

**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.

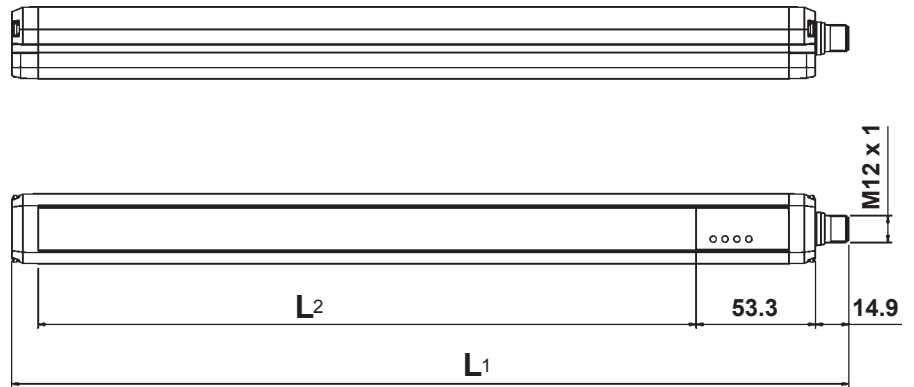


The LED panel present on the extremely compact receiving unit guarantees an easy and immediate indication of the operating status of the safety light curtain.

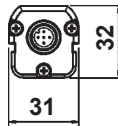
These LED indicators supply also information relative to the device's effective alignment and diagnostics.



## DIMENSIONS



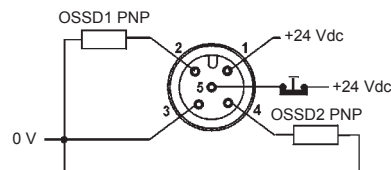
mm



| 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           |

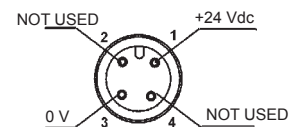
## CONNECTIONS

### 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)<br>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<br>red BREAK LED<br>green SAFE LED   |
| <b>Emitter indicators:</b>             | yellow WORKING UNIT CHECK LED<br>green POWER ON LED  |
| <b>Output type:</b>                    | 2 PNP<br>short-circuit protection: max. 1.4 A at 55 °C<br>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)<br>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)<br>M12 conductors (according to EN 50044, EN 60947-5-2)<br>poles Ø = 32x0.1mm, external Ø = 0.5mm<br>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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SAFETY DEVICES

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