products with this mark at the top of their product introduction page support overdrive.</p>  <p>■ is the overdrive section</p>

## Glossary

No.	Classification	Term	Explanation of Terminology
6	Options	Sharp-cut filter	This filter sharply cuts off light of wavelengths that are less (or more) than the specified wavelength. At CCS, we mainly use these attached to the lens.
7	Options	Light control film	<p>This plastic film is arranged as a minute louver with extremely small gaps. It functions to reduce the diffusion of light in a specific direction and improves parallelism.</p> <p style="text-align: center;"><b>Basic structure of light controller film (cross-section)</b></p>
8	Options	Polarizing Plate / Polarizing Filter	<p>Light with a regular vibration direction of the electric vector of the light wave is called "polarized light". The surface reflection of the workpiece can be removed when used in combination with a polarizing plate and polarizing filter.</p> <ul style="list-style-type: none"> <li> <p><b>Without polarizing plate and polarizing filter</b></p> <p style="text-align: center;"><b>Imaging Example</b></p> <p style="text-align: center;">Reflection of the light prevents proper imaging.</p> </li> <li> <p><b>With polarizing plate and polarizing filter</b></p> <div style="display: flex; justify-content: space-around;"> <div> <p><b>Glossy areas</b></p> <p style="text-align: center;"><b>Imaging Example</b></p> </div> <div> <p><b>Non-glossy areas</b></p> </div> </div> <p style="text-align: center;">The specularly reflected light is blocked by the polarizing filter and only the dispersed reflection of the light is captured, making it possible to take images without light reflection.</p> </li> </ul>
9	Other	LWD	<p>The distance from the tip of the light source to the surface of the workpiece (sample). Abbreviation for light-work-distance.</p> <p>Note: Although this term is used in our website, catalogs and other materials with the above meaning, care must be paid if it is used for other publications as it is not a term that is officially defined by standards or a similar document.</p>

# Camera Image Sensor Size

These are examples of image sensor sizes for use with a camera of an image processing inspection system.



# Field of Vision Chart

These values are for reference. (Unit: mm)

Refer to the field of vision chart for the following products:

High-resolution telecentric lenses (SE-65-M/SE-110-M) ▼ P.259    Telecentric lenses (SE-65/SE-110) ▼ P.263    Macro lenses (SE-16/SE-18) ▼ P.265

Optical magnification	Camera image sensor size														
	1.1 inch			1 inch			2/3 inch			1/1.8 inch			1/3 inch		
	Length	Width	Diagonal	Length	Width	Diagonal	Length	Width	Diagonal	Length	Width	Diagonal	Length	Width	Diagonal
0.1x	106.00	141.00	176.00	96.00	128.00	160.00	66.00	88.00	110.00	53.00	72.00	89.00	36.00	48.00	60.00
0.2x	53.00	70.50	88.00	48.00	64.00	80.00	33.00	44.00	55.00	26.50	36.00	44.50	18.00	24.00	30.00
0.3x	35.33	47.00	58.67	32.00	42.67	53.33	22.00	29.33	36.67	17.67	24.00	29.67	12.00	16.00	20.00
0.4x	26.50	35.25	44.00	24.00	32.00	40.00	16.50	22.00	27.50	13.25	18.00	22.25	9.00	12.00	15.00
0.5x	21.20	28.20	35.20	19.20	25.60	32.00	13.20	17.60	22.00	10.60	14.40	17.80	7.20	9.60	12.00
0.6x	17.67	23.50	29.33	16.00	21.33	26.67	11.00	14.67	18.33	8.83	12.00	14.83	6.00	8.00	10.00
0.7x	15.14	20.14	25.14	13.71	18.29	22.86	9.43	12.57	15.71	7.57	10.29	12.71	5.14	6.86	8.57
0.8x	13.25	17.63	22.00	12.00	16.00	20.00	8.25	11.00	13.75	6.63	9.00	11.13	4.50	6.00	7.50
0.9x	11.78	15.67	19.56	10.67	14.22	17.78	7.33	9.78	12.22	5.89	8.00	9.89	4.00	5.33	6.67
1x	10.60	14.10	17.60	9.60	12.80	16.00	6.60	8.80	11.00	5.30	7.20	8.90	3.60	4.80	6.00
1.5x	7.07	9.40	11.73	6.40	8.53	10.67	4.40	5.87	7.33	3.53	4.80	5.93	2.40	3.20	4.00
2x	5.30	7.05	8.80	4.80	6.40	8.00	3.30	4.40	5.50	2.65	3.60	4.45	1.80	2.40	3.00
3x	3.53	4.70	5.87	3.20	4.27	5.33	2.20	2.93	3.67	1.77	2.40	2.97	1.20	1.60	2.00
4x	2.65	3.53	4.40	2.40	3.20	4.00	1.65	2.20	2.75	1.33	1.80	2.23	0.90	1.20	1.50
5x	2.12	2.82	3.52	1.92	2.56	3.20	1.32	1.76	2.20	1.06	1.44	1.78	0.72	0.96	1.20
6x	1.77	2.35	2.93	1.60	2.13	2.67	1.10	1.47	1.83	0.88	1.20	1.48	0.60	0.80	1.00
7x	1.51	2.01	2.51	1.37	1.83	2.29	0.94	1.26	1.57	0.76	1.03	1.27	0.51	0.69	0.86
8x	1.33	1.76	2.20	1.20	1.60	2.00	0.83	1.10	1.38	0.66	0.90	1.11	0.45	0.60	0.75
9x	1.18	1.57	1.96	1.07	1.42	1.78	0.73	0.98	1.22	0.59	0.80	0.99	0.40	0.53	0.67
10x	1.06	1.41	1.76	0.96	1.28	1.60	0.66	0.88	1.10	0.53	0.72	0.89	0.36	0.48	0.60
12x	0.88	1.18	1.47	0.80	1.07	1.33	0.55	0.73	0.92	0.44	0.60	0.74	0.30	0.40	0.50

## Regulations

### Photobiological safety evaluation of LED Lights for image processing

In order to ensure the safe usage of LED lights, CCS has categorized the risks related to each light unit. When you are considering the purchase of LED lights or are checking risk information of a product you have purchased, please refer to the specifications section of the product information page of our website.

### Safety of Laser Products from CCS, Inc.

The safety of laser products is specified in IEC 60825-1. In Japan, JIS C 6802 corresponds to IEC 60825-1. For classifications of laser products outside of Japan, please refer to our website.  
<https://www.ccs-grp.com/support/standard/about.html>

### List of EU standards, UKCA marking and compliant products



The following CCS products comply with the corresponding standards.

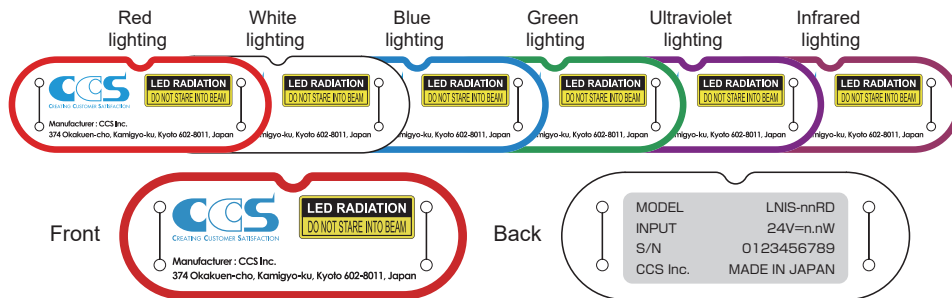
Series name	CE			UKCA			
	Safety standard	EMC standard		Safety standard	EMC standard		
		EMS	EMI		EMS	EMI	
Light Units LDR2, LDR2-LA, LDR-LA-1, SQR, SQR-TP, HLDR3, HLDR-IP, HPR2, LFR, LKR, FPR, FPQ3, LDL2, LDF-RLS, HDL3, LB, TH2, TH2-PM, TH2-CR, LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFX3, LFX3-G, MSU, MFU, PF, UV3/VL3, UV, IR2, IR(Over 1000-nm Type), CIR, HLV3-14, HLV3-22, HLV3-22-4-NR, HLV3-3MRGB-4, HSL-PCL, LV, LS, LNSP2, LN, LN-HK, LNSD, LND2, LT, LNV, LNIS2, LNIS	EN 62471	—	—	BS EN 62471	—	—	
	LNLP, LDLB, LNSP-FN, LNIS-FN, LNDG, OLF-LT, OLB-LT, IU, trinitri-enabled LED lights	EN 62471	EN 61000-6-2	EN 61000-6-4	BS EN 62471	BS EN 61000-6-2	BS EN 61000-6-4
Integrated Control Units for Light Units PFBR-600SW2-LL, PFBR-600SW2-LLCF, PFBR-150SW-MN	EN 62471 EN 61010-1 EN 62311	EN 61000-6-2	EN 61000-3-2 EN 61000-3-3 EN 61000-6-4	BS EN 62471 BS EN 61010-1 BS EN 62311	BS EN 61000-6-2	BS EN 61000-3-2 BS EN 61000-3-3 BS EN 61000-6-4	
	PFBR-20SW-AJT(A), PJT(A), SJT(A), JT(A)	EN 62471	EN 61000-6-2	EN 61000-6-4	BS EN 62471	BS EN 61000-6-2	BS EN 61000-6-4
Control Units PD4, PD3(AC input types), PD2, POD, PF, PJ2, PJ(AC input types), PSCC-60048(A), PSCC-30028(A), PSB4, PSB3	EN 61010-1 EN 62311	EN 61000-6-2	EN 61000-6-4	BS EN 61010-1 BS EN 62311	BS EN 61000-6-2	BS EN 61000-6-4	
	PTU2	EN 61010-1 EN 62311	EN 61326-1		BS EN 61010-1 BS EN 62311	BS EN 61326-1	
	PD3(DC input types/Parallel), PJ(DC input types), CC-PJ-0707, CN-EPOE, CN-4024-2-EIPT, OC-0736-1-ET, PB-2430-1	—	EN 61000-6-2	EN 61000-6-4	—	BS EN 61000-6-2	BS EN 61000-6-4
	PD3(DC input types/Keepalive), CC-ST-1024	—	EN 61326-1		—	BS EN 61326-1	

Note: Our light units that were designed and developed in September 2011 or later comply with the EU standard and bear the CE marking. The LDF-NB series is compliant with laser standards. See P.271 for details. For information on the cabling products, refer to the product web pages.

**Note: The warranty period of the custom order product is different from that listed above. Contact our local sales office for details.**

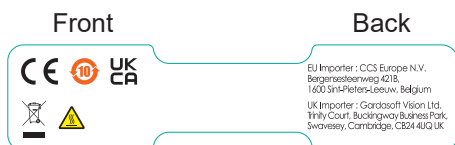
#### Examples of label tags

LED lights of CCS have label tags as shown below attached to their cables or case bodies. These labels are color-coded according to the emitted light of the corresponding light unit. The model, serial number, CE marking and related information are shown on the rear of the label.



#### Regulations Tag

Regulation information such as CE and UKCA marking are shown on this tag.



#### Listed Marks Explanation





## Environmental Regulations

### EU RoHS Directive

The products described in this catalog are compliant with EU RoHS Directive. Refer to our website or the User Manual included with the product for details regarding EU RoHS Directive.

### China RoHS

The products described in this catalog are compliant with China RoHS. Refer to our website or the User Manual included with the product for details regarding the China RoHS.

### REACH Regulations

To perform appropriate risk management for the chemical materials included in the products listed in this catalog, we have established efforts related to reducing the burden on the environment from procured parts, and we strive to select more environmentally-friendly procured parts. Also, as a response to REACH regulations, we have newly constructed an assessment/information transmission system for the chemical materials included in our products, and we are performing autonomous management.

Inquire with your CCS sales representative regarding products and each product's use of materials designated as SVHC (substances of very high concern) under REACH regulations.

**Note: The warranty period of the custom order product is different from that listed above. Contact our local sales office for details.**

## Warranty Information

### Warranty Period: Two years from the date the product is shipped from CCS. (However, radiant quantity \*warranty is one year)

EXCEPT FOR THE EXPRESS WARRANTIES STATED IN THIS DOCUMENT, CCS MAKES NO ADDITIONAL WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER. IN PARTICULAR, ANY AND ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. EXCEPT AS EXPRESSLY SET FORTH HEREIN, CCS MAKES NO WARRANTIES WITH RESPECT TO THE PRODUCTS.

WARRANTY PERIOD: TWO YEARS (ONE YEAR FOR RADIANT QUANTITY), STARTING FROM CCS Inc. SHIPPING DATE.

CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION OR IF THE RADIANT QUANTITY OF THE PRODUCT SHOULD DROP TO 50% OR LESS OF ITS INITIAL RADIANT QUANTITY WITHIN THE SPECIFIED WARRANTY PERIOD. IF EITHER OF THESE CONDITIONS OCCURS, PLEASE TAKE THE PRODUCT TO YOUR CCS SALES REPRESENTATIVE.

#### WARRANTY TERMS

1. CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION UNDER USE ON OUR SPECIFIED CONDITION IN ACCORDANCE WITH THE USER MANUAL AND OTHER WRITTEN CAUTIONS DURING THE INDICATED WARRANTY PERIOD OF TWO YEARS.
2. CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF ITS RADIANT QUANTITY SHOULD DROP TO 50% OR LESS OF ITS INITIAL RADIANT QUANTITY UNDER USE ON OUR SPECIFIED CONDITION IN ACCORDANCE WITH THE USER MANUAL AND OTHER WRITTEN CAUTIONS DURING THE INDICATED WARRANTY PERIOD OF ONE YEAR.
3. CCS Inc. WILL CHARGE A REPAIR FEE UNDER THE FOLLOWING CONDITIONS:
  - 1) IF THE PRODUCT HAS BEEN SUBJECTED TO MISUSE, UNAUTHORIZED REPAIRS, OR MODIFICATION FROM ITS ORIGINAL DESIGN.
  - 2) IF THE PRODUCT HAS BEEN DAMAGED FROM IMPACTS DUE TO INAPPROPRIATE HANDLING.
  - 3) IF DAMAGE TO THE PRODUCT RESULTS FROM EXTERNAL CAUSES INCLUDING ACCIDENTS, FIRE, POLLUTION, RIOTS, COMMUNICATION FAILURES, EARTHQUAKES, THUNDERSTORMS, WIND AND FLOOD DAMAGE, OR ANY OTHER ACT OF PROVIDENCE, OR FROM ANY EXTRAORDINARY CONDITIONS SUCH AS ELECTRICAL SURGES, WATER LEAKAGE, CONDENSATION, OR THE USE OF CHEMICALS.
  - 4) IF THE DAMAGE RESULTS FROM CONNECTION TO ANY POWER SUPPLY OR TO ANY EQUIPMENT WHICH CCS Inc. DOES NOT MANUFACTURE OR DOES NOT SPECIFY FOR USE.
4. CCS ASSUMES NO LIABILITY FOR ANY PURCHASER'S SECONDARY DAMAGE (DAMAGE OF EQUIPMENT, LOSS OF OPPORTUNITIES, LOSS OF PROFITS, ETC.) OR ANY OTHER DAMAGE RESULTING FROM A FAILURE OF OUR PRODUCT.

THIS WARRANTY INFORMATION PROVIDES THE SCOPE OF CCS'S PRODUCT WARRANTY WITHIN THE SPECIFIED PERIOD, AND DOES NOT INDICATE OR IMPLY ANY FURTHER GUARANTEE BEYOND THE WARRANTY TERMS. CONTACT CCS FOR INQUIRIES OR INFORMATION ON REPAIRS TO THE PRODUCT AFTER THE EXPIRATION OF THE WARRANTY.

\*THE RADIANT QUANTITY REFERS TO THE WATTAGE OF PHYSICAL ENERGY RADIATED FROM AN LED. IT REFERS TO THE RADIATION LUMINOSITY OF THE LED MEASURED UNDER CONDITIONS SPECIFIED BY CCS OR THE RADIATION ILLUMINATION OF THE LED UNDER SPECIFIED IRRADIATION CONDITIONS. CCS SPECIFIES THE RADIANT QUANTITY FOR EACH LED LIGHT BECAUSE THE MEASUREMENT AND IRRADIATION CONDITIONS VARY FROM THE FORM, THE APPLICATION AND THE IRRADIATION WAVELENGTH.

### Notes

- The above warranty applies only to CCS brand products. However, some catalog products, special order products, and optional products may differ from the above warranty.
- Product warranty details differ for each brand. See our website for details. <https://www.ccs-grp.com/support/warranty/>
- Product warranties for purchased goods are determined by the applicable manufacturer or seller.

## Repairs and Returns

Inquire at your CCS sales representative about repairs and returns.

### Notes

- To ensure proper and safe use of the product, please read the User Manual completely before using the product.
- The design and specifications of this product are subject to change without notification for product improvement.
- The workpiece imaging examples included in this catalog are intended to serve only as references to help you select a suitable light unit. Please verify the functionality and conditions required for your particular application before you make a final selection. The sample workpieces used in this catalog have been processed specifically for sample imaging. They are not intended to represent product quality and performance.
- Before purchasing the light unit, consider the functionality and use conditions of the corresponding equipment and examine the light unit.

“CCS” and “LIGHTING SOLUTION” are registered trademarks or trademarks of CCS Inc.

# Model Index

□ = Letter ■ = Number

	Model name	Product name	Page	
<b>A</b>	AD-HLDL3	Bar Lights HLDL3 Series Mounting Compatibility Bracket	74, 381	
	AD-LDR-■	Ring Light LDR2 mounting adapter	380	
	AD-LDR-PF-■	Mounting adapter for High Power Strobe Light PF Series		
	AD-LDR-PF-■-LA			
	AD-PFBR-150-MO	Light guide adapters for LED light source PFBR-150 Series	204	
	AD-PFBR-150-HY			
	AD-PFBR-150-SU			
	AD-PFBR-600-01	Light guide adapters for high-power light source PFBR-600 Series	202	
	AD-PFBR-600-02			
	AD-PFBR-600-03			
	ADP2460-PFB-JTLV6	Power supply adapter for the LED light source PFB3(A) Series	207	
<b>B</b>	BK-■-CI	Expansion mounting bracket	382	
	BK-■-JO	Light joint bracket	382	
	BK-HLDL3	Bar light HLDL3 Series installation bracket	74, 381	
	BK-HPD2-■-LFV	Coaxial light joint bracket	382	
	BK-LDL- PF	Power flash light PF Series installation bracket	381	
	BK-LDL2	Bar light LDL2 Series installation bracket		
	BK-LDQ2-■×■	Bar light LDL2 Series four-way installation bracket		
	BK-PD3	PD3 power source bottom installation bracket	328	
	BK-TH-LE12	Flat light TH2 Series installation bracket	381	
	<b>C</b>	CB-■	Extension cable (For 12 V light unit)	383
CB-F-■		4-branch extension cable (For 12 V light unit)		
CB-W-■		2-branch extension cable (For 12 V light unit)		
CC-PJ-0707		LED light control unit CC Series	363	
CC-ST-1024			357	
CD-VA10024-2□		LED light control unit CD-VA Series	333	
CD-VA20024-4□				
CN-1024-2-EPOE		LED light control unit CN-EPOE Series	351	
CN-1024-4-EPOE				
CN-4024-2-EIPT		LED light control unit	353	
CU-LNSP2-■-GL		Coaxial unit for the line light LNSP2 Series	221	
CV-LDL2-■×■		Protective plate for the bar light LDL2 Series	380	
CX-PV6024-4X		LED light control unit board type lighting controller CX Series	349	
CX-PV12024-4X				
<b>D</b>		DF-LB-■×■	Diffusion plates for the diffused lighting bar light LB Series	376
	DF-HLDL3-■	Diffusion plate for the bar lights HLDL3 Series	71, 375	
	DF-LDL-PF-■×■	Diffusion plate for the high power strobe light PF Series	375	
	DF-LDL2-■×■	Diffusion plate for the bar light LDL2 Series		
	DF-LDR-■	Diffusion plate for the ring light LDR2 Series		
	DF-LDR-■LA	Diffusion plate for the low-angle ring light LDR2-LA Series		
	DF-LDR-PF-■	Diffusion plate for the high power strobe light PF Series		
	DF-LDR-PF-■-LA			
	DF-LFV3-■	Diffusion plate for the coaxial light LFV3 Series /high power strobe light PF Series		376
	DF-LFV3-■×■			
	DF-LFV3-■-UF			
	DF-LFV3-■×■-UF			
	DF-SQR-56	Diffusion plate for the ring light SRQ-56	375	
	<b>E</b>	ECNR-E3CN4	Relay connector	328, 366, 370
		EXCB2-25-3	D-sub 25-pin external control cable	332, 344
EXCB2-25M-3		LED light source PFBR external control cable	204	

	EXCB2-9-9-3-ST	LED light source PFB3(A) external control cable	208
	EXCB2-9M-9F-3-CR	LED light source PFBR external control cable	204
	EXCB2-B3	D-sub 15-pin external control cable	332, 362
	EXCB2-E3-3	EIA-485 communication cable	328, 366, 370
	EXCB2-E3-E3-0.2	EIA-485 communication relay cable	
	EXCB2-E6AN-3	Analog input cable	370
	EXCB2-E6SR-3	EIA-485 communication cable	
	EXCB2-E6SR-E3-3	EIA-485 communication relay cable	
	EXCB2-M10-3	ON/OFF input cable	328, 366, 370
	EXCB2-M10M20-3	Parallel communication / ON/OFF input shared cable	
	EXCB2-M20-3	Parallel communication cable	
<b>F</b>	F-BP324-■	Band-pass filter	371
	F-BP365-■		
	F-BP470-■		
	F-BP505-■		
	F-BP525-■		
	F-BP590-■		
	F-BP635-■		
	F-BP660-■		
	F-BP850-■		
	F-LP340-■		
	F-LP920-■		
	F-SP700-■		
	FA-■	Light mounting jig	380
FCB-■	Extension cable (For 24 V light unit)	383	
FCB-■-EL2	Extension cable (For 24 V light unit EL connector)	384	
FCB-■-HSL-SM	HSL-PCL connection cable	158	
FCB-EX10-HSL			
FCB-■-M12	HLDR-IP connection cable	156	
FCB-■-PF	Extension cable for the high power strobe light PF Series	148	
FCB-■-PF-EL9			
FCB-■-1.25SQ-ME7	PSB4/PSB3 connection cable	219, 250, 254	
FCB-20-2.0SQ-ME7			
FCB-F-■	4-branch extension cable (For 24 V light unit)	383	
FCB-HLV3-10	Extension cable for spot light HLV3 Series.	190	
FCB-W-■	2-branch extension cable (For 24 V light unit)	383	
FCB-W-■-EL2	2-branch extension cable (For 24 V light unit EL connector)	384	
FECB-■-M12-5F	Input cable for the bar light LDLB Series	70	
FECB-0.6-M12-5M-5F	Link cable for the bar light LDLB Series		
FPQ3-■□	Low-angle square light FPQ3 Series	57	
FPQ3-100×50□			
FPQ-PF-48□	High power strobe light PF Series	141	
FPR-■□2	Low-angle ring light FPR Series	55	
FRCB-■	Extension robot cable (For 24 V light unit)	383	
FRCB-HLV3-10	Extension cable for spot light HLV3 Series	190	
<b>H</b>	HD-HFR-25-1618	Micro fiber head HFR Series lens holder	196
	HD-HFR-25-1640		
	HFR-25-■	Micro fiber head HFR Series (ring type)	
	HFR-40-20		
HFS-14-500	Micro fiber head (straight type)	195	

	Model name	Product name	Page	
H	HL-24-21	Spot light HLV3 condenser lens	192	
	HL-30			
	HL2-25-P			
	HL2-50-P	Spot light HLV3 condenser lens	191	
	HL2-M50-C			
	HLDL3-■×28□-DF-N			
	HLDL3-■×28□-DF-M	Bar light HLDL3 Series	71	
	HLDL3-■×28□-DF-W			
	HLDL3-■×28□-DF-N			
	HLDL3-100□-DF-N	Ring light HLDL3 Series	45	
	HLDL3-100□-DF-M			
	HLDL3-100□-DF-W			
	HLDL3-IP67-100UV3-365	Violet/ultraviolet light waterproof ring type	159	
	HLDL3-IP67-100VL3-■			
	HLV-22IR■	Infrared light (over 1000-nm type) spot type	177	
	HLV2-24UV3-365	Violet/ultraviolet light spot type	159	
	HLV2-24VL3-■			
	HLV3-14□	Spot light HLV3 Series	187	
	HLV3-14□-HU			
	HLV3-22□-1			
	HLV3-22□-1C			
	HLV3-22□-2			
	HLV3-22□-2C			
	HLV3-22□-2-1220			
	HLV3-22□-2C-1220			
	HLV3-22□-4C			
	HLV3-22□-4M			
HLV3-22□-4S				
HLV3-22IR860				
HLV3-22□-4-NR	Micro fiber head dedicated light source			197
HLV3-3M-RGB-4	Micro fiber head dedicated light source			198
HPD-PF-■□	High power strobe light PF Series			141
HPD2-■□	Dome light HPD2 Series			103
HPD2-75□SQ20				
HPD2-100□SQ30				
HPD2-150□SQ40				
HPD2-200□SQ50				
HPD2-250□SQ60				
HPD2-400□SQ80				
HPD2-100IR■	Infrared light (over 1000-nm type) dome type	177		
HPD2-150IR■				
HPR-PF-■□	High power strobe light PF Series	141		
HPR2-■□	Ring light HPR2 Series	47		
HPR2-400□-FT				
HPR2-100IR■	Infrared light (over 1000-nm type) ring type	177		
HPR2-150IR■				
HSL-58□-D300PCL	High-power spot light HSL-PCL Series	157		
L	L42-■	Ultraviolet cutting filter	374	
	LAV-80□2	Dome light LAV Series	109	
	LB-■×■□	Diffused bar light LB Series	75	
	LB-H-■×50SW			

LC-LFL-■	Light control film for the flat light LFL Series	379
LC-LFV3-■	Light control film for the coaxial light LFV3 Series/high power strobe light PF Series	379
LC-LFV3-■×■		
LC-TH-■×■-HO	Light control film for the flat light TH2 Series	379
LC-TH-■×■-VE		
LDF-200X20□-NB	Lights for interference fringe inspection LDF-NB Series	271
LDF-TP31X31W31W65RLS	Reference light source LDF-RLS Series	183
LDFTP31X31W31W65RLS2		
LDL-■×■IR2-850	Infrared light flat type	171
LDL-■×■IR2-940		
LDL-■×■IR2-850	Infrared light bar type	171
LDL-■×■IR2-940		
LDL-■×■UV3-365-□	Violet/ultraviolet light bar type	159
LDL-■×■VL3-■-□		
LDL-■×■UV365	Ultraviolet light bar type	165
LDL-222X42CIR	CIR Series bar type	181
LDL-222x42CIR-LACL		
LDL-PF-■×■□	High power strobe light PF Series	141
LDL2-■×■□	Bar light LDL2 Series	61
LDL2-■×■□-WD		
LDL2-33×8IR850	Infrared light bar type	
LDL2-74X30IR■	Infrared light (over 1000-nm type) bar type	177
LDL2-74X30IR■-WD		
LDLB-300□-N	Bar light LDLB Series	67
LDLB-IP-300□-N		
LDM2-■□2	Dome light LDM2 Series	107
LDQ-60-25UV365	Ultraviolet light square variable type	165
LDQ-■IR2-850	Infrared light square variable type	171
LDQ-■IR2-940		
LDQ-■UV365	Ultraviolet light square variable type	165
LDR-■□2-LA1	Low-angle ring light LDR-LA1 Series	39
LDR-■UV365-LA-1	Ultraviolet light low-angle ring type	165
LDR-PF-■□	High power strobe light PF Series	141
LDR-PF-■□-LA		
LDR2-■□2	Ring light LDR2 Series	31
LDR2-■RD2-WD		
LDR2-■IR2-850	Infrared light ring type	171
LDR2-■IR2-940		
LDR2-■UV3-365-□	Violet/ultraviolet light ring type	159
LDR2-■VL3-■-□		
LDR2-■UV365	Ultraviolet light ring type	165
LDR2-■□2-LA	Low-angle ring light LDR2-LA Series	35
LDR2-■IR2-850-LA	Infrared light low-angle ring type	171
LDR2-■IR2-940-LA		
LDR2-■UV365-LA	Ultraviolet light low-angle ring light	165
LDR2-90-30□2	Ring light LDR2 Series	31
LDR2-90-30UV365	Ultraviolet light ring type	165
LFL-100IR2-850	Infrared light flat type	171
LFL-100IR2-940		
LFL-■□2	Flat light LFL Series	99
LFL-■□2-P		

# Model Index

□ = Letter ■ = Number

	Model name	Product name	Page
<b>L</b>	LFR-■□2	Ring light LFR Series	51
	LFR-■□2-K		
	LFR-■KSW2		
	LFR-330RD2		
	LFV-G-PF35□	High power strobe light PF Series	141
	LFV-PF-■□		
	LFV3-■□(A)	Coaxial light LFV3 Series	125
	LFV3-50×100□(A)		
	LFV3-CP-13□		
	LFV3-CP-18□		
	LFV3-G-■□	Coaxial light LFV3-G Series	131
	LFV3-G-■×■□		
	LFV3-■IR2-850(A)	Infrared light coaxial type	171
	LFV3-■IR2-940(A)		
	LFV3-CP18IR2-860		
	LFV3-CP18IR2-950		
LFX3-■□	Flat dome light LFX3 Series	117	
LFX3-■IR860			
LFX3-200×100□			
LFX3-200×100IR860			
LFX3-■□-PT-A	Line pattern light LFX3-PT Series	123	
LFX3-■IR860-PT-A			
LFX3-■□-PT-B			
LFX3-■IR860-PT-B			
LFXV-■□	Flat dome light LFXV Series	111	
LFXV-■×■□			
LFXV-■IR860			
LFXV-■×■IR860			
LFV-PF-100□	High power strobe light PF Series	141	
LKR-■□2	Ring light LKR Series	53	
LKR-70-8□2			
LN-■□2	Line light LN Series	227	
LN-■SW2-HK-STK	Line light LN-HK Series	228	
LN-60IR■-HK	Infrared light (over 1000-nm type) line type	177	
LN-■UV3-365	Violet/ultraviolet line type	159	
LN-■VL3-■			
LN-200CIR	CIR Series line type	181	
LN-200UV365	Ultraviolet light line type	165	
LND2-■□	Line light LND2 Series	233	
LNDG-■SW-LA	Line light LNDG Series	243	
LNIS-■SW	Line light LNIS Series	251	
LNIS-■SW-FN	Line light LNIS-FN Series	255	
LNIS2-■SW	Line light LNIS2 Series	247	
LNLP-■SW	Line light LNLP Series	211	
LNSD-■□	Line light LNSD Series	229	
LNSP-■SW-FN	Line light LNSP-FN Series	223	
LNSP-■UV3-365-□	Violet/ultraviolet line type	167	
LNSP-■VL3-■-□			
LNSP2-■SW	Line light LNSP2 Series	225	
LNSP2-■SW-NDF			

	LNV-300□2	Line coaxial light LNV Series	239
	LSP-41UV365	Ultraviolet light spot type	165
	LT-■SW	Line light LT Series	237
	LV-27□2	Spot light LV Series	193
<b>M</b>	MFU-■×■-BL2-■	Coaxial light MFU Series	139
	MR-LDR-■-M25	Lens attachment ring for the ring light LDR2 Series	380
	MR-LDR-■-M27		
	MR-LDR-■-M30		
	MSU-■□2	Coaxial light MSU Series	135
MSU-30×20□2			
<b>N</b>	NFCB2-3	External ON/OFF control cable for control unit	332
	NFCB2-CC-3	External signal cable for the compact controller	358, 364
<b>O</b>	OLF-LT-■□	Organic LED light OLF-LT Series	267
	OLB-LT-100SW-□	Organic LED light OLB-LT Series	269
<b>P</b>	PB-2430-1	LED light control unit PB-2430-1	355
	PD2-1012(A)	LED light control unit PD2 Series	329
	PD2-1024(A)		
	PD2-3012(A)		
	PD2-3012-2(A)		
	PD2-3012-4(A)		
	PD2-3012-8(A)		
	PD2-3024(A)		
	PD2-3024-2(A)		
	PD2-3024-4(A)		
	PD2-3024-8(A)		
	PD2-5012(A)	LED light control unit PD3 Series	321
	PD2-5024(A)		
	PD3-3024-3-EI(A)		
	PD3-3024-3-ET(A)		
	PD3-3024-3-PI		
	PD3-3024-3-PT		
	PD3-3024-3-SI(A)		
	PD3-5024-3-ET(A)		
	PD3-5024-3-PT		
	PD3-5024-4-EI(A)		
	PD3-5024-4-ET(A)	LED light control unit PD4 Series	313
	PD3-5024-4-PI(A)		
	PD3-5024-4-PT(A)		
	PD3-5024-4-SI(A)		
	PD3-10024-8-EI(A)		
	PD3-10024-8-PI		
PD3-10024-8-SI(A)			
PD4-6024-2-E			
PD4-6024-4-E			
PD4-6024-2-P			
PD4-6024-4-P			
PD4-12024-2-E	LED light control unit PD4 Series	313	
PD4-12024-4-E			
PD4-12024-2-P			
PD4-12024-4-P			

□ = Letter ■ = Number

	Model name	Product name	Page
P	PDM-150-15□2	Dome light PDM Series	110
	PF-A4048-2	High power strobe control unit PF Series	345
	PF-A16048-4		
	PFB3-20SW-□-CS1(A)	LED light source PFB3(A) Series	207
	PFB3-20SW-□-DJ1(A)		
	PFB3-20SW-□-DJ2(A)		
	PFB3-20SW-□-DJ3(A)		
	PFB3-20SW-□-DJ4(A)		
	PFB3-20SW-□-HY(A)		
	PFB3-20SW-□-4T(A)		
	PFB3-20SW-□-MI(A)		
	PFB2-20SW-□-MO(A)		
	PFB2-20SW-□-NP(A)		
	PFB3-20SW-□-SH1(A)		
	PFB3-20SW-□-SH2(A)		
	PFB3-20SW-□-SU(A)		
	PFB3-20SW-□-TE(A)		
	PFB3-20SW-□-TF(A)		
	PFB3-20SW-□-VL(A)		
	PFBR-150SW-MN	LED light source PFBR-150 Series	203
	PFBR-600SW2-LL	High-power light source PFBR-600 Series	199
	PFBR-600SW2-LLCF		
	PJ-1505-2CA	Control unit for the spot light HLV3 Series PJ Series	361
	PJ-1505-2CD24		
	PJ-1505-3CA		
	PJ-1505-3CD24		
	PJ2-1505-2CA-PE	Control unit for the spot light HLV3 Series PJ2 Series	359
	PJ2-3005-4CA-PE		
	PL-■	Polarizing filter	373
	PL-■-NL		
	PL-LB-■×■-HO	Polarizing plates for the diffused lighting bar light LB Series	378
	PL-LB-■×■-VE		
	PL-HLDL3-■-HO	Polarizing plates for the bar lights HLDL3 Series	74, 377
	PL-HLDL3-■-VE		
	PL-LDL-PF-■×■-HO	Polarizing plate for the high power strobe light PF Series	377
	PL-LDL-PF-■×■-VE		
	PL-LDL2-■×■	Polarizing plate for the bar light LDL2 Series	377
	PL-LDL2-■×■-HO		
	PL-LDL2-■×■-VE		
	PL-LDR-■	Polarizing plate for the ring light LDR2 Series	373
	PL-LDR-PF-■	Polarizing plate for the high power strobe light PF Series	
	PL-LFV3-■	Polarizing plate for the coaxial light LfV3 Series /High power strobe light PF Series	128, 133
	PL-LFV3-■×■		
	PL-SQR-56	Polarizing plate for the ring light SQR Series	373
	PL2-■-NL	Polarizing filter	
	POD-5024-2-PEI	LED light control unit POD Series	339
	POD-22024-4-PEI		
	PR-LFV3-■	Protective plate for coaxial light LfV3 Series	128, 133
	PR-LFV3-■×■		

	PSB3-30024	LED light control unit PSB3 Series	369
	PSB4-30024-PEI	LED light control unit PSB4 Series	367
	PSB4-60024-2-PEI		
	PSCC-30048(A)	LED light control unit PSCC Series	365
	PSCC-60048(A)		
	PTU2-3012(A)	LED light control unit PTU2 Series	343
	PTU2-3024(A)		
Q	QCB-■	PSCC-60048(A) connection cable	226, 258
	QCBM-■	PSCC-30048(A) connection cable	
	QCB-■-DA	PSCC-60048(A) connection cable	214
	QCBM-■-DA		
R	R60-■	Sharp-cut filter	373
	R60-C		
	R64-■		
	R64-C		
	RCB-■	Extension robot cable (For 12 V light unit)	383
	RP-FPQ3-■-SQ■	Reflection panel for low-angle square light FPQ3 Series	59
	RP-FPQ3-100×50-SQ10		
S	SB-HL2-■	Light aperture adapter for HLV3 Series	192
	SE-16MS	Macro lens SE-16 Series	265
	SE-16SM■		
	SE-16VM■		
	SE-18MS	Macro lens SE-18 Series	263
	SE-18SM■		
	SE-18VM■		
	SE-65ST■	Telecentric lens SE-65 Series	263
	SE-65ST■-M	High-resolution telecentric lens SE-65-M Series	259
	SE-65VT■	Telecentric lens SE-65 Series	263
	SE-65VT■-M	High-resolution telecentric lens SE-65-M Series	259
	SE-110ST■	Telecentric lens SE-110 Series	263
	SE-110ST■-M	High-resolution telecentric lens SE-110-M Series	259
	SE-110VT■	Telecentric lens SE-110 Series	263
	SE-110VT■-M	High-resolution telecentric lens SE-110-M Series	259
	SE-EX2	2x rear converter	266
	SQR-56□2	Ring light SQR-56	43
	SQR-56RD2-WD		
	SQR-56UV365	Ultraviolet light ring type	165
	SQR-TP-28RD	Ring light SQR-TP Series	44
	SQR-TP-34RD		
T	TH-200X30CIR	CIR Series flat type	181
	TH-PF-100X100□	High power strobe light PF Series	141
	TH2-■×■□	Flat light TH2 Series	83
	TH2-■×■□-CR35		
	TH2-■×■□-PM		
	TH2-100X100IR■	Infrared light (over 1000-nm type) flat type	177
U	U340-■	Ultraviolet transmission filter	374
V	V44-■	Blue filter	373
	V44-C		
	Model names that end with "TR"	triniti-enabled LED light	305
	Model names that end with "IU"	Light unit with intensity control unit IU Series	185

# Discontinued Products Information

Discontinued products		Successor		
Series	Note	Series		
F	FPQ Series, FPQ2 Series	Obsolete	FPQ3 Series	P.57
	FPR Series (RD/SW/BL/GR type)	Obsolete	FPR Series (RD2/SW2/BL2/GR2 type)	P.55
H	HLDL2 Series	Obsolete	HLDL3 Series	P.71
	HLDR-IP67-100UV2-365	Obsolete	HLDR-IP67-100UV3-365	P.153
	HLND Series	Obsolete	LNSD Series	P.229
	HLV Series, HLV2 Series	Obsolete	HLV3 Series	P.187
	HPD Series	Obsolete	HPD2 Series	P.103
	HPR Series	Obsolete	HPR2 Series	P.47
	HSL Series	Obsolete	HSL-PCL Series (Built to order)	P.157
	I	IR Series	Obsolete	IR2 Series
L	LDL Series	Obsolete	LDL2 Series	P.61
	LDL Series (Flat type)	Obsolete	TH2 Series (high-luminance type)	P.83
	LDL-TP Series	Obsolete		
	LDL2 Series (RD/SW/BL type)	Obsolete	LDL2 Series (RD2/SW2/BL2 type)	P.61
	LDM2 Series (RD/SW/BL/GR type)	Obsolete	LDM2 Series (RD2/SW2/BL2/GR2 type)	P.107
	LDQ Series	Obsolete	LDL2 Series	P.61
	LDR-LA-1 Series (RD/SW/BL/GR type)	Obsolete	LDR-LA1 Series (RD2/SW2/BL2/GR2 type)	P.39
	LDR2 Series (RD/SW/BL/GR type)	Obsolete	LDR2 Series (RD2/SW2/BL2/GR2 type)	P.31
	LDR2-LA Series (RD/SW/BL/GR type)	Obsolete	LDR2-LA Series (RD2/SW2/BL2/GR2 type)	P.35
	LFL Series (RD/SW/BL/GR type)	Obsolete	LFL Series (RD2/SW2/BL2/GR2 type)	P.99
	LFR Series (RD/SW/BL/GR type)	Obsolete	LFR Series (RD2/SW2/BL2/GR2 type)	P.51
	LFV Series, LFV2 Series	Obsolete	LFV3 Series	P.125
	LFV-34-M Series	Obsolete	—	—
	LFV3-CP Series (RD type)	Obsolete	LFV3-CP Series (RD2 type)	P.125

Discontinued products			Successor			
Series		Note	Series			
L	LFX Series		Obsolete	LFXV / LFX3 Series		P.111 / P.117
	LFX2 Series		Obsolete			
	LKR Series (RD/SW/BL/GR type)		Obsolete	LKR Series (RD2/SW2/BL2/GR2 type)		P.53
	LN Series (RD/SW/BL/GR type)		Obsolete	LN Series (RD2/SW2/BL2/GR2 type)		P.227
	LN-HK Series	SW type (white)	Obsolete	LN-HK Series	SW2 type (white)	P.228
	LND Series		Obsolete	LND2 Series		P.233
	LND2 Series	RD type (Red)	Obsolete	LND2 Series	RD2 type (Red)	P.233
	LNSP Series		Obsolete	LNSP2 Series		P.215
	LNSP-UV-FN Series		Obsolete	LNSP-UV3/VL3-FN Series		P.167
	LNV Series (RD/SW/BL/GR type)		Obsolete	LNV Series (RD2/SW2/BL2/GR2 type)		P.239
	LT Series		Obsolete	LT Series (Built to order)		P.237
	LV Series (RD/SW/BL/GR type)		Obsolete	LV Series (RD2/SW2/BL2/GR2 type)		P.193
M	MFU Series	BL type (Blue)	Obsolete	MFU Series	BL2 type (Blue)	P.139
	MSU Series (RD/SW/BL/GR type)		Obsolete	MSU Series (RD2/SW2/BL2/GR2 type)		P.135
P	PFB Series		Obsolete	PFB3(A) Series		P.207
	PFB2 Series		Obsolete			
	PHL-0508-CD24		Obsolete	CC-PJ-0707		P.363
	PSB-512V, PSB-512VL		Obsolete	—		—
	PSB Series		Obsolete	—		—
	PSB2 Series		Obsolete	PSB4-30024-PEI / PSB3-30024		P.367 / P.369
S	SQR Series (RD/SW/BL/GR type)		Obsolete	SQR Series (RD2/SW2/BL2/GR2 type)		P.43
	SQR-TP-28/34-OR		Obsolete	SQR-TP-28/34RD		P.44
	STU-3000		Obsolete	—		—
T	TH Series		Obsolete	TH2 Series (high-luminance type)		P.83
U	UV2 Series		Obsolete	UV3/VL3 Series		P.159

# Company Information

## Motto

**The Spirit of Love and Appreciation for Customers**

## Philosophy

**Advancing Society with the Science of Light**

### Company Overview

Company name	: CCS Inc.
Established	: October 6, 1993
Capital	: 462.15 million yen
Business operations	: Development, manufacturing and sales of LED Lights and control equipment for image processing. Development, manufacturing and sales of other LED Lights for applications such as microscope light sources, plant cultivation, and art and other museums.

## Provide Services Appropriate to All of Our Customers' Needs

Customers in the field of LED lighting for image processing choose CCS because of our lighting solutions and product development capabilities. Customers who are thinking, "I want to capture this image" or "I need to solve this problem," can select the optimal light unit from our product lineup of approximately 2,500 models of products. Additionally, we can create prototypes, and perform design and development of custom ordered products to match your exact needs.

Since we established our company in 1993, we have become a leading company in the industry by accumulating over 60,000 captured workpiece images, and providing design, development and manufacturing of over 15,000 models of custom ordered light units. The experience we've accumulated in various fields such as optics, heat management, lighting control, and evaluation allows us to provide "optimal images" to our customers.



Based on the know-how and skills we have accumulated since our founding, CCS combines various elements, such as light wavelength, illuminating distance, and illuminating angle, to provide a "lighting solution" environment that is perfect for our customers.

## We Believe Strongly in Our Promise of Product Quality

Under the key words of "Quality First", we create products that thoroughly meet our exacting standards of product quality. In order to maintain and improve that product quality, we have introduced ISO 9001 and are developing products based on a design review system. We conduct internal examination throughout all process of product planning, design and production, and also perform our own rigorous quality control from LED selection up until manufacturing, inspection and shipping. Additionally, we secure traceability of the components, assembly, measurement results, shipping and other aspects of each individual product to create a system that can provide support to our customers even after the product is delivered.

At the time CCS was established, we focused on the great potential of LEDs that were only used for display devices and have continuously developed products since then in order to provide reliable product quality that only CCS, with our vast knowledge of LED Lights, can offer.





**Achievements**

**Leading company in the field of LED Lights for image processing**

- Largest standard products lineup in the industry with approximately 2,500 models
- Design, development and manufacturing of over 15,000 models of custom ordered light units
- More than 60,000 captured workpiece images
- More than 38,000 free loan products
- 15 locations in Japan, 15 locations outside of Japan, for offering service & support



**Consulting**

**Pursuing precision lighting**

We provide consulting regarding our top world class lighting technology. Each office has a laboratory (Tokyo, Nagoya, and Kyoto are fully equipped with line sensor laboratories) that can be hired for imaging experiments. We suggest light units that are optimal for all of your needs.



**Development**

**Design without compromises**

CCS carries out design and development of light units by applying optical, heat, control, evaluation and other technology such as optical, heat and other simulation. We give form to lighting technology by using our unique development capabilities.



**Production**

**High-quality domestic manufacturing**

All of our products are manufactured in Japan. We produce small quantities of a large variety of products in order to develop products that match a wide range of needs. Each of our workers have their own individual work station where they take responsibility for all aspects from mounting and assembly to inspection using our own unique inspection equipment.



**Application**

**Discovering new lighting**

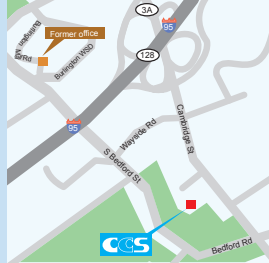
We are also applying the technology and know-how accumulated in the field of LED light for image processing in order to advance into new fields such as the development of UV LED lights used in manufacturing processes such as panel affixing, and the development of an original natural light LED with characteristics near to those of sunlight.



# Business Locations

## CCS America, Inc. (USA)

10 State Street, Suite 103,  
Woburn, MA 01801, U.S.A.  
TEL: +1-781-272-6900, FAX: +1-781-272-6902  
Email: info@ccsamerica.com  
https://www.ccsamerica.com/



## CCS Europe N.V. (Belgium)

Bergensesteenweg 421B,  
1600 Sint-Pieters-Leeuw, Belgium  
TEL: +32-(0)2-333-0080  
FAX: +32-(0)2-333-0081  
Email: sales@ccseu.com



## Detroit Testing Room (USA)

41650 Gardenbrook Road, Suite 100,  
Novi, MI 48375, U.S.A.  
Email : info@ccsamerica.com  
https://www.ccsamerica.com/

## CCS Asia PTE. LTD. (Singapore)

35 Marsiling Industrial Estate Road 3,  
#05-03, Singapore 739257  
TEL: +65-6363-1180, FAX: +65-6363-1236  
Email: sales@ccs-asia.com.sg  
http://www.ccs-asia.com.sg/



## CCS MV (Thailand) Co., Ltd.

349 SJ Infinite I Business Complex, 16th Floor, Unit 1607,  
Vibhavadi-rangsit Road, Kwaeng Chompol,  
Khet Chatuchak, Bangkok 10900, Thailand  
TEL: +66-(0)2-7791-1051, FAX: +66-(0)2-7791-1054  
Email: salesth@ccs-asia.com.sg



Fully-equipped  
line sensor  
testing room

## CCS Asia Malaysia Representative Office

Level 2, Unit 15, Setia SPICE, Jalan Tun Dr Awang,  
11900 Penang, Malaysia  
TEL: +604-611-6656  
Email: sales-msia@ccs-asia.com.sg

Fully-equipped  
line sensor  
testing room

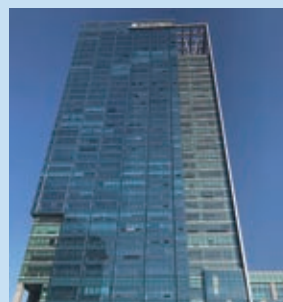
## CCS Asia Kuala Lumpur Testing Room (Malaysia)

Block B-3A-15 Oasis Square, 2 Jalan PJU 1A/7A Ara  
Damansara, 47301 Petaling Jaya, Selangor, Malaysia  
TEL: +603-5626-1686  
Email: sales-msia@ccs-asia.com.sg

## CCS KOREA Inc. (Korea)

1603-1604, O'BIZ TOWER, 126, Beolmal-ro, Dongan-gu,  
Anyang-si, Gyeonggi-do,  
Republic of Korea  
TEL: +82-31-360-3656  
Email: ccskorea@ccs-inc.co.jp

Fully-equipped  
line sensor  
testing room

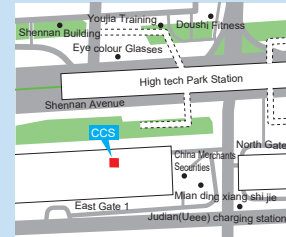




**CCS China Inc. (China)**

A407, TCL Building, Gaoxinnan 1st Road,  
Nanshan District, Shenzhen, Guangdong 518057  
P.R. China  
TEL: +86-755-8279-0477  
FAX: +86-755-8279-0478  
Email: [ccschina@ccs-inc.co.jp](mailto:ccschina@ccs-inc.co.jp)  
<https://www.ccs-chn.com/>

Fully-equipped  
line sensor  
testing room



**CCS China Inc. Shanghai Branch (China)**

Room 2006, 20/F, Tower 1, Kerry Everbright City, 218  
Tian Mu Road West, Jingan District, Shanghai 200070  
P.R. China  
TEL: +86-21-5835-8728  
FAX: +86-21-5835-8928  
Email: [ccschina@ccs-inc.co.jp](mailto:ccschina@ccs-inc.co.jp)  
<https://www.ccs-chn.com/>

Fully-equipped  
line sensor  
testing room



**CCS China Suzhou Testing Room**

Yi Yang Zhi Tong Building 8 floor, Room 8207,  
Dong Ping Street, SIP, Suzhou, Jiangsu, China  
TEL: +86-189-6251-1166  
Email : [ccschina@ccs-inc.co.jp](mailto:ccschina@ccs-inc.co.jp)  
<https://www.ccs-chn.com/>

Fully-equipped  
line sensor  
testing room



**Taiwan Office**

Name: CCS Inc. Taiwan Office  
4th Floor, No. 76, Section 2,  
Nanjing E.Rd., Zhongshan Dist.,  
Taipei City 10457  
TEL: +886-2-2581-7676  
FAX: +886-2-2581-7662  
Email: [taiwan-tr@ccs-inc.co.jp](mailto:taiwan-tr@ccs-inc.co.jp)

**Affiliated Companies**

**EFFILUX SAS (France)**

Mini Parc du Verger - Bâtiment E,  
1 Rue Terre Neuve, 91940 Les Ulis,  
France  
TEL: +33 9 72 38 17 80  
FAX: +33 9 72 11 21 69  
URL: <https://effilux.com/>  
Email: [contact@effilux.fr](mailto:contact@effilux.fr)

**EFFILUX GmbH (Germany)**

Robert-Bosch-Str. 2A,  
50354 Hürth, Germany  
TEL: +49 (0)221 28887010  
URL : [www.effilux.com/de](http://www.effilux.com/de)  
Email : [kontakt@effilux.de](mailto:kontakt@effilux.de)

**Gardasoft Vision Limited (UK)**

Units B & C Trinity Court Buckingway  
Business Park, Anderson  
Road, Swavesey, Cambridge,  
Cambridgeshire, CB24 4UQ, UK  
TEL: +44 1954 234970  
URL: <http://www.gardasoft.com/>  
Email: [vision@gardasoft.com](mailto:vision@gardasoft.com)

# Business Locations

## Japan Domestic Offices

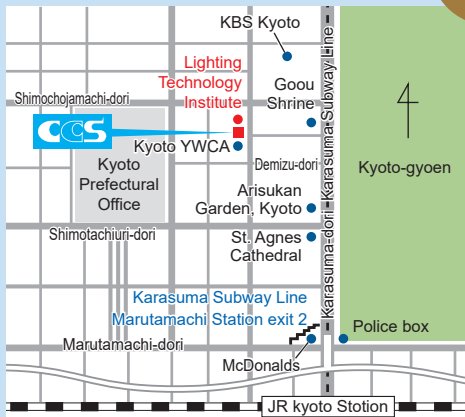
### Kyoto Head Office / Seibu Sales Office / Testing Room / Kyoto AI Lab

38 Konohe-cho, Demizu-Agaru, Muromachi-dori,  
Kamigyo-ku, Kyoto 602-8019, Japan  
TEL: +81-75-415-8277 (Sales), FAX: +81-75-415-8278 (Sales)



<Access Information>  
From JR Kyoto Station, take the  
Subway Karasuma Line to  
Marutamachi Station. 7 minutes  
walk to left.

Fully-equipped  
line sensor  
testing room



### Tokyo Sales Office

3F Hamarikyu Intercity 1-9-1, Kaigan, Minato-ku, Tokyo  
105-0022, Japan  
TEL: +81-3-4346-0560, FAX: +81-3-4346-0561



<Access Information>  
6 minutes walk from Hamamatsu-cho  
Station(JR)  
7 minutes walk from Daimon Station  
(Oedo Subway Line)  
4 minutes walk from Takeshiba Station  
(Yurikamome train)

### Nagoya Sales Office / Testing Room

6F Horiuchi Building Part 3, 4-6-23 Meieki, Nakamura-ku,  
Nagoya, Aichi 450-0002, Japan  
TEL: +81-52-541-6550, FAX: +81-52-541-6050



< Access Information >  
3 minutes walk from JR Nagoya Station  
(Right outside exit 5 of the underground  
Unimall)

Fully-equipped  
line sensor  
testing room

### Sendai Sales Office / Testing Room

13F Mitsui-seimei sendai-honcho Building (Azur Sendai),  
1-1-1 Honcho, Aoba-ku, Sendai, Miyagi 980-0014, Japan  
TEL: +81-22-224-9101, FAX: +81-22-224-9102



<Access Information>  
3 minutes walk from the West exit of  
JR Sendai Station  
/3 minutes walk from subway Sendai  
Station  
/3 minutes walk from subway  
Hirose-dori Station

### Kyoto Technology Development and Manufacturing Center

506 Takeda Mukaishiro-cho, Fushimi-ku,  
Kyoto 612-8418, Japan  
TEL : +81-75-555-3479 FAX : +81-75-555-3480  
(Research and Technology Development Unit)  
TEL : +81-75-691-5600 FAX : +81-75-691-5601  
(Production Unit)

### Lighting Technology Institute (Kyoto)

33 Konoemachi, Demizu-Agaru, Muromachi-dori,  
Kamigyo-ku, Kyoto 602-8019, Japan  
TEL: +81-75-415-2101, FAX: +81-75-432-0101



#### Sapporo (Hokkaido) Testing Room

Room #201 Sun Court Kita 7-jo Ichibankan, 21-3, Kita 7-jo Higashi 7-chome, Higashi-ku, Sapporo, Hokkaido 060-0907, Japan  
TEL: +81-22-224-9101  
(Contact: Sendai Sales Office)  
<Access Information>  
14 minutes walk from JR Sapporo station  
9 minutes walk from exit 4 of Subway Higashi-Kuyakusho-Mae Station

#### Ebisu Testing Room / Tokyo AI Lab

11F Asahi Mutual Life Insurance Co. Ebisu Building  
1-3-1, Ebisu, Shibuya-ku, Tokyo 150-0013, Japan  
TEL: +81-3-4346-0560  
(Contact: Tokyo Sales Office)  
<Access Information>  
3 minutes walk from Ebisu Station, of both JR Yamanote Line and Hibiya Subway Line

#### Kanazawa (Ishikawa) Testing Room

Room #301 Royal Park Plaza 1-13-38, Kitayasue, Kanazawa, Ishikawa, 920-0022, Japan  
TEL: +81-52-541-6550  
(Contact: Nagoya Sales Office)  
<Access Information>  
9 minutes walk from JR Kanazawa Station by West exit

#### Moriyama (Shiga) Testing Room

3F Umeda Sky Building 10-1, Umeda-Cho, Moriyama, Shiga, 524-0037, Japan  
TEL: +81-75-415-8277  
(Contact: Seibu Sales Office)  
<Access Information>  
7 minutes walk from JR Moriyama Station by West exit

#### Hakata (Fukuoka) Testing Room

Room #703 1-14-3 Hakataekihigashi, Hakata-ku, Fukuoka, 812-0013, Japan  
TEL: +81-75-415-8277  
(Contact: Seibu Sales Office)  
<Access Information>  
5 minutes walk from JR Hakata Station

#### Omiya (Saitama) Testing Room

Room #608 Charmant 5 3-210-1  
Miyahara-cho, Kita-ku, Saitama-shi, Saitama, 331-0812, Japan  
TEL: +81-3-4346-0560 FAX: +81-3-4346-0561 (Contact: Tokyo Sales Office)  
<Access Information>  
4 minutes walk from Miyahara Station on the JR Takasaki line (One minute from JR Omiya station).  
7 minutes walk from Kakonomiya Station, Saitama New Urban Transit

#### Yokohama (Kanagawa) Testing Room

Room #201 Grand Chariot, 1-32-18 Hiranuma, Nishi-ku, Yokohama-shi, Kanagawa 220-0023, Japan  
TEL: +81-3-5791-3701  
(Contact: Tokyo Sales Office)  
<Access Information>  
9 minutes walk from JR Yokohama station by East exit.  
4 minutes walk from Sagami Railway Hiranumabashi Station by South exit.  
6 minutes walk from Keikyu Tobe Station.

#### Mikawa Testing Room

Room #1401 Casa Verde, 2-3-8 Mikawa Anjo hon-machi, Anjo City, Aichi 446-0059, Japan  
TEL: +81-52-541-6550  
(Contact: Nagoya Sales Office)  
<Access Information>  
6 minutes walk from JR Mikawa anjo station

#### Yodoyabashi (Osaka) Testing Room

Room #1101 3F Exe Tower Doshomachi 3-3-8, Doshomachi, Chuo-ku, Osaka, 541-0045, Japan  
TEL: +81-6-6203-8886 FAX: +81-75-415-8281  
(Contact: Seibu Sales Office)  
<Access Information>  
2 minutes walk from Midosuji Line Yodoyabashi Station

#### Kumamoto Testing Room

Room #203 Lurashu-toroku, 6-10-51 Toroku, Chūō-ku, Kumamoto, 862-0970, Japan  
TEL: +81-75-415-8277  
(Contact: Seibu Sales Office)  
<Access Information>  
10 minutes walk from JR Tōkai-Gakuen-mae Station

# Service and Support

I want to verify some various light units but  
**our company doesn't have a proper environment.**

**Resolve by free loan products**

I need to  
**change the wavelength and size of the light unit**  
for defect testing of electronic parts...

**Resolve by custom ordering**

**These worries can be resolved.**

I'm not sure that the light units mounted on my existing testing equipment are okay...  
**I want to make them more stable.**

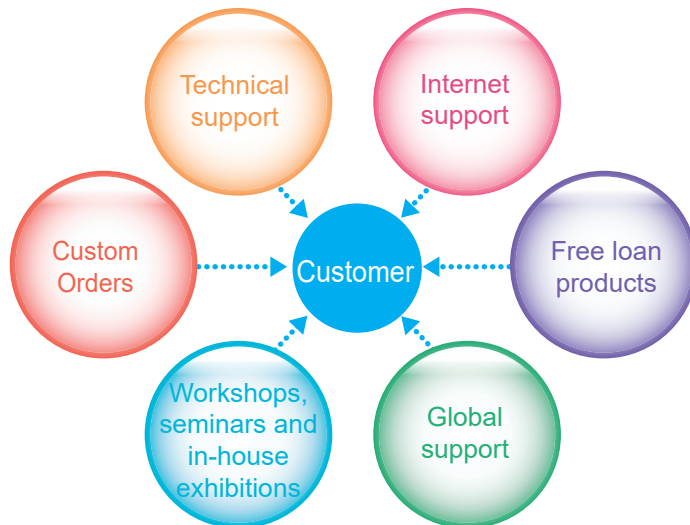
**Resolve by free consulting**

Can the shiny lettering on the surface of a workpiece  
**be clearly read?**

**Resolve by free testing**

We can do it because CCS is number one in the industry.

## Light unit design is the key to success in Image Processing!



# Testing Room Information

We can satisfy all of your requirements with our rich product assortment.

## ➤ Testing Rooms



CCS has fully-equipped testing rooms where we can find out the optimum inspection conditions for your workpieces. The equipment includes LED lights for machine vision, control units, cameras, lenses, and other peripherals from various manufacturers.

If you want to test a workpiece, send us a sample. We will provide you with the optimal image to meet your needs.

You can use this service free of charge. We are looking forward to helping you.



## ➤ Line-Sensor Testing Rooms

We have testing rooms especially for line sensor light.

### Cylindrical sample test bench



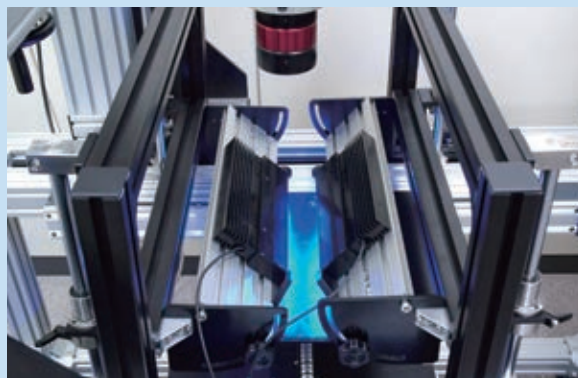
We perform tests that nearly recreate your imaging environment. We suggest the lighting solution for getting optimal images using our LED lights, control units, and options.

- For customers without line-sensor testing equipment who are concerned about workpiece testing
- Customers who want to bring in line cameras

It is also applicable to various other imaging environments.

In addition to the above, we have a wide variety of lenses and cameras. Please feel free to inquire.

### Flat sample test bench



#### Installation example

Optical system (Lens)	Nikon Ai Micro-Nikkor 55 mm f/2.8S Large format lens x 0.7
Camera	8,192 pixel line sensor camera
Image processing	Hardware image processing board
Uniaxial table	Stepping motor Stroke: 600 mm max, 50 mm/sec to 400 mm/sec
Resolution	10 $\mu$ m x 10 $\mu$ m to 100 $\mu$ m x 100 $\mu$ m
Variety of setups	Direct light setup, diffused light setup, transmitted light setup

**CCS website**

**[www.ccs-grp.com](http://www.ccs-grp.com)**

**CCS Headquarters**

38 Konoecho, Demizu-Agaru,  
Muromachi-dori, Kamigyo-ku,  
Kyoto 602-8019, Japan  
t: +81 75 415 8280  
w: [www.ccs-grp.com](http://www.ccs-grp.com)

**CCS America, Inc.**

10 State Street, Suite 103  
Woburn, Massachusetts 01801, U.S.A.  
t: +1-781-272-6900  
e: [info@ccsamerica.com](mailto:info@ccsamerica.com)  
w: [www.ccsamerica.com](http://www.ccsamerica.com)

**CCS Europe N.V.**

Bergensesteenweg 421B,  
1600 Sint-Pieters-Leeuw, Belgium  
t: +32-2-333-0080  
e: [info@ccseu.com](mailto:info@ccseu.com)  
w: [www.ccs-grp.com](http://www.ccs-grp.com)

**CCS Asia PTE. LTD.**

35 Marsiling Industrial Estate Road  
3, #05-03  
Singapore 739257  
t: +65-6363-1180  
e: [sales@ccs-asia.com.sg](mailto:sales@ccs-asia.com.sg)  
w: [www.ccs-asia.com.sg](http://www.ccs-asia.com.sg)

**CCS MV (Malaysia) Sdn.Bhd.**

Level 2, Unit 15, Setia SPICE Canopy,  
Jalan Tun Dr Awang, Bayan Baru,  
11900, Pulau Pinang, Malaysia  
t: +604-611-6656  
e: [sales-msia@ccs-asia.com.sg](mailto:sales-msia@ccs-asia.com.sg)  
w: [www.ccs-asia.com.sg](http://www.ccs-asia.com.sg)

**CCS MV (Thailand) Co., Ltd.**

349 SJ Infinite I Business Complex, 16th  
Floor, Unit 1607, Vibhavadi-rangsit Road,  
Kwaeng Chompol, Khet Chatuchak,  
Bangkok 10900, Thailand  
t: +66-(0)2-779-1051  
e: [salesth@ccs-asia.com.sg](mailto:salesth@ccs-asia.com.sg)  
w: [www.ccs-asia.com.sg](http://www.ccs-asia.com.sg)

**CCS China Inc.**

A407, TCL Building, Gaoxinnan 1st  
Road, Nanshan District, Shenzhen,  
Guangdong 518057 P.R. China  
t: +86-755-8279-0477  
e: [ccschina@ccs-inc.co.jp](mailto:ccschina@ccs-inc.co.jp)  
w: [www.ccs-chn.com](http://www.ccs-chn.com)

**CCS KOREA Inc.**

1603-1604, O'BIZ TOWER, 126, Beolmal-ro,  
Dongan-gu, Anyang-si, Gyeonggi-do,  
Republic of Korea  
t: +82-31-360-3656  
e: [ccskorea@ccs-inc.co.jp](mailto:ccskorea@ccs-inc.co.jp)  
w: [www.ccs-grp.com](http://www.ccs-grp.com)

Many of our products are protected by intellectual property rights.  
(patents, industrial designs and trademarks).  
Be warned against imitations of the CCS brand.



Copyright © 2024 CCS Inc. All Rights Reserved.  
Descriptions in this catalog are based on information available as of January 2024  
v15012024