Safety Light Curtain

F3SG-R

Increase both durability and productivity

The new cutting oil resistant Rugged type is added

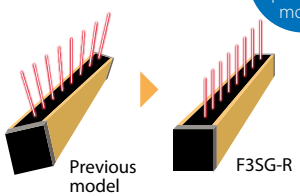
Safety Light Curtain
F3SG-R Series

Fast set-up and high resistance to environmental changes

Tough 1 Resistant to vibration

Torsion resistance

5 times* greater than previous model

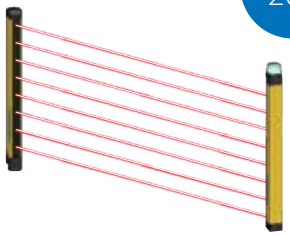


Tough 2 Rugged against environmental changes

High power

Operating range

Up to 20m



Tough 3 Reliable in dusty wash-down environments

IP67

* Compared to the previous model (Omron survey as of March 2017)

A choice of products to suit your need

Multiple versions available: finger, hand and arm protection

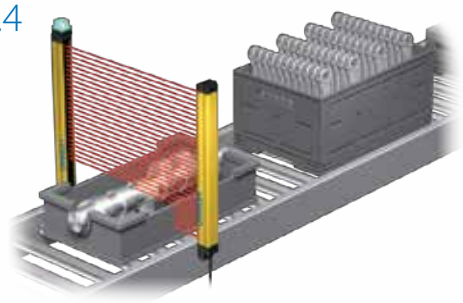
Ideal for flexible manufacturing

Multifunctional Advanced type

F3SG-RA

- Quick and easy installation
- Stable operation and predictive maintenance
- For global use
- Easy adjustment
- Easy configuration and maintenance

p.4



For environments where cutting oil is present

Cutting oil resistant Rugged type

F3SG-RR NEW

- IP67G

p.10

Ideal for simple applications

Simple Easy type

F3SG-RE

- Simple functions
- Reduced wiring
- Fast response time: 5 ms

p.11

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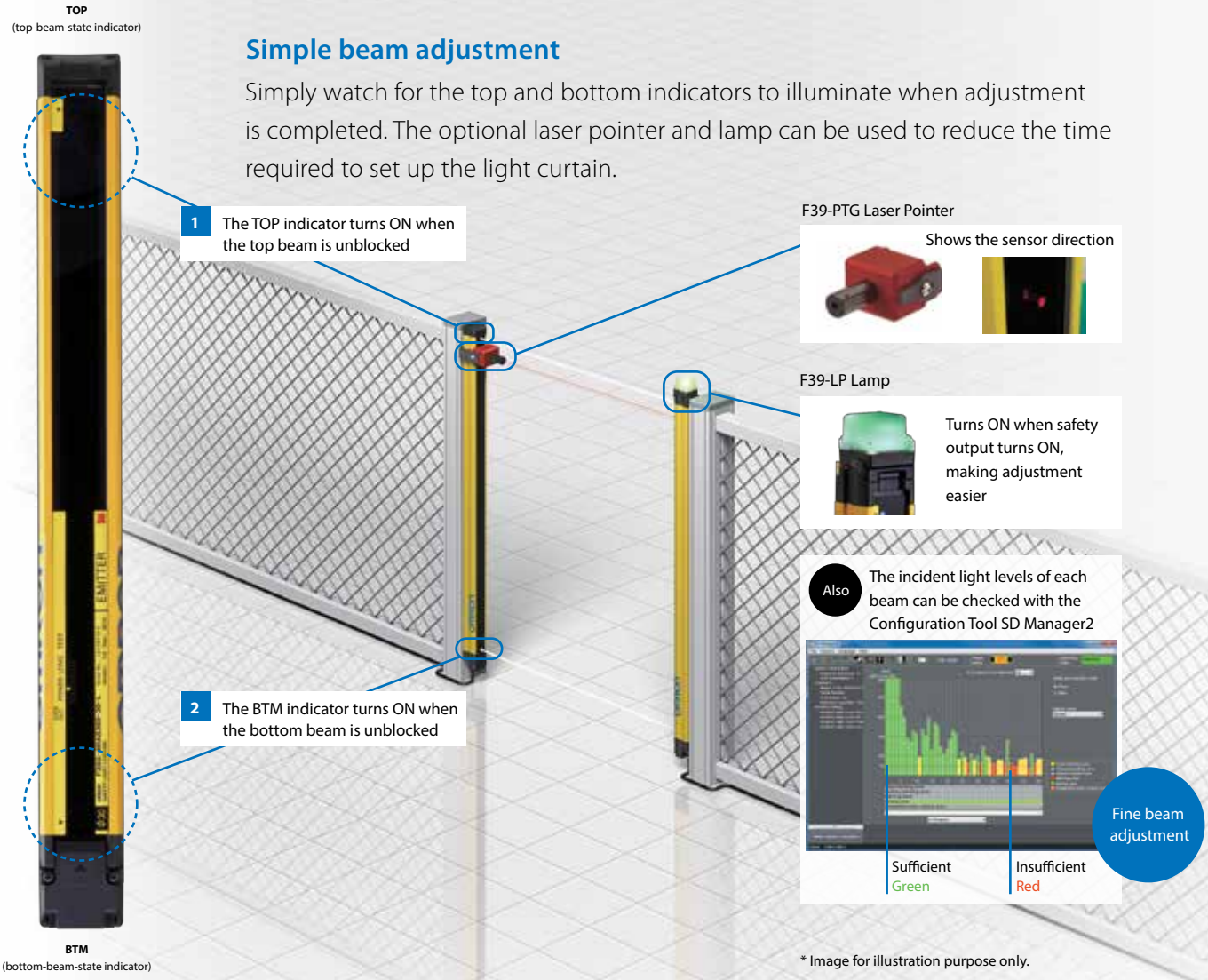
Quick and easy installation

Intuitive and smart designs for fast set-up

Simple beam adjustment

Simply watch for the top and bottom indicators to illuminate when adjustment is completed. The optional laser pointer and lamp can be used to reduce the time required to set up the light curtain.



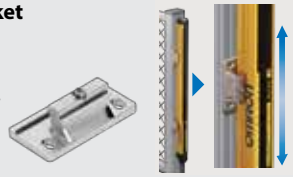
* Image for illustration purpose only.

Mounting brackets

Four types of mounting brackets provide vertical or vertical and horizontal adjustment even after mounting, making beam adjustment easier.

Standard fixed bracket

You can slide the F3SG-R up and down to make vertical adjustments after mounting on a safety fence.



Standard adjustable bracket
(sold separately)

This bracket provides vertical as well as horizontal adjustment of ±15°.

Top/bottom adjustable bracket
(sold separately)

Use this bracket at the top and bottom of the F3SG-R to make horizontal adjustment of ±22.5°.

Top/bottom adjustable bracket
(for user-made mounting part)
(sold separately)

The wall mounting bracket is not provided so that you can design your own wall mounting part.

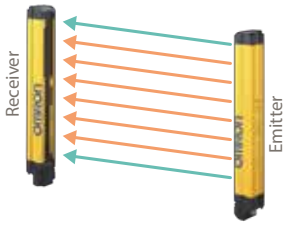
Optical synchronization—No sync lines required

Optical synchronization eliminates the need of wiring for synchronization between the emitter and receiver. The resulting flexible wiring reduces disconnection risk and avoids noise sources.

Optical synchronization

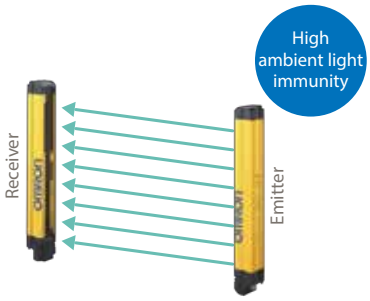
Start-up

The top or bottom beam of the emitter starts synchronizing with the corresponding beam of the receiver



After sync

Once synchronization is done, the emitter is kept synchronized with the receiver while at least one beam is unblocked



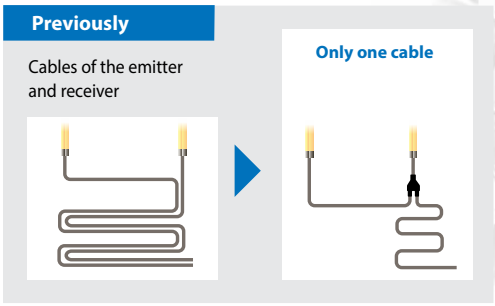
Smartclick cable connection for fast set-up

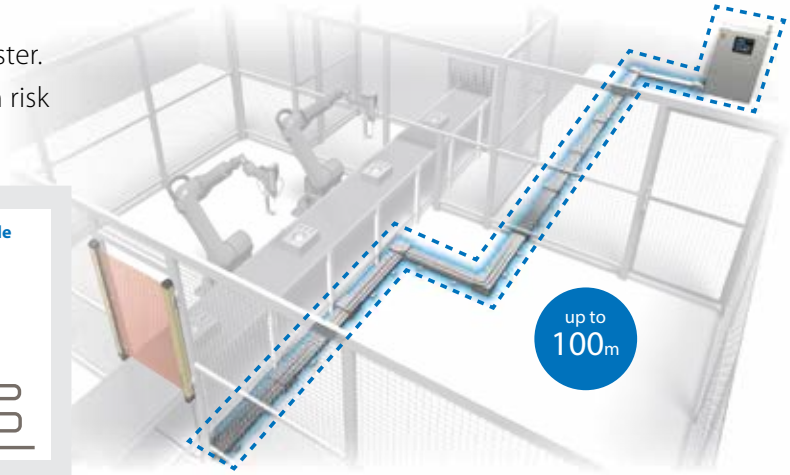
No torque-control required:
the Smartclick connectors connect cables with just a 1/8th turn of the M12 waterproof connector.

* Smartclick is a registered trademark of OMRON Corporation

Simple wiring thanks to reduced wiring connectors

Simple wiring makes installation faster. Fewer cables reduce disconnection risk and noise trouble.



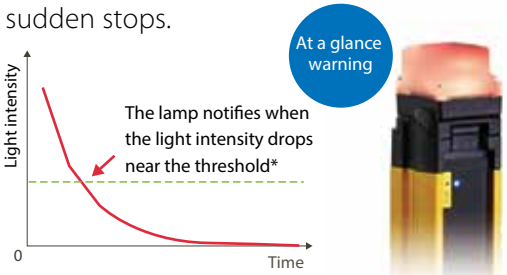


Stable operation and predictive maintenance

Visualization eliminates machine downtime

Low light intensity notification lamp

The lamp notifies when the incident light level drops due to dirt, which prevents sudden stops.



* The incident light level at which the light curtain turns OFF

F39-LP Lamp

Data logging for quick troubleshooting

The error logs stored in the F3SG-RA can be downloaded to a PC that is connected with the F3SG-RA using the dedicated interface unit. The Configuration Tool SD Manager2 can be used to analyze errors to identify causes and solutions. The data on light intensity, power-ON time, and switching frequency can also be collected regularly for predictive maintenance.

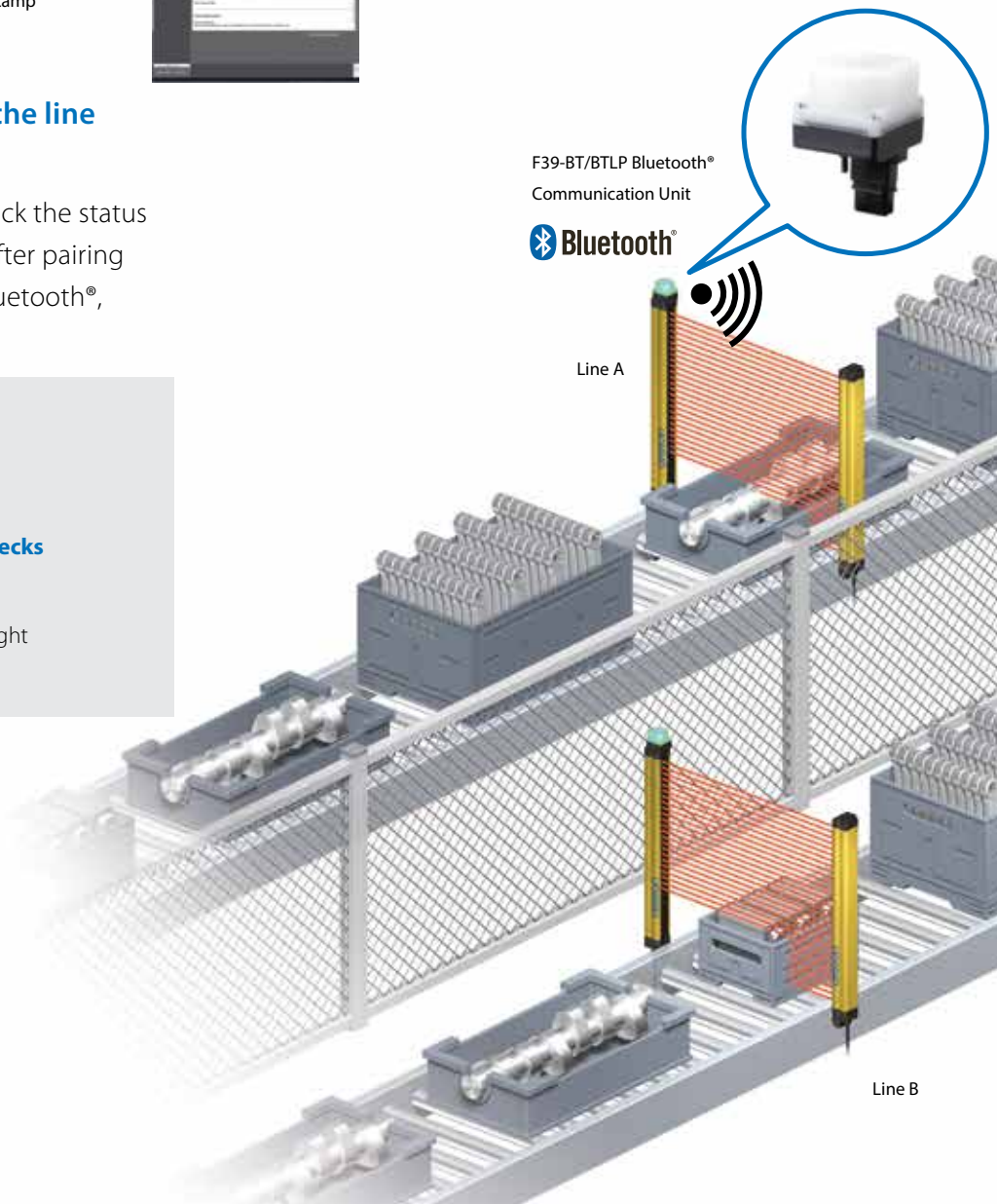
Configuration Tool SD Manager2

Check status without stopping the line with Bluetooth®

The SD Manager2 can be used to check the status of the safety light curtain wirelessly after pairing the safety light curtain with PC via Bluetooth®, which reduces maintenance time.

Wireless connectivity

- **Monitoring during operation**
- **No possibility of blocking beams**
- **No work required after completing checks**
- Monitoring from **anywhere**
- Serial number to choose the right safety light curtain from **many installed on lines**



Easy to deploy around the world

PNP/NPN selection

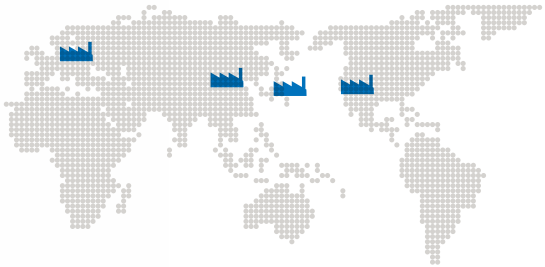
The F3SG-RA is designed to be used in a variety of environments around the world, conforming to international standards.

PNP or NPN can be selected with the DIP switch. The same cables are used.

The F3SG-R conforms to major international standards including Chinese GB standards

Global production and delivery

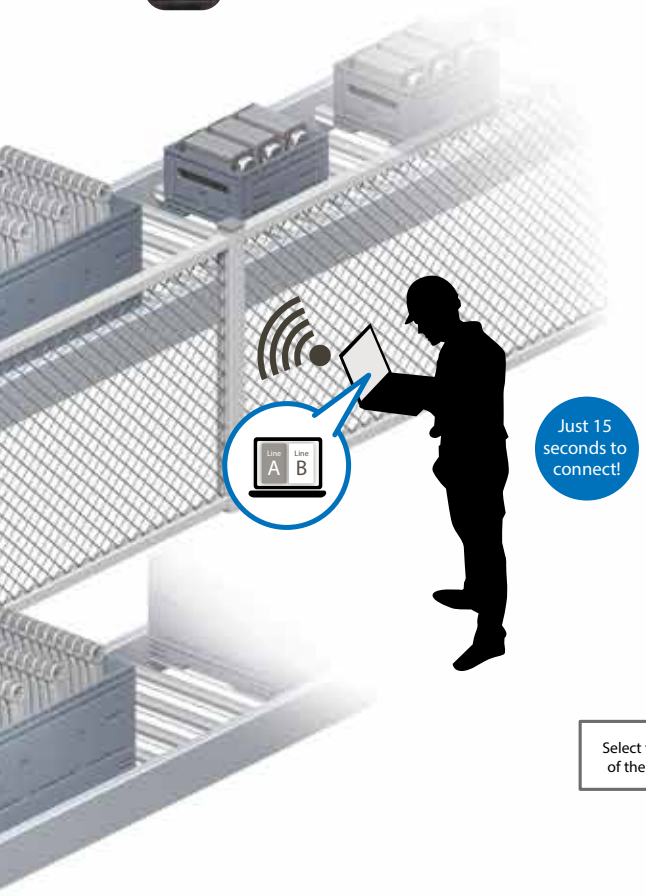
Omron enhanced the global production bases and local services in Japan, China, United States and Europe to deliver Omron products quickly and reliably. Our sales network of approximately 150 offices in 40 countries and regions supports our customers.



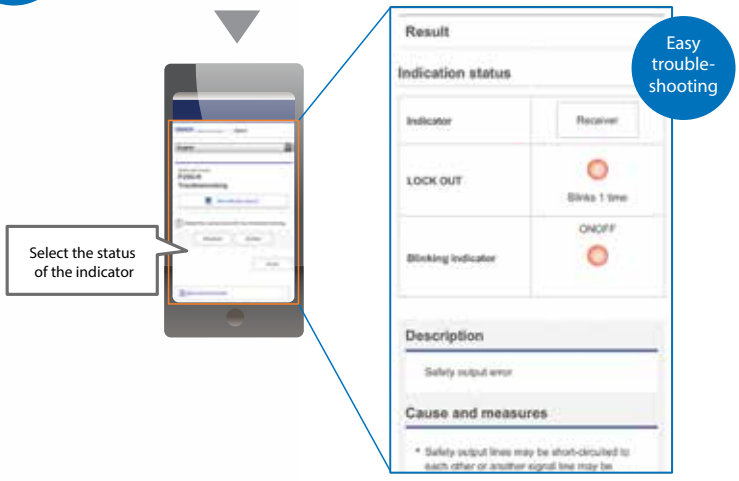
Troubleshooting in eight languages*

You can find causes and solutions of errors that occur during operation on the troubleshooting web page in eight languages. Operators across the world can check the error details in their local languages, which will help them minimize time to troubleshoot.

* English, Chinese, Italian, Korean, French, German, Spanish and Japanese



Scan the QR code and go directly to the troubleshooting web page

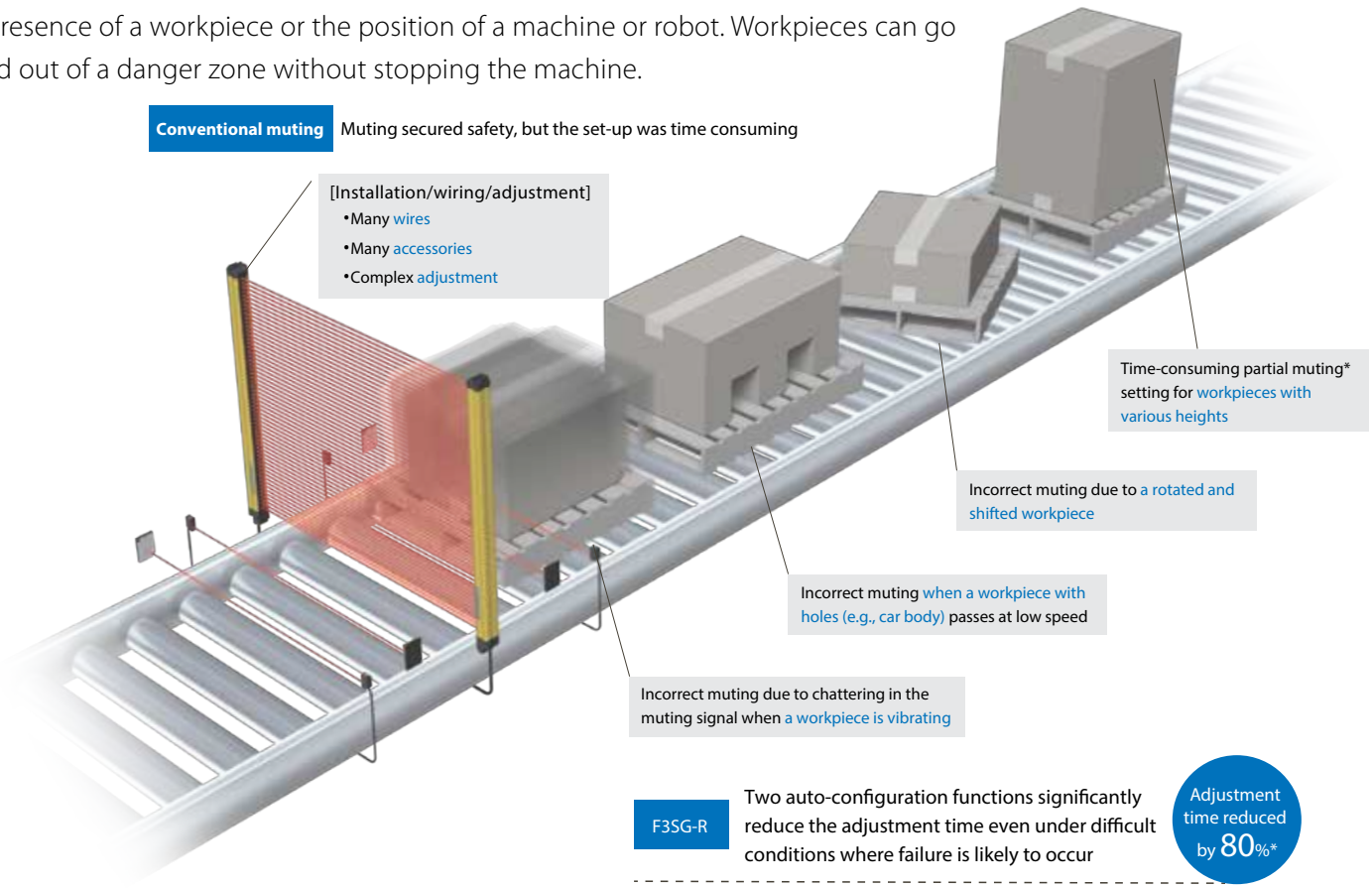


Easy adjustment

Increase productivity by detecting workpieces correctly

Muting

The F3SG-RA provides the advanced Muting function that disables beams which detect the presence of a workpiece or the position of a machine or robot. Workpieces can go in and out of a danger zone without stopping the machine.

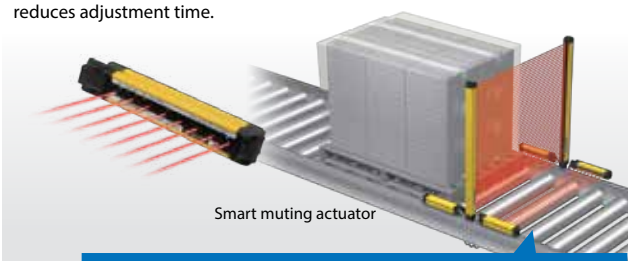


* Compared to the previous model (Omron survey as of March 2017)

Multiple-beam sensor technology for vibrating workpieces

Smart muting actuator

The smart muting actuator extends the functions of the F3SG-R in applications where a workpiece is vibrating forward and backward This prevents unexpected machine downtime and significantly reduces adjustment time.

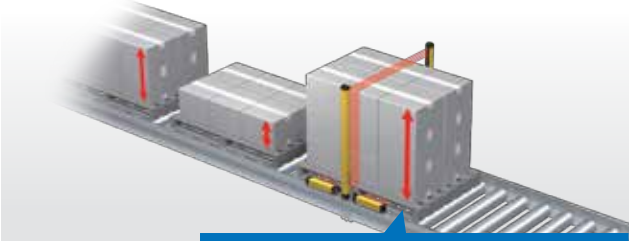


Automatic and flexible detection even under unstable conveying conditions

Automatic partial muting for workpieces with various heights

Dynamic muting

When workpieces with various heights are conveyed on the same line, the dynamic muting function automatically sets the appropriate beams, based on the height of the object.



Partial muting based on the detected workpiece height

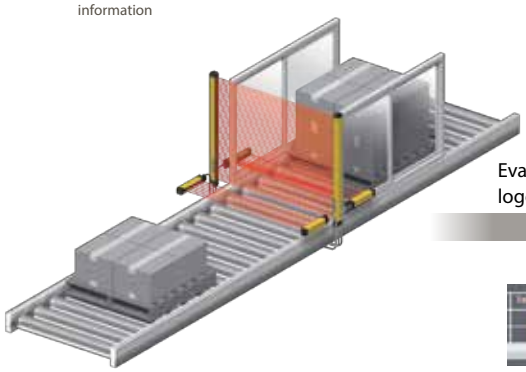
* Partial muting: A function that allows specified beams (e.g., beams blocked by a workpiece) to be disabled, keeping others active, even during muting

Easy to use | Configuration Tool SD Manager2

Minimizing setting and detection errors

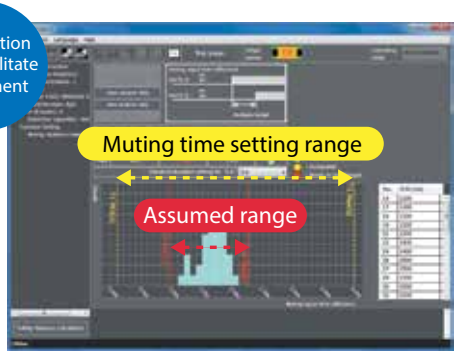
Muting statistics information

The Configuration Tool SD Manager2 visualizes the installation positions and settings by logging the muting sensor operating conditions of the F3SG-R. It helps ensure reliable, first-time-right configuration.



Evaluates settings using logged results

Visualization helps facilitate adjustment



Examples of logging

Low risk of intermittent stop, but not safe

OK in a test run, but intermittent stop may occur during long-term operations

Test run result is out of setting range. Muting sequence error occurred.

From configuration and adjustment to maintenance

The SD Manager2 helps you to make and change settings

Easy-to-understand icons

Examples

Monitoring

Incident/ambient light level monitoring

Monitor incident light levels of each beam for fine tuning

Maintenance information

Check error log and other data required for maintenance

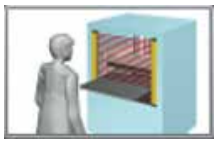
I/O Setting

Auxiliary output/lamp

Change the settings assigned to each output including lamp color and pattern

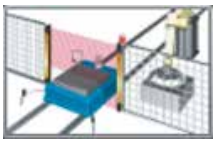
Function Setting

Fixed blanking



Set disabled beams manually or by teach-in

Muting/override



Set disabled beams and time. Setting can be evaluated.

IP67G

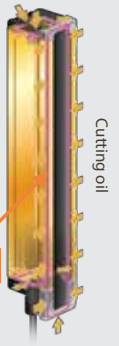
Rugged design for reliable use in cutting oil environments

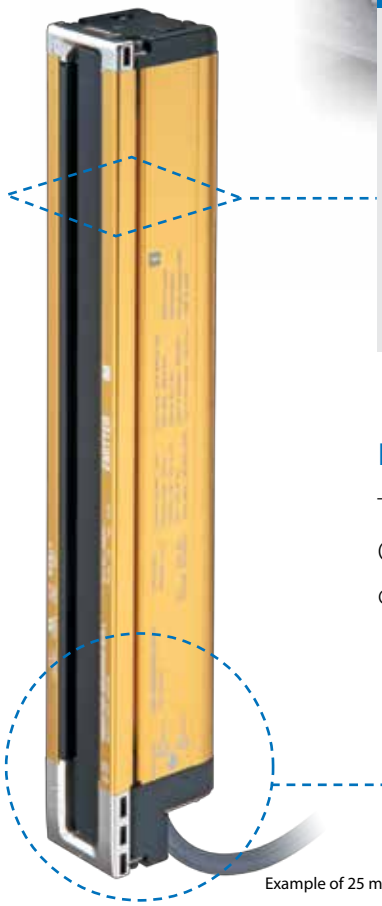
Unique construction

No gaps

Patented

The optical surface is completely covered with rubber, and the metal parts placed on the rubber are compressed and deformed to seal tightly. This construction does not use double-sided tape that oil can penetrate, preventing cutting oil from getting inside.

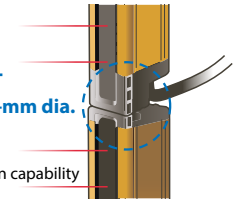




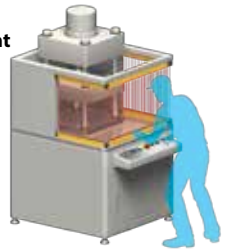
No dead space

The F3SG-R perfectly fits to machines without wasting space. Thanks to the Cascade Connection function and perfect fit installation, you can series-connect light curtains to fit various protective heights, reducing inventories.

The detection zone completely covers the joint



Example of 25 mm detection capability



* Up to three sets of F3SG-R (up to 255 beams in total) can be series-connected

Reduced wiring and fast response

Simple ON/OFF detection

Easy version for cost-efficiency

The Easy type inherits the rugged but slim housing and basic safety features of the Advanced type. Simple ON/OFF detection reduces errors, preventing productivity from dropping.

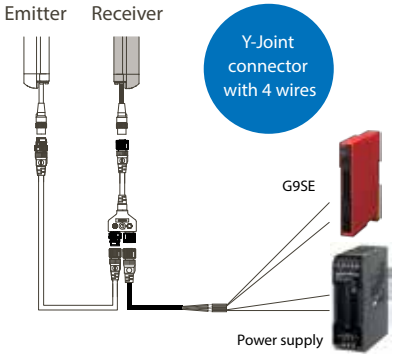
Simple safety functions to reduce errors and save costs

Reduced to just 4 wires

Fastest response time of 5 ms

Easier to build safety circuits

Only four wires are required for the minimum configuration, which is as simple as wiring a photoelectric sensor. Simple connection with a safety controller makes it easy to build a safety circuit.



Industry's fastest class*

Fastest response time of 5 ms

The Easy type that allows the distance between the light curtain and hazard source to be reduced is ideal for the use in a small machine.

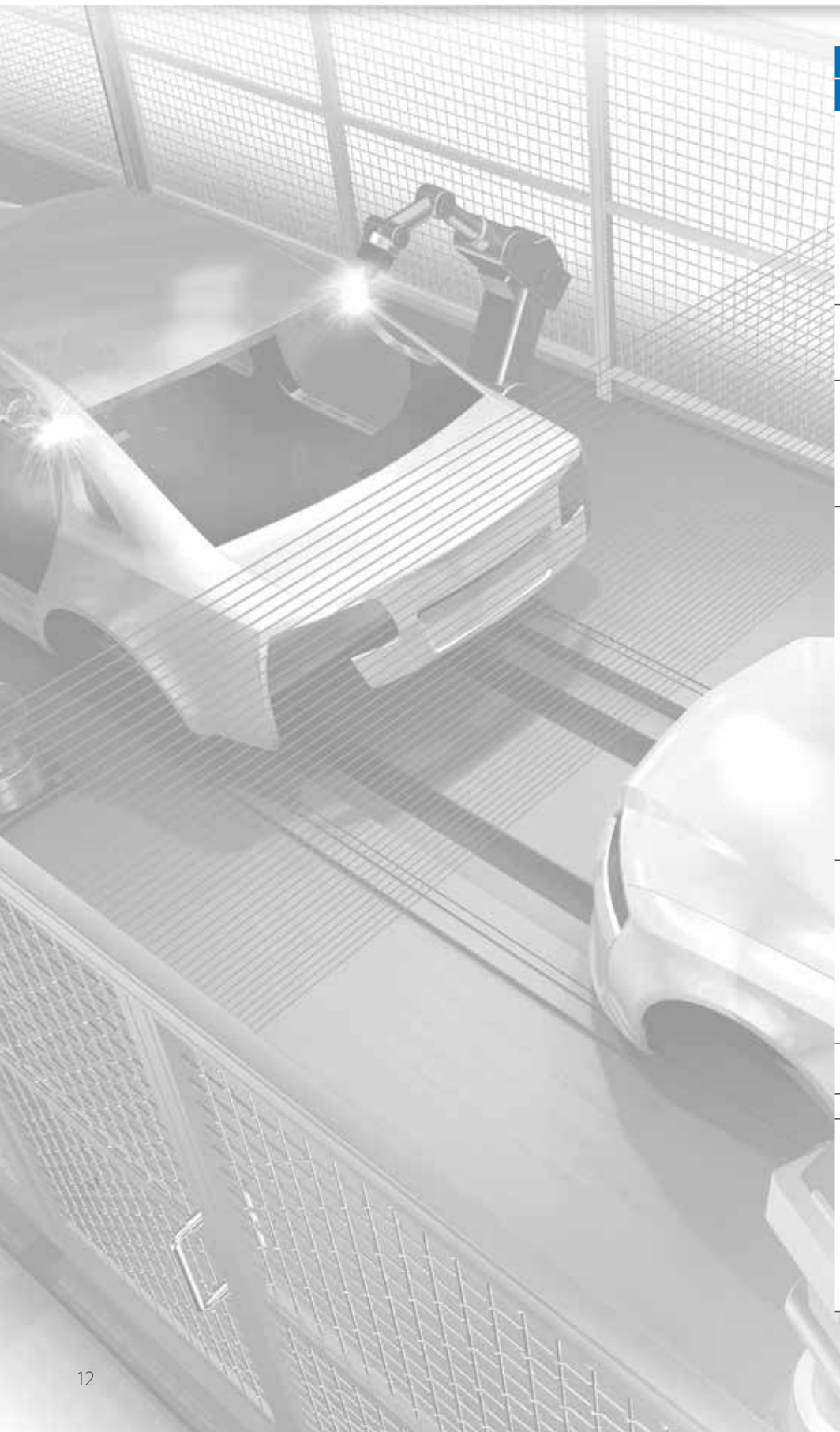
* Omron survey as of March 2017

Also

Use easy-to-obtain cables

Commercially available M12 connector cables can be used as extension cables to build a safety circuit.

List of specifications and features



Application	Finger Protection
	Hand and Arm Protection
	Body Protection
Specification	Detection Capability
	Beam Gap
	Operating Range
	Protective Height
	Number of Beams
Feature	PNP/NPN Selection
	External Test
	Interlock
	Pre-Reset
	External Device Monitoring (EDM)
	Auxiliary Output
	Muting
	Blanking
	Reduced Resolution
	Warning Zone
	Scan Code Selection
	Operating Range Selection
	Response Time Adjustment
	Designated Beam Output
Bracket	Standard Fixed Bracket
	Standard Adjustable Bracket
	Top/Bottom Adjustable Bracket
	Top/Bottom Adjustable Bracket (For User-Made Mounting Part)
	Location Bracket (Intermediate Bracket)
	Top/Bottom Bracket (3 Types)
Connection/Wiring	Cascade Connection
	Reduced Wiring
Environmental Resistance	Degree of Protection
Accessory	Lamp
	Bluetooth Communication Unit
	SD Manager2
	Laser Pointer
	Single/Double-Ended Connector Cable
	Cascading Cable
	Spatter Protection Cover

	Advanced Type		Rugged Type		Easy Type	
	F3SG-RA		F3SG-RR		F3SG-RE	
	Ideal for flexible manufacturing • Quick and easy installation • Stable operation and predictive maintenance • For global use • Easy adjustment • Easy configuration and maintenance		Ideal for environments where cutting oil is present • Four times longer oil resistance • IP67G • No dead space		Ideal for simple applications • Simple functions • Reduced wiring • Fast response time: 5 ms	
	■		■		■	
		■		■		■
	14-mm dia.	30-mm dia.	14-mm dia.	25-mm dia.	14-mm dia.	30-mm dia.
	10 mm	20 mm	10 mm	20 mm	10 mm	20 mm
	0.3 to 10 m	0.3 to 20 m	0.3 to 10 m	0.3 to 17 m	0.3 to 10 m	0.3 to 20 m
	160 to 2,080 mm	190 to 2,510 mm	240 to 1,920 mm		160 to 2,080 mm	190 to 2,510 mm
	15 to 207	8 to 124	23 to 191	12 to 96	15 to 207	8 to 124
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	IP67		IP67, IP67G		IP67	
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*1. Supports PNP/NPN by switching between 0 V and 24 V active

Setting by DIP Switch Setting by Configuration Tool Setting by Wiring

OMRON Safety Product Offering

F3SG-RA/RE/RR

1 Safety Light Curtains

The F3SG global light curtains offers advanced functionality suitable for a wide range of applications. The economy type offers simple on/off operation for basic applications. The F3SG-RA and RE both have a robust IP67 waterproof housing and the F3SG-RR has a IP67G oil resistant housing for demanding environments.

A4EG

8 Enabling Switches

Provides the additional protection needed during set-up, programming and servicing of robotic and automatic equipment.

- Has distinct clicks for three easily discernible positions

F3SJ-E

F3SJ-B

F3SJ-A

MS4800

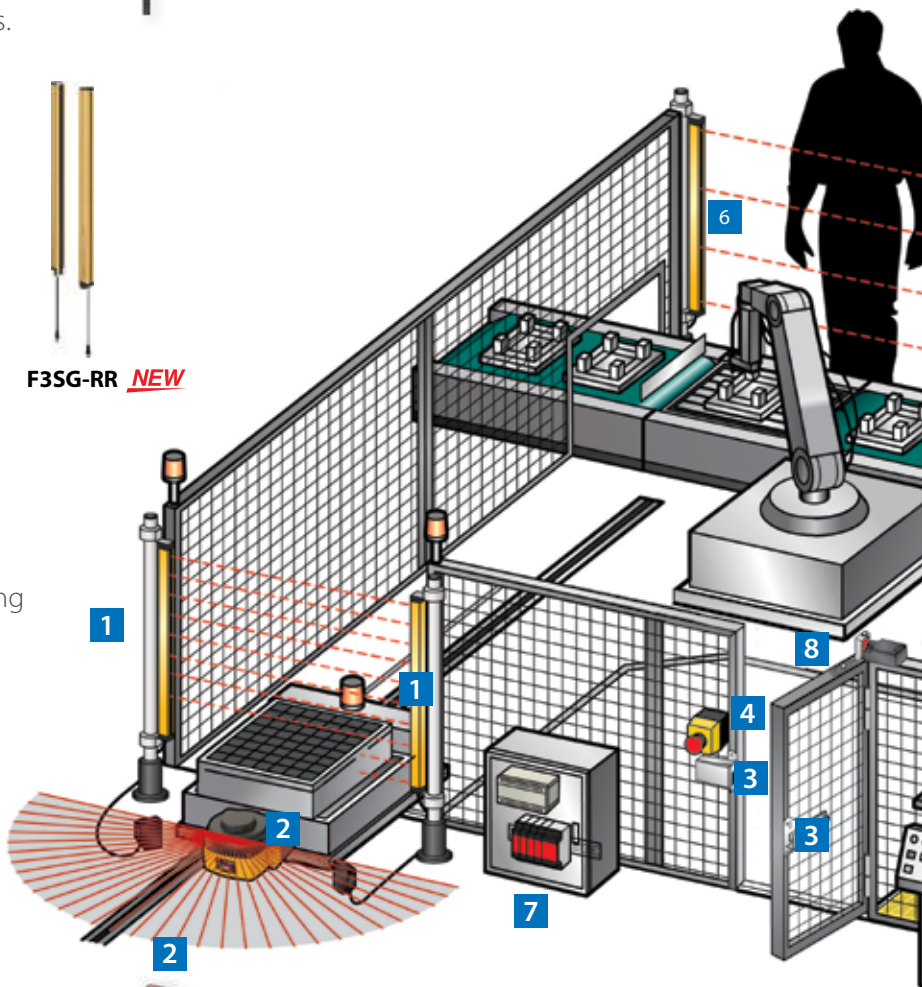
F3SG-RR *NEW*

OS32C

2 Safety Laser Scanners

Our OS32C is a very compact safety laser scanner. It has 70 zone configurations for complex guarding parameters. Safety coverage up to 4 m at 270 degrees.

Industry First!
EtherNet/IP capable of status and measurement data reporting.



3 Safety Interlock Switches

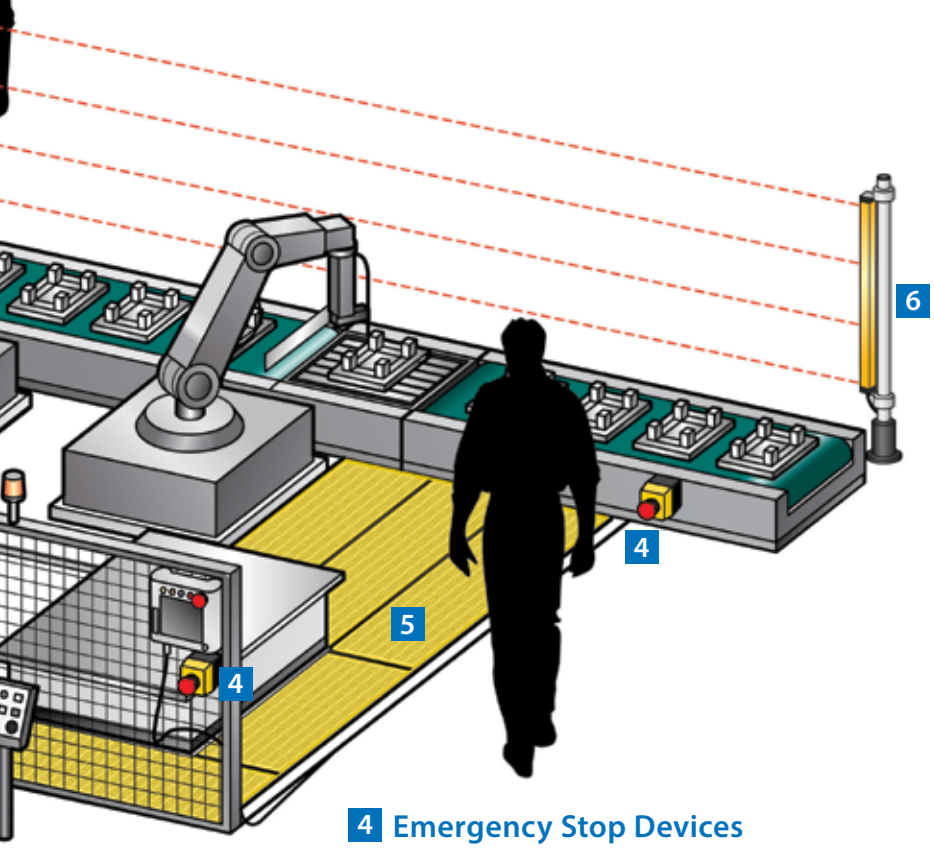
Tamper resistant switches enhance mechanical guarding methods.

- Guardlocking switches
- Hinge pin switches
- Non-contact switches
- Limit switches
- Tongue switches
- Explosion-proof versions

7 Safety Programmable Controllers
7 Safety Monitoring Relays

The NX-S series of controller offers Safety over EtherCAT, our first to offer integrated safety functionality into the Sysmac platform, suitable for mid to large sized applications; now with stand-alone capabilities.

The G9SP stand-alone programmable safety controller for mid-sized applications supports direct connection to safety mats and non-contact switches. The new G9SE series of safety relay units offers an easy approach for various simple safety applications. The G9SE saves mounting space, lowers installation cost with screw-less terminals, and reduces operational cost with intuitive diagnostic indicators.



6 Perimeter Guarding

PA4600 models are available with single and multiple-beam models with an operating range to 70 meters. They're perfect when installing fences is not practical.

5 Safety Edges & Bumpers
5 Safety Mats & Area Guarding

Built tough for tough environments. Combine a mat with a controller to provide proven reliability.

4 Emergency Stop Devices

- Enclosed and panel-mounted models available with key-operated reset.
- Combination rope and push button actuated emergency stop switches.
- Heavy duty housing offering rope spans to 200 meters

OMRON AUTOMATION AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • www.omron247.com

OMRON CANADA, INC. • HEAD OFFICE
Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • www.omron247.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE
México DF • 52.55.59.01.43.00 • 01-800-226-6766 • mela@omron.com

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Apodaca, N.L. • 52.81.11.56.99.20 • 01-800-226-6766 • mela@omron.com

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• Industrial Robots • Mobile Robots

Operator Interfaces
• Human Machine Interface (HMI)

Motion & Drives
• Machine Automation Controllers (MAC) • Motion Controllers • Servo Systems
• Frequency Inverters

Vision, Measurement & Identification
• Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing
• Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors
• Rotary Encoders • Ultrasonic Sensors

Safety
• Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems
• Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices
• Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components
• Power Supplies • Timers • Counters • Programmable Relays
• Digital Panel Meters • Monitoring Products

Switches & Relays
• Limit Switches • Pushbutton Switches • Electromechanical Relays
• Solid State Relays

Software
• Programming & Configuration • Runtime

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