

**SAFEasy™ TYPE 2 LIGHT CURTAINS**

- **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**

## 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 **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.

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.

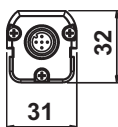
These LED indicators supply also information relative to the device's effective alignment and diagnostics.



## DIMENSIONS



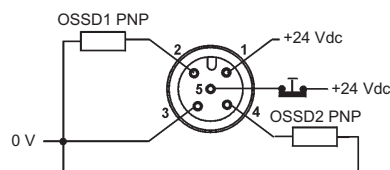
mm



VERSIONS	L <sub>1</sub>	L <sub>2</sub>
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

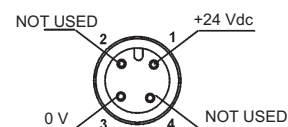
## CONNECTIONS

### RECEIVER (RX)



- 1 = brown = +24 Vdc
- 2 = white = OSSD1
- 3 = blue = 0 V
- 4 = black = OSSD2
- 5 = grey = TEST (refer to note) \*

### EMITTER (TX)



- 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

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



## MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
<b>with automatic RESTART</b>		
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
<b>with manual RESTART</b>		
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

## ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
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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### HEADQUARTERS

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# SAFETY DEVICES