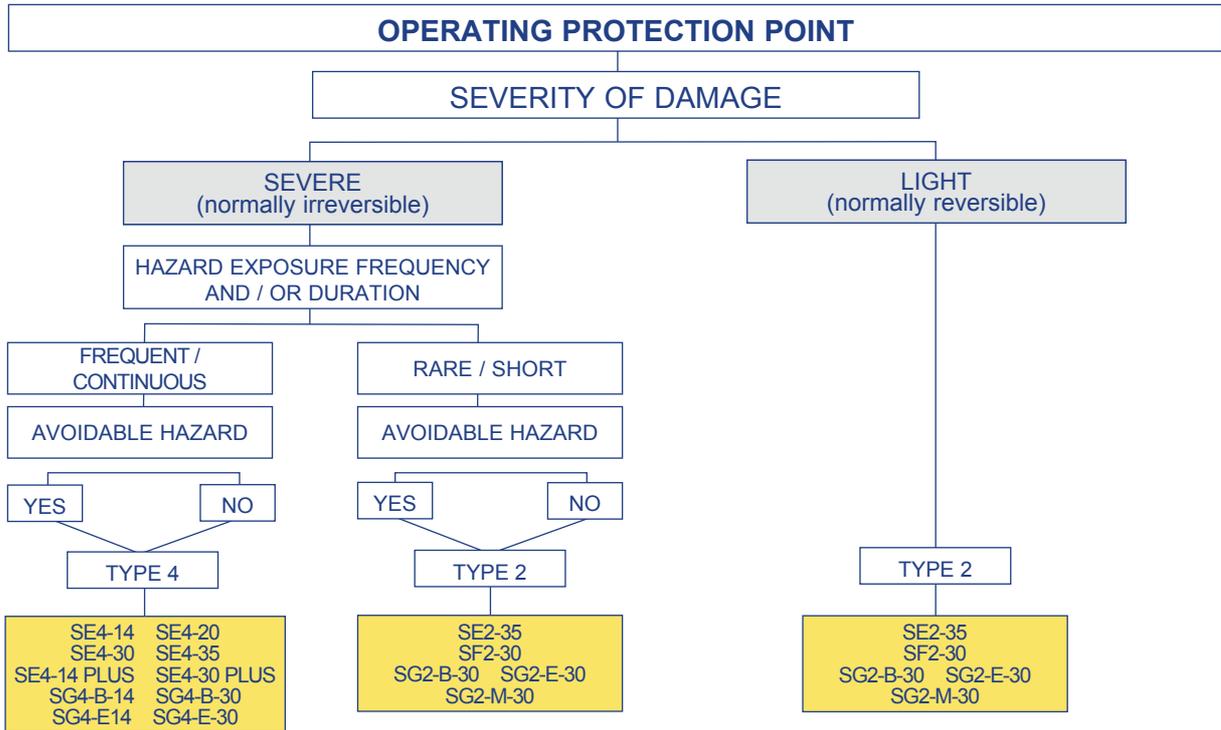




PHOTOELECTRIC DEVICES FOR SAFETY

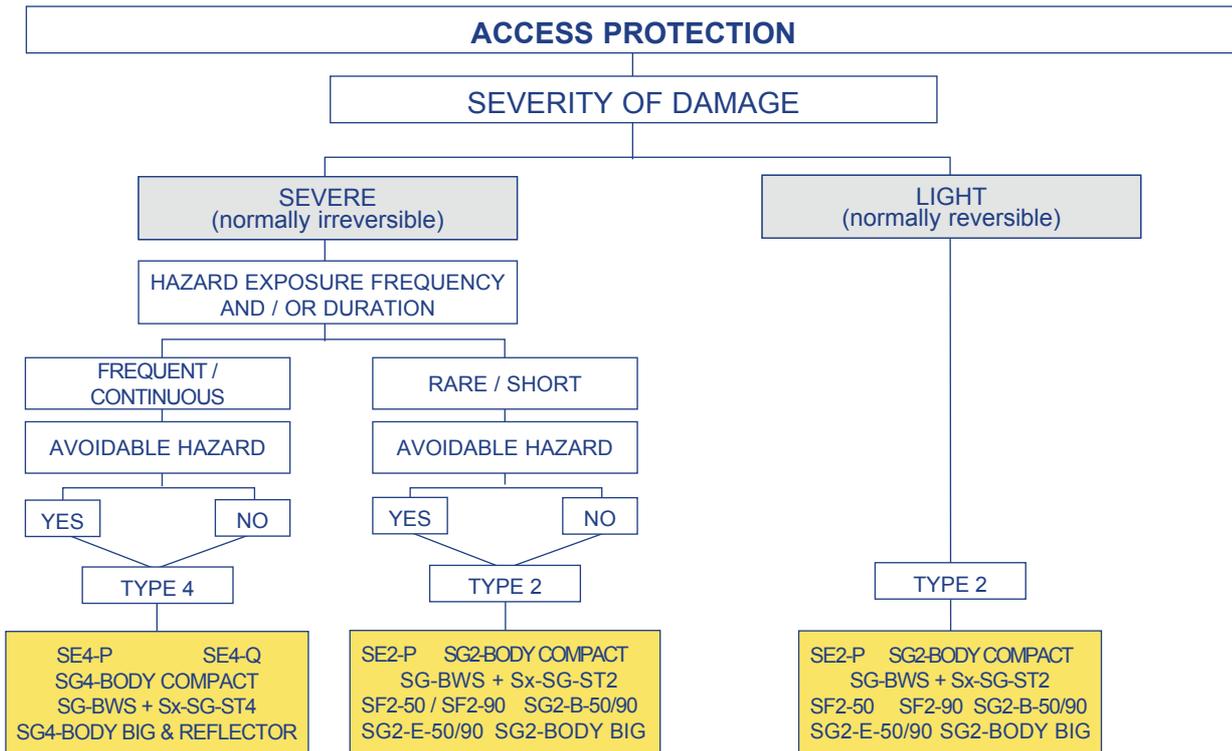
Selection guide



Note: The given information is indicative and synthetic; it is compulsory to refer to the complete EN 954 standard for a correct risk and safety type evaluation.

	RESOLUTION (mm)	OPERATING RANGE (m)	
 Type 2	SF2-30	30	15
	SG2-B-30	30	19
	SG2-E-30	30	9 / 19*
			* selectable maximum distance: 9 m or 19 m
	SE2-35	35	15
SG2-M-30	30	12/20	
 Type 4	SG4-B-14	14	6
	SE4-14	14	6
	SG4-14-E	14	4/7
	SE4-14 PLUS	14	6
	SE4-20	20	6
 Type 4	SE4-30	30	15
	SE4-30 PLUS	30	15
	SG4-30-E	30	12/20
	SE4-35	35	15
	SG4-B-30	30	19

TYPE 2 TYPE 4



Note: The given information is indicative and synthetic; it is compulsory to refer to the complete EN 954 standard for a correct risk and safety type evaluation.

	RESOLUTION (mm)	OPERATING RANGE (m)	
	SE2-P	515 - 415 - 315	50
	SG2 BODY BIG	520 - 420 - 320	60
	SG2 BODY COMPACT	515 - 415 - 315	50
	SF2-B-50 / 90	50 / 90	15
	SG2-B-50 / 90	50 / 90	19
	SG2-E-50 / 90	50 / 90	9 / 19*
			* selectable maximum distance: 9 m or 19 m
	SG-BWS + SX-SG-T2	-	up to 50*
		* 8 m with S5-SG-ST2; 50 m with S300-ST2	
	SE4-Q	515 - 415 - 315	25
	SE4-P	515 - 415	50
	SG4 BODY COMPACT L/T	515 - 415	3 7 * 3 m for - 'W' version; 7 m for - 'T' version;
	SG4 BODY COMPACT Linear	515 - 415 - 315	50
	SG4 BODY BIG	520 - 420 - 320	30/60*
		* short range models: 0.5-30 m, long range models: 6-60 m	
	SG4 BODY REFLECTOR L/T	520 - 420	3
	SG4 BODY REFLECTOR Linear	520 - 420 - 320	6,5 8
	SB-BWS-T4 + Sx-ST4	-	up to 40*
		* 8 m with S5-SG-ST4; 40 m with SL5-ST4; 50 m with S300-ST4	

TYPE 2

TYPE 4

Selection guide

Note: The reference Standard is the **EN 999 / ISO 13855** 'Safety of machinery - the positioning of protective equipment in respect of approach speeds of parts of the human body'. The given information is indicative and synthetic; it is compulsory to refer to the complete **EN 999 / ISO 13855** standard for a correct safety distance calculation.

The minimum distance *S* in mm between the hazardous area and the detection point is expressed by the formula:

$$S = (K \times T) + C$$

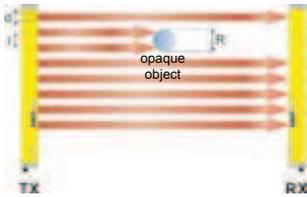
K is a parameter (mm/sec) linked to the approach speed of the human body or parts

T is the total time (sec) necessary to stop the machine, where $T = t_1 + t_2$

t_1 = max. time between the detection actuation and the change of the device switching status

t_2 = max. machine response time

C is an additional distance (mm) based on the device typology used in terms of resolution, where the resolution is the minimum dimension of an opaque object able to obscure at least one of the beams of the sensitive detection area.



$R \leq 40$ mm	Finger or hand protection				R=resolution
$R > 70$ mm	Body protection				
$R < 116$ mm	Presence detection				

NORMAL APPROACH TO THE DETECTION AREA

Safety light curtains with 40 mm maximum resolution

$$S = (K \times T) + C$$

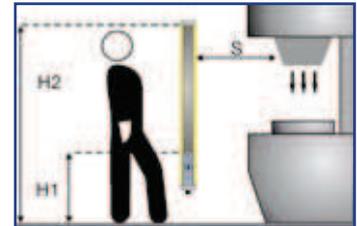
where $K = 2000$ mm/sec, $C = 8(d - 14)$ mm but not smaller than 0,

d = device resolution (mm)

This formula is valid for safety distances *S* up to 500 mm.

If the result of the formula gives *S* higher than 500 mm, $K = 1600$ mm/sec

and $S = (1600 \text{ mm/sec} \times T) + 8(d - 14)$ mm



Safety light curtains with 40 to 70 mm resolution

$$S = (K \times T) + C$$

where $K = 1600$ mm/sec, $C = 850$ mm

In all cases, the highest beam height is $\varnothing 900$ mm and the lowest beam is ≤ 300 mm.

Safety light grid with separate multiple beams

$$S = (K \times T) + C$$

where $K = 1600$ mm/sec, $C = 850$ mm

A light grid with 2, 3, 4 separate beams is often used to detect the intrusion of the human body or parts in a specific area; the number of beams and the distance between them depends on the risk estimation made and by specific machine applications. Risks such as slipping under the lower beam, passing over the higher beam, passing through two beams have to be considered.

The following table provides the heights from the ground or from reference plane for different beams.

Number of beams	Heights of single beams from the plane (mm)
4	300, 600, 900, 1200
3	300, 700, 1100
2	400, 900

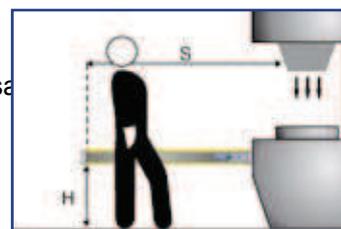
In case of use of a single beam, in an industrial environment, a height of 750 mm is considered appropriate, with the device positioned at a machine distance, where

$$S = (1600 \text{ mm/sec} \times T) + 1200 \text{ mm}.$$

PARALLEL APPROACH TO THE DETECTION AREA

$$S = (K \times T) + C$$

where $K = 1600 \text{ mm/sec}$, $C = (1200 \text{ mm} - 0,4 H)$, not less than 850 mm
 $H_{\text{max}} = 1000 \text{ mm}$, $H_{\text{min}} = 15 (d - 50 \text{ mm})$, where $d = \text{resolution of the sensor}$



ANGLED APPROACH RESPECT TO THE DETECTION AREA

For foreseeable approach angles bigger than 30°, follow the normal approach procedure, while for angles inferior to 30° follow the parallel approach procedure.

Note: The reference Standard is the **EN 999 / ISO 13855** 'Safety of machinery - the positioning of protective equipment in respect of approach speeds of parts of the human body'. The given information is indicative and synthetic; it is compulsory to refer to the complete **EN 999 / ISO 13855** standard for a correct safety distance calculation.

Finger protection



TECHNICAL DATA

SERIES		SE4-14	SE4-14 PLUS
<p>According to IEC 61496-1 IEC 61496-2 Power supply</p> 		Type 4 integrated light curtains	Type 4 integrated light curtains
	Resolution	24 Vdc	24 Vdc
	Operating range	14 mm	14 mm
	Controlled height	0.2...6 m	0.2...6 m
	Response time	150...900 mm	150...1200 mm
	OSSD output	18...39 ms	21...68 ms
	Connection	2 PNP transistor	2 PNP transistor
	Dimensions (mm)	Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 8-poles; Tx: M12 4-poles Rx: M12 5-poles; Tx: M12 5-poles
	Device functions	35 x 40	35 x 40
	Certifications	Test Manual/auto Restart selection Total/partial Muting selection Override	Test Manual/auto Restart selection EDM selection
Plus functions	   	   	
		3 models available: Fixed/Floating Blanking EDM Cascading EDM Cascading/Blanking EDM	



SE4-20	SG4-B-14	SG4-E-14
Type 4 integrated light curtains	Type 4 integrated light curtains	Type 4 integrated light curtains
24 Vdc	24 Vdc	24 Vdc
20 mm	14 mm	14 mm
0.2...6 m	0.2...6 m	0.2...7 m / 0.2...4 m selectable
150...1650 mm	150 ... 1800 mm	300 ... 1800 mm
16...39 ms	10...51 ms	no coding: 15...33 ms coding: 20...65 ms
2 PNP transistor	2 PNP transistor	2 PNP / NPN transistor
Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 12-poles+5-poles/M12 12-poles Tx: M12 5-poles
35 x 40	32 x 37	35 x 41 ZERO DEAD ZONE
Test Manual/auto Restart selection Total/partial Muting selection Override	Test Manual/auto Restart selection EDM selection	Test Manual/auto Restart selection EDM selection Programmable Muting Programmable Blanking
   	   	   
		Reduction Range Anti-interference coding Selectable PNP/NPN outputs ALIGNMENT AID
		Accessory DONGLE for: configuration cloning remote monitoring remote programming

Hand protection



TECHNICAL DATA

SERIES		SE2-35	SF2-30
According to IEC 61496-1 IEC 61496-2 Power supply		Type 2 integrated light curtains	Type 2 integrated light curtains
Resolution		24 Vdc	24 Vdc
Operating range		35 mm	30 mm
Controlled height		0.2...15 m	0.2...15 m
Response time		150...1650 mm	150...1500 mm
OSSD output		15...32 ms	24 ms max.
Connection		2 PNP transistor	2 PNP transistor
Dimensions (mm)		Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 5 poles Tx: M12 4 poles
Device functions		35 x 40	31 x 32
Certifications		Test Manual/auto Restart selection Total/partial Muting selection Override	Test Manual Restart Automatic Restart
Plus functions			



SG2-B-30	SG2-E-30	SG2-M-30
Type2 integrated light curtains	Type2 integrated light curtains	Type 2 integrated light curtains
24 Vdc	24 Vdc	24 Vdc
30 mm	30 mm	30 mm
0.2...19 m	0.2...9 m / 0.2...19 m selectable	0.2...20 m / 0.2...12 m selectable
150...1800 mm	150...1800 mm	300 ... 1800 mm
8...24 ms	8...24 ms	13...22 ms
2 PNP transistor	2 PNP transistor	2 PNP transistor
Rx: M12 5-poles Tx: M12 4-poles	Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 12-poles+5-poles Tx: M12 5-poles
32 x 37	32 x 37	35 x 41 ZERO DEAD ZONE
Test Automatic Restart	Test Manual/auto Restart selection	Test Manual/auto Restart selection EDM selection Configurable Muting
   	   	   
	EDM selectable Selectable max. distance: 9 m or 19 m	Reduction Range ALIGNMENT AID

Hand protection



TECHNICAL DATA

SERIES	SE4-20	SE4-30
According to IEC 61496-1 IEC 61496-2 Power supply	Type 4 integrated light curtains	Type 4 integrated light curtains
Resolution	24 Vdc	24 Vdc
Operating range	20 mm	30 mm
Controlled height	0.2...6 m	0.2...15 m
Response time	150...1650 mm	150...1650 mm
OSSD output	16...39 ms	15...32 ms
Connection	2 PNP transistor	2 PNP transistor
Dimensions (mm)	Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 8-poles Tx: M12 4-poles
Device functions	35 x 40	35 x 40
Certifications	Test Manual/auto Restart selection Total/partial Muting selection Override	Test Manual/auto Restart selection Total/partial Muting selection Override
Plus functions		



SE4-30 PLUS	SE4-35	SG4-B-30	SG4-E-30
Type 4 integrated light curtains	Type 4 integrated light curtains	Type 4 integrated light curtains	Type 4 integrated light curtains
24 Vdc	24 Vdc	24 Vdc	24 Vdc
30 mm	35 mm	30 mm	30 mm
0.2...15 m	0.2...15 m	0.2...19 m	0.2...20 m / 0.2...12 m
150...1650 mm	150...1650 mm	150 ... 1800 mm	300 ... 1800 mm
16...43 ms	15...32 ms	9...28 ms	no coding: 13...22 ms coding: 16...38 ms
2 PNP transistor	2 PNP transistor	2 PNP transistor	2 PNP / NPN transistor
Rx: M12 8-poles; Tx: M12 4-poles Rx: M12 5-poles; Tx: M12 5-poles	Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 12-poles+5-poles/M12 12-poles Tx: M12 5-poles
35 x 40	35 x 40	32 x 37	35 x 41 ZERO DEAD ZONE
Test Manual/auto Restart selection EDM selection	Test Manual/auto Restart selection Total/partial Muting selection Override	Test Manual/auto Restart selection EDM selection	Test Manual/auto Restart selection EDM selection Programmable Muting Programmable Blanking
   	   	   	   
3 models available: Fixed/Floating Blanking EDM Cascading EDM Cascading/Blanking EDM			Reduction Range Anti-interference coding Selectable PNP/NPN outputs ALIGNMENT AID
			Accessory DONGLE for: configuration cloning remote monitoring remote programming

Body protection and presense control



TECHNICAL DATA

SERIES	SE2-P	SG-BWS-T4+Sx-SG-ST2
According to IEC 61496-1 IEC 61496-2 Power supply	Type 2 integrated light curtains	Type 4 control unit or sensors
	24 Vdc	24 Vdc
N° beams / resolution	2 - 3 - 4	up to 4
Operating range	0.5...50 m	up to 50 m
Controlled height	500 - 800 - 900 - 1200 mm	
Response time	14 ms	29 ms max
OSSD output	2 PNP transistor	2 PNP transistor
Connection	Rx: M12 8-poles Tx: M12 4-poles	terminal block: 16 clamps
Dimensions (mm)	35 x 40	23 x 119 x 99
Device functions	Test Manual/auto Restart selection Total/partial Muting selection Override	Reset Manual/auto Restart selection EDM selection
Certifications		
Plus functions		



SF2-50 / SF2-90	SG2-B-50 / SG2-B-90	SG2-E-50 / SG2-E-90
Type 2 integrated light curtains	Type 2 integrated light curtains	Type 2 integrated light curtains
24 Vdc	24 Vdc	24 Vdc
50 / 90 mm	50 / 90 mm	50 / 90 mm
0.2... 15 m	0.2...19 m	0.2...9 m / 0.2...19 m selectable
300...1500 mm	300...1800 mm	300...1800 mm
15...24 ms	8...20 ms (50 vers.) 8...19 ms (90 vers.)	8...20 ms (50 vers.) 8...19 ms (90 vers.)
2 PNP transistor	2 PNP transistor	2 PNP transistor
Rx: M12 5-poles Tx: M12 4-poles	Rx: M12 5-poles Tx: M12 4-poles	Rx: M12 8-poles Tx: M12 4-poles
31 x 32	32 x 37	32 x 37
Test Manual Restart Automatic Restart	Test Automatic Restart	Test Manual/auto Restart selection
   	   	   
		EDM selectable Selectable max. distance: 9 m or 19 m

Body protection



TECHNICAL DATA

SERIES		SE4-P	SE4-Q
According to IEC 61496-1 IEC 61496-2 Power supply	 	Type 4 integrated light curtains	Type 4 integrated light curtains
N° beams		2 - 3 - 4	2 - 3 - 4
Operating range		4...50 m	0.5...25 m
Controlled height		500 - 800 - 900 - 1200 mm	500 - 800 - 900 - 1200 mm
Response time		14 ms	14 ms
OSSD output		2 PNP transistor	2 PNP transistor
Connection		Rx: M12 8-poles Tx: M12 4-poles	Rx: M12 8-poles Tx: M12 4-poles
Dimensions (mm)		35 x 40	35 x 40
Device functions		Test Manual/auto Restart selection Total/partial Muting selection Override	Test Manual/auto Restart selection Total/partial Muting selection Override
Certifications		   	   
Plus functions			

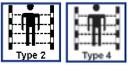


SG-BWS-T4+Sx-SG-ST4	SG-BWS-T4-MT
Type 4 control unit and sensors	Type 4 control unit
24 Vdc	24 Vdc
up to 4	up to 4 safety sensor couples and up to 2 light curtain couples
up to 40 m	Refer to sensors or curtains
	Refer to sensors or curtains
29 ms max	39 ms
2 PNP transistor	2 relay
terminal block: 16 clamps	terminal block: 48 clamps
23 x 119 x 99	68 x 119 x 99
Reset Manual/auto Restart selection EDM selection	Reset Manual/auto Restart selection EDM selection Single / double Muting selection Edge / Triggered Override selection
 	 

Body protection with integrated Muting



TECHNICAL DATA

SERIES		SG BODY COMPACT BASE	SG BODY COMPACT MUTING
According to IEC 61496-1 IEC 61496-2		Type 2 Type 4 integrated light curtains	Type 2 Type 4 integrated light curtains
Power supply		24 Vdc	24 Vdc
N° beams		2 - 3 - 4	2 - 3 - 4
Operating range		0.5...50 m	0.5...3 m ('L' or 'T') 0.5...50 m (linear models)
Controlled height		500 - 800 - 900 - 1200 mm	500 - 800 - 900 - 1200 mm 500 - 800 mm ('L or T' models)
Response time		16 ms	16 ms
OSSD output		2 PNP transistor	2 PNP transistor
Connection		Rx: M12 8 - poles Tx: M12 4 - poles	Rx: M12 8 - poles / M12 5 - poles Tx: M12 4 - poles / M12 5 - poles
Dimensions (mm)		35 x 40	35 x 40
Device functions		Test Manual/auto Restart selection EDM selection	One-way / Two-way Muting Test Manual/auto Restart selection Muting time-out selection EDM selection Override
Certifications			
Plus functions			



SG BODY BIG TX-RX BASE	SG BODY BIG TX-RX MUTING
Type 2 Type 4 integrated light curtains	Type 2 Type 4 integrated light curtains
24 Vdc	24 Vdc
2 - 3 - 4	2 - 3 - 4
6...60 m	Type 2: 0,5...60 m Type 4 Short range: 0,5...30 m Type 4 Long range: 6...60 m
500 - 800 - 900 - 1200 mm	500 - 800 - 900 - 1200 mm
Max 12 ms	Max 24 ms
2 PNP transistor	2 PNP transistor
Rx: M12 8 - poles Tx: M12 5 - poles	Rx: M12 5 - poles + M12 12 - poles Tx: M12 5 - poles + M12 5 - poles
52 x 57	52 x 57
Manual/auto Restart selection EDM selection	Test Manual/auto Restart selection EDM selection
   	   
	One-way or two-way Muting Muting time-out selection Muting enable Muting filter Edged/Triggered Override selection Auto restart after Override selection Anti-Interference coding

Body protection with passive unit and integrated Muting



TECHNICAL DATA	SERIES	SG4 BODY REFLECTOR BASE	SG4 BODY REFLECTOR MUTING
		According to IEC 61496-1 IEC 61496-2 Power supply 	Type 4 retroreflex light curtains 24 Vdc 2 - 3 - 4 0.5...8 m 500 - 800 - 900 - 1200 mm 12 ms 2 PNP transistor active unit: M12 8-poles passive unit: non connected 52 x 57 Test Manual/auto Restart selection EDM selection
	Certifications	   	   
	Plus functions		One-way or two-way Muting Muting time-out selection Muting enable Muting filter Edged/Triggered Override selection Auto restart after Override selection



SF2-HAND SERIES

The **SAFEasy™** light curtains of the SF2 series, according to the IEC 61496-1 and IEC 61496-2 standards, are very suitable for hand protection of operators exposed to risks.

Different models are available with ten standard heights ranging from 150 to 1500 mm, 30 mm resolution and an operating distance reaching 15 m. The emitter and receiver units are optically synchronised and contain all the control circuits, test input and two safety outputs inside the housing.

The connection with the machine stopping circuits are guaranteed by unshielded M12 4-pole connectors for the emitter and M12 5-pole connectors for the receiver.

The **SAFEasy™** light curtains of the SF 2 series have also integrated the test function, automatically activated every 0.5 seconds, without stopping the machine's working cycle.

A wide range of industrial applications, requiring operator safety, can be solved by the **SAFEasy™** light curtains, thanks to the extremely compact dimensions (31x32 mm), easy installation and excellent performances.

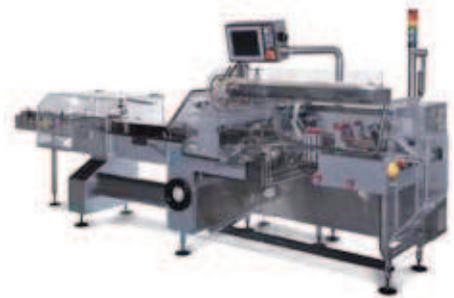


HIGHLIGHTS

- Integrated light curtains for **HAND PROTECTION**
- 30 mm resolution and operating distance up to 15 m
- 31 x 32 mm compact profile
- Versions with automatic or manual **RESTART**

APPLICATIONS

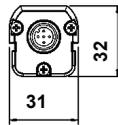
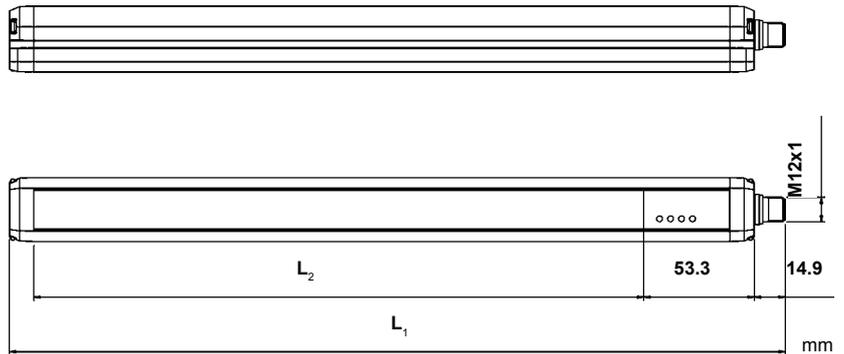
- Automatic machines;
- Machines for packaging, material handling, storing;
- Weaving machines, wood working machines, ceramic working machines;
- Automatic and semi-automatic assembly lines;
- Automatic warehouses.



The LED panel present on the extremely compact receiving unit guarantees an easy and immediate indication of the operating status of the safety light curtain.

These LED indicators supply also information relative to the device's effective alignment and diagnostics.

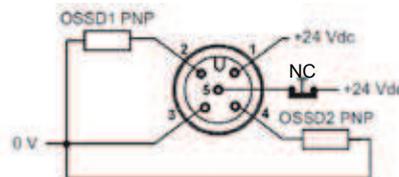
DIMENSIONS



VERSIONS	L_1	L_2
SF2-30-015	227	147
SF2-30-030	374	294
SF2-30-045	521	441
SF2-30-060	668	588
SF2-30-075	815	735
SF2-30-090	962	882
SF2-30-105	1109	1029
SF2-30-120	1256	1176
SF2-30-135	1403	1323
SF2-30-150	1550	1470

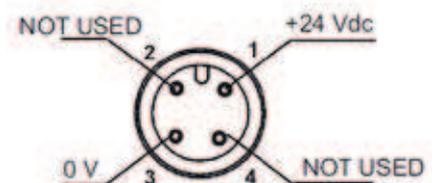
CONNECTIONS

RX: M12 5 POLE CONNECTOR



- 1 = brown = +24 Vdc
- 2 = white = OSSD1
- 3 = blue = 0 V
- 4 = black = OSSD2
- 5 = grey = TEST *

TX: M12 4 POLE CONNECTOR



- 1 = brown = +24 Vdc
- 2 = white = Not used
- 3 = blue = 0 V
- 4 = black = Not used

*= automatic RESTART (X version) TEST/RESET function
 = manual RESTART (Y version) TEST/RESTART/RESET function

TECHNICAL DATA

Power supply (Vdd):	24 Vdc ± 20% (SELV / PELV)	
Consumption:	50 mA max. / 1 W (emitter)	
	90 mA max. / 2.5 W (receiver without load)	
Light emission:	infrared LED 880 nm	
Optic diameter:	Ø 18 mm	
Number of controlled beams:	refer to table 1	
Optic interaxis:	18.4 mm	
Resolution:	30 mm	
Controlled height:	refer to table 2	
Operating distance:	0.2 ... 15 m	
Receiver inputs:	external switches for Test and Restart	
Receiver indicators:	2 yellow ALIGNMENT LEDs	
	red BREAK LED	
	green SAFE LED	
Emitter indicators:	yellow WORKING UNIT CHECK LED	
	green POWER ON LED	
Output type:	2 PNP	
	short-circuit protection:	max. 1.4 A at 55°C min. 1.2 A at 0 °C
Output current (for all loads):	500 mA max. per output	
Output voltage ON min.:	Vdd - 1 V	
Output voltage OFF max.:	0.2 V	
Leakage current:	0.65 mA	
Capacitive load (pure):	100 nF max.	
Resistive load (pure):	60 Ω min.	
Response time:	refer to table 3	
Receiver connection:	M12 5-pole connector	
Emitter connection:	M12 4-pole connector	
Safety category:	type 2	
Electrical protection:	class 1	
Mechanical protection:	IP65 (EN 60529)	
	IP67 (connector part)	
Housing material:	painted aluminium	
Cap end material:	PBT	
Lens material:	PMMA	
Cable length:	50 m max * (at 100nF capacitive load and Vdd=24V)	
	M12 conductors (according to EN 50044, EN 60947-5-2)	
	poles Ø = 32x0.1mm, external Ø = 0.5mm	
Weight:	1 Kg. max. / m of total height	
Operating temperature:	0 ... +55 °C	
Storage temperature:	-25 ... +70 °C	
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2	

* = if a longer cable has to be used, please verify that the same specifications are respected

TABLES

Model	SF2
SF2 height 150	8
SF2 height 300	16
SF2 height 450	24
SF2 height 600	32
SF2 height 750	40
SF2 height 900	48
SF2 height 1050	56
SF2 height 1200	64
SF2 height 1350	72
SF2 height 1500	80

Table 1: NUMBER OF CONTROLLED BEAMS

Model	SF2
SF2 height 150	187
SF2 height 300	334
SF2 height 450	481
SF2 height 600	628
SF2 height 750	775
SF2 height 900	922
SF2 height 1050	1069
SF2 height 1200	1216
SF2 height 1350	1363
SF2 height 1500	1510

Table 2: CONTROLLED HEIGHT (mm)

Model	SF2
SF2 height 150	14
SF2 height 300	15
SF2 height 450	16
SF2 height 600	17
SF2 height 750	18
SF2 height 900	19
SF2 height 1050	20
SF2 height 1200	22
SF2 height 1350	23
SF2 height 1500	24

Table 3: RESPONSE TIME (ms)



RELIABILITY DATA

PL (Ref. EN ISO 13849-1)	d
CAT (Ref. EN 954-1)	2
SIL (Ref. EN IEC 61508)	2
SIL CL (Ref. EN IEC 62061)	2
PFHD – Probability of Danger Failure (1/h)	2,34E-08
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	302
DC – Diagnostic Coverage (%)	93,80%
SFF – Safe Failure Fraction (%)	96,06%
HFT – Hardware Fault Tolerance	0

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	N° ORDER
with automatic RESTART		
SF2-30-015-PP-X	type 2 safety light curtain h=150 mm	957081000
SF2-30-030-PP-X	type 2 safety light curtain h=300 mm	957081010
SF2-30-045-PP-X	type 2 safety light curtain h=450 mm	957081020
SF2-30-060-PP-X	type 2 safety light curtain h=600 mm	957081030
SF2-30-075-PP-X	type 2 safety light curtain h=750 mm	957081040
SF2-30-090-PP-X	type 2 safety light curtain h=900 mm	957081050
SF2-30-105-PP-X	type 2 safety light curtain h=1050 mm	957081060
SF2-30-120-PP-X	type 2 safety light curtain h=1200 mm	957081070
SF2-30-135-PP-X	type 2 safety light curtain h=1350 mm	957081080
SF2-30-150-PP-X	type 2 safety light curtain h=1500 mm	957081090
with manual RESTART		
SF2-30-015-PP-Y	type 2 safety light curtain h=150 mm	957081100
SF2-30-030-PP-Y	type 2 safety light curtain h=300 mm	957081110
SF2-30-045-PP-Y	type 2 safety light curtain h=450 mm	957081120
SF2-30-060-PP-Y	type 2 safety light curtain h=600 mm	957081130
SF2-30-075-PP-Y	type 2 safety light curtain h=750 mm	957081140
SF2-30-090-PP-Y	type 2 safety light curtain h=900 mm	957081150
SF2-30-105-PP-Y	type 2 safety light curtain h=1050 mm	957081160
SF2-30-120-PP-Y	type 2 safety light curtain h=1200 mm	957081170
SF2-30-135-PP-Y	type 2 safety light curtain h=1350 mm	957081180
SF2-30-150-PP-Y	type 2 safety light curtain h=1500 mm	957081190
SF2-90-150-PP-Y	Type 2 safety light curtain h=1500 mm	957081550

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	N° ORDER
CS-A1-03-G-03	M12 5-pole unshielded axial 3 m connector	95ACC2110
CS-A1-03-G-05	M12 5-pole unshielded axial 5 m connector	95ACC2120
CS-A1-03-G-10	M12 5-pole unshielded axial 10 m connector	95ACC2140
CS-A1-02-G-03	M12 4-pole unshielded axial 3 m connector	95A251380
CS-A1-02-G-05	M12 4-pole unshielded axial 5 m connector	95A251270
CS-A1-02-G-10	M12 4-pole unshielded axial 10 m connector	95A251390
ST-KSF2	anti-scratch fixing bracket (4 pcs)	95ACC2320
ST-KSF2STD	SF2 standard fixing bracket (12 pcs)	95ASE1020
ST-KSF2-4OR	SF2 orientable supports (4 pcs)	95ACC2580
ST-KSF2-6OR	SF2 orientable supports (6 pcs)	95ACC2590

Please refer also to **Safety Device Accessories**



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SF2-PRESENCE CONTROL SERIES

The **SAFEasy™** light curtains of the **SF2** series, according to the IEC 61496-1 and IEC 61496-2 standards, are very suitable for presence detection of operators exposed to risks.

Different models are available with nine standard heights ranging from 300 to 1500 mm, with 50 or 90 mm resolution and an operating distance reaching 15 m. The emitter and receiver units are optically synchronised and contain all the control circuits, test input and two safety outputs inside the housing.

The connection with the machine stopping circuits are guaranteed by unshielded M12 4-pole connectors for the emitter and M12 5-pole connectors for the receiver.

The **SAFEasy™** light curtains of the SF2 series have also integrated the test function, automatically activated every 0.5 seconds, without stopping the machine's working cycle.

A wide range of industrial applications, requiring operator safety, can be solved by the **SAFEasy™** light curtains, thanks to the extremely compact dimensions (31x32 mm), easy installation and excellent performances.



SAFETY

HIGHLIGHTS

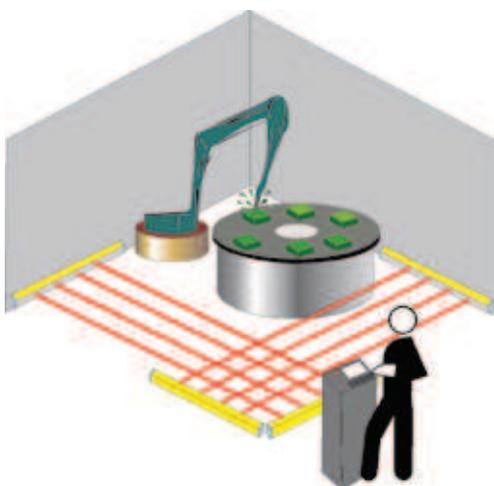
- Integrated light curtains for PRESENCE CONTROL PROTECTION
- 50 and 90 mm resolution and operating distance up to 15 m
- 31 x 32 mm compact profile
- Versions with automatic or manual RESTART

APPLICATIONS

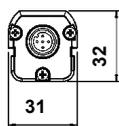
- Automatic machines;
- Packaging, material handling and storage machines;
- Textile, wood-working and ceramic machines;
- Automatic and semi-automatic assembling lines;
- Automatic warehouses.



Presence control is obtained positioning horizontally the safety light curtain. This installation allows to continuously control the presence of an obstacle inside a specific area. This is a particularly useful solution when dangerous area, not visible from the machine control points, has to be protected.



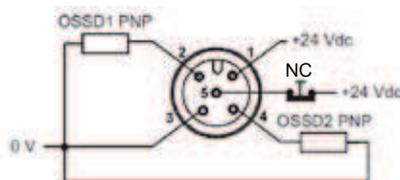
DIMENSIONS



CONTROLLED HEIGHT (mm)	L ₁	L ₂
300	294	374
450	521	441
600	668	588
750	815	735
900	962	882
1050	1109	1029
1200	1256	1176
1350	1403	1323
1500	1550	1470

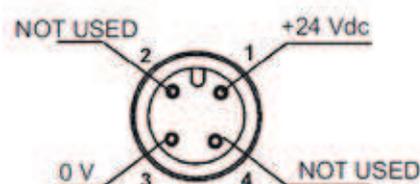
CONNECTIONS

RX: M12 5 POLE CONNECTOR



- 1 = brown = +24 Vdc
- 2 = white = OSSD1
- 3 = blue = 0 V
- 4 = black = OSSD2
- 5 = grey = TEST *

TX: M12 4 POLE CONNECTOR



- 1 = brown = +24 Vdc
- 2 = white = Not used
- 3 = blue = 0 V
- 4 = black = Not used

*= automatic RESTART (X version) TEST/RESET function
 = manual RESTART (Y version) TEST/RESTART/RESET function

TECHNICAL DATA

Power supply (Vdd):	24 Vdc ± 20% (SELV / PELV)	
Consumption:	50 mA max. / 1 W (emitter)	
	90 mA max. / 2.5 W (receiver without load)	
Light emission:	infrared LED 880 nm	
Optic diameter:	Ø 18 mm	
Number of controlled beams:	refer to table 1	
Optic interaxis:	37,5 mm (SF2-50); 74 mm (SF2-90)	
Resolution:	50 / 90 mm	
Controlled height:	refer to table 2	
Operating distance:	0.2 ... 15 m	
Receiver inputs:	external switches for Test and Restart	
Receiver indicators:	2 yellow ALIGNMENT LEDs	
	red BREAK LED	
	green SAFE LED	
Emitter indicators:	yellow WORKING UNIT CHECK LED	
	green POWER ON LED	
Output type:	2 PNP	
	short-circuit protection:	max. 1.4 A at 55°C
		min. 1.2 A at 0 °C
Output current (for all loads):	500 mA max. per output	
Output voltage ON min.:	Vdd - 1 V	
Output voltage OFF max.:	0.2 V	
Leakage current:	0.65 mA	
Capacitive load (pure):	100 nF max.	
Resistive load (pure):	60 Ω min.	
Response time:	refer to table 3	
Receiver connection:	M12 5-pole connector	
Emitter connection:	M12 4-pole connector	
Safety category:	type 2	
Electrical protection:	class 1	
Mechanical protection:	IP65 (EN 60529)	
	IP67 (connector part)	
Housing material:	painted aluminium	
Cap end material:	PBT	
Lens material:	PMMA	
Cable length:	50 m max * (at 100nF capacitive load and Vdd=24V)	
	M12 conductors (according to EN 50044, EN 60947-5-2)	
	poles Ø = 32x0.1mm, external Ø = 0.5mm	
Weight:	1 Kg. max. / m of total height	
Operating temperature:	0 ... +55 °C	
Storage temperature:	-25 ... +70 °C	
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2	

* = if a longer cable has to be used, please verify that the same specifications are respected

TABLES

Model	SF2-50	SF2-90
SF2 height 300	9	5
SF2 height 450	13	7
SF2 height 600	17	9
SF2 height 750	21	11
SF2 height 900	25	13
SF2 height 1050	29	15
SF2 height 1200	33	17
SF2 height 1350	37	19
SF2 height 1500	41	21

Table 1: NUMBER OF CONTROLLED BEAMS

Model	SF2
SF2 height 300	334
SF2 height 450	481
SF2 height 600	628
SF2 height 750	775
SF2 height 900	922
SF2 height 1050	1069
SF2 height 1200	1216
SF2 height 1350	1363
SF2 height 1500	1510

Table 2: CONTROLLED HEIGHT (mm)

Model	SF2
SF2 height 300	15
SF2 height 450	16
SF2 height 600	17
SF2 height 750	18
SF2 height 900	19
SF2 height 1050	20
SF2 height 1200	22
SF2 height 1350	23
SF2 height 1500	24

Table 3: RESPONSE TIME (ms)



RELIABILITY DATA

PL (Ref. EN ISO 13849-1)	d
CAT (Ref. EN 954-1)	2
SIL (Ref. EN IEC 61508)	2
SIL CL (Ref. EN IEC 62061)	2
PFHD – Probability of Danger Failure (1/h)	2,34E-08
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	302
DC – Diagnostic Coverage (%)	93,80%
SFF – Safe Failure Fraction (%)	96,06%
HFT – Hardware Fault Tolerance	0

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	N° ORDER
SF2-50 with automatic RESTART		
SF2-50-030-PP-X	Type 2 safety light curtain h=300 mm	957081200
SF2-50-045-PP-X	Type 2 safety light curtain h=450 mm	957081210
SF2-50-060-PP-X	Type 2 safety light curtain h=600 mm	957081220
SF2-50-075-PP-X	Type 2 safety light curtain h=750 mm	957081230
SF2-50-090-PP-X	Type 2 safety light curtain h=900 mm	957081240
SF2-50-105-PP-X	Type 2 safety light curtain h=1050 mm	957081250
SF2-50-120-PP-X	Type 2 safety light curtain h=1200 mm	957081260
SF2-50-135-PP-X	Type 2 safety light curtain h=1350 mm	957081270
SF2-50-150-PP-X	Type 2 safety light curtain h=1500 mm	957081280
SF2-50 with manual RESTART		
SF2-50-030-PP-Y	Type 2 safety light curtain h=300 mm	957081380
SF2-50-045-PP-Y	Type 2 safety light curtain h=450 mm	957081390
SF2-50-060-PP-Y	Type 2 safety light curtain h=600 mm	957081400
SF2-50-075-PP-Y	Type 2 safety light curtain h=750 mm	957081410
SF2-50-090-PP-Y	Type 2 safety light curtain h=900 mm	957081420
SF2-50-105-PP-Y	Type 2 safety light curtain h=1050 mm	957081430
SF2-50-120-PP-Y	Type 2 safety light curtain h=1200 mm	957081440
SF2-50-135-PP-Y	Type 2 safety light curtain h=1350 mm	957081450
SF2-50-150-PP-Y	Type 2 safety light curtain h=1500 mm	957081460
SF2-90 with automatic RESTART		
SF2-90-030-PP-X	Type 2 safety light curtain h=300 mm	957081290
SF2-90-045-PP-X	Type 2 safety light curtain h=450 mm	957081300
SF2-90-060-PP-X	Type 2 safety light curtain h=600 mm	957081310
SF2-90-075-PP-X	Type 2 safety light curtain h=750 mm	957081320
SF2-90-090-PP-X	Type 2 safety light curtain h=900 mm	957081330
SF2-90-105-PP-X	Type 2 safety light curtain h=1050 mm	957081340
SF2-90-120-PP-X	Type 2 safety light curtain h=1200 mm	957081350
SF2-90-135-PP-X	Type 2 safety light curtain h=1350 mm	957081360
SF2-90-150-PP-X	Type 2 safety light curtain h=1500 mm	957081370
SF2-90 with manual RESTART		
SF2-90-030-PP-Y	Type 2 safety light curtain h=300 mm	957081470
SF2-90-045-PP-Y	Type 2 safety light curtain h=450 mm	957081480
SF2-90-060-PP-Y	Type 2 safety light curtain h=600 mm	957081490
SF2-90-075-PP-Y	Type 2 safety light curtain h=750 mm	957081500
SF2-90-090-PP-Y	Type 2 safety light curtain h=900 mm	957081510
SF2-90-105-PP-Y	Type 2 safety light curtain h=1050 mm	957081520
SF2-90-120-PP-Y	Type 2 safety light curtain h=1200 mm	957081530
SF2-90-135-PP-Y	Type 2 safety light curtain h=1350 mm	957081540
SF2-90-150-PP-Y	Type 2 safety light curtain h=1500 mm	957081550

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	N° ORDER
CS-A1-03-G-03	M12 5-pole unshielded axial 3 m connector	95ACC2110
CS-A1-03-G-05	M12 5-pole unshielded axial 5 m connector	95ACC2120
CS-A1-03-G-10	M12 5-pole unshielded axial 10 m connector	95ACC2140
CS-A1-02-G-03	M12 4-pole unshielded axial 3 m connector	95A251380
CS-A1-02-G-05	M12 4-pole unshielded axial 5 m connector	95A251270
CS-A1-02-G-10	M12 4-pole unshielded axial 10 m connector	95A251390
ST-KSF2	anti-scratch fixing bracket (4 pcs)	95ACC2320
ST-KSF2STD	SF2 standard fixing bracket (12 pcs)	95ASE1020
ST-KSF2-4OR	SF2 orientable supports (4 pcs)	95ACC2580
ST-KSF2-6OR	SF2 orientable supports (6 pcs)	95ACC2590



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SG2-HAND SERIES

The **SAFEasy™ SG2** light curtains represent the natural evolution of the SF2 series.

The SG2 series offers two models, **SG2-B “Base”** and **SG2-E “Extended”**, thus guaranteeing compatibility with the SF2 series (**SG2-B**), as well as offering advanced functions for a Type 2 safety light curtain, such as EDM and Anti-Interference (**SG2-E**). Models with controlled heights ranging from 150 to 1800 mm are available, all with an operating distance reaching 19 m.

The response times ranging from 8 to 24 msec result to be amongst the lowest on the market, consenting the installation of the product nearer to the dangerous area. As well as offering the base functions present in the **SG2-B** model, the **SG2-E** series integrates advanced functions for a Type 2 device such as manual/automatic Restart, EDM function, Anti-interference system (obtained thanks to the reduction to 9 m of the maximum operating distance). All selectable functions.

The profile and rotating fixing brackets ease installation and the alignment of the emitting and receiving units, even at long distances and in applications with deviating mirrors.

The **SG2** series represents the ideal solution for all the typical applications of a Type 2 safety light curtain.

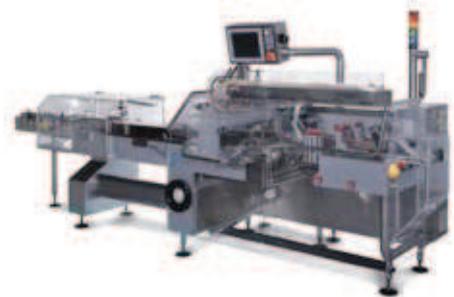


HIGHLIGHTS

- Integrated light curtain for HAND PROTECTION
- Maximum operating distance reaching 19 m
- Controlled heights ranging from 150 to 1800 mm
- New sturdy profile and rotating brackets
- Selectable Manual/Automatic Restart, EDM and Anti-Interference

APPLICATIONS

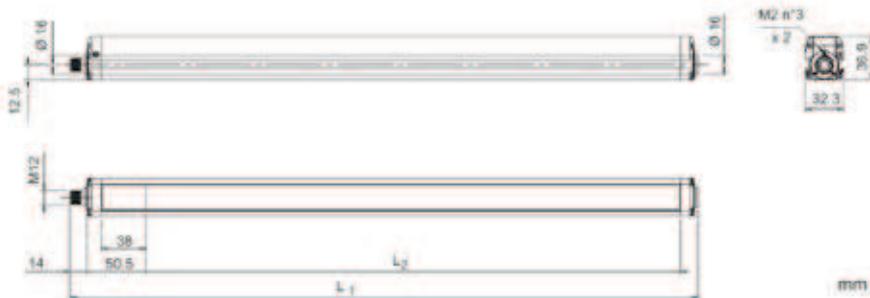
- Automatic machines;
- Machines for packaging, material handling, storing;
- Weaving machines, wood working machines, ceramic working machines;
- Automatic and semi-automatic assembly lines;
- Automatic warehouses.



The characteristics introduced by the SG2 safety light curtains are:

- Operating distance reaching 19 m
- Wider controlled height range (reaching 1800 mm)
- Reduced response times, 25% less than SF2
- New sturdy and more functional profile
- Easier and quicker installation thanks to the new rotating fixing brackets that ease alignment even in the harshest conditions
- Compatibility with the entire SE accessory range
- SG2-E with selectable "Function" such as: Manual/Automatic Restart, EDM and Anti-Interference thanks to the reduction of the maximum operating distance from 19 to 9 m

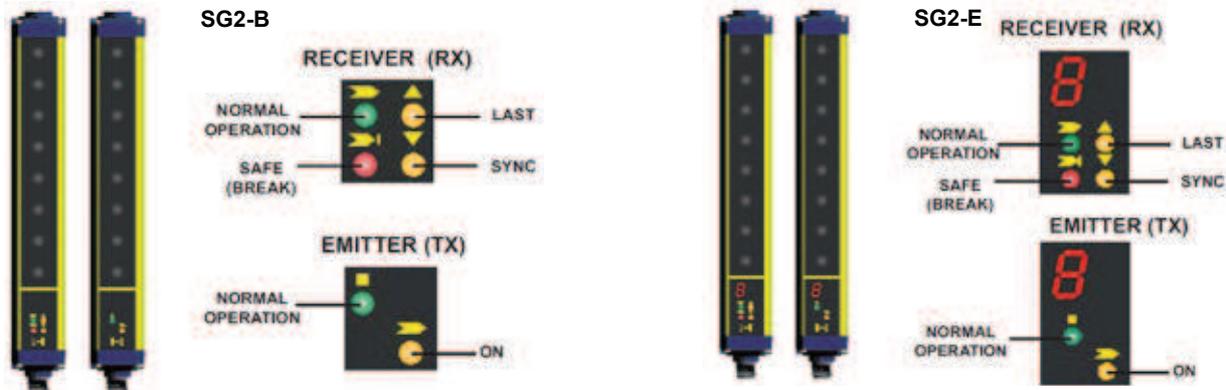
DIMENSIONS



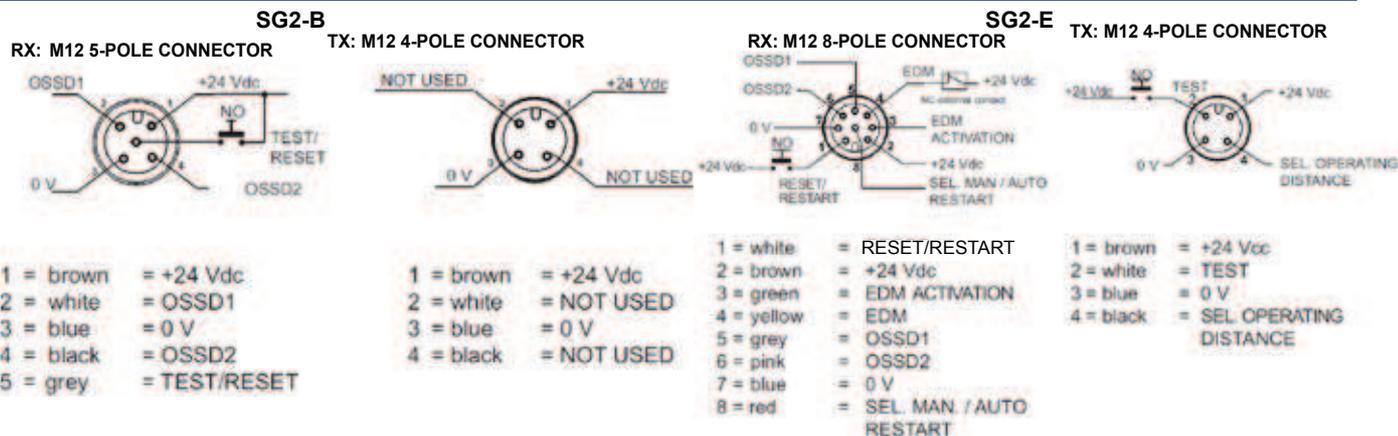
VERSIONS	L ₁	L ₂
SG2-30-015-OO-*	233.3	153.3
SG2-30-030-OO-*	383.2	303.2
SG2-30-045-OO-*	533.2	453.3
SG2-30-060-OO-*	683.2	603.2
SG2-30-075-OO-*	833.2	753.3
SG2-30-090-OO-*	983.2	903.2
SG2-30-105-OO-*	1133.2	1053.2
SG2-30-120-OO-*	1283.3	1203.3
SG2-30-135-OO-*	1433.2	1353.2
SG2-30-150-OO-*	1583.3	1503.3
SG2-30-165-OO-*	1733.3	1653.3
SG2-30-180-OO-*	1883.3	1803.3

* = X Base model or E-C Extended model

INDICATORS AND SETTINGS



CONNECTIONS



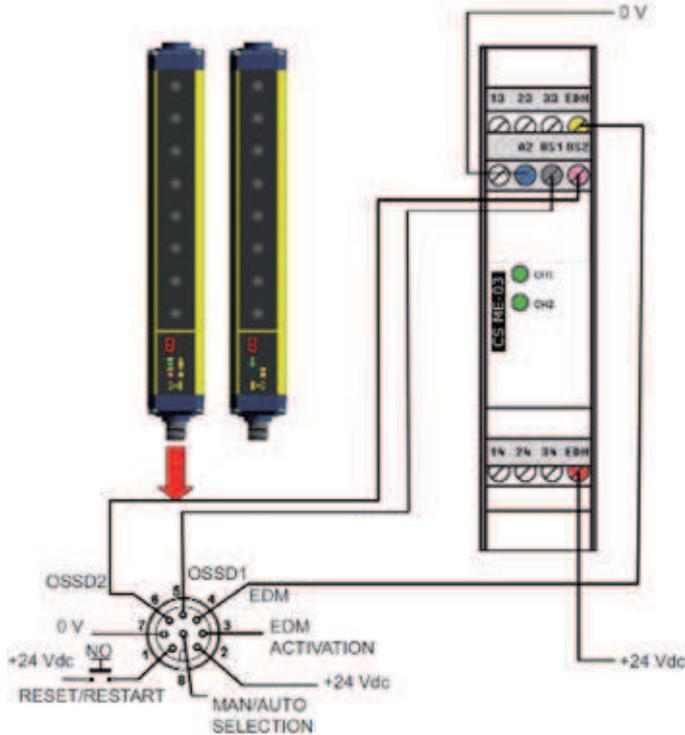
NOTE: For MANUAL RESTART CONNECT TOGETHER Pin8 with Pin6. For Automatic Restart connect together Pin8 with Pin5

SG2-E: FUNCTIONS

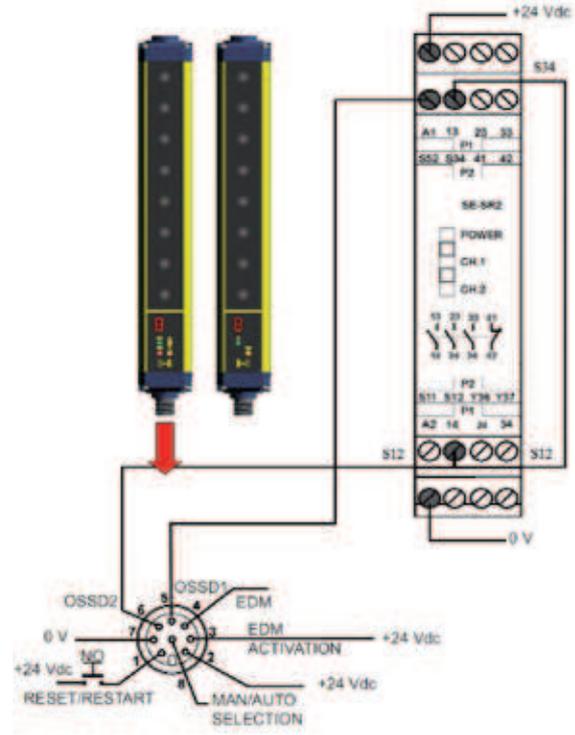
EDM

The **EDM** function allows to connect the light barrier to a couple of simple forced-guided safety relays instead to a Type 2 safety relay and thus guaranteeing an enormous economical advantage.

Connection with EDM function

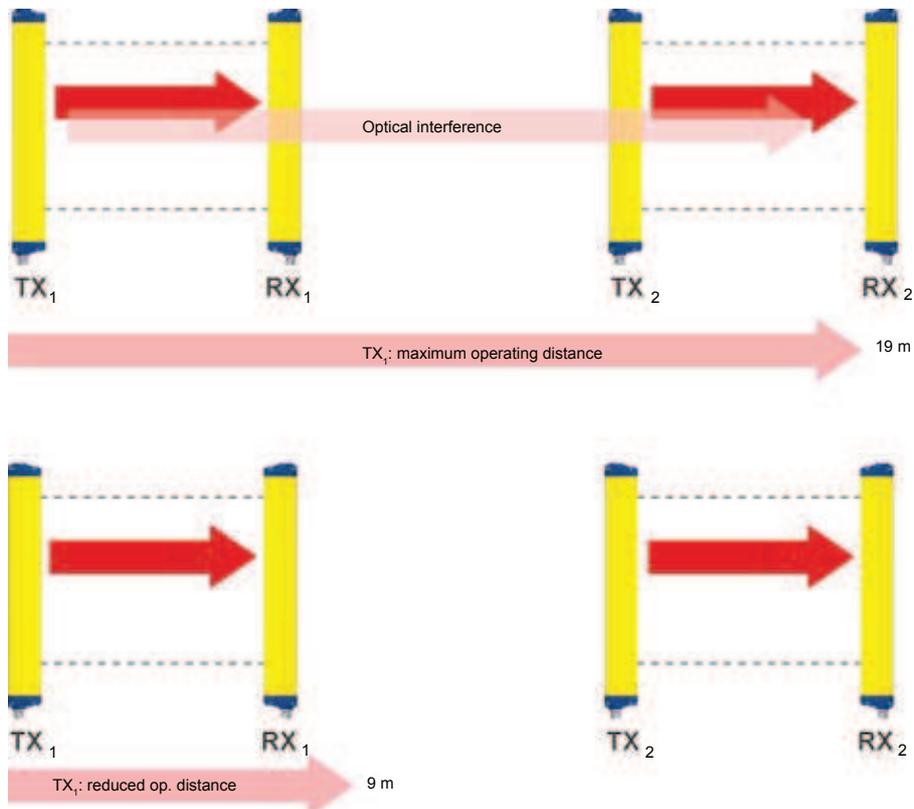


Connection without EDM function



Anti-Interference system

The Anti-Interference system consents the installation of different light curtains aligned one next to the other avoiding mutual optical interference, without the need to install separating shields.



TECHNICAL DATA

Electrical Data	
Power supply (Vdd):	24 Vdc \pm 20%
Consumption (emitter):	2 W max
Consumption (receiver):	3.5 W max (without load)
OSSD outputs:	2 PNP
Short-circuit protection:	1.4 A max
Output current:	0.5 A max on each output
Output voltage - ON status:	Vdd -1 V min
Output voltage - OFF status:	0.2 V max
Capacitive load:	2.2 μ F @ 24 Vdc max
Response time:	Refer to table
Controlled height:	150...1800 mm
Safety category:	Type 2
Auxiliary functions:	
SG2-B	Reset / Test
	Automatic Restart
SG2-E	Reset / Test
	Man./Auto Restart
	Selectable EDM
Electrical protection:	Class I / Class III
Connections:	
SG2-B	M12 4-pole for emitter
	M12 5-pole for receiver
SG2-E	M12 4-pole for emitter
	M12 8-pole for receiver
Cable length (for powering):	50 m max *
Optical Data	
Light emission:	Infrared LED (950 nm)
Resolution:	30 mm
Operating distance:	0.2...19 m (SG2-B)
	selectable 0.2...9 m / 0.2...19 m (SG2-E)
Aperture angle (EAA) :	\pm 5°
Ambient light rejection:	IEC-61496-2
MECHANICAL AND ENVIRONMENTAL DATA	
Operating temperature:	
SG2-B	0...+ 55 °C
SG2-E	- 10...+ 55 °C
Storage temperature:	- 25...+ 70 °C
Temperature class:	T6
Humidity:	15...95 % (non condensating)
Mechanical protection:	IP 65 (EN 60529)
Vibrations:	0.35 mm amplitude
	ency, 20 sweep per axis
	1 octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10 G) 1.000 shock per axis
	(EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)
Protective shield material:	PMMA
Cap material:	PC MAKROLON
Weight:	1 kg / m

*If a longer cable has to be used, please verify that the capacitive load specifications are respected

TABLES

MODEL	
SG2 height 150	8
SG2 height 300	16
SG2 height 450	24
SG2 height 600	32
SG2 height 750	40
SG2 height 900	48
SG2 height 1050	56
SG2 height 1200	64
SG2 height 1350	72
SG2 height 1500	80
SG2 height 1650	88
SG2 height 1800	96

Table 1: NUMBER OF CONTROLLED BEAMS

MODEL	
SG2 height 150	150
SG2 height 300	300
SG2 height 450	450
SG2 height 600	600
SG2 height 750	750
SG2 height 900	900
SG2 height 1050	1050
SG2 height 1200	1200
SG2 height 1350	1350
SG2 height 1500	1500
SG2 height 1650	1650
SG2 height 1800	1800

Table 2: CONTROLLED HEIGHT (mm)

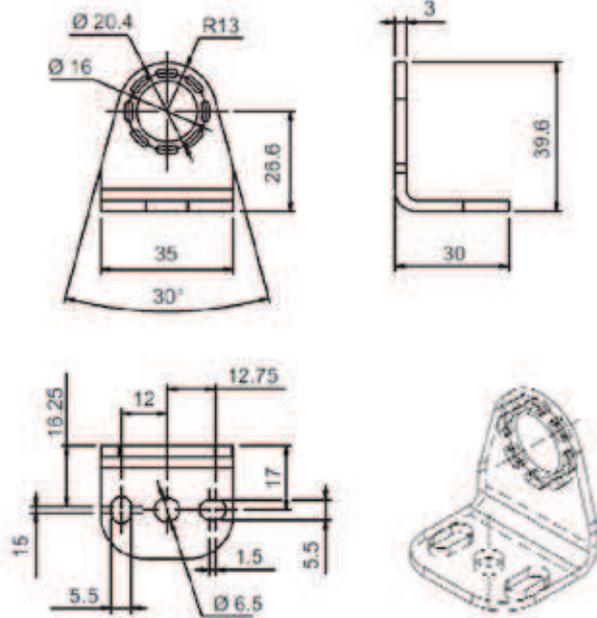
MODEL	
SG2 height 150	8
SG2 height 300	9
SG2 height 450	11
SG2 height 600	12
SG2 height 750	14
SG2 height 900	15
SG2 height 1050	17
SG2 height 1200	18
SG2 height 1350	20
SG2 height 1500	21
SG2 height 1650	23
SG2 height 1800	24

Table 3: RESPONSE TIME (ms)



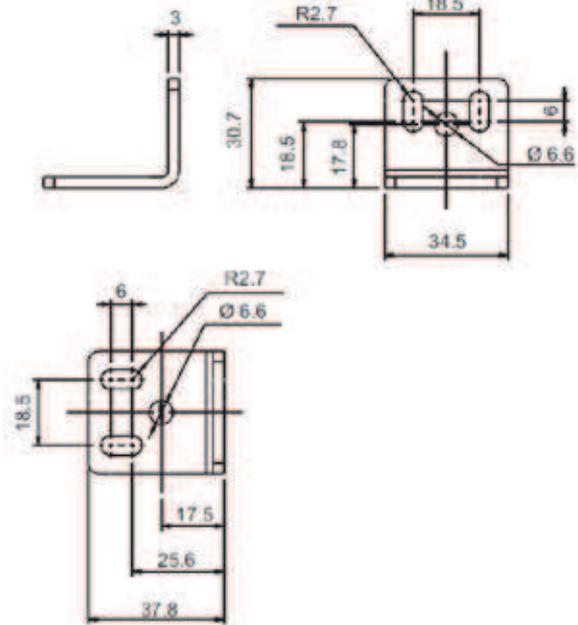
FIXING BRACKET

Rotating fixing bracket¹

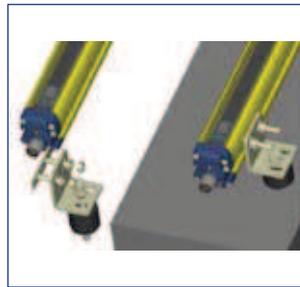
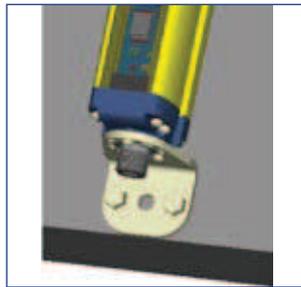


¹ Supplied with the Extended model

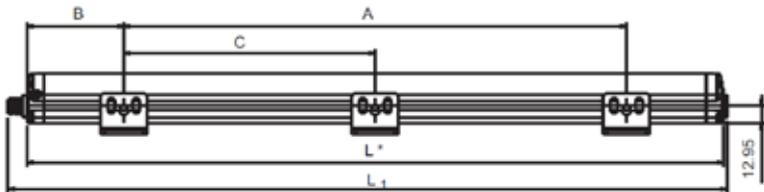
Angled fixing bracket²



² Supplied with the Base model



Installation with anti-vibration supports



MODELS	L (mm)	A (mm)	B (mm)	C (mm)
SG2-30-015-OO-*	216.3	108	54	-
SG2-30-030-OO-*	366.2	216	75	-
SG2-30-045-OO-*	516.3	316	100	-
SG2-30-060-OO-*	666.2	366	150	-
SG2-30-075-OO-*	816.3	466	175	-
SG2-30-090-OO-*	966.2	566	200	-
SG2-30-105-OO-*	1116.2	666	225	-
SG2-30-120-OO-*	1266.3	966	150	483
SG2-30-135-OO-*	1416.2	1066	175	533
SG2-30-150-OO-*	1566.3	1166	200	583
SG2-30-165-OO-*	1716.3	1266	225	633
SG2-30-180-OO-*	1866.3	1366	250	683

* = X Base model or E-C Extended model

RELIABILITY DATA SG2-B SG2-E

PL (Ref. EN ISO 13849-1)	d
CAT (Ref. EN 954-1)	2
SIL (Ref. EN IEC 61508)	2
SIL CL (Ref. EN IEC 62061)	2
PFHD – Probability of Danger Failure (1/h)	1,04E-08
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	273
DC – Diagnostic Coverage (%)	97,50%
SFF – Safe Failure Fraction (%)	98,40%
HFT – Hardware Fault Tolerance	0

MODEL SELECTION AND ORDER INFORMATION

Model	Description	Order N°	Model	Description	Order N°
SG2-B			SG2-E		
SG2-30-015-OO-X	Type 2 safety light curtain h=150 mm	957801000	SG2-30-015-OO-E-C	Type 2 safety light curtain h=150 mm	957801340
SG2-30-030-OO-X	Type 2 safety light curtain h=300 mm	957801010	SG2-30-030-OO-E-C	Type 2 safety light curtain h=300 mm	957801350
SG2-30-045-OO-X	Type 2 safety light curtain h=450 mm	957801020	SG2-30-045-OO-E-C	Type 2 safety light curtain h=450 mm	957801360
SG2-30-060-OO-X	Type 2 safety light curtain h=600 mm	957801030	SG2-30-060-OO-E-C	Type 2 safety light curtain h=600 mm	957801370
SG2-30-075-OO-X	Type 2 safety light curtain h=750 mm	957801040	SG2-30-075-OO-E-C	Type 2 safety light curtain h=750 mm	957801380
SG2-30-090-OO-X	Type 2 safety light curtain h=900 mm	957801050	SG2-30-090-OO-E-C	Type 2 safety light curtain h=900 mm	957801390
SG2-30-105-OO-X	Type 2 safety light curtain h=1050 mm	957801060	SG2-30-105-OO-E-C	Type 2 safety light curtain h=1050 mm	957801400
SG2-30-120-OO-X	Type 2 safety light curtain h=1200 mm	957801070	SG2-30-120-OO-E-C	Type 2 safety light curtain h=1200 mm	957801410
SG2-30-135-OO-X	Type 2 safety light curtain h=1350 mm	957801080	SG2-30-135-OO-E-C	Type 2 safety light curtain h=1350 mm	957801420
SG2-30-150-OO-X	Type 2 safety light curtain h=1500 mm	957801090	SG2-30-150-OO-E-C	Type 2 safety light curtain h=1500 mm	957801430
SG2-30-165-OO-X	Type 2 safety light curtain h=1650 mm	957801100	SG2-30-165-OO-E-C	Type 2 safety light curtain h=1650 mm	957801440
SG2-30-180-OO-X	Type 2 safety light curtain h=1800 mm	957801110	SG2-30-180-OO-E-C	Type 2 safety light curtain h=1800 mm	957801450

ACCESSORY SELECTION AND ORDER INFORMATION

Model	Description	Order N°
CS-A1-02-U-03	M12 4-pole unshielded axial 3 m connector, UL 2464	95ASE1120
CS-A1-02-U-05	M12 4-pole unshielded axial 5 m connector, UL 2464	95ASE1130
CS-A1-02-U-10	M12 4-pole unshielded axial 10 m connector, UL 2464	95ASE1140
CS-A1-02-U-15	M12 4-pole unshielded axial 15 m connector, UL 2464	95ASE1150
CS-A1-02-U-25	M12 4-pole unshielded axial 25 m connector, UL 2464	95ASE1160
CS-A1-03-U-03	M12 5-pole unshielded axial 3 m connector, UL 2464	95ASE1170
CS-A1-03-U-05	M12 5-pole unshielded axial 5 m connector, UL 2464	95ASE1180
CS-A1-03-U-10	M12 5-pole unshielded axial 10 m connector, UL 2464	95ASE1190
CS-A1-03-U-15	M12 5-pole unshielded axial 15 m connector, UL 2464	95ASE1200
CS-A1-03-U-25	M12 5-pole unshielded axial 25 m connector, UL 2464	95ASE1210
CS-A1-06-U-03	M12 8-pole unshielded axial 3 m connector, UL 2464	95ASE1220
CS-A1-06-U-05	M12 8-pole unshielded axial 5 m connector, UL 2464	95ASE1230
CS-A1-06-U-10	M12 8-pole unshielded axial 10 m connector, UL 2464	95ASE1240
CS-A1-06-U-15	M12 8-pole unshielded axial 15 m connector, UL 2464	95ASE1250
CS-A1-06-U-25	M12 8-pole unshielded axial 25 m connector, UL 2464	95ASE1260
ST-KSTD	Angled fixing brackets (4 pc kit)	95ACC1670
ST-K4AV	Anti-vibration supports (4 pc kit)	95ACC1700
ST-K6AV	Anti-vibration supports (6 pc kit)	95ACC1710
ST-K4ROT	Top-Bottom rotating fixing brackets (4 pc kit)	95ASE1280



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SG2-PRESENCE CONTROL SERIES

The **SAFEasy™ SG2** light curtains represent the natural evolution of the SF2 series.

The **SG2** series offers two models, **SG2-B “Base”** and **SG2-E “Extended”**, thus guaranteeing compatibility with the SF2 series (**SG2-B**), as well as offering advanced functions for a Type 2 safety light curtain, such as EDM and Anti-Interference (**SG2-E**). Models with controlled heights ranging from 300 to 1800 mm are available, all with an operating distance reaching 19 m.

The response times ranging from 9 to 20 msec result to be amongst the lowest on the market, consenting the installation of the product nearer to the dangerous area. As well as offering the base functions present in the **SG2-B** model, the **SG2-E** series integrates advanced functions for a Type 2 device such as manual/automatic Restart, EDM function, Anti-interference system (obtained thanks to the reduction to 9 m of the maximum operating distance). All selectable functions.

The profile and rotating fixing brackets ease installation and the alignment of the emitting and receiving units, even at long distances and in applications with deviating mirrors.

The **SG2** series represents the ideal solution for all the typical applications of a Type 2 safety light curtain.

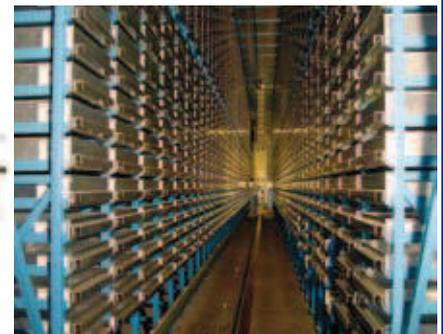


HIGHLIGHTS

- Integrated light curtain for PRESENCE CONTROL
- Maximum operating distance reaching 19 m
- Controlled heights ranging from 300 to 1800mm
- New sturdy profile and rotating brackets
- Selectable Manual/Automatic Restart, EDM and Anti-Interference

APPLICATIONS

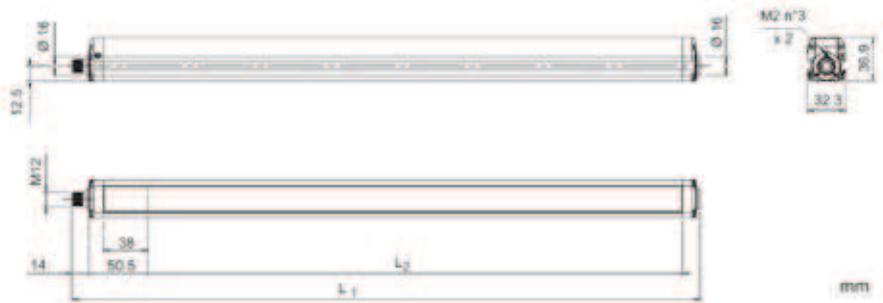
- Automatic machines;
- Packaging, material handling and storage machines;
- Textile, wood-working and ceramic machines;
- Automatic and semi-automatic assembling lines;
- Automatic warehouses.



The characteristics introduced by the SG2 safety light curtains are:

- Operating distance reaching 19 m
- Wider controlled height range (reaching 1800 mm)
- Reduced response times, 30% less than SF2
- New sturdy and more functional profile
- Easier and quicker installation thanks to the new rotating fixing brackets that ease alignment even in the harshest conditions
- Compatibility with the entire SE accessory range
- SG2-E with selectable functions, such as Manual/Automatic Restart, EDM and Anti-Interference thanks to the reduction of the maximum operating distance from 19 to 9 m

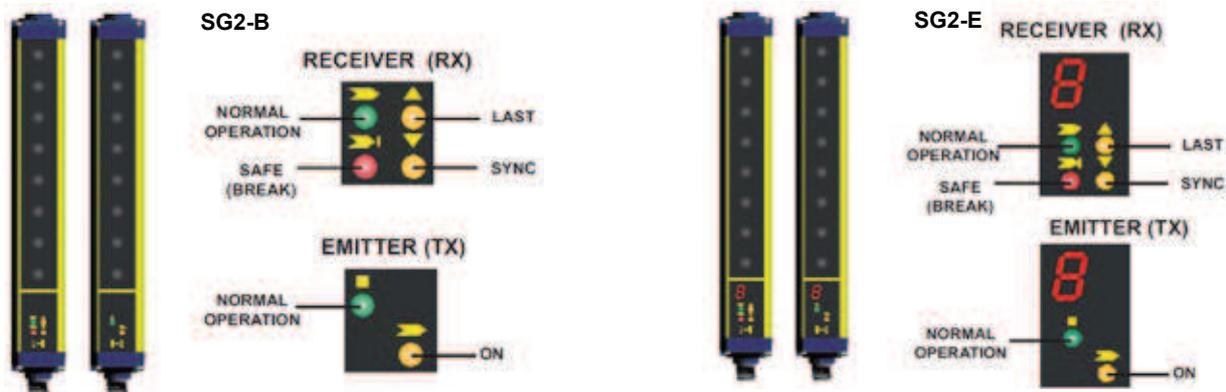
DIMENSIONS



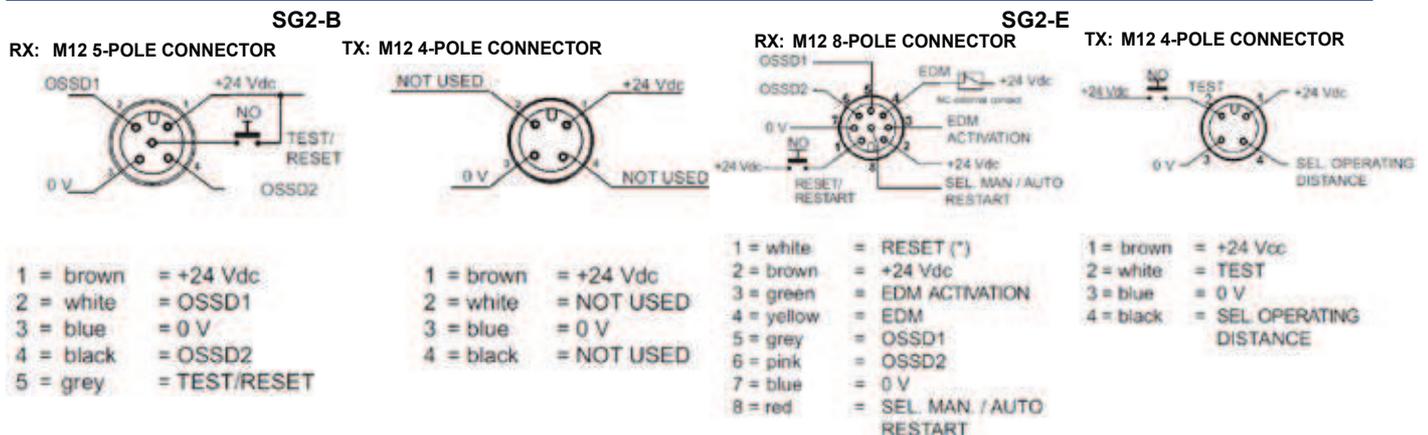
VERSION	L ₁	L ₂
SG2-kk-030-OO-*	383.2	303.2
SG2-kk-045-OO-*	533.2	453.3
SG2-kk-060-OO-*	683.2	603.2
SG2-kk-075-OO-*	833.2	753.3
SG2-kk-090-OO-*	983.2	903.2
SG2-kk-105-OO-*	1133.2	1053.2
SG2-kk-120-OO-*	1283.3	1203.3
SG2-kk-135-OO-*	1433.2	1353.2
SG2-kk-150-OO-*	1583.3	1503.3
SG2-kk-165-OO-*	1733.3	1653.3
SG2-kk-180-OO-*	1883.3	1803.3

kk = Resolution (50 mm – 90 mm)
* = X Base model or E-C Extended model

INDICATORS AND SETTINGS



CONNECTIONS



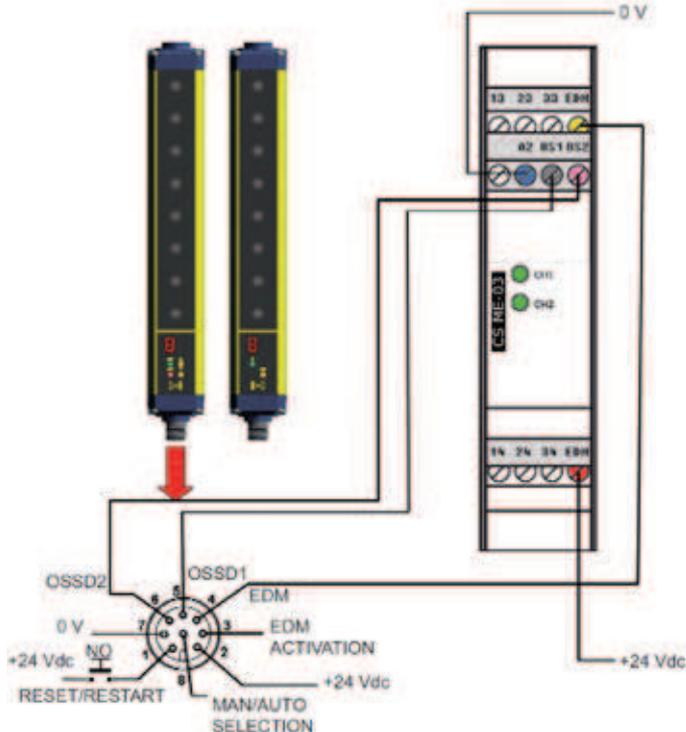
NOTE: For MANUAL RESTART CONNECT TOGETHER Pin8 with Pin6.
For Automatic Restart connect together Pin8 with Pin5

SG2-E: FUNCTIONS

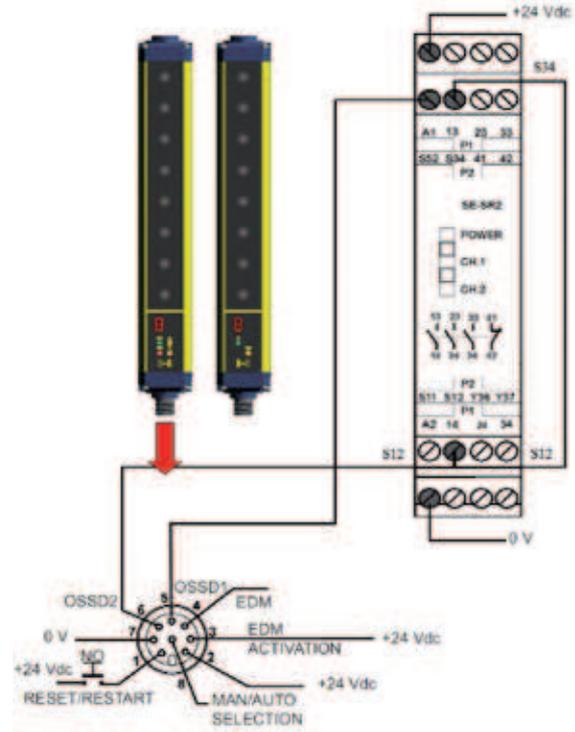
EDM

The **EDM** function allows to connect the light barrier to a couple of simple forced-guided safety relays instead to a Type 2 safety relay and thus guaranteeing an enormous economical advantage.

Connection with EDM function

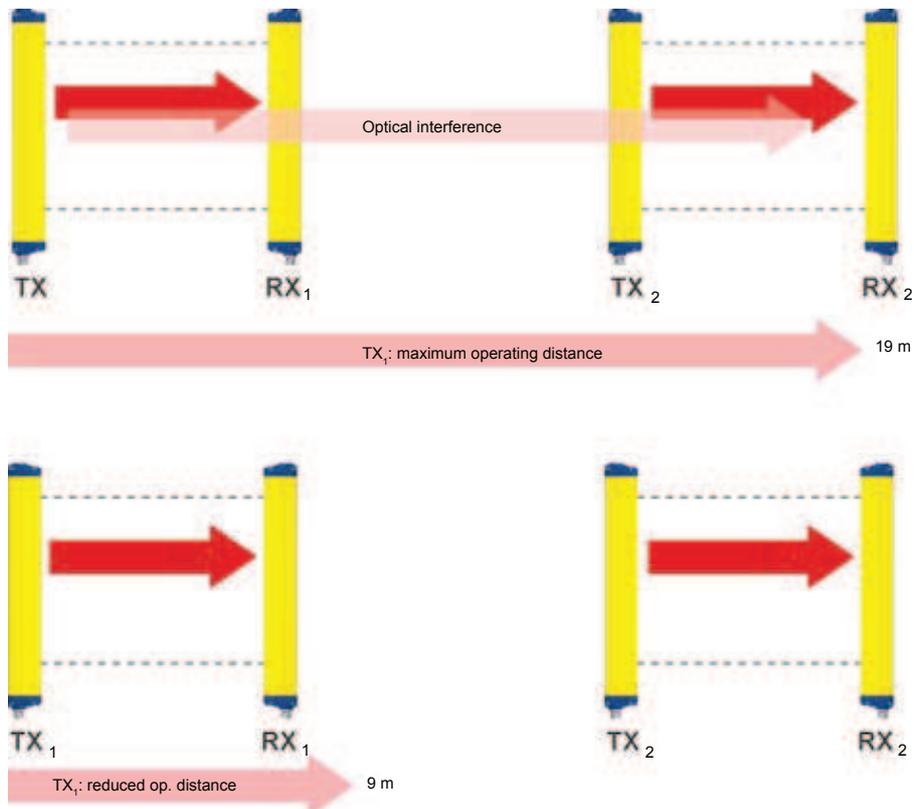


Connection without EDM function



Anti-Interference system

The Anti-Interference system consents the installation of different light curtains aligned one next to the other avoiding mutual optical interference, without the need to install separating shields.



TECHNICAL DATA

Electrical Data	
Power supply (Vdd):	24 Vdc ± 20%
Consumption (emitter):	2 W max
Consumption (receiver):	3.5 W max (without load)
OSSD outputs:	2 PNP
Short-circuit protection:	1.4 A max
Output current:	0.5 A max on each output
Output voltage - ON status:	Vdd - 1 V min
Output voltage - OFF status:	0.2 V max
Capacitive load:	2.2 uF @ 24 Vdc max
Response time:	Refer to table
Controlled height:	300..1800 mm
Safety category:	Type 2
Auxiliary functions:	
SG2-B	Reset / Test
	Automatic Restart
SG2-E	Reset / Test
	Man./Auto Restart
	Selectable EDM
Electrical protection:	Class I / Class III
Connections:	
SG2-B	M12 4-pole for emitter
	M12 5-pole for receiver
SG2-E	M12 4-pole for emitter
	M12 8-pole for receiver
Cable length (for powering):	50 m max *
OPTICAL DATA	
Light emission:	Infrared LED (950 nm)
Resolution:	50 - 90 mm
Operating distance:	0.2...19 m (SG2-B)
	selectable 0.2...9 m / 0.2...19 m (SG2-E)
Aperture angle (EAA) :	± 5°
Ambient light rejection:	IEC-61496-2
MECHANICAL AND ENVIRONMENTAL DATA	
Operating temperature:	
SG-B	0 - + 55 °C
SG-E	-10...+55 °C
Storage temperature:	- 25...+ 70 °C
Temperature class:	T6
Humidity:	15...95 % (non condensating)
Mechanical protection:	IP 65 (EN 60529)
Vibrations:	0.35 mm amplitude
	10 ... 55 Hz frequency, 20 sweep per axis
	1 octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10 G) 1.000 shock per axis
	(EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)
Protective shield materiale:	PMMA
Cap material:	PC MAKROLON
Weight:	1 kg / m

*If a longer cable has to be used, please verify that the capacitive load specifications are respected

TABLES

MODEL	50 mm	90 mm
SG2 height 300	9	5
SG2 height 450	13	7
SG2 height 600	17	9
SG2 height 750	21	11
SG2 height 900	25	13
SG2 height 1050	29	15
SG2 height 1200	33	17
SG2 height 1350	37	19
SG2 height 1500	41	21
SG2 height 1650	45	23
SG2 height1800	49	25

Table 1: NUMBER OF CONTROLLED BEAMS

MODEL	
SG2 height 300	300
SG2 height 450	450
SG2 height 600	600
SG2 height 750	750
SG2 height 900	900
SG2 height 1050	1050
SG2 height 1200	1200
SG2 height 1350	1350
SG2 height 1500	1500
SG2 height 1650	1650
SG2 height 1800	1800

Table 2: CONTROLLED HEIGHT (mm)

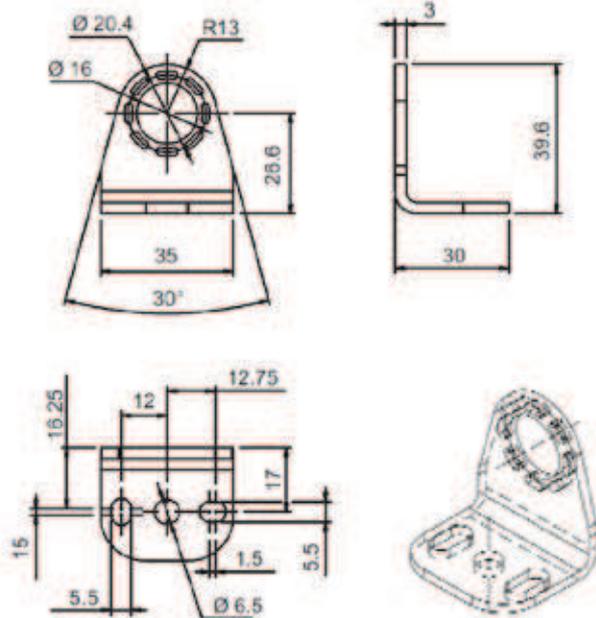
MODEL	50 mm	90 mm
SG2 height 300	9	9
SG2 height 450	10	10
SG2 height 600	11	11
SG2 height 750	12	12
SG2 height 900	14	13
SG2 height 1050	15	14
SG2 height 1200	16	15
SG2 height 1350	17	16
SG2 height 1500	18	17
SG2 height 1650	19	18
SG2 height 1800	20	19

Table 3: RESPONSE TIME (ms)



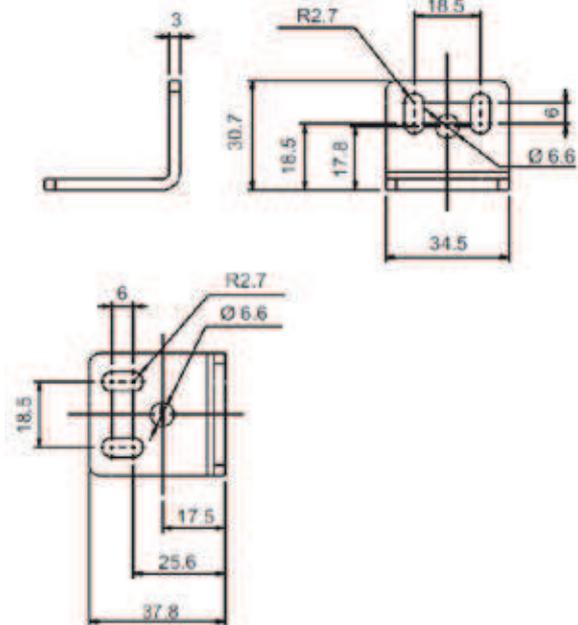
FIXING BRACKET

Rotating fixing bracket¹

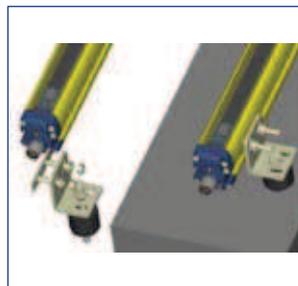


¹ Supplied with the Extended model

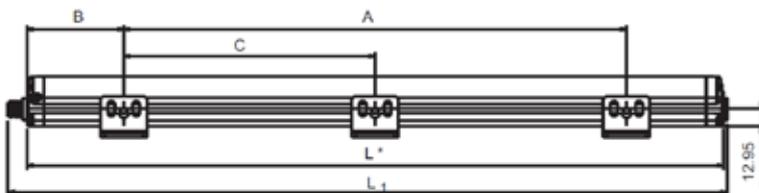
Angled fixing bracket²



² Supplied with the Base model



Installation with anti-vibration supports



MODELS	L (mm)	A (mm)	B (mm)	C (mm)
SG2-kk-030-OO-*	366.2	216	75	-
SG2-kk-045-OO-*	516.3	316	100	-
SG2-kk-060-OO-*	666.2	366	150	-
SG2-kk-075-OO-*	816.3	466	175	-
SG2-kk-090-OO-*	966.2	566	200	-
SG2-kk-105-OO-*	1116.2	666	225	-
SG2-kk-120-OO-*	1266.3	966	150	483
SG2-kk-135-OO-*	1416.2	1066	175	533
SG2-kk-150-OO-*	1566.3	1166	200	583
SG2-kk-165-OO-*	1716.3	1266	225	633
SG2-kk-180-OO-*	1866.3	1366	250	683

kk = Resolution (50 mm – 90 mm)

* = X Base model or E-C Extended model

MODEL SELECTION AND ORDER INFORMATION

Model	Description	Order N°
SG2-B 50 mm		
SG2-50-030-OO-X	Type 2 safety light curtain h=300 mm	957801120
SG2-50-045-OO-X	Type 2 safety light curtain h=450 mm	957801130
SG2-50-060-OO-X	Type 2 safety light curtain h=600 mm	957801140
SG2-50-075-OO-X	Type 2 safety light curtain h=750 mm	957801150
SG2-50-090-OO-X	Type 2 safety light curtain h=900 mm	957801160
SG2-50-105-OO-X	Type 2 safety light curtain h=1050 mm	957801170
SG2-50-120-OO-X	Type 2 safety light curtain h=1200 mm	957801180
SG2-50-135-OO-X	Type 2 safety light curtain h=1350 mm	957801190
SG2-50-150-OO-X	Type 2 safety light curtain h=1500 mm	957801200
SG2-50-165-OO-X	Type 2 safety light curtain h=1650 mm	957801210
SG2-50-180-OO-X	Type 2 safety light curtain h=1800 mm	957801220

Model	Description	Order N°
SG2-E 50 mm		
SG2-50-030-OO-E-C	Type 2 safety light curtain h=300 mm	957801460
SG2-50-045-OO-E-C	Type 2 safety light curtain h=450 mm	957801470
SG2-50-060-OO-E-C	Type 2 safety light curtain h=600 mm	957801480
SG2-50-075-OO-E-C	Type 2 safety light curtain h=750 mm	957801490
SG2-50-090-OO-E-C	Type 2 safety light curtain h=900 mm	957801500
SG2-50-105-OO-E-C	Type 2 safety light curtain h=1050 mm	957801510
SG2-50-120-OO-E-C	Type 2 safety light curtain h=1200 mm	957801520
SG2-50-135-OO-E-C	Type 2 safety light curtain h=1350 mm	957801530
SG2-50-150-OO-E-C	Type 2 safety light curtain h=1500 mm	957801540
SG2-50-165-OO-E-C	Type 2 safety light curtain h=1650 mm	957801550
SG2-50-180-OO-E-C	Type 2 safety light curtain h=1800 mm	957801560

Model	Description	Order N°
SG2-B 90 mm		
SG2-90-030-OO-X	Type 2 safety light curtain h=300 mm	957801230
SG2-90-045-OO-X	Type 2 safety light curtain h=450 mm	957801240
SG2-90-060-OO-X	Type 2 safety light curtain h=600 mm	957801250
SG2-90-075-OO-X	Type 2 safety light curtain h=750 mm	957801260
SG2-90-090-OO-X	Type 2 safety light curtain h=900 mm	957801270
SG2-90-105-OO-X	Type 2 safety light curtain h=1050 mm	957801280
SG2-90-120-OO-X	Type 2 safety light curtain h=1200 mm	957801290
SG2-90-135-OO-X	Type 2 safety light curtain h=1350 mm	957801300
SG2-90-150-OO-X	Type 2 safety light curtain h=1500 mm	957801310
SG2-90-165-OO-X	Type 2 safety light curtain h=1650 mm	957801320
SG2-90-180-OO-X	Type 2 safety light curtain h=1800 mm	957801330

Model	Description	Order N°
SG2-E 90 mm		
SG2-90-030-OO-E-C	Type 2 safety light curtain h=300 mm	957801570
SG2-90-045-OO-E-C	Type 2 safety light curtain h=450 mm	957801580
SG2-90-060-OO-E-C	Type 2 safety light curtain h=600 mm	957801590
SG2-90-075-OO-E-C	Type 2 safety light curtain h=750 mm	957801600
SG2-90-090-OO-E-C	Type 2 safety light curtain h=900 mm	957801610
SG2-90-105-OO-E-C	Type 2 safety light curtain h=1050 mm	957801620
SG2-90-120-OO-E-C	Type 2 safety light curtain h=1200 mm	957801630
SG2-90-135-OO-E-C	Type 2 safety light curtain h=1350 mm	957801640
SG2-90-150-OO-E-C	Type 2 safety light curtain h=1500 mm	957801650
SG2-90-165-OO-E-C	Type 2 safety light curtain h=1650 mm	957801660
SG2-90-180-OO-E-C	Type 2 safety light curtain h=1800 mm	957801670

RELIABILITY DATA SG2-B SG2-E

PL (Ref. EN ISO 13849-1)	d
CAT (Ref. EN 954-1)	2
SIL (Ref. EN IEC 61508)	2
SIL CL (Ref. EN IEC 62061)	2
PFHD – Probability of Danger Failure (1/h)	1,04E-08
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	273
DC – Diagnostic Coverage (%)	97,50%
SFF – Safe Failure Fraction (%)	98,40%
HFT – Hardware Fault Tolerance	0

ACCESSORY SELECTION AND ORDER INFORMATION

Model	Description	Order N°
CS-A1-02-U-03	M12 4-pole unshielded axial 3 m connector, UL 2464	95ASE1120
CS-A1-02-U-05	M12 4-pole unshielded axial 5 m connector, UL 2464	95ASE1130
CS-A1-02-U-10	M12 4-pole unshielded axial 10 m connector, UL 2464	95ASE1140
CS-A1-02-U-15	M12 4-pole unshielded axial 15 m connector, UL 2464	95ASE1150
CS-A1-02-U-25	M12 4-pole unshielded axial 25 m connector, UL 2464	95ASE1160
CS-A1-03-U-03	M12 5-pole unshielded axial 3 m connector, UL 2464	95ASE1170
CS-A1-03-U-05	M12 5-pole unshielded axial 5 m connector, UL 2464	95ASE1180
CS-A1-03-U-10	M12 5-pole unshielded axial 10 m connector, UL 2464	95ASE1190
CS-A1-03-U-15	M12 5-pole unshielded axial 15 m connector, UL 2464	95ASE1200
CS-A1-03-U-25	M12 5-pole unshielded axial 25 m connector, UL 2464	95ASE1210
CS-A1-06-U-03	M12 8-pole unshielded axial 3 m connector, UL 2464	95ASE1220
CS-A1-06-U-05	M12 8-pole unshielded axial 5 m connector, UL 2464	95ASE1230
CS-A1-06-U-10	M12 8-pole unshielded axial 10 m connector, UL 2464	95ASE1240
CS-A1-06-U-15	M12 8-pole unshielded axial 15 m connector, UL 2464	95ASE1250
CS-A1-06-U-25	M12 8-pole unshielded axial 25 m connector, UL 2464	95ASE1260
ST-KSTD	Angled fixing brackets (4 pc kit)	95ACC1670
ST-K4AV	Anti-vibration supports (4 pc kit)	95ACC1700
ST-K6AV	Anti-vibration supports (6 pc kit)	95ACC1710
ST-K4ROT	Top-Bottom rotating fixing brackets (4 pc kit)	95ASE1280

Please refer also to **Safety Device Accessories**



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SG4-FINGER SERIES

The series of **SAFEasy™ SG4-B FINGER** safety light curtains widens the existing **SG** range, whilst representing an evolution of the **SE4-PLUS** line, offering a Type 4 safety light device for finger protection with base functions. Ideal for applications that do not require complementary functions such as Muting, Cascade and blanking.

The **SG4-B** series has been especially developed to simplify:

- installation (new rotating TOP-BOTTOM fixing brackets to ease alignment);
- connection (use of standard connectors, no connection between emitter and receiver necessary);
- configuration (no external control units and / or supplementary cables necessary);
- use (alignment guided by a 7 segment double display on both units).

Improved response time and operating distance, respect to the **SE4-PLUS** series distinguish this series and make it one of the best performing light curtains available today on the market.



HIGHLIGHTS

- Integrated light curtain for FINGER PROTECTION (14 mm resolution)
- Maximum operating distance reaching 6 m
- Controlled heights ranging from 150 to 1800 mm
- Compact 32x37 mm profile
- Selectable EDM and Manual/ Automatic Restart

APPLICATIONS

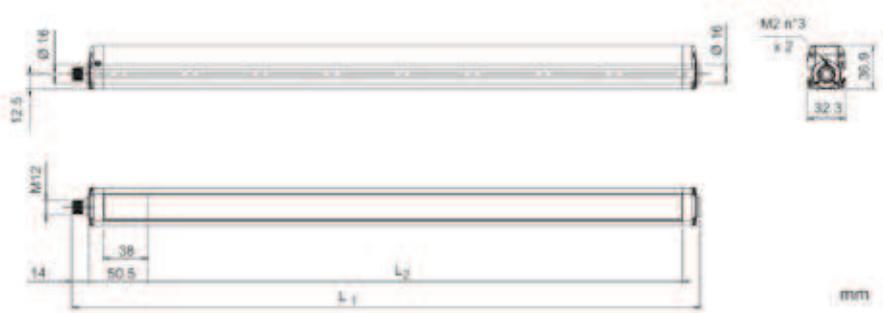
- Automatic machines;
- Packaging and cutting machines;
- Textile, wood-working and ceramic machines;
- Automatic assembling lines;
- Milling, lathe and shearing machines;
- Bending and metal-working machines.



The main characteristics of the SG4-B FINGER are:

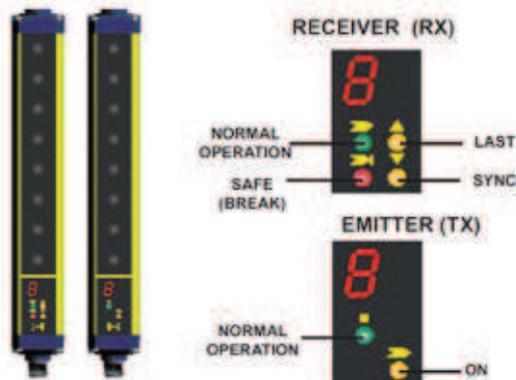
- Operating distance reaching 6 m
- Response time from 11 to 50 msec
- Controlled heights ranging from 150 to 1800 mm
- New sturdy and more functional profile
- Compatibility with the entire SE accessory range
- Selectable EDM and Manual/Automatic Restart
- User interface equipped with a 7 segment display on both TX and RX units
- Alignment aid function

DIMENSIONS



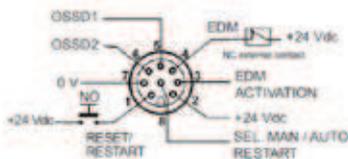
VERSION	L ₁	L ₂
SG4-14-015-OO-E	233.3	153.3
SG4-14-030-OO-E	383.2	303.2
SG4-14-045-OO-E	533.2	453.3
SG4-14-060-OO-E	683.2	603.2
SG4-14-075-OO-E	833.2	753.3
SG4-14-090-OO-E	983.2	903.2
SG4-14-105-OO-E	1133.2	1053.2
SG4-14-120-OO-E	1283.3	1203.3
SG4-14-135-OO-E	1433.2	1353.2
SG4-14-150-OO-E	1583.3	1503.3
SG4-14-165-OO-E	1733.3	1653.3
SG4-14-180-OO-E	1883.3	1803.3

INDICATORS AND SETTINGS



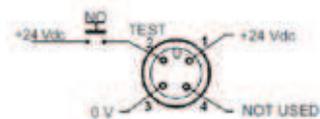
CONNECTIONS

RX: M12 8-POLE CONNECTOR



- | | |
|------------|----------------------------|
| 1 = white | = RESET (*) |
| 2 = brown | = +24 Vdc |
| 3 = green | = EDMACTIVATION (**) |
| 4 = yellow | = EDM |
| 5 = grey | = OSSD1 |
| 6 = pink | = OSSD2 |
| 7 = blue | = 0 V |
| 8 = red | = SEL. MAN. / AUTO RESTART |

TX: M12 4-POLE CONNECTOR



- | | |
|-----------|------------|
| 1 = brown | = +24 Vdc |
| 2 = white | = TEST |
| 3 = blue | = 0 V |
| 4 = black | = NOT USED |

*Automatic RESTART - RESET function
Manual RESTART - RESET/RESTART function
**Refer to "SG4-B: functions"

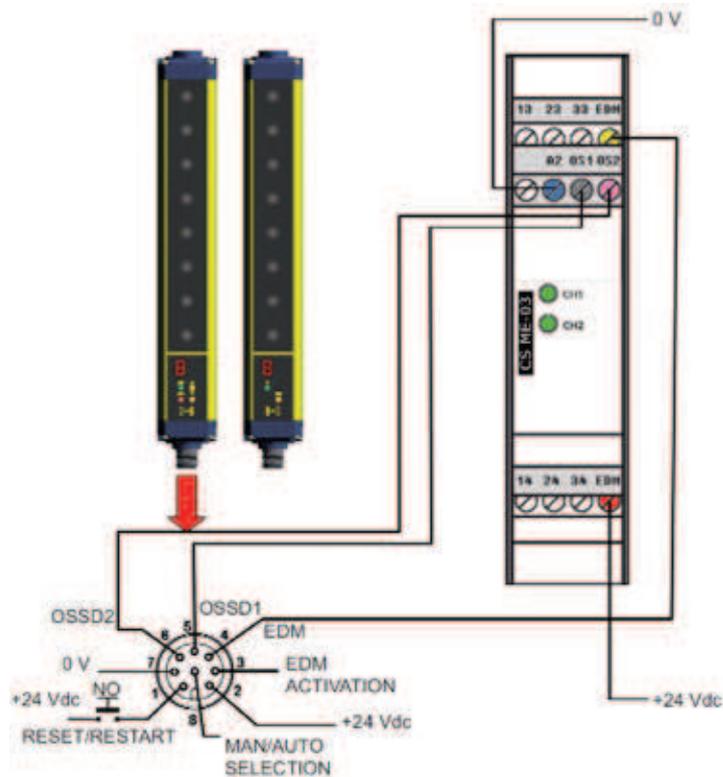
NOTE: For MANUAL RESTART CONNECT TOGETHER Pin8 with Pin6.
For Automatic Restart connect together Pin8 with Pin5

SG4-B: FUNCTIONS

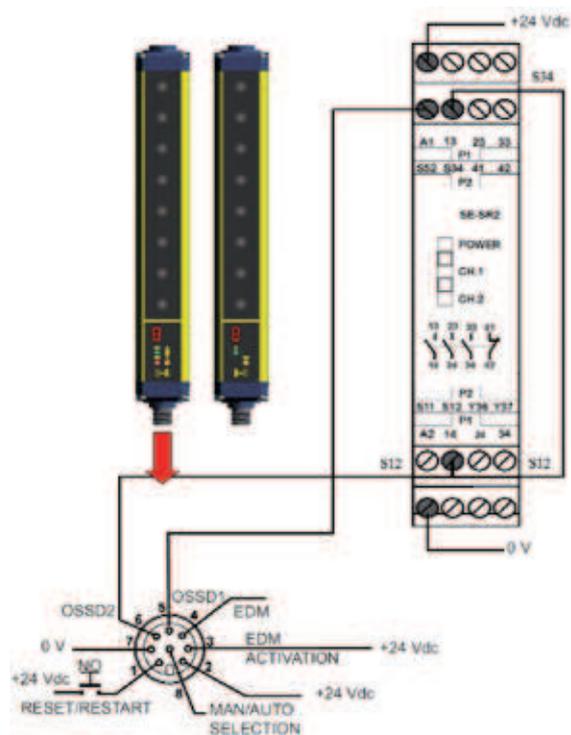
EDM

The **EDM** function allows to connect the light barrier to a couple of simple forced-guided safety relays instead to a Type 4 safety relay and thus guaranteeing an enormous economical advantage.

Connection with EDM function



Connection without EDM function



TECHNICAL DATA

Electrical Data	
Power supply (Vdd)	24 Vdc ± 20%
Consumption (TX):	2.5 W max
Consumption (RX):	4 W max (without load)
OSSD outputs:	2 PNP
Short-circuit protection:	1.4 A max
Output current:	0.5 A max on each output
Output voltage – ON status:	Vdd-1 V
Output voltage – OFF status:	0.2 V
Leakage current:	< 1mA
Capacitive load:	2.2 uF @ 24Vdc (*)
Response time:	Refer to table
Controlled height:	150 ... 1800 mm
Safety category:	Type 4
Auxiliary functions:	Reset/Test
	Selectable Man./ Auto. Restart
	Selectable EDM
Electrical protection:	Class I / Class III
Connections:	M12 4-pole for emitter
	M12 8-pole for receiver
Cable length (for powering)	50 m. max (*)
OPTICAL DATA	
Light emission:	Infrared LED (950 nm)
Resolution:	14 mm
Operating distance:	0.2...6 m
Aperture angle (EAA):	±2.5°
Ambient light rejection:	IEC 61496-2
MECHANICAL AND ENVIRONMENTAL DATA	
Operating temperature:	0...55°C
Storage temperature:	-25...+ 70 °C
Temperature class:	T6
Humidity:	15...95 % (non condensating)
Mechanical protection:	IP65 (EN 60529)
Vibrations:	Width 0.35 mm
	Frequency 10 ... 55 Hz 20 sweep per axis, 1 octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10g) 1.000 shock per axis (EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)
Protective shield material:	PMMA
Cap material:	PC MAKROLON
Weight:	1.3 Kg / m

*If a longer cable has to be used, please verify that the capacitive load specifications are respected

TABLES

MODEL	
SG4 height 150	16
SG4 height 300	32
SG4 height 450	48
SG4 height 600	64
SG4 height 750	80
SG4 height 900	96
SG4 height 1050	112
SG4 height 1200	128
SG4 height 1350	144
SG4 height 1500	160
SG4 height 1650	176
SG4 height 1800	192

Table 1: NUMBER OF CONTROLLED BEAMS

MODEL	
SG4 height 150	150
SG4 height 300	300
SG4 height 450	450
SG4 height 600	600
SG4 height 750	750
SG4 height 900	900
SG4 height 1050	1050
SG4 height 1200	1200
SG4 height 1350	1350
SG4 height 1500	1500
SG4 height 1650	1650
SG4 height 1800	1800

Table 2: CONTROLLED HEIGHT (mm)

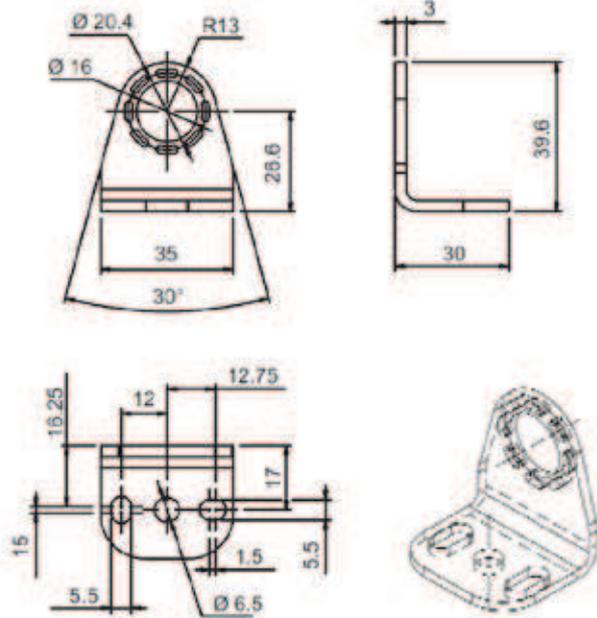
MODEL	
SG4 height 150	11
SG4 height 300	15
SG4 height 450	18
SG4 height 600	22
SG4 height 750	25
SG4 height 900	29
SG4 height 1050	33
SG4 height 1200	36
SG4 height 1350	40
SG4 height 1500	43
SG4 height 1650	47
SG4 height 1800	50

Table 3: RESPONSE TIME (ms)



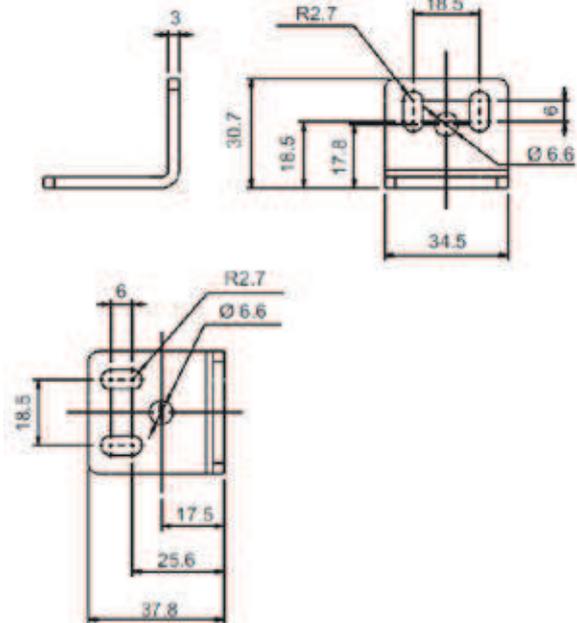
FIXING BRACKET

Rotating fixing bracket¹

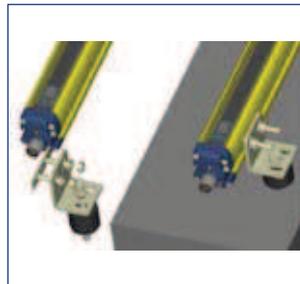


¹ Accessory sold separately

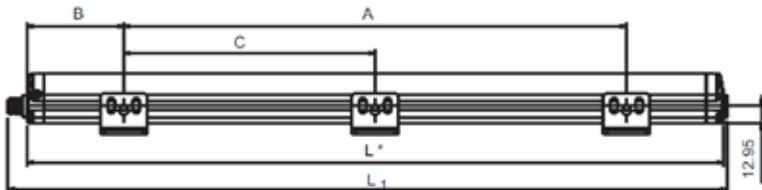
Angled fixing bracket²



² Supplied in the package



Installation with anti-vibration supports



MODELS	L (mm)	A (mm)	B (mm)	C (mm)
SG4-14-015-OO-E	216.3	108	54	-
SG4-14-030-OO-E	366.2	216	75	-
SG4-14-045-OO-E	516.3	316	100	-
SG4-14-060-OO-E	666.2	366	150	-
SG4-14-075-OO-E	816.3	466	175	-
SG4-14-090-OO-E	966.2	566	200	-
SG4-14-105-OO-E	1116.2	666	225	-
SG4-14-120-OO-E	1266.3	966	150	483
SG4-14-135-OO-E	1416.2	1066	175	533
SG4-14-150-OO-E	1566.3	1166	200	583
SG4-14-165-OO-E	1716.3	1266	225	633
SG4-14-180-OO-E	1866.3	1366	250	683

RELIABILITY DATA SG4-B

PL (Ref. EN ISO 13849-1)	e
CAT (Ref. EN 954-1)	4
SIL (Ref. EN IEC 61508)	3
SIL CL (Ref. EN IEC 62061)	3
PFHD – Probability of Danger Failure (1/h)	2,64E-09
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	444
DC – Diagnostic Coverage (%)	98,80%
SFF – Safe Failure Fraction (%)	99,30%
HFT – Hardware Fault Tolerance	1

MODEL SELECTION AND ORDER INFORMATION

Model	Description	Order N°
SG4-14-015-OO-E	Type 4 safety light curtain h=150 mm	957901000
SG4-14-030-OO-E	Type 4 safety light curtain h=300 mm	957901010
SG4-14-045-OO-E	Type 4 safety light curtain h=450 mm	957901020
SG4-14-060-OO-E	Type 4 safety light curtain h=600 mm	957901030
SG4-14-075-OO-E	Type 4 safety light curtain h=750 mm	957901040
SG4-14-090-OO-E	Type 4 safety light curtain h=900 mm	957901050
SG4-14-105-OO-E	Type 4 safety light curtain h=1050 mm	957901060
SG4-14-120-OO-E	Type 4 safety light curtain h=1200 mm	957901070
SG4-14-135-OO-E	Type 4 safety light curtain h=1350 mm	957901080
SG4-14-150-OO-E	Type 4 safety light curtain h=1500 mm	957901090
SG4-14-165-OO-E	Type 4 safety light curtain h=1650 mm	957901100
SG4-14-180-OO-E	Type 4 safety light curtain h=1800 mm	957901110

ACCESSORYSELECTION AND ORDER INFORMATION

Model	Description	Order N°
CS-A1-02-U-03	M12 4-pole unshielded axial 3 m connector, UL 2464	95ASE1120
CS-A1-02-U-05	M12 4-pole unshielded axial 5 m connector, UL 2464	95ASE1130
CS-A1-02-U-10	M12 4-pole unshielded axial 10 m connector, UL 2464	95ASE1140
CS-A1-02-U-15	M12 4-pole unshielded axial 15 m connector, UL 2464	95ASE1150
CS-A1-02-U-25	M12 4-pole unshielded axial 25 m connector, UL 2464	95ASE1160
CS-A1-06-U-03	M12 8-pole unshielded axial 3 m connector, UL 2464	95ASE1220
CS-A1-06-U-05	M12 8-pole unshielded axial 5 m connector, UL 2464	95ASE1230
CS-A1-06-U-10	M12 8-pole unshielded axial 10 m connector, UL 2464	95ASE1240
CS-A1-06-U-15	M12 8-pole unshielded axial 15 m connector, UL 2464	95ASE1250
CS-A1-06-U-25	M12 8-pole unshielded axial 25 m connector, UL 2464	95ASE1260
ST-KSTD	Angled fixing brackets (4 pc kit)	95ACC1670
ST-K4AV	Anti-vibration supports (4 pc kit)	95ACC1700
ST-K6AV	Anti-vibration supports (6 pc kit)	95ACC1710
ST-K4ROT	Top-Bottom rotating fixing brackets (4 pc kit)	95ASE1280

Please refer also to **Safety Device Accessories**



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SG4-B HAND SERIES

The new series of **SAFEasy™ SG4-B HAND** safety light curtains widens the existing **SG** range, whilst representing an evolution of the **SE4-PLUS** line, offering a Type 4 safety light device for hand protection with base functions. Ideal for applications that do not require complementary functions such as Muting, Cascade and blanking. The new **SG4-B** series has been especially developed to simplify:

- installation (new rotating TOP-BOTTOM fixing brackets to ease alignment);
- connection (use of standard connectors, no connection between emitter and receiver necessary);
- configuration (no external control units and / or supplementary cables necessary);
- use (alignment guided by a 7 segment double display on both units).

Improved response time and operating distance, respect to the **SE4-PLUS** series distinguish this series and make it one of the best performing light curtains available today on the market.

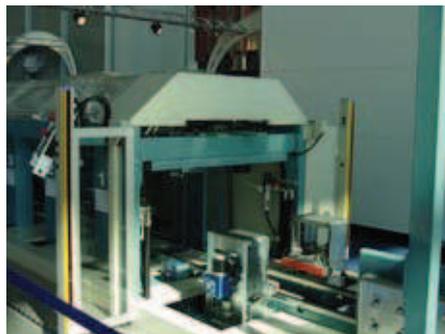


HIGHLIGHTS

- Integrated light curtain for HAND PROTECTION (30 mm resolution)
- Maximum operating distance reaching 19 m
- Controlled heights ranging from 150 to 1800 mm
- Compact 32x37 mm profile
- Selectable EDM and Manual/ Automatic Restart

APPLICATIONS

- Automatic machines;
- Packaging and cutting machines;
- Textile, wood-working and ceramic machines;
- Automatic assembling lines;
- Milling, lathe and shearing machines;
- Bending and metal-working machines.

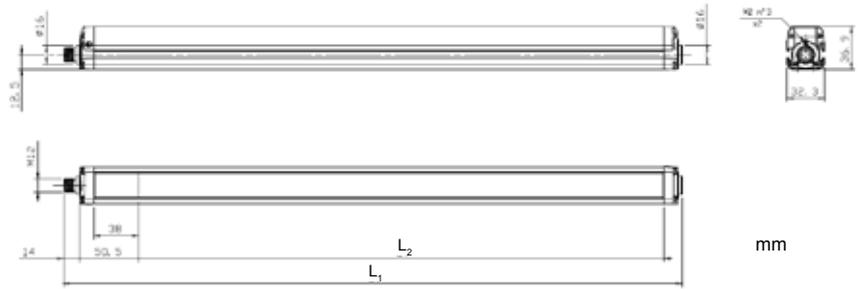


SETTING

The main characteristics of the SG4-B HAND are:

- Operating distance reaching 19 m
- Response times ranging from 9 to 27 msec
- Controlled heights ranging from 150 to 1800 mm
- New sturdy and more functional profile
- Compatibility with the entire SE accessory range
- Selectable EDM and Manual/Automatic Restart
- User interface equipped with a 7 segment display on both TX and RX units
- Alignment aid function

DIMENSIONS



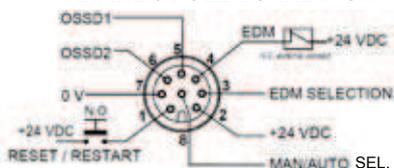
VERSIONS	L ₁	L ₂
SG4-30-015-OO-E	233.3	153.3
SG4-30-030-OO-E	383.2	303.2
SG4-30-045-OO-E	533.2	453.3
SG4-30-060-OO-E	683.2	603.2
SG4-30-075-OO-E	833.2	753.3
SG4-30-090-OO-E	983.2	903.2
SG4-30-105-OO-E	1133.2	1053.2
SG4-30-120-OO-E	1283.3	1203.3
SG4-30-135-OO-E	1433.2	1353.2
SG4-30-150-OO-E	1583.3	1503.3
SG4-30-165-OO-E	1733.3	1653.3
SG4-30-180-OO-E	1883.3	1803.3

INDICATORS AND SETTINGS



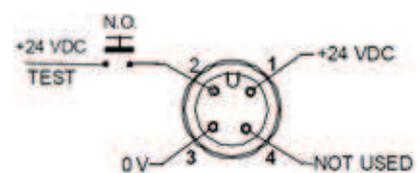
CONNECTIONS

RX: M12 8-POLE CONNECTOR



- 1 = white = RESET (*)
- 2 = brown = +24 Vdc
- 3 = green = EDM ACTIVATION (**)
- 4 = yellow = EDM
- 5 = grey = OSSD1
- 6 = pink = OSSD2
- 7 = blue = 0 V
- 8 = red = SEL. MAN. / AUTO RESTART

TX: M12 4-POLE CONNECTOR



- 1 = brown = +24 Vdc
- 2 = white = TEST
- 3 = blue = 0 V
- 4 = black = NOT USED

*automatic RESTART - RESET function
 manual RESTART-RESET/RESTART function
 **Refer to "SG4-B: function"

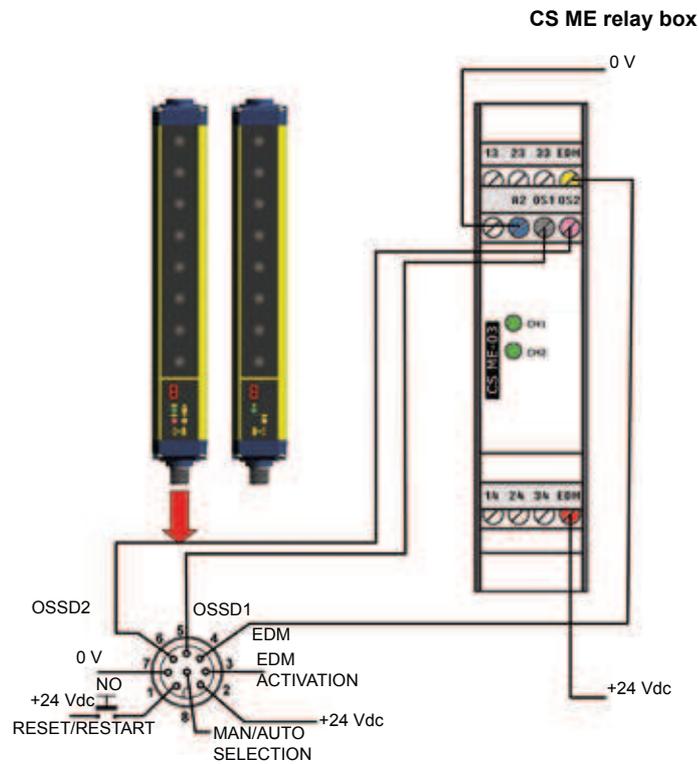
NOTE: For MANUAL RESTART CONNECT TOGETHER Pin8 with Pin6.
 For Automatic Restart connect together Pin8 with Pin5

SG4-B: FUNCTIONS

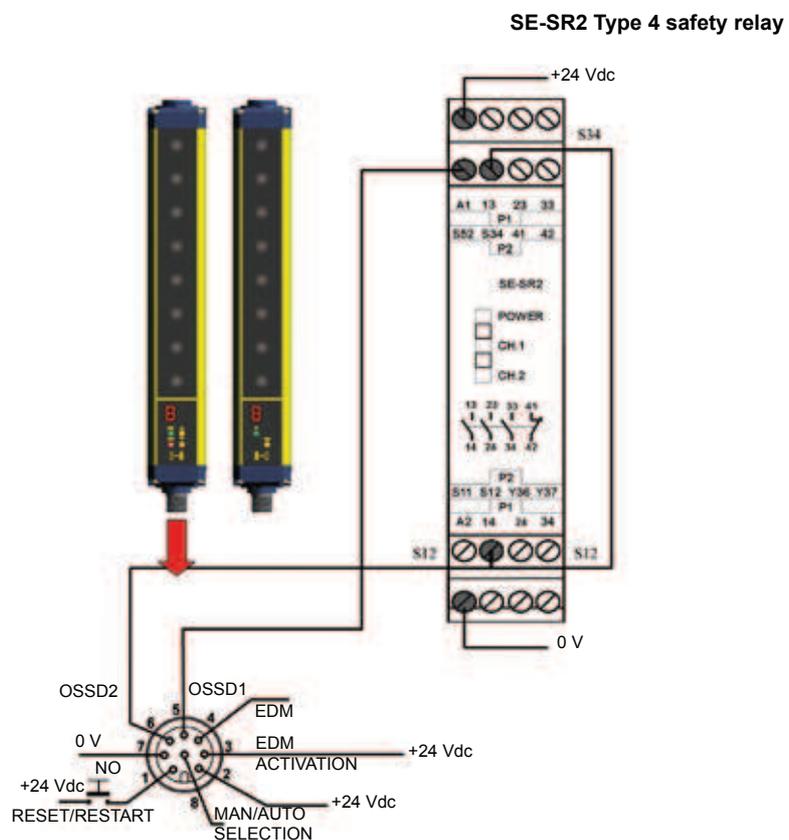
EDM

The **EDM** function allows to connect the light barrier to a couple of simple forced-guided safety relays instead to a Type 4 safety relay and thus guaranteeing an enormous economical advantage.

Connection with EDM function



Connection without EDM function



TECHNICAL DATA

Electrical Data	
Power supply (Vdd)	24 Vdc ± 20%
Consumption (TX):	2.5 W max
Consumption (RX):	4 W max (without load)
OSSD outputs:	2 PNP
Short-circuit protection:	1.4 A max
Output current:	0.5 A max on each output
Output voltage – ON status:	Vdd-1 V
Output voltage – OFF status:	0.2 V
Leakage current:	< 1mA
Capacitive load:	2.2 uF @ 24Vdc (*)
Response time:	Refer to table
Controlled height:	150 ... 1800 mm
Safety category:	Type 4
Auxiliary functions:	Reset/Test
	Selectable Man./ Auto. Restart
	Selectable EDM
Electrical protection:	Class I / Class III
Connections:	M12 4-pole for emitter
	M12 8-pole for receiver
Cable length (for powering)	50 m. max (*)
Optical Data	
Light emission:	Infrared LED (950 nm)
Resolution:	30 mm
Operating distance:	0.2...19 m
Aperture angle (EAA):	±2.5° max.
Ambient light rejection:	IEC 61496-2
Mechanical and environmental data	
Operating temperature:	0...55°C
Storage temperature:	-25...+ 70 °C
Temperature class:	T6
Humidity:	15...95 % (non condensating)
Mechanical protection:	IP65 (EN 60529)
Vibrations:	Width 0.35 mm
	Frequency 10 ... 55 Hz 20 sweep per axis, 1 octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10g) 1.000 shock per axis (EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)
Protective shield material:	PMMA
Cap material:	PC MAKROLON
Weight:	1.3 Kg / m

*If a longer cable has to be used, please verify that the capacitive load specifications are respected



TABLES

MODEL	
SG4 height 150	8
SG4 height 300	16
SG4 height 450	24
SG4 height 600	32
SG4 height 750	40
SG4 height 900	48
SG4 height 1050	56
SG4 height 1200	64
SG4 height 1350	72
SG4 height 1500	80
SG4 height 1650	88
SG4 height 1800	96

Table 1: NUMBER OF CONTROLLED BEAMS

MODEL	
SG4 height 150	150
SG4 height 300	300
SG4 height 450	450
SG4 height 600	600
SG4 height 750	750
SG4 height 900	900
SG4 height 1050	1050
SG4 height 1200	1200
SG4 height 1350	1350
SG4 height 1500	1500
SG4 height 1650	1650
SG4 height 1800	1800

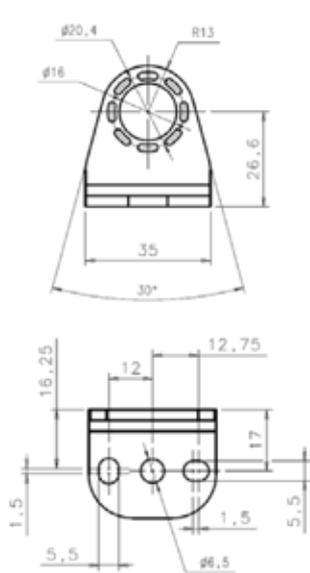
Table 2: CONTROLLED HEIGHT (mm)

MODEL	
SG4 height 150	9
SG4 height 300	11
SG4 height 450	13
SG4 height 600	14
SG4 height 750	16
SG4 height 900	18
SG4 height 1050	19
SG4 height 1200	21
SG4 height 1350	23
SG4 height 1500	25
SG4 height 1650	26
SG4 height 1800	28

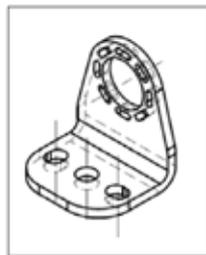
Table 3: RESPONSE TIME (ms)

FIXING BRACKET

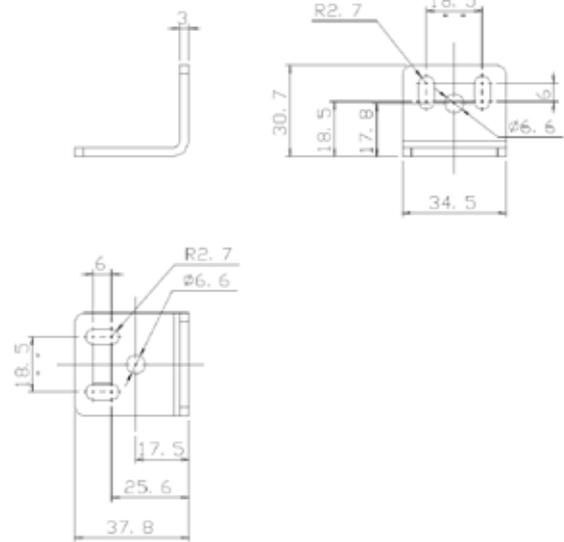
Rotating fixing bracket¹



¹ Accessory sold separately

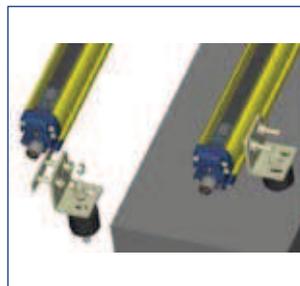


Angled fixing bracket²

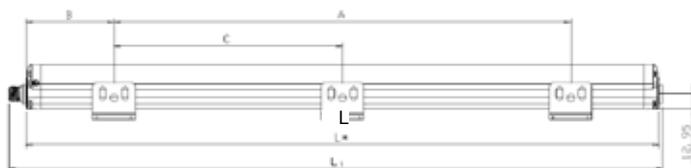


² Supplied in the package

mm



Installation with anti-vibration supports



MODELS	L (mm)	A (mm)	B (mm)	C (mm)
SG4-30-015-OO-E	216.3	108	54	-
SG4-30-030-OO-E	366.2	216	75	-
SG4-30-045-OO-E	516.3	316	100	-
SG4-30-060-OO-E	666.2	366	150	-
SG4-30-075-OO-E	816.3	466	175	-
SG4-30-090-OO-E	966.2	566	200	-
SG4-30-105-OO-E	1116.2	666	225	-
SG4-30-120-OO-E	1266.3	966	150	483
SG4-30-135-OO-E	1416.2	1066	175	533
SG4-30-150-OO-E	1566.3	1166	200	583
SG4-30-165-OO-E	1716.3	1266	225	633
SG4-30-180-OO-E	1866.3	1366	250	683

RELIABILITY DATA SG4-B

PL (Ref. EN ISO 13849-1)	e
CAT (Ref. EN 954-1)	4
SIL (Ref. EN IEC 61508)	3
SIL CL (Ref. EN IEC 62061)	3
PFHD – Probability of Danger Failure (1/h)	2,64E-09
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	444
DC – Diagnostic Coverage (%)	98,80%
SFF – Safe Failure Fraction (%)	99,30%
HFT – Hardware Fault Tolerance	1

MODEL SELECTION TABLE

Model	Description	Order N°
SG4-30-015-OO-E	Type 4 safety light curtain h=150 mm	957901120
SG4-30-030-OO-E	Type 4 safety light curtain h=300 mm	957901130
SG4-30-045-OO-E	Type 4 safety light curtain h=450 mm	957901140
SG4-30-060-OO-E	Type 4 safety light curtain h=600 mm	957901150
SG4-30-075-OO-E	Type 4 safety light curtain h=750 mm	957901160
SG4-30-090-OO-E	Type 4 safety light curtain h=900 mm	957901170
SG4-30-105-OO-E	Type 4 safety light curtain h=1050 mm	957901180
SG4-30-120-OO-E	Type 4 safety light curtain h=1200 mm	957901190
SG4-30-135-OO-E	Type 4 safety light curtain h=1350 mm	957901200
SG4-30-150-OO-E	Type 4 safety light curtain h=1500 mm	957901210
SG4-30-165-OO-E	Type 4 safety light curtain h=1650 mm	957901220
SG4-30-180-OO-E	Type 4 safety light curtain h=1800 mm	957901230

ACCESSORY SELECTION AND ORDER INFORMATION

Model	Description	Order N°
CS-A1-02-U-03	M12 4-pole unshielded axial 3 m connector, UL 2464	95ASE1120
CS-A1-02-U-05	M12 4-pole unshielded axial 5 m connector, UL 2464	95ASE1130
CS-A1-02-U-10	M12 4-pole unshielded axial 10 m connector, UL 2464	95ASE1140
CS-A1-02-U-15	M12 4-pole unshielded axial 15 m connector, UL 2464	95ASE1150
CS-A1-02-U-25	M12 4-pole unshielded axial 25 m connector, UL 2464	95ASE1160
CS-A1-06-U-03	M12 8-pole unshielded axial 3 m connector, UL 2464	95ASE1220
CS-A1-06-U-05	M12 8-pole unshielded axial 5 m connector, UL 2464	95ASE1230
CS-A1-06-U-10	M12 8-pole unshielded axial 10 m connector, UL 2464	95ASE1240
CS-A1-06-U-15	M12 8-pole unshielded axial 15 m connector, UL 2464	95ASE1250
CS-A1-06-U-25	M12 8-pole unshielded axial 25 m connector, UL 2464	95ASE1260
ST-KSTD	Angled fixing brackets (4 pc kit)	95ACC1670
ST-K4AV	Anti-vibration supports (4 pc kit)	95ACC1700
ST-K6AV	Anti-vibration supports (6 pc kit)	95ACC1710
ST-K4ROT	Top-Bottom rotating fixing brackets (4 pc kit)	95ASE1280

Please refer also to **Safety Device Accessories**



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SE2-HAND SERIES

The **SAFEasy™** light curtains, according to the IEC 61496-1 e IEC 61496-2 standards, are suitable for hand protection of operators exposed to risks. Different models with eleven standard heights ranging from 150 to 1650 mm, 35 mm resolution and an operating distance reaching 15 m are available. Specific dip-switches, that can be reached through a slot present on the front of the receiver protected by a lid and opened with a simple screwdriver, guarantee rapid and safe device setting. The operator is thus able to configure, according to the specific needs, the manual or automatic Restart, as well as the Muting and partial Muting functions. The emitter-receiver units are optically synchronised and contain all the control circuits, inputs and outputs inside the housing.

The **SAFEasy™** light curtains have also integrated the test function, automatically activated every second, without stopping the machine's working cycle.

A wide range of industrial applications, requiring operator safety, can be solved by the **SAFEasy™** light curtains, thanks to the extremely compact dimensions (35x40 mm) and easy connection and installation.



HIGHLIGHTS

- Integrated light curtains for HAND PROTECTION
- Version with 35 mm resolution
- Special slot for device setting
- 35 x 40 mm compact profile

APPLICATIONS

- Automatic machines
- Packaging machines, handling machines, storing machines
- Wood working machines, glass working machines, ceramics working machines.
- Automatic and semi-automatic assembly lines
- Automatic warehouses
- Presses, punching machines, benders and cutters

Assembly lines



Automatic warehouse



Packaging lines



TECHNICAL DATA

Power supply:	24 Vdc ± 20% (SELV/PELV)
Consumption:	70 mA max. / 2.1 W (emitter) 100 mA max. / 3 W (receiver without load)
Light emission:	infrared LED 880 nm
Optic diameter:	Ø 16 mm
Number of controlled beams:	refer to table 1
Optic interaxis:	refer to table 2
Resolution:	refer to table 2
1st beam installation height:	refer to table 3
Through beam operating distance:	0.5 ... 25 m (Q vers.) 4 ... 50 m (P vers.)
Receiver inputs:	external switches for Muting, Test, Restart and Override
Receiver indicators:	green / red SAFE / BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED yellow blinking FAILURE LED green POWER ON LED
Emitter indicators:	green POWER ON LED yellow blinking FAILURE LED green POWER ON LED
Output type:	2 PNP
Output current:	0.7 A max. 0.25 A max. (45°C - 55°C) short-circuit signalling and protection
Response time:	14 ms
Selectable functions:	Total / partial Muting Manual / Automatic Restart refer to table 4
Time-out period:	Muting: 10 minutes Override: 2 minutes
Muting signalling lamp:	24 V 3 W min. (125 mA), 7 W max. (300 mA)
Receiver connection:	8-pole M12 connector
Emitter connection:	4-pole M12 connector
Cable length:	50 m max. (with 50 nF capacitive load)
Safety category:	type 4
Electrical protection:	class 1
Mechanical protection:	IP65 IP67 (connector part)
Housing material:	aluminium with PC Makrolon plastic caps
Weight:	1.2 Kg max. / m of total height
Operating temperature:	-10 ... +55 °C
Storage temperature:	-25 ... +70 °C
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2

TABLES

MODEL	SE2-35
SE2 height 150	8
SE2 height 300	16
SE2 height 450	24
SE2 height 600	32
SE2 height 750	40
SE2 height 900	48
SE2 height 1050	56
SE2 height 1200	64
SE2 height 1350	72
SE2 height 1500	80
SE2 height 1650	88

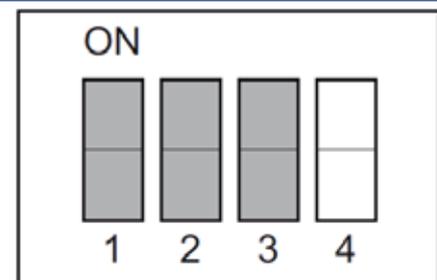
Table 1: NUMBER OF BEAMS

MODEL	SE2-35
SE2 height 150	180
SE2 height 300	327
SE2 height 450	474
SE2 height 600	621
SE2 height 750	768
SE2 height 900	915
SE2 height 1050	1062
SE2 height 1200	1209
SE2 height 1350	1356
SE2 height 1500	1503
SE2 height 1650	1650

Table 2: CONTROLLED HEIGHT (mm)

MODEL	SE2-35
SE2 height 150	15
SE2 height 300	17
SE2 height 450	18
SE2 height 600	20
SE2 height 750	22
SE2 height 900	23
SE2 height 1050	25
SE2 height 1200	27
SE2 height 1350	28
SE2 height 1500	30
SE2 height 1650	32

Table 3: RESPONSE TIME (ms)



GREY dip-switches: total / partial Muting selection
WHITE dip-switches: manual / auto. Restart selection

Table 4: DIP-SWITCH SELECTION

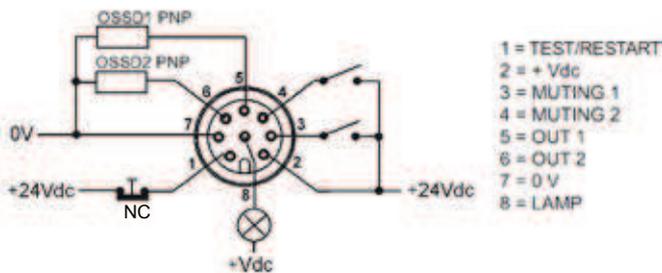


RELIABILITY DATA

PL (Ref. EN ISO 13849-1)	d
CAT (Ref. EN 954-1)	2
SIL (Ref. EN IEC 61508)	2
SIL CL (Ref. EN IEC 62061)	2
PFHD – Probability of Danger Failure (1/h)	1,37E-08
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	309
DC – Diagnostic Coverage (%)	96,3%
SFF – Safe Failure Fraction (%)	97,83%
HFT – Hardware Fault Tolerance	0

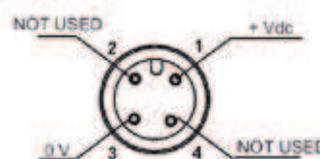
CONNECTIONS

RX: M12 8-POLE CONNECTOR



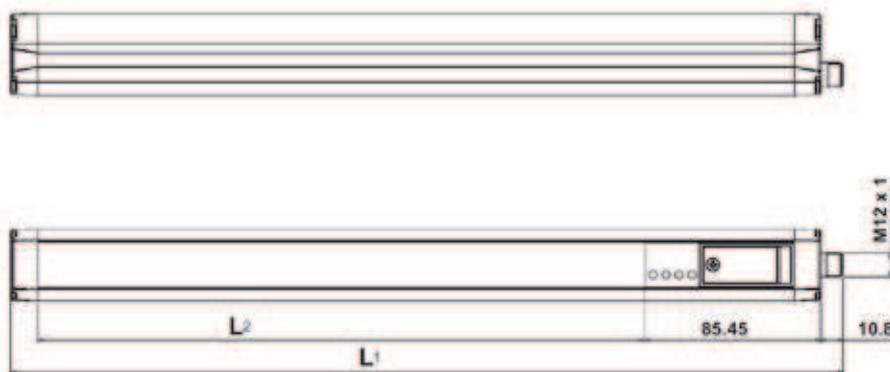
- 1 = TEST/RESTART
- 2 = + Vdc
- 3 = MUTING 1
- 4 = MUTING 2
- 5 = OUT 1
- 6 = OUT 2
- 7 = 0 V
- 8 = LAMP

TX: M12 4-POLE CONNECTOR



- 1 = brown = + Vdc
- 2 = white = NOT USED
- 3 = blue = 0 V
- 4 = black = NOT USED

DIMENSIONS



mm

VERSIONS	L ₁	L ₂
SE2-35-015-PP-W	256	147
SE2-35-030-PP-W	403	294
SE2-35-045-PP-W	550	441
SE2-35-060-PP-W	697	588
SE2-35-075-PP-W	844	735
SE2-35-090-PP-W	991	882
SE2-35-105-PP-W	1138	1029
SE2-35-120-PP-W	1285	1176
SE2-35-135-PP-W	1432	1323
SE2-35-150-PP-W	1579	1470
SE2-35-165-PP-W	1726	1617

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
SE2-35-015-PP-W	type 2 safety light curtain h=150 mm	957101000
SE2-35-030-PP-W	type 2 safety light curtain h=300 mm	957101010
SE2-35-045-PP-W	type 2 safety light curtain h=450 mm	957101020
SE2-35-060-PP-W	type 2 safety light curtain h=600 mm	957101030
SE2-35-075-PP-W	type 2 safety light curtain h=750 mm	957101040
SE2-35-090-PP-W	type 2 safety light curtain h=900 mm	957101050
SE2-35-105-PP-W	type 2 safety light curtain h=1050 mm	957101060
SE2-35-120-PP-W	type 2 safety light curtain h=1200 mm	957101070
SE2-35-135-PP-W	type 2 safety light curtain h=1350 mm	957101080
SE2-35-150-PP-W	type 2 safety light curtain h=1500 mm	957101090
SE2-35-165-PP-W	type 2 safety light curtain h=1650 mm	957101100

ACCESSORY SELECTION AND ORDER INFORMATION

Please refer also to **Safety Device Accessories**

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SE2-BODY SERIES

The **SAFEasy™** light curtains, according to the IEC 61496-1 e IEC 61496-2 standards, are suitable for detecting the human body when approaching dangerous areas. Models with different standard heights (500, 800, 900, 1200 mm), with 2, 3, 4 beams and operating distance reaching 50 m are available. Specific dip-switches, that can be reached through a slot present on the front of the receiver protected by a lid and opened with a simple screwdriver, guarantee rapid and safe device setting. The operator is thus able to configure, according to the specific needs, the manual or automatic Restart, as well as the Muting and partial Muting functions. The emitter-receiver units are optically synchronised and contain all the control circuits, inputs and outputs inside the housing. The **SAFEasy™** light curtains have also integrated the test function, automatically activated every second, without stopping the machine's working cycle. A wide range of industrial applications, requiring operator safety, can be solved by the **SAFEasy™** light curtains, thanks to the extremely compact dimensions (35x40 mm) and easy connection and installation.



HIGHLIGHTS

- Integrated light curtains for BODY PROTECTION
- Versions with 2 / 3 / 4 beams
- Special slot for device setting
- 35 x 40 mm compact profile

APPLICATIONS

- Automatic machines
- Packaging machines, handling machines, storing machines
- Wood working machines, glass working machines, ceramics working machines, etc.
- Automatic and semi-automatic assembly lines
- Automatic warehouses
- Presses, punching machines, benders and cutters

Conveyors



Automatic warehouse



Automotive



TECHNICAL DATA

Power supply:	24 Vdc ± 20% (SELV/PELV)
Consumption:	70 mA max. / 2.1 W (emitter) 100 mA max. / 3 W (receiver without load)
Light emission:	infrared LED 880 nm
Optic diameter:	Ø 16 mm
Number of controlled beams:	refer to table 1
Optic interaxis:	refer to table 2
Resolution:	refer to table 2
1st beam installation height:	refer to table 3
Through beam operating distance:	0.5 ... 50 m
Receiver inputs:	external switches for Muting, Test, Restart and Override
Receiver indicators:	green / red SAFE / BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED
Emitter indicators:	yellow blinking FAILURE LED green POWER ON LED
Output type:	2 PNP
Output current:	0.7 A max. (using both outputs) 0.5 A max. (using one single output) 0.25 A max. (for both outputs from 45°C - 55°C) short-circuit signalling and protection
Response time:	14 ms
Selectable functions:	Total / partial Muting Manual / Automatic Restart refer to table 4
Time-out period:	Muting: 10 minutes Override: 2 minutes
Muting signalling lamp:	24 V 3 W min. (125 mA), 7 W max. (300 mA)
Receiver connection:	8-pole M12 connector
Emitter connection:	4-pole M12 connector
Cable length:	50 m max. (with 50 nF capacitive load)
Safety category:	type 2
Electrical protection:	class 1
Mechanical protection:	IP65 IP67 (connector part)
Housing material:	aluminium with PC Makrolon plastic caps
Weight:	1.2 Kg max. / m of total height
Operating temperature:	-10 ... +55 °C
Storage temperature:	-25 ... +70 °C
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2



TABLES

MODEL	BEAMS
SE2 height 500	2
SE2 height 800	3
SE2 height 900	4
SE2 height 1200	4

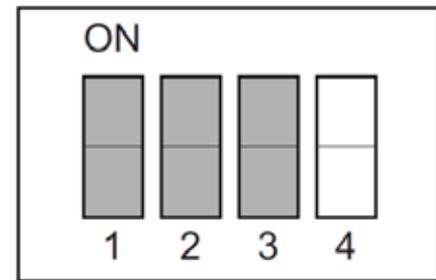
Table 1: NUMBER OF BEAMS

MODEL	mm
SE2 height 500	500 / 515
SE2 height 800	400 / 415
SE2 height 900	300 / 315
SE2 height 1200	400 / 415

Table 2: INTERAXIS/RESOLUTION

MODEL	mm
SE2 height 500	400
SE2 height 800	300
SE2 height 900	300
SE2 height 1200	300

Table 3: 1st BEAM INSTALLATION HEIGHT



GREY dip-switches: total / partial Muting selection
WHITE dip-switches: manual / auto. Restart selection

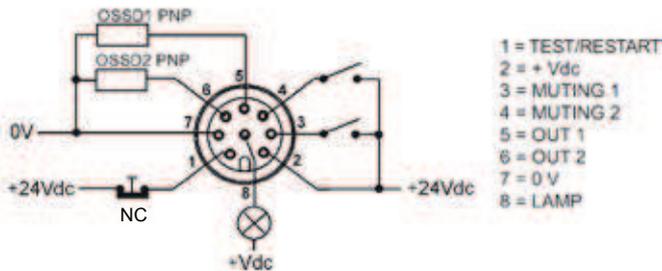
Table 4: DIP-SWITCH SELECTION

RELIABILITY DATA

PL (Ref. EN ISO 13849-1)	d
CAT (Ref. EN 954-1)	2
SIL (Ref. EN IEC 61508)	2
SIL CL (Ref. EN IEC 62061)	2
PFHD – Probability of Danger Failure (1/h)	1,37E-08
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	309
DC – Diagnostic Coverage (%)	96,3%
SFF – Safe Failure Fraction (%)	97,83%
HFT – Hardware Fault Tolerance	0

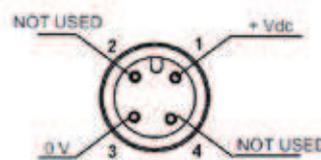
CONNECTIONS

RX: M12 8-POLE CONNECTOR



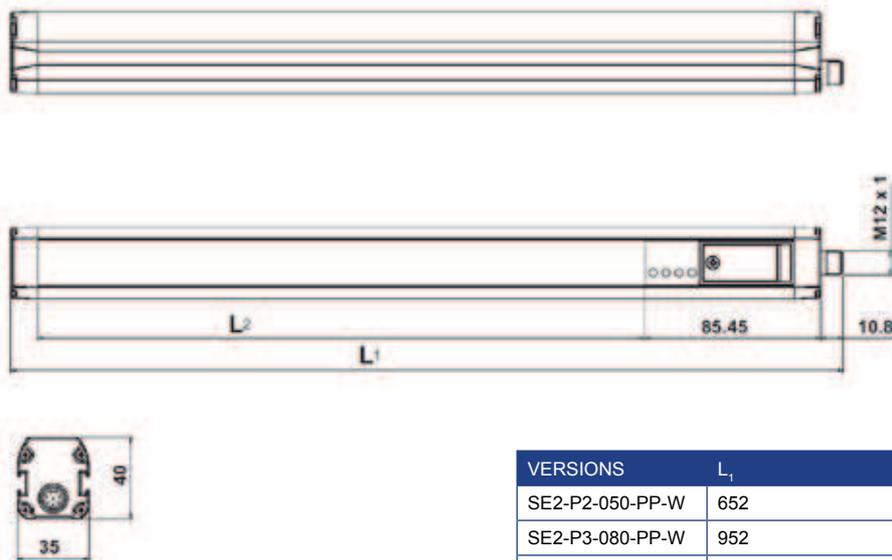
- 1 = TEST/RESTART
- 2 = + Vdc
- 3 = MUTING 1
- 4 = MUTING 2
- 5 = OUT 1
- 6 = OUT 2
- 7 = 0 V
- 8 = LAMP

TX: M12 4-POLE CONNECTOR



- 1 = brown = + Vdc
- 2 = white = NOT USED
- 3 = blue = 0 V
- 4 = black = NOT USED

DIMENSIONS



VERSIONS	L ₁	L ₂
SE2-P2-050-PP-W	652	543
SE2-P3-080-PP-W	952	843
SE2-P4-090-PP-W	1052	943
SE2-P4-120-PP-W	1352	1243

mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
SE2-P2-050-PP-W	type 2 safety light curtain with 2 beams	957101110
SE2-P3-080-PP-W	type 2 safety light curtain with 3 beams	957101120
SE2-P4-090-PP-W	type 2 safety light curtain with 4 beams	957101130
SE2-P4-120-PP-W	type 2 safety light curtain with 4 beams	957101140

ACCESSORY SELECTION AND ORDER INFORMATION

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SE4-FINGER SERIES

The **SAFEasy™** light curtains, according to the IEC 61496-1 e IEC 61496-2 standards, are suitable for finger protection of operators exposed to risks.

Different models with six standard heights ranging from 150 to 900 mm, with 14 mm resolution and operating distance reaching 6 m are available. Specific dip-switches, that can be reached through a slot present on the front of the receiver protected by a lid and opened with a simple screwdriver, guarantee rapid and safe device setting. The operator is thus able to configure, according to the specific needs, the manual or automatic Restart, as well as the muting and partial muting functions. The emitter-receiver units are optically synchronised and contain all the control circuits, inputs and outputs inside the housing.

A wide range of industrial applications, requiring operator safety, can be solved by the **SAFEasy™** light curtains, thanks to the extremely compact dimensions (35x40 mm) and easy connection and installation.



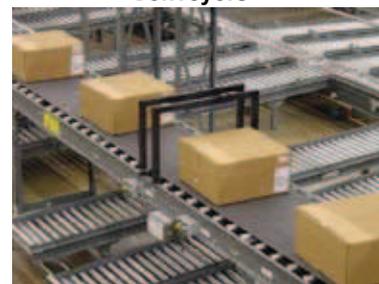
HIGHLIGHTS

- Integrated light curtains for FINGER PROTECTION
- Version with 14 mm resolution
- Special slot for device setting
- 35 x 40 mm compact profile

APPLICATIONS

- Automatic machines
- Packaging machines, handling machines, storing machines
- Wood working machines, glass working machines, ceramics working machines, etc.
- Automatic and semi-automatic assembly lines
- Automatic warehouses
- Presses, punching machines, benders and cutters

Conveyors



Automatic warehouse



Automotive



TECHNICAL DATA

Power supply:	24 Vdc ± 20%, (SELV/PELV)
Consumption:	70 mA max. / 2.1 W (emitter) 100 mA max. / 3 W (receiver without load)
Light emission:	infrared LED 880 nm
Optic diameter:	Ø 14 mm
Number of controlled beams:	refer to table 1
Optic interaxis:	7 mm
Resolution:	14 mm
Controlled height:	refer to table 2
Through beam operating distance:	0.2 ... 6 m
Receiver inputs:	external switches for Muting, Test, Restart and Override
Receiver indicators:	green / red SAFE / BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED
Emitter indicators:	yellow blinking FAILURE LED green POWER ON LED
Output type:	2 PNP
Output current:	0.7 A max. 0.25 A max. (45°C - 55°C) short-circuit signalling and protection
Response time:	refer to table 3
Selectable functions:	Total / partial Muting Manual / Automatic Restart refer to table 4
Time-out periods:	Muting: 10 minutes Override: 2 minutes
Muting signalling lamp:	24 V 3 W min. (125 mA), 7 W max. (300 mA)
Receiver connection:	8-pole M12 connector
Emitter connection:	4-pole M12 connector
Cable length:	50 m max. (with 50 nF capacitive load)
Safety category:	type 4
Electrical protection:	class 1
Mechanical protection:	IP65 IP67 (connector part)
Housing material:	aluminium with PC Makrolon plastic caps
Weight:	1.2 Kg max. / m of total height
Operating temperature:	-10 ... +55 °C
Storage temperature:	-25 ... +70 °C
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2



TABLES

MODEL	BEAMS
SE4 height 150	21
SE4 height 300	42
SE4 height 450	63
SE4 height 600	84
SE4 height 750	105
SE4 height 900	126

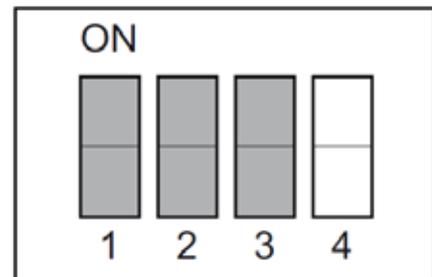
Table 1: NUMBER OF BEAMS

MODEL	mm
SE4 height 150	161
SE4 height 300	308
SE4 height 450	455
SE4 height 600	602
SE4 height 750	749
SE4 height 900	896

Table 2: CONTROLLED HEIGHT

MODEL	ms
SE4 height 150	18
SE4 height 300	22
SE4 height 450	26
SE4 height 600	31
SE4 height 750	35
SE4 height 900	39

Table 3: RESPONSE TIME



GREY dip-switches: total / partial Muting selection
WHITE dip-switches: manual / auto. Restart selection
Table 4: DIP-SWITCH SELECTION

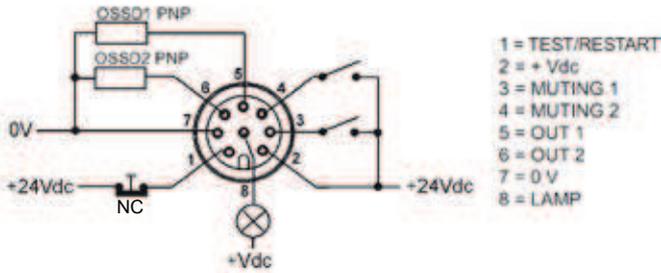


RELIABILITY DATA

PL (Ref. EN ISO 13849-1)	e
CAT (Ref. EN 954-1)	4
SIL (Ref. EN IEC 61508)	3
SIL CL (Ref. EN IEC 62061)	3
PFHD – Probability of Danger Failure (1/h)	2.76E-09
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	335
DC – Diagnostic Coverage (%)	99,00%
SFF – Safe Failure Fraction (%)	99,44%
HFT – Hardware Fault Tolerance	1

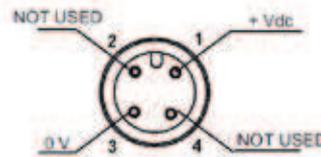
CONNECTIONS

RX: M12 8-POLE CONNECTOR



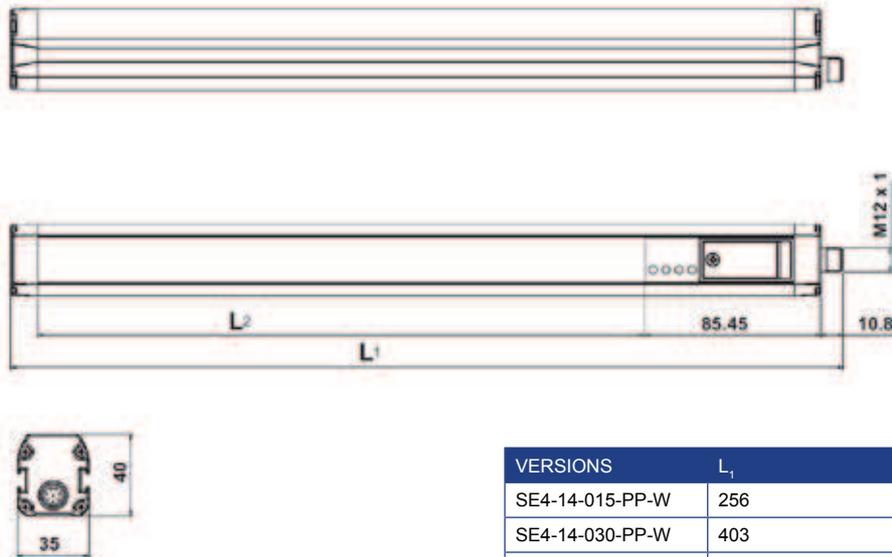
- 1 = TEST/RESTART
- 2 = + Vdc
- 3 = MUTING 1
- 4 = MUTING 2
- 5 = OUT 1
- 6 = OUT 2
- 7 = 0 V
- 8 = LAMP

TX: M12 4-POLE CONNECTOR



- 1 = brown = + Vdc
- 2 = white = NOT USED
- 3 = blue = 0 V
- 4 = black = NOT USED

DIMENSIONS



VERSIONS	L ₁	L ₂
SE4-14-015-PP-W	256	147
SE4-14-030-PP-W	403	294
SE4-14-045-PP-W	550	441
SE4-14-060-PP-W	697	588
SE4-14-075-PP-W	844	735
SE4-14-090-PP-W	991	882

mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
SE4-14-015-PP-W	type 4 safety light curtain h=150 mm	957201150
SE4-14-030-PP-W	type 4 safety light curtain h=300 mm	957201160
SE4-14-045-PP-W	type 4 safety light curtain h=450 mm	957201170
SE4-14-060-PP-W	type 4 safety light curtain h=600 mm	957201180
SE4-14-075-PP-W	type 4 safety light curtain h=750 mm	957201190
SE4-14-090-PP-W	type 4 safety light curtain h=900 mm	957201370

ACCESSORY SELECTION AND ORDER INFORMATION

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SE4-HAND SERIES

The **SAFEasy™** light curtains, according to the IEC 61496-1 e IEC 61496-2 standards, are suitable for hand protection of operators exposed to risks.

Different models with eleven standard heights ranging from 150 to 1650 mm, with 20, 30 and 35 mm resolutions and operating distance reaching 15 m are available.

Specific dip-switches, that can be reached through a slot present on the front of the receiver protected by a lid and opened with a simple screwdriver, guarantee rapid and safe device setting. The operator is thus able to configure, according to the specific needs, the manual or automatic Restart, as well as the Muting and partial Muting functions. The emitter-receiver units are optically synchronised and contain all the control circuits, inputs and outputs inside the housing.

A wide range of industrial applications, requiring operator safety, can be solved by the **SAFEasy™** light curtains, thanks to the extremely compact dimensions (35x40 mm) and easy connection and installation.



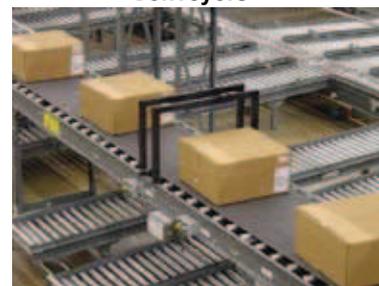
HIGHLIGHTS

- Integrated light curtains for HAND PROTECTION
- Versions with 20, 30 and 35 mm resolution
- Special slot for device setting
- 35 x 40 mm compact profile

APPLICATIONS

- Automatic machines
- Packaging machines, handling machines, storing machines
- Wood working machines, glass working machines, ceramics working machines, etc.
- Automatic and semi-automatic assembly lines
- Automatic warehouses
- Presses, punching machines, benders and cutters

Conveyors



Automatic warehouse



Automotive



TECHNICAL DATA

Power supply:	24 Vdc ± 20% (SELV/PELV)
Consumption:	70 mA max. / 2.1 W (emitter) 100 mA max. / 3 W (receiver without load)
Light emission:	infrared LED 880 nm
Number of controlled beams:	refer to table 1
Optic interaxis:	14 mm (SE4-20) 18.4 mm (SE4-30) 18.4 mm (SE4-35)
Resolution:	20 mm (SE4-20) 30 mm (SE4-30) 35 mm (SE4-35)
Controlled height:	refer to table 2
Through beam operating distance:	0.2 ... 6 m (SE4-20) 0.2 ... 15 m (SE4-30) 0.2 ... 15 m (SE4-35)
Receiver inputs:	external switches for Muting, Test, Restart and Override
Receiver indicators:	green / red SAFE / BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED
Emitter indicators:	yellow blinking FAILURE LED green POWER ON LED
Output type:	2 PNP
Output current:	0.7 A max. 0.25 A max. (45°C - 55°C) short-circuit signalling and protection
Response time:	refer to table 3
Selectable functions:	Total / partial Muting Manual / Automatic Restart refer to table 4
Time-out period:	Muting: 10 minutes Override: 2 minutes
Muting signalling lamp:	24 V 3 W min. (125 mA), 7 W max. (300 mA)
Receiver connection:	8-pole M12 connector
Emitter connection:	4-pole M12 connector
Cable length:	50 m max. (with 50 nF capacitive load)
Safety category:	type 4
Electrical protection:	class 1
Mechanical protection:	IP65 IP67 (connector part)
Housing material:	aluminium with PC Makrolon plastic caps
Weight:	1.2 Kg max. / m of total height
Operating temperature:	-10 ... +55 °C
Storage temperature:	-25 ... +70 °C
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2



TABLES

MODEL	SE4-20	SE4-30/35
SE4 height 150	11	8
SE4 height 300	22	16
SE4 height 450	33	24
SE4 height 600	44	32
SE4 height 750	55	40
SE4 height 900	66	48
SE4 height 1050	77	56
SE4 height 1200	88	64
SE4 height 1350	99	72
SE4 height 1500	110	80
SE4 height 1650	121	88

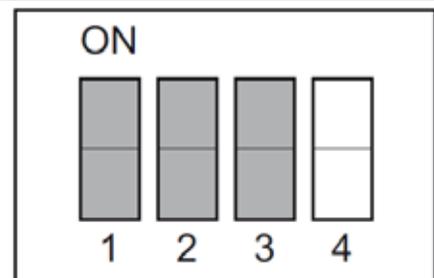
Table 1: NUMBER OF BEAMS

MODEL	SE4-20	SE4-30/35
SE4 height 150	161	180
SE4 height 300	308	327
SE4 height 450	455	474
SE4 height 600	602	621
SE4 height 750	749	768
SE4 height 900	896	915
SE4 height 1050	1043	1062
SE4 height 1200	1190	1209
SE4 height 1350	1337	1356
SE4 height 1500	1484	1503
SE4 height 1650	1631	1650

Table 2: CONTROLLED HEIGHT (mm)

MODEL	SE4-20	SE4-30/35
SE4 height 150	16	15
SE4 height 300	18	17
SE4 height 450	21	18
SE4 height 600	23	20
SE4 height 750	25	22
SE4 height 900	27	23
SE4 height 1050	29	25
SE4 height 1200	32	27
SE4 height 1350	34	28
SE4 height 1500	36	30
SE4 height 1650	39	32

Table 3: RESPONSE TIME (ms)



GREY dip-switches: total / partial Muting selection
WHITE dip-switches: manual / auto. Restart selection

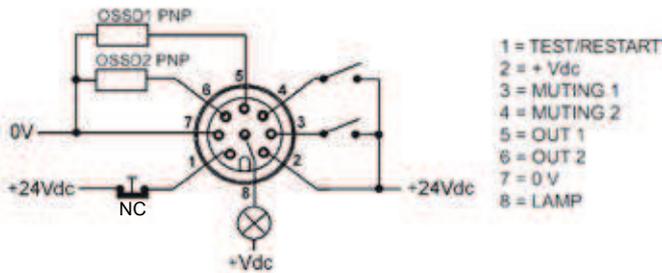
Table 4: DIP-SWITCH SELECTION

RELIABILITY DATA

PL (Ref. EN ISO 13849-1)	e
CAT (Ref. EN 954-1)	4
SIL (Ref. EN IEC 61508)	3
SIL CL (Ref. EN IEC 62061)	3
PFHD – Probability of Danger Failure (1/h)	2.76E-09
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	335
DC – Diagnostic Coverage (%)	99,00%
SFF – Safe Failure Fraction (%)	99,44%
HFT – Hardware Fault Tolerance	1

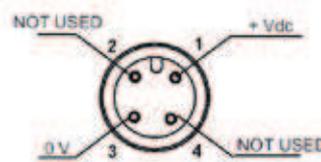
CONNECTIONS

RX: M12 8-POLE CONNECTOR



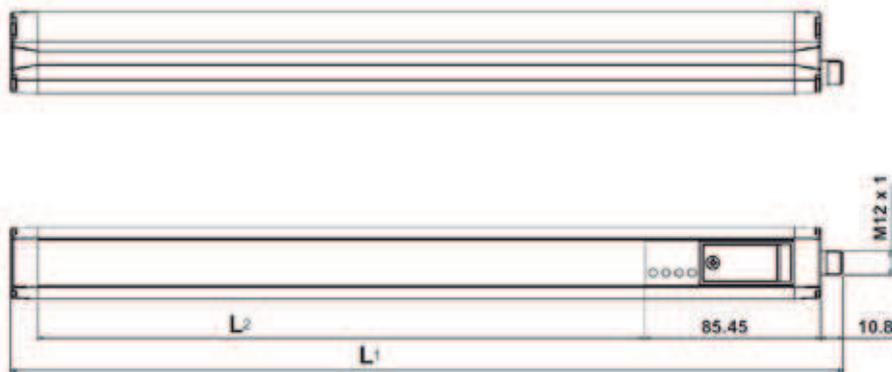
- 1 = TEST/RESTART
- 2 = + Vdc
- 3 = MUTING 1
- 4 = MUTING 2
- 5 = OUT 1
- 6 = OUT 2
- 7 = 0 V
- 8 = LAMP

TX: M12 4-POLE CONNECTOR



- 1 = brown = + Vdc
- 2 = white = NOT USED
- 3 = blue = 0 V
- 4 = black = NOT USED

DIMENSIONS



mm

VERSIONS	L ₁	L ₂
SE4-xx-015-PP-W	256	147
SE4-xx-030-PP-W	403	294
SE4-xx-045-PP-W	550	441
SE4-xx-060-PP-W	697	588
SE4-xx-075-PP-W	844	735
SE4-xx-090-PP-W	991	882
SE4-xx-105-PP-W	1138	1029
SE4-xx-120-PP-W	1285	1176
SE4-xx-135-PP-W	1432	1323
SE4-xx-150-PP-W	1579	1470

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	RESOLUTION	CODE N°
SE4-20-015-PP-W	type 4 safety light curtain, h=150 mm	20 mm	957201270
SE4-20-030-PP-W	type 4 safety light curtain, h=300 mm	20 mm	957201280
SE4-20-045-PP-W	type 4 safety light curtain, h=450 mm	20 mm	957201290
SE4-20-060-PP-W	type 4 safety light curtain, h=600 mm	20 mm	957201250
SE4-20-075-PP-W	type 4 safety light curtain, h=750 mm	20 mm	957201300
SE4-20-090-PP-W	type 4 safety light curtain, h=900 mm	20 mm	957201310
SE4-20-105-PP-W	type 4 safety light curtain, h=1050 mm	20 mm	957201320
SE4-20-120-PP-W	type 4 safety light curtain, h=1200 mm	20 mm	957201330
SE4-20-135-PP-W	type 4 safety light curtain, h=1350 mm	20 mm	957201340
SE4-20-150-PP-W	type 4 safety light curtain, h=1500 mm	20 mm	957201350
SE4-20-165-PP-W	type 4 safety light curtain, h=1650 mm	20 mm	957201360
SE4-30-015-PP-W	type 4 safety light curtain, h=150 mm	30 mm	957201380
SE4-30-030-PP-W	type 4 safety light curtain, h=300 mm	30 mm	957201390
SE4-30-045-PP-W	type 4 safety light curtain, h=450 mm	30 mm	957201400
SE4-30-060-PP-W	type 4 safety light curtain, h=600 mm	30 mm	957201240
SE4-30-075-PP-W	type 4 safety light curtain, h=750 mm	30 mm	957201410
SE4-30-090-PP-W	type 4 safety light curtain, h=900 mm	30 mm	957201420
SE4-30-105-PP-W	type 4 safety light curtain, h=1050 mm	30 mm	957201430
SE4-30-120-PP-W	type 4 safety light curtain, h=1200 mm	30 mm	957201440
SE4-30-135-PP-W	type 4 safety light curtain, h=1350 mm	30 mm	957201450
SE4-30-150-PP-W	type 4 safety light curtain, h=1500 mm	30 mm	957201460
SE4-30-165-PP-W	type 4 safety light curtain, h=1650 mm	30 mm	957201470
SE4-35-015-PP-W	type 4 safety light curtain, h=150 mm	35 mm	957201000
SE4-35-030-PP-W	type 4 safety light curtain, h=300 mm	35 mm	957201010
SE4-35-045-PP-W	type 4 safety light curtain, h=450 mm	35 mm	957201020
SE4-35-060-PP-W	type 4 safety light curtain, h=600 mm	35 mm	957201030
SE4-35-075-PP-W	type 4 safety light curtain, h=750 mm	35 mm	957201040
SE4-35-090-PP-W	type 4 safety light curtain, h=900 mm	35 mm	957201050
SE4-35-105-PP-W	type 4 safety light curtain, h=1050 mm	35 mm	957201060
SE4-35-120-PP-W	type 4 safety light curtain, h=1200 mm	35 mm	957201070
SE4-35-135-PP-W	type 4 safety light curtain, h=1350 mm	35 mm	957201080
SE4-35-150-PP-W	type 4 safety light curtain, h=1500 mm	35 mm	957201090
SE4-35-165-PP-W	type 4 safety light curtain, h=1650 mm	35 mm	957201100

ACCESSORY SELECTION AND ORDER INFORMATION

Please refer also to **Safety Device Accessories**



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SE4-BODY SERIES

The **SAFEasy™** light curtains, according to the IEC 61496-1 e IEC 61496-2 standards, are suitable for detecting the human body when approaching dangerous areas. Models with different standard heights (500, 800, 900, 1200 mm), with 2, 3, 4 beams and operating distance reaching 50 m are available. Specific dip-switches, that can be reached through a slot present on the front of the receiver protected by a lid and opened with a simple screwdriver, guarantee rapid and safe device setting. The operator is thus able to configure, according to the specific needs, the manual or automatic Restart, as well as the Muting and partial Muting functions. The emitter-receiver units are optically synchronised and contain all the control circuits, inputs and outputs inside the housing. A wide range of industrial applications, requiring operator safety, can be solved by the **SAFEasy™** light curtains, thanks to the extremely compact dimensions (35x40 mm) and easy connection and installation.



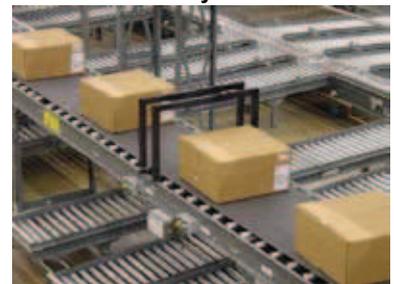
HIGHLIGHTS

- Integrated light curtains for BODY PROTECTION
- Versions with 2 / 3 / 4 beams
- Special slot for device setting
- 35 x 40 mm compact profile

APPLICATIONS

- Automatic machines
- Packaging machines, handling machines, storing machines
- Wood working machines, glass working machines, ceramics working machines, etc.
- Automatic and semi-automatic assembly lines
- Automatic warehouses
- Presses, punching machines, benders and cutters

Conveyors



Automatic warehouse



Automotive



TECHNICAL DATA

Power supply:	24 Vdc ± 20% (SELV/PELV)
Consumption:	70 mA max. / 2.1 W (emitter) 100 mA max. / 3 W (receiver without load)
Light emission:	infrared LED 880 nm
Optic diameter:	Ø 16 mm
Number of controlled beams:	refer to table 1
Optic interaxis:	refer to table 2
Resolution:	refer to table 2
1st beam installation height:	refer to table 3
Through beam operating distance:	0.5 ... 25 m (Q vers.) 4 ... 50 m (P vers.)
Receiver inputs:	external switches for Muting, Test, Restart and Override
Receiver indicators:	green / red SAFE / BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED
Emitter indicators:	yellow blinking FAILURE LED green POWER ON LED
Output type:	2 PNP
Output current:	0.7 A max. 0.25 A max. (45°C - 55°C) short-circuit signalling and protection
Response time:	14 ms
Selectable functions:	Total / partial Muting Manual / Automatic Restart refer to table 4
Time-out period:	Muting: 10 minutes Override: 2 minutes
Muting signalling lamp:	24 V 3 W min. (125 mA), 7 W max. (300 mA)
Receiver connection:	8-pole M12 connector
Emitter connection:	4-pole M12 connector
Cable length:	50 m max. (with 50 nF capacitive load)
Safety category:	type 4
Electrical protection:	class 1
Mechanical protection:	IP65 IP67 (connector part)
Housing material:	aluminium with PC Makrolon plastic caps
Weight:	1.2 Kg max. / m of total height
Operating temperature:	-10 ... +55 °C
Storage temperature:	-25 ... +70 °C
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2

TABLES

MODEL	BEAMS
SE4 height 500	2
SE4 height 800	3
SE4 height 900	4
SE4 height 1200	4

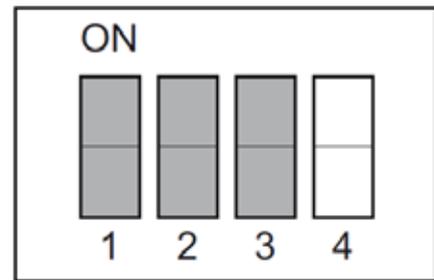
Table 1: NUMBER OF BEAMS

MODEL	mm
SE4 height 500	500 / 515
SE4 height 800	400 / 415
SE4 height 900	300 / 315
SE4 height 1200	400 / 415

Table 2: INTERAXIS / RESOLUTION

MODEL	mm
SE4 height 500	400
SE4 height 800	300
SE4 height 900	300
SE4 height 1200	300

Table 3: 1st BEAM INSTALLATION HEIGHT



GREY dip-switches: total / partial Muting selection
WHITE dip-switches: manual / auto. Restart selection
Table 4: DIP-SWITCH SELECTION



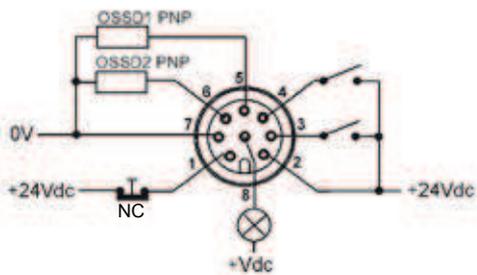
RELIABILITY DATA

PL (Ref. EN ISO 13849-1)	e
CAT (Ref. EN 954-1)	4
SIL (Ref. EN IEC 61508)	3
SIL CL (Ref. EN IEC 62061)	3
PFHD – Probability of Danger Failure (1/h)	2,76E-09
T1 – Life Time (Years)	20
MTTFD - Mean Time to Danger Failure (Years)	335
DC – Diagnostic Coverage (%)	99%
SFF – Safe Failure Fraction (%)	99,4%
HFT – Hardware Fault Tolerance	1

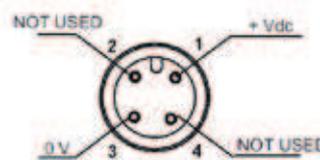
CONNECTIONS

RX: M12 8-POLE CONNECTOR

TX: M12 4-POLE CONNECTOR

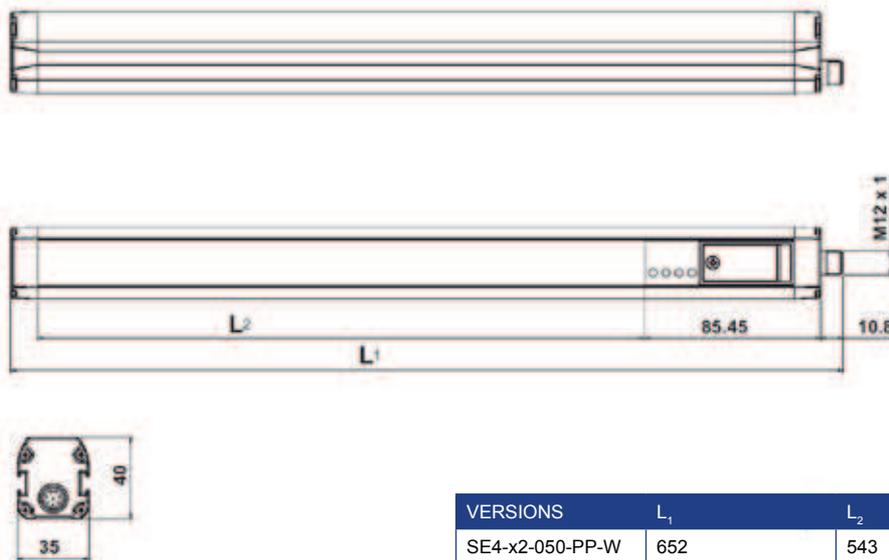


- 1 = TEST/RESTART
- 2 = + Vdc
- 3 = MUTING 1
- 4 = MUTING 2
- 5 = OUT 1
- 6 = OUT 2
- 7 = 0 V
- 8 = LAMP



- 1 = brown = + Vdc
- 2 = white = NOT USED
- 3 = blue = 0 V
- 4 = black = NOT USED

DIMENSIONS



mm

VERSIONS	L ₁	L ₂
SE4-x2-050-PP-W	652	543
SE4-x3-080-PP-W	952	853
SE4-x4-090-PP-W	1052	943
SE4-x4-120-PP-W	1352	1243

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
SE4-P2-050-PP-W	type 4 safety light curtain with 2 beams and 4 ... 50 m op. distance	957201110
SE4-P3-080-PP-W	type 4 safety light curtain with 3 beams and 4 ... 50 m op. distance	957201120
SE4-P4-090-PP-W	type 4 safety light curtain with 4 beams and 4 ... 50 m op. distance	957201130
SE4-P4-120-PP-W	type 4 safety light curtain with 4 beams and 4 ... 50 m op. distance	957201140
SE4-Q2-050-PP-W	type 4 safety light curtain with 2 beams and 0.5 ... 25 m op. distance	957201200
SE4-Q3-080-PP-W	type 4 safety light curtain with 3 beams and 0.5 ... 25 m op. distance	957201210
SE4-Q4-090-PP-W	type 4 safety light curtain with 4 beams and 0.5 ... 25 m op. distance	957201220
SE4-Q4-120-PP-W	type 4 safety light curtain with 4 beams and 0.5 ... 25 m op. distance	957201230

ACCESSORY SELECTION AND ORDER INFORMATION

Please refer also to **Safety Device Accessories**



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SE4-PLUS FINGER SERIES

The SAFEasy™ light curtains, according to the IEC 61496-1 and IEC 61496-2, are particularly suitable for finger protection of operators exposed to risks.

Different models are available with heights ranging from 150 to 1200 mm, 14 mm resolution and operating distance reaching 6 m. Each model has one or more advanced functions: EDM, Blanking and Cascade. The light curtains are able to verify the integrity of external monitoring devices thanks to the EDM (External Device Monitoring) function. The Blanking function allows to deactivate a part of the detection area during functioning, allowing material passage or mechanical obstacle presence without causing machine interruption. Fixed Blanking and Floating Blanking can be selected. The Cascade configuration allows to combine the functioning of a couple of light curtains positioned in different areas.

Specific dip-switches, that can be reached through a slot present on the front of the active unit protected by a lid and opened with a simple screwdriver, guarantee a rapid and safe configuration.

The compact dimensions (35 x 40 mm), easy installation and excellent performances make the SAFEasy™ light curtains suitable to industrial applications requiring operator safety.



HIGHLIGHTS

- Integrated light curtains for FINGER PROTECTION (14 mm resolution)
- EDM and Blanking functions
- Cascade configuration
- 35 x 40 mm compact profile

APPLICATIONS

Wood working machines



Packaging lines



Automatic machines

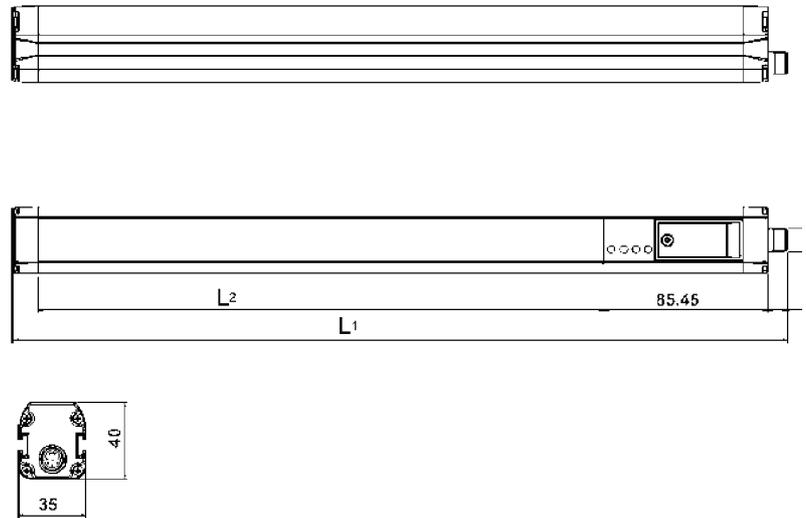


The features introduced by the safety light curtains of the SE4-PLUS FINGER series are given below:

- EDM function: allows to verify the status of the external monitoring devices (typically safety relays), avoiding external malfunctions jeopardising correct device functioning.
- Fixed Blanking: allows the operator to exclude the control of beams in a pre-set position.
- Floating Blanking: allows the operator to exclude the control of a pre-set number of beams in any position within the detection area.
- Cascade configuration: a couple of light curtains can function connected to each other in accordance to a Master-Slave protocol and combining the safety information relative to the two different sections of the controlled machine. The Master unit has a Blanking function and can be used without the Slave unit.

Models with the Muting function are not available in the SE4-PLUS FINGER series.

DIMENSIONS



mm

VERSIONS	L ₁	L ₂
SE4-xx-015-PP-y	256	147
SE4-xx-030-PP-y	403	294
SE4-xx-045-PP-y	550	441
SE4-xx-060-PP-y	697	588
SE4-xx-075-PP-y	844	735
SE4-xx-090-PP-y	991	882
SE4-xx-105-PP-y	1138	1029
SE4-xx-120-PP-y	1285	1176

xx= 14 o 30

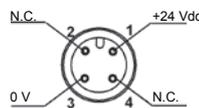
y: B= BLANKING, M= MASTER, N= MASTER BLANKING, S= SLAVE

CONNECTIONS

MODEL	EMITTER	RECEIVER
EMD+Blanking	M12 4-pole	M12 8-pole
EDM+Cascade (Master)*	M12 4-pole +M12 5-pole	M12 8-pole +M12 5-pole
EDM+Cascade (Slave)	M12 5-pole	M12 5-pole
EDM + Cascade + Blanking (Master)*	M12 4-pole +M12 5-pole	M12 8-pole +M12 5-pole

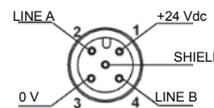
* an electric terminal is supplied for the Master Cascade models for the M12 5-pole connection in order to use the Master unit without connecting the Slave unit

M12 CONNECTOR 4-POLE



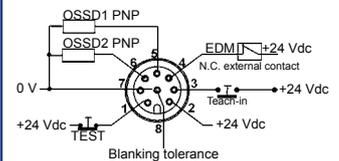
- 1 = brown = +24 Vdc
- 2 = white = N.C.
- 3 = blue = 0 V
- 4 = black = N.C.

M12 CONNECTOR 5-POLE



- 1 = brown = +24 Vdc
- 2 = white = LINE A
- 3 = blue = 0 V
- 4 = black = LINE B
- 5 = grey = SHIELD

M12 CONNECTOR 8-POLE



- 1 = white = TEST/START
- 2 = brown = +24 Vdc
- 3 = green = TEACH-IN
- 4 = yellow = EDM
- 5 = grey = OSSD1
- 6 = pink = OSSD2
- 7 = blue = 0 V
- 8 = red = BLANKING TOLERANCE

TECHNICAL DATA

Power supply:	24 Vdc ± 20% (SELV / PELV)
Consumption:	55 mA max. / 1.5. W (emitter) 125 mA max. / 3.75 W (receiver without load)
Light emission:	infrared LED 880 nm
Number of controlled beams:	refer to table 1
Optic interaxis:	7 mm
Resolution:	14 mm
Controlled height:	refer to table 2
Through beam operating distance:	0.2 ... 6 m
Receiver indicators:	green / red SAFE/ BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED
Emitter indicators:	yellow blinking FAILURE LED green POWER ON LED
Output type:	2 PNP
Output current:	0.5 A max., short-circuit protection
Response time:	refer to tables 3 and 4
Selectable functions:	refer dip-switches
Receiver connection:	refer to connections
Emitter connection:	refer to connections
Cable length:	50 m max. (with 50 nF capacitive load)
Safety category:	Type 4
Electrical protection:	class 1
Mechanical protection:	IP65
Housing material:	aluminium with PC Makrolon plastic caps
Weight:	1.2 Kg max. / m of total height
Operating temperature:	-10 ... +55 °C
Storage temperature:	-25 ... +70 °C
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2



SELECTION TABLE

MODEL	BEAMS
SE4 height 150	21
SE4 height 300	42
SE4 height 450	63
SE4 height 600	84
SE4 height 750	105
SE4 height 900	126
SE4 height 1050	147
SE4 height 1200	168

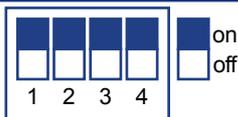
Table 1: NUMBER OF BEAMS

MODEL	mm
SE4 height 150	161
SE4 height 300	308
SE4 height 450	455
SE4 height 600	602
SE4 height 750	749
SE4 height 900	896
SE4 height 1050	1043
SE4 height 1200	1190

Table 2: CONTROLLED HEIGHT

MODEL	ms
SE4 height 150	21
SE4 height 300	28
SE4 height 450	35
SE4 height 600	41
SE4 height 750	48
SE4 height 900	55
SE4 height 1050	62
SE4 height 1200	68

Table 3: RESPONSE TIME

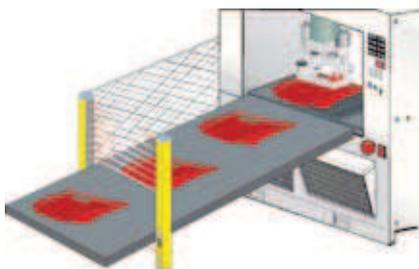


DIP-SWITCHES

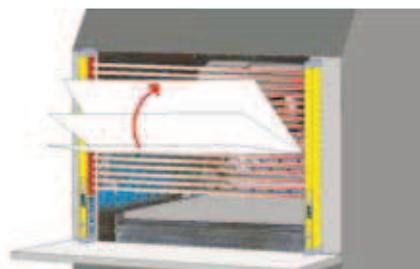
- 1 - Floating function: refer to table
- 2 - Floating function: refer to table
- 3 - EDM inactive (ON) / EDM active (OFF)
- 4 - Automatic (ON) / manual (OFF) reset

DIP1	DIP2	FUNCTION
ON	ON	Floating function deactivated,
ON	OFF	Floating function active, 1 Blanking beam
OFF	ON	Floating function active, 2 adjacent Blanking beams
OFF	OFF	Floating function active, 1, 2 or 3 adjacent Blanking beams

FUNCTIONING MODE



Example of 'Fixed Blanking'



Example of 'Floating Blanking'



Example of 'Cascade' configuration

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	FUNCTION	ORDER N°
SE4-14-015-PP-B	Type 4 safety light curtain	EDM, Blanking	957202000
SE4-14-030-PP-B	Type 4 safety light curtain	EDM, Blanking	957202010
SE4-14-045-PP-B	Type 4 safety light curtain	EDM, Blanking	957202020
SE4-14-060-PP-B	Type 4 safety light curtain	EDM, Blanking	957202030
SE4-14-075-PP-B	Type 4 safety light curtain	EDM, Blanking	957202040
SE4-14-090-PP-B	Type 4 safety light curtain	EDM, Blanking	957202050
SE4-14-105-PP-B	Type 4 safety light curtain	EDM, Blanking	957202060
SE4-14-120-PP-B	Type 4 safety light curtain	EDM, Blanking	957202070
SE4-14-015-PP-M	Type 4 safety light curtain	EDM, Master	957202200
SE4-14-030-PP-M	Type 4 safety light curtain	EDM, Master	957202210
SE4-14-045-PP-M	Type 4 safety light curtain	EDM, Master	957202220
SE4-14-060-PP-M	Type 4 safety light curtain	EDM, Master	957202230
SE4-14-075-PP-M	Type 4 safety light curtain	EDM, Master	957202240
SE4-14-090-PP-M	Type 4 safety light curtain	EDM, Master	957202250
SE4-14-105-PP-M	Type 4 safety light curtain	EDM, Master	957202260
SE4-14-120-PP-M	Type 4 safety light curtain	EDM, Master	957202270
SE4-14-015-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202400
SE4-14-030-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202410
SE4-14-045-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202420
SE4-14-060-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202430
SE4-14-075-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202440
SE4-14-090-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202450
SE4-14-105-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202460
SE4-14-120-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202470
SE4-14-015-PP-S	Type 4 safety light curtain	Slave	957202600
SE4-14-030-PP-S	Type 4 safety light curtain	Slave	957202610
SE4-14-045-PP-S	Type 4 safety light curtain	Slave	957202620
SE4-14-060-PP-S	Type 4 safety light curtain	Slave	957202630
SE4-14-075-PP-S	Type 4 safety light curtain	Slave	957202640
SE4-14-090-PP-S	Type 4 safety light curtain	Slave	957202650
SE4-14-105-PP-S	Type 4 safety light curtain	Slave	957202660
SE4-14-120-PP-S	Type 4 safety light curtain	Slave	957202670

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CV-A1-23-B-005-2F	M12 5-pole shielded axial 0.5 m connector (supplied with the Slave)	95ACC2440
CV-A1-23-B-01-2F	M12 5-pole shielded axial 1 m connector (to be ordered separately)	95ACC2450
SE-C	5 pole-connector cap (supplied with the Master)	95ACC2460

Please refer also to **Safety Device Accessories**



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SG2-M & SG4-E SERIES

The new **SG EXTENDED** safety light curtain series represents the ultimate innovation step of SG family. SG EXTENDED are FULLY INTEGRATED safety light curtains that perfectly combine the SAFEasy concept with applicative flexibility, reliability and performance.

TOTALLY ZERO DEAD ZONE is the distinctive characteristic of all the models from 300 mm to 1800 mm of controlled and overall height. SG EXTENDED series guarantees full application coverage thanks to the following versions :

- **SG2-M 'Muting'** : Type 2 30 mm resolution with integrated Muting function for all packaging and material handling applications
- **SG4-E 'Programmable'** : Type 4 14 and 30 mm resolution with integrated and configurable Cascade, Muting and Blanking functions all in the same part number.

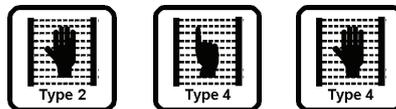
Integrated functions are selectable and configurable in 2 different ways :

- **Basic Configuration Mode (BCM)** : push buttons located on both TX and RX allow the user to configure the device in a very easy and quick way;
- **Advanced Configuration Mode (ACM)** : a GUI interface on PC communicate to the barrier through Ethernet and lead the customer through the configuration process step by step.

SG EXTENDED



SAFETY



HIGHLIGHTS

- Type 2 And Type 4
- 14 And 30Mm Resolution
- Zero Dead Zone
- Up To 20 M Operating Distance
- 300...1800 Mm Controlled Height
- Basic Configuration Mode (Bcm) Through Push-Buttons
- Advanced Configuration Mode (Acm) Through Gui
- CASCADE (No Differentiation Between Master And Slave Models)
- Integrated MUTING Function
- Integrated BLANKING Function
- Accessory Dongle For:
 - Configuration Cloning
 - Ethernet (Tcp/Ip connection)
 - Remote Monitoring
 - Remote Programming

APPLICATIONS

Extreme flexibility together with high performances make **SG EXTENDED** ideal solution for the following applications :

Automotive



Packaging



Metalworking



Woodworking



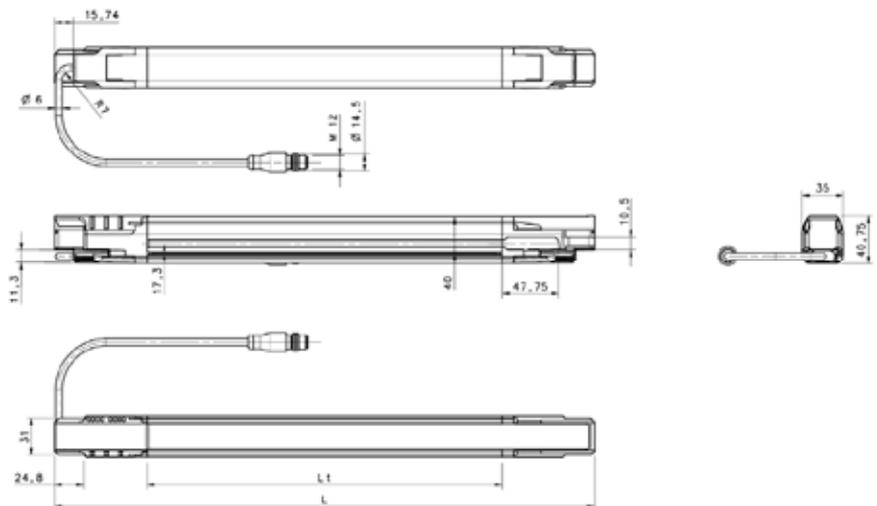
Electronics



The extremely compact size of SG EXTENDED together with the TOTALLY ZERO DEAD ZONE are distinctive characteristic in automation shopfloor for a safety light curtains

- Compact housing
- Standard M12 connectors
- Ethernet communication
- 2 PNP/NPN configurable OSSD outputs
- 8 signalling LEDs
- Alignment level bar-graph on both TX and RX unit
- 3 push-buttons on TX and RX unit for programming

DIMENSIONS

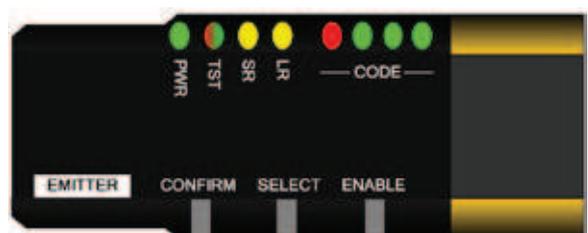
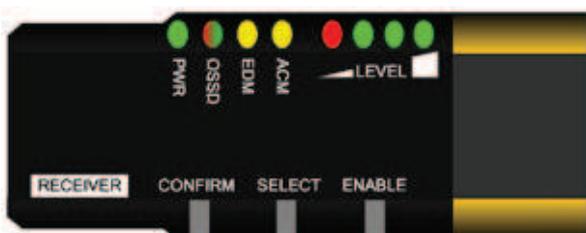


Model	Lt [mm]	L [mm]
SGy-xx-030-OO-#	150	306,3
SGy-xx-045-OO-#	300	456,3
SGy-xx-060-OO-#	450	606,3
SGy-xx-075-OO-#	600	756,3
SGy-xx-090-OO-#	750	906,3
SGy-xx-105-OO-#	900	1056,3
SGy-xx-120-OO-#	1050	1206,3
SGy-xx-135-OO-#	1200	1356,3
SGy-xx-150-OO-#	1350	1506,3
SGy-xx-165-OO-#	1500	1656,3
SGy-xx-180-OO-#	1650	1806,3

y = 2 for SG2-M and 4 for SG4-E
 xx = 30 mm for SG2-M
 14 and 30 mm SG4-E
 # = W for SG2-M and P for SG4-E

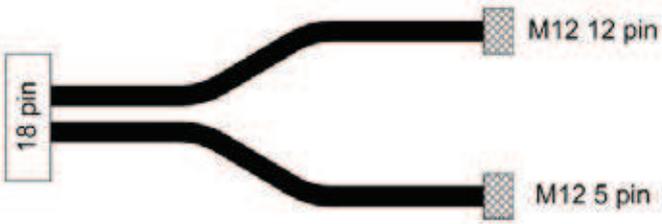
INDICATORS

In the left side of user control panel (on both units of light curtains) an 8 leds user interface helps customer to control and check the state of the light curtain, for alignment mode, normal operation and for troubleshooting activity. User interface allows the user to understand which is the configuration set with the push buttons.



CONNECTIONS

SG2-M RX / SG4-E Muting RX



	<p>M12 12 pin:</p> <ol style="list-style-type: none"> 1. 24V (brown) 2. 0V (blue) 3. RESET/RESTART/ALIGN (white) 4. OVERRIDE1 (green) 5. OSSD2 (pink) 6. EDM (yellow) 7. MUTING DISABLE (black) 8. OSSD1 (grey) 9. OVERRIDE2 (red) 10. MUTING LAMP (violet) 11. OVERRIDE STATUS (grey-pink) 12. EARTH (red-blue)
	<p>M12 5 pin:</p> <ol style="list-style-type: none"> 1. 24V (brown) 2. MUTING2 (white) 3. 0V (blue) 4. MUTING1 (black) 5. N.C. (grey)

SG4-E Blanking RX

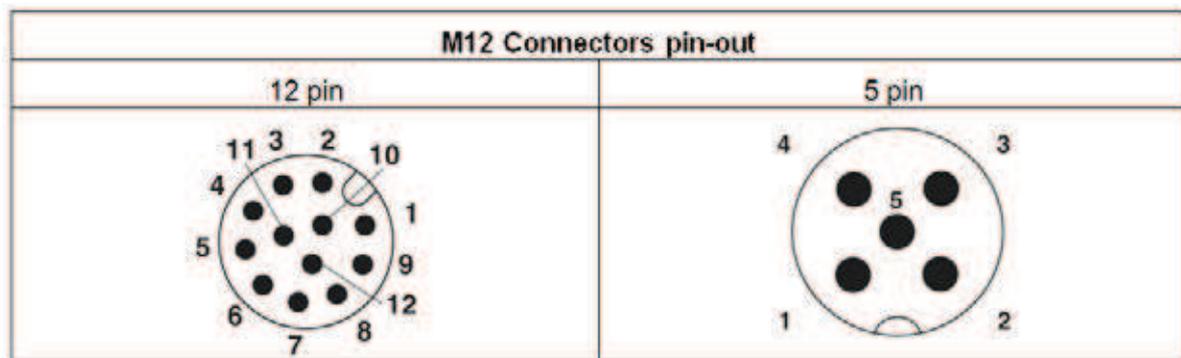


	<p>M12 12 pin:</p> <ol style="list-style-type: none"> 1. 24V (brown) 2. 0V (blue) 3. RESET/RESTART/ALIGN (white) 4. TEACH IN (green) 5. OSSD2 (pink) 6. EDM (yellow) 7. N.C. (black) 8. OSSD1 (grey) 9. TOLERANCE (red) 10. LAMP (violet) 11. N.C. (grey-pink) 12. EARTH (red-blue)
--	--

SG2-M TX / SG4-E TX



	<p>M12 5 pin:</p> <ol style="list-style-type: none"> 1. 24V (brown) 2. TEST (white) 3. 0V (blue) 4. EARTH (black) 5. REDUCTION RANGE (grey)
--	---



CONNECTIONS

SG2-M RX / SG4-E MUTING RX	
LINE	LAYOUT CONNECTION
RESET	
RESTART	
OVERRIDE 1	
OVERRIDE 2	
EDM	REFER TO USER MANUAL SECTION 7.4
MUTING DISABLE	
OSSD1 / OSSD 2	
OVERRIDE STATUS	
MUTING LAMP	
MUTING1/MUTING2	

SG4-E BLANKING RX	
LINE	LAYOUT CONNECTION
RESET	
RESTART	
TEACH IN	
TOLERANCE	
EDM	REFER TO USER MANUAL SECTION 7.4
OSSD1 / OSSD 2	
BLANKING LAMP	
AUX OUTPUT	

SG2-M TX / SG4-E TX	
LINE	LAYOUT CONNECTION
TEST	
REDUCTION RANGE	

TECHNICAL DATA

	SG2-M	SG4-E
Electrical Data		
Power supply (Vdd):	24 Vdc \pm 20%	24 Vdc \pm 20%
Emitter consumption (TX):	3 W max	3 W max
Receiver consumption (RX):	5 W max (without load)	5 W max (without load)
Outputs:	2 PNP outputs short-circuit protection (1.4 A @55°C)	2 PNP / NPN configurable outputs short-circuit protection (1.4 A @55°C)
Output current:	0.5 A max / each output	0.5 A max / each output
Output voltage - ON min:	Vdd -1 V min	Vdd -1 V min
Output voltage - OFF max:	0.2 V	0.2 V
Output capacitive load:	2.2 μ F @24Vdc max	2.2 μ F @24Vdc max
Response time:	See section "MODEL TABLE SELECTION"	See section "MODEL TABLE SELECTION"
Recovery time:	100 ms typical	100 ms typical
Protected height:	from 300 mm to 1800 mm See section "MODEL TABLE SELECTION"	from 300 mm to 1800 mm See section "MODEL TABLE SELECTION"
Safety category:	Type 2 (ref. EN 61496-1)	Type 4 (ref. EN 61496-1)
Auxiliary functions:	Reset, Restart selection, EDM, Test, Muting, Partial Muting, Range reduction	Reset, Restart selection, Alignment, EDM, Test, Muting, Partial Muting, Override, Coding, Range reduction, Fixed Blanking, Floating Blanking, Cascade, PNP / NPN output, GUI programming
Electrical protection:	Class I / Class III	Class I / Class III
Connections:	TX : M12 5 poles RX : M12 12 poles + M12 5 poles	TX : M12 5 poles RX : <ul style="list-style-type: none"> • M12 12 poles + M12 5 poles for Muting applications • M12 12 poles for Blanking applications
Cable length (for power supply):	50m. max.	50m. max.
Pollution degree	2	2
Optical Data		
Emitting light:	Infrared LED (950 nm wavelength)	Infrared LED (950 nm wavelength)
Resolution:	30 mm	14 mm 30 mm
N° of beams:	See section "MODEL TABLE SELECTION"	See section "MODEL TABLE SELECTION"
Operating distance:	0.2...20 m / 0.2...12 m	0.2...7 m / 0.2...4 m for 14 mm resolution 0.2...20 m / 0.2...12 m for 30 mm resolution
Ambient light rejection:	IEC 61496-2	IEC 61496-2
Mechanical and environmental data		
Operating temperature:	0...50°C	0...50°C
Storage temperature:	-25...+ 70 °C	-25...+ 70 °C
Temperature class:	T6	T6
Humidity:	15...95 % (no condensation)	15...95 % (no condensation)
Water protection grade:	IP 65 (EN 60529)	IP 65 (EN 60529)
Vibration:	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave/min (EN 60068-2-6)	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)	Painted aluminium (yellow RAL 1003)
Caps material:	PBT Valox 508 (pantone 072-CVC)	PBT Valox 508 (pantone 072-CVC)
Front glass material:	PMMA	PMMA
Connectors:	M12	M12

RELIABILITY PARAMETERS

	SG2-M	SG4-E
PL (Ref. EN ISO 13849-1)	d	e
CAT (Ref. EN 954-1)	2	4
SIL (Ref. EN IEC 61508)	2	3
SIL CL (Ref. EN IEC 62061)	2	3
PFHD – Probability of Danger Failure (1/h)	1,04E-08	2,64E-09
T1 – Life Time (Years)	20	20
MTTFD - Mean Time to Danger Failure (Years)	273	444
DC – Diagnostic Coverage (%)	97,50%	98,80%
SFF – Safe Failure Fraction (%)	98,40%	99,30%
HFT – Hardware Fault Tolerance	0	1

MODEL SELECTION TABLE

SG2-M

Description	Protected height [mm]	Beams N.	Response time [msec]	Resolution [mm]	Code
SG2-30-030-OO-W	300	16	13	30	957801700
SG2-30-045-OO-W	450	24	14	30	957801710
SG2-30-060-OO-W	600	32	15	30	957801720
SG2-30-075-OO-W	750	40	16	30	957801730
SG2-30-090-OO-W	900	48	17	30	957801740
SG2-30-105-OO-W	1050	56	18	30	957801750
SG2-30-120-OO-W	1200	64	19	30	957801760
SG2-30-135-OO-W	1350	72	19	30	957801770
SG2-30-150-OO-W	1500	80	20	30	957801780
SG2-30-165-OO-W	1650	88	21	30	957801790
SG2-30-180-OO-W	1800	96	22	30	957801800

SG4-E 14

Description	Protected height [mm]	Beams N.	Response time [msec]	Response time with code (msec)	Resolution [mm]	Code
SG4-14-030-OO-P	300	32	15	20	14	957901240
SG4-14-045-OO-P	450	48	17	25	14	957901250
SG4-14-060-OO-P	600	64	19	29	14	957901260
SG4-14-075-OO-P	750	80	20	34	14	957901270
SG4-14-090-OO-P	900	96	22	38	14	957901280
SG4-14-105-OO-P	1050	112	24	43	14	957901290
SG4-14-120-OO-P	1200	128	26	47	14	957901300
SG4-14-135-OO-P	1350	144	27	52	14	957901310
SG4-14-150-OO-P	1500	160	29	56	14	957901320
SG4-14-165-OO-P	1650	176	31	61	14	957901330
SG4-14-180-OO-P	1800	192	33	65	14	957901340

SG4-E 30

Description	Protected height [mm]	Beams N.	Response time [msec]	Response time with code (msec)	Resolution [mm]	Code
SG4-30-030-OO-P	300	16	13	16	30	957901350
SG4-30-045-OO-P	450	24	14	18	30	957901360
SG4-30-060-OO-P	600	32	15	20	30	957901370
SG4-30-075-OO-P	750	40	16	23	30	957901380
SG4-30-090-OO-P	900	48	17	25	30	957901390
SG4-30-105-OO-P	1050	56	18	27	30	957901400
SG4-30-120-OO-P	1200	64	19	29	30	957901410
SG4-30-135-OO-P	1350	72	19	32	30	957901420
SG4-30-150-OO-P	1500	80	20	34	30	957901430
SG4-30-165-OO-P	1650	88	21	36	30	957901440
SG4-30-180-OO-P	1800	96	22	38	30	957901450

SG4-E CASCADE RESPONSE TIME

With the following formulas (and referring to the response time reported in the following tables) the user can calculate the response time of every cascade configuration:

- no code: $T_{\text{CASCADE}} [\text{msec}] = T_{\text{MASTER}} + T_{\text{SLAVE 1}} [+ T_{\text{SLAVE 2}}] + 7,5$
- with code: $T_{\text{CASCADE}} [\text{msec}] = T_{\text{MASTER AIC}} + T_{\text{SLAVE 1 AIC}} [+ T_{\text{SLAVE 2 AIC}}] + 7,5$

Description	Master response time without code (msec) T_{MASTER}	Slave response time without code (msec) T_{SLAVE}	Master response time with code (msec) $T_{\text{MASTER AIC}}$	Slave response time with code (msec) $T_{\text{SLAVE AIC}}$
SG4-14-030-OO-P	13,7	13,7	19,1	19,1
SG4-14-045-OO-P	15,4	15,4	23,6	23,6
SG4-14-060-OO-P	17,2	17,2	28,1	28,1
SG4-14-075-OO-P	18,9	18,9	32,6	32,6
SG4-14-090-OO-P	20,7	20,7	37,1	37,1
SG4-14-105-OO-P	22,4	22,4	41,6	41,6
SG4-14-120-OO-P	24,2	24,2	46,0	46,0
SG4-14-135-OO-P	26,0	-	50,5	-
SG4-14-150-OO-P	27,7	-	55,0	-
SG4-14-165-OO-P	29,5	-	59,5	-
SG4-14-180-OO-P	31,2	-	64,0	-

Description	Master response time without code (msec) T_{MASTER}	Slave response time without code (msec) T_{SLAVE}	Master response time with code (msec) $T_{\text{MASTER AIC}}$	Slave response time with code (msec) $T_{\text{SLAVE AIC}}$
SG4-30-030-OO-P	11,9	11,9	14,6	15,0
SG4-30-045-OO-P	12,8	12,8	16,8	17,0
SG4-30-060-OO-P	13,7	13,7	19,1	19,0
SG4-30-075-OO-P	14,5	14,5	21,3	21,0
SG4-30-090-OO-P	15,4	15,4	23,6	24,0
SG4-30-105-OO-P	16,3	16,3	25,8	26,0
SG4-30-120-OO-P	17,2	17,2	28,1	28,0
SG4-30-135-OO-P	18,0	-	30,3	-
SG4-30-150-OO-P	18,9	-	32,6	-
SG4-30-165-OO-P	19,8	-	34,8	-
SG4-30-180-OO-P	20,7	-	37,1	-

SOFTWARE PC



- A Home
- B Toolbar
- C Task selection area
- D Help online
- E Status Bar

Step 1: Configuration



Configuration step allows the user to edit the functions parameters of the safety light curtain. This step will be selected, by default, when you first access the Configuration window.

Note

The Step 1 Configuration button will be active only if the current logged user is a Systems Integrator. A Maintainer or a Machine User cannot modify the safety configuration parameters.

Step 2: Programming



Programming step is aimed to view and accept the new configuration report before saving it to the safety light curtain.

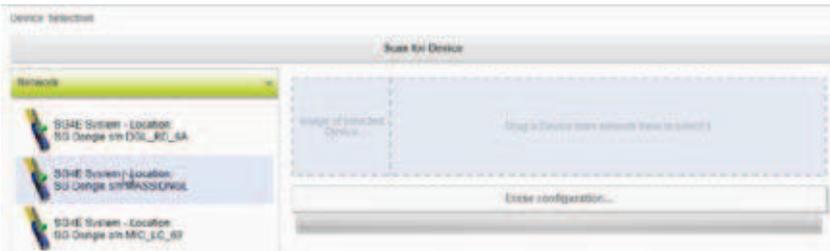
This Step is enabled only when connected to a SG Dongle or a SG4-E Safety System.

Step 3: Monitoring



Monitoring step is to check the final behavior of the safety system after configuration. The Step 3 Monitoring enables you monitor a safety system to test a new configuration.

MAXIMUM SIMPLICITY



Scan for Devices
This function finds all the devices connected to the network.



Help
A Help is available for each step, supplying useful suggestions on the options available.



Topology
The Topology area, selected by default, displays the graphical representation of the configuration of the Safety Light Curtain in the current configuration operation. The System can be a real or virtual Safety System composed in the Selection screen.

REPORT MANAGEMENT

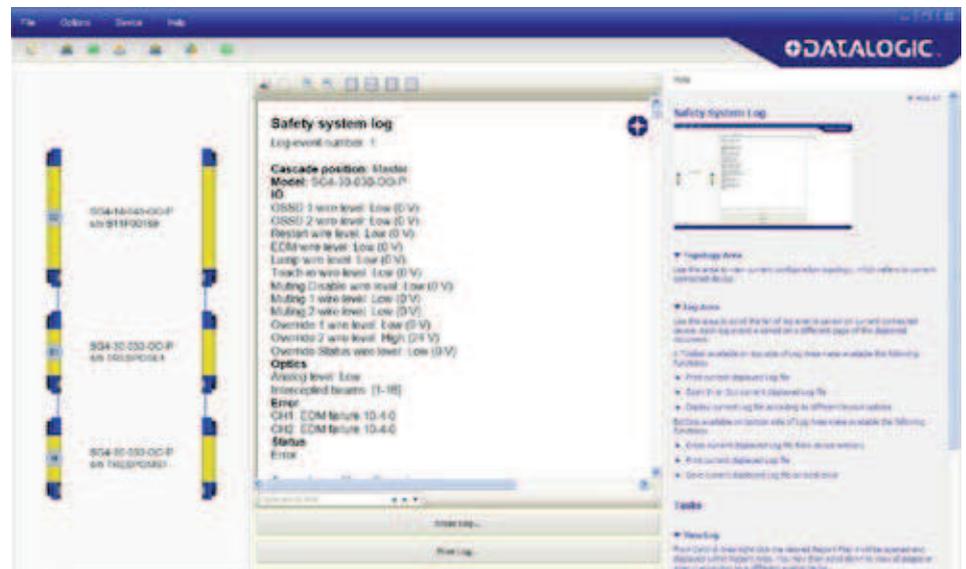
Use this option to connect to a Cloner device and view, print, save, or erase the Safety System configuration reports stored on the Cloner itself. A report is a list of parameters that represent a configuration that is generally saved on a safety system.



LOG MANAGEMENT

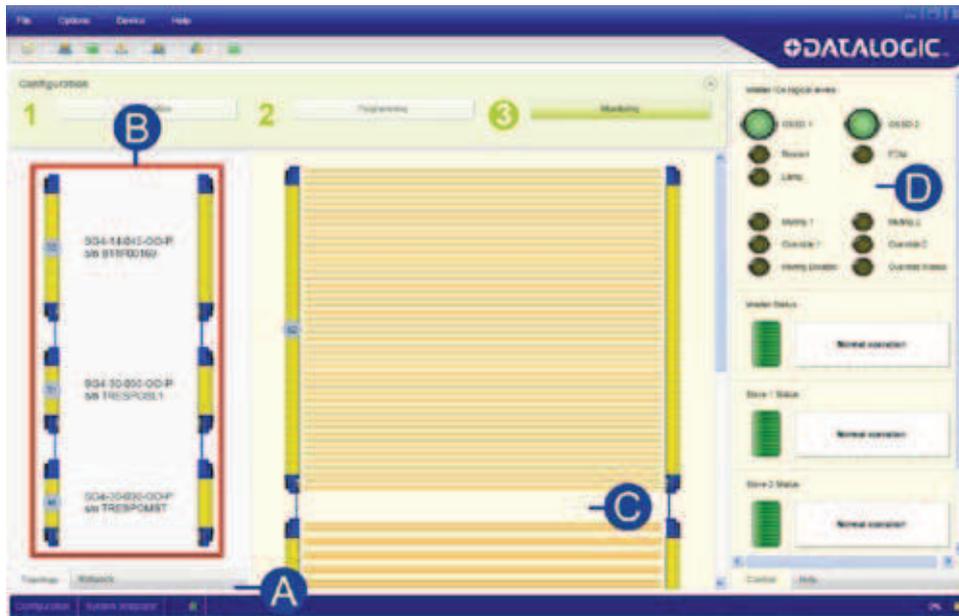
Use this option to connect to a logger device and view, print, save or erase the Safety System log stored on the logger.

Note: A logger is a Safety Device or a Cloner, e.g. SG Dongle, which can store the Safety System log. It is a collection of Safety System states. The log stores the state each device when particular events occur during the Safety System operation.



EXCELLENT FLEXIBILITY

Monitoring



Connect to the remote Safety Systems or Cloner through the Ethernet connection and monitor their present or working status.

A Network Area: Displays the list of Safety devices present on the Local Area Network. It is a read only area.

B Topology Area: Displays the structure of the current connected SG4E light curtains cascade if SG Dongle is connected to a cascade, or the SG Dongle when only SG Dongle is connected.

C Protected Area: Displays the current status of the protected area by listing light curtain beams. You may check current status by verifying all beams are displayed.

D Control Area: Displays the level of the OSSDs and current status of the inputs and the outputs on the M12 connectors of the SG Dongle; it also gives information about the operation status of master, slaves and SG Dongle.

The bottom part displays the status of each component of the cascade connection. That is the status of the master and one or more slaves.

SG4 DONGLE ETHERNET ADAPTOR

The SG4 DONGLE makes the system flexible and addressable allowing remote monitoring and remote programming: product assistance becomes much easier.

- CONFIGURATION CLONING
- ETHERNET (TCP/IP) CONNECTION
- REMOTE MONITORING
- REMOTE PROGRAMMING



FUNCTIONS

Operation functions and parameters configuration can be performed in two different ways:

Basic Configuration Mode (BCM):

Let the user select among basic functions / basic parameters with the help of push buttons and led user interface (**available on both SG2-M and SG4-E**)

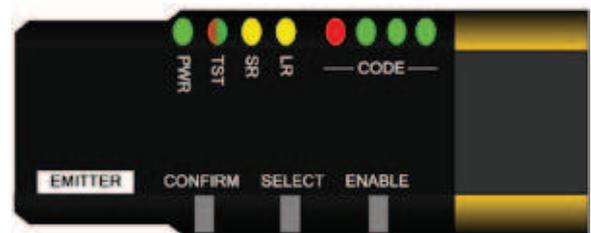
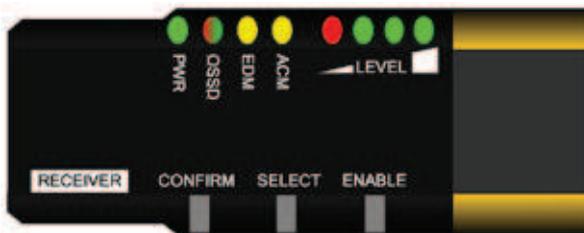
Advanced Configuration Mode (ACM):

Let the user select among advanced functions / advanced parameters with the help of a PC Software GUI interface (**available only for SG4-E**)

BCM

A user interface of 8 leds and 3 protected push buttons lets the user operate basic configuration.

The user must use the provided special tool (see below) to activate push buttons thus accidental access to safety configuration is avoided.



Basic configuration steps:

In the right side of user control panel (on both units of the light curtain) a setting interface composed by 3 push buttons is present; the purpose of the interface is to let the user set light curtain locally and without use of PC graphic user interface.

Setting interface is composed by a CONFIRM push button used to enter in BCM and to confirm the selected configuration, a SELECT push button used to roll by different functions and an ENABLE push button to activate/deactivate the current function.

Please refer to the quick installation guide for necessary BCM configuration steps.

When an Advanced Configuration is already set on ESPE (configuration by SG4-GUI PC User Interface) ACM LED on RX unit's ON. Then a button pressure on Step 2 causes ESPE configuration failure lockout to prevent unauthorized advanced configuration changes.

SG2-M RX

RX Function list												
Function	Led #	Setting (default in bold)	LED Status								Zone	
			1	2	3	4	5	6	7	8		
Partial Muting	2 - 3	Zone A	●	○	○	○	○	○	○	○	○	
		Zone A+B	●	○	○	○	○	○	○	○	○	
		Zone A+B+C	●	○	○	○	○	○	○	○	○	
		Zone A+B+C+D	●	○	○	○	○	○	○	○	○	
		Zone B	●	○	○	○	○	○	○	○	○	
		Zone C	●	○	○	○	○	○	○	○	○	
EDM	4	Enabled	●	○	○	○	○	○	○	○		
		Disabled	●	○	○	○	○	○	○	○		
Restart Mode	5	Auto	●	○	○	○	○	○	○			
		Manual	●	○	○	○	○	○	○			
Muting direction	6	T (bidirectional)	●	○	○	○	○	○	○			
		L (monodirectional)	●	○	○	○	○	○	○			
Muting Time-out	7	10 min	●	○	○	○	○	○	○			
		Inf.	●	○	○	○	○	○	○			
Override sensor	8	Level	●	○	○	○	○	○	○			
		Edge	●	○	○	○	○	○	○			

SG4-E RX

RX Function list in Muting (default) operation Mode (Led3 ON Yellow)			
Function	Led #	Setting (default in bold)	Led
			Status 1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No Code	○ ● ● ● ● ● ● ●
Muting/Blanking Selection	3	Muting	● ● ● ● ● ● ● ●
		Blanking	○ ● ● ● ● ● ● ●
EDM	4	Enabled	● ● ● ● ● ● ● ●
		Disabled	○ ● ● ● ● ● ● ●
Restart mode	5	Auto	● ● ● ● ● ● ● ●
		Manual	○ ● ● ● ● ● ● ●
Muting Direction	6	T (bidirectional)	● ● ● ● ● ● ● ●
		L (monodirectional)	○ ● ● ● ● ● ● ●
Muting Timeout	7	10 min	● ● ● ● ● ● ● ●
		Inf.	○ ● ● ● ● ● ● ●
Override Trigger	8	Level	● ● ● ● ● ● ● ●
		Edge	○ ● ● ● ● ● ● ●

Function list in Blanking operation Mode (Led3 OFF)			
Function	Led #	Setting (default in bold)	Led Status
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No Code	○ ● ● ● ● ● ● ●
Muting/Blanking Selection	3	Muting	● ● ● ● ● ● ● ●
		Blanking	○ ● ● ● ● ● ● ●
EDM	4	Enabled	● ● ● ● ● ● ● ●
		Disabled	○ ● ● ● ● ● ● ●
Restart mode	5	Auto	● ● ● ● ● ● ● ●
		Manual	○ ● ● ● ● ● ● ●
Floating Blanking Selection	6-7	Floating Blanking Disabled	● ● ● ● ● ● ● ●
		Floating Blanking 1 beam	● ● ● ● ● ● ● ●
		Floating Blanking 2 beams	○ ● ● ● ● ● ● ●
		Reduced Res 4 beams	○ ● ● ● ● ● ● ●
Fixed blanking selection	8	1 Fixed Blanking Zone	● ● ● ● ● ● ● ●
		2 Fixed Blanking Zones	○ ● ● ● ● ● ● ●



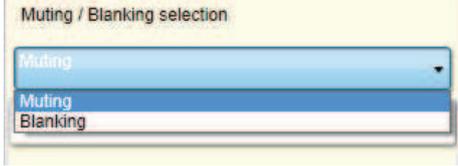
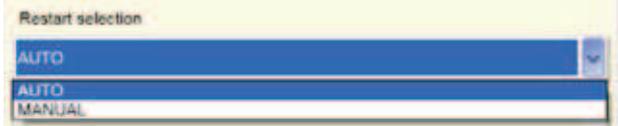
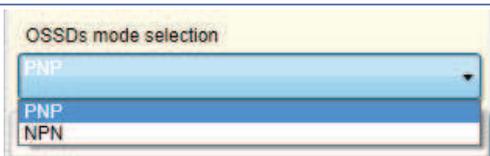
SG4-E TX

Tx Function list			
Function	Led #	Setting (default in bold)	Led Status
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No Code	○ ● ● ● ● ● ● ●
Range Selection	3	Long	● ● ● ● ● ● ● ●
		Short	○ ● ● ● ● ● ● ●

FUNCTIONS

SG4-E RX ACM

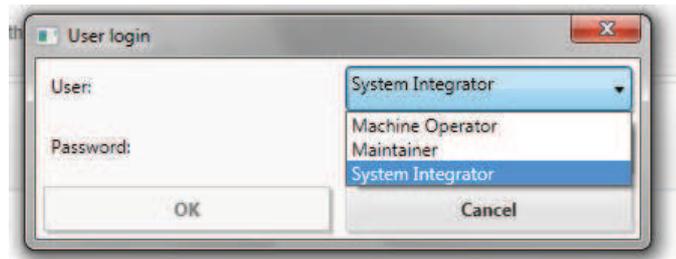
COMMON FUNCTIONS

Control	Functioning	ACM Configuration
Muting / Blanking mode	This function allows the user to define the light curtain mode.	
Restart	The restart mode allows the user to define how the light curtain returns in a Normal Operation condition.	
EDM	The External Device Monitoring (EDM) function controls external relays or contactors by verifying the OSSDs status.	
Reduction range	This function allows the user to select the maximum operating distance at which the curtains can be mounted.	
Anti-Interference Coding	The coding function allows the ESPE to remain in normal operation also when an interference condition with an other ESPE occurs, and in particular when the TX of the first light curtain radiates in the direction of the RX of the second light curtain.	
PNP / NPN OSSD output	The PNP/NPN function allows the user to inform the light curtain on how the OSSDs are connected.	

RIGHTS MANAGEMENT

There are 3 different kinds of operator that can use the GUI with 3 different levels of authorizations.

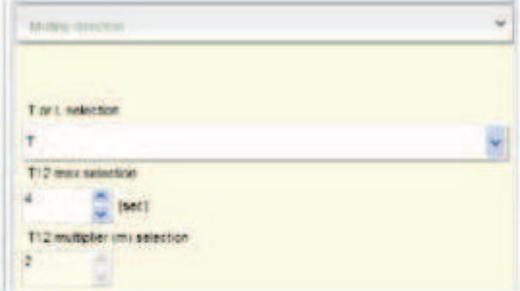
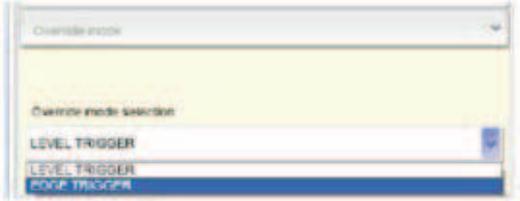
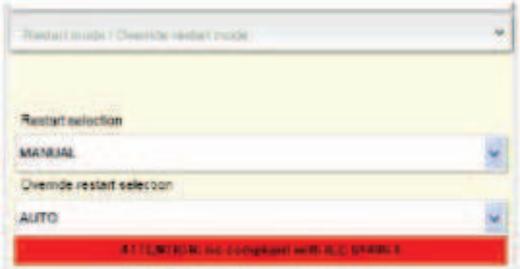
- **System Integrator:** has all the possible authorizations and can set every configuration on the GUI
- **Maintainer:** can upload the configurations (saved on the GUI) on the light curtain and use the GUI for monitoring the system, but he can't create new configurations
- **Machine Operator:** uses the GUI only for monitoring the system



PASSWORDS: each product has FACTORY passwords for each user that are reported on Instruction Manual. After the first access, each user's PASSWORD can be changed and personalized.

FUNCTIONS - MUTING

In this section are listed all the functionalities related with MUTING that can be selected through SG4-E GUI. For detailed explanation of each function and corresponding Time Diagrams please refer to Instruction manual and GUI software HELP.

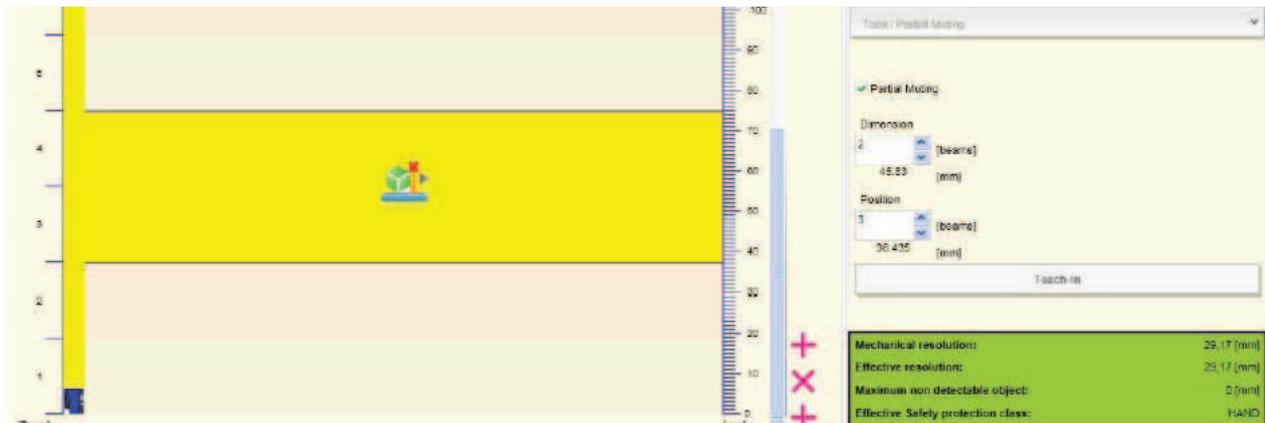
Control	Functioning	ACM Configuration
Muting direction	The DEVICE can be used with both bidirectional 'T' or unidirectional 'L' type muting.	
Muting Activation Time T12	Time T12 needed from Muting 1 and Muting 2 signals activation for starting the Muting. Values: from 1 to 16 secs	
L Muting Deactivation Time TMoff	When Muting 1 signal becomes OFF the device starts a countdown before stopping the muting. This countdown lasts a time related to the Muting Activation Time T12 by a multiplier. Values: from 1 to 16	
Muting duration (Muting TimeOut)	Muting timeout is a time that defines the maximum duration of muting function; after the timeout the muting ends. Values: from 10 to 1080 min infinitive (∞)	
Muting Filter	The muting filter is a filter on muting inputs; low-high or high-low transitions of MUTING signals are considered valid only if maintained for a time (Tf) greater than 100 msec. Values: ON (100 msec) or OFF	
Override Mode	It's possible to configure the trigger of override inputs: Level or Edge. Values: LEVEL or EDGE	
Override Timeout	Override timeout is the maximum duration of override. Values: from 1 to 256 min	
Override Restart	This kind of selection can be achieved only if the light curtain is in Manual Restart; the user can select the type of Override Restart. Values: Normal or Auto	

FUNCTIONS - PARTIAL MUTING

It's possible to configure the type of muting: total or partial. Partial muting can be useful in those applications in which the user wants to limit the muting function effects to selected zones only.

In ACM Configuration the user can select a maximum of **5 muting zones**, each defined with the following parameters:

- **Position:** first beam of muting zone (starting from user display cap)
- **Dimension:** number of beams of muting zone



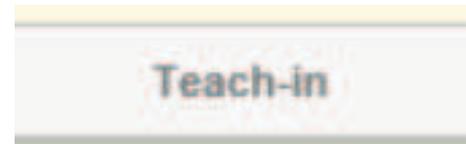
Check "Partial Muting" to enable function



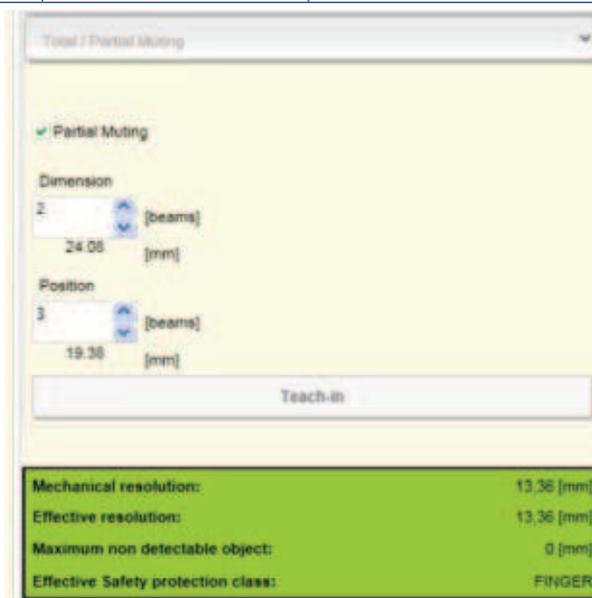
Click "+" button to add a new muting zone, X to remove a selected one



Click "Teach-In" button to acquire an object positioned inside the controlled area as a new muting zone



Choose correct parameters for selected zone. Both Dimension and Position are set in beams unit, equivalent measures in mm are exposed by GUI.



FUNCTIONS - BLANKING

In this section are listed all the functionalities related with BLANKING that can be selected through SG4-E GUI. For detailed explanation of each function and corresponding Time Diagrams please refer to Instruction manual and GUI software HELP. Operator can add up to **5 zones** of different **BLANKING TYPES**.

Click “+” button to add a new muting zone, X to remove a selected one

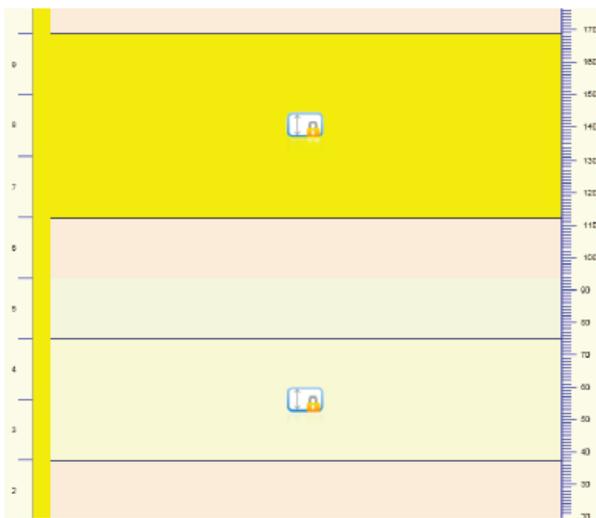


Click “Teach-In” button to acquire an object positioned inside the controlled area as a new muting zone



Fixed Blanking

Fixed Blanking allows a fixed portion of the controlled area (i.e. a fixed set of beams) to be occupied, while all the other beams operate normally.



Reduced resolution / Blanking

Reduced resolution
0 [beams]
0 [mm]

Blanking type selection
Fixed Blanking

Dimension
3 [beams]
64.58 [mm]

Dimension tolerance
0 [beams]
0 [mm]

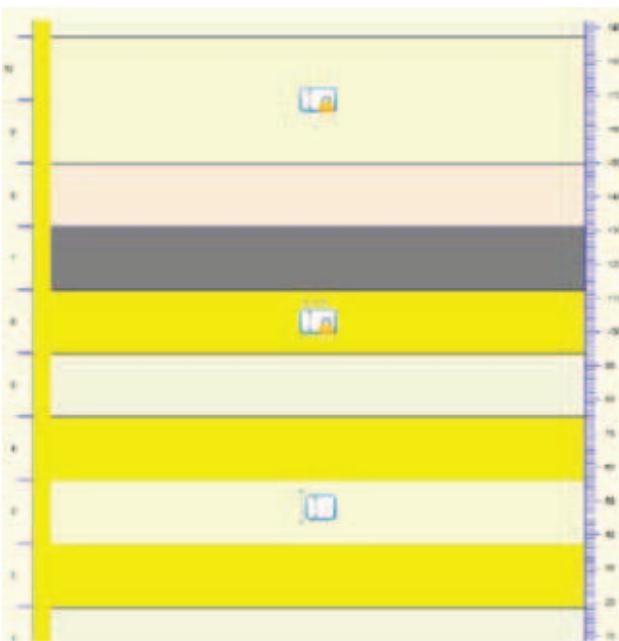
Position
7 [beams]
111.435 [mm]

Position tolerance
0 [beams]
0 [mm]

Teach-in

Fixed Blanking with increased tolerance

This is a fixed blanking with the tolerance only on one side of the blanking zone, so the user has to choose a “tolerance top” or a “tolerance bottom”.



Reduced resolution / Blanking

Reduced resolution
0 [beams]
0 [mm]

Blanking type selection
Fixed Blanking Increased Tolerance Top

Dimension
1 [beams]
27.06 [mm]

Dimension tolerance
1 [beams]
16.75 [mm]

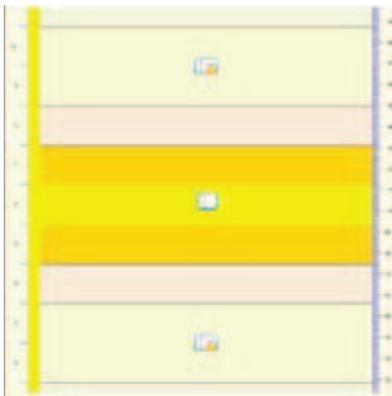
Position
6 [beams]
92.685 [mm]

Position tolerance
0 [beams]
0 [mm]

Teach-in

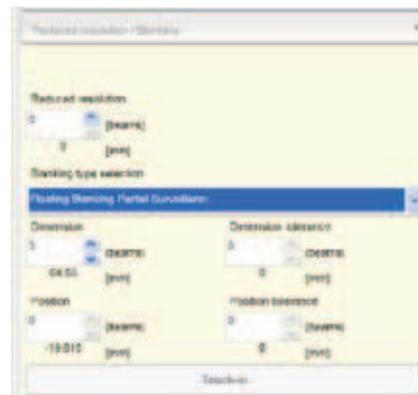
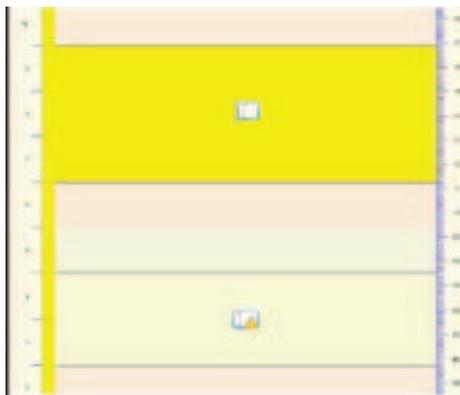
FLOATING BLANKING WITH TOTAL SURVEILLANCE

Floating objects can move up or down intercepting different beams while moving; the objects can't overlap nor change relative positions.



FLOATING BLANKING WITH PARTIAL SURVEILLANCE

Floating objects can move up or down intercepting different beams while moving; they can even get out of the protected area or intercept a number of beams minor than the configured one.



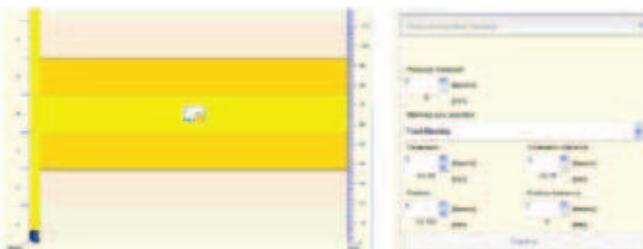
Tolerance

There are 2 types of tolerance: position and dimension.

Dimension Tolerance
It indicates how many beams the object can be smaller than the number fixed by the value Dimension.

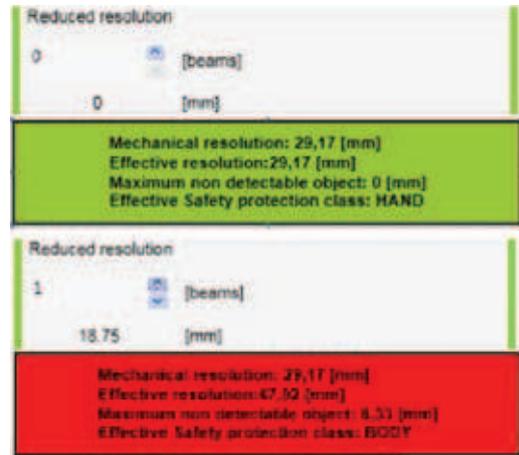
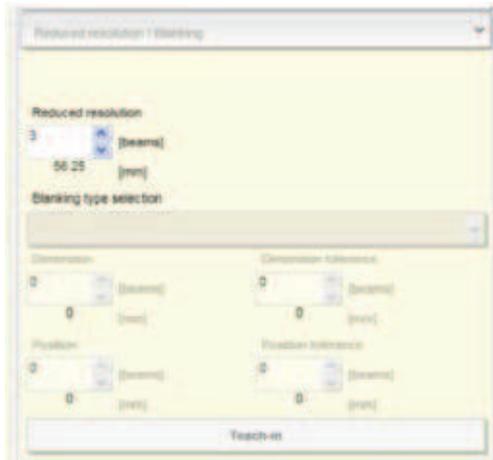


Position Tolerance
It indicates the number of beams in blanking zone that can be intercepted above and below the blanking zone without making the OSSDs switch off.



Reduced Resolution

Reduced Resolution is a particular kind of floating blanking in which more than one object can intercept each a defined number of beams with the device remaining in normal operation.



FUNCTIONS - CASCADE

SG4-E allows to connect in a cascade configuration up to 3 units (1 Master and 2 Slaves). It means a maximum of 160 beams for 30 mm resolution models and a maximum of 320 beams for 14mm resolution models. The maximum length of the master unit is 1800mm and the maximum length of each slave is 1200mm.



Response Time

Please Refer to SG4-E CASCADE RESPONSE TIME section of this document.

MASTER and SLAVE configuration

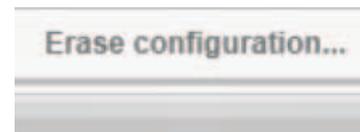
A safe auto-recognition procedure at startup is implemented; it automatically detects cascade topology and correctly address units.

In order to allow auto-recognition it's mandatory to connect the termination cap (supplied on kit) on the tail connector of last cascade unit, in both transmitter and receiver units.

RESET TO FACTORY SETTINGS

This feature can be achieved both through BCM and ACM.

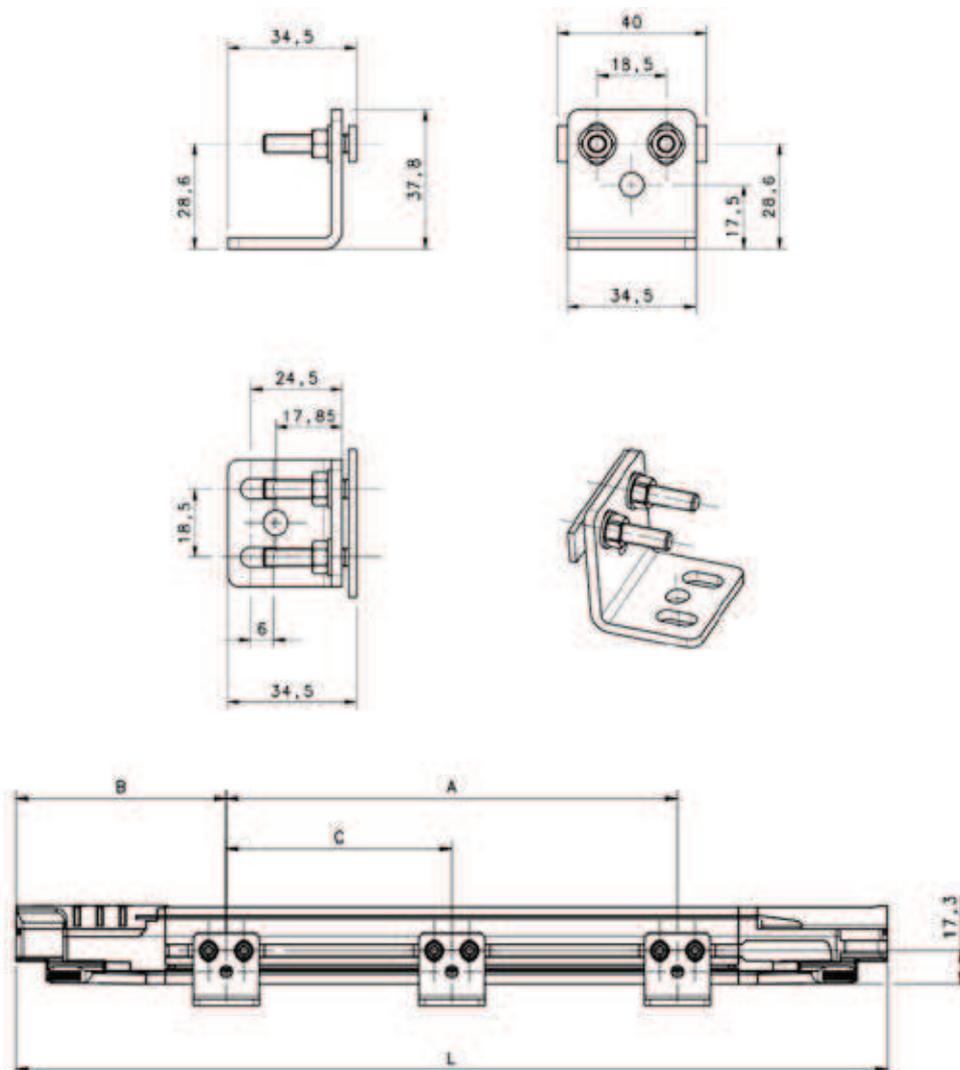
- **BCM:** press and keep pressed CONFIRM button for at least 9 sec but less than 30 sec. otherwise the light curtain goes in lockout failure.
- **ACM:** press ERASE CONFIGURATION Button on Device Selection section of GUI after a connected device has been selected



NOTE: Factory reset will erase both BCM and ACM configurations.

OUTFITS

ANGLED FIXING BRACKET (WITH THREADED PINS METALLIC INSERT)



DESCRIPTION	L [mm]	A [mm]	B [mm]	C [mm]
SGy-xx-030-OO-#	306.3	86.3	110	-
SGy-xx-045-OO-#	456.3	236.3	110	-
SGy-xx-060-OO-#	606.2	306.2	150	-
SGy-xx-075-OO-#	756.2	406.2	175	-
SGy-xx-090-OO-#	906.1	506.1	200	-
SGy-xx-105-OO-#	1056.1	606.1	225	-
SGy-xx-120-OO-#	1206	966	150	453
SGy-xx-135-OO-#	1356	1066	175	503
SGy-xx-150-OO-#	1505.9	1166	200	553
SGy-xx-165-OO-#	1655.9	1266	225	603
SGy-xx-180-OO-#	1805.8	1366	250	652.9

Legend:

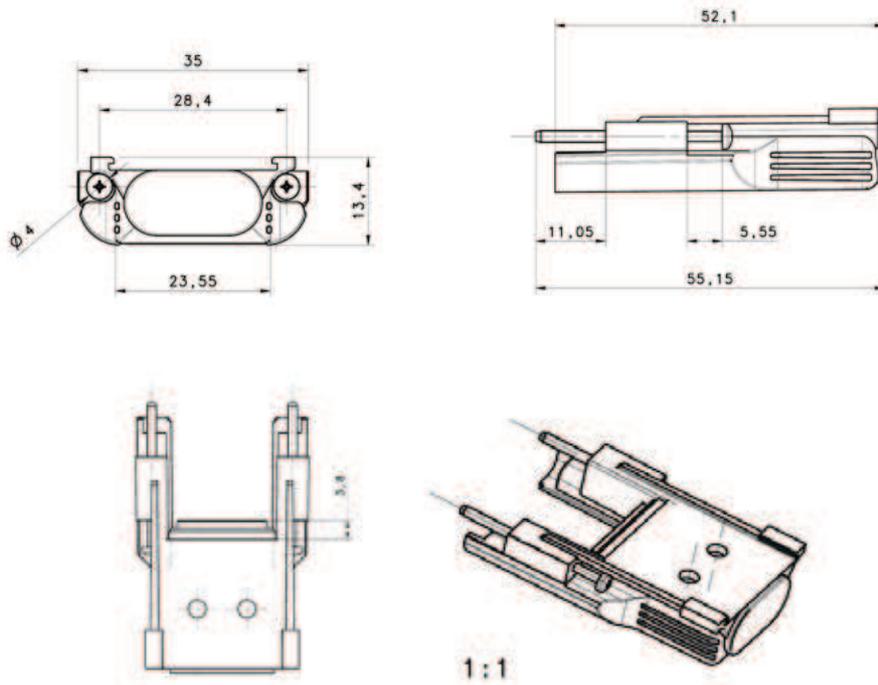
y = 2 for SG2-M and 4 for SG4-E

xx = 30 mm for SG2-M

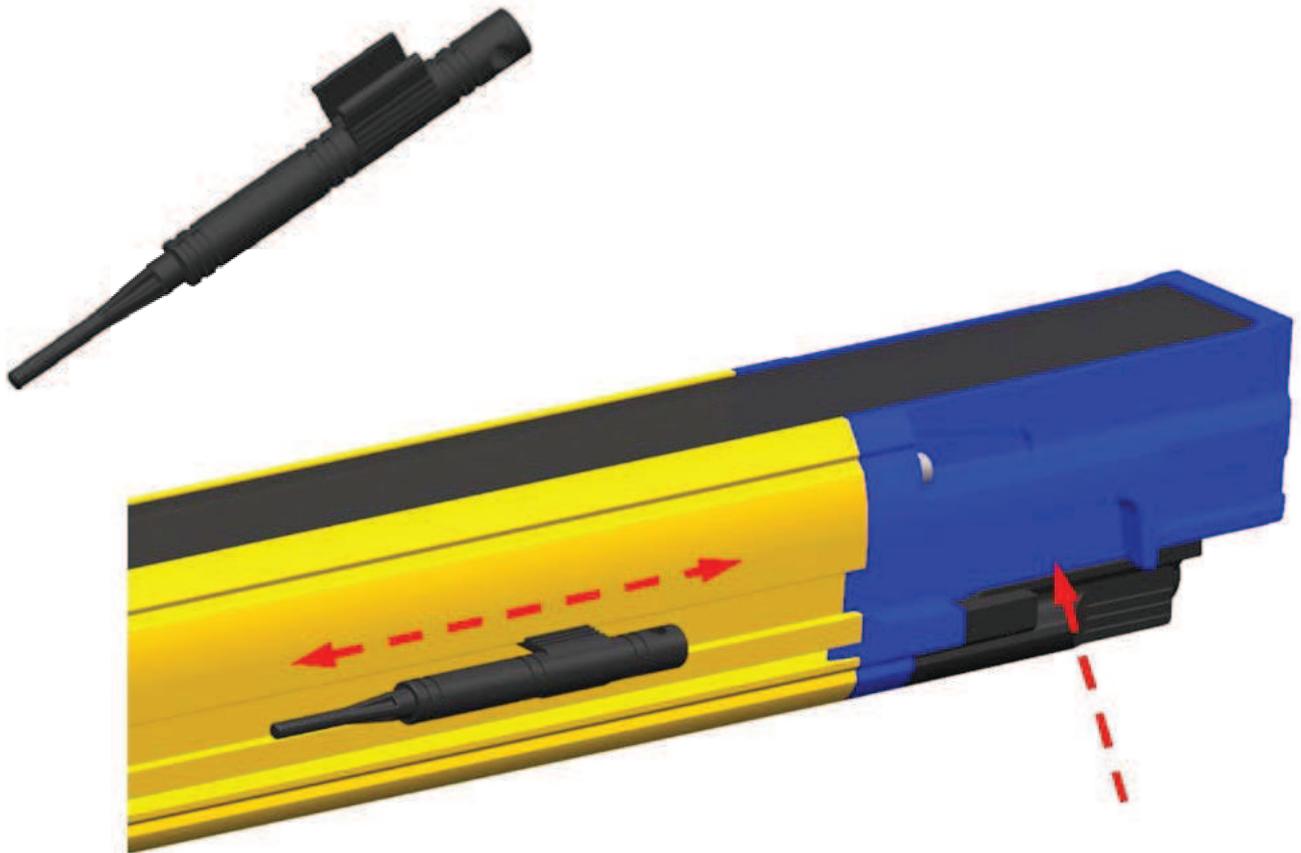
14 and 30 mm SG4-E

= W for SG2-M and P for SG4-E

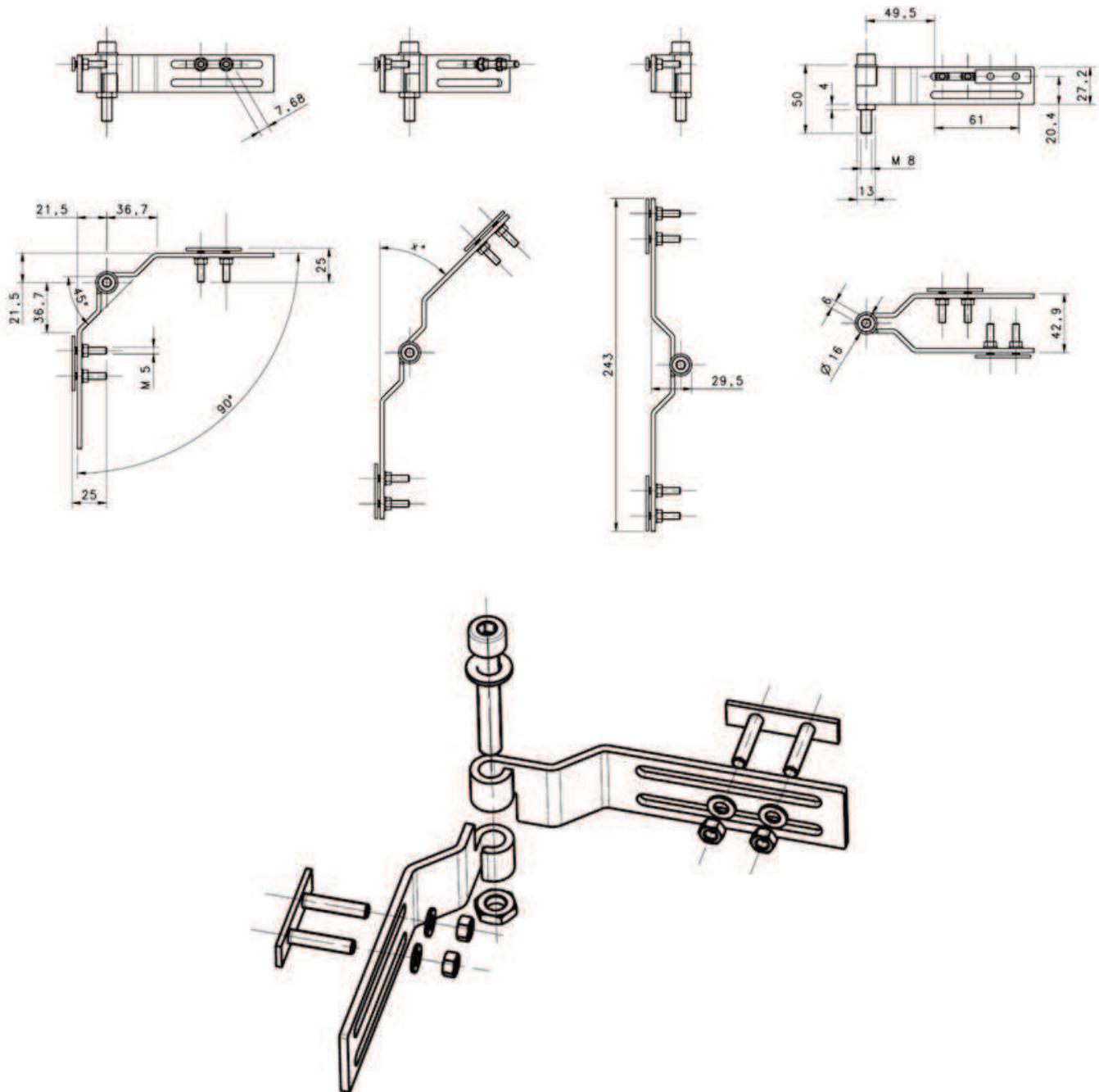
TERMINATOR CAP



PROGRAMMING TOOL FOR BCM

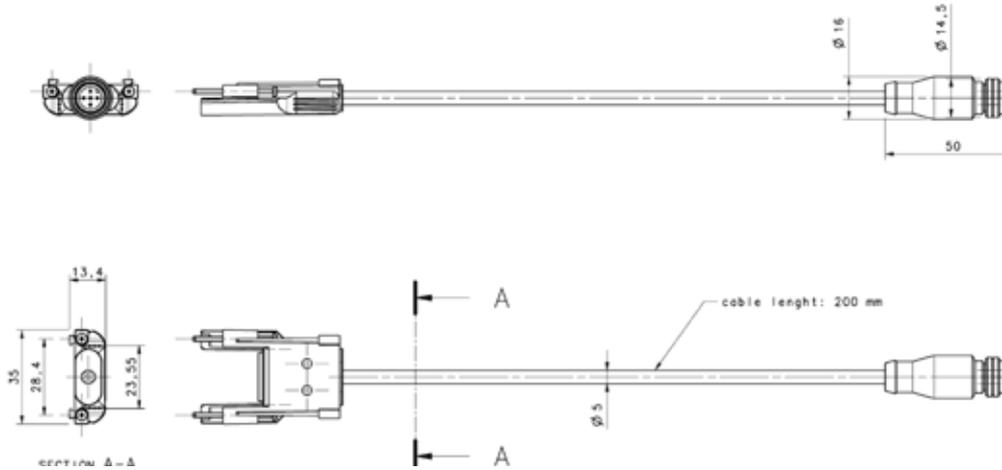


ACCESSORY SELECTION AND ORDER INFORMATION
CASCADE BRACKET



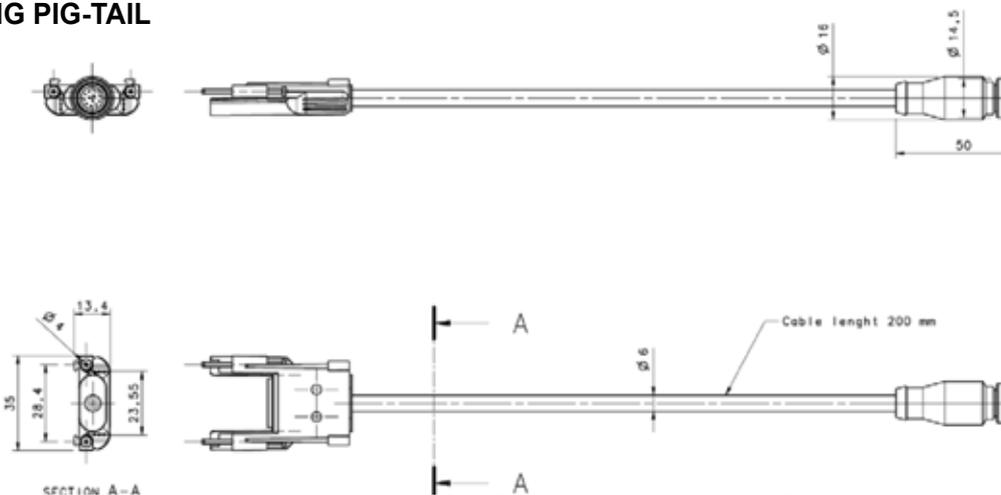
MODEL	DESCRIPTION	CODE
ST-KCASCADE-SG EXTENDED	ST-KCASCADE-SG EXTENDED	95ASE2110

TX PIG-TAIL



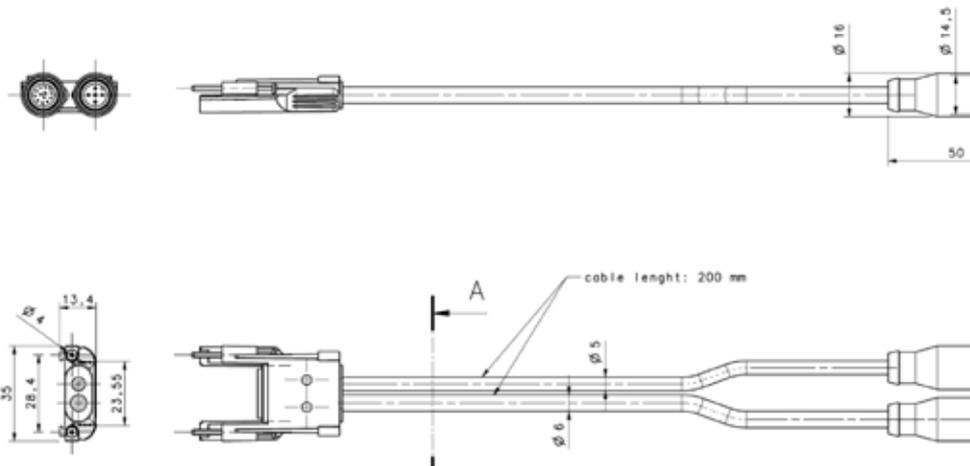
This is the Pig-Tail cable that must be always used for TX UNIT of both SG2-M and SG4-E. It has a 18 poles socket in one side and a M12 5 poles in the other

RX BLANKING PIG-TAIL



This is the Pig-Tail cable that must be used for RX UNIT of SG4-E when you configure it in BLANKING MODE and DON'T USE SG4 DONGLE. It has a 18 poles socket in one side and a M12 12 poles in the other

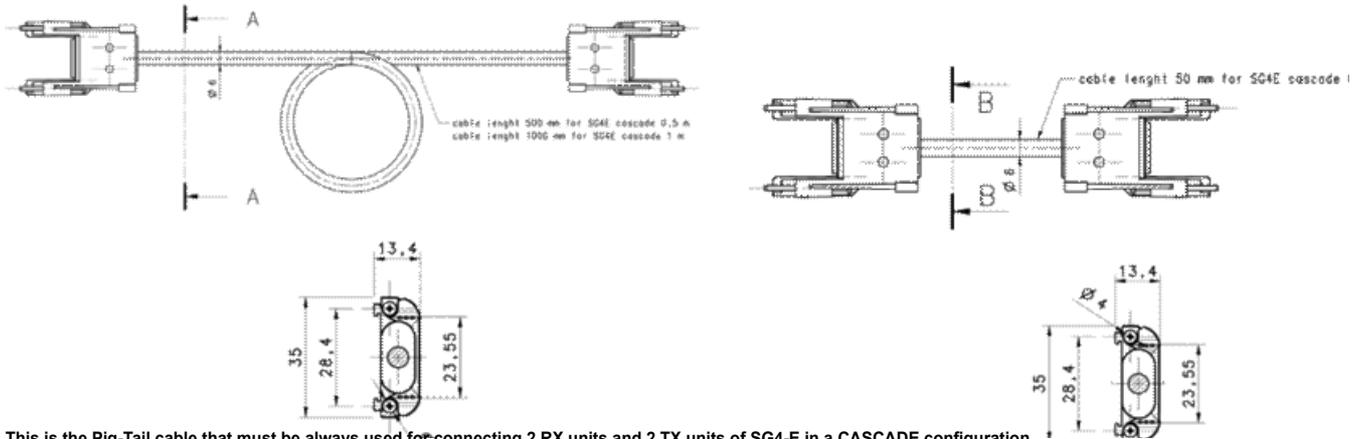
RX MUTING PIG-TAIL



This is the Pig-Tail cable that must be always used for RX UNIT of SG2-M and SG4-E when you configure it in MUTING MODE and DON'T USE SG4 DONGLE. It has a 18 poles socket in one side and a M12 5 poles plus M12 12 poles in the other.

MODEL	DESCRIPTION	CODE
CS-G1-50-B-002	CS-G1-50-B-002 SG EXTENDED TX 0,2m	95A252820
CS-G1-70-B-002	CS-G1-70-B-002 SG EXTENDED BLANK RX 0,2m	95A252830
CS-R1-75-B-002	CS-R1-75-B-002 SG EXTENDED MUTING RX 0,2	95A252810

CASCADE CABLES



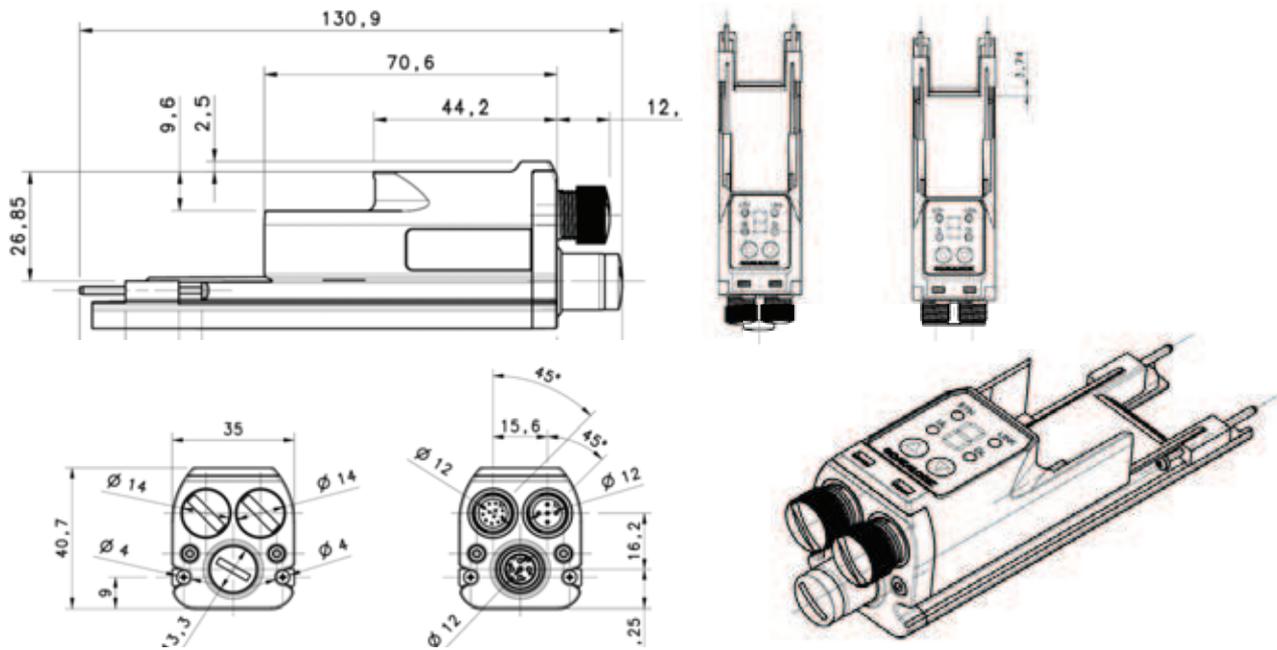
This is the Pig-Tail cable that must be always used for connecting 2 RX units and 2 TX units of SG4-E in a CASCADE configuration. It has a 18 poles socket on both sides.

3 different lengths are available :

- 50 mm
- 500 mm
- 1000 mm

MODEL	DESCRIPTION	CODE
CS-F1-80-B-01	CS-F1-80-B-01 SG EXTENDED CASCADE 1m	95A252840
CS-F1-80-B-005	CS-F1-80-B-005 SG EXTENDED CASCADE 0,5m	95A252850
CS-F1-80-B-0005	CS-F1-80-B-0005SG EXTENDED CASCADE 0,05m	95A252860

SG4-DONGLE ETHERNET ADAPTOR



MODEL	DESCRIPTION	CODE
SG4-DONGLE	SG4-DONGLE ETHERNET ADAPTOR	95ASE2080

MODEL	DESCRIPTION	CODE
SG-DM 150	Deviating mirror version 150 mm	95ASE1670
SG-DM 600	Deviating mirror version 600 mm	95ASE1680
SG-DM 900	Deviating mirror version 900 mm	95ASE1690
SG-DM 1200	Deviating mirror version 1200 mm	95ASE1700
SG-DM 1650	Deviating mirror version 1650 mm	95ASE1710
SG-DM 1900	Deviating mirror version 1900 mm	95ASE1720
SE-S 800	Column and floor stand H= 800 mm	95ACC1730
SE-S 1000	Column and floor stand H= 1000 mm	95ACC1740
SE-S 1200	Column and floor stand H= 1200 mm	95ACC1750
SE-S 1500	Column and floor stand H= 1500 mm	95ACC1760
SE-S 1800	Column and floor stand H= 1800 mm	95ACC1770
SG-PSB 600	SG-PSB 600 PROTECTIVE STAND H=600mm	95ASE2240
SG-PSB 1000	SG-PSB 1000 PROTECTIVE STAND H=1000mm	95ASE2250
SG-PSB 1200	SG-PSB 1000 PROTECTIVE STAND H=1200mm	95ASE2260
SG-PSB 1650	SG-PSB 1000 PROTECTIVE STAND H=1650mm	95ASE2270
SG-PSB 1900	SG-PSB 1000 PROTECTIVE STAND H=1900mm	95ASE2280
SG-P	SG-P PLATE KIT FOR PROTECTIVE STANDS	95ASE2290
TP-14	TP-14 test piece Ø 14mm L = 300mm	95ACC1630
TP-30	TP-30 test piece Ø 30mm L = 300mm	95ACC1650
SG-LP	Laser pointer	95ASE5590
CS-A1-03-U-03	5-pole M12 cable (axial) 3 m	95ASE1170
CS-A1-03-U-05	5-pole M12 cable (axial) 5 m	95ASE1180
CS-A1-03-U-10	5-pole M12 cable (axial) 10 m	95ASE1190
CS-A1-03-U-15	5-pole M12 cable (axial) 15 m	95ASE1200
CS-A1-03-U-25	5-pole M12 cable (axial) 25 m	95ASE1210
CS-A1-03-U-50	5-pole M12 cable (axial) 50m	95A252700
CS-A1-06-U-03	8-pole M12 cable (axial) 3 m	95ASE1220
CS-A1-06-U-05	8-pole M12 cable (axial) 5 m	95ASE1230
CS-A1-06-U-10	8-pole M12 cable (axial) 10 m	95ASE1240
CS-A1-06-U-15	8-pole M12 cable (axial) 15 m	95ASE1250
CS-A1-06-U-25	8-pole M12 cable (axial) 25 m	95ASE1260
CS-A1-06-U-50	8-pole M12 cable (axial) 50 m	95A252710
CS-A1-10-U-03	12-pole M12 cable (axial) 3 m	95A252720
CS-A1-10-U-05	12-pole M12 cable (axial) 5 m	95A252730
CS-A1-10-U-10	12-pole M12 cable (axial) 10 m	95A252740
CS-A1-10-U-15	12-pole M12 cable (axial) 15 m	95A252750
CS-A1-10-U-25	12-pole M12 cable (axial) 25 m	95A252760
CS-A1-10-U-50	12-pole M12 cable (axial) 50 m	95A252770
SG-AS-ARM ^{note 1}	Active sensor single arm	95ASE1840
SG-PR-ARM ^{note 1}	Passive reflector single arm	95ASE1850
SG-L-ARMS	"L" Muting arms kit	95ASE1860
SG-T-ARMS	"T" Muting arms kit	95ASE1870
SG-CB-C	Muting C Bracket Compact Kit	95ASE1930
LMS	Muting lamp	95ASE1830
LMS-1	Modular Muting lamp	95ACC1990
LMS-2	Muting lamp - horizontal mounting	95ACC2000
LMS-3	Muting lamp - vertical mounting	95ACC2010
SU-LMS-1A	Basic module for LMS-1	95ACC2020
SU-LMS-1B	Tower module for LMS-1	95ACC2030
CV-Y1-02-B-007	M12 4-pole cable 0.7m for "T" Muting	95ACC2560
CV-L1-02-B-007	M12 4-pole cable 0.7m for "L" Muting	95ACC2570
SE-SR2	Type 4 Safety Relay 3NO 1NC	95ACC6170
CS ME-03VU24-Y14	EDM Relay Box	95ASE1270

note 1: With RRX Muting arms the overall operating distance is reduced to **3 meters**.



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SE4-PLUS HAND SERIES

The SAFEasy™ light curtains, according to the IEC 61496-1 and IEC 61496-2, are particularly suitable for hand protection of operators exposed to risks.

Different models are available with heights ranging from 150 to 1650 mm, 30 mm resolution and operating distance reaching 15 m. Each model has one or more advanced functions: EDM, Blanking and Cascade. The light curtains are able to verify the integrity of external monitoring devices thanks to the EDM (External Device Monitoring) function. The Blanking function allows to deactivate a part of the detection area during functioning, allowing material passage or mechanical obstacle presence without causing machine interruption. Fixed Blanking and Floating Blanking can be selected. The Cascade configuration allows to combine the functioning of a couple of light curtains positioned in different areas.

Specific dip-switches, that can be reached through a slot present on the front of the active unit protected by a lid and opened with a simple screwdriver, guarantee a rapid and safe configuration.

The compact dimensions (35 x 40 mm), easy installation and excellent performances make the SAFEasy™ light curtains suitable to industrial applications requiring operator safety.



HIGHLIGHTS

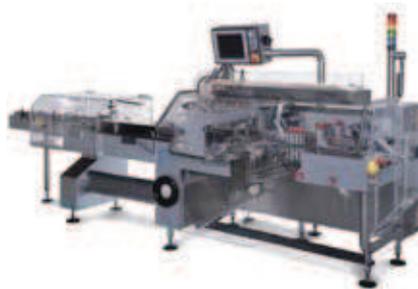
- Integrated light curtains for HAND PROTECTION (30 mm resolution)
- EDM and Blanking functions
- Cascade configuration
- 35 x 40 mm compact profile

APPLICATIONS

Wood working machines



Packaging lines



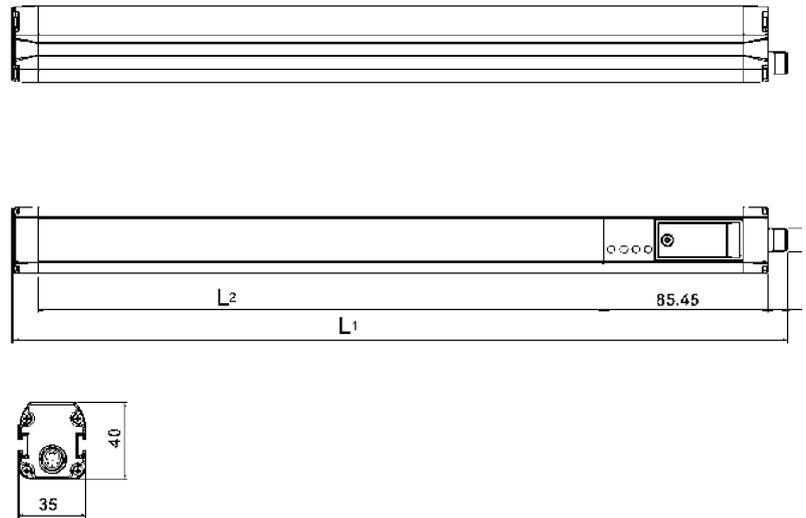
Automatic machines



The features introduced by the safety light curtains of the SE4-PLUS HAND series are given below:

- EDM function: allows to verify the status of the external monitoring devices (typically safety relays), avoiding external malfunctions jeopardising correct device functioning.
- Fixed Blanking: allows the operator to exclude the control of beams in a pre-set position.
- Floating Blanking: allows the operator to exclude the control of a pre-set number of beams in any position within the detection area.
- Cascade configuration: a couple of light curtains can function connected to each other in accordance to a Master-Slave protocol and combining the safety information relative to the two different sections of the controlled machine. The Master unit has a Blanking function and can be used without the Slave unit. Models with the Muting function are not available in the SE4-PLUS HAND series.

DIMENSIONS



mm

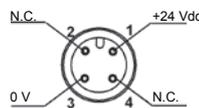
VERSIONS	L ₁	L ₂
SE4-xx-015-PP-y	256	147
SE4-xx-030-PP-y	403	294
SE4-xx-045-PP-y	550	441
SE4-xx-060-PP-y	697	588
SE4-xx-075-PP-y	844	735
SE4-xx-090-PP-y	991	882
SE4-xx-105-PP-y	1138	1029
SE4-xx-120-PP-y	1285	1176
SE4-xx-135-PP-y	1432	1323
SE4-xx-150-PP-y	1579	1470
SE4-xx-165-PP-y	1726	1617

CONNECTIONS

MODEL	EMITTER	RECEIVER
EMD+Blanking	M12 4-pole	M12 8-pole
EDM+Cascade (Master)*	M12 4-pole +M12 5-pole	M12 8-pole +M12 5-pole
EDM+Cascade (Slave)	M12 5-pole	M12 5-pole
EDM + Cascade + Blanking (Master)*	M12 4-pole +M12 5-pole	M12 8-pole +M12 5-pole

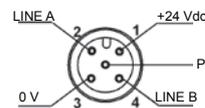
* an electric terminal is supplied for the Master Cascade models for the M12 5-pole connection in order to use the Master unit without connecting the Slave unit

M12 CONNECTOR 4-POLE



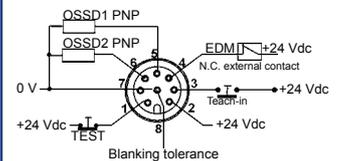
- 1 = brown = +24 Vdc
- 2 = white = N.C.
- 3 = blue = 0 V
- 4 = black = N.C.

M12 CONNECTOR 5-POLE



- 1 = brown = +24 Vdc
- 2 = white = LINE A
- 3 = blue = 0 V
- 4 = black = LINE B
- 5 = grey = PE

M12 CONNECTOR 8-POLE



- 1 = white = TEST/START
- 2 = brown = +24 Vdc
- 3 = green = TEACH-IN
- 4 = yellow = EDM
- 5 = grey = OSSD1
- 6 = pink = OSSD2
- 7 = blue = 0 V
- 8 = red = BLANKING TOLERANCE

TECHNICAL DATA

Power supply:	24 Vdc ± 20% (SELV / PELV)
Consumption:	55 mA max. / 1.5. W (emitter) 125 mA max. / 3.75 W (receiver without load)
Light emission:	infrared LED 880 nm
Number of controlled beams:	refer to table 1
Optic interaxis:	18.4 mm
Resolution:	30 mm
Controlled height:	refer to table 2
Through beam operating distance:	0.2 ... 15 m
Receiver indicators:	green / red SAFE/ BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED
Emitter indicators:	yellow blinking FAILURE LED green POWER ON LED
Output type:	2 PNP
Output current:	0.5 A max., short-circuit protection
Response time:	refer to tables 3 and 4
Selectable functions:	refer dip-switches
Receiver connection:	refer to connections
Emitter connection:	refer to connections
Cable length:	50 m max. (with 50 nF capacitive load)
Safety category:	Type 4
Electrical protection:	class 1
Mechanical protection:	IP65
Housing material:	aluminium with PC Makrolon plastic caps
Weight:	1.2 Kg max. / m of total height
Operating temperature:	-10 ... +55 °C
Storage temperature:	-25 ... +70 °C
Reference standards:	EN 954-1, IEC 61496-1, IEC 61496-2

SELECTION TABLE

MODEL	BEAMS
SE4 height 150	8
SE4 height 300	16
SE4 height 450	24
SE4 height 600	32
SE4 height 750	40
SE4 height 900	48
SE4 height 1050	56
SE4 height 1200	64
SE4 height 1350	72
SE4 height 1500	80
SE4 height 1650	88

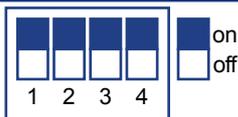
Table 1: NUMBER OF BEAMS

MODEL	mm
SE4 height 150	180
SE4 height 300	327
SE4 height 450	474
SE4 height 600	621
SE4 height 750	768
SE4 height 900	915
SE4 height 1050	1062
SE4 height 1200	1209
SE4 height 1350	1356
SE4 height 1500	1503
SE4 height 1650	1650

Table 2: CONTROLLED HEIGHT

MODEL	ms
SE4 height 150	16
SE4 height 300	20
SE4 height 450	23
SE4 height 600	25
SE4 height 750	27
SE4 height 900	30
SE4 height 1050	32
SE4 height 1200	35
SE4 height 1350	38
SE4 height 1500	40
SE4 height 1650	43

Table 4: RESPONSE TIME

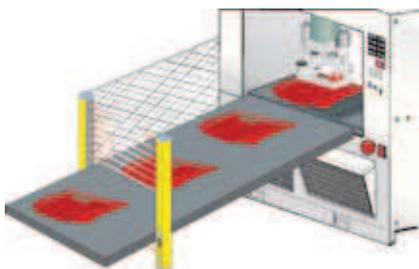


DIP-SWITCHES

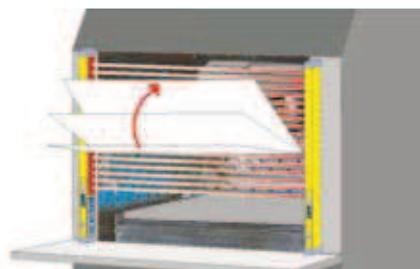
- 1 - Floating function: refer to table
- 2 - Floating function: refer to table
- 3 - EDM inactive (ON) / EDM active (OFF)
- 4 - Automatic (ON) / manual (OFF) reset

DIP1	DIP2	FUNCTION
ON	ON	Floating function deactivated,
ON	OFF	Floating function active, 1 Blanking beam
OFF	ON	Floating function active, 2 adjacent Blanking beams
OFF	OFF	Floating function active, 1, 2 or 3 adjacent Blanking beams

FUNCTIONING MODE



Example of 'Fixed Blanking'



Example of 'Floating Blanking'



Example of 'Cascade' configuration

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	FUNCTION	ORDER N°
SE4-30-015-PP-B	Type 4 safety light curtain	EDM, Blanking	957202080
SE4-30-030-PP-B	Type 4 safety light curtain	EDM, Blanking	957202090
SE4-30-045-PP-B	Type 4 safety light curtain	EDM, Blanking	957202100
SE4-30-060-PP-B	Type 4 safety light curtain	EDM, Blanking	957202110
SE4-30-075-PP-B	Type 4 safety light curtain	EDM, Blanking	957202120
SE4-30-090-PP-B	Type 4 safety light curtain	EDM, Blanking	957202130
SE4-30-105-PP-B	Type 4 safety light curtain	EDM, Blanking	957202140
SE4-30-120-PP-B	Type 4 safety light curtain	EDM, Blanking	957202150
SE4-30-135-PP-B	Type 4 safety light curtain	EDM, Blanking	957202160
SE4-30-150-PP-B	Type 4 safety light curtain	EDM, Blanking	957202170
SE4-30-165-PP-B	Type 4 safety light curtain	EDM, Blanking	957202180
SE4-30-015-PP-M	Type 4 safety light curtain	EDM, Master	957202280
SE4-30-030-PP-M	Type 4 safety light curtain	EDM, Master	957202290
SE4-30-045-PP-M	Type 4 safety light curtain	EDM, Master	957202300
SE4-30-060-PP-M	Type 4 safety light curtain	EDM, Master	957202310
SE4-30-075-PP-M	Type 4 safety light curtain	EDM, Master	957202320
SE4-30-090-PP-M	Type 4 safety light curtain	EDM, Master	957202330
SE4-30-105-PP-M	Type 4 safety light curtain	EDM, Master	957202340
SE4-30-120-PP-M	Type 4 safety light curtain	EDM, Master	957202350
SE4-30-135-PP-M	Type 4 safety light curtain	EDM, Master	957202360
SE4-30-150-PP-M	Type 4 safety light curtain	EDM, Master	957202370
SE4-30-165-PP-M	Type 4 safety light curtain	EDM, Master	957202380
SE4-30-015-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202480
SE4-30-030-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202490
SE4-30-045-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202500
SE4-30-060-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202510
SE4-30-075-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202520
SE4-30-090-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202530
SE4-30-105-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202540
SE4-30-120-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202550
SE4-30-135-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202560
SE4-30-150-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202570
SE4-30-165-PP-N	Type 4 safety light curtain	EDM, Master Blanking	957202580
SE4-30-015-PP-S	Type 4 safety light curtain	Slave	957202680
SE4-30-030-PP-S	Type 4 safety light curtain	Slave	957202690
SE4-30-045-PP-S	Type 4 safety light curtain	Slave	957202700
SE4-30-060-PP-S	Type 4 safety light curtain	Slave	957202710
SE4-30-075-PP-S	Type 4 safety light curtain	Slave	957202720
SE4-30-090-PP-S	Type 4 safety light curtain	Slave	957202730
SE4-30-105-PP-S	Type 4 safety light curtain	Slave	957202740
SE4-30-120-PP-S	Type 4 safety light curtain	Slave	957202750
SE4-30-135-PP-S	Type 4 safety light curtain	Slave	957202760
SE4-30-150-PP-S	Type 4 safety light curtain	Slave	957202770
SE4-30-165-PP-S	Type 4 safety light curtain	Slave	957202780

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CV-A1-23-B-005-2F	M12 5-pole shielded axial 0.5 m connector (supplied with the Slave)	95ACC2440
CV-A1-23-B-01-2F	M12 5-pole shielded axial 1 m connector (to be ordered separately)	95ACC2450
SE-C	5 pole-connector cap (supplied with the Master)	95ACC2460

Please refer also to **Safety Device Accessories**



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SG-BODY "BIG" SERIES

The new **SG BODY "BIG"** safety light curtain series thanks to its new housing together with the innovative design optical-electronic platform ensures the performance of high-level safety light curtain required in the material handling market.

Classical TX-RX models with operating distance reaching up to **60m**, available in **2, 3 and 4 beams** models with controlled height of **500, 800, 900 and 1200mm** controlled height are now completed by a **LONG RANGE** version **40mm** resolution for hand protection with operating distance reaching up to 60m.

All SG BODY "BIG" models are then provided in 2 different versions :

- **BASE** version that represents the ideal product for all applications where Muting function is not required but EDM, MANUAL/AUTOMATIC restart are fundamental;
- **MUTING** version integrates the Muting function and completes it with all advanced features associated to like anti-interference coding, 'L' o 'T' configurations, edged or triggered OVERRIDE and external Muting enable.

Total absence of "DEAD ZONE", 7 segment displays **USER INTERFACE** for signaling and diagnostics, alignment AID function, both integrated and external muting lamp and 3 different types of mounting brackets (SWIVELLING SIDE for "THIN MOUNTING", TOP-BOTTOM ROTATING and REAR) complete the product and make it the ideal and most performing solution for all the industrial application.

HIGHLIGHTS

- New big sturdy profile for heavy duties;
- Up to 60mt operating distance;
- 2,3,4 beams with 500, 800, 900 and 1200mm controlled height;
- Two models : BASE and MUTING;
- No programming required : integrated safety functions DIP SWITCH selectable;
- Integrated Muting with all advanced features associated to like anti-interference coding, 'L' o 'T' configurations, edged or triggered OVERRIDE and external Muting enable.
- Type 2 models SIL 2 and PL d and Type 4 models SIL 3 PL e



APPLICATIONS

Extreme reliability and simplicity make the SG BODY safety light curtains the ideal solution for the following applications:

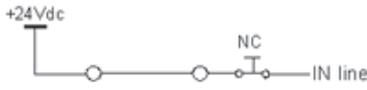
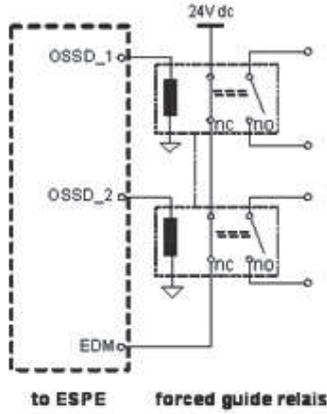
- Automatic machines
- Robots
- Automatic assembling lines
- Palletizers and Depalletizers
- Automatic warehouses



SETTINGS

BASE VERSION

In BASE versions integrated functions can be selected or enabled through dedicate wires on TX and RX M12 connectors

Line	Layout connection	Behaviour
TEST		Test not active
RESET/RESTART/RESTART MODE		Automatic restart
RESET/RESTART/RESTART MODE		Manual restart
EDM		(EDM ENABLE: active)
EDM ENABLE		EDM enabled
OSSDs		

MUTING VERSION

A closing cap coupled with the top cap of the RX and TX units can be unscrewed to access dip-switches slot. By means of internal dip-switches the user can set-up some functions.

RX closing cap contains LED integrated MUTING lamp

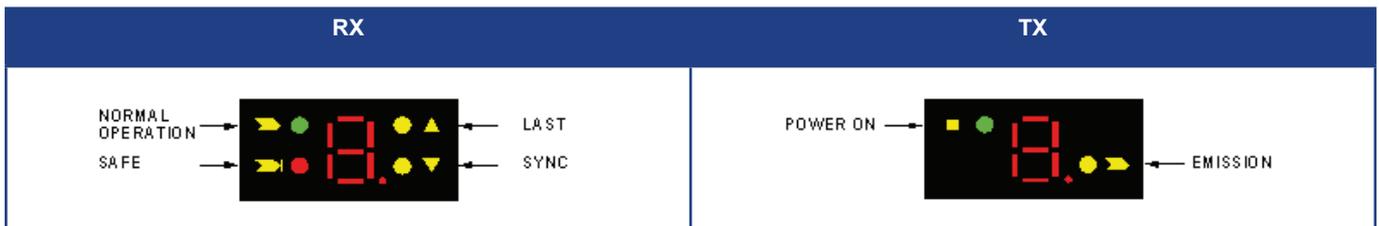


RX			TX		
	ON	OFF		ON	OFF
Dip switch n°1: Muting timeout	10 min	∞	Dip switch n°1: coding selection	See table	See table
Dip switch n°2: Muting T/L	T	L	Dip switch n°2: coding selection	See table	See table
Dip switch n°3: Muting filter	Disabled	Enabled	Dip switch n°3: not used	-	-
Dip switch n°4: Override restart	Manual	Automatic	Dip switch n°4: not used	-	-
Dip switch n°5: Override mode	Edged	Triggered	Dip switch n°5: not used	-	-
Dip switch n°6: EDM enable	EDM on	EDM off	Dip switch n°6: not used	-	-
Dip switch n°7: coding selection	See table	See table	Dip switch n°7: not used	-	-
Dip switch n°8: coding selection	See table	See table	Dip switch n°8: not used	-	-
Dip-switch 7	Dip-switch 8	CODE	Dip-switch 1	Dip-switch 2	CODE
ON	ON	NO CODE	ON	ON	NO CODE
OFF	ON	Code 1	OFF	ON	Code 1
ON	OFF	Code 2	ON	OFF	Code 2
OFF	OFF	Not used	OFF	OFF	Not used

Wire configurations are the same reported in the table above for base versions

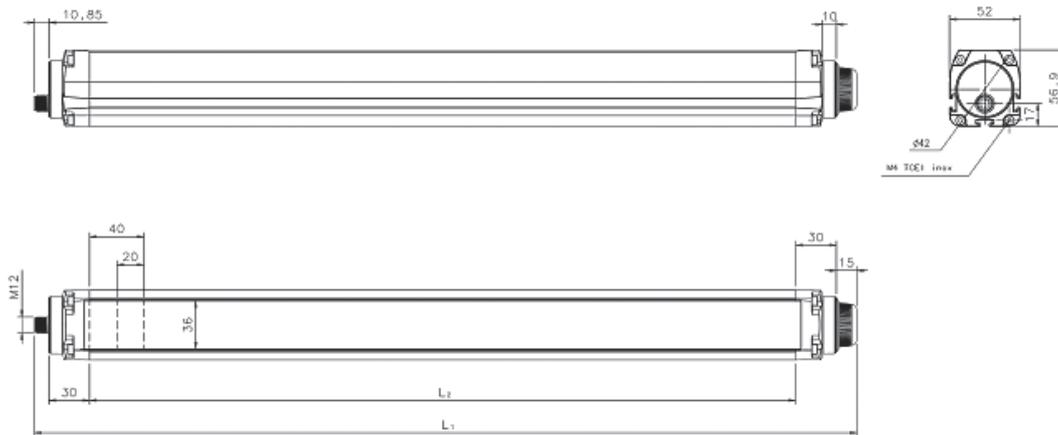
INDICATORS

A user interface aids the customer to control and check the state of the light curtain, for alignment mode, normal operation and for troubleshooting activity. User interface is composed by four LEDs on the receiver and two LEDs on the emitter and an one-digit display present on both receiver and emitter unit



DIMENSIONS

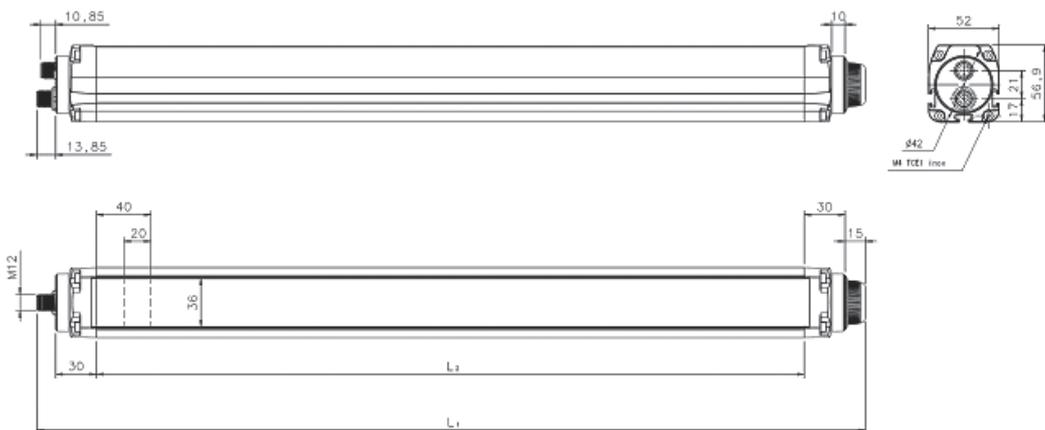
BASE VERSION



Model	L1 [mm]	L2 [mm]
SGx-B2-050-OO-E	606,35	520,5
SGx-B3-080-OO-E	906,35	820,5
SGx-B4-090-OO-E	1006,35	920,5
SGx-B4-120-OO-E	1306,35	1220,5
SG4-40-060-OO-E	783,35	700,5
SG4-40-090-OO-E	1083,35	1000,5
SG4-40-120-OO-E	1383,35	1300,5

x = ESPE Type: 2,4

MUTING VERSION



Model	L1 [mm]	L2 [mm]
SGx-Byy2-050-OO-W-C	609,35	520,5
SGx-Byy3-080-OO-W-C	909,35	820,5
SGx-Byy4-090-OO-W-C	1009,35	920,5
SGx-Byy4-120-OO-W-C	1309,35	1220,5

x = ESPE Type: 2,4

yy = operating distance (only for Type 4): SR, LR

CONNECTIONS

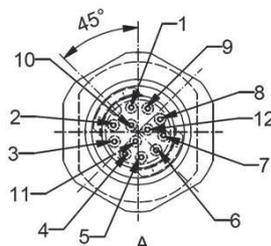
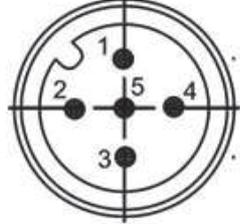
BASE VERSION CONNECTIONS

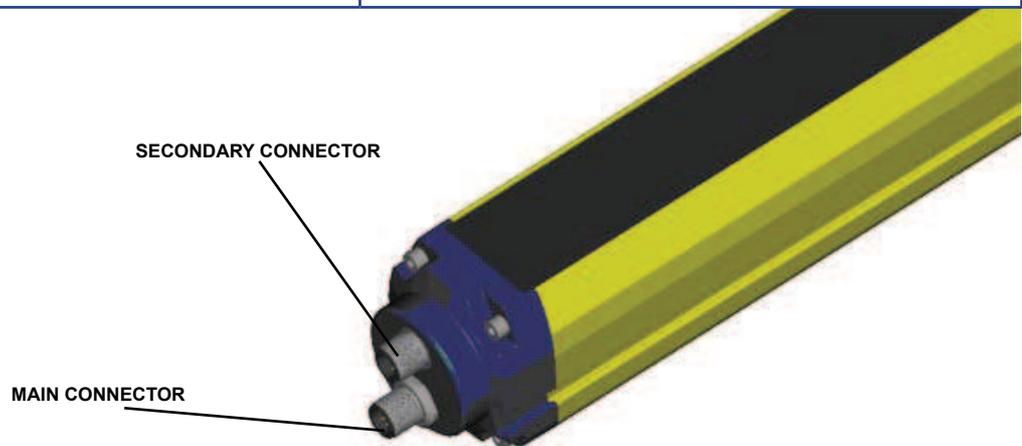


RX	TX
<p>M12 8-pole connector</p> <ul style="list-style-type: none"> 1 = White = RESET/RESTART/RESTART MODE 2 = Brown = 24Vdc 3 = Green = EDM ENABLE 4 = Yellow = EDM 5 = Grey = OSSD1 6 = Pink = OSSD2 7 = Blue = 0V 8 = Red = EARTH 	<p>M12 5-pole connector</p> <ul style="list-style-type: none"> 1 = Brown = 24Vdc 2 = White = TEST 3 = Blue = 0V 4 = Black = EARTH 5 = Grey = N.C.

CONNECTIONS

MUTING VERSION CONNECTIONS

RX		TX	
MAIN CONNECTOR	SECONDARY CONNECTOR	MAIN CONNECTOR	SECONDARY CONNECTOR
			
<p>Main connector: M12 12-pole connector</p> <p>1 = Brown = 24Vdc 2 = Blue = 0V 3 = White = RESET/RESTART/RESTART MODE 4 = Green = OVERRIDE1 5 = Pink = OSSD2 6 = Yellow = EDM 7 = Black = MUTING ENABLE 8 = Grey = OSSD1 9 = Red = OVERRIDE2 10 = Violet = LAMP OUTPUT 11 = Grey-Pink = OVERRIDE STATUS 12 = Red-Blue = EARTH</p> <p>Secondary connector: M12 5-pole connector</p> <p>1 = Brown = 24Vdc 2 = White = MUTING2 3 = Blue = 0V 4 = Black = MUTING1 5 = Grey = N.C.</p>		<p>Main connector: M12 5-pole connector</p> <p>1 = Brown = 24Vdc 2 = White = TEST 3 = Blue = 0V 4 = Black = EARTH 5 = Grey = N.C.</p> <p>Secondary connector: M12 5-pole connector</p> <p>1 = Brown = 24Vdc 2 = White = N.C. 3 = Blue = 0V 4 = Black = N.C. 5 = Grey = N.C.</p>	

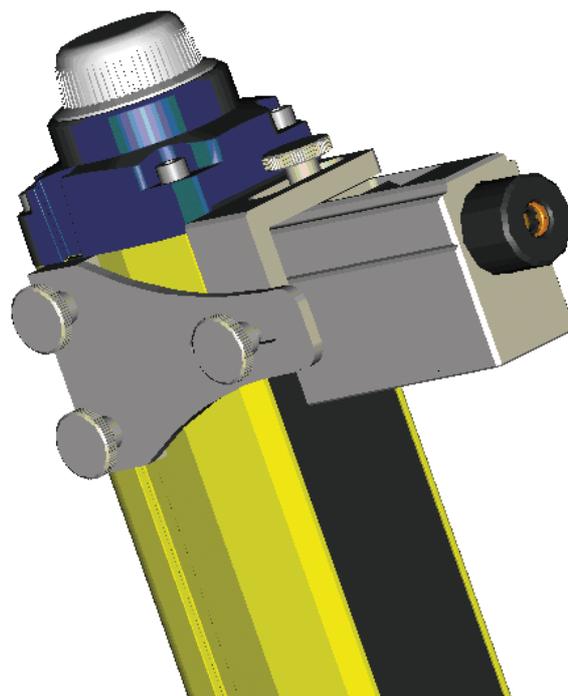


TECHNICAL DATA

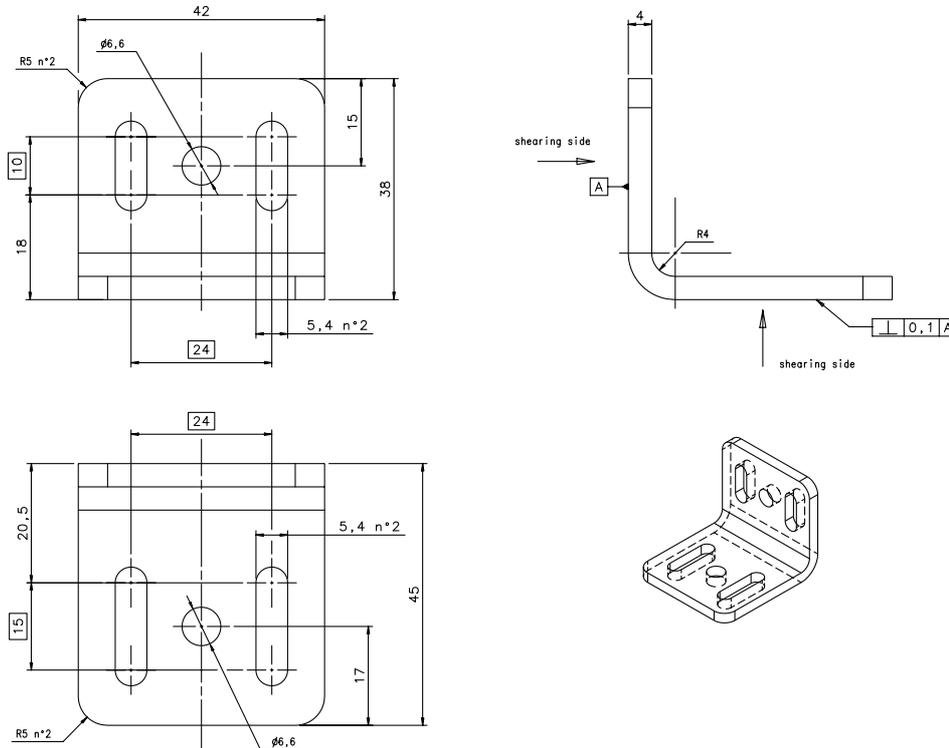
	BASE VERSION	MUTING VERSION
Electrical Data		
Power supply	24 Vdc \pm 20%	24 Vdc \pm 20%
Emitter consumption (TX)	2.5 W max	2.5 W max
Receiver consumption (RX)	4.0 W max (without load)	4.0 W max (without load)
Outputs:	2 PNP outputs short-circuit protection (1.4 A @55°C)	2 PNP outputs short-circuit protection (1.4 A @55°C)
Output current:	0.5 A max / each output	0.5 A max / each output
Output voltage - ON min:	Power supply value less 1 V	Power supply value less 1 V
Output voltage - OFF max:	0.2 V	0.2 V
Output capacitive load	2.2 μ F @24Vdc	2.2 μ F @24Vdc
Response time:	From 11 to 24 ms See section "MODEL TABLE SELECTION"	From 11 to 24 ms See section "MODEL TABLE SELECTION"
Protected height:	from 500mm to1200mm See section "MODEL TABLE SELECTION"	from 500mm to1200mm See section "MODEL TABLE SELECTION"
Safety category:	Type 4 / Type 2 (ref. EN 61496-1)	Type 4 / Type 2 (ref. EN 61496-1)
Auxiliary functions:	Reset, Restart selection, EDM, Test	Reset, Restart selection, Alignment, EDM, Test, Muting, Override, Coding
Electrical protection:	class III	class III
Connections:	TX : M12 5 poles RX : M12 8 poles	TX : M12 5 pole + M12 5 pole RX : M12 12 pole + M12 5 pole
Cable length (for power supply):	70m. max.	70m. max.
Pollution degree	2	2
Optical Data		
Light source:	Infrared LED (950 nm wavelength)	Infrared LED (950 nm wavelength)
Resolution:	40 mm 319,75 mm 419,75 mm 519,75 mm	319,75 mm 419,75 mm 519,75 mm
Beam spacing:	20 mm 300 mm 400 mm 500 mm	300 mm 400 mm 500 mm
Operating distance:	See section "MODEL TABLE SELECTION"	See section "MODEL TABLE SELECTION"
Ambient light rejection:	IEC 61496-2	IEC 61496-2
Mechanical and environmental data		
Operating temperature:	0...55°C	0...55°C
Storage temperature:	-25...+ 70 °C	-25...+ 70 °C
Temperature class:	T6	T6
Humidity:	15...95 % (no condensation)	15...95 % (no condensation)
Water protection grade:	IP 65 (EN 60529)	IP 65 (EN 60529)
Vibration:	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave/min (EN 60068-2-6)	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)	Painted aluminium (yellow RAL 1003)
Caps material:	PBT Valox 508 (pantone 072-CVC)	PBT Valox 508 (pantone 072-CVC)
Front glass material:	PMMA	PMMA
Connectors:	M12	M12

TECHNICAL DATA

	BASE VERSION	MUTING VERSION
Reliability data		
PL (Ref. EN ISO 13849-1)	SG2 : d SG4 : e	SG2 : d SG4 : e
CAT (Ref. EN 954-1)	SG2 : 2 SG4 : 4	SG2 : 2 SG4 : 4
SIL (Ref. EN IEC 61508)	SG2 : 2 SG4 : 3	SG2 : 2 SG4 : 3
SIL CL (Ref. EN IEC 62061)	SG2 : 2 SG4 : 3	SG2 : 2 SG4 : 3
PFHD – Probability of Danger Failure (1/h)	SG2 : 1,19E-08 SG4 : 1,10E-08 SG4 40mm LONG RANGE : 1,95E-08	SG2 : 3,15E-08 SG4 : 1,03E-08
T1 – Life Time (Years)	SG2 : 20 SG4 : 20	SG2 : 20 SG4 : 20
MTTFD - Mean Time to Danger Failure (Years)	SG2 : 317 SG4 : 353 SG4 40mm LONG RANGE : 98	SG2 : 288 SG4 : 338
DC – Diagnostic Coverage (%)	SG2 : 96,7% SG4 : 96,4% SG4 40mm LONG RANGE : 98,3%	SG2 : 92,10% SG4 : 96,80%
SFF – Safe Failure Fraction (%)	SG2 : 98% SG4 : 97,9% SG4 40mm LONG RANGE : 98,9%	SG2 : 95,20% SG4 : 98,1%
HFT – Hardware Fault Tolerance	SG2 : 0 SG4 : 1 SG4 40mm LONG RANGE : 1	SG2 : 0 SG4 : 1

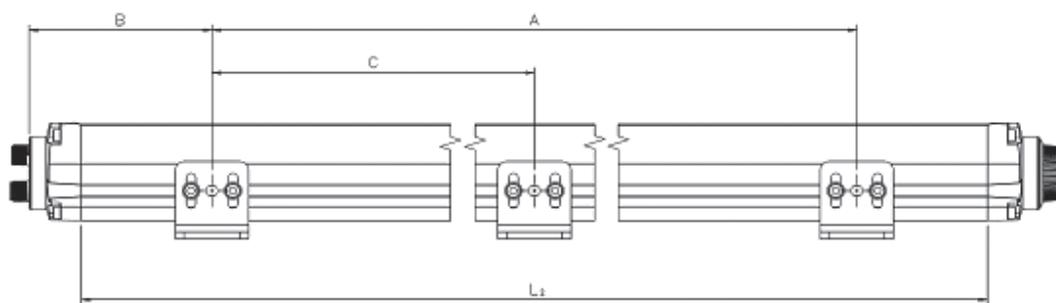


ACCESSORY SELECTION AND ORDER INFORMATION
SIDE FIXING BRACKET



MODEL	DESCRIPTION	CODE
ST-K4STD-SG BODY BIG	Side fixing bracket (4 pcs kit)	95ASE1950
ST-K4AV	Antivibration support (4 pcs kit)	95ACC1700
ST-K6AV	Antivibration support (6 pcs kit)	95ACC1710

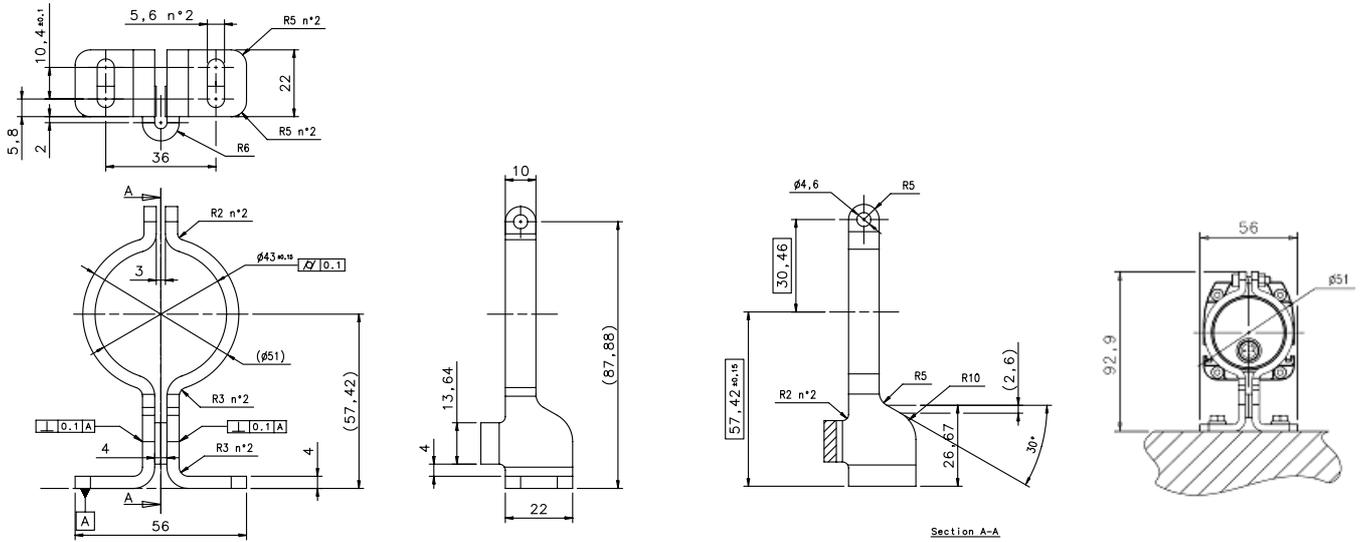
THE RECOMMENDED MOUNTING POSITIONS ACCORDING TO THE LIGHT CURTAIN LENGTH ARE SHOWN IN FIGURE 52 AND IN THE SUBSEQUENT TABLE.



DESCRIPTION	L2[mm]	A [mm]	B [mm]	C [mm]
SGx-yyy2-050-OO-k-x	520,5	320,5	100	-
SGx- yyy3 -080-OO-k-x	820,5	370,5	125	-
SGx- yyy4 -090-OO-k-x	920,5	620,5	150	-
SGx- yyy4 -120-OO-k-x	1220,5	1020,5	100	510,25
SG4-40-060-OO-E	700,5	420,5	140	-
SG4-40-090-OO-E	1000,5	770,5	115	-
SG4-40-120-OO-E	1300,5	1120,5	90	560,25

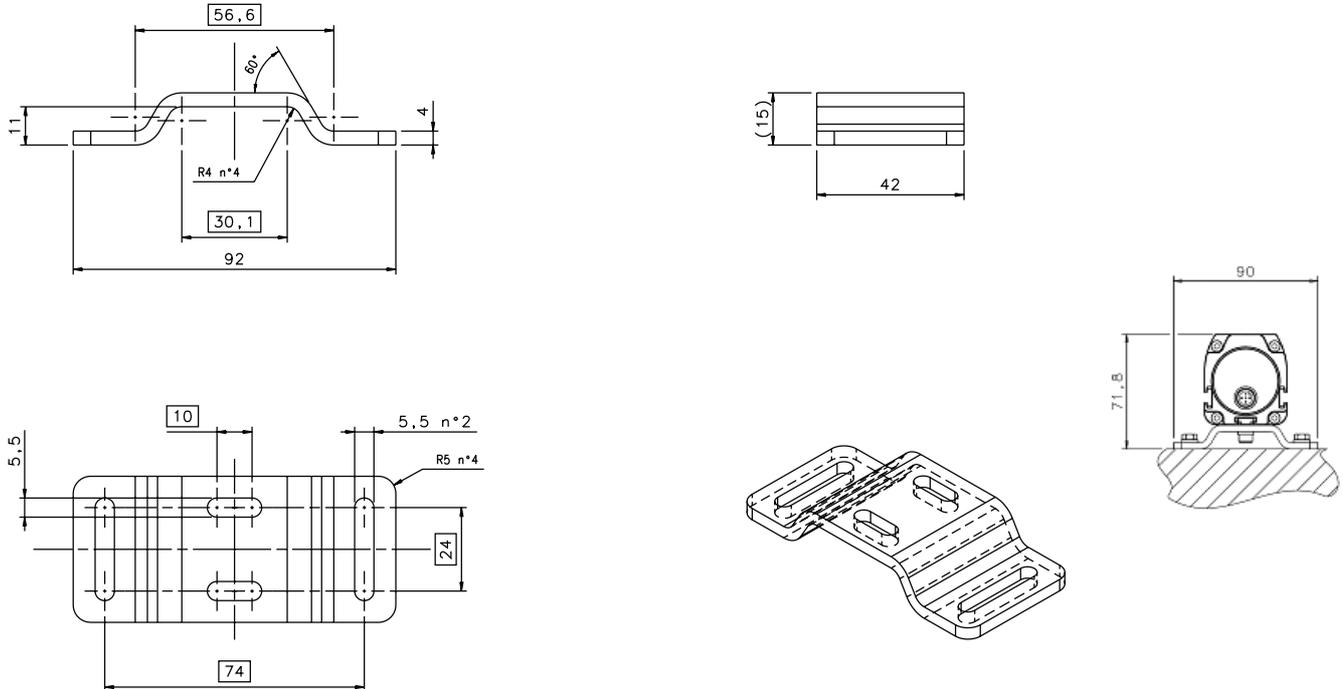
Legend
 x : 2 or 4;
 yyy : • B
 • BSR
 • BLR
 k : E or W
 x : C

ROTATIVE FIXING BRACKET



MODEL	DESCRIPTION	CODE
ST-K4ROT-SG BODY BIG	Rotative Fixing Bracket (4 pcs kit)	95ASE1960

REAR FIXING BRACKET



MODEL	DESCRIPTION	CODE
ST-K4REAR-SG BODY BIG	Rear Fixing Bracket (4 pcs kit)	95ASE1970

NOTE: The aforementioned fixing brackets are not available as outfit

MODEL	DESCRIPTION	CODE
SG-DM 150	Deviating mirror version 150 mm	95ASE1670
SG-DM 600	Deviating mirror version 600 mm	95ASE1680
SG-DM 900	Deviating mirror version 900 mm	95ASE1690
SG-DM 1200	Deviating mirror version 1200 mm	95ASE1700
SG-DM 1650	Deviating mirror version 1650 mm	95ASE1710
SG-DM 1900	Deviating mirror version 1900 mm	95ASE1720
SE-S 800	Column and floor stand H= 800 mm	95ACC1730
SE-S 1000	Column and floor stand H= 1000 mm	95ACC1740
SE-S 1200	Column and floor stand H= 1200 mm	95ACC1750
SE-S 1500	Column and floor stand H= 1500 mm	95ACC1760
SE-S 1800	Column and floor stand H= 1800 mm	95ACC1770
SG-SB	Protective stand base	95ASE1660
SG-PS 600	Protective stand H= 600 mm	95ASE1610
SG-PS 900	Protective stand H= 900 mm	95ASE1620
SG-PS 1200	Protective stand H= 1200 mm	95ASE1630
SG-PS 1650	Protective stand H = 1650 mm	95ASE1640
SG-PS 1900	Protective stand H = 1900 mm	95ASE1650
TP-40	Test piece Ø 40 mm	95ASE1820
TP-50	Test piece Ø 50 mm	95ASE1790
TP-90	Test piece Ø 90 mm	95ASE1800
SG-LP	Laser pointer	95ASE5590
CS-A1-03-U-03	5-pole M12 cable (axial) 3 m	95ASE1170
CS-A1-03-U-05	5-pole M12 cable (axial) 5 m	95ASE1180
CS-A1-03-U-10	5-pole M12 cable (axial) 10 m	95ASE1190
CS-A1-03-U-15	5-pole M12 cable (axial) 15 m	95ASE1200
CS-A1-03-U-25	5-pole M12 cable (axial) 25 m	95ASE1210
CS-A1-03-U-50	5-pole M12 cable (axial) 50m	95A252700
CS-A1-06-U-03	8-pole M12 cable (axial) 3 m	95ASE1220
CS-A1-06-U-05	8-pole M12 cable (axial) 5 m	95ASE1230
CS-A1-06-U-10	8-pole M12 cable (axial) 10 m	95ASE1240
CS-A1-06-U-15	8-pole M12 cable (axial) 15 m	95ASE1250
CS-A1-06-U-25	8-pole M12 cable (axial) 25 m	95ASE1260
CS-A1-06-U-50	8-pole M12 cable (axial) 50 m	95A252710
CS-A1-10-U-03	12-pole M12 cable (axial) 3 m	95A252720
CS-A1-10-U-05	12-pole M12 cable (axial) 5 m	95A252730
CS-A1-10-U-10	12-pole M12 cable (axial) 10 m	95A252740
CS-A1-10-U-15	12-pole M12 cable (axial) 15 m	95A252750
CS-A1-10-U-25	12-pole M12 cable (axial) 25 m	95A252760
CS-A1-10-U-50	12-pole M12 cable (axial) 50 m	95A252770
SG-AS-ARM ^{note 1}	Active sensor single arm	95ASE1840
SG-PR-ARM ^{note 1}	Passive reflector single arm	95ASE1850
SG-F1-G1-ARMS ^{note 2}	F1-G1 muting arm for RX	95ASE1880
SG-F2-G2-ARMS ^{note 2}	F2-G2 muting arm for RX	95ASE1890
SG-CB-B	Muting C bracket big kit	95ASE1920
LMS	Muting lamp	95ASE1830
LMS-1	Modular Muting lamp	95ACC1990
LMS-2	Muting lamp - horizontal mounting	95ACC2000
LMS-3	Muting lamp - vertical mounting	95ACC2010
SU-LMS-1A	Basic module for LMS-1	95ACC2020
SU-LMS-1B	Tower module for LMS-1	95ACC2030
CV-Y1-02-B-007	M12 4-pole cable 0.7m for "T" versions with integrated sensors	95ACC2560
CV-L1-02-B-007	M12 4-pole cable 0.7m for "L" versions with integrated sensors	95ACC2570
SE-SR2	TYPE 4 SAFETY RELAY 3NO 1NC	95ACC6170
CS ME-03VU24-Y14	EDM RELAY BOX	95ASE1270

note 1: With RRX Muting arms the overall operating distance is reduced to **3 meters**.

RRX Muting arms **MUST BE USED ONLY WITH 0.5..30/60 MT OPERATING DISTANCE MODELS**

note 2: With F/G Muting arms the overall operating distance is reduced to **7 meters**.

F/G Muting arms **MUST BE USED ONLY WITH 0.5..30/60 MT OPERATING DISTANCE MODELS**

MODEL SELECTION TABLE

BASE MODELS

Description	Protected height [mm]	Beams N	Response time [msec]	Resolution [mm]	Interaxis [mm]	Operating distance [m]	Code
SG2-B2-050-OO-E	500	2	11	519,75	500	0.5..60	957851240
SG2-B3-080-OO-E	800	3	12	419,75	400	0.5..60	957851250
SG2-B4-090-OO-E	900	4	13	319,75	300	0.5..60	957851260
SG2-B4-120-OO-E	1200	4	13	419,75	400	0.5..60	957851270
SG4-B2-050-OO-E	500	2	11	519,75	500	6..60	957851280
SG4-B3-080-OO-E	800	3	12	419,75	400	6..60	957851290
SG4-B4-090-OO-E	900	4	13	319,75	300	6..60	957851300
SG4-B4-120-OO-E	1200	4	13	419,75	400	6..60	957851310
SG4-40-060-OO-E	660	33	20	40	20	6..60	957851570
SG4-40-090-OO-E	960	48	22	40	20	6..60	957851580
SG4-40-120-OO-E	1260	63	24	40	20	6..60	957851590

MUTING MODELS

Description	Protected height [mm]	Beams N	Response time [msec]	Resolution [mm]	Interaxis [mm]	Operating distance [m]	Code
SG2-B2-050-OO-W-C	500	2	No code: 11 Code: 17	519,75	500	0.5..60	957851320
SG2-B3-080-OO-W-C	800	3	No code: 12 Code: 19	419,75	400	0.5..60	957851330
SG2-B4-090-OO-W-C	900	4	No code: 13 Code: 21	319,75	300	0.5..60	957851340
SG2-B4-120-OO-W-C	1200	4	No code: 13 Code: 21	419,75	400	0.5..60	957851350
SG4-BSR2-050-OO-W-C	500	2	No code: 11 Code: 17	519,75	500	0.5..30	957851400
SG4-BSR3-080-OO-W-C	800	3	No code: 12 Code: 19	419,75	400	0.5..30	957851410
SG4-BSR4-090-OO-W-C	900	4	No code: 13 Code: 21	319,75	300	0.5..30	957851420
SG4-BSR4-120-OO-W-C	1200	4	No code: 13 Code: 21	419,75	400	0.5..30	957851430
SG4-BLR2-050-OO-W-C	500	2	No code: 11 Code: 17	519,75	500	6..60	957851360
SG4-BLR3-080-OO-W-C	800	3	No code: 12 Code: 19	419,75	400	6..60	957851370
SG4-BLR4-090-OO-W-C	900	4	No code: 13 Code: 21	319,75	300	6..60	957851380
SG4-BLR4-120-OO-W-C	1200	4	No code: 13 Code: 21	419,75	400	6..60	957851390



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SG BODY COMPACT SERIES

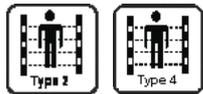
SG BODY COMPACT is the new family of Datalogic Automation Type 2 and Type 4 safety light curtains for body protection and access control able to rapidly and effectively solve all the industrial safety applications mainly in automotive field, packaging and material handling.

SG BODY COMPACT perfectly combines vanguard technology, extremely high performances and Datalogic distinctive **SAFEasy™** concept.

2, 3 and 4 beams models with controlled height of 500, 800, 900 and 1200mm all reaching 50m operating distance are available.

All SG BODY "COMPACT" models are then provided in 2 different versions:

- **BASE** version represents the ideal product for all applications where Muting function is not required but EDM and MANUAL/AUTOMATIC restart functions are basic requirements for very standard applications;
- **MUTING** version series satisfy all applications that require the Muting function, thanks to the use of preassembled, pre-cabled and pre-aligned Muting sensors. Polarized retroreflex or through beam models with 'T' integrated Muting sensors for two-way Muting, 'L' integrated Muting sensors for one-way and linear versions without integrated Muting sensors.



HIGHLIGHTS

- Up to 50mt operating distance
- 2,3,4 beams 500, 800, 900 and 1200mm controlled height
- Two versions : BASE and MUTING
- No programming required : integrated safety functions WIRE or DIP SWITCH selectable
- Integrated Muting with all advanced features associated to like 'L' or 'T' configurations, EDM, Manual/ Automatic RESTART selectable
- Integrated LED MUTING lamp;
- Same profile of SE series;
- Compatible with SE series;
- TOP-BOTTOM Rotating brackets for easier alignment
- Type 2 models SIL 2 and PL d and Type 4 models SIL 3 PL e

APPLICATIONS

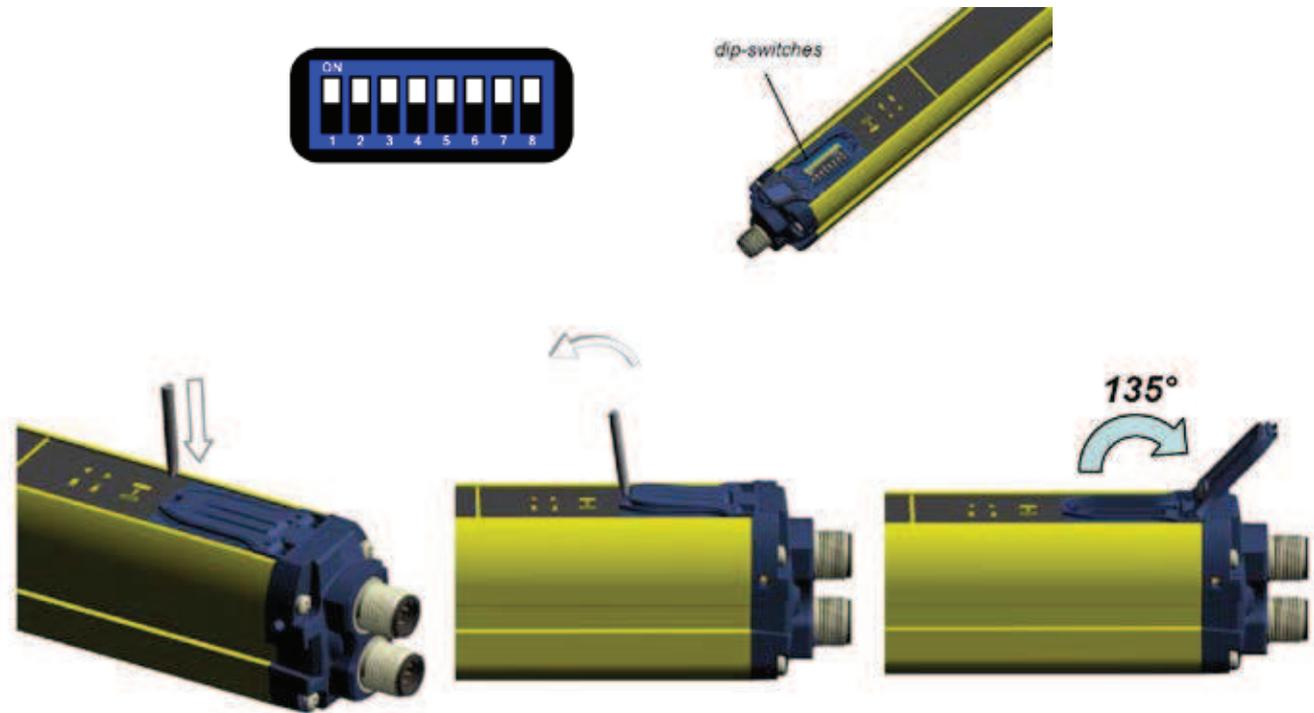
Extreme reliability and simplicity make the SG BODY COMPACT safety light curtains the ideal solution for the following applications:

- Automatic machines
- Robots
- Automatic assembling lines
- Palletizers and Depalletizers



SETTINGS

A slot located in the front side of the RX unit, that can be easily opened using a screwdriver, simplifies the access to the internal dip-switches used for enabling/configuring integrated functions

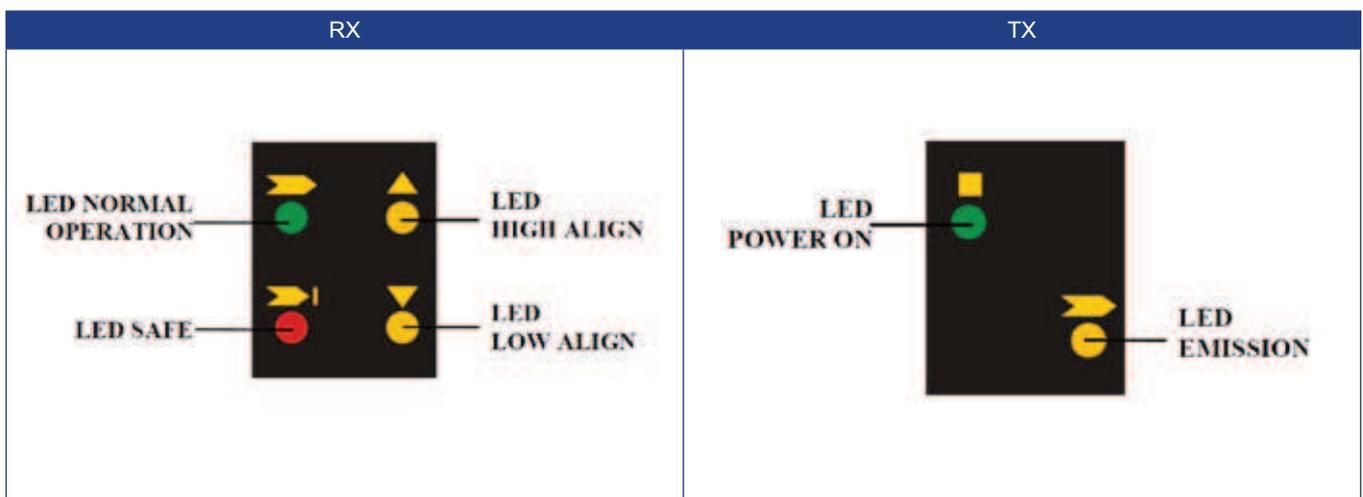


BASE VERSION			
Switch	Function	ON	OFF
1,5	-	-	-
2,6	-	-	-
3,7	EDM	Deactivated	Activated
4,8	Restart	Automatic	Manual

MUTING VERSION			
Switch	Function	ON	OFF
1,5	Muting time-out	10 min.	∞
2,6	Muting	T config. (4 beams)	L config. (2 beams)
3,7	EDM	Deactivated	Activated
4,8	Restart	Automatic	Manual

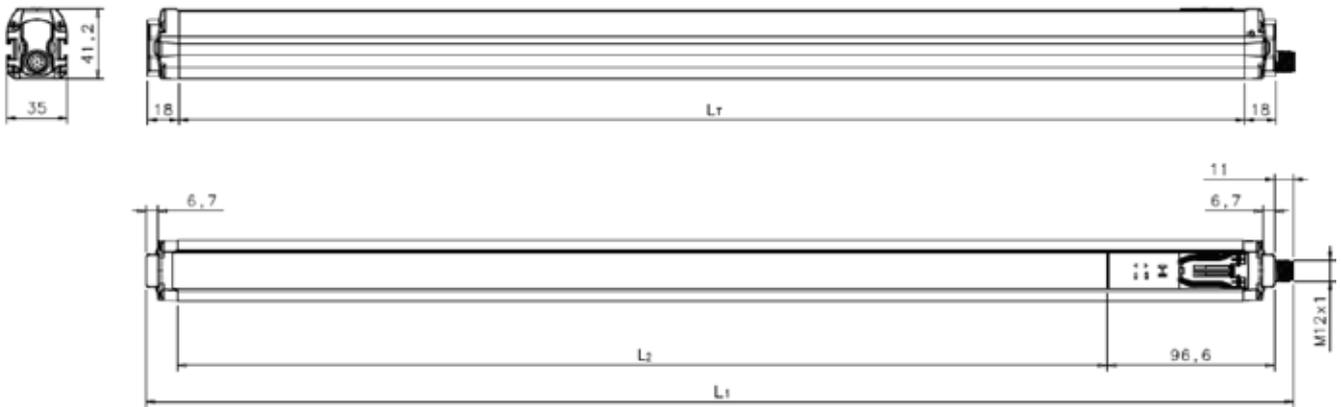
INDICATORS

The operator can check the operating condition of the light curtains through four LEDs positioned on the receiving unit and two LEDs on the emitting unit.



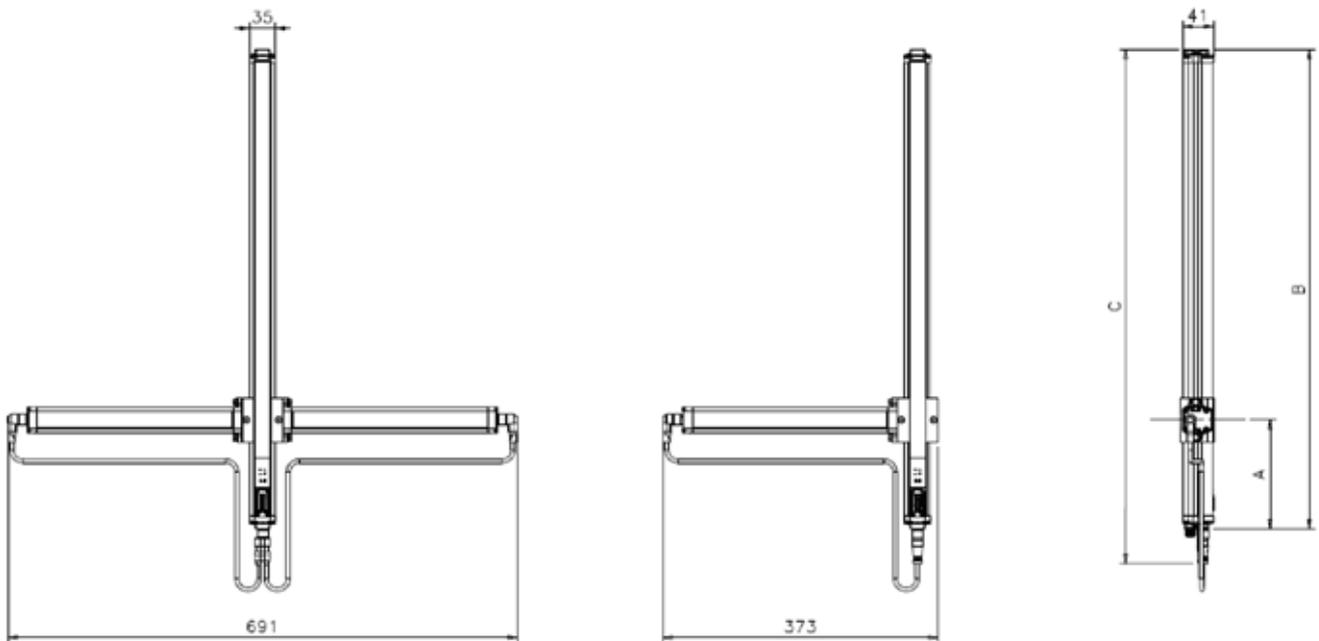
DIMENSIONS

BASE VERSION



Model	L1	L2	L3
2 BEAMS 500mm	664	617	538.4
3 BEAMS 800mm	964	917	838.4
4 BEAMS 900mm	1064	1017	938.4
4 BEAMS 1200mm	1364	1317	1238.4

MUTING VERSION



Model	A [mm]	B [mm]	C [mm]
2 BEAMS 500mm	120-260	653	700
3 BEAMS 800mm	120-260	953	1000
4 BEAMS 900mm	120-260	1053	1100
4 BEAMS 1200mm	120-260	1353	1400

CONNECTIONS

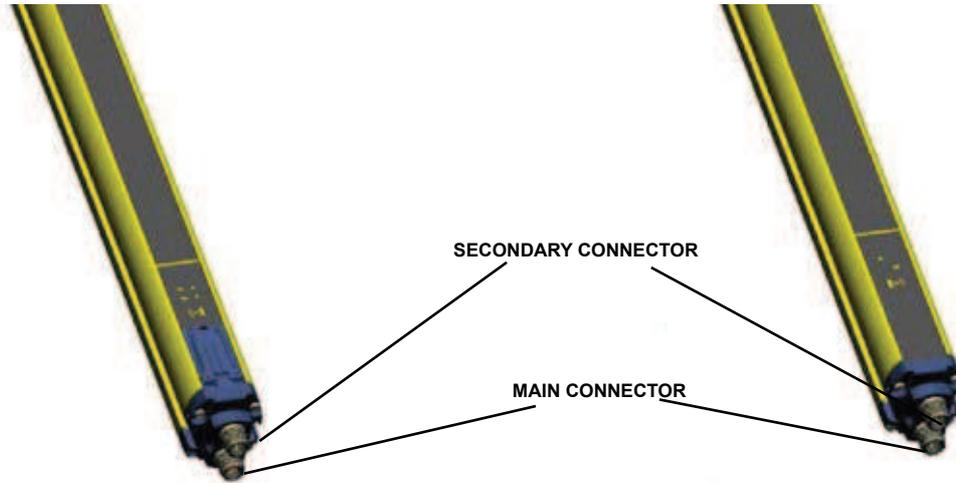
BASE VERSION CONNECTIONS



RX	TX
<p>M12 8-pole connector</p> <ul style="list-style-type: none"> 1 = white = TEST/START 2 = brown = 24 Vdc 3 = green = NOT USED 4 = yellow = EDM 5 = grey = OSSD1 6 = pink = OSSD2 7 = blue = 0V 8 = red = NOT USED 	<p>M12 4-pole connector</p> <ul style="list-style-type: none"> 1 = Brown = 24Vdc 2 = White = NOT USED 3 = Blue = 0V 4 = Black = NOT USED

CONNECTIONS

MUTING VERSION CONNECTIONS



RX	TX
<p>Main connector: M12 8-pole connector</p> <ul style="list-style-type: none"> 1 = white = TEST/START 2 = brown = 24 VDC 3 = green = OVERRIDE 1 4 = yellow = EDM 5 = grey = OSSD1 6 = pink = OSSD2 7 = blue = 0V 8 = red = OVERRIDE 2 	<p>Main connector: M12 4-pole connector</p> <ul style="list-style-type: none"> 1 = brown = 24 VDC 2 = white = NOT USED 3 = blue = 0 V 4 = black = NOT USED
<p>Secondary connector: M12 5-pole connector</p> <ul style="list-style-type: none"> 1 = brown = 24 VDC 2 = white = MUTING2 3 = blue = 0V 4 = black = MUTING1 5 = grey = NOT USED 	<p>Secondary connector: M12 5-pole connector</p> <ul style="list-style-type: none"> 1 = brown = 24 VDC 2 = white = NOT USED 3 = blue = 0 V 4 = black = NOT USED 5 = grey = NOT USED

TECHNICAL DATA

	BASE VERSION	MUTING VERSION
Power supply = Vdd:	24 Vdc ± 20% (SELV/PELV)	24 Vdc ± 20% (SELV/PELV)
Internal capacitance:	23 nF (Tx) /120 nF (Rx)	23 nF (Tx) /120 nF (Rx)
Outputs:	2 PNP outputs (2 NPN on request) short-circuit protection max: 1.4A at 55°C min: 1.1A at -10°C	2 PNP outputs (2 NPN on request) short-circuit protection max: 1.4A at 55°C min: 1.1A at -10°C
Output current:	0.5 A max / each output	0.5 A max / each output
Output voltage - ON min:	Vdd -1 V	Vdd -1 V
Output voltage - OFF max:	0.2 V	0.2 V
Leakage current:	< 1mA	< 1mA
Capacitive load (pure):	65 nF max at 25°C	65 nF max at 25°C
Response time:	From 14 to 16 ms	From 14 to 16 ms
Emission type:	Infrared (880 nm)	Infrared (880 nm)
Resolution:	315 mm (4 beams) 415 mm (3 and 4 beams) 515 mm (2 beams)	315 mm (4 beams) 415 mm (3 and 4 beams) 515 mm (2 beams)
Operating distance:	0.5...50 m	0.5...3 m (SG2-T/L and SG4-T/L); 0.5...50 m (SG2-S and SG4-S)
Ambient light rejection	IEC 61496-2	IEC 61496-2
Safety category:	Type 4 / Type 2 (ref. EN 61496-1)	Type 4 / Type 2 (ref. EN 61496-1)
Auxiliary functions:	Restart/EDM/Reset	Muting / Override Restart/EDM/Reset
Time-out period:		Muting: 10 minutes / ∞ Override: 2 minutes
Operating temperature:	- 10...+ 55 °C	- 10...+ 55 °C
Storage temperature:	- 25...+ 70 °C	- 25...+ 70 °C
Temperature class:	T6 (Tx/Rx/Arm)	T6 (Tx/Rx/Arm)
Humidity:	15...95 % (no condensation)	15...95 % (no condensation)
Electrical protection:	Class 1 (**refer to note)	Class 1 (**refer to note)
Mechanical protection:	IP 65 (EN 60529)	IP 65 (EN 60529)
Ambient light rejection:	IEC-61496-2	IEC-61496-2
Vibrations:	0.35 mm width, 10 ... 55 Hz frequency, 20 sweep for each axis, 1octave/min (EN 60068-2-6)	0.35 mm width, 10 ... 55 Hz frequency, 20 sweep for each axis, 1octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10 G) 1.000 shock for each axis (EN 60068-2-29)	16 ms (10 G) 1.000 shock for each axis (EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)	Painted aluminium (yellow RAL 1003)
Cap material:	PC Lexan 943A	PC Lexan 943A
Lens material:	PMMA	PMMA
Connections:	Tx: conn. M12-4 poles Rx: conn. M12-8 poles	Tx: conn. M12-4 poles + conn. M12-5 poles Rx: conn. M12-8 poles + conn. M12-5 poles
Cable length:	50 m. max (* refer to note) (with 50nF capacitive load and Vdc=24V)	

* if a longer cable has to be used, please verify that the same specifications are respected

** Electrical protection

	Class 1	Class 3
Protective grounding	Compulsory	Not accepted
Symbol for connection protective grounding	Compulsory	Not accepted
Protection by means of extra-low voltage with protective separation (SELV and PELV)	Recommended	Compulsory

RELIABILITY DATA

	BASE VERSION	MUTING VERSION
PL (Ref. EN ISO 13849-1)	SG2 : d SG4 : e	SG2 : d SG4 : e
CAT (Ref. EN 954-1)	SG2 : 2 SG4 : 4	SG2 : 2 SG4 : 4
SIL (Ref. EN IEC 61508)	SG2 : 2 SG4 : 3	SG2 : 2 SG4 : 3
SIL CL (Ref. EN IEC 62061)	SG2 : 2 SG4 : 3	SG2 : 2 SG4 : 3
PFHD – Probability of Danger Failure (1/h)	SG2 : 1,00E-08 SG4 : 2,62E-09	SG2 : 1,00E-08 SG4 : 2,62E-09
T1 – Life Time (Years)	SG2 : 20 SG4 : 20	SG2 : 20 SG4 : 20
MTTFD - Mean Time to Danger Failure (Years)	SG2 : 337 SG4 : 384	SG2 : 337 SG4 : 384
DC – Diagnostic Coverage (%)	SG2 : 97% SG4 : 98,9%	SG2 : 97% SG4 : 98,9%
SFF – Safe Failure Fraction (%)	SG2 : 98,14% SG4 : 99,38%	SG2 : 98,14% SG4 : 99,38%
HFT – Hardware Fault Tolerance	SG2 : 0 SG4 : 1	SG2 : 0 SG4 : 1

MODEL SELECTION TABLE
BASE VERSION

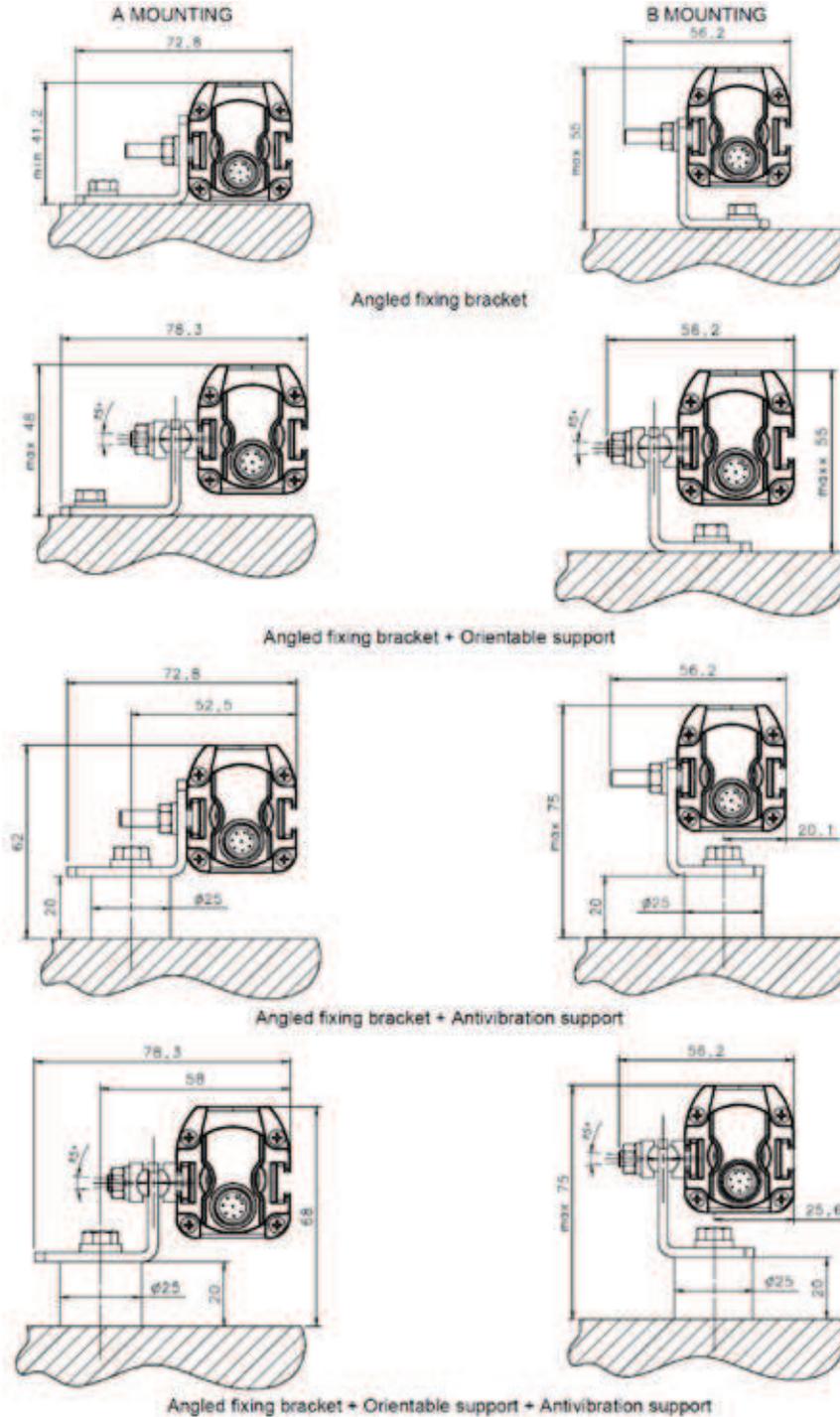
Description	Prot. height [mm]	Beams N.	Resp. time [msec]	Resolution [mm]	Interaxis [mm]	Op. distance [m]	Code
SG2-S2-050-PP-E	515	2	14	515	500	0.5..50	957851000
SG2-S3-080-PP-E	815	3	14	415	380	0.5..50	957851010
SG2-S4-090-PP-E	915	4	16	315	300	0.5..50	957851020
SG2-S4-120-PP-E	1215	4	16	415	400	0.5..50	957851030
SG4-S2-050-PP-E	515	2	14	515	500	0.5..50	957851040
SG4-S3-080-PP-E	815	3	14	415	380	0.5..50	957851050
SG4-S4-090-PP-E	915	4	16	315	300	0.5..50	957851060
SG4-S4-120-PP-E	1215	4	16	415	400	0.5..50	957851070

MUTING VERSION

Description	Prot. height [mm]	Beams N.	Resp. time [msec]	Resolution [mm]	Interaxis [mm]	Op. distance [m]	Code
SG2-S2-050-PP-W	515	2	14	515	500	0.5..50	957851080
SG2-S3-080-PP-W	815	3	14	415	400	0.5..50	957851090
SG2-S4-090-PP-W	915	4	16	315	300	0.5..50	957851100
SG2-S4-120-PP-W	1215	4	16	415	400	0.5..50	957851110
SG2-L2-050-PP-W	515	2	14	515	500	0.5..3	957851120
SG2-L3-080-PP-W	815	3	14	415	400	0.5..3	957851130
SG2-T2-050-PP-W	915	2	14	515	500	0.5..3	957851140
SG2-T3-080-PP-W	1215	3	14	415	400	0.5..3	957851150
SG4-S2-050-PP-W	515	2	14	515	500	0.5..50	957851160
SG4-S3-080-PP-W	815	3	14	415	400	0.5..50	957851170
SG4-S4-090-PP-W	915	4	16	315	300	0.5..50	957851180
SG4-S4-120-PP-W	1215	4	16	415	400	0.5..50	957851190
SG4-L2-050-PP-W	515	2	14	515	500	0.5..3	957851200
SG4-L3-080-PP-W	815	3	14	415	400	0.5..3	957851210
SG4-T2-050-PP-W	515	2	14	515	500	0.5..3	957851220
SG4-T3-080-PP-W	815	3	14	415	400	0.5..3	957851230

ACCESSORY SELECTION AND ORDER INFORMATION

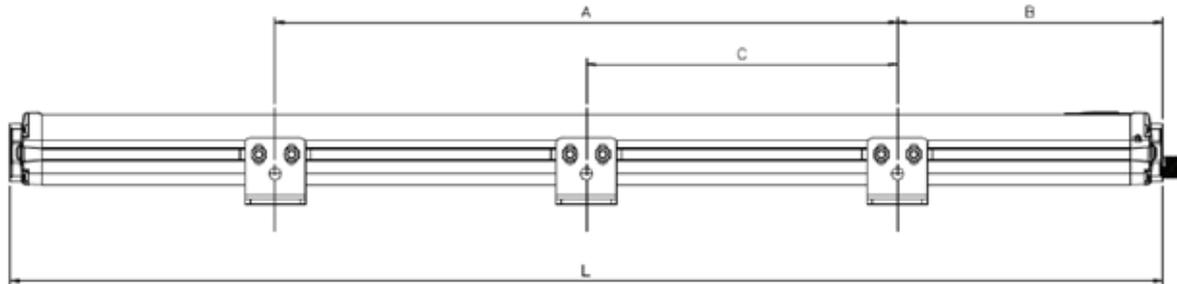
SIDE FIXING BRACKET



MODEL	DESCRIPTION	CODE
ST-KSTD	Fixing brackets for angle mounting (4 pcs kit)	95ACC1670
ST-K4AV	Antivibration support (4 pcs kit)	95ACC1700
ST-K6AV	Antivibration support (6 pcs kit)	95ACC1710
ST-K4OR	Orientable support (4 pcs kit)	95ACC1680
ST-K6OR	Orientable support (6 pcs kit)	95ACC1690

ACCESSORY SELECTION AND ORDER INFORMATION

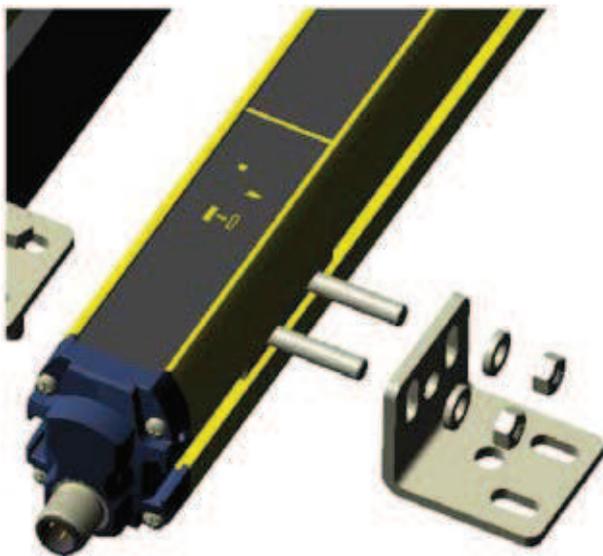
The recommended mounting positions according to the light curtain length are shown in the subsequent table.



DESCRIPTION	L2[mm]	A [mm]	B [mm]	C [mm]
SGx-S2-050-PP-y	653	342	150	-
SGx-S3-080-PP-y	953	542	200	-
SGx-S4-090-PP-y	1053	602	220	-
SGx-S4-120-PP-y	1353	942	200	472
SGx-L2-050-PP-W	653	342	150	-
SGx-L3-080-PP-W	953	542	200	-
SGx-T2-050-PP-W	653	342	150	-
SGx-T3-080-PP-W	953	542	200	-

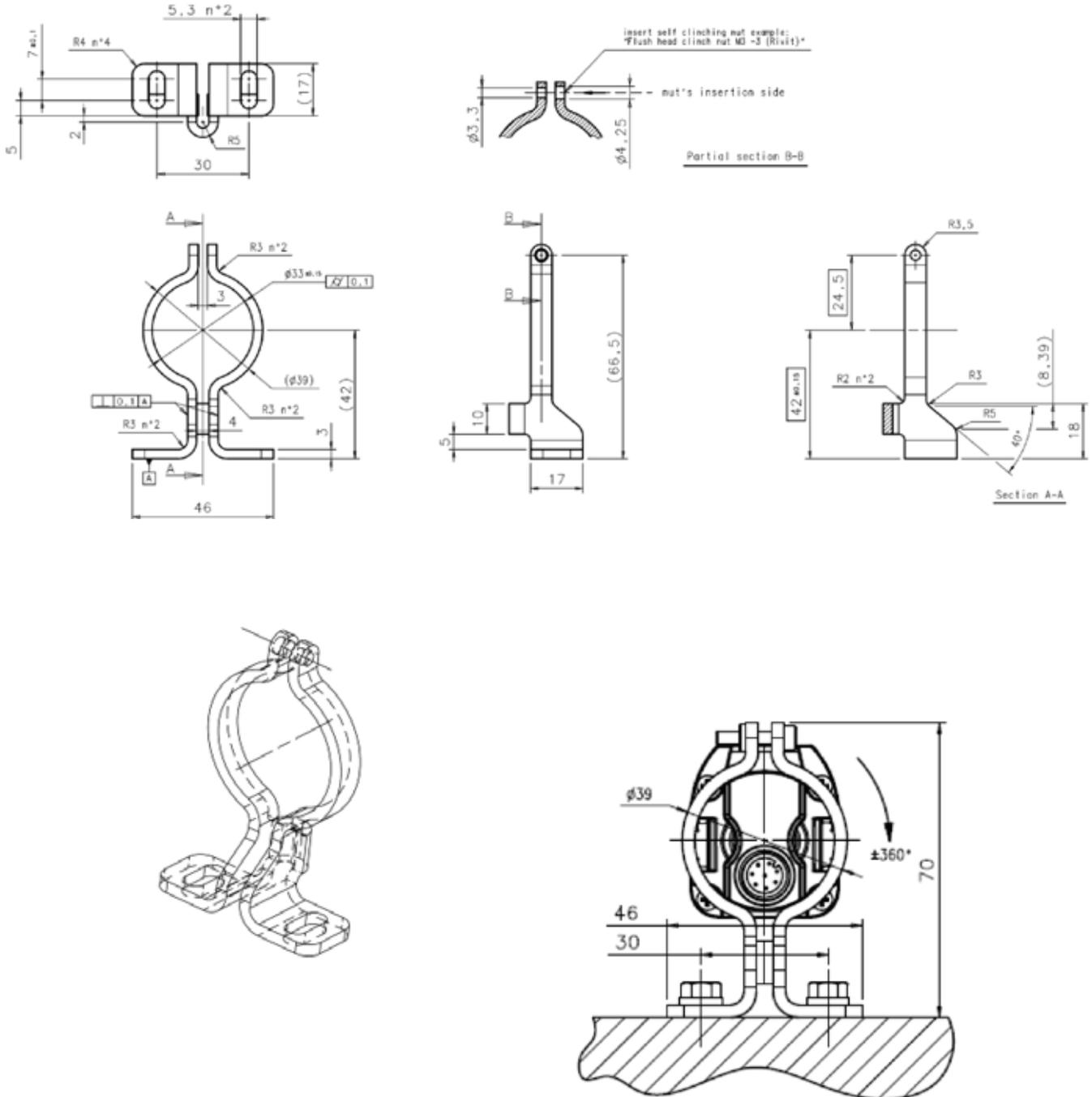
x = Type 2 or Type 4 models
 y = E for BASE version W for MUTING version

NOTE: The side fixing brackets are provided into the package as outfit. Models with controlled area less than 1200mm are provided with 4 side fixing brackets; models with 1200mm controlled area are provided with 6 side fixing brackets.



ACCESSORY SELECTION AND ORDER INFORMATION

ROTATIVE FIXING BRACKET

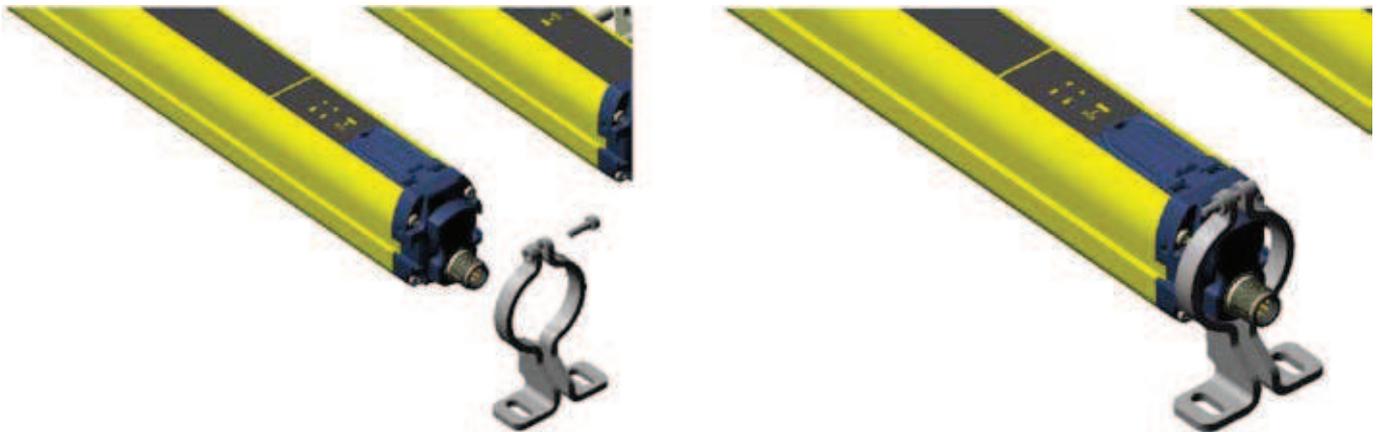


MODEL	DESCRIPTION	CODE
ST-K4ROT-SG BODY COMPACT	Rotative Fixing Bracket (4 pcs kit)	95ASE2040

NOTE: The rotating fixing brackets are not available as outfit

ACCESSORY SELECTION AND ORDER INFORMATION

ROTATIVE FIXING BRACKET MOUNTING

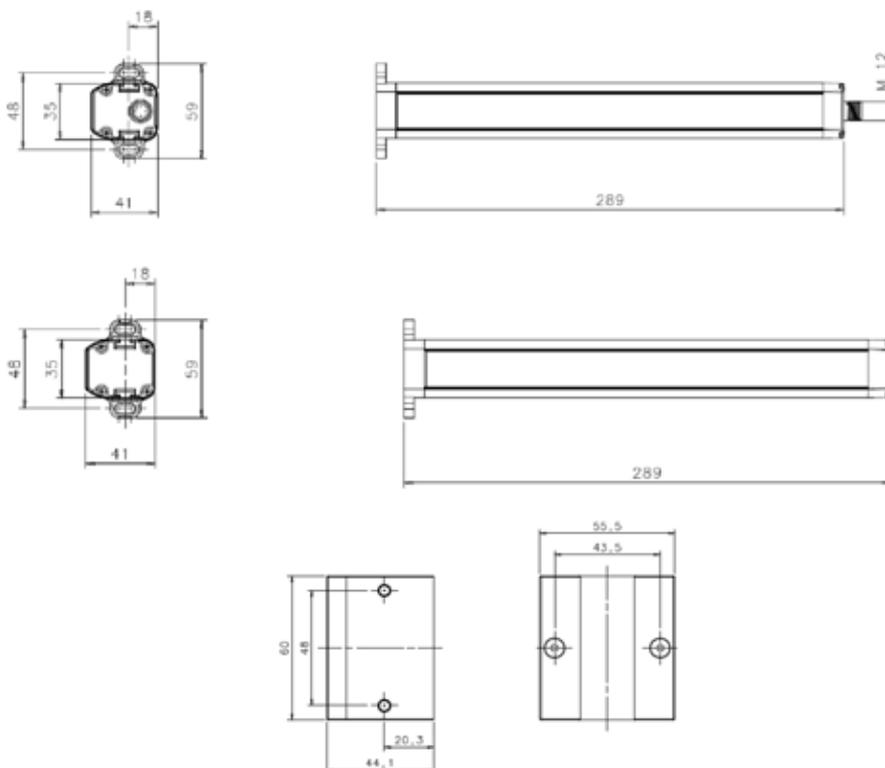


MUTING ARMS

SG BODY COMPACT series light curtains are available in T models for bidirectional Muting and L models for unidirectional Muting with Muting arms provided of retroreflex sensors; also linear models without integrated Muting sensors are available. These models can be converted in T models and L models by means of Muting arms accessories.

Muting arms are available in 2 versions: with retroreflex sensors and with emitter-receiver sensors. SG BODY COMPACT light curtains are designed, on both emitter and receiver, for mounting of both typology of Muting arms.

The following figures show, respectively, the dimensions of single active arms, of single passive arms, and the corresponding fixing bracket stand alone.



ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE
SE-S 800	Column and floor stand H= 800 mm	95ACC1730
SE-S 1000	Column and floor stand H= 1000 mm	95ACC1740
SE-S 1200	Column and floor stand H= 1200 mm	95ACC1750
SE-S 1500	Column and floor stand H= 1500 mm	95ACC1760
SE-S 1800	Column and floor stand H= 1800 mm	95ACC1770
SG-SB	Protective stand base	95ASE1660
SG-PS 600	Protective stand H= 600 mm	95ASE1610
SG-PS 900	Protective stand H= 900 mm	95ASE1620
SG-PS 1200	Protective stand H= 1200 mm	95ASE1630
SG-PS 1650	Protective stand H = 1650 mm	95ASE1640
SG-PS 1900	Protective stand H = 1900 mm	95ASE1650
TP-50	Test piece Ø 50 mm	95ASE1790
TP-90	Test piece Ø 90 mm	95ASE1800
SG-LP	Laser pointer	95ASE5590
CS-A1-03-U-03	5-pole M12 cable (axial) 3 m	95ASE1170
CS-A1-03-U-05	5-pole M12 cable (axial) 5 m	95ASE1180
CS-A1-03-U-10	5-pole M12 cable (axial) 10 m	95ASE1190
CS-A1-03-U-15	5-pole M12 cable (axial) 15 m	95ASE1200
CS-A1-03-U-25	5-pole M12 cable (axial) 25 m	95ASE1210
CS-A1-03-U-50	5-pole M12 cable (axial) 50m	95A252700
CS-A1-06-B-NC	axial M12-8 pole	95ACC2550
CV-A1-22-B-03	axial shielded 4-pin 3 m cable	95ACC1480
CV-A1-22-B-05	axial shielded 4-pin 5 m cable	95ACC1490
CV-A1-22-B-10	axial shielded 4-pin 10 m cable	95ACC1500
CV-A1-22-B-15	axial shielded 4-pin 15 m cable	95ACC2070
CV-A1-22-B-25	axial shielded 4-pin 25 m cable	95ACC2090
CV-A1-26-B-03	axial shielded 8-pin 3 m cable	95ACC1510
CV-A1-26-B-05	axial shielded 8-pin 5 m cable	95ACC1520
CV-A1-26-B-10	axial shielded 8-pin 10 m cable	95ACC1530
CV-A1-26-B-15	axial shielded 8-pin 15 m cable	95ACC2080
CV-A1-26-B-25	axial shielded 8-pin 25 m cable	95ACC2100
CV-A2-22-B-03	radial shielded 4-pin 3 m cable	95ACC1540
CV-A2-22-B-05	radial shielded 4-pin 5 m cable	95ACC1550
CV-A2-22-B-10	radial shielded 4-pin 10 m cable	95ACC1560
SG-AS-ARM ^{note 1}	Active sensor single arm	95ASE1840
SG-PR-ARM ^{note 1}	Passive reflector single arm	95ASE1850
SG-L-ARMS	L COUPLE ARMS	95ASE1860
SG-T-ARMS	T COUPLE ARMS	95ASE1870
SG-F1-G1-ARMS ^{note 2}	F1-G1 muting arm for RX	95ASE1880
SG-F2-G2-ARMS ^{note 2}	F2-G2 muting arm for RX	95ASE1890
SG-CB-C	Muting C bracket compact kit	95ASE1930
CV-Y1-02-B-007	M12 4-pole cable 0.7m for "T" vesions with integrated sensors	95ACC2560
CV-L1-02-B-007	M12 4-pole cable 0.7m for "L" vesions with integrated sensors	95ACC2570
SE-SR2	TYPE 4 SAFETY RELAY 3NO 1NC	95ACC6170
CS ME-03VU24-Y14	EDM RELAY BOX	95ASE1270

note 1: With RRX Muting arms the overall operating distance is reduced to **3 meters**.

note 2: With F/G Muting arms the overall operating distance is reduced to **7 meters**. F/G Muting arms **can be mounted on TX and RX units by using secondary connectors**.



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SG-BODY "BIG" REFLECTOR SERIES

The new **SG BODY "BIG"** safety light curtain series thanks to its new housing together with the innovative design optical-electronic platform ensures the performance of high-level safety light curtain required in the material handling market.

Classical TX-RX models are now completed by "**REFLECTOR**" models made by an active unit and a complete passive unit, with integrated moulded plastic mirrors, reaching up to **8m**, available in **2, 3 and 4 beams** with **500, 800, 900 and 1200mm** controlled height. REFLECTOR models are provided in 2 different versions :

- **BASE** version that represents the ideal product for all applications where Muting function is not required but EDM, MANUAL/AUTOMATIC restart are fundamental;
- **MUTING** version integrates the Muting function and completes it with all advanced features associated to like 'L' or 'T' configurations, edged or triggered **OVERRIDE** and external Muting enable.

Total absence of "DEAD ZONE", 7 segment displays **USER INTERFACE** for signaling and diagnostics, alignment **AID** function, both integrated and external muting lamp and 3 different types of mounting brackets (**SWIVELLING SIDE** for "**THIN MOUNTING**", **TOP-BOTTOM ROTATING** and **REAR**) complete the product and make it the ideal and most performing solution for all the industrial application.



HIGHLIGHTS

- Same big sturdy profile for both active and passive unit with same length;
- Up to 8mt operating distance;
- 2,3,4 beams with 500, 800, 900 and 1200mm controlled height;
- Two models : **BASE** and **MUTING**;
- No programming required : integrated safety functions **DIP SWITCH** selectable;
- Integrated muting Muting with all advanced features associated to like anti-interference coding, 'L' o 'T' configurations, edged or triggered **OVERRIDE** and external Muting enable.
- Same profile for active and passive unit
- Type 4 models **SIL 3** and **PL e**

APPLICATIONS

Extreme reliability and simplicity make the **SG BODY** safety light curtains the ideal solution for the following applications:

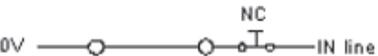
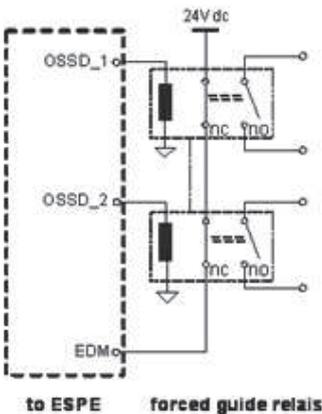
- Automatic machines
- Robots
- Automatic assembling lines
- Palletizers and Depalletizers



SETTINGS

BASE VERSION

In BASE versions integrated functions can be selected or enabled through dedicate wires on ACTIVE UNIT M12 connectors

Line	Layout connection	Behaviour
RESET/RESTART/RESTART MODE		Automatic restart
RESET/RESTART/RESTART MODE		Manual restart
EDM		(EDM ENABLE: active)
EDM ENABLE		EDM enabled
OSSDs		

MUTING VERSION

A closing cap coupled with the top cap of the ACTIVE UNIT can be unscrewed to access dip-switches slot. By means of internal dip-switches the user can set-up some functions.

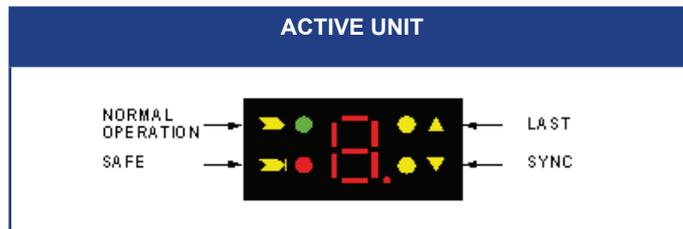
ACTIVE UNIT closing cap contains LED integrated MUTING lamp



	ON	OFF
Dip switch n°1: Muting timeout	10 min	∞
Dip switch n°2: Muting T/L	T	L
Dip switch n°3: Muting filter	Disabled	Enabled
Dip switch n°4: Override restart	Manual	Automatic
Dip switch n°5: Override mode	Edged	Triggered
Dip switch n°6: EDM enable	EDM on	EDM off
Dip switch n°7-8: not used		

INDICATORS

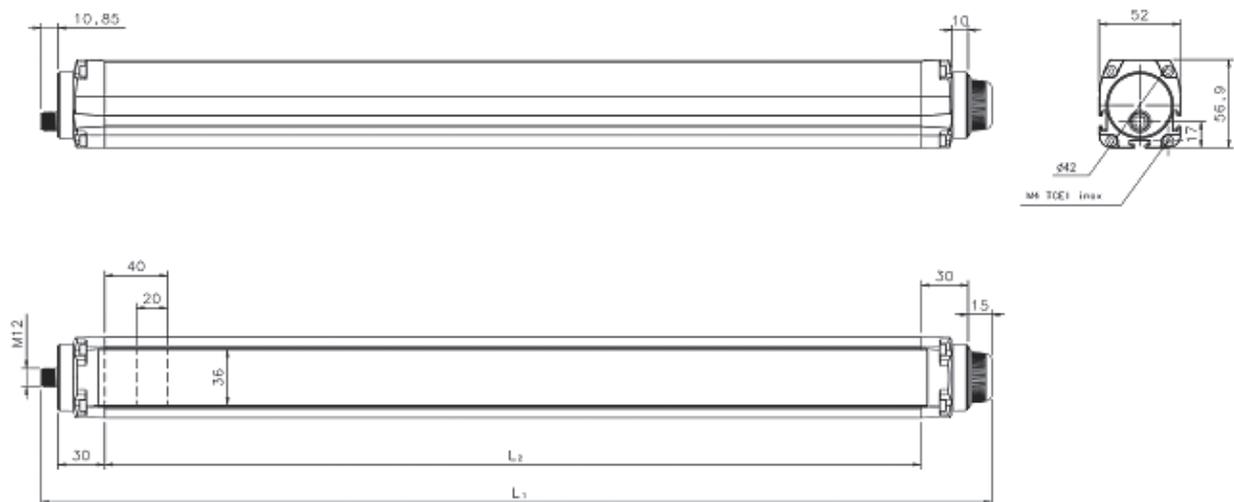
A user interface aids the customer to control and check the state of the light curtain, for alignment mode, normal operation and for troubleshooting activity. User interface is composed by four LEDs and an one-digit display on the ACTIVE UNIT.



DIMENSIONS

BASE VERSION - ACTIVE UNIT

LINEAR

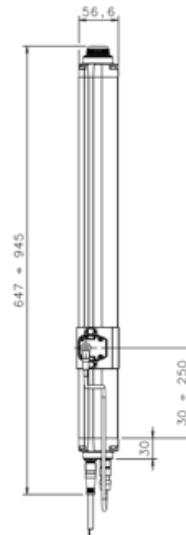
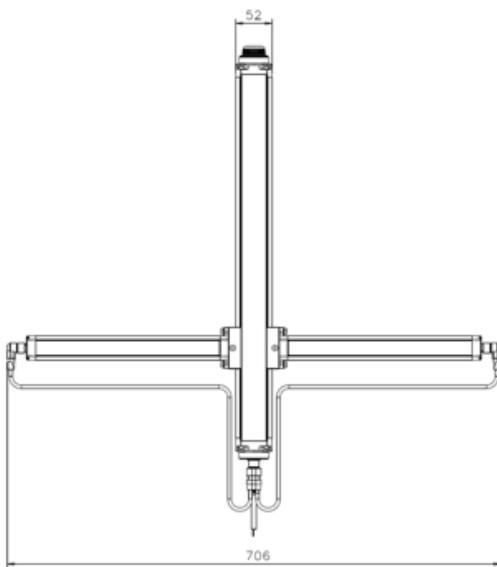
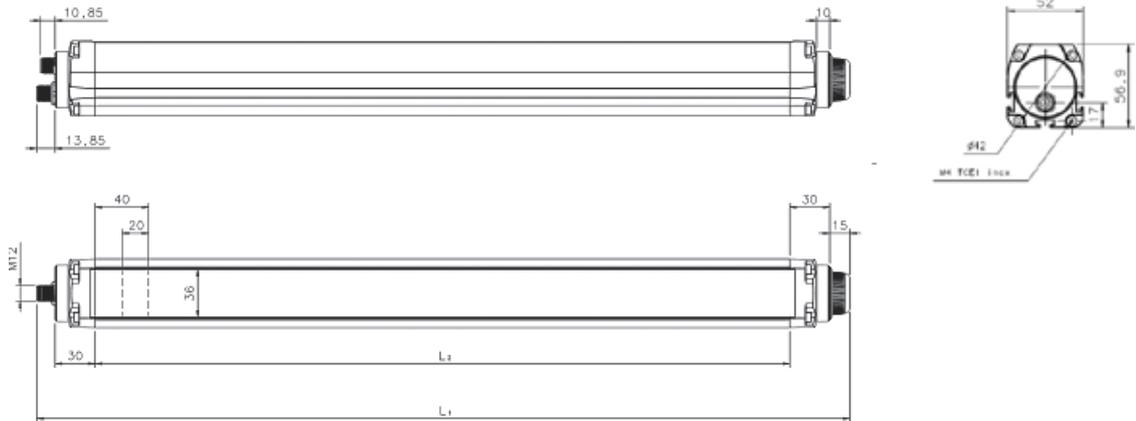


Model	L1 [mm]	L2 [mm]
SG4-RB2-050-OO-E	606,35	520,5
SG4-RB3-080-OO-E	906,35	820,5
SG4-RB4-090-OO-E	1006,35	920,5
SG4-RB4-120-OO-E	1306,35	1220,5

DIMENSIONS

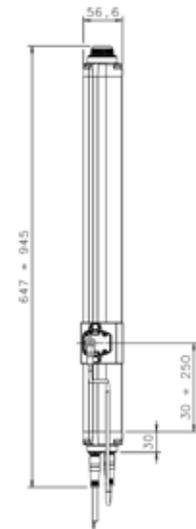
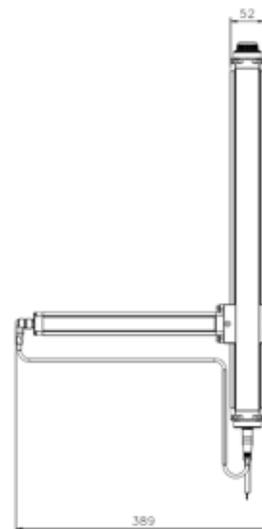
MUTING VERSION - ACTIVE UNIT

LINEAR



T- ACTIVE

L- ACTIVE

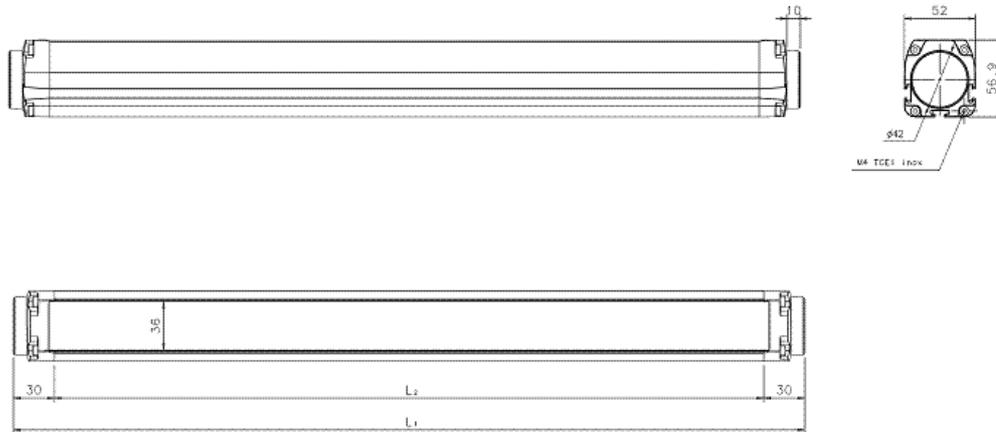


Model	L1 [mm]	L2 [mm]
SG4-RB2-050-OO-W	609,35	520,5
SG4-RB2L-050-OO-W	609,35	520,5
SG4-RB2T-050-OO-W	609,35	520,5
SG4-RB3-080-OO-W	909,35	820,5
SG4-RB3L-080-OO-W	909,35	820,5
SG4-RB3T-080-OO-W	909,35	820,5
SG4-RB4-090-OO-W	1009,35	920,5
SG4-RB4-120-OO-W	1309,35	1220,5

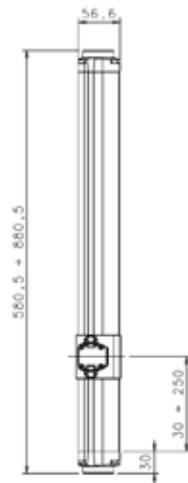
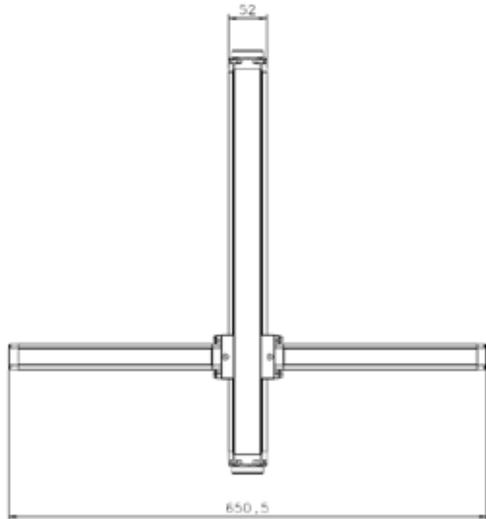
DIMENSIONS

MUTING VERSION - PASSIVE UNIT

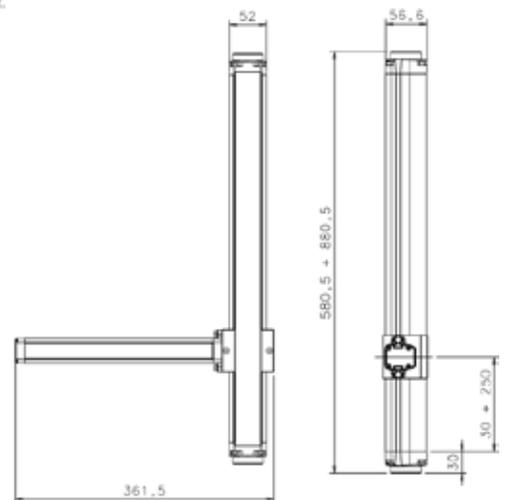
LINEAR



T- PASSIVE



L- PASSIVE

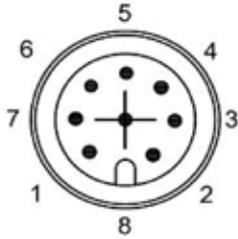


Model	L1 [mm]	L2 [mm]
SG4-RDB2	580,5	520,5
SG4-RDB2L	580,5	520,5
SG4-RDB2T	580,5	520,5
SG4-RDB3	880,5	820,5
SG4-RDB3L	880,5	820,5
SG4-RDB3T	880,5	820,5
SG4-RDB4-090	980,5	920,5
SG4-RDB4-120	1280,5	1220,5

CONNECTIONS

BASE VERSION CONNECTIONS

ACTIVE UNIT

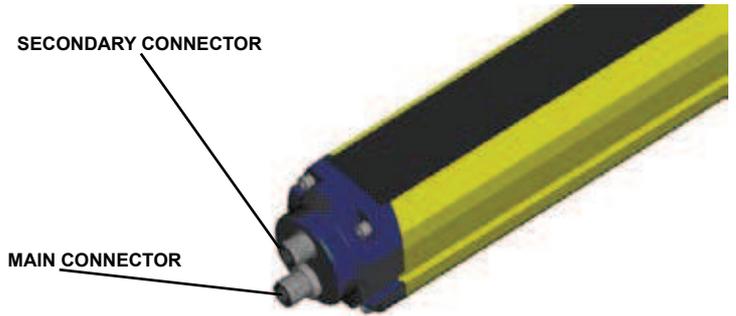


M12 8-pole connector

- 1 = White = RESET/RESTART/RESTART MODE
- 2 = Brown = 24Vdc
- 3 = Green = EDM ENABLE
- 4 = Yellow = EDM
- 5 = Grey = OSSD1
- 6 = Pink = OSSD2
- 7 = Blue = 0V
- 8 = Red = EARTH

SECONDARY CONNECTOR

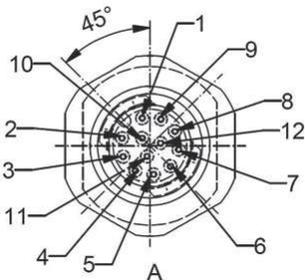
MAIN CONNECTOR



MUTING VERSION CONNECTIONS

ACTIVE UNITE

MAIN CONNECTOR



SECONDARY CONNECTOR



M12 12-pole connectors

- 1 = Brown = 24Vdc
- 2 = Blue = 0V
- 3 = White = RESET/RESTART/RESTART MODE
- 4 = Green = OVERRIDE1
- 5 = Pink = OSSD2
- 6 = Yellow = EDM
- 7 = Black = MUTING ENABLE
- 8 = Grey = OSSD1
- 9 = Red = OVERRIDE2
- 10 = Violet = LAMP INPUT
- 11 = Grey-Pink = OVERRIDE STATUS
- 12 = Red-Blue = EARTH

M12 5-pole connectors

- 1 = Brown = 24Vdc
- 2 = White = MUTING2
- 3 = Blue = 0V
- 4 = Black = MUTING1
- 5 = Grey = N.C.

TECHNICAL DATA

	BASE VERSION	MUTING VERSION
Electrical Data		
Power supply	24 Vdc \pm 20%	24 Vdc \pm 20%
Active unit	6.5 W max (without load)	6.5 W max (without load)
Outputs:	2 PNP outputs short-circuit protection (1.4 A @55°C)	2 PNP outputs short-circuit protection (1.4 A @55°C)
Output current:	0.5 A max / each output	0.5 A max / each output
Output voltage - ON min:	Power supply value less 1 V	Power supply value less 1 V
Output voltage - OFF max:	0.2 V	0.2 V
Output capacitive load	2.2 μ F @24Vdc	2.2 μ F @24Vdc
Response time:	From 11 to 12 ms See section "MODEL TABLE SELECTION"	From 11 to 12 ms See section "MODEL TABLE SELECTION"
Protected height:	from 500mm to1200mm See section "MODEL TABLE SELECTION"	from 500mm to1200mm See section "MODEL TABLE SELECTION"
Safety category:	Type 4 (ref. EN 61496-1)	Type 4 (ref. EN 61496-1)
Auxiliary functions:	Reset, Restart selection, Alignment, EDM	Reset, Restart selection, Alignment, EDM, Muting, Override
Electrical protection:	class III	class III
Connections:	ACTIVE: M12 8-poles PASSIVE: no connections	ACTIVE: M12 12-poles + M12 5-poles PASSIVE: no connections
Cable length (for power supply):	70m. max.	70m. max.
Pollution degree	2	2
Optical Data		
Light source:	Infrared LED (950 nm wavelength)	Infrared LED (950 nm wavelength)
Resolution:	319,75 mm 419,75 mm 519,75 mm	319,75 mm 419,75 mm 519,75 mm
Beam spacing:	300 mm 380 mm 500 mm	300 mm 380 mm 500 mm
Operating distance:	From 0,5 to 8 mt See section "MODEL TABLE SELECTION"	From 0,5 to 8 mt See section "MODEL TABLE SELECTION"
Ambient light rejection:	IEC 61496-2	IEC 61496-2
Mechanical and environmental data		
Operating temperature:	0...55°C	0...55°C
Storage temperature:	-25...+ 70 °C	-25...+ 70 °C
Temperature class:	T6	T6
Humidity:	15...95 % (no condensation)	15...95 % (no condensation)
Water protection grade:	IP 65 (EN 60529)	IP 65 (EN 60529)
Vibrations:	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave/min (EN 60068-2-6)	0.35 mm width, 10...55 Hz frequency, 20 sweep for each axis, 1 octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)	16 ms (10g) 1.000 shock for each axis (EN 60068-2-29)
Housing material:	Painted aluminium (yellow RAL 1003)	Painted aluminium (yellow RAL 1003)
Caps material:	PBT Valox 508 (pantone 072-CVC)	PBT Valox 508 (pantone 072-CVC)
Front glass material:	PMMA	PMMA
Connectors:	M12	M12

TECHNICAL DATA

	BASE VERSION	MUTING VERSION
Reliability data		
PL (Ref. EN ISO 13849-1)	e	e
CAT (Ref. EN 954-1)	4	4
SIL (Ref. EN IEC 61508)	3	3
SIL CL (Ref. EN IEC 62061)	3	3
PFHD – Probability of Danger Failure (1/h)	9,28E-09	8,57E-09
T1 – Life Time (Years)	20	20
MTTFD - Mean Time to Danger Failure (Years)	462	439
DC – Diagnostic Coverage (%)	96%	96,50%
SFF – Safe Failure Fraction (%)	97,20%	97,50%
HFT – Hardware Fault Tolerance	1	1

MODEL SELECTION TABLE

BASE VERSION

Description	Protected height [mm]	Beams N.	Response time [msec]	Resolution [mm]	Interaxis [mm]	Operating distance [m]	Code
SG4-RB2-050-OO-E	500	2	11	519,75	500	0.5..8	957951000
SG4-RB3-080-OO-E	800	3	12	399,75	380	0.5..8	957951010
SG4-RB4-090-OO-E	900	4	12	319,75	300	0.5..6.5	957951190
SG4-RB4-120-OO-E	1200	4	12	419,75	400	0.5..8	957951020
SG4-RDB2 (passive)	500	-	-	-	500	-	957951100
SG4-RDB3 (passive)	800	-	-	-	380	-	957951110
SG4-RDB4-090 (passive)	900	-	-	-	300	-	957951170
SG4-RDB4-120 (passive)	1200	-	-	-	400	-	957951120

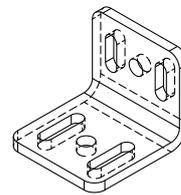
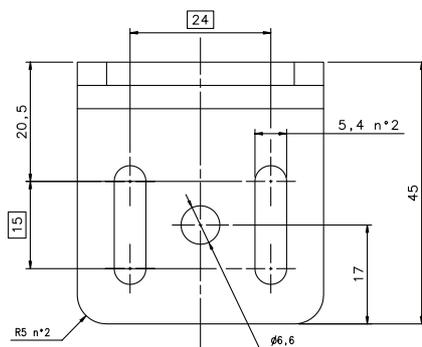
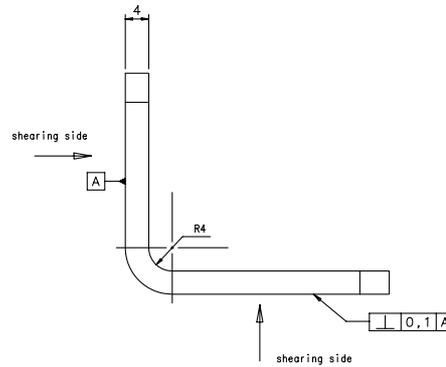
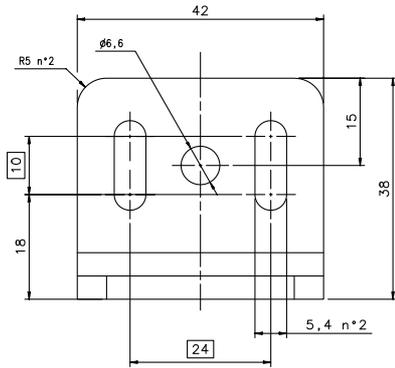
MUTING VERSION

Description	Protected height [mm]	Beams N.	Response time [msec]	Resolution [mm]	Interaxis [mm]	Operating distance [m]	Code
SG4-RB2-050-OO-W	500	2	11	519,75	500	0.5..8	957951030
SG4-RB2L-050-OO-W	500	2	11	519,75	500	0.5..3	957951060
SG4-RB2T-050-OO-W	500	2	11	519,75	500	0.5..3	957951080
SG4-RB3-080-OO-W	800	3	12	399,75	380	0.5..8	957951040
SG4-RB3L-080-OO-W	800	3	12	399,75	380	0.5..3	957951070
SG4-RB3T-080-OO-W	800	3	12	399,75	380	0.5..3	957951090
SG4-RB4-090-OO-W	900	4	12	319,75	300	0.5..6.5	957951180
SG4-RB4-120-OO-W	1200	4	12	419,75	400	0.5..8	957951050
SG4-RDB2 (passive)	500	2	-	-	500	-	957951100
SG4-RDB2L (passive)	500	2	-	-	500	-	957951130
SG4-RDB2T (passive)	500	2	-	-	500	-	957951150
SG4-RDB3 (passive)	800	3	-	-	380	-	957951110
SG4-RDB3L (passive)	800	3	-	-	380	-	957951140
SG4-RDB3T (passive)	800	3	-	-	380	-	957951160
SG4-RDB4-090 (passive)	900	4	-	-	300	-	957951170
SG4-RDB4-120 (passive)	1200	4	-	-	400	-	957951120



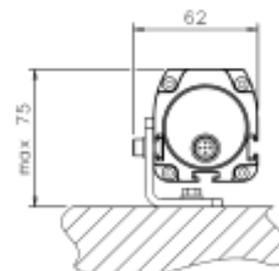
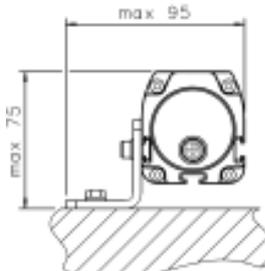
ACCESSORY SELECTION AND ORDER INFORMATION

SIDE FIXING BRACKET

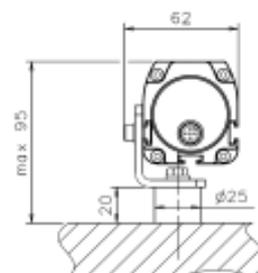
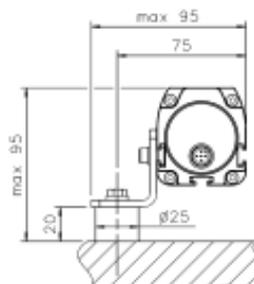


MOUNTING A

MOUNTING B



Angled fixing bracket

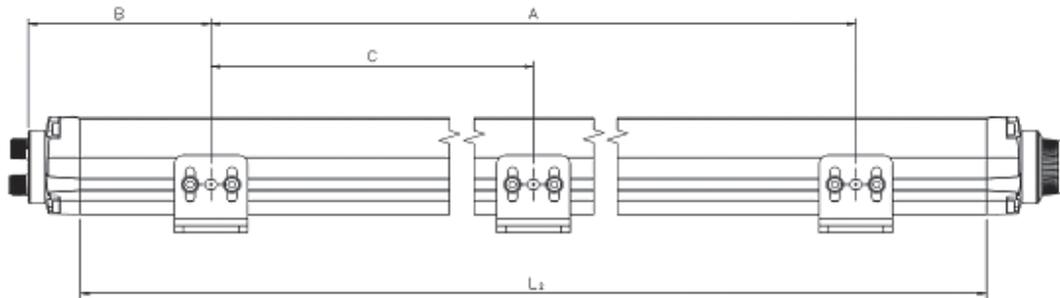


Angled fixing bracket + Antivibration support

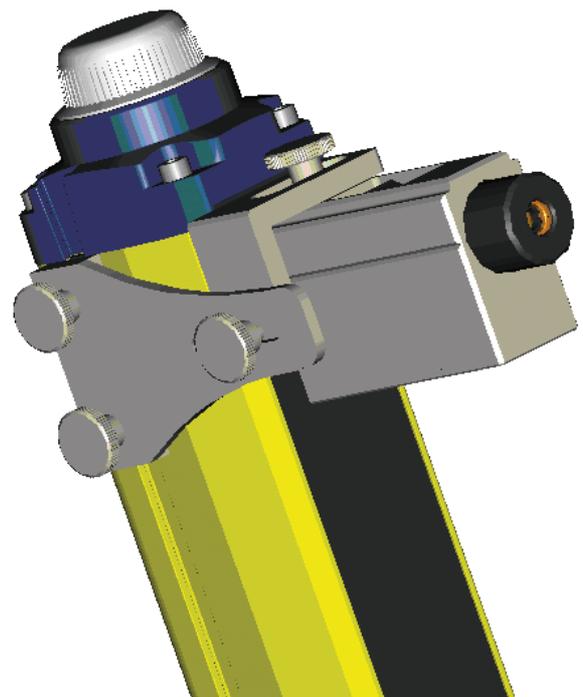
MODEL	DESCRIPTION	CODE
ST-K4STD-SG BODY BIG	Side fixing bracket (4 pcs kit)	95ASE1950
ST-K4AV	Antivibration support (4 pcs kit)	95ACC1700
ST-K6AV	Antivibration support (6 pcs kit)	95ACC1710

ACCESSORY SELECTION AND ORDER INFORMATION

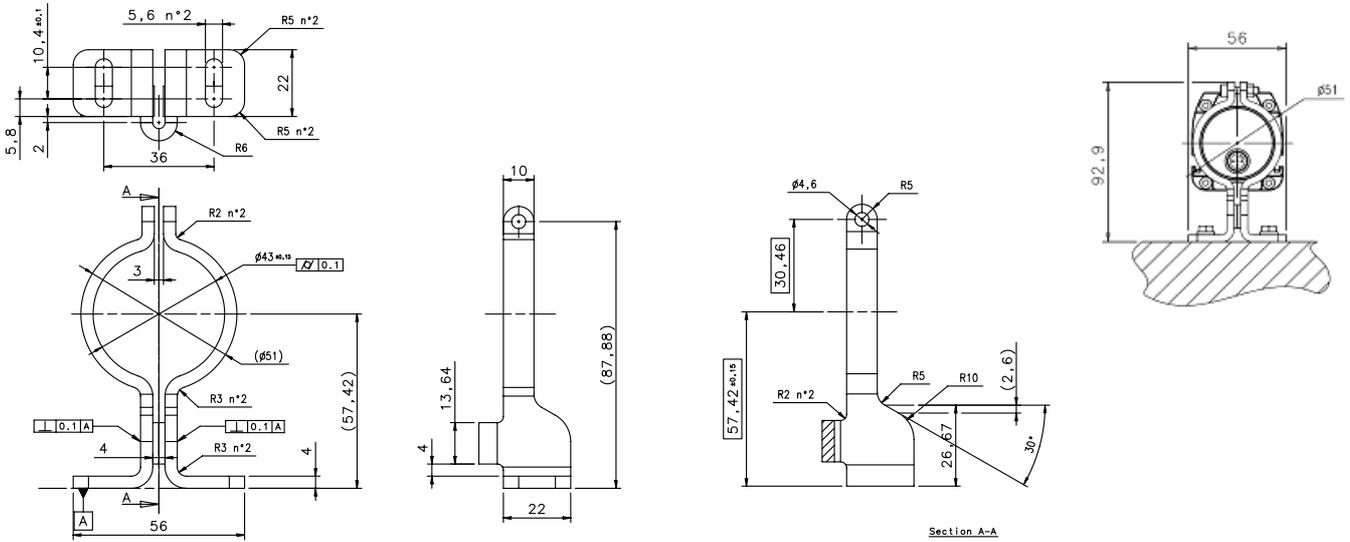
The recommended mounting positions according to the light curtain length are shown in and in the subsequent table.



DESCRIPTION	L ₂ [mm]	A [mm]	B [mm]	C [mm]
SG4-RB2-050-OO-W	520,5	320,5	100	-
SG4-RB2L-050-OO-W	520,5	320,5	100	-
SG4-RB2T-050-OO-W	520,5	320,5	100	-
SG4-RB3-080-OO-W	820,5	370,5	125	-
SG4-RB3L-080-OO-W	820,5	370,5	125	-
SG4-RB3T-080-OO-W	820,5	370,5	125	-
SG4-RB4-090-OO-W	920,5	620,5	150	-
SG4-RB4-120-OO-W	1220,5	1020,5	100	510,25
SG4-RDB2 (passive)	520,5	320,5	100	-
SG4-RDB2L (passive)	520,5	320,5	100	-
SG4-RDB2T (passive)	520,5	320,5	100	-
SG4-RDB3 (passive)	820,5	370,5	125	-
SG4-RDB3L (passive)	820,5	370,5	125	-
SG4-RDB3T (passive)	820,5	370,5	125	-
SG4-RDB4-090 (passive)	920,5	620,5	150	-
SG4-RDB4-120 (passive)	1220,5	1020,5	100	510,25

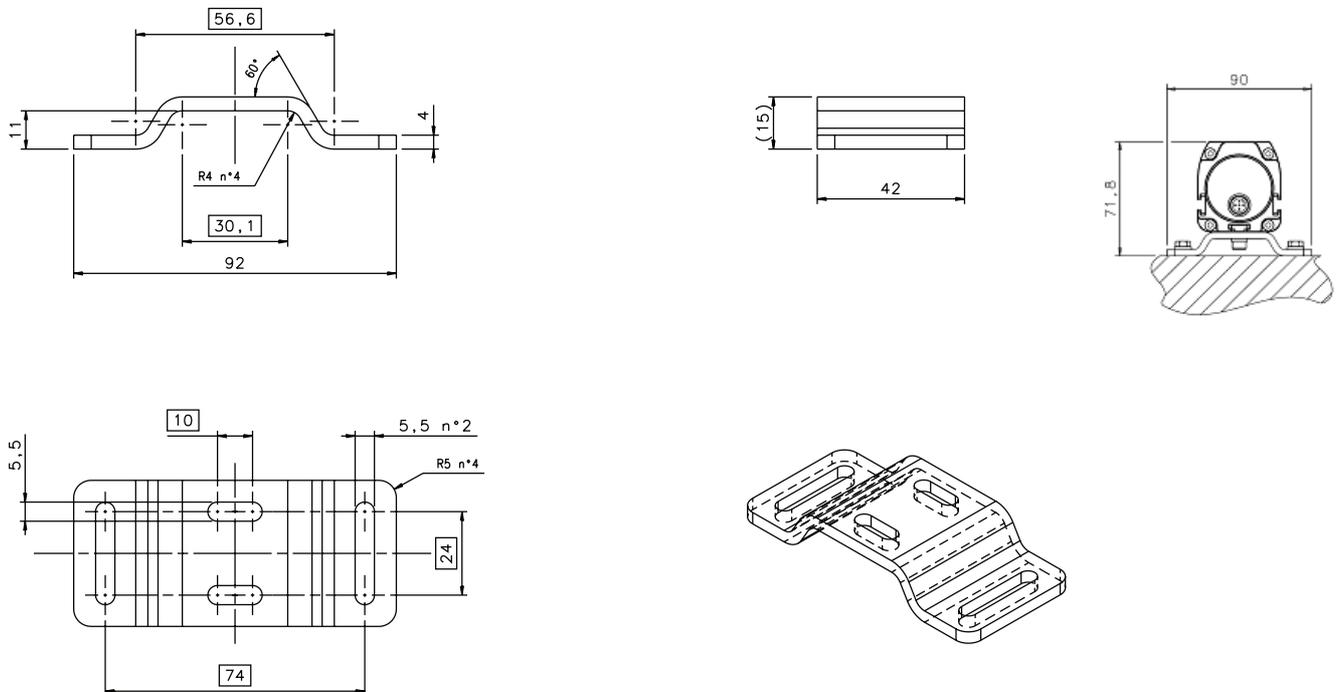


ROTATIVE FIXING BRACKET



MODEL	DESCRIPTION	CODE
ST-K4ROT-SG BODY BIG	Rotative Fixing Bracket (4 pcs kit)	95ASE1960

REAR FIXING BRACKET



MODEL	DESCRIPTION	CODE
ST-K4REAR-SG BODY BIG	Rear Fixing Bracket (4 pcs kit)	95ASE1970

NOTE: The aforementioned fixing brackets are not available as outfit

MODEL	DESCRIPTION	CODE
SE-S 800	Column and floor stand H= 800 mm	95ACC1730
SE-S 1000	Column and floor stand H= 1000 mm	95ACC1740
SE-S 1200	Column and floor stand H= 1200 mm	95ACC1750
SE-S 1500	Column and floor stand H= 1500 mm	95ACC1760
SE-S 1800	Column and floor stand H= 1800 mm	95ACC1770
SG-SB	Protective stand base	95ASE1660
SG-PS 600	Protective stand H= 600 mm	95ASE1610
SG-PS 900	Protective stand H= 900 mm	95ASE1620
SG-PS 1200	Protective stand H= 1200 mm	95ASE1630
SG-PS 1650	Protective stand H = 1650 mm	95ASE1640
SG-PS 1900	Protective stand H = 1900 mm	95ASE1650
TP-50	Test piece Ø 50 mm	95ASE1790
TP-90	Test piece Ø 90 mm	95ASE1800
SG-LP	Laser pointer	95ASE5590
CS-A1-03-U-03	5-pole M12 cable (axial) 3 m	95ASE1170
CS-A1-03-U-05	5-pole M12 cable (axial) 5 m	95ASE1180
CS-A1-03-U-10	5-pole M12 cable (axial) 10 m	95ASE1190
CS-A1-03-U-15	5-pole M12 cable (axial) 15 m	95ASE1200
CS-A1-03-U-25	5-pole M12 cable (axial) 25 m	95ASE1210
CS-A1-03-U-50	5-pole M12 cable (axial) 50m	95A252700
CS-A1-06-U-03	8-pole M12 cable (axial) 3 m	95ASE1220
CS-A1-06-U-05	8-pole M12 cable (axial) 5 m	95ASE1230
CS-A1-06-U-10	8-pole M12 cable (axial) 10 m	95ASE1240
CS-A1-06-U-15	8-pole M12 cable (axial) 15 m	95ASE1250
CS-A1-06-U-25	8-pole M12 cable (axial) 25 m	95ASE1260
CS-A1-06-U-50	8-pole M12 cable (axial) 50 m	95A252710
CS-A1-10-U-03	12-pole M12 cable (axial) 3 m	95A252720
CS-A1-10-U-05	12-pole M12 cable (axial) 5 m	95A252730
CS-A1-10-U-10	12-pole M12 cable (axial) 10 m	95A252740
CS-A1-10-U-15	12-pole M12 cable (axial) 15 m	95A252750
CS-A1-10-U-25	12-pole M12 cable (axial) 25 m	95A252760
CS-A1-10-U-50	12-pole M12 cable (axial) 50 m	95A252770
SG-AS-ARM ^{note 1}	Active sensor single arm	95ASE1840
SG-PR-ARM ^{note 1}	Passive reflector single arm	95ASE1850
SG-F1-G1-ARMS ^{note 2}	F1-G1 muting arm for RX	95ASE1880
SG-F2-G2-ARMS ^{note 2}	F2-G2 muting arm for RX	95ASE1890
SG-CB-B	Muting C bracket big kit	95ASE1920
LMS	Muting lamp	95ASE1830
LMS-1	Modular Muting lamp	95ACC1990
LMS-2	Muting lamp - horizontal mounting	95ACC2000
LMS-3	Muting lamp - vertical mounting	95ACC2010
SU-LMS-1A	Basic module for LMS-1	95ACC2020
SU-LMS-1B	Tower module for LMS-1	95ACC2030
CV-Y1-02-B-007	M12 4-pole cable 0.7m for "T" versions with integrated sensors	95ACC2560
CV-L1-02-B-007	M12 4-pole cable 0.7m for "L" versions with integrated sensors	95ACC2570
SE-SR2	TYPE 4 SAFETY RELAY 3NO 1NC	95ACC6170
CS ME-03VU24-Y14	EDM RELAY BOX	95ASE1270
CS-R1-40-B-0015	REFLECTOR 12to8 POLES ADAPTOR	95ASE2020
SG-MFB	MUTING ARMS FRONT BRACKETS KIT	95ASE2030

note 1: With RRX Muting arms the overall operating distance is reduced to **3 meters**.

note 2: With F/G Muting arms the overall operating distance is reduced to **7 meters**. F/G Muting arms **can be mounted on a passive unite but requiring external power supply**



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SG-BWS SERIES

The SG-BWS series presents two models:

- **SG-BWS-T4**: control unit with plastic housing for DIN/OMEGA rail mounting equipped with 16 clamps that can connect from 1 to 4 photocell couples of the S5-ST, SL5-ST, S300 series **with OSSD safety outputs**;
- **SG-BWS-T4-MT**: control unit with plastic housing for DIN/OMEGA rail mounting equipped with 48 clamps that can connect from 1 to 4 photocell couples of the S5-ST, SL5-ST, S300 series and contemporaneously up to 2 safety light curtains equipped with safety outputs activated with two 230V relay.

The SG-BWS-T4 model is **WITHOUT MUTING FUNCTION** but presents EDM and selectable MANUAL/AUTOMATIC RESTART. The SG-BWS-T4-MT model is provided with **DOUBLE MUTING FUNCTION**. The control unit fits some safety outputs controlled depending on the status of the safety photocells connected to the device. A danger condition detected by a photocell or light curtain opens the outputs.



HIGHLIGHTS

- Two models:
 - SG-BWS-T4 WITHOUT MUTING FUNCTION
 - SG-BWS-T4-MT WITH DOUBLE MUTING FUNCTION
- Factory automation standard housing with compact dimensions
- Possibility to connect 4 safety single-beam and 2 safety light curtains
- PLUS functions: Single/Double muting, Edged/triggered Override, Double Muting Lamp, External Muting Enable
- Configurable device through dip-switches
- Satisfies the requirements of key safety Standards, such as Category 4 of EN 954-1, SIL3 of IEC 61508, and performance levels PL e of EN ISO 13849-1.

APPLICATIONS

Extreme reliability and simplicity make the SG-BWS control units the ideal solution for the following applications:

- Automatic warehouses
- Machines for food packaging
- Robots
- Automatic assembling lines
- Machines for PCB production



SETTINGS



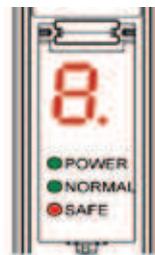
- User interface is present on the top of the SG-BWS-T4 for signalling and configuration.
- Two units made of 8 dip-switches are present on the top of the SG-BWS-T4-MT model. These switches activate/deactivate and configure additional functions integrated in the device.
- Signalling interface and dip-switches are protected from non-authorized access by transparent lids that can be opened using a specific tool.

 ON	DIP	PURPOSE	OFF (Default)	ON
<input type="checkbox"/>	1	ENABLE EDM	ENABLED	DISABLED
<input type="checkbox"/>	2	RESET MODE	AUTOMATIC	MANUAL
<input type="checkbox"/>	3	MUTING TIME-OUT	10 MINUTES	INFINITY
<input type="checkbox"/>	4	MUTING DIRECTION	T	L
<input type="checkbox"/>	2	OVERRIDE	EDGED	TRIGGERED
<input type="checkbox"/>	6	MUTING SELECTION	See specific table	
<input type="checkbox"/>	7	MUTING SELECTION		
<input type="checkbox"/>	8	MUTING SELECTION		

The EDM and MAN/AUTO Restart functions integrated in SG-BWS-T4 model can be selected through specific control unit lines (refer "CONNECTION" section of the present document).

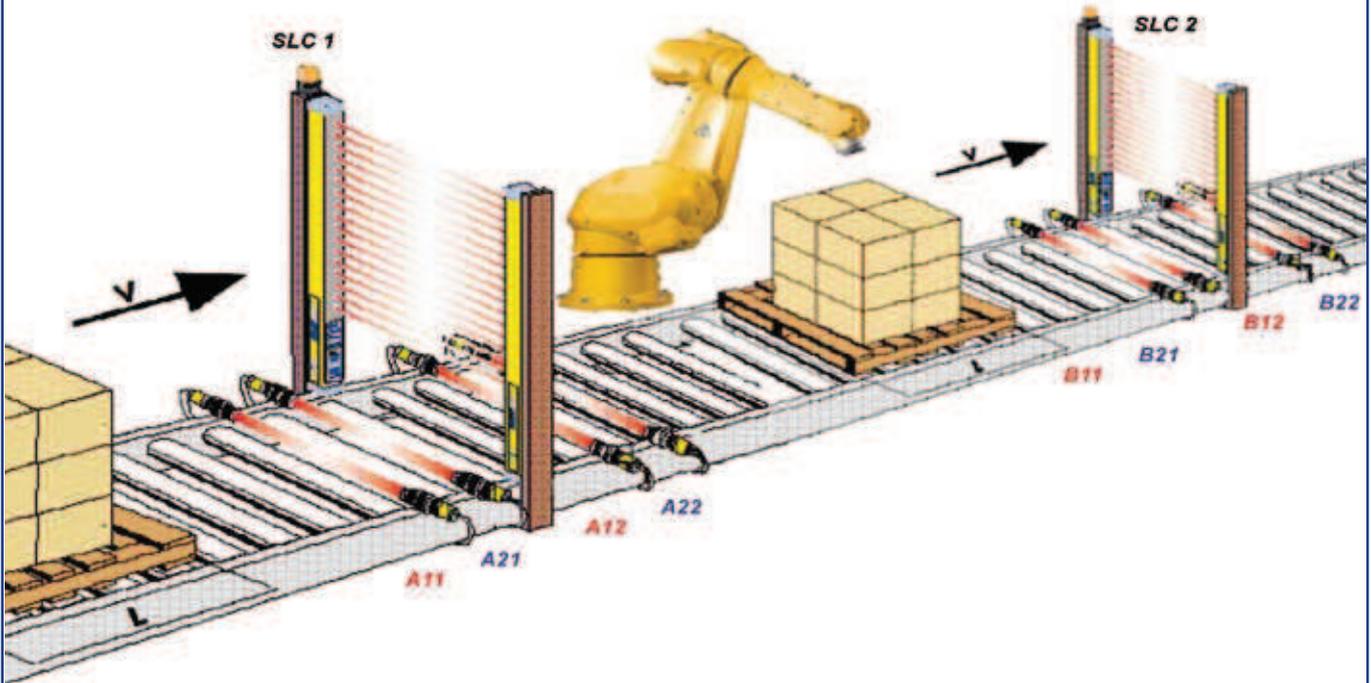
INDICATORS

An user interface is present for viewing warnings and setup is present on the top of both SG-BWS-T4 and SG-BWS-T4-MT control units. Besides the 7-segment display (for diagnostics purposes), the warning components include 3 LEDs:



LED	INDICATION
 POWER	Device is powered correctly
 NORMAL	No danger: safety outputs closed
 SAFE	Danger or fault: safety outputs open
	The 7-segment display shows detailed information on control unit current status

DOUBLE MUTING FUNCTION SETTING



Thanks to its two separate muting channels, SG-BWS-T4-MT can accept the muting request output by sensors without interrupting the safety function on light curtain or safety sensors of both channels. The dip-switches 6-7-8 allow users to couple the single devices to the 2 muting channels available on the SG-BWS-T4-MT control unit. Following table reports all the available combinations.

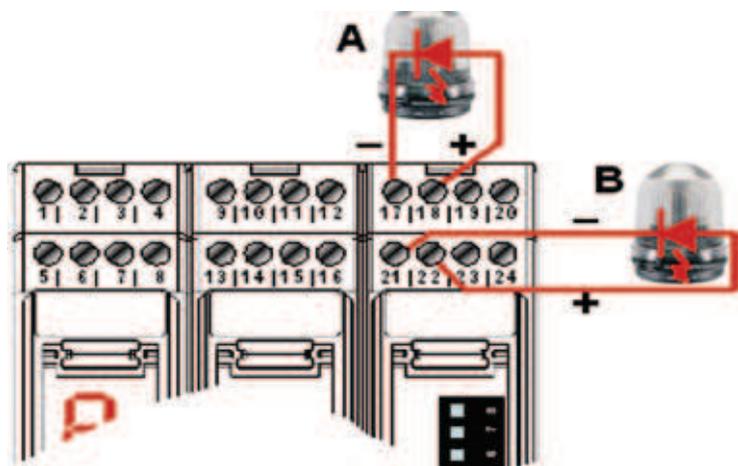
DIP-SWITCH SETUP	PHOTOCELLS	LIGHT CURTAIN 1	LIGHT CURTAIN 2
000	A	A	A
001	A	A	B
010	A	B	B
011	-	A	B
100	A	B	-
101	-	A	A
110	A	-	-
111	-	-	-

0=OFF, 1=ON, A(B)=Device associated to channel A(B) Default setting: 000

MUTING WARNING DEVICES

To use the Muting function it is also required to connect the external Muting warning (lamp) since control unit would lock out if it is missing. One lamp shall be used per channel. If device is preset for use of just one channel, both warning devices are associated to it: in this way, failure of one of the lamps would not lock out system operation. SG-BWS-T4-MT allows installation of both incandescent lamps and LEDs. For the latter case, polarity shall be carefully complied with, as indicated aside.

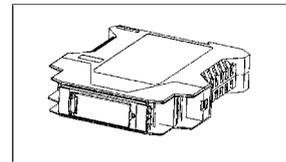
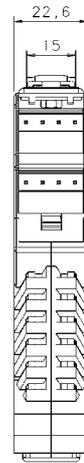
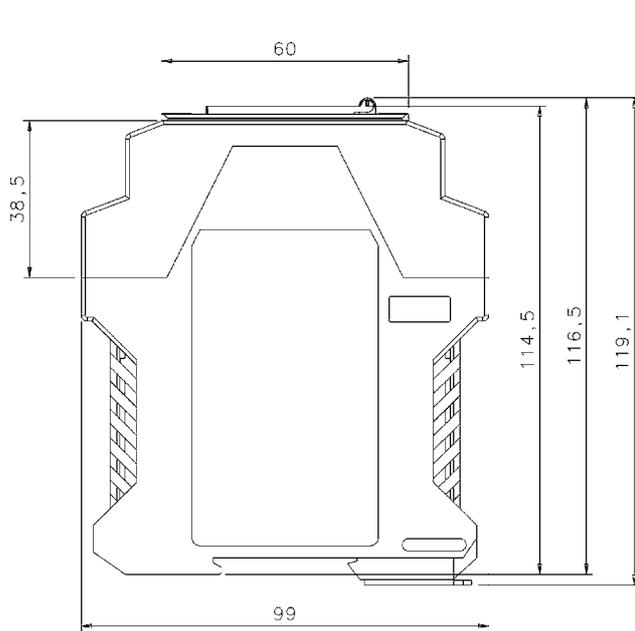
Note: When only 1 muting lamp is used, please connect on the clamps of the other one a 150 ohm > 5W resistor!



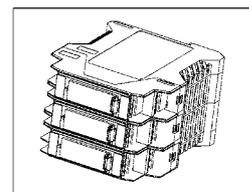
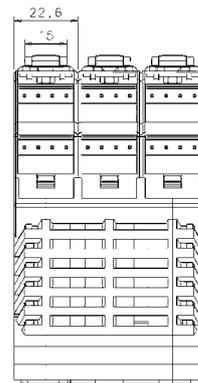
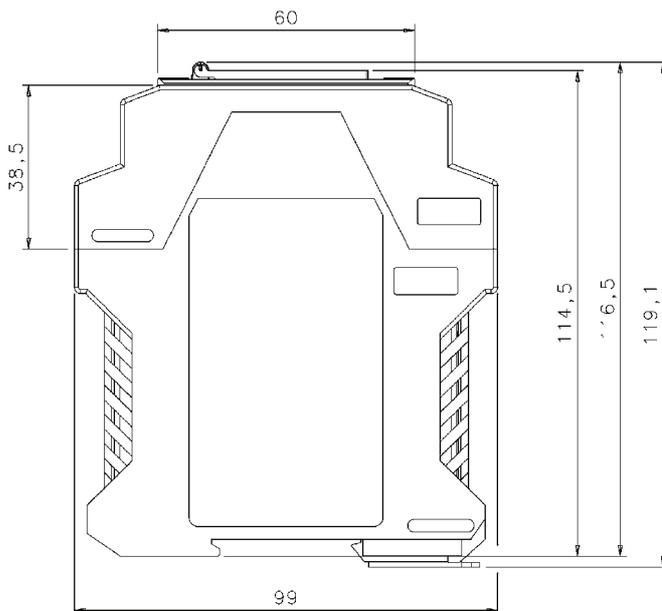
Note: the Muting lamp is not supplied with the device. Please refer to "Accessory selection and order information table."

DIMENSIONS

SG-BWS-T4

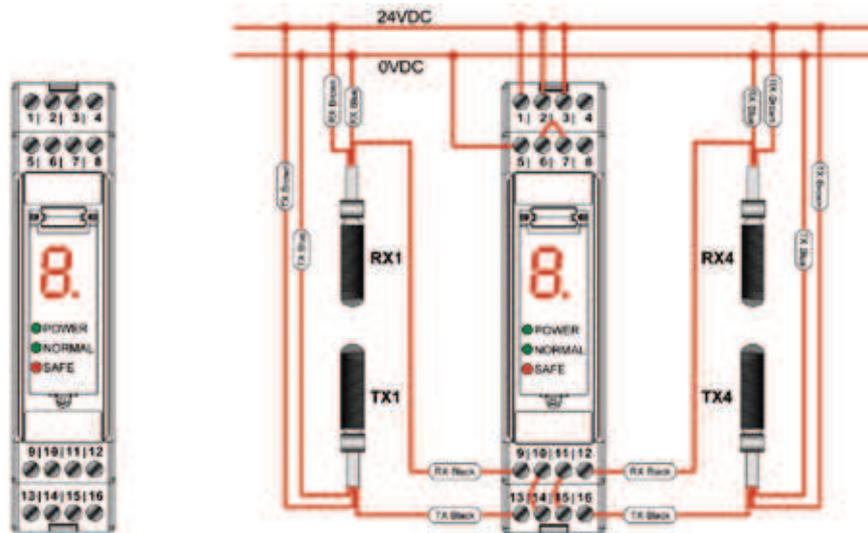


SG-BWS-T4-MT

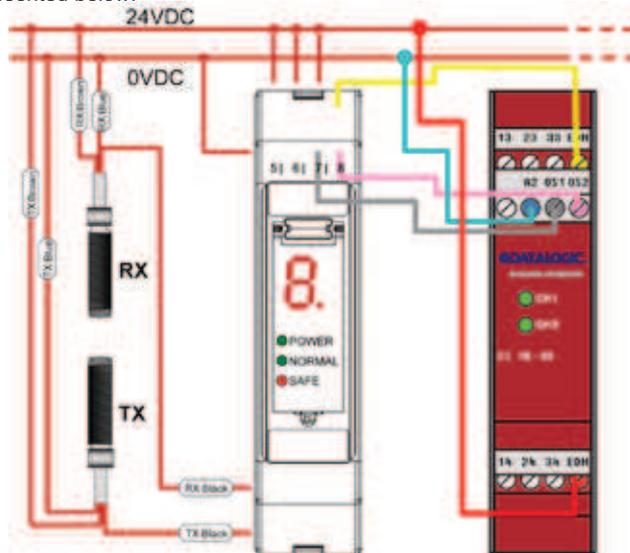


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SG-BWS-T4 CONNECTIONS

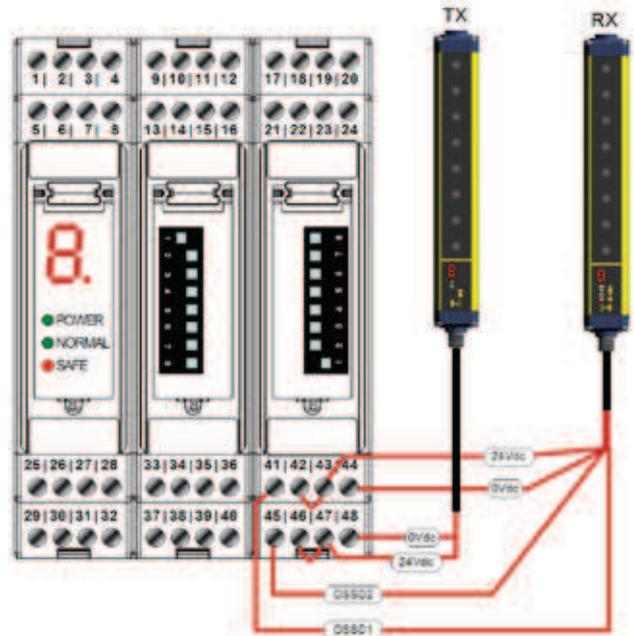
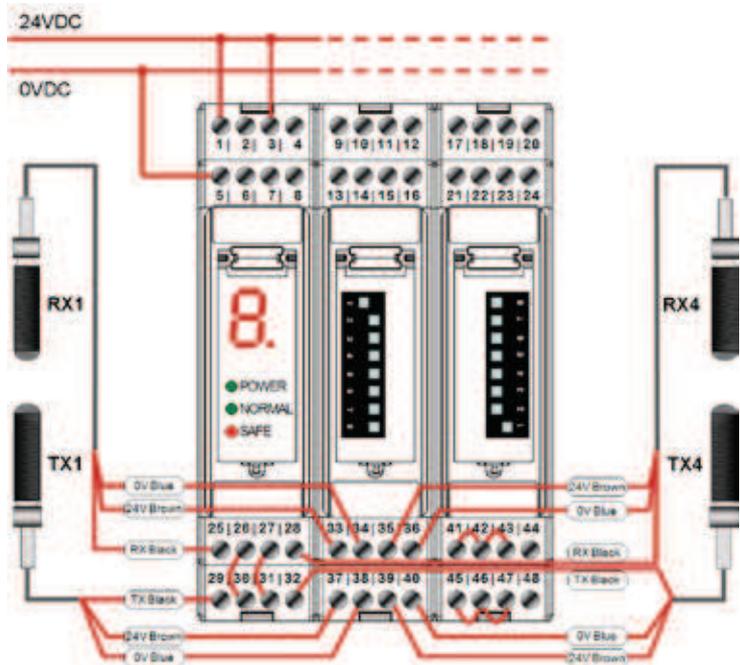
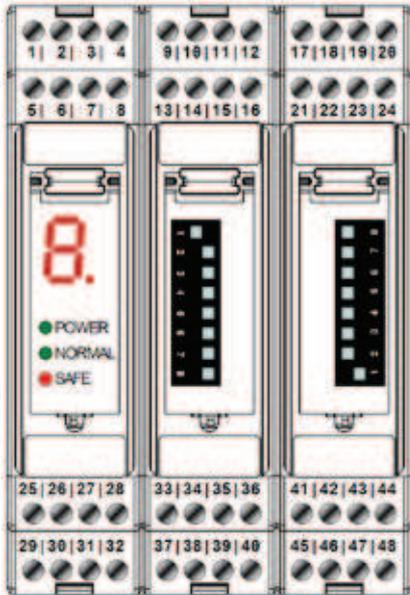


NOTE : As SG-BWS-T4 has OSSD Safety outputs in order to have relay outputs, the device must have EDM function connected to the CS-ME EDM relay box as represented below:



SIGNAL	CONTACT	CONNECTION
VCC	1	External 24Vdc
START/TEST/RESET	2	- Contact NC towards 24Vdc
EDM ENABLE	3	- 24Vdc > EDM DEACTIVATED - Not connected > EDM activated
EDM	4	- NC contact of external relays towards 24Vdc (with EDM activated) - Not connected > with EDM deactivated
0V	5	External 0Vdc
MAN/AUTO	6	- OSSD1 (7) > AUTOMATIC RESTART - OSSD2 (8) > MANUAL RESTART
OSSD1	7	Reel of external relay 1 (positive)
OSSD2	8	Reel of external relay 2 (positive)
RX1	9	PNP output of receiver photocell 1 (black)
RX2	10	PNP output of receiver photocell 2 (black)
RX3	11	PNP output of receiver photocell 3 (black)
RX4	12	PNP output of receiver photocell 4 (black)
TX1	13	TEST of emitter photocell 1 (black)
TX2	14	TEST of emitter photocell 2 (black)
TX3	15	TEST of emitter photocell 3 (black)
TX4	16	TEST of emitter photocell 4 (black)

SG-BWS-T4-MT CONNECTIONS



SIGNAL	CLAMP	CONNECTION	FUNCTION
VDC	1	External 24Vdc	Power supply
START	2	NO contact towards 24Vdc	Reset function
TEST/RESET	3	NC contact towards 24Vdc	Test/Reset function
EDM	4	- NC contact of external relays towards 24Vdc (with EDM activated) - NOT CONNECTED (with EDM deactivated)	Input EDM
0V	5	0Vdc external	Power supply
MUTEN A	6	NO contact towards 24Vdc	Muting activation
MUTEN B	7	NO contact towards 24Vdc	Muting activation
DEFLAMP	8	Positive terminal signaling device	Lamp fault signaling
MUTA1	9	PNP output of the A1 Muting sensor	Muting input
OVRA1	10	Contact of Override A1 NO towards 24Vdc	Override input
MUTB1	11	PNP output of the B1 Muting sensor	Muting input
OVRA2	12	Contact of Override B1 NO towards 24Vdc	Override input
MUTA2	13	PNP output of A2 Muting sensor	Muting input
OVRA2	14	Contact of Override A2 NO towards 24Vdc	Override input
MUTB2	15	PNP output of B2 Muting sensor	Muting input
OVRA2	16	Contact of Override B2 NO towards 24Vdc	Override input
LAMPA-	17	Negative terminal of the A Muting lamp	Muting lamp output
LAMPA+	18	Positive terminal of the A Muting lamp	Muting lamp output
SAFNC11	19	NO relay 230V 1 output	Safety contact
SAFNC21	20		Safety contact
LAMPB-	21	Negative terminal of the B Muting lamp	Muting lamp output
LAMPB+	22	Positive terminal of the B Muting lamp	Muting lamp output
SAFNC12	23	NO relay 230V 2 output	Safety contact
SAFNC22	24		Safety contact
RX1	25	PNP output of the photocell receiver 1 (black)	Photocell input
RX2	26	PNP output of the photocell receiver 2 (black)	Photocell input
RX3	27	PNP output of the photocell receiver 3 (black)	Photocell input
RX4	28	PNP output of the photocell receiver 4 (black)	Photocell input
TX1	29	TEST of the photocell emitter 1 (black)	Photocell output
TX2	30	TEST of the photocell emitter 2 (black)	Photocell output
TX3	31	TEST of the photocell emitter 3 (black)	Photocell output
TX4	32	TEST of the emitter photocell 4 (black)	Photocell output
24VRX12	33	24Vdc photocell receivers 1 and 2 (brown)	Power supply output
0VRX12	34	0 Vdc photocell receivers 1 and 2 (blue)	Power supply output
24VRX34	35	24 Vdc photocell receivers 3 and 4 (brown)	Power supply output
0VRX34	36	0Vdc photocell receivers 3 and 4 (blue)	Power supply output
24VTX12	37	24Vdc photocell emitters 1 and 2 (brown)	Power supply output
0VTX12	38	0Vdc photocell emitters 1 and 2 (blue)	Power supply output
24VTX34	39	24Vdc photocell emitters 3 and 4 (brown)	Power supply output
0VTX34	40	0Vdc photocell emitters 3 and 4 (blue)	Power supply output
OSSD11	41	OSSD 1 output of the light curtain 1 (grey)	Light curtain input
OSSD21	42	OSSD 1 output of the light curtain 2 (grey)	Light curtain input
24LRX12	43	24Vdc receivers of light curtain 1 and 2 (brown)	Power supply output
0LRX12	44	0Vdc receivers of light curtain 1 and 2 (brown)	Power supply output
OSSD12	45	OSSD 2 output of light curtain 1 (pink)	Light curtain input
OSSD22	46	OSSD 2 output of light curtain 2 (pink)	Light curtain input
24LTX12	47	24Vdc light curtain emitters 1 and 2 (brown)	Power supply output
0LTX12	48	0Vdc light curtain emitters 1 and 2 (brown)	Power supply output

NO: Normally open – NC: Normally closed

NOTE : Both SG-BWS-T4 and SG-BWS-T4-MT models are equipped with extractable screw clamps. It's possible to replace them with corresponding spring clamps provided as accessories, if necessary.

TECHNICAL DATA

ELECTRICAL DATA

	SG-BWS-T4	SG-BWS-T4-MT
Power supply:	24 Vdc ± 15%	24 Vdc ± 15%
Consumption:	2.1 W max	3.8 W max
Output contacts:	2 PNP	2 normally open relays, 250 Vac 5A - 24 Vdc 5A
Response time:	Short circuit protection: 1.4 A max	39ms (includes response time of photocells)
Safety category:	Type 4 (ref. EN 61496-1)	Type 4 (ref. EN 61496-1)
SIL:	SIL 3 (ref. IEC 61508 and IEC 62061)	SIL 3 (ref. IEC 61508 and IEC 62061)
PL:	PL e (ref. EN ISO 13849-1)	PL e (ref. EN ISO 13849-1)
PFHd min (1/h):	1,60E-09	1,74E-09
MTTFd (years):	545	428
Accessory functions:	Reset / EDM selection / auto-man selection	Reset / EDM selection / auto-man selection Single/Double Muting selection Edged/Triggered Override Selection
Overload protection:		Cat. II (250 Vac) – Cat. III (24Vdc) (ref. EN 50178)
Connections:	Clamps (*)	Clamps (*)
Cable lengths (power supply):	50 m. max	50 m. max
Pollution degree:	2	2

MECHANICAL AND ENVIRONMENTAL DATA

Operating temperature:	0...55°C	0...55°C
Storage temperature:	-25...+ 70 °C	-25...+ 70 °C
Temperature class:	T6	T6
Humidity:	15...95 % (no condensation)	15...95 % (no condensation)
Mechanical protection:	IP 20 (EN 60529)	IP 20 (EN 60529)
Vibrations:	0.35 mm amplitude, 10 ... 55Hz frequency 20 sweeps for axis, 1octave/min (EN 60068-2-6)	0.35 mm amplitude, 10 ... 55Hz frequency 20 sweeps per axis, 1octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10 G) 1.000 shocks for axis (EN 60068-2-29)	16 ms (10 G) 1.000 shocks for axis (EN 60068-2-29)
Housing material:	Nylon PA66	Nylon PA66
Weight:		

(*) Spring clamps are available as accessories



MODEL SELECTION TABLE

MODEL	DESCRIPTION	ORDER N°
SG-BWS-T4	cat. 4 safety control unit with edm and man/auto restart	957051000
SG-BWS-T4-MT	cat. 4 safety control unit with double muting	957051010

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
SG-DM 150	deviating mirror h=150mm	95ASE1670
LMS	muting lamp	95ASE1830
LMS-1	modular muting lamp	95ACC1990
LMS-2	muting lamp – horizontal mounting	95ACC2000
LMS-3	muting lamp - vertical mounting	95ACC2010
SU-LMS-1A	base module for lms-1	95ACC2020
SU-LMS-1B	tower module for lms-1	95ACC2030



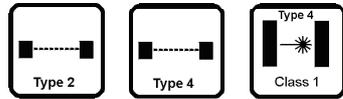
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SX-F/G-SG-ST SERIES

The emitter-receiver photocells of the **Sx-F/G-SG-ST** series have been homologated to function with the control units of the SG-BWS series that together form a safety system respectively of **Type 2 and Type 4 conforming with the EN 954-1 and EN ISO 13849-1 Standards.**

The photocells are available in the **M18 tubular plastic** format with infrared emission of the **S5** series for distances reaching **8m**, M18 plastic tubular format with laser emission of the **SL5** series with operating range reaching **40m**, and MAXI format with infrared emission of the new **S300** series with operating range reaching a respectively 50m for Type 2 and 40m for Type 4 models. Together with S300 standard models **DEFOGGING MODELS** with heated front glass are available for applications where sudden changes of the temperature in the nearby of the sensor are causing condensation.

All models are equipped with **M12 4-pole connector**: no cable or terminal block models are available. LEDs signal both the operating status and correct alignment of the safety photocells.



HIGHLIGHTS

- Emitter-receiver photocells with test input
- Type 2 and Type 4 models
- Plastic tubular and MAXI
- Photocells with standard M12 connectors
- IR emission models for distances reaching 8m, 40m, 50m
- Class 1 laser emission models for distances reaching 40m

APPLICATIONS

Extreme reliability and simplicity make the SX-F/G-SG-ST together with SG-BWS control units the ideal solution for the following applications:

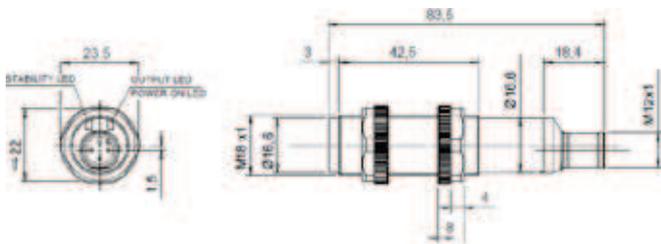
- Automatic warehouses
- Machines for food packaging
- Robots
- Automatic assembling lines
- Machines for PCB production



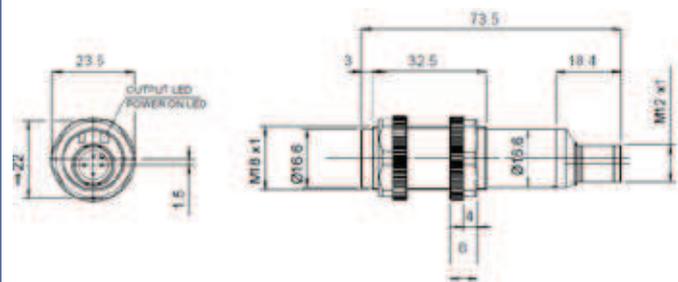
DIMENSIONS

S5 and SL5

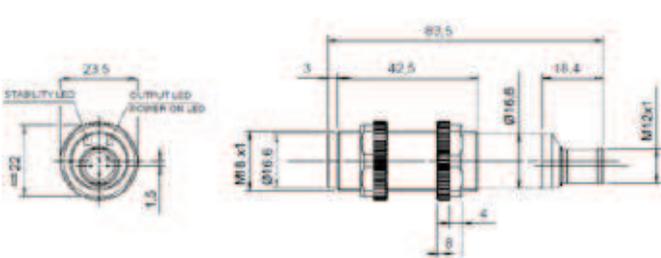
S5-5-F8-92-SG-ST2



S5-5-G8-62-SG-ST2



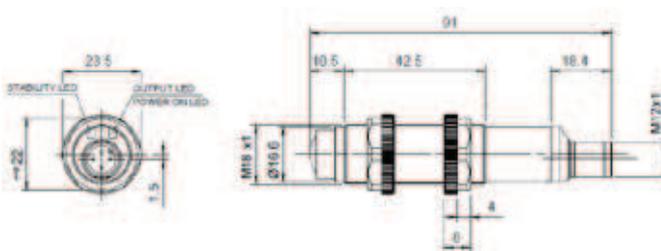
S5-5-F8-92-SG-ST4



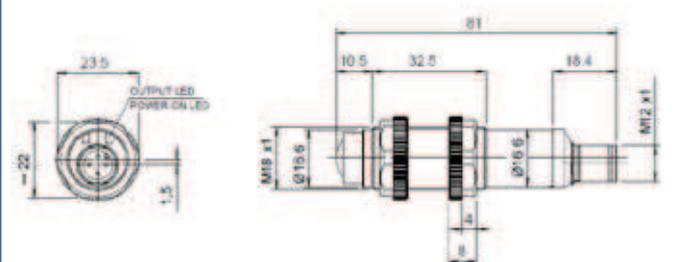
S5-5-G8-62-SG-ST4



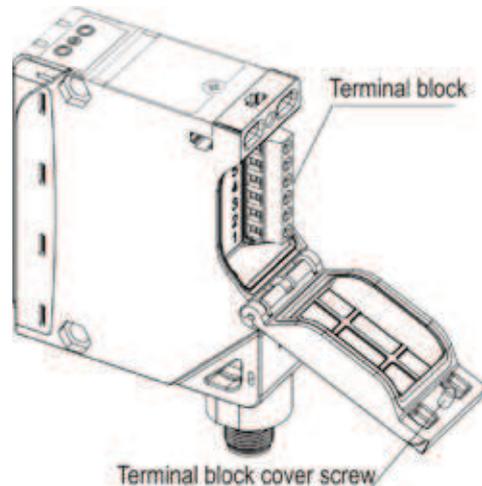
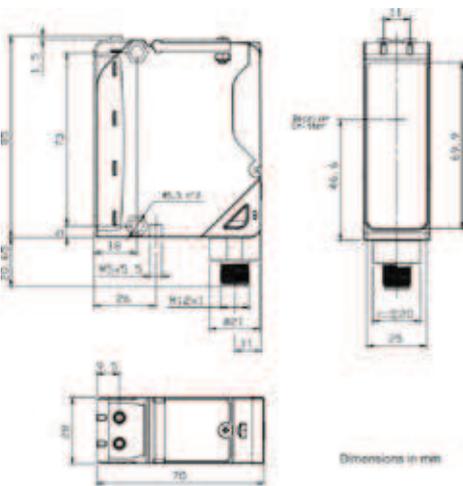
SL5-5-F-92-SG-ST4



SL5-5-G-82-SG-ST4

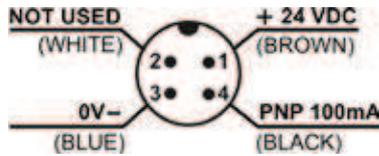


S300

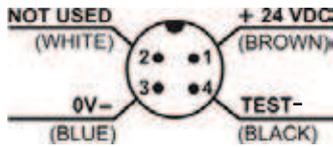


CONNECTIONS S5/SL5 F/G

S5/SL5 F

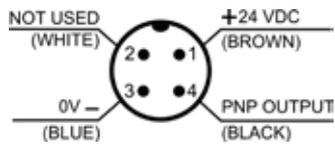


S5/SL5 G

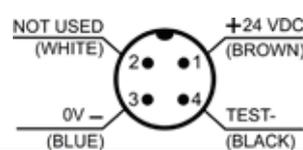


CONNECTIONS S300 F/G

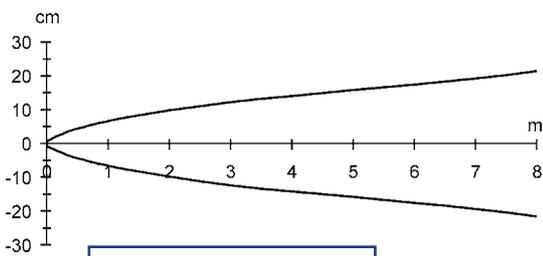
S300 F



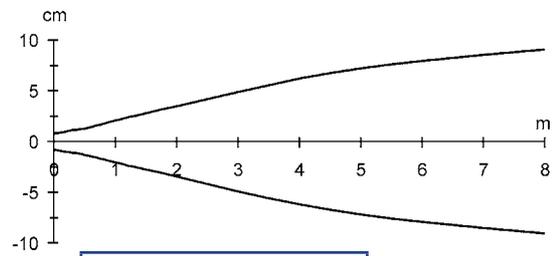
S300 G



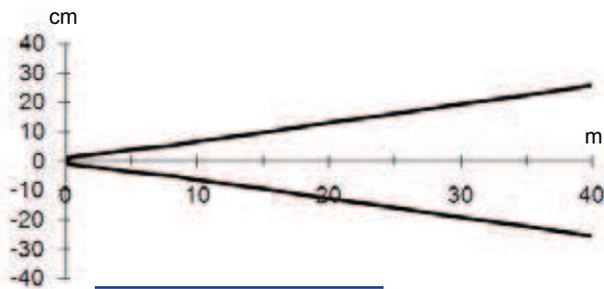
DETECTION DIAGRAMS



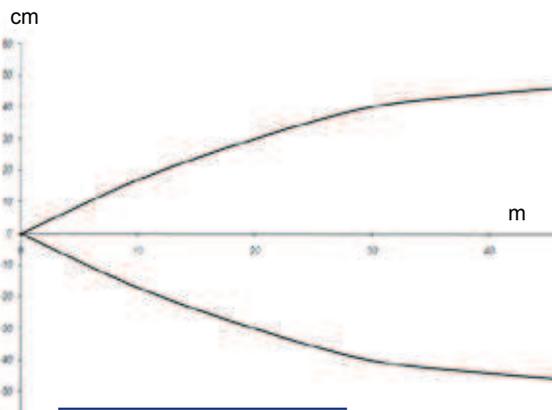
S5-F/G- SG-ST2



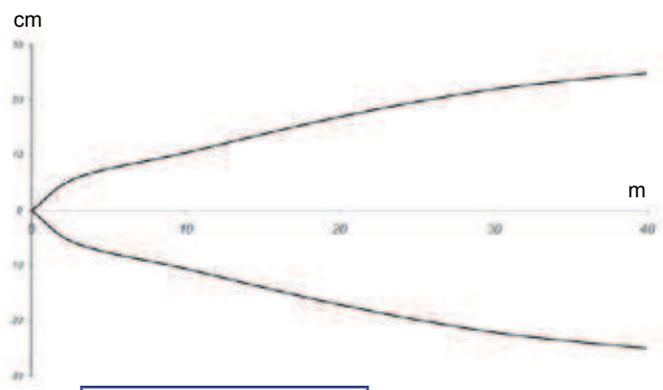
S5-F/G- SG-ST4



SL5-F/G- SG-ST4



S300-F/G- SG-ST2



S300-F/G- SG-ST4

TECHNICAL DATA

S5/SL5

	SL5...SG-ST4	S5...SG-ST2/ST4
Power supply:	24 Vdc ±15%	
Consumption (excluded output current):	35 mA max.	30 mA max.
Outputs:	PNP (short-circuit protection)	
Output current:	100 mA max.	
Output saturation voltage:	2 V max.	
Leakage current:	50 µA at 30 Vdc	
Response time:	1 ms max.	
Switching frequency:	500 Hz max.	
Operating temperature:	-10 ... 50 °C	-25 ... 55 °C
Storage temperature:	-25 ... 70 °C	
Dielectric strength:	500 Vac / 1 min. between electronic parts and housing	
Insulating resistance	>20 MΩ / 500 Vdc, between electronic parts and housing	
Operating distance (min. values):	0 ... 40 m	0...8 m
Emission type:	red Laser (650 nm) Class 1 EN 60825-1 (1994)	LED infrared 880 nm
Effective aperture angle:	xx...ST2 = ± 5° / xx...ST4 = ± 2.5°	
Ambient light rejection:	according to EN 60947-5-2	
Vibration:	0.5 mm amplitude, 10 ... 55 Hz frequency, for each axis (EN60068-2-6)	
Shock resistance:	11 ms (30 G) 6 shocks for each axis (EN60068-2-27)	
Housing material:	ABS UL 94V-O	
Connector/gland material:	Polycarbonate	
Lens material:	PMMA	
Mechanical protection:	IP67	
Connections:	M12 4-pole connector	
Weight:	30 g. max.	

S300

DC MODELS	S300...2/5-G/F-ST2/ST4	
Power supply:	24 VDC ±15%	
Ripple:	10 % max	
Consumption (excluded output current):	S300...F: <25mA S300...G: < 20 mA	
Outputs:	PNP NC open collector	
Output current:	100 mA (resistive load)	
Output saturation voltage:	2.4 V max	
Diagnostic functions	Test- input	
Response time:	1 ms	
Switching frequency:	500 Hz	
Weight:	140 g	
Common data	S300...G	S300...F
Emission type:	INFRARED LED (880nm)	
Operating distance (typical value):	S300...ST2: 0..50m S300...ST4: 0..40m	
EAA:	S300...ST2: ± 5° / S300...ST4: ±2.5°	
Indicators:	POWER ON LED (GREEN)	OUTPUT LED (YELLOW), STABILITY LED (GREEN)
Operating temperature:	-40...55 °C	
Storage temperature:	-40...70 °C	
Insulating resistance:	> 20 MΩ, 500 VDC between electronics and housing	
Ambient light rejection:	EN 60947-5-2	
Vibration:	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)	
Shock resistance:	11 ms (30 G) 6 shock for every axis (EN60068-2-27)	
Housing:	PBT 30% Glass fiber-reinforced	
Lenses:	frontal window and lens in PC	
Protection class:	IP67 (IEC / EN60529) / cable gland EN50262	
UL requirements:	Class 2 power supply; 60-70°C copper conductor 24-20 AWG; Type 1 Enclosure	
Connections:	see the "CONNECTIONS" paragraph	



MODEL SELECTION AND ORDER INFORMATION
S5

MODEL	DESCRIPTION	CODE
S5-5-G8-62-SG-ST2	S5-5-G8-62-SG-ST2 emitter, 10/30Vdc, Type 2	952051870
S5-5-F8-92-SG-ST2	S5-5-F8-92-SG-ST2 receiver, 10/30Vdc, Type 2	952051890
S5-5-G8-62-SG-ST4	S5-5-G8-62-SG-ST4 emitter, 10/30Vdc, Type 4	952051910
S5-5-F8-92-SG-ST4	S5-5-F8-92-SG-ST4 receiver, 10/30Vdc, Type 4	952051930

SL5

MODEL	DESCRIPTION	CODE
SL5-5-G-82-SG-ST4	SL5-5-G-82-SG-ST4 Laser emitter, 40m, M12, Type 4	952501160
SL5-5-F-92-SG-ST4	SL5-5-F-92-SG-ST4 receiver, 40m, PNP, Light, M12, Type 4	952501170

S300

MODEL	DESCRIPTION	CODE
S300-PR-5-G00-EX-SG-ST2	S300-PR-5-G00-EX-SG-ST2 emitter 10/30Vdc Type 2	951451320
S300-PR-5-G00-EX-M-SG-ST2	S300-PR-5-G00-EX-M-SG-ST2 emitter 10/30Vdc Type 2 defogging	951451330
S300-PR-5-F00-OC-SG-ST2	S300-PR-5-F00-OC-SG-ST2 receiver 10/30Vdc Type 2	951451340
S300-PR-5-F00-OC-M-SG-ST2	S300-PR-5-F00-OC-M-SG-ST2 receiver 10/30Vdc Type 2 defogging	951451350
S300-PR-5-G00-EX-SG-ST4	S300-PR-5-G00-EX-SG-ST4 emitter 10/30Vdc Type 4	951451360
S300-PR-5-G00-EX-M-SG-ST4	S300-PR-5-G00-EX-M-SG-ST4 emitter 10/30Vdc Type 4 defogging	951451370
S300-PR-5-F00-OC-SG-ST4	S300-PR-5-F00-OC-SG-ST4 receiver 10/30Vdc Type 4	951451380
S300-PR-5-F00-OC-M-SG-ST4	S300-PR-5-F00-OC-M-SG-ST4 receiver 10/30Vdc Type 4 defogging	951451390

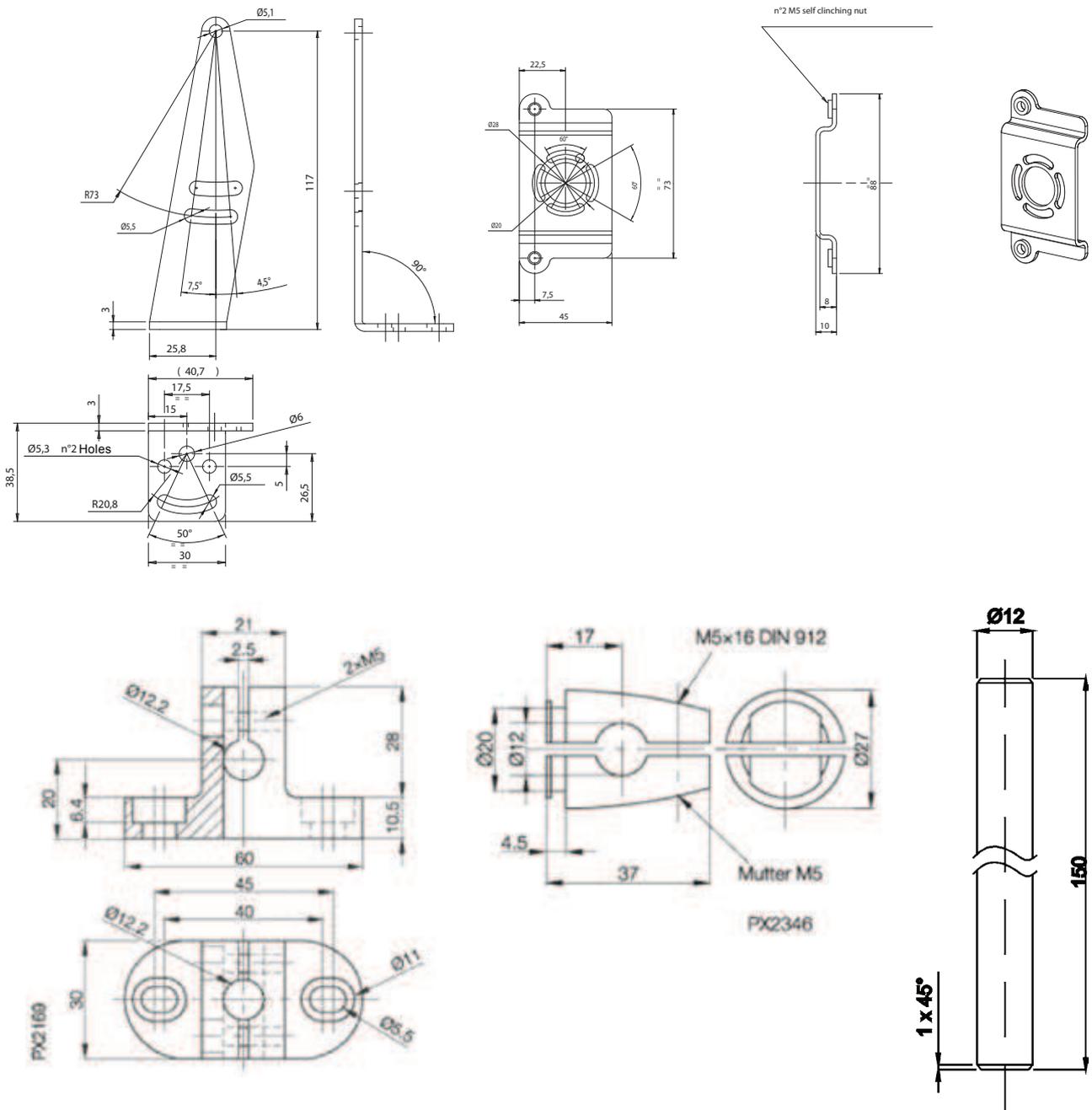
NOTE: THE SAFETY PHOTOCELLS LISTED ABOVE ARE CERTIFIED AND MUST BE USED ONLY WITH SAFETY CONTROL UNITS SG-BWS-T4 AND SG-BWS-T4-MT SERIES. NEITHER TECHNICAL AND FUNCTIONING COMPATIBILITY NOR CERTIFICATIONS ARE GUARANTEE IF USING THEM WITH OTHER BRAND CONTROL UNITS OR OLD/OBSOLETE DATALOGIC AUTOMATION CONTROL UNITS

ACCESSORIES SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE
CS-A1-02-U-03	4-pole M12 cable (axial) 3 m	95ASE1120
CS-A1-02-U-05	4-pole M12 cable (axial) 5 m	95ASE1130
CS-A1-02-U-10	4-pole M12 cable (axial) 10 m	95ASE1140
CS-A1-02-U-15	4-pole M12 cable (axial) 15 m	95ASE1150
CS-A1-02-U-25	4-pole M12 cable (axial) 25 m	95ASE1160
SP-40	fixed support for tubular M18 sensors	95ACC1370
SWING-18	adjustable support for plastic tubular M18 sensors	895000006
MICRO-18	support with micrometric regulation for tubular M18 sensors	95ACC1380
ST-5099	S300 FIXED BRACKET	95ACC2830
ST-5100	S300 FIXED BRACKET	95ACC2840
DataVS-MK-01	S300 MOUNTING KIT	95A901380

Note: for S5, SL5 fixing brackets and supports dimensional 2D dimensional drawings please refer to the corresponding datasheets

S300 ACCESSORY DRAWINGS



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SAFEASY™ ACCESSORIES

The accessory range for the **SAFEasy™** SE and SF2 safety light curtain series includes a complete offer of complementary parts for the installation and use of safety devices in plants and machinery. The deviating mirrors of the **SE-DM** series, useful to protect different sides of a machine, are available in different heights ranging from 150 mm to 1800 mm. The column and floor stands of safety light curtains and deviating mirrors of the **SE-S** series are available with heights ranging from 800 mm to 1800 mm. The protective stands of the **SE-P** series, ideal to guarantee device protection against shocks, also available in different heights ranging from 273 mm to 1743 mm. The laser pointer of the **SE-LP** series represents a valid support for the alignment and installation of the SE safety light curtain series, in particular for applications with long operating distances and / or using deviating mirrors. The **SE-SR2** safety relay guarantees the correct connection of the **SAFEasy™** safety light curtain series to machine stopping circuits. The series also includes Muting accessories: Muting signalling lamps of the **LMS** series and **SE-SRT** Muting connection box. The shielded cables of the **CV** series are available both in the standard axial version as well as in the 90° version; the latter particularly useful in applications that have reduced space. The fixing brackets, orientable, anti-vibration and anti-scratch supports of the **ST-K** series and the **TP** test pieces complete the offer.

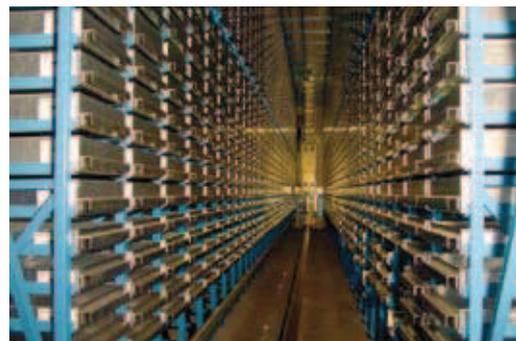
HIGHLIGHTS

- Complete range of accessories for **SAFEasy™** safety light curtains
- Deviating mirrors, fixing brackets and supports, protective stands
- Muting accessories: signalling lamps and Muting connection box
- Type 4 safety relays



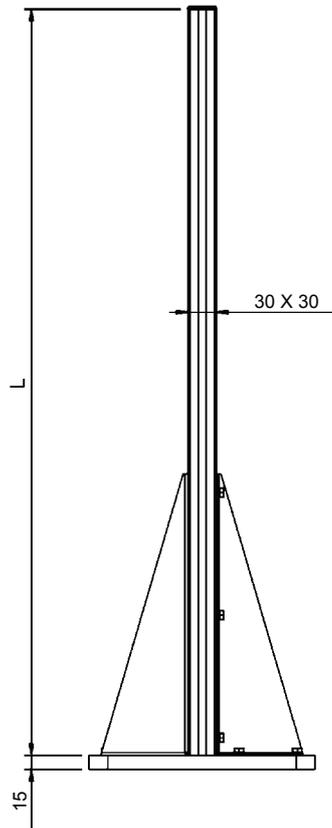
APPLICATIONS

Safety accessories series are suitable for all the application where Datalogic Automation safety light curtains are used to protect dangerous part of automatic machine.

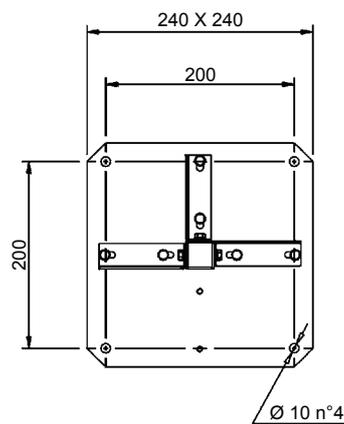


DEVIATING MIRRORS - SE-DM SERIES

The column and floor stands of the **SE-S** series, as well as being suitable for the **SAFEasy™** - SE safety light curtain series, can be used also with the SF2 safety light curtain series and deviating mirrors of the SE-DM series.



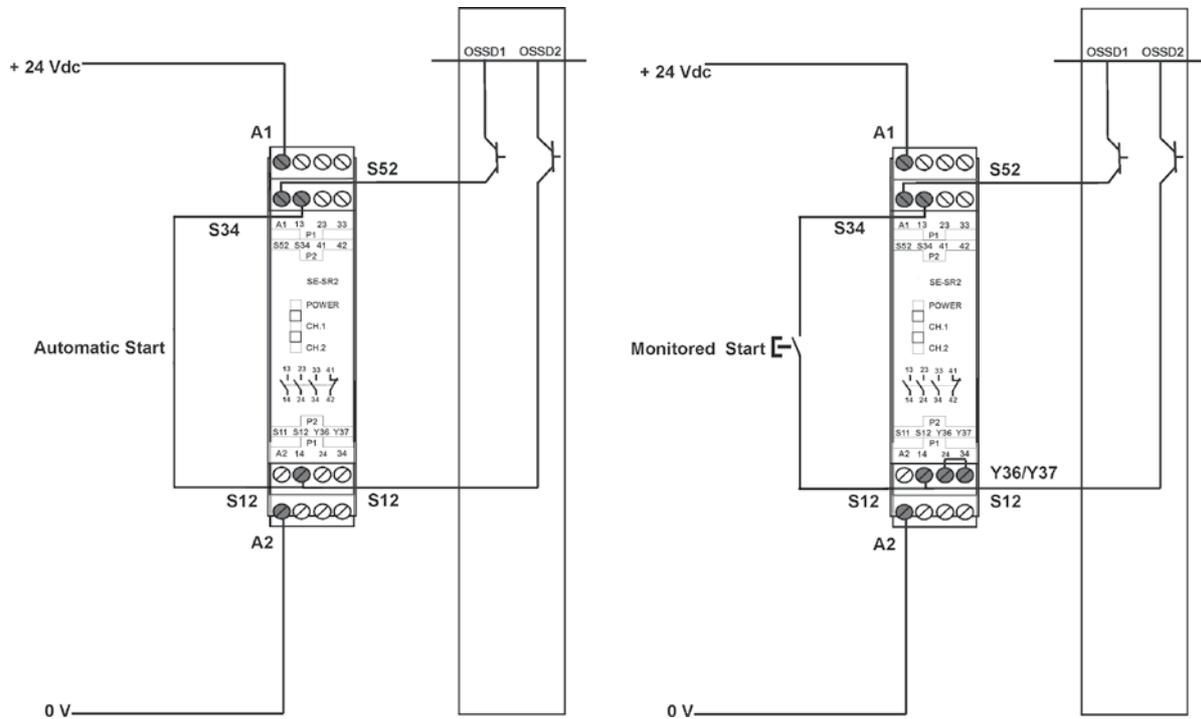
VERSION	L (mm)
SE-S 800	800
SE-S 1000	1000
SE-S 1200	1200
SE-S 1500	1500
SE-S 1800	1800



mm

* 30 x 30 mm profile dimensions for 800, 1000 and 1200 mm
 45 x 45 mm profile dimensions for 1500 and 1800 mm

SAFETY RELAYS - SE-SR2 SERIES



The drawings show the connection between SAFEasy™ safety light curtains and the type 4 safety relay of the SE-SR2 series operating in Automatic Start (left side) and Manual Start with monitoring (right side).

TEST PIECES - TP SERIES



The test pieces of the TP series allow to verify if the resolution of the SAFEasy™ safety light curtains is guaranteed inside the entire detection field. Models with Ø 14, 20, 30, 35, 40, 50 and 90 mm are available.

FIXING BRACKETS - ST-K SERIES

The **ST-KSTD** model represents the spare part kit composed of 4 standard fixing brackets for SE safety light curtains.

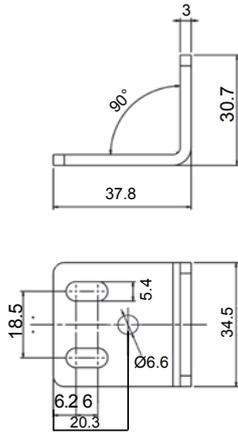
The **ST-K*OR** supports allow the orientation of the SE safety light curtains of $\pm 5^\circ$.

The **ST-K*AV** supports allow the absorption of the vibrations caused by the machinery where the SE safety light curtains are installed.

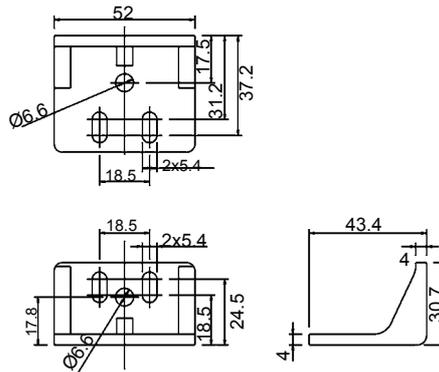
The **ST-KSF2STD** model represents the spare part kit composed of 12 standard fixing brackets for SF2 safety light curtains.

The **ST-KSF2** model represents the anti-scratch brackets (kit composed of 4 brackets) for SF2 safety light curtains.

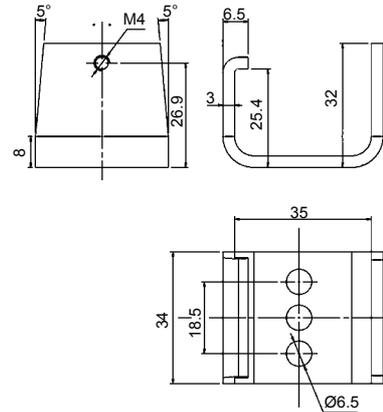
The **ST-KP*MP** model represents the plastic fixing brackets for the SE safety light curtains.



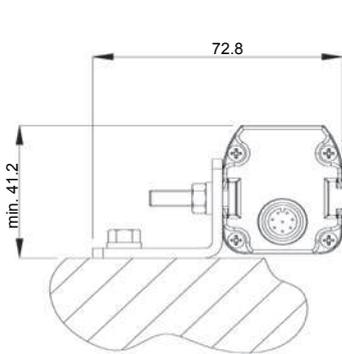
SE series: standard fixing bracket.



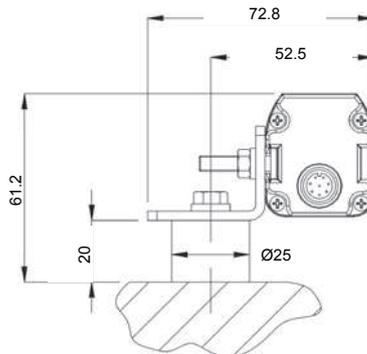
SE series: plastic fixing bracket.



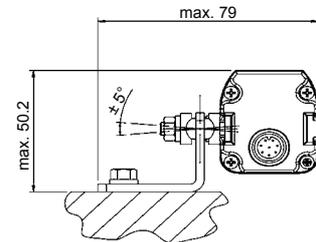
SF2 series: standard fixing bracket.



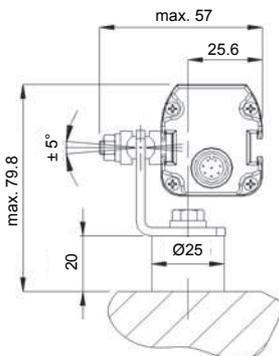
SE series: application with standard fixing bracket.



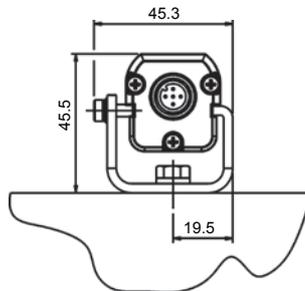
SE series: application with standard fixing bracket and ST-K*AV anti-vibration support.



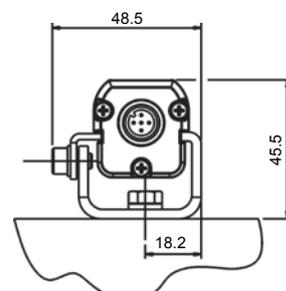
SE series: application with standard fixing bracket and ST-K*OR orientable support.



SE series: application with standard fixing bracket, ST-K*AV anti-vibration support and ST-K*OR orientable support.



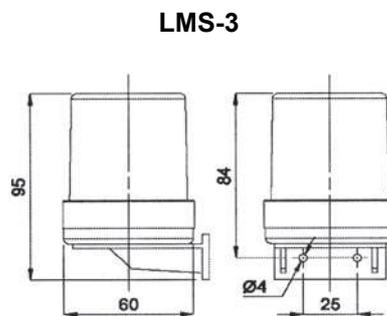
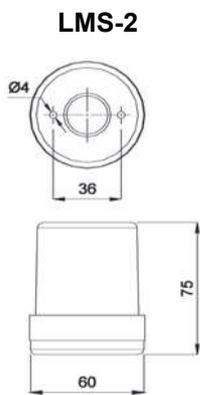
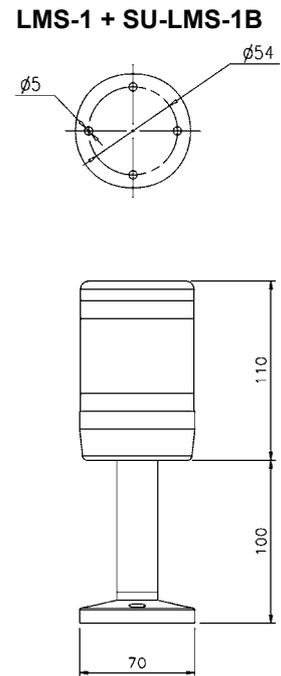
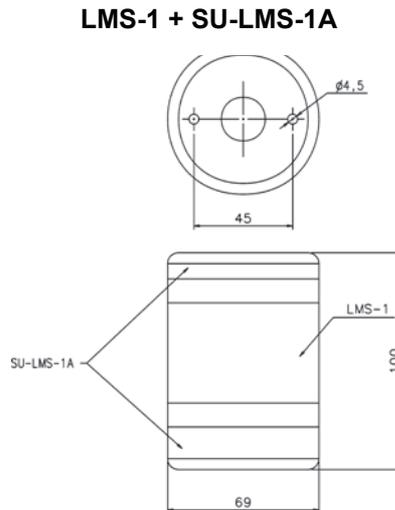
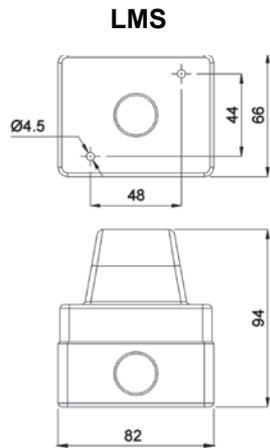
SF2 series: application with standard fixing bracket. The standard fixing bracket is compatible with the SE standard fixing bracket, ST-K*AV anti-vibration support.



SF2 series: application with ST-KSF2 anti-scratch bracket.

mm

MUTING SIGNALLING DEVICES - LMS SERIES

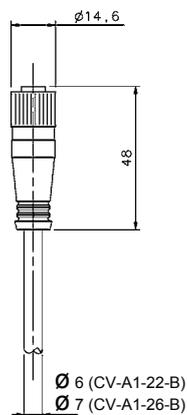


Use 24 V lamps
3 W min (125 mA)
7 W max. (300 mA)

mm

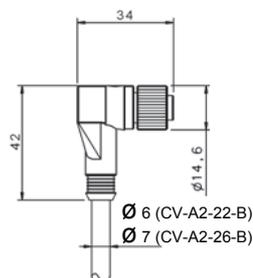
SHIELDED CABLES - CV SERIES

**CV-A1-22-B
CV-A1-26-B**



axial versions

**CV-A2-22-B
CV-A2-26-B**



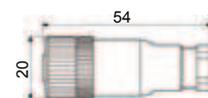
radial versions

mm

CONNECTORS - CS SERIES

CS-A1-06-B-NC

AXIAL M12 8-POLE
FEMALE CONNECTOR



accepts conductors with
0.25 ... 0.75mm² sections

mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
CS-A1-06-B-NC	axial M12-8 pole	95ACC2550
CV-A1-22-B-03	axial shielded 4-pin 3 m cable	95ACC1480
CV-A1-22-B-05	axial shielded 4-pin 5 m cable	95ACC1490
CV-A1-22-B-10	axial shielded 4-pin 10 m cable	95ACC1500
CV-A1-22-B-15	axial shielded 4-pin 15 m cable	95ACC2070
CV-A1-22-B-25	axial shielded 4-pin 25 m cable	95ACC2090
CV-A1-26-B-03	axial shielded 8-pin 3 m cable	95ACC1510
CV-A1-26-B-05	axial shielded 8-pin 5 m cable	95ACC1520
CV-A1-26-B-10	axial shielded 8-pin 10 m cable	95ACC1530
CV-A1-26-B-15	axial shielded 8-pin 15 m cable	95ACC2080
CV-A1-26-B-25	axial shielded 8-pin 25 m cable	95ACC2100
CV-A2-22-B-03	radial shielded 4-pin 3 m cable	95ACC1540
CV-A2-22-B-05	radial shielded 4-pin 5 m cable	95ACC1550
CV-A2-22-B-10	radial shielded 4-pin 10 m cable	95ACC1560
CV-A2-26-B-03	radial shielded 8-pin 3 m cable	95ACC1600
CV-A2-26-B-05	radial shielded 8-pin 5 m cable	95ACC1610
CV-A2-26-B-10	radial shielded 8-pin 10 m cable	95ACC1620
LMS	muting lamp	95ASE1830
LMS-1	modular muting lamp	95ACC1990
LMS-2	muting lamp - horizontal mounting	95ACC2000
LMS-3	muting lamp - vertical mounting	95ACC2010
SU-LMS-1A	basic module for LMS-1	95ACC2020
SU-LMS-1B	tower module for LMS-1	95ACC2030
SE-S 800	column and floor stand H=800 mm	95ACC1730
SE-S 1000	column and floor stand H=1000 mm	95ACC1740
SE-S 1200	column and floor stand H=1200 mm	95ACC1750
SE-S 1500	column and floor stand H=1500 mm	95ACC1760
SE-S 1800	ground support H=1800 mm	95ACC1770
SE-SR2	type 4 safety relay - 3 NO 1NC	95ACC6170
ST-KSF2	anti-scratch fixing bracket - 4 pcs kit	95ACC2320
ST-KSF2STD	SF2 fixing bracket - 12 pcs kit	95ASE1020
ST-KSF2-40R	SF2 orientable supports - 4 pcs kit	95ACC2580
ST-KSF2-60R	SF2 orientable supports - 6 pcs kit	95ACC2590
ST-KSTD	SE fixing bracket - 4 pcs kit	95ACC1670
ST-KP4MP	SE plastic fixing bracket - 4 pcs kit	95ASE1100
ST-KP6MP	SE plastic fixing bracket - 6 pcs kit	95ASE1110
ST-K4AV	anti-vibration supports - 4 pcs kit	95ACC1700
ST-K6AV	anti-vibration supports - 6 pcs kit	95ACC1710
ST-K4OR	orientable supports - 4 pcs kit	95ACC1680
ST-K6OR	orientable supports - 6 pcs kit	95ACC1690
TP-14	test piece Ø 14 mm	95ACC1630
TP-20	test piece Ø 20 mm	95ACC1640
TP-30	test piece Ø 30 mm	95ACC1650
TP-35	test piece Ø 35 mm	95ACC1660
TP-40	test piece Ø 40 mm	95ASE1820
TP-50	test piece Ø 50 mm	95ASE1790
TP-90	test piece Ø 90 mm	95ASE1800



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CS ME SERIES

This **compact relay box** is the ideal solution able to guarantee a cost advantage respect to using a double-channel Type 2 or Type 4 safety relay. The box **can be used with all the safety light curtains of the SG and SE series that have the EDM function** (External Device Monitoring, i.e. the control of the external counter status). It represents an efficient alternative to using a couple of force-guided relays. The front terminal blocks and DIN rail mounting guarantee extremely fast installation and cabling ease.

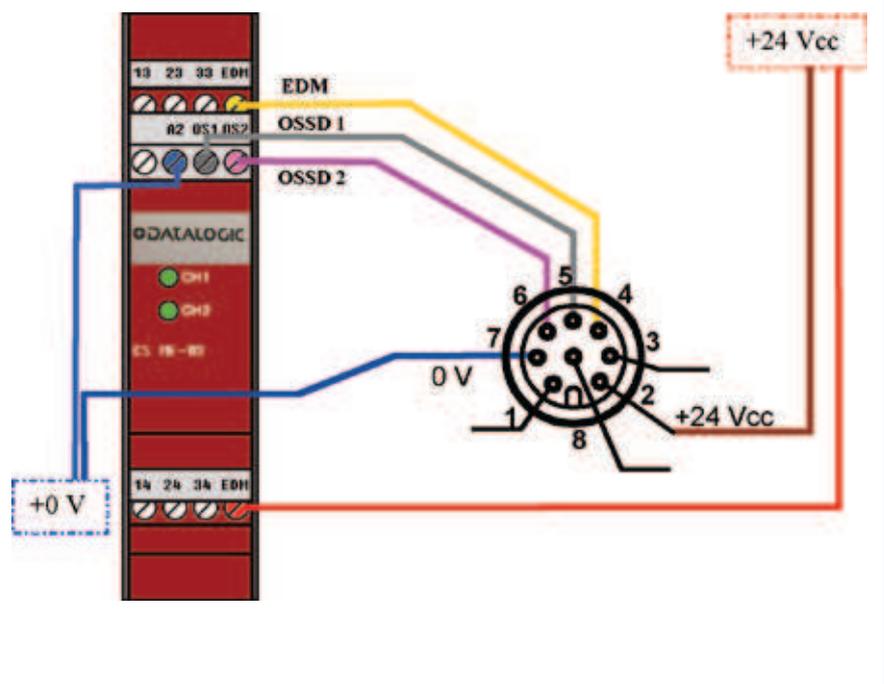


HIGHLIGHTS

- Module for Type 2 and Type 4 electrical light curtains
- 2 inputs for OSSD
- Output contacts: 3 NO safety contact and 1 NC feedback/EDM contact
- Standard terminal block for channel cabling

CONNECTIONS

Example of connecting the EDM module to the SE and SG series of safety light curtains with EDM function.



TECHNICAL DATA

HOUSING	Material:	Polyamide PA 6.6 class V0 (UL94)
	Protection degree:	IP40 (housing) IP20 (terminal block)
	Dimensions (L x H x D):	111.5 x 99.0 x 22.5mm
	Cable cross section:	0.2 ... 2.5mm ² 24 ... 12AWG
	Terminal driving torque:	0.5 ... 0.6Nm
GENERAL FEATURES	Safety category:	up to category 4 according to EN 954-1 (dependent from the base module)
	Ambient temperature:	-25 ... + 55°C
	Mechanical endurance:	> 10 millions operations
	Electrical endurance:	> 100.000 operations
	Pollution degree:	outside 3, inside 2
	Pulse withstand voltage (U _{imp}):	2.5KV
	Rated insulation voltage:	250V
	Over-voltage category:	II
	Insulation type:	basic insulation
Weight:	0.2Kg	
POWER SUPPLY	Rated operating voltage (U _n):	24Vdc*
	Max residual ripple in DC:	10%
	Supply voltage tolerance:	±20% di U _n
	Rated power consumption DC:	< 2W*
	Start power consumption:	< 3W control circuit
CONTROL CIRCUIT	Operating time t _A :	40ms
	Releasing time on de-energisation t _{R1} :	15ms + output circuit
OUTPUT CIRCUIT	Output contacts:	3 NO safety contacts
		1 NC feedback contact
	Contact type:	forced guided contacts
	Contacts material:	Silver alloy, gold plated
	Max. switching voltage:	230 */240Vac; 300Vdc
	Max. switching current per contact:	6A*
	Simultaneous currents sum of 3 outputs:	≤ 12A
	Conventional free air thermal current:	6A
	Contacts resistance:	≤100mW
	Protection fuse outside:	6A*
	Max. switching capacity:	1380 A/W
Utilization category (EN 60947-5-1):	AC15, U _e = 230V, I _e = 3 A DC13, U _e = 24V, I _e = 6 A (6 operations/minute)	
Utilization category (UL508):	C300	
STANDARD CONFORMITY	Standard conformity:	EN 60204-1, EN 954, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN 418, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, UL 508, CSA C22.2 n°14-95
	Directory conformity:	2006/95/EC, 2006/42/EC, 2004/108/EC
	Clearance and creepage distances:	according to EN 60947-1
	Approvals:	UL file n° E131787

* Data type approved by UL conforms to the standard UL 508 (file E131787)
Notes (data type approved by UL):
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- The terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

MODELS

MODEL	DESCRIPTION	ORDER N°
CS ME-03VU24-Y14	EDM RELAY BOX	95ASE1270



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SG-DM SERIES

Accessory deviating mirrors of SG-DM series can be used with all DATALOGIC AUTOMATION SF2, SE, SG2, SG4, SG BODY safety light curtain series and with Sx-F/G-SG-ST safety photocell series. Available in different lengths starting from **150mm (single mirrors for mono and multibeam applications) and reaching 1900mm**, making them ideal for classical perimeter protection. The **SG-DM** deviating mirrors can be mounted in a "stand alone" configuration directly on the machine or inside SG-PS protective stand series. Mirror mounting can be performed through dedicated accessory mounting kits: **ST-PS-DM** for protective stands mounting and **ST-DM** for "stand alone" mounting.



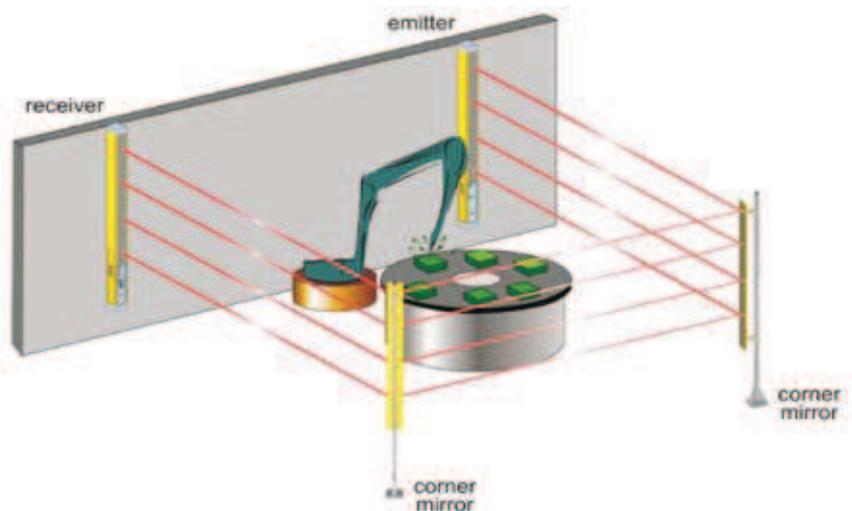
SAFETY

HIGHLIGHTS

- Suitable for all models SF2, SE, SG2, SG4, SG BODY safety light curtains series and Sx-F/G-SG-ST safety photocells series
- Suitable for stand alone mounting on the machines or inside protective stands SG-PS series
- Sturdy aluminum profile
- 80mm width

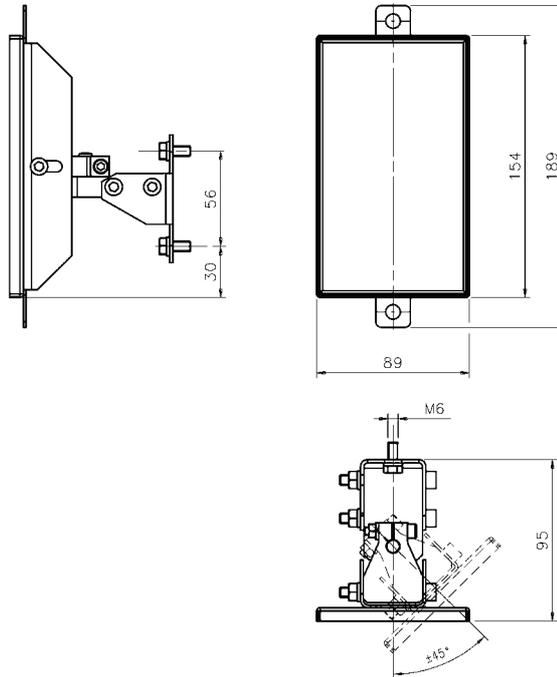
APPLICATIONS

Thanks to its extremely easy mounting, the SG-DM deviating mirrors are particularly suitable for all the applications that require the protection of more than one side of a machine.

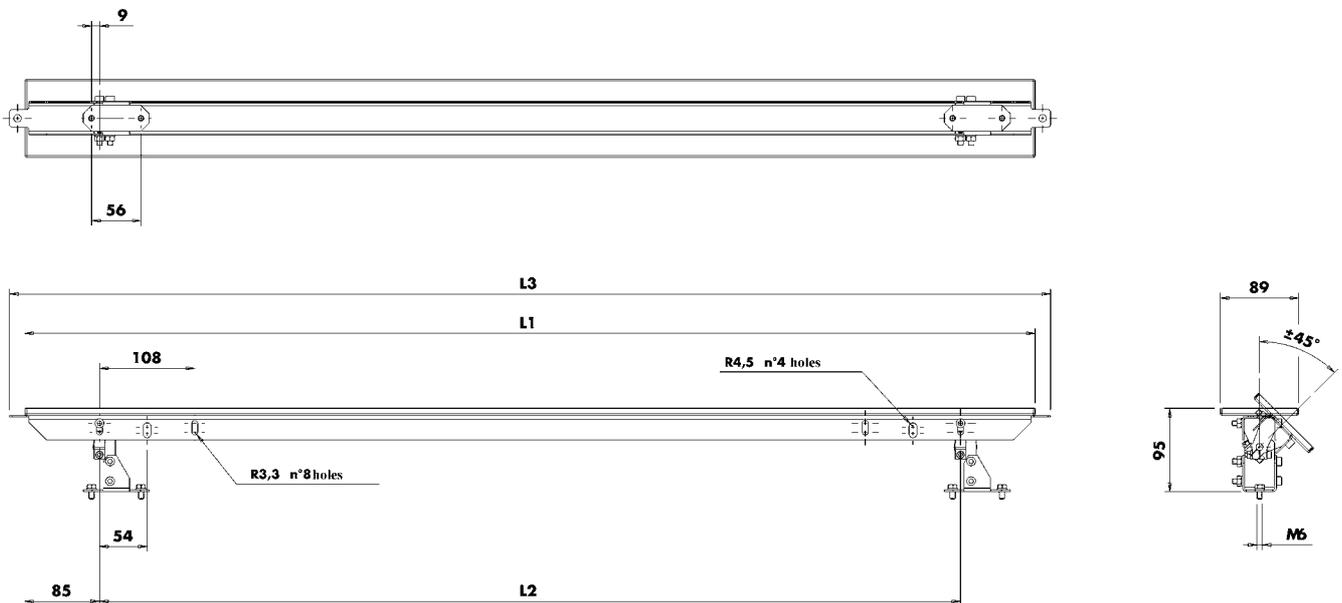


DIMENSIONS

Overall dimensions of 150 model



Overall dimensions of models from 600 to 1900



Model	L1 [mm]	L2 (mm)	L3 (mm)
SG-DM 600	545	376	580
SG-DM 900	845	676	880
SG-DM 1200	1145	976	1180
SG-DM 1650	1595	1426	1630
SG-DM 1900	1845	1676	1880

Note: the SG-DM couplet with the Protective Stand overall dimensions are available in the dedicated user manual.

MIRRORS – SAFETY LIGHT CURTAINS CORRESPONDANCE TABLE

MIRROR MODELS	CORRESPONDING SAFETY LIGHT CURTAINS MODELS
SG-DM 600	SEX-XX-015
SG-DM 600	SEX-XX-030
SG-DM 600	SGX-XX-015
SG-DM 600	SGX-XX-030
SG-DM 600	SGX-XX-015
SG-DM 600	SGX-XX-030
SG-DM 600	SGX-XX-045
SG-DM 600	SGX-XX-045
SG-DM 600	SGX-XX-045
SG-DM 900	SGX-XX-060
SG-DM 900	SGX-XX-060
SG-DM 900	SGX-XX-060
SG-DM 900	SGX-XX-075
SG-DM 900	SGX-XX-075
SG-DM 900	SGX-XX-075
2X SG-DM 150 / SG-DM 900	SEX-X2-050
2X SG-DM 150 / SG-DM 900	SG2-S2-050
2X SG-DM 150 / SG-DM 900	SG4-S2-050
2X SG-DM 150 / SG-DM 900	SG2-B2-050
2X SG-DM 150 / SG-DM 900	SG4-B2-050
2X SG-DM 150 / SG-DM 900	SG4-BLR2-050
2X SG-DM 150 / SG-DM 900	SG4-BSR2-050
SG-DM 900	SG4-40-060
SG-DM 1200	SEX-XX-090
SG-DM 1200	SGX-XX-090
SG-DM 1200	SGX-XX-090
SG-DM 1200	SEX-XX-105
SG-DM 1200	SGX-XX-105
SG-DM 1200	SGX-XX-105
3X SG-DM 150 / SG-DM 1200	SEX-X3-080
3X SG-DM 150 / SG-DM 1200	SG2-S3-080
3X SG-DM 150 / SG-DM 1200	SG4-S3-080
3X SG-DM 150 / SG-DM 1200	SG2-B3-080
3X SG-DM 150 / SG-DM 1200	SG4-B3-080
3X SG-DM 150 / SG-DM 1200	SG4-BLR3-080
3X SG-DM 150 / SG-DM 1200	SG4-BSR3-080
4X SG-DM 150 / SG-DM 1200	SEX-X4-090
4X SG-DM 150 / SG-DM 1200	SG2-S4-090
4X SG-DM 150 / SG-DM 1200	SG4-S4-090
4X SG-DM 150 / SG-DM 1200	SG2-B4-090
4X SG-DM 150 / SG-DM 1200	SG4-B4-090
4X SG-DM 150 / SG-DM 1200	SG4-BLR4-090
4X SG-DM 150 / SG-DM 1200	SG4-BSR4-090
SG-DM 1200	SG4-40-090
SG-DM 1650	SGX-XX-120
SG-DM 1650	SGX-XX-120
SG-DM 1650	SGX-XX-120
SG-DM 1650	SGX-XX-135
SG-DM 1650	SGX-XX-135
SG-DM 1650	SGX-XX-135
SG-DM 1650	SGX-XX-150
SG-DM 1650	SGX-XX-150
SG-DM 1650	SGX-XX-150
4X SG-DM 150 / SG-DM 1650	SEX-X4-120
4X SG-DM 150 / SG-DM 1650	SG2-S4-120
4X SG-DM 150 / SG-DM 1650	SG4-S4-120
4X SG-DM 150 / SG-DM 1650	SG2-B4-120
4X SG-DM 150 / SG-DM 1650	SG4-B4-120
4X SG-DM 150 / SG-DM 1200	SG4-BLR4-120
4X SG-DM 150 / SG-DM 1200	SG4-BSR4-120
SG-DM 1650	SG4-40-120
SG-DM 1900	SEX-XX-165
SG-DM 1900	SGX-XX-165
SG-DM 1900	SGX-XX-165
SG-DM 1900	SGX-XX-180
SG-DM 1900	SGX-XX-180

MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	ORDER N°
SG-DM 150	DEVIATING MIRROR H=150MM	950801160
SG-DM 600	DEVIATING MIRROR H=600MM	950801170
SG-DM 900	DEVIATING MIRROR H=900MM	950801200
SG-DM 1200	DEVIATING MIRROR H=1200MM	950801210
SG-DM 1650	DEVIATING MIRROR H=1650MM	950801240
SG-DM 1900	DEVIATING MIRROR H=1900MM	950801260

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-DM*	"STAND ALONE" MIRRORS MOUNTING KIT	95ASE1940

*** FIXING BRACKET ARE NOT INCLUDED IN THE PACKAGE BUT MUST BE ORDERED, IF REQUIRED, AS ACCESSORY**



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SG-IP69K SERIES

The **SG-IP69K** accessory, is a PMMA acrylic tube used to protect and seal the safety light curtains of **SG2**, **SG4** and **SG BODY COMPACT** series. Thanks to SGIP69K accessory the IP protection of the safety light curtain is increased from **IP65** to **IP67**, **IP68** and **IP69K**.

The **Gore-Tex membrane** on the caps prevents water or dirt entering as well as internal condensation. The connection cable for the light curtain is protected and kept in its place by a M16 metric chock that prevents the entry of water or dirt.



SAFETY

HIGHLIGHTS

- Guarantees IP67, IP68 and IP69K mechanical protection
- Acrylic tubular PMMA housing
- Available for all models of the different heights of the SG2, SG4 (150 – 1800 mm) and SG BODY Compact (2, 3 and 4 beams) series
- Does not compromise the performance of the light curtain in terms of alignment
- Do not change the EAA value

APPLICATIONS

The SG-IP69K accessory is particularly used where high levels of humidity and temperature are present and machines or equipments are frequently washed with hot water (up to 80°C) at high pressure (up to 100 bar s) and / or cleaned with detergents. SG-IP69K is particularly suitable for FOOD industry applications:

- beverage production
- meat slaughter
- sausage production
- milk / cheese industry



CHEMICAL RESISTANCE TABLE

	CONCENTRATION	RESISTANCE	LEGEND
Inorganic Acid			FR = Full resistance
Boric acid		FR	MR = Medium resistance
Hydrochloric acid	< 40%	FR	NR = No resistance
Chromic acid	< 40%	FR	
Chlorosulfuric acid		FR	
Hydrogen fluoride	< 40%	MR	
Phosphoric acid	< 30%	FR	
Nitric Acid	< 20%	MR	
Concentrate nitric acid		NR	
Sulfuric acid	< 40%	FR	
Sulfuric acid	< 80%	MR	
Sulfuric acid	1%	FR	
Acid for accumulators		FR	
ALKALINE ACID			
Ammoniac		FR	
Barium hydrate, saturate solution		FR	
Potassic Carbonate, saturate solution		MR	
Soda Ash, saturate solution		FR	
Milk of Lime		FR	
Caustic Potassium, whatever concentration		MR	
Sodium hydroxide, whatever concentration		FR	
Inorganic Substances			
Chlorine water		FR	
Hydrogen peroxide 40 volums		FR	
Hydrogen peroxide 120 volums		NR	
Aluminium Chloride		FR	
Aluminium fluoride		MR	
Aluminium oxalate		FR	
Aluminium sulphate		FR	
Potassium alum		FR	
Ammonium carbonate		FR	
Ammonium chloride		FR	
Ammonium fluoride		FR	
Ammonium nitrate		FR	
Ammonium sulphate		FR	
Argent nitrate		FR	
Barium Chloride		FR	
Barium sulphate		FR	
Calcium Chloride		FR	
Calcium hypochlorite		MR	
Liquid Chlorine		NR	
Sulfuryl chloride		NR	
Ferric chloride (ico)		FR	
Ferric chloride (oso)		FR	
Ferric sulphate (oso)		FR	
Magnesium Chloride		FR	
Magnesium Sulphate		FR	

CHEMICAL RESISTANCE TABLE

SOLVENTS E ORGANIC COMPOUNDS	CONCENTRATION	RESISTANCE	LEGEND
Amyl acetate		NR	FR = Full resistance
Manganese(II) sulfate		FR	MR = Medium resistance
Mercury sulphate		MR	NR = No resistance
Nickel sulphate		FR	
Potassium bicarbonate		FR	
Potassium dichromate		FR	
Potassium carbonate		FR	
Potassium cyanide		FR	
Potassium ferricyanide		FR	
Niter (saltpeter)		FR	
Potassium permanganate		FR	
Potassium sulfite		FR	
Potassium sulfate		FR	
Copper(II) chloride		FR	
Copper sulphate		FR	
Silicon tetrachloride		NR	
Sodium bisulphite		FR	
Sodium cyanide		FR	
Sodium chlorate		FR	
Sodium Cloride		FR	
Sodium fluoride		FR	
Sodium phosphate		MR	
Sodium hypochlorite		MR	
Sodium nitrate		FR	
Sodium sulphate		FR	
Sodium sulphur		FR	
Tin chloride (oso)		FR	
Tin chloride (ico)		FR	
Tin sulphate (ico)		FR	
Zinc sulphate		FR	
Zinc chloride		FR	
Sulphur		FR	



CHEMICAL RESISTANCE TABLE

ORGANIC ACIDS	CONCENTRATION	RESISTANCE	LEGEND
Concentrated acetic acid		NR	FR = Full resistance
Acetyl acid	< 10%	FR	MR = Medium resistance
Butyric acid	< 5%	FR	NR = No resistance
Formic acid		NR	
Formic acid	< 2%	FR	
Lactic acid	< 10%	FR	
Oxalic acid		FR	
Picric acid	1% (in water)	FR	
Stearic acid		FR	
Tartaric acid	< 20%	FR	
Thioglycolic acid	< 10%	MR	
Trichloroacetic acid		NR	
Ethyl acetate		NR	
Acetone		NR	
Alcool allilico		NR	
Alcool amilico		NR	
N-Butanol		NR	
Ethil alcohol	< 20%	FR	
Ethil alcohol		NR	
Isopropyl alcohol		NR	
Wood alcohol		NR	
1-propyl alcohol		NR	
Acetic aldehyde		NR	
Acetic anhydride		NR	
Formaldehyde		FR	
Aniline		NR	
Benzine		MR	
Benzole		NR	
Ethil bromide		NR	
Butirato di etile		NR	
Chlorophenol		NR	
Chloroform		NR	
Ethil chloryde		NR	
Aviation gasoline		MR	
Cresol, methyl phenol		NR	
Decalina		FR	
Diacetonalcool		NR	
1,4-Dioxane		NR	
Ethylene bromide		NR	
Bis(2-ethylhexyl) phthalate		MR	
Heptane		FR	
Esalina		FR	
Hexane		FR	
ThiChloroether		NR	
Petroleum ether		FR	
Phenol		FR	
Ethyl ether		NR	
Ftalato diamilico		NR	
Ftalato dibutilico		NR	
Glycerine		FR	
2-etandiolo		FR	
Butyl lactate		NR	
Methyl ethyl ketone		NR	
Monobromo naftalina		FR	
Naphthalene		FR	
Pyridine		NR	
Propylene, methyl ethylene, propene		NR	
Carbon disulfide		NR	
Freon		NR	
Tetrachloroethylene		NR	
Carbon tetrachloride		NR	
Tetrahydrofuran		NR	
Tetralina		NR	
Tolulo		NR	

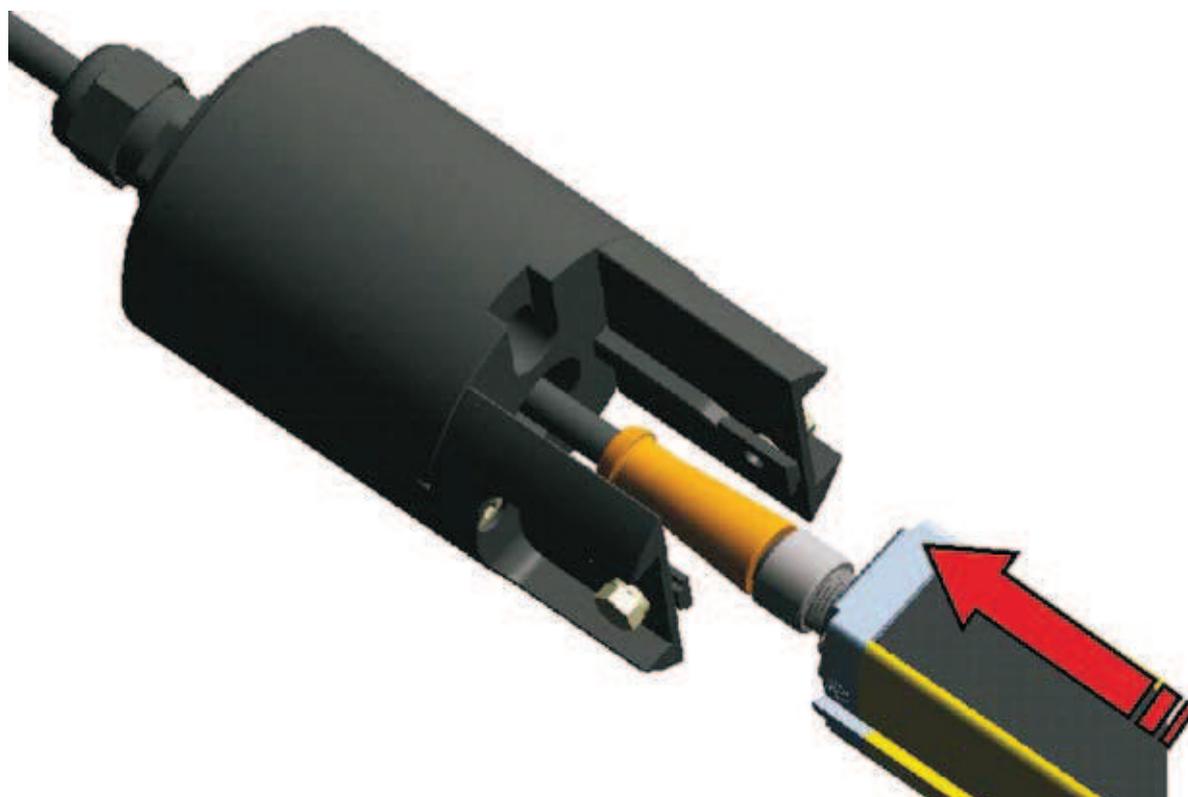
CHEMICAL RESISTANCE TABLE

	CONCENTRATION	RESISTANCE	LEGEND
Disinfectants			FR = Full resistance
Hydrogen peroxide 100 volums		FR	MR = Medium resistance
Turpentine		FR	NR = No resistance
Trichloroethylene		NR	
Tricresisolfato		NR	
Trietillamina		FR	
Xylol		NR	
Gas			
Ammonia		FR	
Carbon dioxide		FR	
Sulfur trioxide		FR	
Sulfur dioxide		FR	
Nitrogen dioxide		FR	
Gas illuminante		FR	
Hydrogen sulfide		FR	
Methane		FR	
Carbon monoxide		FR	
Oxygen		FR	
Ozone		FR	
Bromine vapors		MR	
Chlorine vapors		MR	
Foods			
Vinegar		FR	
Water		FR	
Mineral water		FR	
Anise		FR	
Beer		FR	
Coffee		FR	
Cinnamon		FR	
Chocolate		FR	
Onion		FR	
Chamomile extract		FR	
Lauro leaves		FR	
Dianthus		NR	
Milk of Lime		FR	
Liquors		NR	
Nutmeg		FR	
Pepper		FR	
Cider		FR	
Juice		FR	
Wine		FR	

CHEMICAL RESISTANCE TABLE

	CONCENTRATION	RESISTANCE
Fats, Oils, Wax		
Refining fatty acid		FR
Floor wax		MR
Diesel oil		FR
Vegetable oils and fats		FR
Mineral oils		FR
Moneral oils and fats		FR
Transformer oil		FR
Detergents		Fr
Alcool	< 20%	FR
Carbolic acid		NR
DDT (dichlorodiphenyltrichloroethane)		MR
Formalia (se è formalina = Formaldehyde)		FR
Pasta di cloramina		NR
Calcium hypochlorite pulp		FR
Ethanol denaturated		NR
Soluzione cloramina	< 2%	FR
Calcium chloride solution	< 2%	FR
Mercury(II) chloride		FR
Alcool anidro		NR
Pure gasoline		NR
Sodium hypochlorite		FR
Solvent stain remover		NR
Ammonia water solution		FR

LEGEND
FR = Full resistance
MR = Medium resistance
NR = No resistance



MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
SG-IP69K 150	Tubular IP69K H=150mm	95ASE1290
SG-IP69K 300	Tubular IP69K H=300mm	95ASE1300
SG-IP69K 450	Tubular IP69K H=450mm	95ASE1310
SG-IP69K 600	Tubular IP69K H=600mm	95ASE1320
SG-IP69K 750	Tubular IP69K H=750mm	95ASE1330
SG-IP69K 900	Tubular IP69K H=900mm	95ASE1340
SG-IP69K 1050	Tubular IP69K H=1050mm	95ASE1350
SG-IP69K 1200	Tubular IP69K H=1200mm	95ASE1360
SG-IP69K 1350	Tubular IP69K H=1350mm	95ASE1370
SG-IP69K 1500	Tubular IP69K H=1500mm	95ASE1380
SG-IP69K 1650	Tubular IP69K H=1650mm	95ASE1390
SG-IP69K 1800	Tubular IP69K H=1800mm	95ASE1400

NOTE: Each package contains what is necessary to protect a single unit (TX or RX). To protect both TX and RX, two pieces of the same code are needed



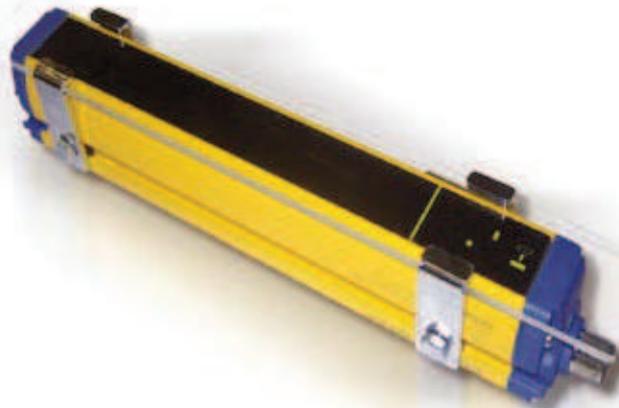
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SG-LS SERIES

The **LENS SHIELD** accessory for safety light curtains, composed of a PMMA Altuglas plate that can be mounted on the front glass of the safety light, ensures an effective protection against dust, chips and incandescent drops, deriving from material working near the safety light curtain.

Thanks to the unique profile, available in different lengths, the accessory **suits all the models of the SG2, SG4 and SE series.**

The accessory can be easily installed thanks to the fixing brackets supplied in the package that exploit the side groove of the safety light curtain. It can also be quickly replaced when the glass is damaged.



HIGHLIGHTS

- PMMA Altuglas 3mm plate
- Protects front glass of the light curtain from dust, chips and incandescent drops
- One profile available in different lengths ideal for all models of the SG2, SG4 and SE series (150–1800mm)
- Doesn't leave glue deposits or other residual material on the light curtain

APPLICATIONS

The SG-LS accessory is particularly suitable in working areas characterized by chips or incandescent drops deriving from material working or welding such as:

- Punching machines
- Milling machines
- Welding machines

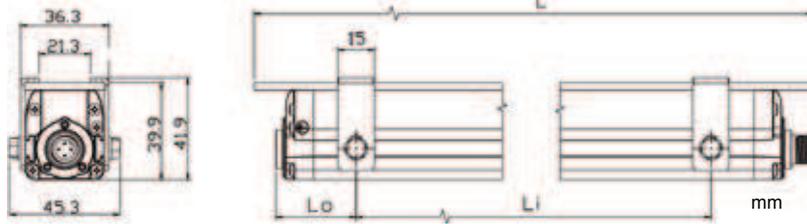
Five plates are supplied in the package that supply adequate replacements even in presence of extremely high wear.

TECHNICAL DATA

Protected height*:	150..1800mm
	2, 3, 4 beams
Housing material:	PMMA Altuglas
Thickness	3 mm
Reduction factor of the op.distance*:	10 % for each Lens Shield installed

* technical data referred to safety light curtain where the accessory is mounted

DIMENSIONS



Measurement in mm

SG2, SG4B, SE Hand/Finger protection					SE Body protection				
	VERS.	L	Li	Lo	VERS.	L	Li	Lo	
n°2+2 BRACKETS	15	245	160	30	2r 050	642	490	75	n°2+2 BRA- CKETS
	30	392	345	45	3r 080	942	640	175	
	45	540	400	60	4r 090	1042	660	200	
	60	686	520	75					n°3+3 BRA- CKETS
	75	832	590	115					
	90	980	640	175	4r 120	1342	480	200	
n°3+3 BRACKETS	105	1126	740	200					
	120	1274	445	200					
	135	1422	520	200					
	150	1568	595	200					
	165	1715	670	200					
	180	1860	745	200					

MODELS

MODEL	DESCRIPTION	ORDER N°
SG-LS 150	lens shield 150	95ASE1450
SG-LS 300	lens shield 300	95ASE1460
SG-LS 450	lens shield 450	95ASE1470
SG-LS 600	lens shield 600	95ASE1480
SG-LS 750	lens shield 750	95ASE1490
SG-LS 900	lens shield 900	95ASE1500
SG-LS 1050	lens shield 1050	95ASE1510
SG-LS 1200	lens shield 1200	95ASE1520
SG-LS 1350	lens shield 1350	95ASE1530
SG-LS 1500	lens shield 1500	95ASE1540
SG-LS 1650	lens shield 1650	95ASE1550
SG-LS 1800	lens shield 1800	95ASE1560
SG-LS 2	lens shield 2	95ASE1570
SG-LS 3	lens shield 3	95ASE1580
SG-LS 4-900	lens shield 4-900	95ASE1590
SG-LS 4-120	lens shield 4-120	95ASE1600

NOTE: Each package contains what is necessary to protect a single unit (TX or RX). To protect both TX and RX, two pieces of the same code are needed

ACCESSORIES

MODEL	DESCRIPTION	ORDER N°
SG-LS-MC4	Elastic fastner for LENS SHIELD (kit 4pcs.)	95ASE1810



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SG-LP SERIES

Thanks to its completely new housing and fixing system **SG-LP laser pointer** can be installed in all safety light curtains profiles of **SE, SG2, SG4-B and SG Body series**. Exactly as the previous model SE-LP, the **installation is performed through one of two lateral grooves**; but, thanks to a specially designed CAMME fixing equipment the laser pointer can be inserted into the groove either from the top or from the side, depending on which kind of fixing brackets have been used to mount the safety light curtain (standard "L" or TOP-BOTTOM Rotating ones). One top and one lateral fixing brackets, together with two tightening knobs allow to adjust SG-LP laser pointer's position in both transversal and longitudinal directions and to have it constantly centred respect light curtain's optical axis, independently from housing width.



HIGHLIGHTS

- To be used to help the mechanical alignment of TX and RX unit of safety light curtain;
- Suitable for all SE, SG2, SG4-B and SG Body profiles;
- Installation performed through one of two lateral grooves of the safety light curtain housing;
- Insertion into the groove either from the top or from the side, depending on which kind of fixing brackets have been used;
- Double adjustment, transversal and longitudinal directions, thanks to one top and one lateral fixing brackets, together with two tightening knobs.

APPLICATIONS

SG-LP laser pointer is advised to be used to ease TX and RX mechanical alignment process in the following installation conditions:

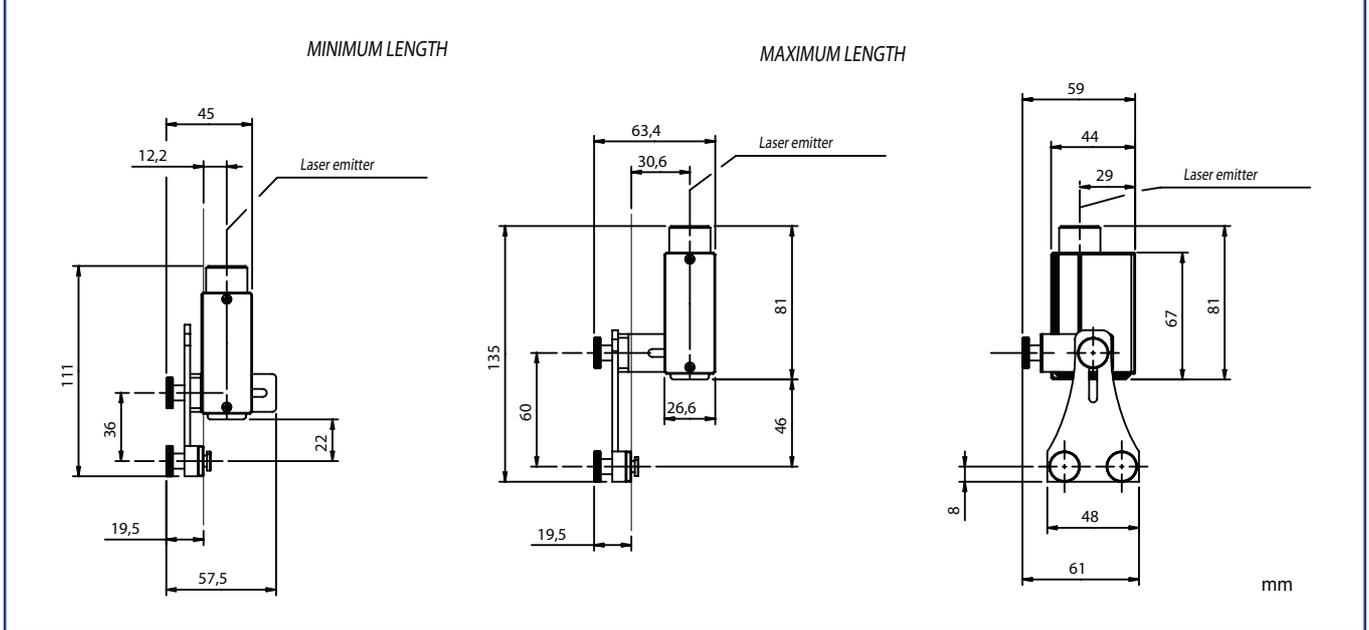
- Multi-beam body/access protection safety light curtain;
- Multi-beam body/access protection safety light curtain installed with deviating mirrors to perform perimetric protections;
- Finger or hand protection safety light curtains installed with deviating mirrors to protect different sides of a machine.

SAFETY PRECAUTIONS

The SG-LP laser pointer uses a red laser light beam that can be potentially dangerous to the human eye.

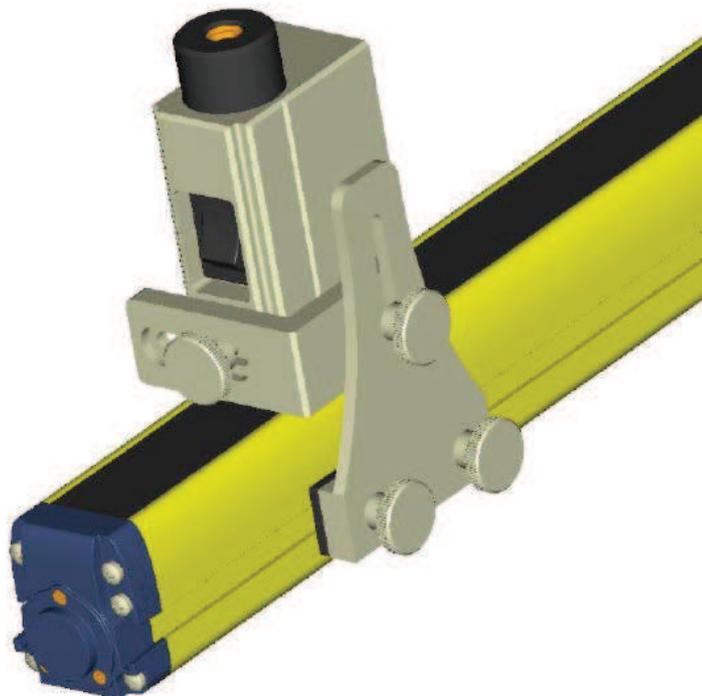


DIMENSIONS



AVAILABLE MODELS

MODEL	DESCRIPTION	ORDER N°
SG-LP	SG-LP LASER POINTER	95ASE5590



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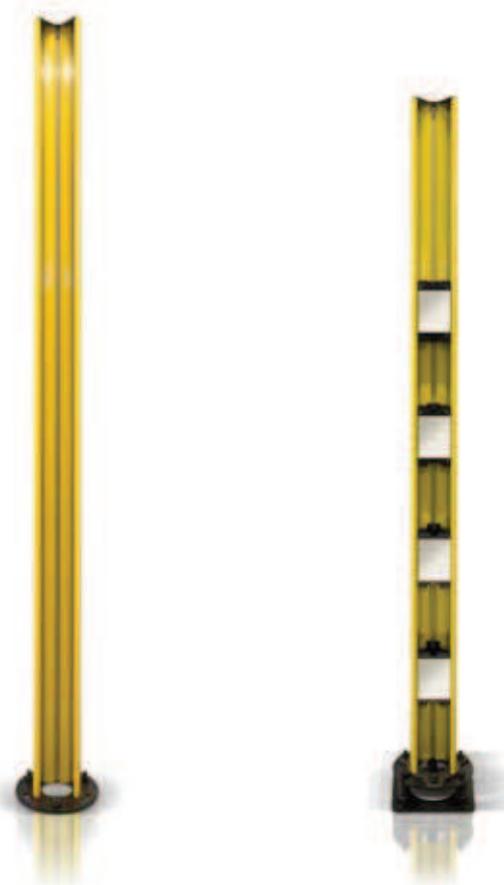
SG-PSB AND SG-PSM SERIES

The new **SG-PSB** and **SG-PSM** series are studied to improve the previous series SG-PS and to be used with all SG2, SG4, SG BODY BIG, SG BODY REFLECTOR and SG BODY COMPACT safety light curtains for finger, hand and body protection and access control.

Two complete new series are now available :

- **SG-PSB** version represents the natural replacement of SG-PS. SG – PSB is a protective aluminium profile mounted on a steel base made by two plates. Five different models with heights from 600mm to 1900mm are available.
- **SG-PSM** version is completely new and integrates into SG-PSB single mirrors for typical body or access perimeter protection. Four different models for 2, 3, 4 beams body protection 500, 800, 900 and 1200 mm controlled height whose mirrors are positioned according to EN-999 standard.

SG-PSB and **SG-PSM** series drastically reduce the overall plant costs thanks to their extremely installation easiness.



SAFETY

HIGHLIGHTS

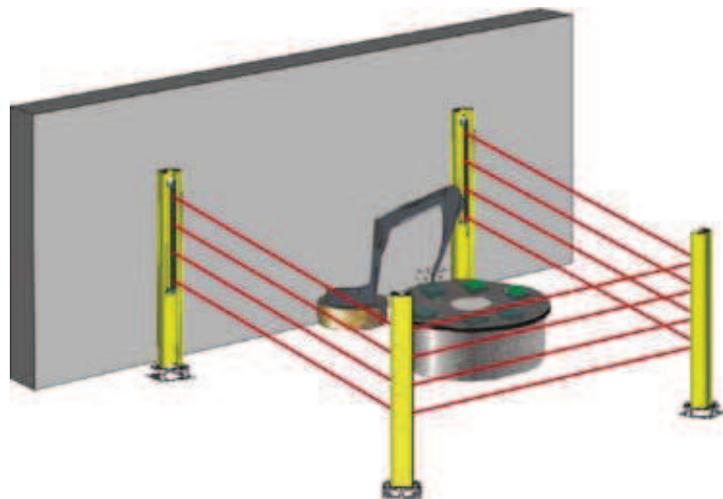
- Safety light curtains protection against shocks and collisions
- Available for all SE, SG2, SG4-B, SG BODY and SG BODY REFLECTOR series
- Models for barriers and with integrated deviating single mirrors
- Suitable for mounting stand-alone full-length mirrors inside
- Single base with 2 disks for flatness regulation and angular adjustment
- Upper plate's grooves positioned at most common angles (30, 45, 60, 90 degrees)
- Spherical level ball
- Additional accessory kit of squared plate together with 3 load springs
- Double rear groove for mounting additional external muting sensor

TYPICAL APPLICATIONS

The combination of multiple light beam safety devices or safety light curtains with deflector mirrors is the right solution for perimeter protection.

The adjustment of the deflector mirrors mounted in sturdy columns is thereby very straightforward.

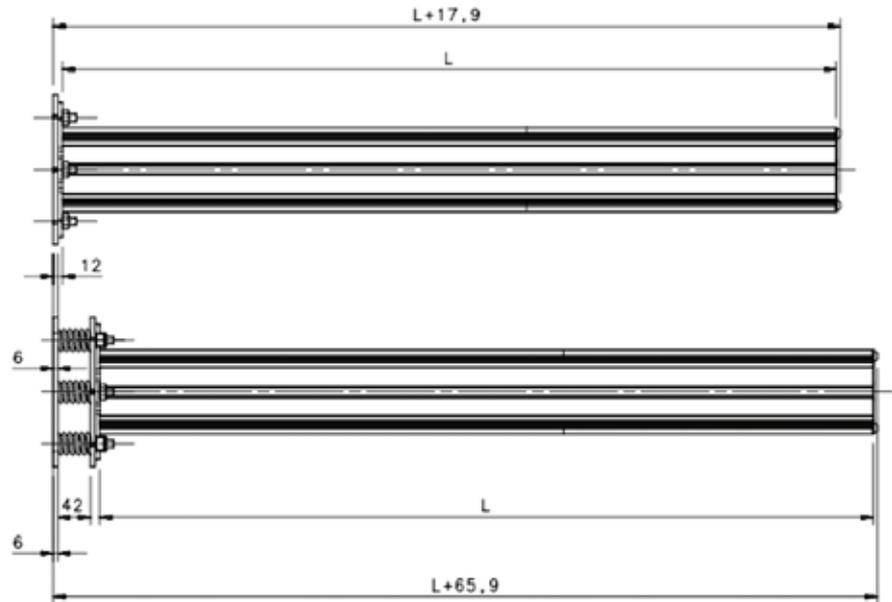
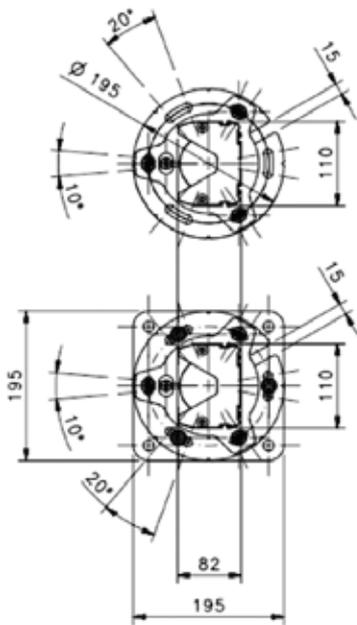
Here the unhindered access for loading as well as for changing tools and programs is a further advantage over mechanical fencing. The result is an increase in productivity.



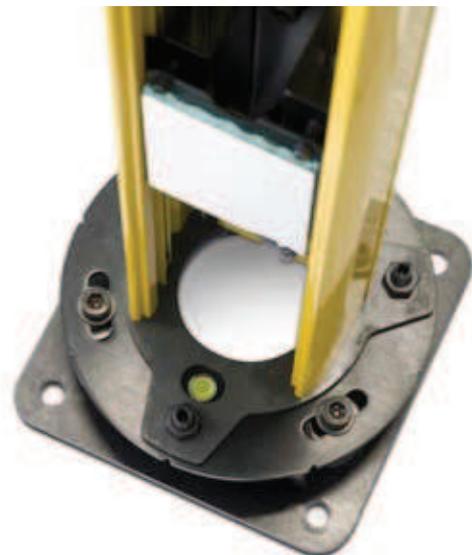
TECHNICAL SPECIFICATIONS

SPECIAL FEATURES	SG-PSB	SP-PSM	SG-P
Easy installation, quick vertical and axial alignment in just a few steps	•	•	
Easy height adjustment of the installed devices	•		
Individual mirrors can be exchanged and separately aligned		•	
Mirror distance according to EN 999 standard		•	
Additional upper plate with grooves positioned at most common angles	•	•	
Flatness regulation through 3 grains and spheric level ball	•	•	
Automatic resetting after mechanical impacts with special spring elements			•

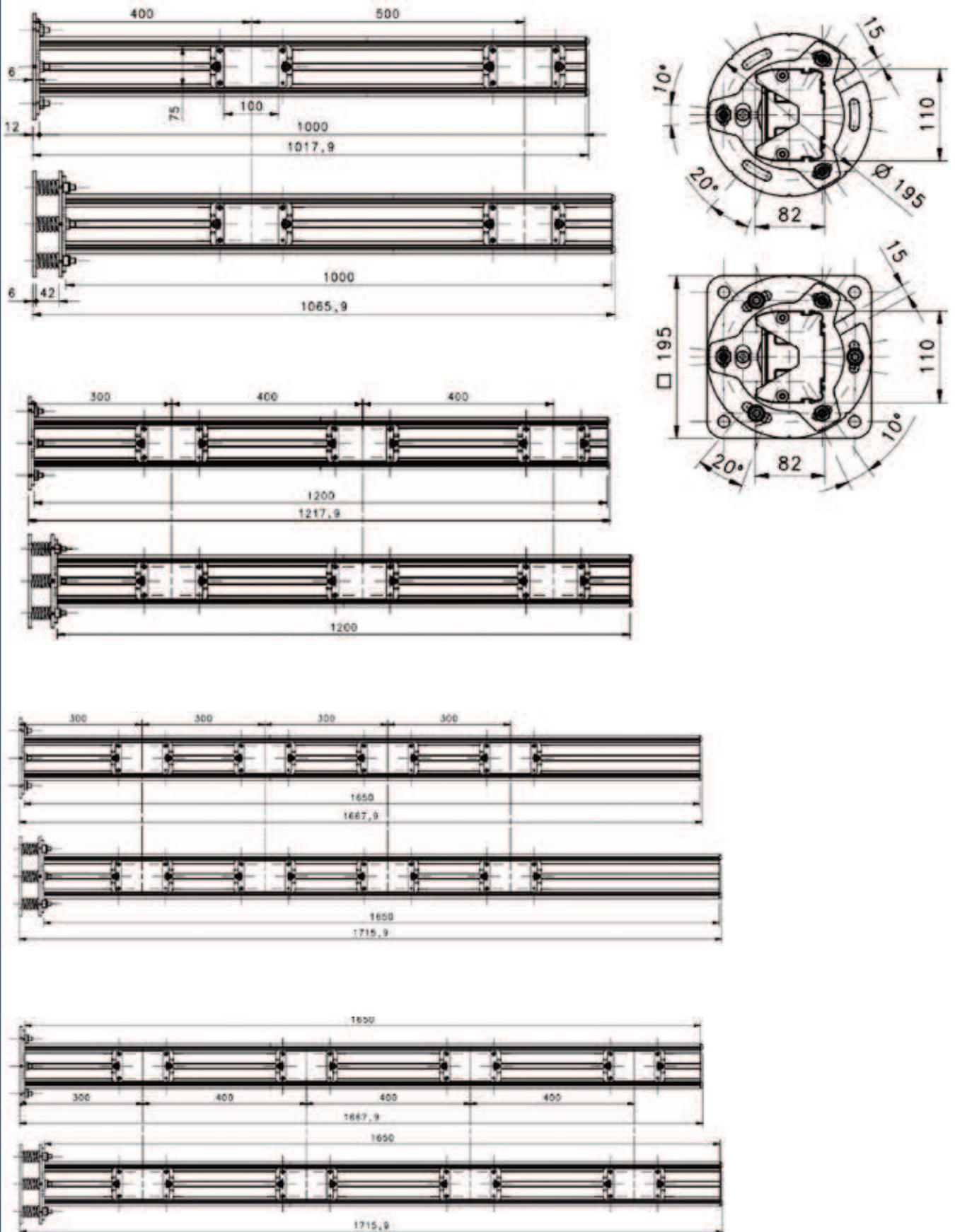
SG-PSB DIMENSIONS



VERSION	L (mm)
SG-PSB 600	600
SG-PSB 1000	1000
SG-PSB 1200	1200
SG-PSB 1650	1650
SG-PSB 1900	1900



SG-PSM DIMENSIONS



SG-PSM AND SAFETY LIGHT CURTAIN CORRESPONDENCE

The following table lists safety light curtain models that can be combined with the SG-PSM corresponding ones for typical perimeter protection applications.

SG-PSM	CORRESPONDING CURTAIN	CONTROLLED HEIGHT
SG-PSM-2-500	SE2-P2-050#####	500 mm
	SE4-P2-050#####	500 mm
	SE4-Q2-050#####	500 mm
	SG2-S2-050#####	500 mm
	SG4-S2-050#####	500 mm
	SG2-B2-050#####	500 mm
	SG4-B2-050#####	500 mm
	SG4-BLR2-050#####	500 mm
	SG4-BSR2-050#####	500 mm
SG-PSM-3-800	SE2-P3-080#####	800 mm
	SE4-P3-080#####	800 mm
	SE4-Q3-080#####	800 mm
	SG2-S3-080#####	800 mm
	SG4-S3-080#####	800 mm
	SG2-B3-080#####	800 mm
	SG4-B3-080#####	800 mm
	SG4-BLR3-080#####	800 mm
	SG4-BSR3-080#####	800 mm
SG-PSM-4-900	SE2-P4-090#####	900 mm
	SE4-P4-090#####	900 mm
	SE4-Q4-090#####	900 mm
	SG2-S4-090#####	900 mm
	SG4-S4-090#####	900 mm
	SG2-B4-090#####	900 mm
	SG4-B4-090#####	900 mm
	SG4-BLR4-090#####	900 mm
	SG4-BSR4-090#####	900 mm
SG-PSM-4-1200	SE2-P4-120#####	1200 mm
	SE4-P4-120#####	1200 mm
	SE4-Q4-120#####	1200 mm
	SG2-S4-120#####	1200 mm
	SG4-S4-120#####	1200 mm
	SG2-B4-120#####	1200 mm
	SG4-B4-120#####	1200 mm
	SG4-BLR4-120#####	1200 mm
	SG4-BSR4-120#####	1200 mm

SG-PSB AND SAFETY LIGHT CURTAIN CORRESPONDENCE

The following table lists safety light curtain models that can be mounted inside the SG-PSB corresponding ones for typical perimeter protection applications. Fixing brackets column specifies the bracket accessory kit required to install TX or RX unit inside the protective stand.

SG-PSB	CURTAIN	CONTROLLED HEIGHT	FIXING BRACKETS
SG-PSB 600	SE2-35	150÷450 mm	ST-PS4-SG-SE
	SE4-14/20/30/35	150÷450 mm	ST-PS4-SG-SE
	SG2-30/50/90	150÷450 mm	ST-PS4-SG-SE
	SG4-14/30	150÷450 mm	ST-PS4-SG-SE
SG-PSB 1000	SE2-35	600÷750 mm	ST-PS4-SG-SE
	SE4-14/20/30/35	600÷750 mm	ST-PS4-SG-SE
	SE2-P2-050#####	500 mm	ST-PS4-SG-SE
	SE4-P2-050#####	500 mm	ST-PS4-SG-SE
	SE4-Q2-050#####	500 mm	ST-PS4-SG-SE
	SG2-30/50/90	600÷750 mm	ST-PS4-SG-SE
	SG4-14/30	600÷750 mm	ST-PS4-SG-SE
	SG2-S2-050#####	500 mm	ST-PS4-SG-SE
	SG4-S2-050#####	500 mm	ST-PS4-SG-SE
	SG2-B2-050#####	500 mm	ST-PS4-SG BODY
	SG4-B2-050#####	500 mm	ST-PS4-SG BODY
	SG4-BLR2-050#####	500 mm	ST-PS4-SG BODY
SG4-BSR2-050#####	500 mm	ST-PS4-SG BODY	
SG-PSB 1200	SE2-35	900÷1050 mm	ST-PS4-SG-SE
	SE4-14/20/30/35	900÷1050 mm	ST-PS4-SG-SE
	SE2-P3-080#####	800 mm	ST-PS4-SG-SE
	SE4-P3-080#####	800 mm	ST-PS4-SG-SE
	SE4-Q3-080#####	800 mm	ST-PS4-SG-SE
	SG2-30/50/90	900÷1050 mm	ST-PS4-SG-SE
	SG4-14/30	900÷1050 mm	ST-PS4-SG-SE
	SG2-S3-080#####	800 mm	ST-PS4-SG-SE
	SG4-S3-080#####	800 mm	ST-PS4-SG-SE
	SG2-B3-080#####	800 mm	ST-PS4-SG BODY
	SG4-B3-080#####	800 mm	ST-PS4-SG BODY
	SG4-BLR3-080#####	800 mm	ST-PS4-SG BODY
SG4-BSR3-080#####	800 mm	ST-PS4-SG BODY	

SG-PSB	CURTAIN	CONTROLLED HEIGHT	FIXING BRACKETS
SG-PSB 1650	SE2-35	1200÷1500 mm	ST-PS6-SG-SE
	SE4-14/20/30/35	1200÷1500 mm	ST-PS6-SG-SE
	SE2-P4-090#####	900 mm	ST-PS4-SG-SE
	SE4-P4-090#####	900 mm	ST-PS4-SG-SE
	SE4-Q4-090#####	900 mm	ST-PS4-SG-SE
	SE2-P4-120#####	1200 mm	ST-PS6-SG-SE
	SE4-P4-120#####	1200 mm	ST-PS6-SG-SE
	SE4-Q4-120#####	1200 mm	ST-PS6-SG-SE
	SG2-30/50/90	1200÷1500 mm	ST-PS6-SG-SE
	SG4-14/30	1200÷1500 mm	ST-PS6-SG-SE
	SG2-S4-090#####	900 mm	ST-PS4-SG-SE
	SG4-S4-090#####	900 mm	ST-PS4-SG-SE
	SG2-B4-090#####	900 mm	ST-PS4-SG BODY
	SG4-B4-090#####	900 mm	ST-PS4-SG BODY
	SG4-BLR4-090#####	900 mm	ST-PS4-SG BODY
	SG4-BSR4-090#####	900 mm	ST-PS4-SG BODY
	SG2-S4-120#####	1200 mm	ST-PS6-SG-SE
	SG4-S4-120#####	1200 mm	ST-PS6-SG-SE
	SG2-B4-120#####	1200 mm	ST-PS6-SG BODY
	SG4-B4-120#####	1200 mm	ST-PS6-SG BODY
SG4-BLR4-120#####	1200 mm	ST-PS6-SG BODY	
SG4-BSR4-120#####	1200 mm	ST-PS6-SG BODY	
SG-PSB 1900	SE2-35	1650 mm	ST-PS6-SG-SE
	SE4-20/30/35	1650 mm	ST-PS6-SG-SE
	SG2-30/50/90	1650÷1800 mm	ST-PS6-SG-SE
	SG4-14/30	1650÷1800 mm	ST-PS6-SG-SE

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
SG-PSB 600	SG-PSB 600 PROTECTIVE STAND H=600mm	95ASE2240
SG-PSB 1000	SG-PSB 1000 PROTECTIVE STAND H=1000mm	95ASE2250
SG-PSB 1200	SG-PSB 1200 PROTECTIVE STAND H=1200mm	95ASE2260
SG-PSB 1650	SG-PSB 1650 PROTECTIVE STAND H=1650mm	95ASE2270
SG-PSB 1900	SG-PSB 1900 PROTECTIVE STAND H=1900mm	95ASE2280
SG-PSM-2-500	SG-PSM-2-500 PROT STANDS 2 MIRRORS H500	95ASE2300
SG-PSM-3-800	SG-PSM-3-800 PROT STANDS 3 MIRRORS H800	95ASE2310
SG-PSM-4-900	SG-PSM-4-900 PROT STANDS 4 MIRRORS H900	95ASE2320
SG-PSM-4-1200	SG-PSM-4-1200 PROT STANDS 4 MIRRORS H1200	95ASE2330

NOTE: Each SG-PSB model contains what is necessary to protect a single unit (TX or RX). To protect both TX and RX, two pieces of the same part number are needed.

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
SG-P	SG-P PLATE KIT FOR PROTECTIVE STANDS	95ASE2290
ST-PS4-SG BODY	ST-PS4-SG BODY 4PCS PROTECTIVE STANDS MOUNTING KIT SG BODY BIG	95ASE1730
ST-PS6-SG BODY	ST-PS6-SG BODY 6PCS PROTECTIVE STANDS MOUNTING KIT SG BODY BIG	95ASE1740
ST-PS4-SG-SE	ST-PS4-SG-SE 4PCS PROTECTIVE STANDS MOUNTING KIT SG2/SG4/SE2/SE4	95ASE1750
ST-PS6-SG-SE	ST-PS6-SG-SE 6PCS PROTECTIVE STANDS MOUNTING KIT SG2/SG4/SE2/SE4	95ASE1760
ST-PS-DM	ST-PS-DM 4PCS PROTECTIVE STANDS MOUNTING KIT DEVIATING MIRRORS	95ASE1770

NOTE: Inside the SG-PSB profile many different safety light curtain models can be mounted; for that reason 5 different accessory fixing bracket kits are available. According to the barrier supposed to be installed into the SG-PSB customer has to order the corresponding kit.



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SG-SRT

The new **SG-SRT** evolves and improves SE-SRT connection box. Based on Datalogic CBX800 GATEWAY housing SG-SRT is developed to fit the advanced functionalities of new SG BODY BIG, SG BODY REFLECTOR and SG BODY COMPACT safety light curtains guaranteeing easy installation, connection, configuration and use. SG-SRT is then provided in 2 different models :

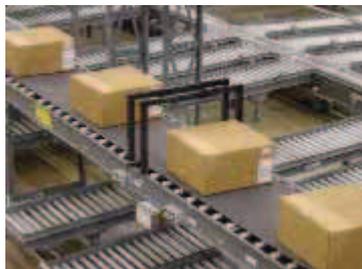
- **SG-SRT-1** version represents the natural replacement of SE-SRT.
- **SG-SRT-2** is especially designed to work together with new SG BODY BIG and SG BODY REFLECTOR series exploiting their full functionalities.



HIGHLIGHTS

- CBX800 housing
- TOTAL COMPATIBILITY WITH SE-SRT
- Two models: SG-SRT-1 and SG-SRT-2
- Fairlead for passage of cables towards the machine
- Two Integrated FORCE GUIDED SAFETY RELAYS : 2 NO contact available on each relay
- Configuration performed setting the various jumpers and connectors on the same PCB

Automatic machines



Robots



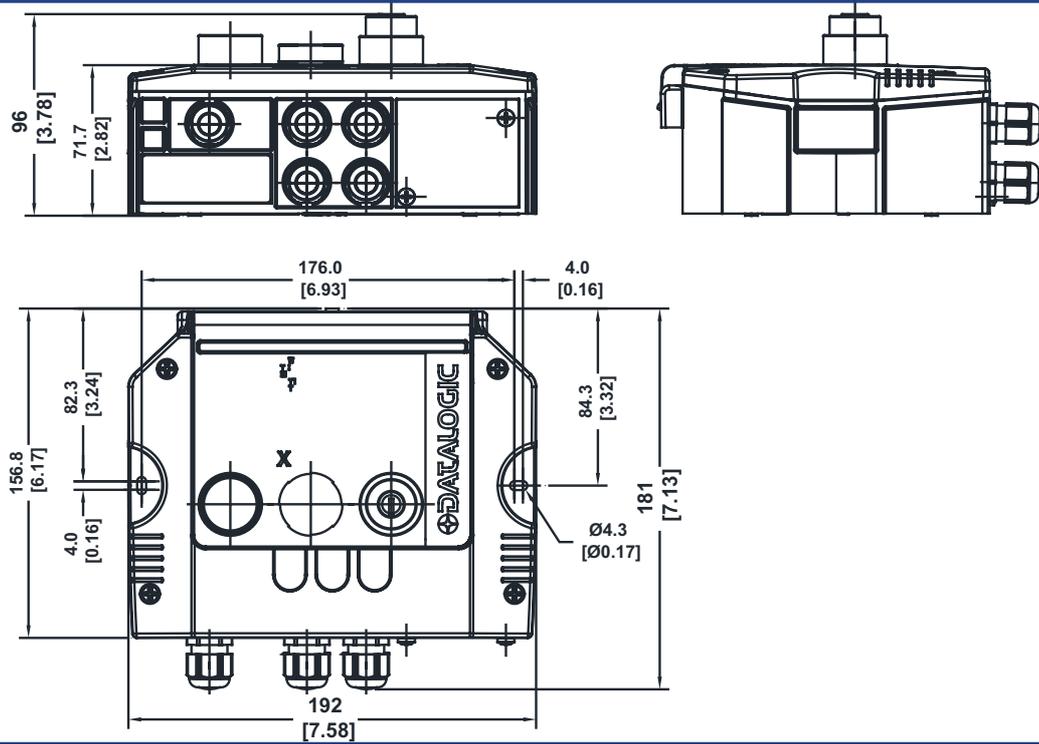
Automatic assembly lines



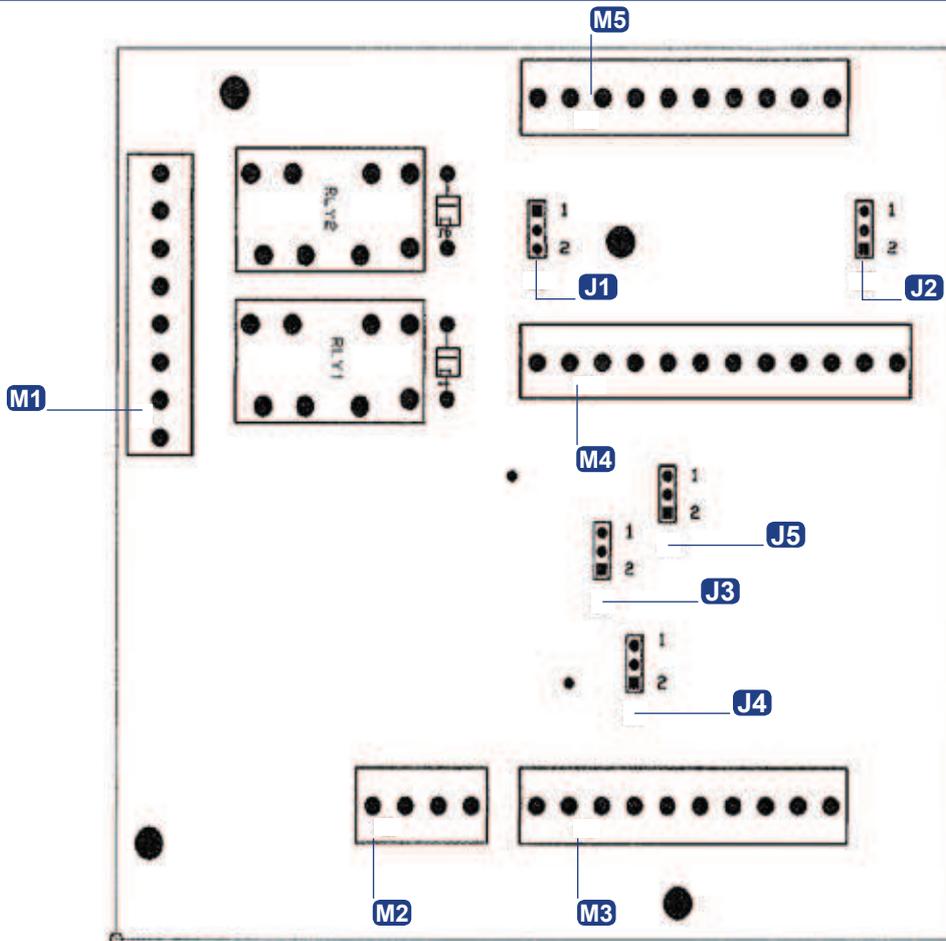
Palletizers and depalletizers



DIMENSIONS



ELECTRICAL CONNECTIONS



CONFIGURATION SELECTIONS

JUMPER	FUNCTION	POS	SELECTION	DEFAULT
J1	RESTART	1-2	AUTOMATIC RESTART (*)	X
		2-3	MANUAL RESTART	
J2	LAMP	1-2	LAMP ON BOX (**)	X
		2-3	EXTERNAL LAMP	
J3	OSSD2	1-2	RLY2 RELAY ENABLED	X
		2-3	OSSD2 ROUTED TO OUT	
J4	OSSD1	1-2	RLY1 RELAY ENABLED	X
		2-3	OSSD1 ROUTED TO OUT	
J5	EDM	1-2	EDM INTERNAL	X
		2-3	EDM EXTERNAL	
(*)	FORCED CONFIGURATION FOR SGBODY COMPACT (the selection of the Restart should be determined by the appropriate light curtain DIPswitches)			
(**)	ONLY FOR SG-SRT-2 MODELS			

CONN.	PIN	DESCRIPTION
M1	1	K111
	2	K112
	3	K121
	4	K122
	5	K211
	6	K212
	7	K221
	8	K222
M2	1	VCC
	2	GND
	3	FE
	4	TEST
M3	1	VCC
	2	GND
	3	OSSD2
	4	OSSD1
	5	EDM
	6	MUTING E
	7	LAMP OUT
	8	OVR STAT
	9	FE
	10	TEST
M4	1	VCC
	2	GND
	3	RESTART
	4	OVR1
	5	OSSD2
	6	EDM
	7	MUTING E
	8	OSSD1
	9	OVR2
	10	LAMP
	11	OVR STAT
	12	FE
M5	1	M51
	2	M52
	3	M53
	4	M54
	5	M55
	6	M56
	7	M57
	8	M58
	9	M59
	10	M510
PRE-WIRED	1	TO RESTART PUSHBUTTON
	2	TO RESTART PUSHBUTTON
	3	TO GND LAMP OF RESTART PUSH BUTTON
	4	TO LAMP OF RESTART PUSH BUTTON
	5	TO OVERRIDE OVR1 PUSH BUTTON
	6	TO 24 VCC OVERRIDE OVR1 PUSH BUTTON
	7	TO OVERRIDE OVR2 PUSH BUTTON
	8	TO GND OVERRIDE OVR2 PUSH BUTTON
	9	TO TEST LAMP
	10	TO VCC OF TEST LAMP

FUNCTIONING

The SG-SRT connection boxes allow you to directly manage, without further action, the following functions according to the typical operation of the connected Safety Barrier model:

FUNCTION	THROUGH
TEST	TEST/START Push button
RESTART	TEST/START Push button
RESET	TEST/START Push button
EDM internal	Internal Selector
EDM external actuators	Internal Selector
OVERRIDE	Key Selector
MUTING STATE	Integrated Lamp (SG-SRT-2 only)

Please refer to the Safety Barrier Manuals for all information regarding connections, operations and options for the functions listed above.

OUTPUT RELAY BEHAVIOUR

The boxes use 2 safety guided relay contacts. These relays are specified by the manufacturer for higher voltages and currents as indicated by the technical data. However, to ensure correct isolation and prevent premature damage for age drift, you need to protect each output line using a delayed 6A fuse and verify that the load characteristics comply with the instructions below:

Max. switchable voltage: 250 Vac
Max. switchable current: 2 A

CONNECTION BOX AND SAFETY LIGHT CURTAIN CORRESPONDENCE

SAFETY LIGH CURTAIN MODEL	CONNECTION BOX MODEL
SG2 BODY COMPACT BASE	-
SG2 BODY COMPACT MUTING	SG-SRT-1
SG4 BODY COMPACT BASE	-
SG4 BODY COMPACT MUTING	SG-SRT-1
SG2 BODY BIG BASE	-
SG2 BODY BIG MUTING	SG-SRT-1 / SG-SRT-2
SG4 BODY BIG BASE	-
SG4 BODY BIG MUTING	SG-SRT-1 / SG-SRT-2
SG4 BODY REFLECTOR BASE	-
SG4 BODY REFLECTOR MUTING	SG-SRT-1 / SG-SRT-2

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
SG-SRT-1	SG-SRT-1 MUTING CONNECTION BOX	95ASE2050
SG-SRT-2	SG-SRT-2 MUTING CONNECTION BOX LAMP	95ASE2060



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EUROPE

DATALOGIC AUTOMATION

Headquarters

Via Lavino, 265

40050 Monte San Pietro

Bologna - Italy

Tel. +39 (0)51/6765611

Fax +39 (0)51/6759324

info.automation.it@datalogic.com

DATALOGIC AUTOMATION Iberia

Sucursal en España

C/ Samonta, 25 4ª Planta

08970 Sant Joan Despí

Barcelona - Spain

Tel. +34 (0)93/4772059

Fax +34 (0)93/4777272

info.automation.es@datalogic.com

DATALOGIC AUTOMATION AB

Höjrodergatan 21

21239 Malmö - Sweden

Tel. +46 (0)40/385000

Fax +46 (0)40/385001

info.automation.se@datalogic.com

DATALOGIC AUTOMATION Benelux

Newtonweg 3

4104 BK Culemborg - The Netherlands

Tel. +31 345/589489

Fax +31 345/511419

info.automation.nl@datalogic.com

DATALOGIC AUTOMATION S.r.l.

Niederlassung Central Europe

Carl-Zeiss Str. 31

73230 Kirchheim/Teck

Germany

Tel. +49 07021/509700

Fax +49 07021/5097029

info.automation.de@datalogic.com

DATALOGIC AUTOMATION UK

Datalogic House

Dunstable Road, Redbourn

Herfordshire

England

AL3 7PR

Tel. +44 (0)1582/464900

Fax +44 (0)1582/464999

info.automation.uk@datalogic.com

DATALOGIC AUTOMATION S.r.l.

Succursale en France

Le Parc Technologique de Lyon

333 cours du 3ème Millénaire - Le Pôle

69800 Saint Priest - France

Tél. +33 (0)4/72476180

Fax +33 (0)4/72470721

info.automation.fr@datalogic.com

AMERICA

DATALOGIC AUTOMATION Inc

3000 Earhart Court, Suite 135

Hebron, Kentucky 41048 - United States

Tel. +1 (0)859/6897000

Fax +1 (0)859/3344970

info.automation.us@datalogic.com

ASIA

DATALOGIC AUTOMATION Asia Ltd

Suite 902, Suncome Liao-w's Plaza,

738 Shang Cheng Road, Pudong,

Shanghai 200120 - China

Tel: +86 (0)21/58366692/3

Fax: +86 (0)21/58366695

info.automation.cn@datalogic.com

DATALOGIC AUTOMATION Asia Ltd

West, 3/F, Tower E, Tongfang Information Harbor,

No.11, LangShan Rd., North Area, Hi-tech Park,

NanShan District, Shenzhen, China

Tel: +86 755-8629 6779

Fax: +86 755-8628 1738

info.automation.cn@datalogic.com

DATALOGIC AUTOMATION Asia Ltd

Unit 1-3, 7/F, Yuen Long Trading Centre, 33 Wang Yip Street West, Yuen Long, NT.

Hong Kong

Tel +852 2785/3912

Fax +852 2785/3913

info.automation.hk@datalogic.com

IDEC DATALOGIC.CO. Ltd

10-40, Mikuni-Honmachi 1-Chome,

Yodogawa-ku, Osaka 532 0005, Japan

Tel. +81(6) 6398/3200

Fax +81 (6) 6398/3202

www.idljp.com

AUSTRALIA - NEW ZEALAND

DATALOGIC AUTOMATION Pty Ltd

Unit 130, 45 Gilby Road

Mt Waverley

Victoria, 3149 - Australia

Tel. +61 (0)3/95589299

Fax: +61 (0)3/95589233

info.automation.au@datalogic.com

www.automation.datalogic.com

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