

SG4 FIELDBUS

openSAFETY over POWERLINK



SAFETY

First safety light curtain with integrated openSAFETY over POWERLINK
Fast and easy installation, configuration and maintenance
Complete diagnostic and monitoring available over the communication bus
Basic models : classic functions available
Advanced models: each beam status safe information available



- Two M12 connectors on receiver side for POWERLINK connection
- M8 connectors on emitter and receiver for power supply
- Up to 20m operating range and 1800m protected height
- Finger, hand and body protection
- Compact dimensions (35 x 42 mm section)
- POWERLINK node address configurable with selector switches
- Functions available in combination with B&R safety controller SL and SLX : auto/manual restart, EDM, Muting, Override
- Functions available for advanced models in combination with B&R safety controller SL: fixed blanking, floating blanking, partial and dynamic muting, warning areas, measurement



APPLICATIONS

- Automatic and semi-automatic machines and lines
- Primary packaging machinery (packing, filling, labelling, etc...)
- Cutting machinery
- Bending and metal-working machines
- Material handling machinery
- Palletizers and depalletizers
- Material handling
- Robots cells



	FINGER	HAND	ARM	BODY
TYPE 2				
TYPE 4	▪	▪		▪

INDUSTRIES

Food & Beverage, Metal, Wood, Ceramic, Automotive, Intralogistics

SG4 - 14 - 015 - OP - A

TYPE		MONITORED HEIGHT		FUNCTIONALITY	
4	Type 4	015	150 mm	A	Advanced
RESOLUTION		030	300 mm	B	Basic
14	Finger: 14 mm	...		FIELDBUS PROTOCOL	
30	Hand: 30 mm	180	1800 mm	OP	openSAFETY over POWERLINK

SG4 - S2 - 060 - OP - B

TYPE		MONITORED HEIGHT		FUNCTIONALITY	
4	Type 4	060	600 mm	B	Basic
BEAMS		080	800 mm	FIELDBUS PROTOCOL	
2	2 Beams	090	900 mm	OP	openSAFETY over POWERLINK
3	3 Beams	120	1200 mm		
4	4 Beams				

TECHNICAL DATA

SG4 FIELDBUS		
	Finger and Hand resolution [SG4-xx-xxx-OP-x]	Body detection [SG4-Sx-xxx-OP-x]
GENERAL DATA		
Type (EN61496-1)		4
PL (EN ISO 13849-1)		e
SIL (IEC 61508)		3
Resolution	14 mm [SG4-14-xxx-OP-x] 30 mm [SG4-30-xxx-OP-x]	2 beams [SG4-S2-xxx-OP-x] 3 beams [SG4-S3-xxx-OP-x] 4 beams [SG4-S4-xxx-OP-x]
Protected height	150 ...1800 mm (with 150 mm steps)	600 / 800 / 900 / 1200 mm
Operating distance	0.2 ... 6 m [SG4-14-xxx-OP-x] 0.2 ... 19 m [SG4-30-xxx-OP-x]	0.2 ...19 m
ELECTRICAL DATA		
Power supply (Vdd)		24 Vdc ± 20%
Consumption (Transmitter):		3 W max
Consumption (Receiver):		5 W max
Response time		see response time table
Power supply cable length		50 m max
Ethernet cable length		100 m max
MECHANICAL AND ENVIRONMENTAL DATA		
Operating temperature		0 ...+50 °C
Humidity		15 ... 95 % (no condensation)
Mechanical protection		IP 65 (EN 60529)
FUNCTIONS		
SG4 FIELDBUS can only be used in combination with a safety PLC to which it transmits safety information about its status through openSAFETY over POWERLINK. BASE models transmit only their ON/OFF status, ADVANCED models transmit also each beam status. Using appropriate functional blocks or instructions inside the safety PLC it is possible to implement the following functions:		
BASE MODELS [SG4-xx-xxx-OP-B] ADVANCED MODELS [SG4-xx-xxx-OP-A]		Automatic/Manual restart
		External Device Monitoring
ADVANCED MODELS [SG4-xx-xxx-OP-A]		Total Muting
		Partial muting
		Auto dynamic Partial muting
		Fixed Blanking
		Floating Blanking
	Measurement	

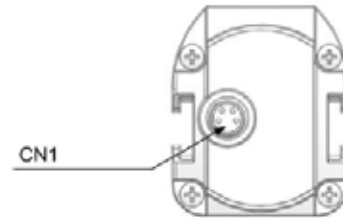
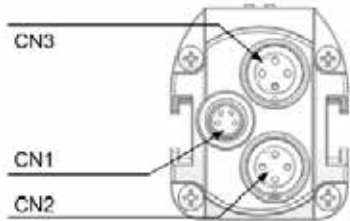
MODEL	RESPONSE TIME (ms)
SG4-14-015-OP-B	19
SG4-14-030-OP-B	22
SG4-14-045-OP-B	25
SG4-14-060-OP-B	29
SG4-14-075-OP-B	31
SG4-14-090-OP-B	35
SG4-14-105-OP-B	38
SG4-14-120-OP-B	41
SG4-14-135-OP-B	44
SG4-14-150-OP-B	47
SG4-14-165-OP-B	51
SG4-14-180-OP-B	54
SG4-30-015-OP-B	19
SG4-30-030-OP-B	21
SG4-30-045-OP-B	22
SG4-30-060-OP-B	24
SG4-30-075-OP-B	25
SG4-30-090-OP-B	27
SG4-30-105-OP-B	29
SG4-30-120-OP-B	31
SG4-30-135-OP-B	32
SG4-30-150-OP-B	34
SG4-30-165-OP-B	36
SG4-30-180-OP-B	38
SG4-S2-060-OP-B	24
SG4-S3-080-OP-B	27
SG4-S4-090-OP-B	27
SG4-S4-120-OP-B	31

NOTE

The response time reported in this table is the part of the communication time depending only by the light curtain. Additional time must be added, depending on configurable parameters of the POWERLINK network and safety PLC.

CONNECTIONS

	CN1	CN2	CN3
EMITTER	<p>POWER CONNECTOR: M8 4-pin male</p>	<p>POWERLINK CONNECTOR: M12 D-coded female Ethernet</p>	<p>POWERLINK CONNECTOR: M12 D-coded female Ethernet</p>
RECEIVER	<p>POWER CONNECTOR: M8 4-pin male</p>		



CN1	SIGNAL	DESCRIPTION
1	24 Vdc (BROWN)	<p>POWER CONNECTOR</p>
2	NOT USED (WHITE)	
3	0 Vdc (BLUE)	
4	NOT USED (BLACK)	
CN2	SIGNAL	DESCRIPTION
1	TxD+, transmit data +	<p>ETHERNET POWERLINK PORT 1</p>
2	RxD+, receive data +	
3	TxD-, transmit data -	
4	RxD-, receive data -	

INDICATORS

Receiver



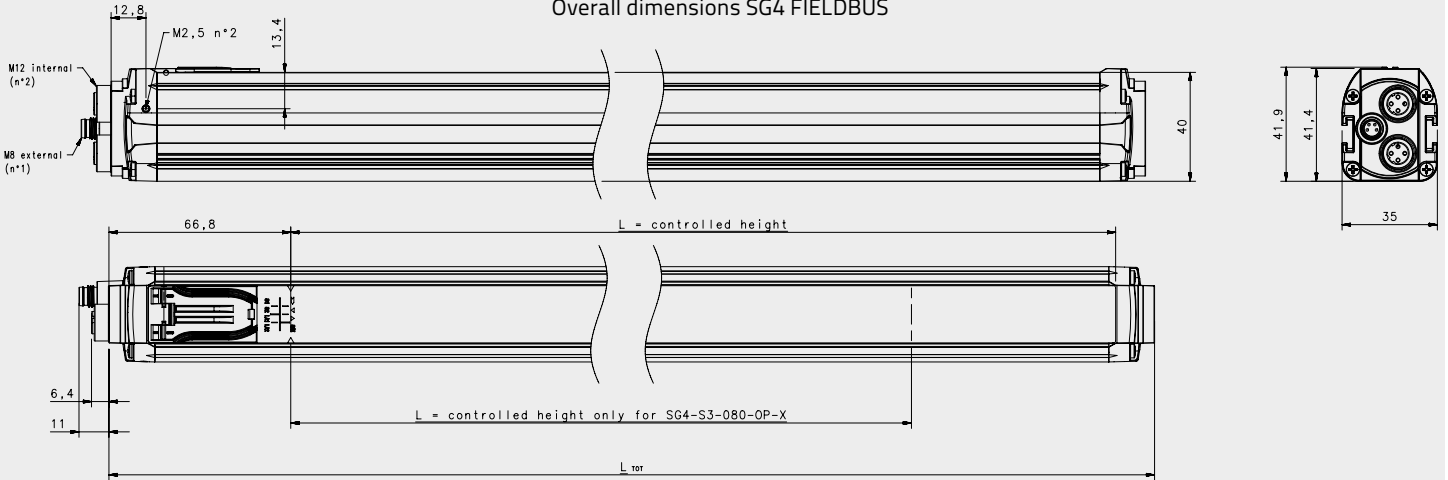
Emitter



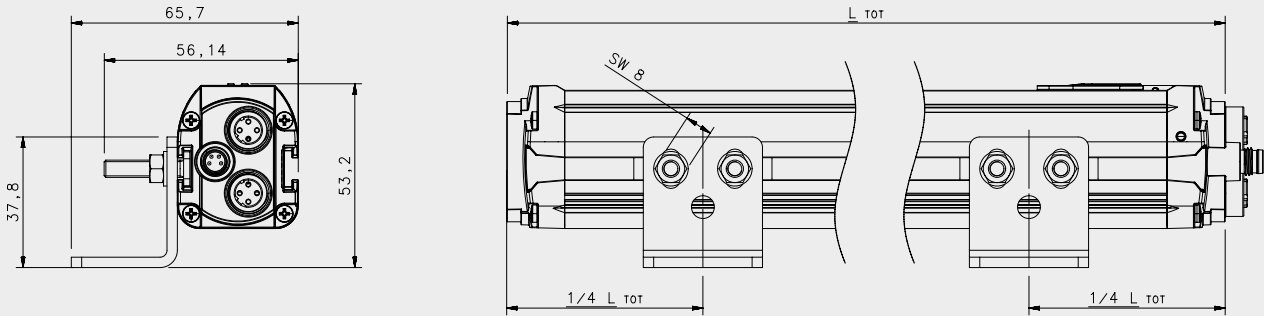
LED	COLOR	NAME	FUNCTION (NORMAL OPERATION)	FUNCTION (ERROR)
	Red/Green	BEAM STATUS	Red On: At least one beam intercepted Green On: All beams free	Red On
	Yellow	SYNC BEAM	On: First beam intercepted or not aligned	Blinking: OPTIC, uP or openSAFETY ERROR
	Yellow	LAST BEAM	On: Last beam intercepted or not aligned	
M	Red	MASTER uP STATUS	Off: Normal operation Blinking: Boot or pre-op	On: Error on MASTER uP Boot or Pre-op
P	Red/Green	POWERLINK STATUS	Green On: normal operation Green blinking: pre-op	Red On: Ethernet Powerlink Error
1	Green	EPL PORT 1 LINK	On: there is a link Blinking: there is activity on this link	N/A
2	Green	EPL PORT 2 LINK	On: there is a link Blinking: there is activity on this link	N/A
S	Red	SLAVE uP STATUS	Off: Normal operation Blinking: Boot or pre-op	On: Error on SLAVE uP Boot Pre-op

DIMENSIONS

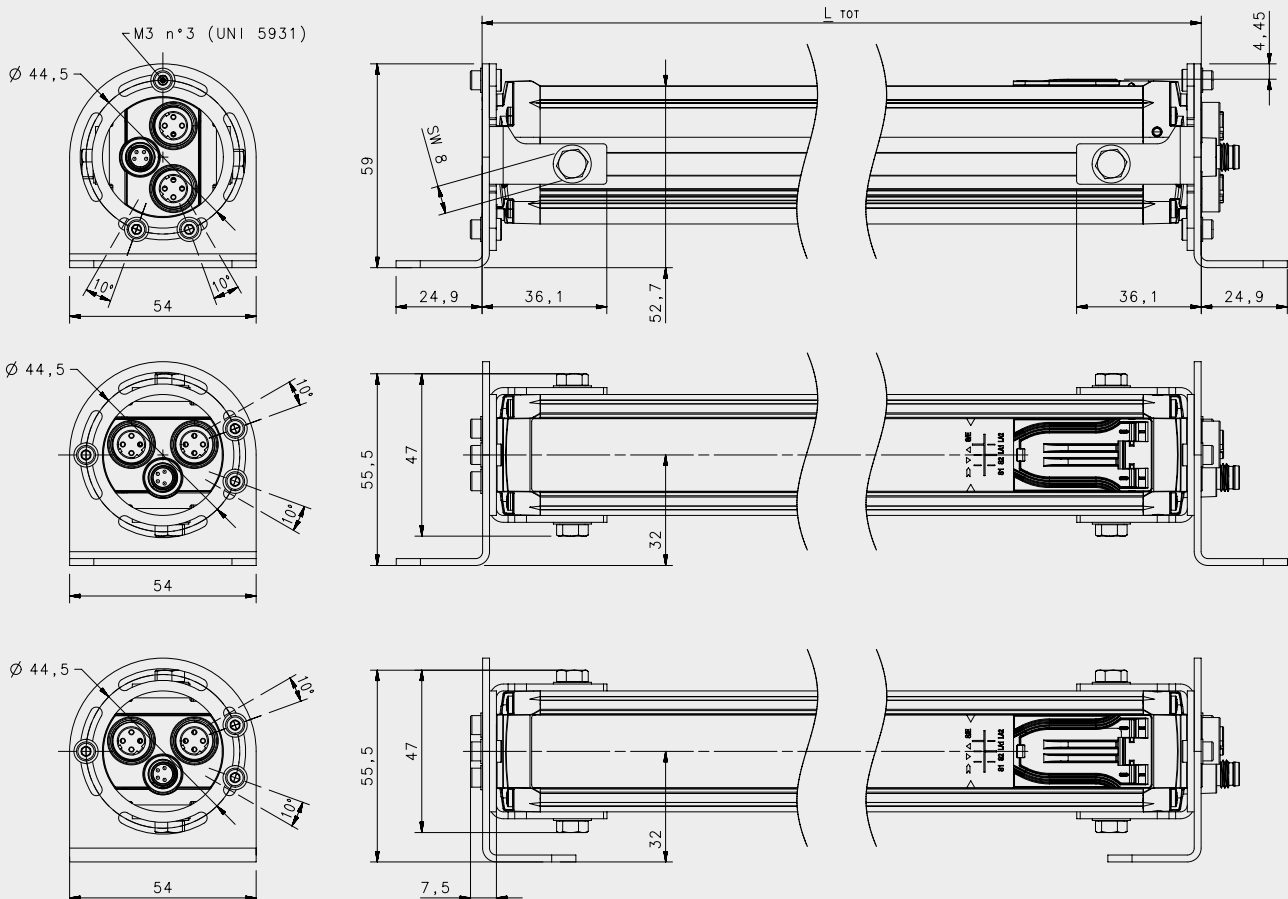
Overall dimensions SG4 FIELDBUS



Overall dimensions SG4 FIELDBUS with ST-KSTD fixing bracket



Overall dimensions SG4 FIELDBUS with ST-K4-ROT-OP fixing bracket



MODEL SELECTION AND ORDER INFORMATION

	Basic functionality [SG4-xx-xxx-OP-B] [SG4-Sx-xxx-OP-B]	Order Number	Advanced functionality [SG4-xx-xxx-OP-A]	Order Number
Finger protection	SG4-14-015-OP-B	957901770	SG4-14-015-OP-A	957902050
	SG4-14-030-OP-B	957901780	SG4-14-030-OP-A	957902060
	SG4-14-045-OP-B	957901790	SG4-14-045-OP-A	957902070
	SG4-14-060-OP-B	957901800	SG4-14-060-OP-A	957902080
	SG4-14-075-OP-B	957901810	SG4-14-075-OP-A	957902090
	SG4-14-090-OP-B	957901820	SG4-14-090-OP-A	957902100
	SG4-14-105-OP-B	957901830	SG4-14-105-OP-A	957902110
	SG4-14-120-OP-B	957901840	SG4-14-120-OP-A	957902120
	SG4-14-135-OP-B	957901850	SG4-14-135-OP-A	957902130
	SG4-14-150-OP-B	957901860	SG4-14-150-OP-A	957902140
	SG4-14-165-OP-B	957901870	SG4-14-165-OP-A	957902150
SG4-14-180-OP-B	957901880	SG4-14-180-OP-A	957902160	
Hand protection	SG4-30-015-OP-B	957901890	SG4-30-015-OP-A	957902170
	SG4-30-030-OP-B	957901900	SG4-30-030-OP-A	957902180
	SG4-30-045-OP-B	957901910	SG4-30-045-OP-A	957902190
	SG4-30-060-OP-B	957901920	SG4-30-060-OP-A	957902200
	SG4-30-075-OP-B	957901930	SG4-30-075-OP-A	957902210
	SG4-30-090-OP-B	957901940	SG4-30-090-OP-A	957902220
	SG4-30-105-OP-B	957901950	SG4-30-105-OP-A	957902230
	SG4-30-120-OP-B	957901960	SG4-30-120-OP-A	957902240
	SG4-30-135-OP-B	957901970	SG4-30-135-OP-A	957902250
	SG4-30-150-OP-B	957901980	SG4-30-150-OP-A	957902260
Body Protection	SG4-30-165-OP-B	957901990	SG4-30-165-OP-A	957902270
	SG4-30-180-OP-B	957902000	SG4-30-180-OP-A	957902280
	SG4-S2-060-OP-B	957902010	--	--
	SG4-S3-080-OP-B	957902020	--	--
	SG4-S4-090-OP-B	957902030	--	--
	SG4-S4-120-OP-B	957902040	--	--

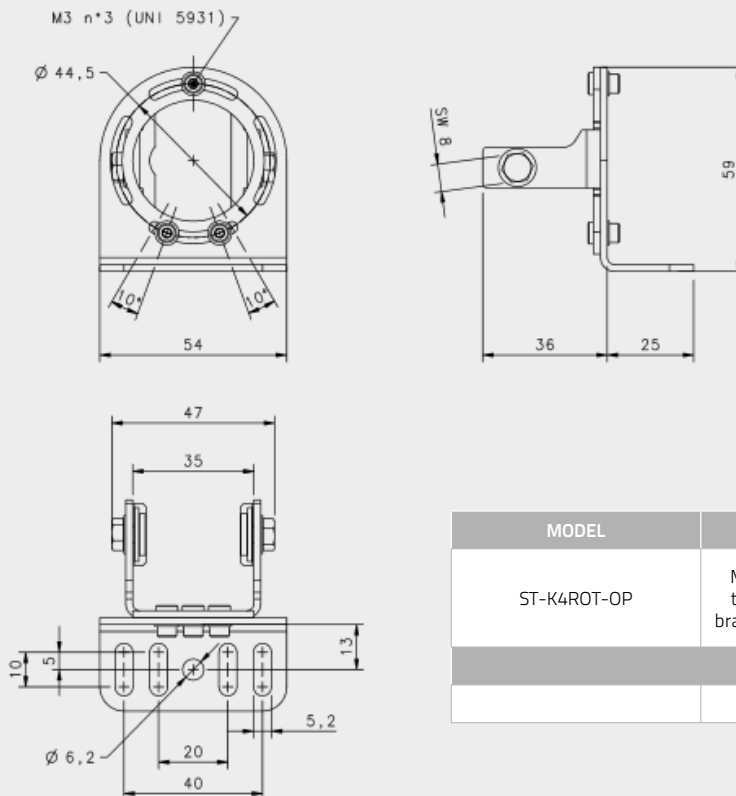
CABLES

	POWER SUPPLY CABLES		
	MODEL	LENGTH (m)	ORDER CODE
M8 AXIAL CONNECTOR	CS-B1-02-G-03	3	95A251420
	CS-B1-02-G-05	5	95A251430
	CS-B1-02-G-07	7	95A251440
	CS-B1-02-G-10	10	95A251480
M8 RADIAL CONNECTOR	CS-B2-02-G-03	3	95A251450
	CS-B2-02-G-05	5	95A251460
	CS-B2-02-G-07	7	95A251470
M12 AXIAL - RJ45	POWERLINK CABLES		
	CAB-ETH-M01	1	93A051346
	CAB-ETH-M03	3	93A051347
	CAB-ETH-M05	5	93A051348
	CAB-ETH-M10	10	93A051391
M12 AXIAL - M12	ETH CABLE M12-M12 1M	1	93A050065
	ETH CABLE M12-M12 3M	3	93A050066
	ETH CABLE M12-M12 5M	5	93A050067

ACCESSORIES

	SG4 FIELDBUS [SG4-14-xxx-OP-x] [SG4-30-xxx-OP-x]	SG4 FIELDBUS [SG4-Sx-xxx-OP-x]
BRACKETS		
Standard angled brackets (included)		ST-KSTD
Antivibration support (4 pcs / 6 pcs)*		ST-K4AV ST-K6AV
Plastic brackets (4 pcs / 6 pcs)*		ST-KP4MP ST-KP6MP
Orientable brackets (4 pcs)		ST-K4ROT-OP
STANDS		
Protective Stands Stand Plate for SG-PSB		SG-PSB series SG-P
Protective Stands Mounting Brackets (4 pcs / 6 pcs)*		ST-PS4-SG-SE ST-PS6-SG-SE
Floor columns		SE-S Series
MIRRORS		
Protective stands with single mirrors Deviating Mirrors	--	SG-PSM series
Deviating Mirrors mounting kit for SG-PSB Mirror Mounting Bracket		SG-DM Series ST-PS-DM ST-DM
ALIGNMENT TOOL		
LASER Pointer		SG-LP
NOTES		
* Use 6 brackets for light curtains with length >= 1200 mm		

BRACKETS



MODEL	DESCRIPTION	ORDER NUMBER
ST-K4ROT-OP	Metal top-bottom rotating fixing brackets kit (4 brackets) for SG4 FIELDBUS	95ASE2840
COMPATIBILITY		
SG4 FIELDBUS		