

## 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.



# SAFETY

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 <sub>1</sub> | L <sub>2</sub> |
|-----------------|----------------|----------------|
| 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         |

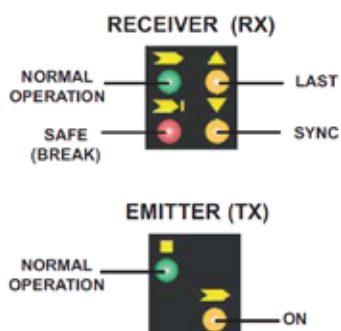
kk = Resolution (50 mm – 90 mm)

\* = X Base model or E-C Extended model

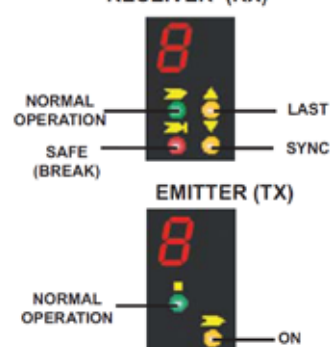
## INDICATORS AND SETTINGS



**SG2-B**



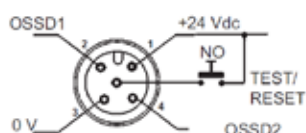
**SG2-E RECEIVER (RX)**



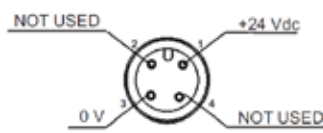
## CONNECTIONS

**SG2-B**

**RX: M12 5-POLE CONNECTOR**



**TX: M12 4-POLE CONNECTOR**

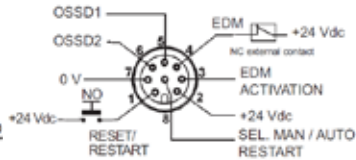


- 1 = brown = +24 Vdc  
2 = white = OSSD1  
3 = blue = 0 V  
4 = black = OSSD2  
5 = grey = TEST/RESET

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

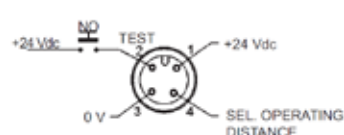
**SG2-E**

**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 Vcc  
2 = white = TEST  
3 = blue = 0 V  
4 = black = SEL. OPERATING DISTANCE

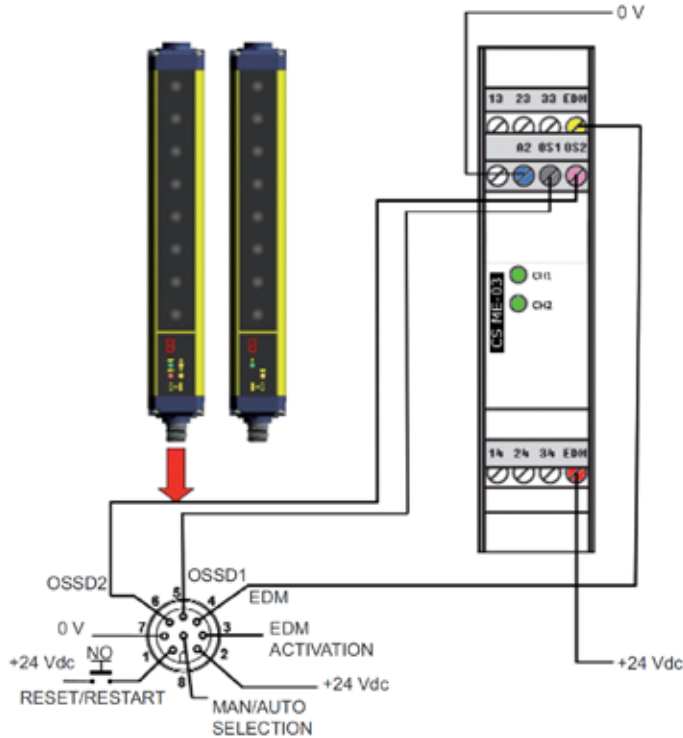
**NOTE:** For MANUAL RESTART CONNECT TOGETHER Pin8 with Pin6.  
For Automatic Restart connect together Pin8 with Pin5

## SG2-E: FUNCTIONS

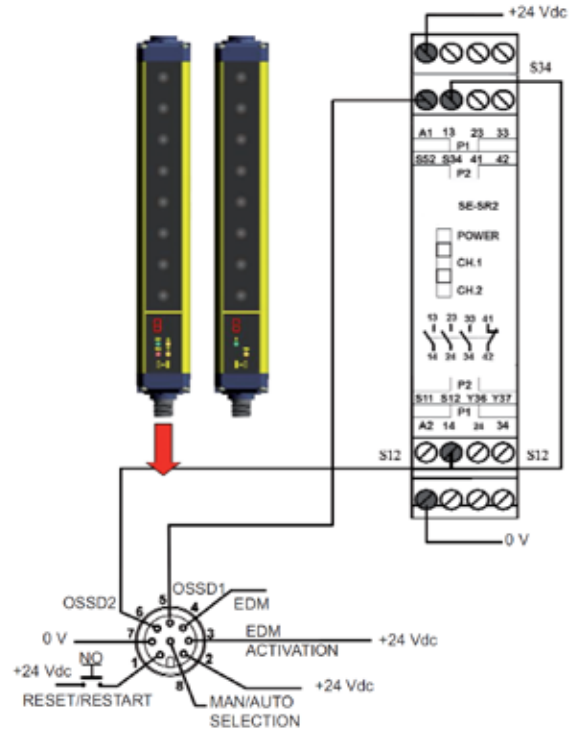
### EDM

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

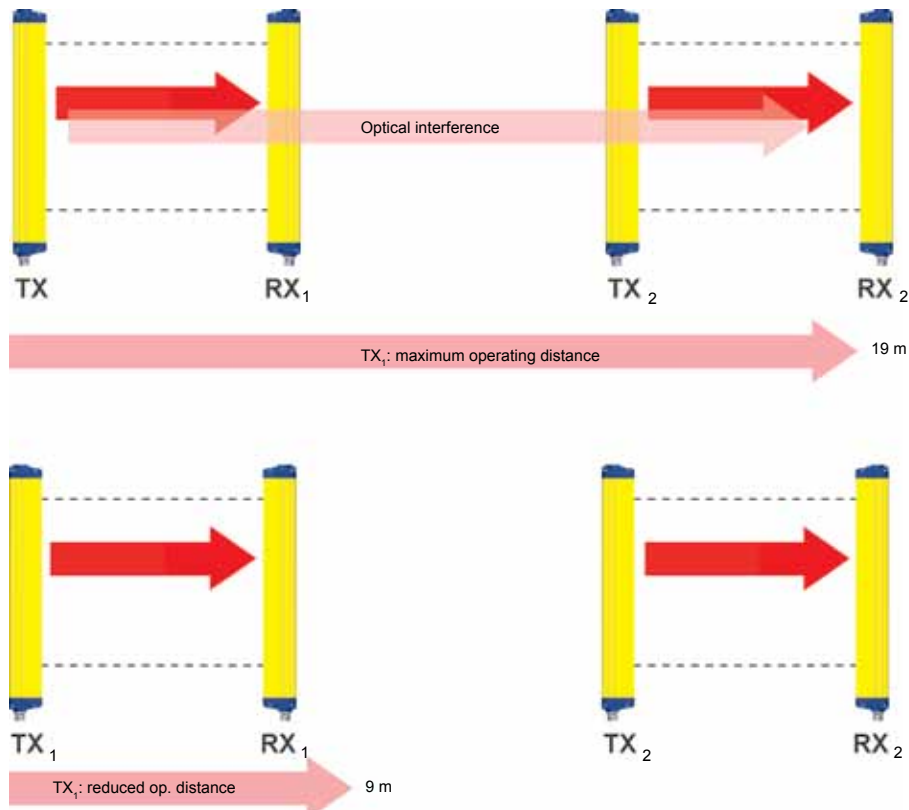


#### Connection without EDM function



### 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 $\mu$ F @ 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) :            | $\pm$ 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 height 1800 | 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)

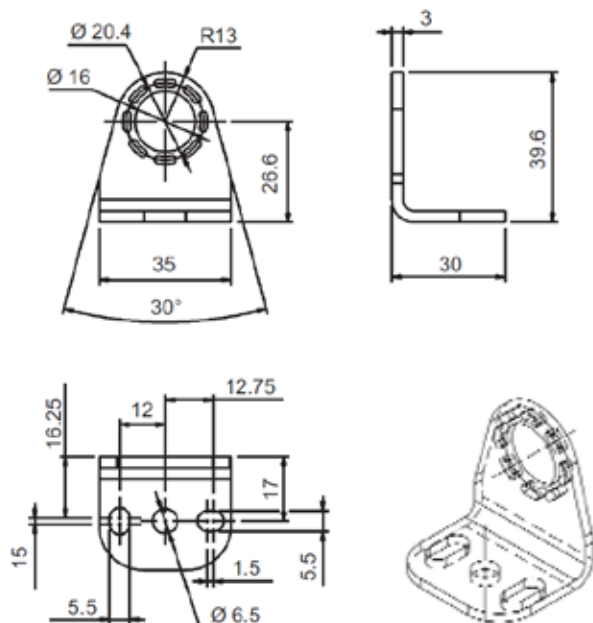
| MODEL           | 50 mm | 90 mm |
|-----------------|-------|-------|
| SG2 height 300  | 9     | 9     |
| SG2 height 450  | 10    | 10    |
| SG2 height 600  | 11    | 11    |
| SG2 height 750  | 12    | 12    |
| SG2 height 900  | 14    | 13    |
| SG2 height 1050 | 15    | 14    |
| SG2 height 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)



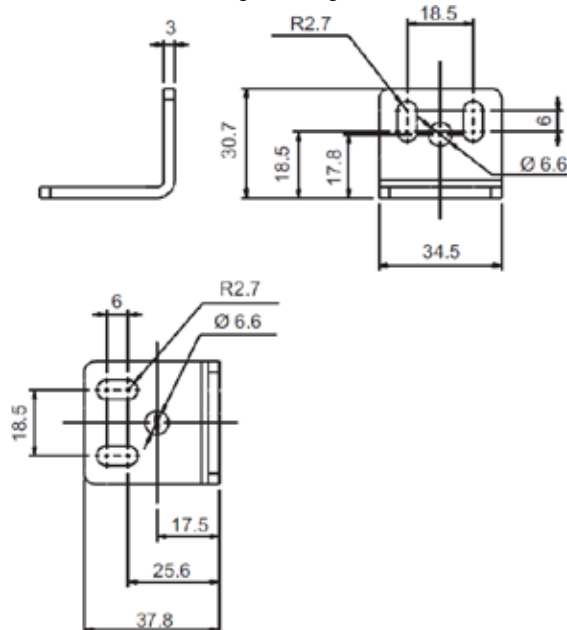
## FIXING BRACKET

Rotating fixing bracket<sup>1</sup>

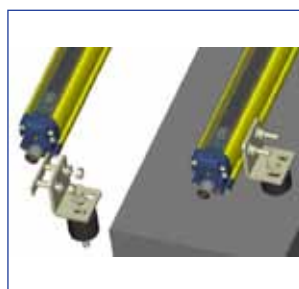
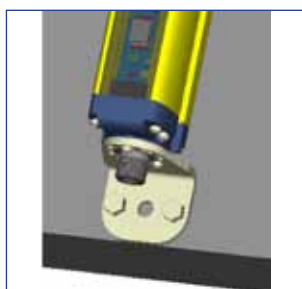


<sup>1</sup> Supplied with the Extended model

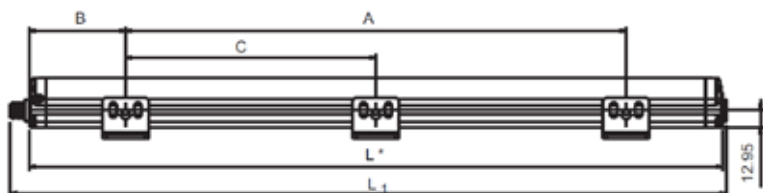
Angled fixing bracket<sup>2</sup>



<sup>2</sup> 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°  |
|--------------------|---------------------------------------|-----------|
| <b>SG2-B 50 mm</b> |                                       |           |
| 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°  |
|--------------------|---------------------------------------|-----------|
| <b>SG2-E 50 mm</b> |                                       |           |
| 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°  |
|--------------------|---------------------------------------|-----------|
| <b>SG2-B 90 mm</b> |                                       |           |
| 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°  |
|--------------------|---------------------------------------|-----------|
| <b>SG2-E 90 mm</b> |                                       |           |
| 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)                    | c        |
| CAT (Ref. EN 954-1)                         | 2        |
| SIL (Ref. EN IEC 61508)                     | 1        |
| SIL CL (Ref. EN IEC 62061)                  | 1        |
| 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**

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.