



Safety. Detection. Control.



# SAFEGATE

Access Guarding Made Easy

Product catalogue

Issue 1



# SAFEGATE

## Type 4 Muting Integrated Access Control Barrier



Integrated Status and Muting lamp

Flexible configuration  
Hardware or Software configuration to cover all Muting applications

Fully scalable  
Change configuration at any time

Vast range of accessories  
Including special mounting brackets and floor mounting columns

3 pre-configured Muting logics  
Exit-only (parallel/crossed),  
Entry-Exit (parallel),  
Entry-Exit (crossed)

Configuration  
with MA Muting  
arms with  
integrated  
sensors



Pre-configured and  
pre-wired Muting arms

Configuration  
with MZ Muting  
brackets with M<sup>5</sup>  
multi-beam  
photocells



**M<sup>5</sup>** multi-beam Muting photocells

Ideal for sensing unconventional  
objects



SAFETY LEVEL

**TYPE 4**

SIL 3 - SILCL 3  
PL e - Cat. 4

## MAIN FEATURES

Safegate Type 4 range of access control barriers is the ideal solution for the protection of a vast number of high-risk industrial applications, in particular those requiring a high level of integration of the Muting functions.

 Safegate guarantees the perfect integration of all Muting sensors, directly connected to the access control barrier

 Each barrier can be configured as:

- Exit-only (L-Muting) with crossed (X) or parallel (P) beams
- Entry-Exit (T-Muting) with crossed (X) beams
- Entry-Exit (T-Muting) with parallel (P) beams

Configuration can be changed at any time.

 Hardware configurable models (**SM/SMO/SMPO**) allow configuration of Muting logics and functional parameters via the Master connector wiring

 Software configurable models (**SMPO**) allow configuration of Muting logics and additional functional parameters (i.e. Partial Muting) via Safegate Configuration Software (SCS)

 Programmable models (**SMPO**) allow further configuration parameters, ideal to address particular issues in more complicated application scenarios

 Safegate can be used with MA Muting arms (with pre-aligned and pre-configured integrated Muting sensors), with MZ Muting brackets (with M<sup>5</sup> multi-beam photocells) or with any other Muting sensor

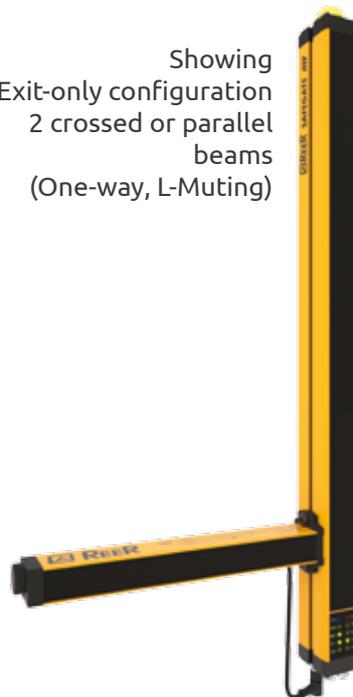
 Sensors can be upgraded, added or removed at any time

 Models with integrated status lamp allow to easily recognise the status of the barrier



SMPO models can be configured via the SCS software

Showing  
Exit-only configuration  
2 crossed or parallel  
beams  
(One-way, L-Muting)



Showing  
Entry-Exit configuration  
2 crossed or 4 parallel  
beams  
(Two-way, T-Muting)



-30 ... +55 °C operating temperature

**-30 ... +55 °C**



IP65 and IP67 protection rate

## THE SAFEGATE RANGE

### Safegate Models

Hardware configuration

Hardware configuration  
With integrated Status and Muting lamp

Hardware or Software configuration  
With integrated Status and Muting lamp



### Muting logic

HARDWARE

SOFTWARE

L2XP configurations  
"Exit-only"  
2 crossed or parallel  
beams (One-way)

T2X configurations  
"Entry-Exit"  
2 crossed beams  
(Two-way)

T4P configurations  
"Entry-Exit"  
4 parallel beams  
(Two-way)



Hardware configuration via Master connector wiring



L2X L2P  
T2X T4P  
configurations

Software configuration via  
Safegate Configurator Software

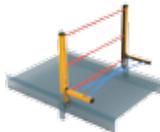
### Muting sensors

#### MA

Muting  
arms with  
integrated  
sensors



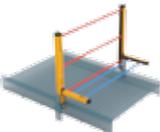
MA L2X  
2 integrated  
sensors  
(emitter and  
receiver)



L Muting logic  
Crossed beams  
One-way  
Exit-only

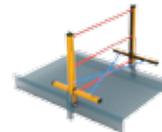


MA L2P TRX  
2 integrated  
sensors  
(transceiver)



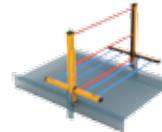
L Muting logic  
Parallel beams  
One-way  
Exit-only

MA T2X  
2 integrated  
sensors  
(emitter and  
receiver)



T Muting logic  
Crossed beams  
Two-way  
Entry-Exit

MA T4P TRX  
4 integrated  
sensors  
(transceiver)



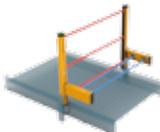
T Muting logic  
Parallel beams  
Two-way  
Entry-Exit

#### MZ

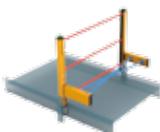
Muting  
brackets  
with M<sup>5</sup>  
sensors



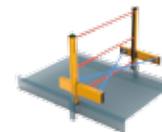
MZ L2XP  
2 M<sup>5</sup>  
multi-beam  
sensors



L Muting logic  
Crossed or  
Parallel beams  
One-way  
Exit-only

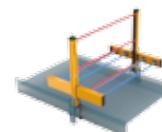


MZ T2X  
2 M<sup>5</sup>  
multi-beam  
sensors



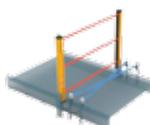
T Muting logic  
Crossed beams  
Two-way  
Entry-Exit

MZ T4P  
4 M<sup>5</sup>  
multi-beam  
sensors

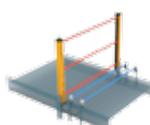


T Muting logic  
Parallel beams  
Two-way  
Entry-Exit

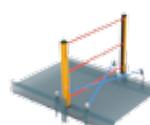
External M<sup>5</sup>  
sensors  
(or  
photocells)



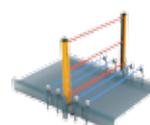
L Muting  
logic  
Crossed  
beams  
One-way  
Exit-only  
  
2 sensors



L Muting  
logic  
Parallel  
beams  
One-way  
Exit-only  
  
2 sensors



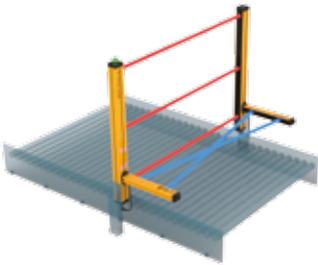
T Muting  
logic  
Crossed  
beams  
Two-way  
Entry-Exit  
  
2 sensors



T Muting  
logic  
Parallel  
beams  
Two-way  
Entry-Exit  
  
4 sensors

## MUTING TYPES

## / L2X LOGIC WITH CROSSED BEAMS - ONE-WAY MUTING WITH 2 SENSORS

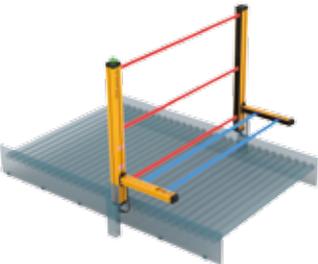


- Max. time between the 2 Muting activation signals: 4 sec.
- Possibility to use with photocells, proximity sensors, and limit switches
- Operative range: 1 ... 2,5 m (MA), 0 ... 3,5 m (MZ)
- Muting sensor elements adjustable in height and angle
- Max. Muting time-out time: 30 sec. or 9 hours selectable
- Muting enable input available

**Characteristics**

Suitable solution for any applications of pallet exit.

## / L2P LOGIC WITH PARALLEL BEAMS - ONE-WAY MUTING WITH 2 SENSORS

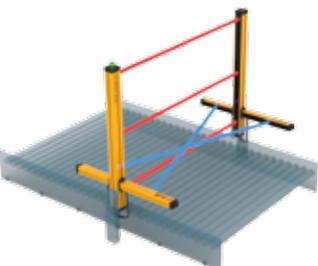


- Max. time between the 2 Muting activation signals: 4 sec.
- Possibility to use with photocells, proximity sensors, and limit switches
- Operative range: 0 ... 3,5 m (MA TRX, MA TRX V and MZ), 0 ... 2 m (MA TRX G)
- Muting sensor elements adjustable in height and angle
- Max. Muting time-out time: 30 sec. or 9 hours selectable
- Muting enable input available

**Characteristics**

Suitable solution for pallet exit with transparent material applications: i.e glass.

## / T2X LOGIC WITH CROSSED BEAMS - TWO-WAY MUTING WITH 2 SENSORS



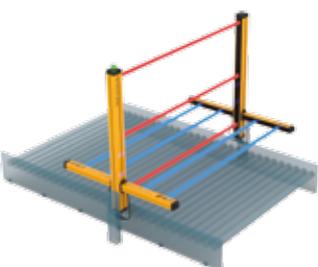
- Max. time between the 2 Muting activation signals: 4 sec.
- Possibility to use with photocells, proximity sensors, and limit switches
- Operative range: 1 ... 2,5 m (MA), 0 ... 3,5 m (MZ)
- Muting sensor elements adjustable in height and angle
- Max. Muting time-out time: 30 sec. or 9 hours selectable
- Muting enable input available

**Characteristics**

Suitable solution for the most common pallet infeed/outfeed applications.

Ideal solution in case of a continuous flow of pallets even without separation between the pallets.

## / SEQUENTIAL T4P LOGIC WITH PARALLEL BEAMS - TWO-WAY MUTING WITH 4 SENSORS



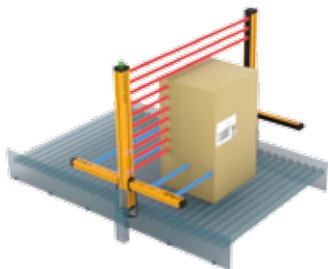
- Max. time between the 2 Muting activation signals: 4 sec.
- Possibility to use with photocells, proximity sensors, and limit switches
- Operative range: 0 ... 3,5 m (MA TRX, MA TRX V and MZ), 0 ... 2 m (MA TRX G)
- Muting sensor elements adjustable in height and angle
- Max. Muting time-out time: 30 sec., 9 hours or infinite selectable
- Muting enable input available

**Characteristics**

Suitable solution for transparent material and application with presence of a pallet with reduced width or not centred with respect to the conveyor. Through the verification of the 4 sensors, allows to set infinite Muting time-out.

*Please note: this configuration needs a separation between two consecutive pallets equal to the distance between the two external Muting sensors.*

## PARTIAL MUTING



The SMPO programmable models allows the "partial muting" function, hence the possibility of interdicting a number of beams in relation to the size and shape of the pallet in order to prevent dangerous access when the light curtains is in muting condition.

## MUTING SENSORS

Four muting inputs integrated into two muting connectors (red and blue). *When 4 Muting sensors are installed (i.e. T4P configuration), the use of a Y-splitter is mandatory*

Muting sensor connector (M12 5-pole)

Muting sensor connector (M12 5-pole)

Muting arms (MA) with pre-wired and pre-aligned sensors for all Muting logics configurations:

- MA L2X - 2 crossed beams sensors (emitter and receiver)
- MA L2P TRX - 2 parallel beams retro-reflective sensors (TRX)
- MA L2P TRX G - 2 parallel beams retro-reflective sensors (TRX) with reduced operative range to optimise correct and consistent detection of transparent materials (i.e. glass)
- MA L2P TRX V - 2 parallel beams retro-reflective sensors (TRX) with longer Muting arms for high-speed conveyors
- MA T2X - 2 crossed beams sensors (emitter and receiver)
- MA T4P TRX - 4 parallel beams retro-reflective sensors (TRX)
- MA T4P TRX G - 4 parallel beams retro-reflective sensors (TRX) with reduced operative range to optimise correct and consistent detection of transparent materials (i.e. glass)
- MA L4P TRX V - 4 parallel beams retro-reflective sensors (TRX) with longer Muting arms for high-speed conveyors

Muting brackets (MZ) with M<sup>5</sup> multi-beam sensors for all Muting logics configurations:

- MZ L2XP - 2 M<sup>5</sup> multi-beam photocells. Acting on the position of the sensors, it can be configured with crossed or parallel beams
- MZ L2P V - 2 M<sup>5</sup> multi-beam photocell with parallel beams with longer brackets available for high-speed conveyors
- MZ T2X - 2 M<sup>5</sup> multi-beam photocells with crossed beams
- MZ T4P - 4 M<sup>5</sup> multi-beam photocells with parallel beams
- MZ T4P V - 4 M<sup>5</sup> multi-beam photocells with parallel beams with longer brackets for high-speed conveyors



M12 5-pole Y-splitter to for the connection of 4 Muting sensors

## APPROVALS

- 2006/42/EC: "Machine Directive"
- 2014/30/EU: "Electromagnetic Compatibility Directive"

### Type 4 Safety Level

- EN 61496-1:2013 "Safety of machinery - Electro-sensitive protective equipment - General requirements and tests"
- EN 61496-2:2013 "Safety of machinery - Electro-sensitive protective equipment - Particular requirements for equipment using active opto-electronic protective devices (AOPDs)"

### SIL 3 Safety Level

- EN 61508-1:2010 "Functional safety of electrical/electronic programmable electronic safety related systems - General requirements"
- EN 61508-2:2010 "Functional safety of electrical/electronic/programmable electronic safety related systems - Requirements for electrical/electronic/programmable electronic safety-related systems"
- EN 61508-3:2010 "Functional safety of electrical/electronic programmable electronic safety related systems: Software requirements"
- EN 61508-4:2010 "Functional safety of electrical/electronic programmable electronic safety related systems - Definitions and abbreviations"

### SILCL 3 Safety Level

- EN 62061:2005/A2:2015 "Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems"

### PL e - Cat. 4 Safety Level

- EN ISO 13849-1:2015 "Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design"

- UL (C+US) mark for USA and Canada
- ANSI / UL 1998: "Safety Software in Programmable Components"

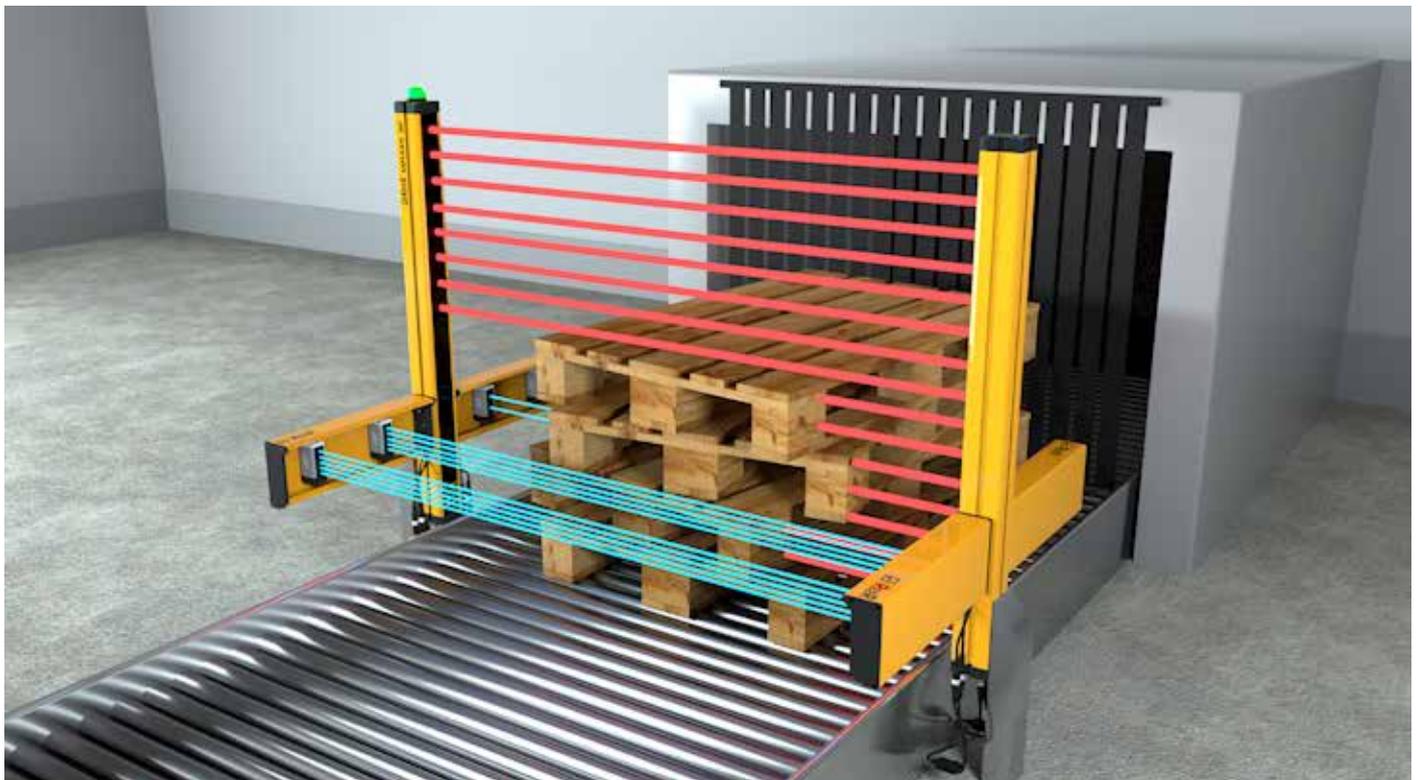


SAFETY LEVEL

**TYPE 4**

 SIL 3 - SILCL 3  
 PL e - Cat. 4

**NOTE:** Muting arms and Muting brackets are quick and easy to install. They also comply with regulatory requirements on Muting sensors geometry and all other safety-related parameters, as per IEC TS 62046 and other current standards.



Palletizer with irregular pallets transit showing a Safegate with MZ Muting brackets (M<sup>5</sup> multi-beam photocells)

## HARDWARE CONFIGURATION



SAFETY LEVEL

**TYPE 4**SIL 3 - SILCL 3  
PL e - Cat. 4

|                 |                     |                    |
|-----------------|---------------------|--------------------|
| Resolution (mm) | Start/Restart       | Muting Logic       |
| 30, 40          | Manual or Automatic | One-way<br>Two-way |
| Access control  | Safety output       | Muting Sensors     |
| 2, 3, 4 beams   | 2                   | External<br>2 or 4 |

Built-in Muting function.

Selectable manual or automatic restart.

Integrated feedback input for external relay monitoring (EDM).

M12 5-pole connectors for 2 or 4 Muting sensors.

Hardware configuration of Muting logics and functional parameters via the Master M12 12-pole connector wiring. Use of unshielded cables up to 100 m.

Protected heights: 310 mm ... 2260 mm.

## TECHNICAL FEATURES

|                                       |   |
|---------------------------------------|---|
| Operative range (m)                   | 0 ... 4 or 0 ... 12 selectable  |
| Response time (ms)                    | 5,5 ... 28 depending on the model (see technical manual)  |
| Response time for Muting signals (ms) | 100   |
| Safety outputs                        | 2 PNP auto-controlled (400 mA at 24 VDC) with short-circuit, overload, polarity reversal protection                                 |
| Display                               | LEDs for self-diagnosis and light curtain status  |
| Muting lamp output                    | 24 VDC; 0,5 ... 5 W   |
| External Device Monitoring            | External device monitoring feedback input with selectable enabling  |
| Max. Muting time-out                  | 30 sec. or 9 hours selectable (for any type of Muting logic).<br>Infinite (only for Two-way sequential Muting logic)                |
| Override function                     | Built-in override function with 2 operating modes selectable:<br>- manual action with hold to run<br>- automatic with pulse command |
| Max. override time-out (min.)         | 15<br>Maximum number of consecutive override: 30  |
| Power supply (VDC)                    | 24 ± 20%  |
| Muting logics                         | Hardware configurable<br>One-way muting with 2 sensors<br>Two-way muting with 2 or 4 sensors  |
| Muting sensors                        | - MA Muting arms kits<br>- MZ Muting brackets kits<br>- External, with relay or PNP output (dark-on logic)                          |

## CABLES NEEDED

- Emitter: M12 5-pole. See [page 30](#) (CD x, CD x SB, CDM 9, CDM 99)
- Receiver: M12 12-pole. See [page 31](#) (CS12Dx)
- Y-splitter: M12 5-pole for the connection of 4 Muting sensors. See [page 32](#) (CSY12RX, CSY12TX)

## ACCESSORIES

- MA Muting arms kits. See [page 21](#)
- MZ Muting brackets kits. See [page 25](#)
- Safety relays. See [page 29](#)
- Support columns. See [page 33](#)
- Deflecting mirrors. See [page 35](#)
- Brackets. See [page 36](#)

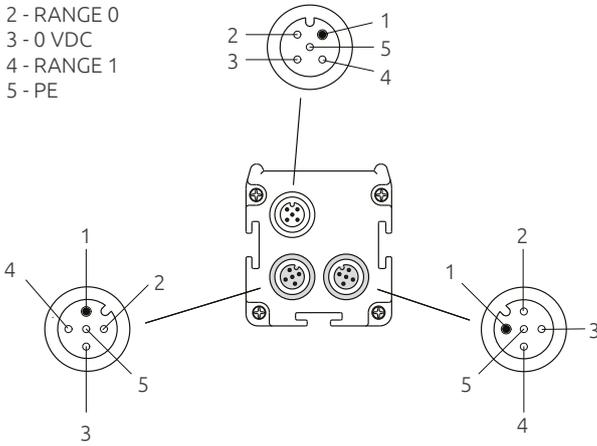


HARDWARE CONFIGURATION

CONNECTORS

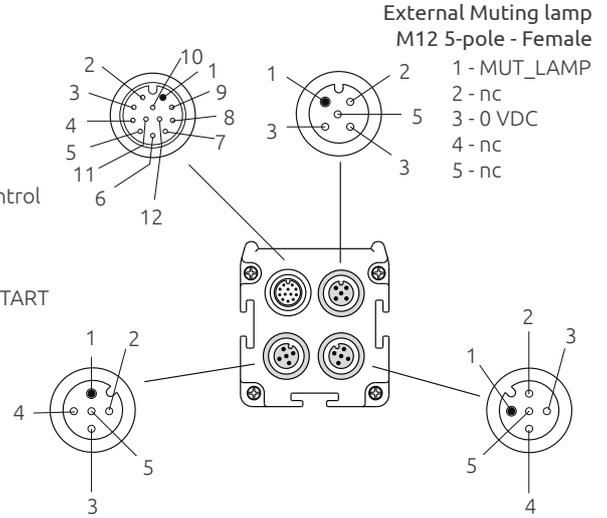
Emitter  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - RANGE 0
- 3 - 0 VDC
- 4 - RANGE 1
- 5 - PE



Receiver  
M12 12-pole - Male

- 1 - 24 VDC
- 2 - 0 VDC
- 3 - OSSD 1
- 4 - OSSD 2
- 5 - PE
- 6 - SEL\_A / Partial\_Control
- 7 - MUT\_ENABLE
- 8 - EDM
- 9 - OVERRIDE 2
- 10 - OVERRIDE 1/RESTART
- 11 - SEL\_B
- 12 - STATUS



External Muting lamp  
M12 5-pole - Female

- 1 - MUT\_LAMP
- 2 - nc
- 3 - 0 VDC
- 4 - nc
- 5 - nc

Muting sensors 1 - 2 (blu)  
M12 5-pole - Female

- 1 - 24 VDC\_A
- 2 - SYNCRO\_A
- 3 - 0 VDC
- 4 - 0 VDC
- 5 - PE

Muting sensors 3 - 4 (red)  
M12 5-pole - Female

- 1 - 24 VDC\_B
- 2 - SYNCRO\_B
- 3 - 0 VDC
- 4 - 0 VDC
- 5 - PE

Muting sensors 3 - 4 (red)  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - Sensor 4
- 3 - 0 VDC
- 4 - Sensor 3
- 5 - PE

Muting sensors 1 - 2 (blu)  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - Sensor 2
- 3 - 0 VDC
- 4 - Sensor 1
- 5 - PE

PART NUMBERS

Hand detection Max. range: selectable 4 or 12 m



| SM Resolution 30 mm   | SM 303  | SM 453  | SM 603  | SM 753  | SM 903  | SM 1053 | SM 1203 | SM 1353 | SM 1503 | SM 1653 | SM 1803 | SM 1953 | SM 2103 | SM 2253 |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ordering codes        | 1390221 | 1390222 | 1390223 | 1390224 | 1390225 | 1390226 | 1390227 | 1390228 | 1390229 | 1390230 | 1390231 | 1390232 | 1390233 | 1390234 |
| Protected height (mm) | 310     | 460     | 610     | 760     | 910     | 1060    | 1210    | 1360    | 1510    | 1660    | 1810    | 1960    | 2110    | 2260    |
| Number of beams       | 16      | 23      | 31      | 38      | 46      | 53      | 61      | 68      | 76      | 83      | 91      | 98      | 106     | 113     |
| Overall height (mm)   | 395     | 545     | 695     | 845     | 995     | 1145    | 1295    | 1445    | 1595    | 1745    | 1895    | 2045    | 2195    | 2345    |



| SM Resolution 40 mm   | SM 304  | SM 454  | SM 604  | SM 754  | SM 904  | SM 1054 | SM 1204 | SM 1354 | SM 1504 | SM 1654 | SM 1804 | SM 1954 | SM 2104 | SM 2254 |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Ordering codes        | 1390321 | 1390322 | 1390323 | 1390324 | 1390325 | 1390326 | 1390327 | 1390328 | 1390329 | 1390330 | 1390331 | 1390332 | 1390333 | 1390334 |
| Protected height (mm) | 310     | 460     | 610     | 760     | 910     | 1060    | 1210    | 1360    | 1510    | 1660    | 1810    | 1960    | 2110    | 2260    |
| Number of beams       | 11      | 16      | 21      | 26      | 31      | 36      | 41      | 46      | 51      | 56      | 61      | 66      | 71      | 76      |
| Overall height (mm)   | 395     | 545     | 695     | 845     | 995     | 1145    | 1295    | 1445    | 1595    | 1745    | 1895    | 2045    | 2195    | 2345    |

Access control Max. range: selectable 4 or 12 m



| SM 2, 3, 4 beams      | SM 2B   | SM 3B   | SM 4B   |
|-----------------------|---------|---------|---------|
| Ordering codes        | 1390620 | 1390621 | 1390622 |
| Number of beams       | 2       | 3       | 4       |
| Beam spacing (mm)     | 500     | 400     | 300     |
| Protected height (mm) | 510     | 810     | 910     |
| Overall height (mm)   | 685     | 985     | 1085    |

## HARDWARE CONFIGURATION, WITH INTEGRATED STATUS AND MUTING LAMP



SAFETY LEVEL

**TYPE 4**SIL 3 - SILCL 3  
PL e - Cat. 4Resolution  
(mm)

30 - 40

Start/  
RestartManual or  
AutomaticMuting  
LogicOne-way  
Two-wayAccess  
control2, 3, 4  
beamsSafety  
output

2

Muting  
SensorsExternal  
2 or 4

Built-in Muting function.

Selectable manual or automatic restart .

Integrated feedback input for external relay monitoring (EDM).

M12 5-pole connectors for 2 or 4 Muting sensors.

Integrated Status and Muting lamp.

Hardware configuration of Muting logics and functional parameters via the Master M12 12-pole connector wiring. Use of unshielded cables up to 100 m.

Protected heights: 310 mm ... 2260 mm.

## TECHNICAL FEATURES

|                                       |   |
|---------------------------------------|---|
| Operative range (m)                   | 0 ... 4 or 0 ... 12 selectable  |
| Response time (ms)                    | 5,5 ... 28 depending on the model<br>(see technical manual)   |
| Response time for Muting signals (ms) | 100   |
| Safety outputs                        | 2 PNP auto-controlled (400 mA at 24 VDC)<br>with short-circuit, overload, polarity reversal<br>protection                               |
| Display                               | LEDs for self-diagnosis and light curtain status  |
| Muting lamp output                    | 24 VDC; 0,5 ... 5 W   |
| Integrated Status and Muting lamp     | Multicolor LED - 24 VDC   |
| External Device Monitoring            | External device monitoring feedback input<br>with selectable enabling   |
| Max. Muting time-out                  | 30 sec. or 9 hours selectable (for any type of<br>Muting logic).<br>Infinite (only for Two-way sequential Muting<br>logic)              |
| Override function                     | Built-in override function with 2 operating<br>modes, selectable:<br>- manual action with hold to run<br>- automatic with pulse command |
| Max. override time-out (min.)         | 15<br>Maximum number of consecutive override: 30  |
| Power supply (VDC)                    | 24 ± 20%  |
| Muting logics                         | Hardware configurable<br>One-way muting with 2 sensors<br>Two-way muting with 2 or 4 sensors  |
| Muting sensors                        | - MA Muting arms kits<br>- MZ Muting brackets kits<br>- External, with relay or PNP output (dark-on<br>logic)                           |

## CABLES NEEDED

- Emitter: M12 5-pole. See [page 30](#)  
(CD x, CD x SB, CDM 9, CDM 99)
- Receiver: M12 12-pole. See [page 31](#) (CS12Dx)
- Y-splitter: M12 5-pole for the connection of 4 Muting sensors. See [page 32](#) (CSY12RX, CSY12TX)

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- Deflecting mirrors. See [page 35](#)
- Brackets. See [page 36](#)



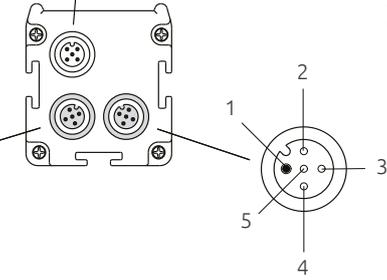
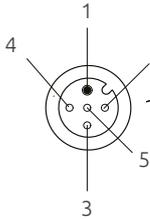
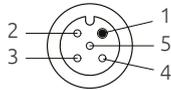
# SMO

## HARDWARE CONFIGURATION, WITH INTEGRATED STATUS AND MUTING LAMP

### CONNECTORS

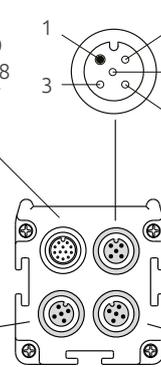
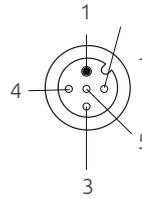
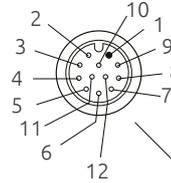
**Emitter**  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - RANGE 0
- 3 - 0 VDC
- 4 - RANGE 1
- 5 - PE



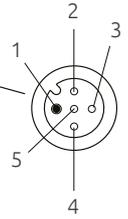
**Receiver**  
M12 12-pole - Male

- 1 - 24 VDC
- 2 - 0 VDC
- 3 - OSSD 1
- 4 - OSSD 2
- 5 - PE
- 6 - SEL\_A / Partial\_Control
- 7 - MUT\_ENABLE
- 8 - EDM
- 9 - OVERRIDE 2
- 10 - OVERRIDE 1/ RESTART
- 11 - SEL\_B
- 12 - STATUS



**External Muting lamp**  
M12 5-pole - Female

- 1 - MUT\_LAMP
- 2 - nc
- 3 - 0 VDC
- 4 - nc
- 5 - nc



**Muting sensors 1 - 2 (blu)**  
M12 5-pole - Female

- 1 - 24 VDC\_A
- 2 - SYNCRO\_A
- 3 - 0 VDC
- 4 - 0 VDC
- 5 - PE

**Muting sensors 3 - 4 (red)**  
M12 5-pole - Female

- 1 - 24 VDC\_B
- 2 - SYNCRO\_B
- 3 - 0 VDC
- 4 - 0 VDC
- 5 - PE

**Muting sensors 3 - 4 (red)**  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - Sensor 4
- 3 - 0 VDC
- 4 - Sensor 3
- 5 - PE

**Muting sensors 1 - 2 (blu)**  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - Sensor 2
- 3 - 0 VDC
- 4 - Sensor 1
- 5 - PE

### PART NUMBERS

**Hand detection** Max. range: selectable 4 or 12 m



| SMO Resolution 30 mm | SMO 303 | SMO 453 | SMO 603 | SMO 753 | SMO 903 | SMO 1053 | SMO 1203 | SMO 1353 | SMO 1503 | SMO 1653 | SMO 1803 | SMO 1953 | SMO 2103 | SMO 2253 |
|----------------------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Ordering codes       | 1390241 | 1390242 | 1390243 | 1390244 | 1390245 | 1390246  | 1390247  | 1390248  | 1390249  | 1390250  | 1390251  | 1390252  | 1390253  | 1390254  |
| Altezza protetta(mm) | 310     | 460     | 610     | 760     | 910     | 1060     | 1210     | 1360     | 1510     | 1660     | 1810     | 1960     | 2110     | 2260     |
| Number of beams      | 16      | 23      | 31      | 38      | 46      | 53       | 61       | 68       | 76       | 83       | 91       | 98       | 106      | 113      |
| Overall height (mm)  | 420     | 570     | 720     | 870     | 1020    | 1170     | 1320     | 1470     | 1620     | 1770     | 1920     | 2070     | 2220     | 2370     |



| SMO Resolution 40 mm  | SMO 304 | SMO 454 | SMO 604 | SMO 754 | SMO 904 | SMO 1054 | SMO 1204 | SMO 1354 | SMO 1504 | SMO 1654 | SMO 1804 | SMO 1954 | SMO 2104 | SMO 2254 |
|-----------------------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Ordering codes        | 1390341 | 1390342 | 1390343 | 1390344 | 1390345 | 1390346  | 1390347  | 1390348  | 1390349  | 1390350  | 1390351  | 1390352  | 1390353  | 1390354  |
| Protected height (mm) | 310     | 460     | 610     | 760     | 910     | 1060     | 1210     | 1360     | 1510     | 1660     | 1810     | 1960     | 2110     | 2260     |
| Number of beams       | 11      | 16      | 21      | 26      | 31      | 36       | 41       | 46       | 51       | 56       | 61       | 66       | 71       | 76       |
| Overall height (mm)   | 420     | 570     | 720     | 870     | 1020    | 1170     | 1320     | 1470     | 1620     | 1770     | 1920     | 2070     | 2220     | 2370     |

**Access control** Max. range: selectable 4 or 12 m



| SMO 2, 3, 4 beams     | SMO 2B  | SMO 3B  | SMO 4B  |
|-----------------------|---------|---------|---------|
| Ordering codes        | 1390640 | 1390641 | 1390642 |
| Number of beams       | 2       | 3       | 4       |
| Beam spacing (mm)     | 500     | 400     | 300     |
| Protected height (mm) | 510     | 810     | 910     |
| Overall height (mm)   | 710     | 1010    | 1110    |

## PROGRAMMABLE, WITH INTEGRATED STATUS AND MUTING LAMP



Built-in Muting function.

Selectable manual or automatic restart.

Integrated feedback input for external relay monitoring (EDM).

M12 5-pole connectors for 2 or 4 Muting sensors.

Integrated Status and Muting lamp.

Hardware configuration via the Master M12 12-pole connector wiring.

Software Configuration via Safegate Configuration Software (SCS) (PC connection with USB-M12 cable).

Use of unshielded cables up to 100 m.

Protected heights: 310 mm ... 2260 mm.

## TECHNICAL FEATURES

|                                       |   |
|---------------------------------------|---|
| Operative range (m)                   | 0 ... 4 or 0 ... 12 selectable  |
| Response time (ms)                    | 5,5 ... 28 depending on the model (see technical manual)  |
| Response time for Muting signals (ms) | 100   |
| Safety outputs                        | 2 PNP auto-controlled (400 mA at 24 VDC) with short-circuit, overload, polarity reversal protection       |
| Display                               | LEDs for self-diagnosis and light curtain status  |
| Muting lamp output                    | 24 VDC; 0,5 ... 5 W   |
| Integrated Status and Muting lamp     | Multicolor LED - 24 VDC   |
| External Device Monitoring            | External device monitoring feedback input with selectable enabling  |
| Max. Muting time-out                  | Hardware or software configurable   |
| Partial Muting                        | Software configurable. Possibility to inhibit only a selected number of beams                             |
| Override function                     | Built-in override function with 2 operating modes. Hardware or software configurable                      |
| Max. override time-out (min.)         | 15<br>Maximum number of consecutive override: 30  |
| Power supply (VDC)                    | 24 ± 20%  |
| Muting logics                         | Hardware or software configurable<br>One-way muting with 2 sensors<br>Two-way muting with 2 or 4 sensors  |
| Muting sensors                        | - MA Muting arms kits<br>- MZ Muting brackets kits<br>- External with relay or PNP output (dark-on logic) |

## CABLES NEEDED

- Emitter: M12 5-pole. See [page 30](#) (CD x, CD x SB, CDM 9, CDM 99)
- Receiver: M12 12-pole. See [page 31](#) (CS12Dx)
- Y-splitter: M12 5-pole for the connection of 4 Muting sensors. See [page 32](#) (CSY12RX, CSY12TX)
- USB-M12 5-pole adapter. See [page 31](#) (CS12USB)

## ACCESSORIES

- MA Muting arms kits. See [page 21](#)
- MZ Muting brackets kits. See [page 25](#)
- Safety relays. See [page 29](#)
- Support columns. See [page 33](#)
- Deflecting mirrors. See [page 35](#)
- Brackets. See [page 36](#)



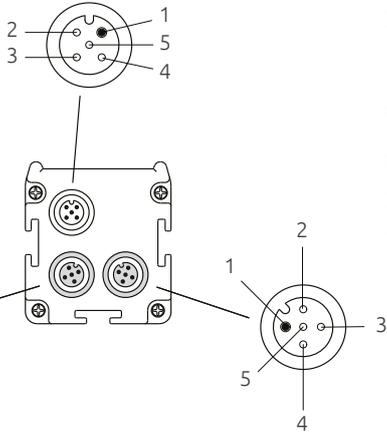
# SMPO

## PROGRAMMABLE, WITH INTEGRATED STATUS AND MUTING LAMP

### CONNECTORS

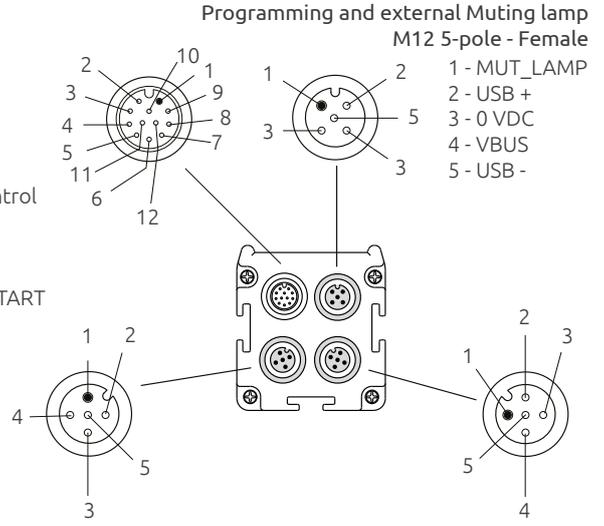
**Emitter**  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - RANGE 0
- 3 - 0 VDC
- 4 - RANGE 1
- 5 - PE



**Receiver**  
M12 12-pole - Male

- 1 - 24 VDC
- 2 - 0 VDC
- 3 - OSSD 1
- 4 - OSSD 2
- 5 - PE
- 6 - SEL\_A / Partial\_Control
- 7 - MUT\_ENABLE
- 8 - EDM
- 9 - OVERRIDE 2
- 10 - OVERRIDE 1/ RESTART
- 11 - SEL\_B
- 12 - STATUS



**Programming and external Muting lamp**  
M12 5-pole - Female

- 1 - MUT\_LAMP
- 2 - USB +
- 3 - 0 VDC
- 4 - VBUS
- 5 - USB -

**Muting sensors 1 - 2 (blu)**  
M12 5-pole - Female

- 1 - 24 VDC\_A
- 2 - SYNCRO\_A
- 3 - 0 VDC
- 4 - 0 VDC
- 5 - PE

**Muting sensors 3 - 4 (red)**  
M12 5-pole - Female

- 1 - 24 VDC\_B
- 2 - SYNCRO\_B
- 3 - 0 VDC
- 4 - 0 VDC
- 5 - PE

**Muting sensors 3 - 4 (red)**  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - Sensor 4
- 3 - 0 VDC
- 4 - Sensor 3
- 5 - PE

**Muting sensors 1 - 2 (blu)**  
M12 5-pole - Female

- 1 - 24 VDC
- 2 - Sensor 2
- 3 - 0 VDC
- 4 - Sensor 1
- 5 - PE

### PART NUMBERS

**Hand detection** Max. range: selectable 4 or 12 m



| SMPO Resolution 30 mm | SMPO 303 | SMPO 453 | SMPO 603 | SMPO 753 | SMPO 903 | SMPO 1053 | SMPO 1203 | SMPO 1353 | SMPO 1503 | SMPO 1653 | SMPO 1803 | SMPO 1953 | SMPO 2103 | SMPO 2253 |
|-----------------------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Ordering codes        | 1390281  | 1390282  | 1390283  | 1390284  | 1390285  | 1390286   | 1390287   | 1390288   | 1390289   | 1390290   | 1390291   | 1390292   | 1390293   | 1390294   |
| Altezza protetta(mm)  | 310      | 460      | 610      | 760      | 910      | 1060      | 1210      | 1360      | 1510      | 1660      | 1810      | 1960      | 2110      | 2260      |
| Number of beams       | 16       | 23       | 31       | 38       | 46       | 53        | 61        | 68        | 76        | 83        | 91        | 98        | 106       | 113       |
| Overall height (mm)   | 420      | 570      | 720      | 870      | 1020     | 1170      | 1320      | 1470      | 1620      | 1770      | 1920      | 2070      | 2220      | 2370      |



| SMPO Resolution 40 mm | SMPO 304 | SMPO 454 | SMPO 604 | SMPO 754 | SMPO 904 | SMPO 1054 | SMPO 1204 | SMPO 1354 | SMPO 1504 | SMPO 1654 | SMPO 1804 | SMPO 1954 | SMPO 2104 | SMPO 2254 |
|-----------------------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Ordering codes        | 1390381  | 1390382  | 1390383  | 1390384  | 1390385  | 1390386   | 1390387   | 1390388   | 1390389   | 1390390   | 1390391   | 1390392   | 1390393   | 1390394   |
| Protected height (mm) | 310      | 460      | 610      | 760      | 910      | 1060      | 1210      | 1360      | 1510      | 1660      | 1810      | 1960      | 2110      | 2260      |
| Number of beams       | 11       | 16       | 21       | 26       | 31       | 36        | 41        | 46        | 51        | 56        | 61        | 66        | 71        | 76        |
| Overall height (mm)   | 420      | 570      | 720      | 870      | 1020     | 1170      | 1320      | 1470      | 1620      | 1770      | 1920      | 2070      | 2220      | 2370      |

**Access control** Max. range: selectable 4 or 12 m



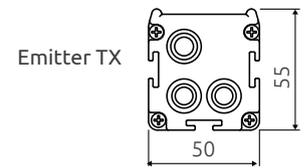
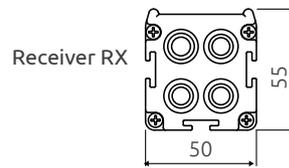
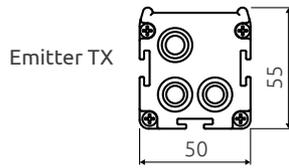
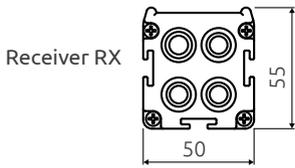
| SMPO 2, 3, 4 beams    | SMPO 2B | SMPO 3B | SMPO 4B |
|-----------------------|---------|---------|---------|
| Ordering codes        | 1390680 | 1390681 | 1390682 |
| Number of beams       | 2       | 3       | 4       |
| Beam spacing (mm)     | 500     | 400     | 300     |
| Protected height (mm) | 510     | 810     | 910     |
| Overall height (mm)   | 710     | 1010    | 1110    |

# MECHANICAL DATA

## SM, SMO AND SMPO MODELS

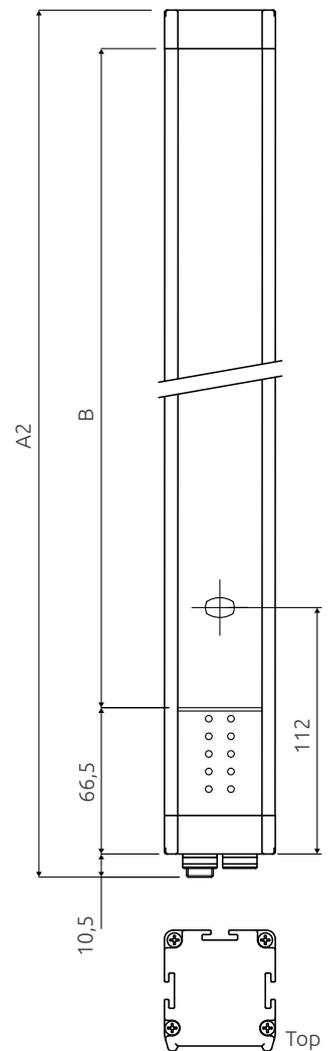
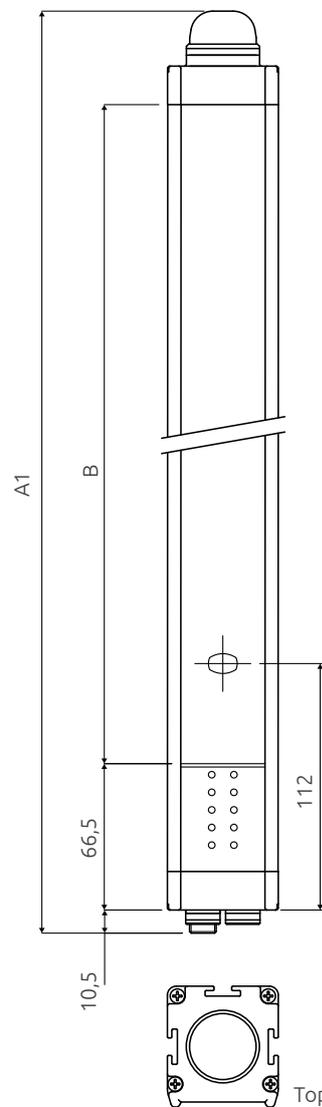
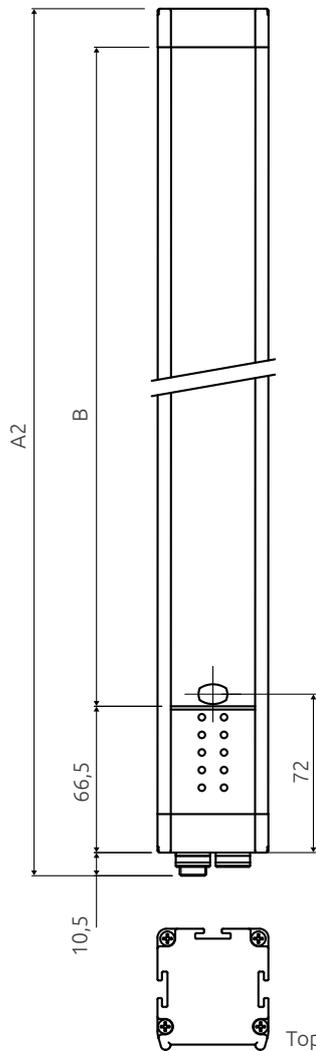
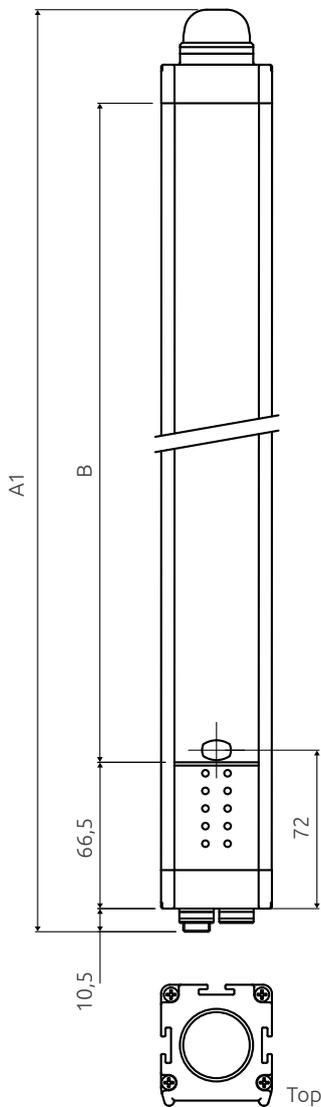
Hand detection models  
(resolution 30, 40 mm)

Access control models  
(2,3,4 beams)



With integrated  
Status and Muting lamp

With integrated  
Status and Muting lamp



| Model    | 300                        | 450 | 600 | 750 | 900  | 1050 | 1200                       | 1350 | 1500 | 1650 | 1800 | 1950 | 2100                       | 2250 | 2B  | 3B   | 4B   |
|----------|----------------------------|-----|-----|-----|------|------|----------------------------|------|------|------|------|------|----------------------------|------|-----|------|------|
| A1 (mm)  | 420                        | 570 | 720 | 870 | 1020 | 1170 | 1320                       | 1470 | 1620 | 1770 | 1920 | 2070 | 2220                       | 2370 | 710 | 1010 | 1110 |
| A2 (mm)  | 395                        | 545 | 695 | 845 | 995  | 1145 | 1295                       | 1445 | 1595 | 1745 | 1895 | 2045 | 2195                       | 2345 | 685 | 985  | 1085 |
| B (mm)   | 300                        | 450 | 600 | 750 | 900  | 1050 | 1200                       | 1350 | 1500 | 1650 | 1800 | 1950 | 2100                       | 2250 | 590 | 890  | 990  |
| Mounting | Set of 4 brackets included |     |     |     |      |      | Set of 6 brackets included |      |      |      |      |      | Set of 4 brackets included |      |     |      |      |

## SENSORS ADJUSTMENT

All MA Muting arms are adjustable in height and angle.

This unique feature, allows to control the angle of the detection plane, facilitating the detection of irregular materials in transit.

The reference ruler on the side of the barrier facilitates the alignment of the arms.

MA Muting arms

Maximum vertical adjustment allowed:  $\pm 70$  mm

Maximum angular adjustment allowed:  $\pm 8^\circ$

MZ Muting brackets with M<sup>5</sup> multi-beams photocells, in addition to the height and angular adjustment, also allow angular adjustment of the M<sup>5</sup> sensors on their vertical axis.

MZ Muting brackets

Maximum angular adjustment allowed:  $\pm 8^\circ$

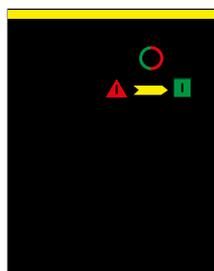
Maximum vertical adjustment allowed:  $\pm 70$  mm

Maximum angular adjustment allowed:  $\pm 8^\circ$

## INTEGRATED STATUS AND MUTING LAMP

|   |   |   |   |  |   |   |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
|   | <i>Flashing</i>   |   | <i>Flashing</i>   | <i>Flashing</i>  |   | <i>Flashing</i>   |
| <b>GUARD</b><br>Normal operations   | <b>CLEAR</b><br>Waiting for restart   | <b>MUTING</b><br>Muting in progress   | <b>OVERRIDE</b><br>Override in progress   | <b>OVERRIDE REQUEST</b><br>Waiting for an override                                 | <b>BREAK</b><br>Occupied curtain (at least one beam occupied)                       | <b>FAIL</b><br>Error condition  |

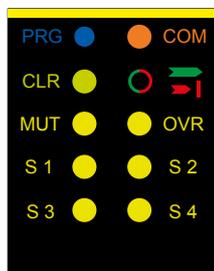
## DISPLAY



### Emitter SM - SMO - SMPO Models

1 - Tri-colour LED Description

|   |                         |
|---|-------------------------|
|    | Power on - Initial Test |
|    | Fail condition          |
|   | Test condition          |
|  | Normal operation        |



### Receiver SM - SMO - SMPO Models

PRG COM CLR LED bi-colour MUT OVR S1 S2 S3 S4 Description

|   |   |   |   |   |   |   |   |   |   |   |                         |
|---|---|---|---|---|---|---|---|---|---|---|-------------------------|
|  |  |  |  |  |  |  |  |  |  |  | Power on - Initial Test |
|---|---|---|---|---|---|---|---|---|---|---|-------------------------|

Regular operations

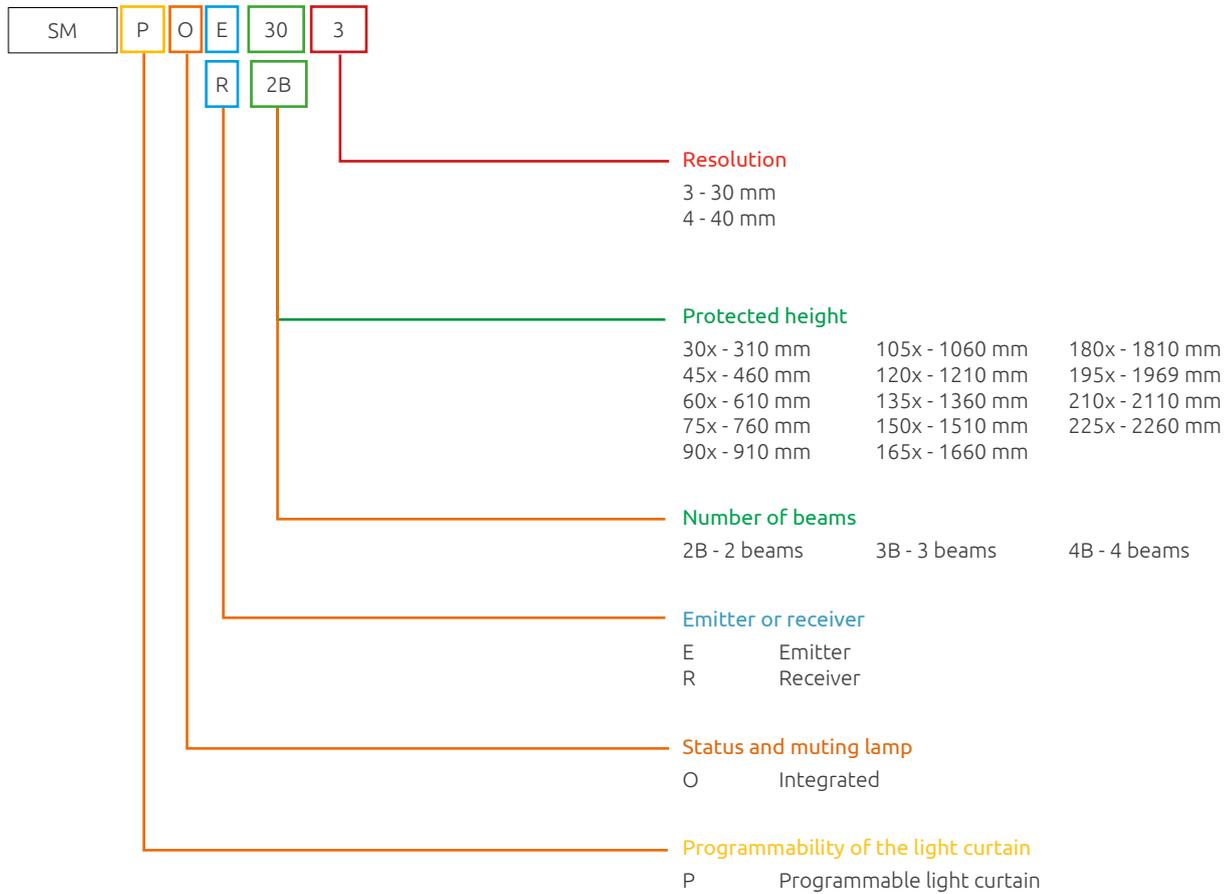
| LED           | LED status  | Description  |
|---------------|---|--|
| PROG          |  | Light curtain programmed via USB                           |
| COM           |  | Communication with active PC                               |
| CLR           |  | Light curtain awaiting for RESTART (clear gate)            |
| LED bi-colour |  | OSSD outputs set to OFF - Occupied light curtain condition |
|               |  | GUARD condition  |
| MUT           |  | Muting active  |
| OVR           |  | Override active  |
|               |  | Override request   |
| S1            |  | Interruption Sensor 1                                      |
|               |  | Sensor 1 clear   |
| S2            |  | Interruption Sensor 2                                      |
|               |  | Sensor 2 clear   |
| S3            |  | Interruption Sensor 3                                      |
|               |  | Sensor 3 clear   |
| S4            |  | Interruption Sensor 4                                      |
|               |  | Sensor 4 clear   |



Fault operations

| LED bi-colour | Number of flashes |     |     |   | S1 S2 S3 S4 | Description                           |
|---------------|-------------------|-----|-----|---|-------------|---------------------------------------|
|               | CLR               | MUT | OVR |   |             |                                       |
|               |                   |     |     |   |             | Configuration error SEL_A/SEL_B/EDM   |
| 2             |                   |     |     |   |             | Wrong EDM configuration               |
| 3             | 3                 |     |     |   |             | EDM feedback failure                  |
| 3             |                   | 3   |     |   |             | STATUS input failure                  |
| 3             |                   |     | 3   |   |             | OVERRIDE_1 / OVERRIDE_1 input failure |
| 3             |                   |     |     | 3 |             | Sensor input failure                  |
| 3             | 3                 | 3   | 3   | 3 |             | Muting lamp failure                   |
| 4             |                   |     |     |   |             | OSSD1 / OSSD2 error                   |
| 5             |                   |     |     |   |             | Main card error                       |
| 5             | 5                 |     |     |   |             | Base sheet (EEPROM) error             |
| 5             |                   |     | 5   |   |             | Main card error                       |
| 6             |                   |     |     |   |             | Main card (Microcontroller) error     |
| 6             | 6                 |     |     |   |             | Generic default board error           |
| 6             |                   | 6   |     |   |             | Beams error                           |
| 6             |                   |     | 6   |   |             | 24 VDC power supply overload          |
| 6             | 6                 | 6   | 6   |   |             | Lamp/status over current              |
| 7             |                   |     |     |   |             | Receiving beams failure               |
| 8             |                   |     |     |   |             | Interfering emitter detected          |

**CODE LEGEND**



Palletizer with regular pallets transit showing a Safegate with MA Muting arms (integrated sensors)

## SAFEGATE CONFIGURATION SOFTWARE (SCS)

Software configurable models (SMPO) allow configuration of Muting logics and additional functional parameters (i.e. Partial Muting) via Safegate Configuration Software (SCS). Programmable models (SMPO) allow managing further configuration parameters, ideal to address particular issues in more complicated application scenarios.



Access to the programming functions of the light curtains protected by two-level password



Possibility of downloading the existing configuration of the light curtain



Uploading of the light curtain configuration



Light curtains **general parameter** configuration

- Automatic or manual restart
- K1/K2 feedback enabling
- K1/K2 feedback reading time



**Muting logic** configuration

- L Muting logic with parallel or crossed beams
- T Muting logic with crossed beams
- T Muting logic with parallel beams (sequential)
- T Muting logic with parallel beams (concurrent)



**Muting parameters** configuration

- Muting enable
- Occupancy order of the sensors (direction)
- Sensor gap for non-homogeneous pallet materials
- Muting closure and Muting time-out



**Partial Muting** configuration



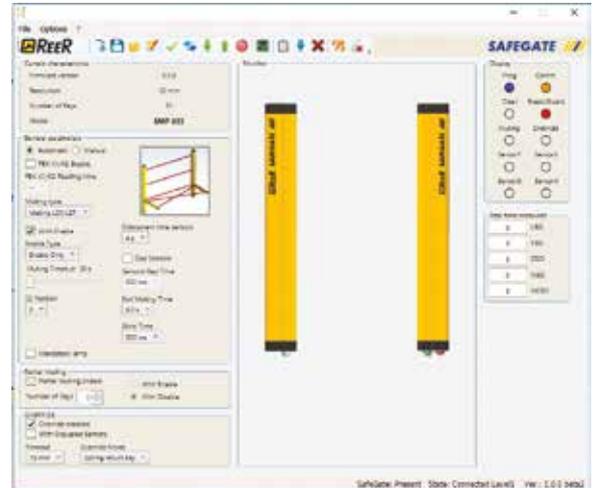
**Override function** configuration



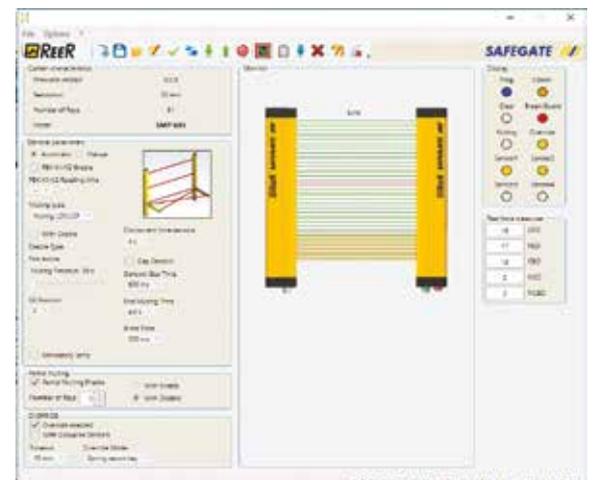
Check and configuration validation



Light curtain status monitoring



Configuration



Status monitor

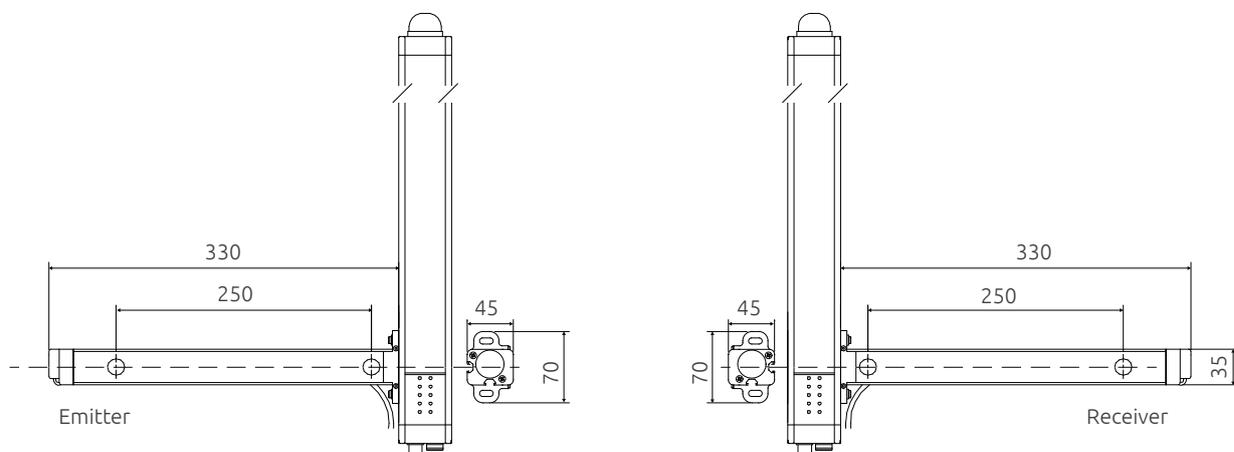


Crossed beams Muting arms with 2 through-beam sensors.

Can be used in conjunction with Safegate access control barriers to create a One-way access control system with Exit-only L-Muting logic.

The kit includes: 2 Muting arms (emitter and receiver) with pre-wired and pre-aligned Muting sensors, screws and fixing brackets.

## DIMENSIONS



Dimensions: mm

## MA L2X

### MUTING ARMS KIT - L MUTING LOGIC WITH 2 CROSSED BEAMS

#### TECHNICAL FEATURES

|                         |                 |
|-------------------------|-----------------|
| Model                   | MA L2X          |
| Ordering codes          | 1390800         |
| Opto-electronic sensors | 2 crossed beams |
| Operative range (m)     | 1 ... 2,5       |

# MUTING ARMS



## MA L2P TRX / G / V

TRX MUTING ARMS KIT - L MUTING LOGIC WITH 2 PARALLEL BEAMS

### TECHNICAL FEATURES

|                         |  |
|-------------------------|--|
| Model                   | MA L2P TRX<br>MA L2P TRX G (reduced operative range for application with transparent material)<br>MA L2P TRX V (longer Muting arms for high-speed conveyors) |
| Ordering codes          | MA L2P TRX - 1390804<br>MA L2P TRX G - 1390813<br>MA L2P TRX V - 1390806   |
| Opto-electronic sensors | 2 parallel beams   |
| Operative range (m)     | 0 ... 3,5 (MA L2P TRX)<br>0 ... 2 (MA L2P TRX G)<br>0 ... 3,5 (MA L2P TRX V)   |

Parallel beams Muting arms with 2 retro-reflective sensors.

Can be used in conjunction with Safegate access control barriers to create a One-way access control system with Exit-only L-Muting logic.

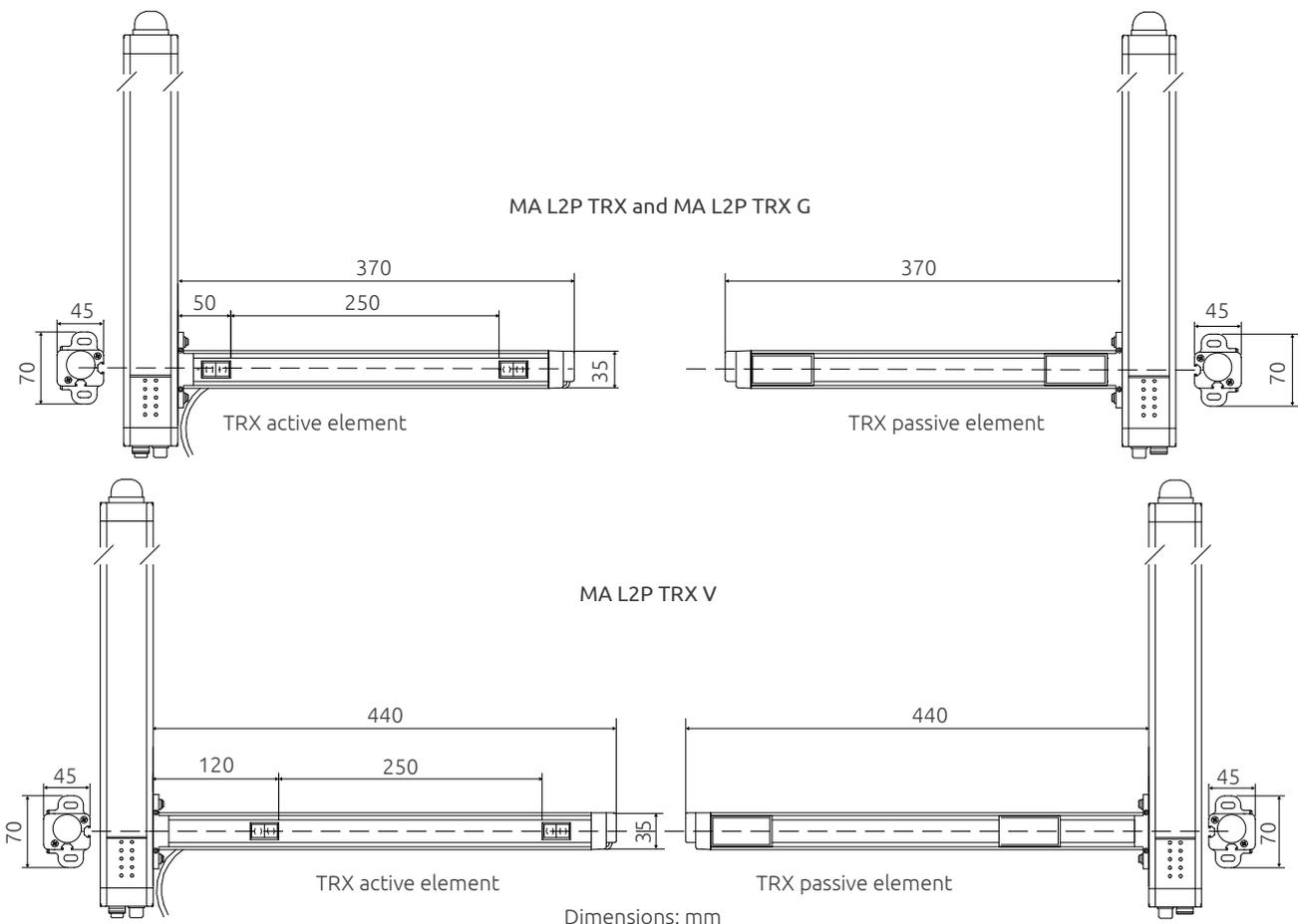
The kit includes: 2 Muting arms (active and passive elements) with pre-wired and pre-aligned Muting sensors, screws and fixing brackets.

### Special versions

MA L2P TRX G with special built-in Muting sensors to optimise correct and consistent detection of transparent materials (i.e. glass).

MA L2P TRX V with longer built-in Muting arms for high-speed conveyors.

### DIMENSIONS



## MA T2X

MUTING ARMS KIT - T MUTING LOGIC  
WITH 2 CROSSED BEAMS

### TECHNICAL FEATURES

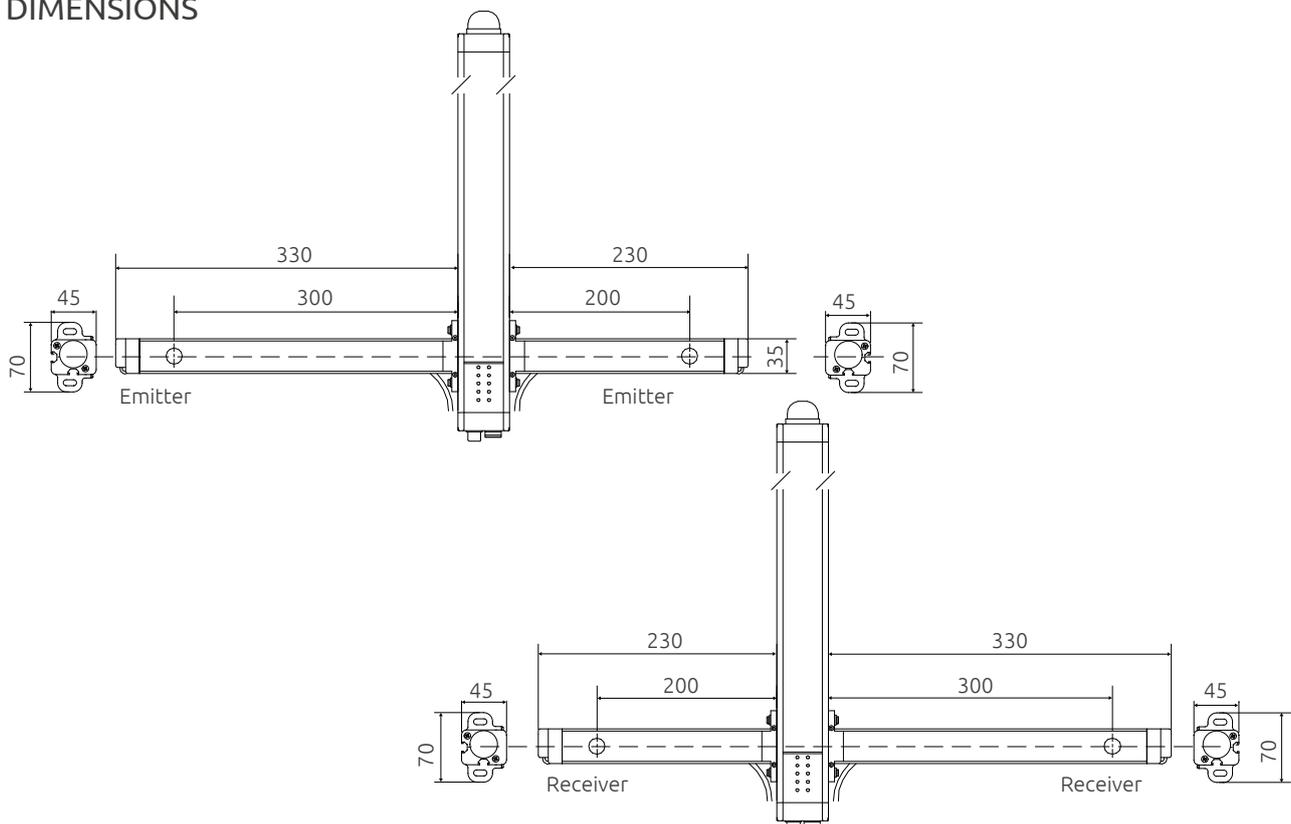
|                         |                 |
|-------------------------|-----------------|
| Model                   | MA T2X          |
| Ordering codes          | 1390802         |
| Opto-electronic sensors | 2 crossed beams |
| Operative range (m)     | 1 ... 2,5       |

Crossed beams Muting arms with 2 through-beam sensors.

Can be used in conjunction with Safegate access control barriers to create a Two-way access control system with Entry-Exit T-Muting logic.

The kit includes: 4 Muting arms (emitter and receiver) with pre-wired and pre-aligned Muting sensors, screws and fixing brackets.

### DIMENSIONS



Dimensions: mm

# MUTING ARMS



## MA T4P TRX / G / V

TRX MUTING ARMS KIT - T MUTING LOGIC WITH 4 PARALLEL BEAMS

### TECHNICAL FEATURES

|                         |  |
|-------------------------|--|
| Model                   | MA T4P TRX   |
|                         | MA T4P TRX G (reduced operative range for application with transparent material)<br>MA T4P TRX V (longer Muting arms for high-speed conveyors) |
| Ordering codes          | MA T4P TRX - 1390805<br>MA T4P TRX G - 1390814<br>MA T4P TRX V - 1390807   |
| Opto-electronic sensors | 4 parallel beams   |
| Operative range (m)     | 0 ... 3,5 (MA T4P TRX)   |
|                         | 0 ... 2 (MA T4P TRX G)   |
|                         | 0 ... 3,5 (MA T4P TRX V)   |

Parallel beams Muting arms with 4 retro-reflective sensors.

Can be used in conjunction with Safegate access control barriers to create a Two-way access control system with Entry-Exit T-Muting logic.

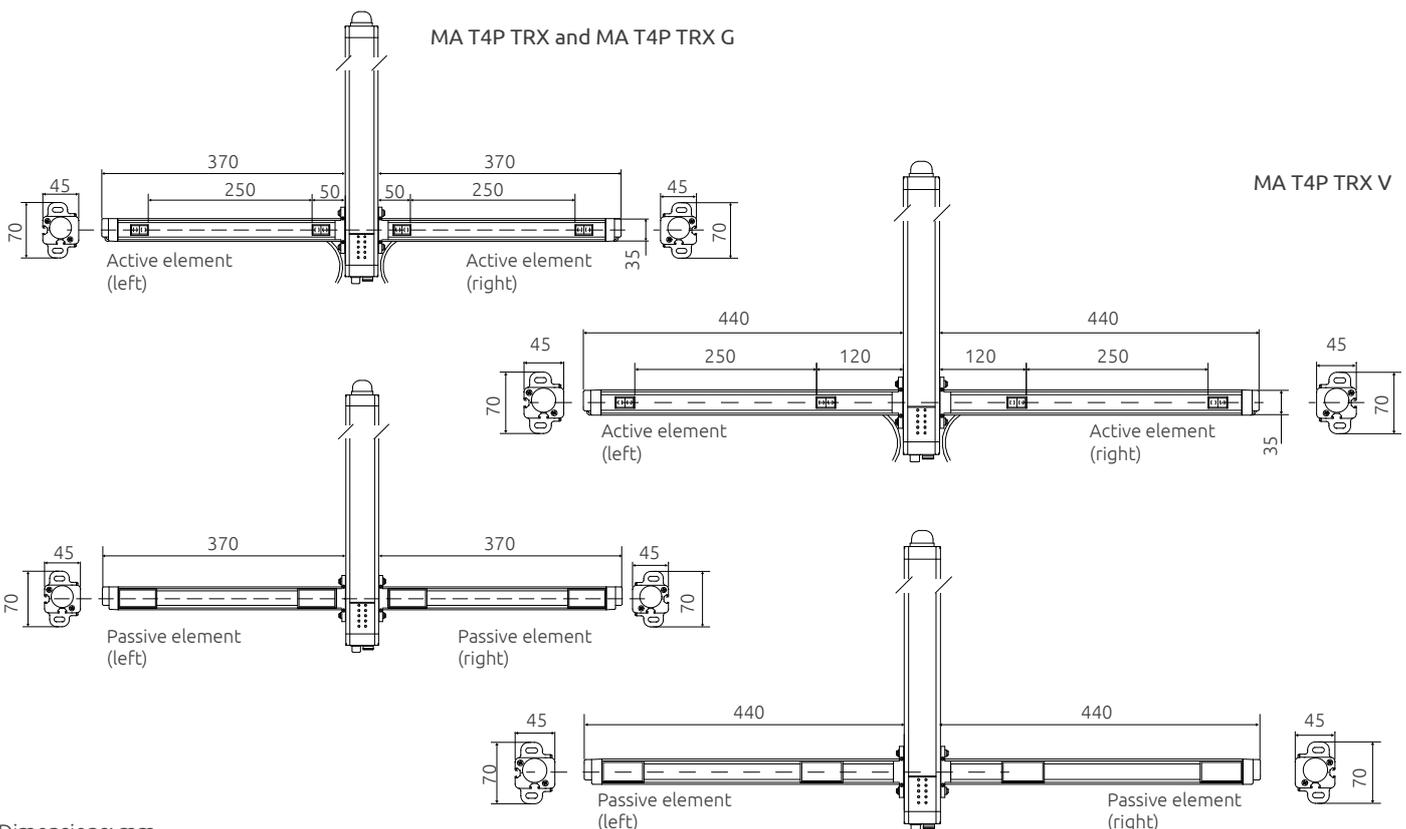
The kit includes: 4 Muting arms (active and passive elements) with pre-wired and pre-aligned Muting sensors, screws and fixing brackets.

### Special versions

MA T4P TRX G with special built-in Muting sensors to optimise correct and consistent detection of transparent materials (i.e. glass).

MA T4P TRX V version with longer built-in Muting arms for high-speed conveyors.

### DIMENSIONS



## MUTING BRACKETS



Crossed or parallel beams Muting brackets with 2 M<sup>5</sup> multi-beam photocells.

Can be used in conjunction with Safegate access control barriers to create a One-way access control system with Exit-only L-Muting logic.

The kit includes: 2 Muting brackets with 2 M<sup>5</sup> multi-beam photocells (emitter and receiver), screws and fixing brackets.

#### Special versions

MZ L2P V with longer Muting brackets for high-speed conveyors.

## MZ L2XP / MZ L2P V

MUTING BRACKETS KIT - L LOGIC WITH  
CROSSED OR PARALLEL BEAMS

### TECHNICAL FEATURES

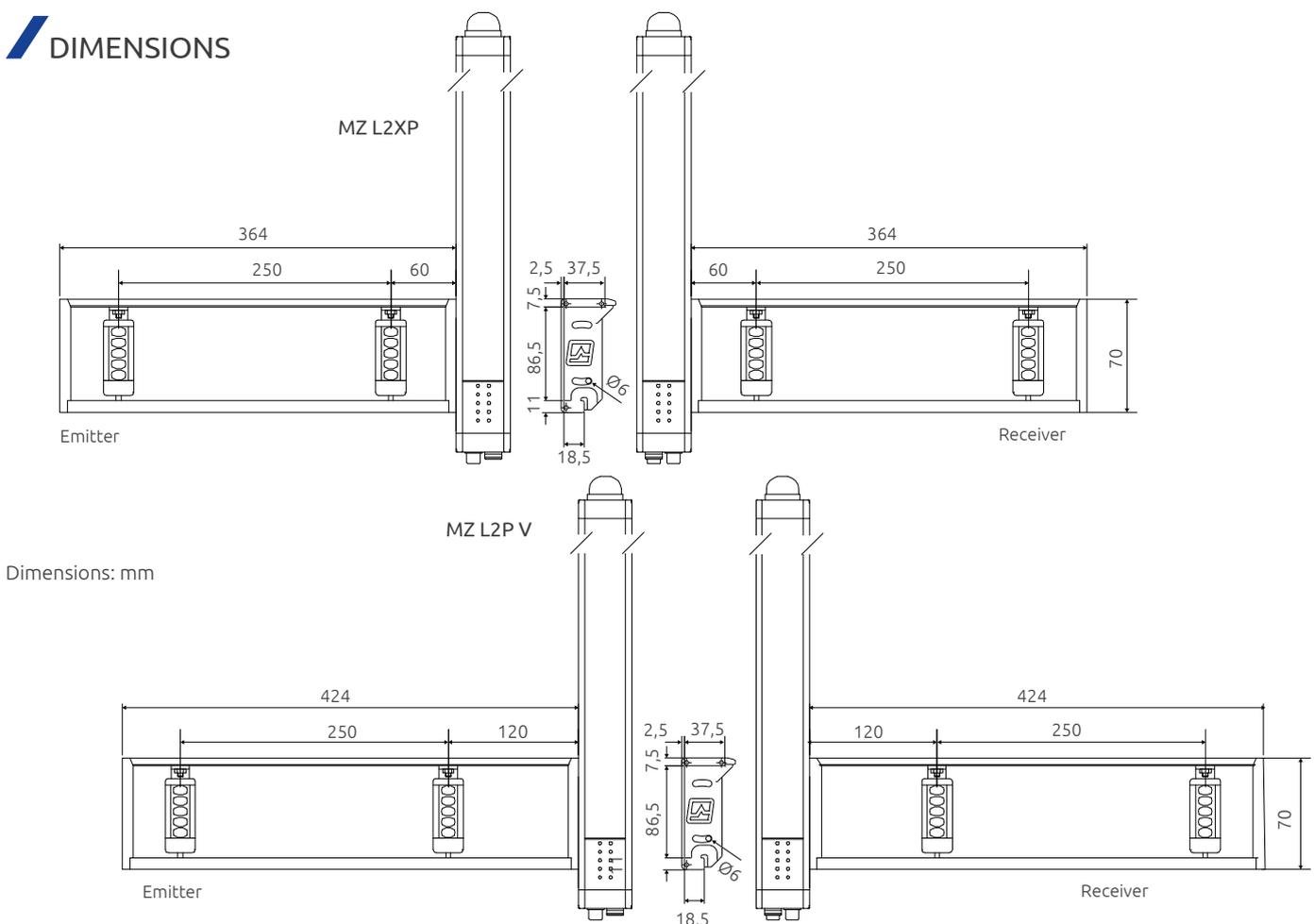
|                         |  |
|-------------------------|--|
| Model                   | MZ L2XP<br>MZ L2P V (longer Muting brackets for high speed conveyors)                              |
| Ordering codes          | MZ L2XP - 1390808<br>MZ L2P V - 1390811  |
| Opto-electronic sensors | MZ L2XP - 2 M <sup>5</sup> crossed or parallel beams<br>MZ L2P V - 2 M <sup>5</sup> parallel beams |
| Operative range (m)     | 0 ... 3,5  |

### WARNING!

*This model defaults in P (parallel beams) configuration. To change to X (crossed beams) configuration, the M<sup>5</sup> multi-beam photocells, on one of the brackets, must be reversed and re-oriented accordingly.*

*To avoid any interference, the two M<sup>5</sup> multi-beam photocells use different encodings.*

### DIMENSIONS



## MUTING BRACKETS



## MZ T2X

MUTING BRACKETS KIT - T LOGIC WITH  
CROSSED BEAMS

## TECHNICAL FEATURES

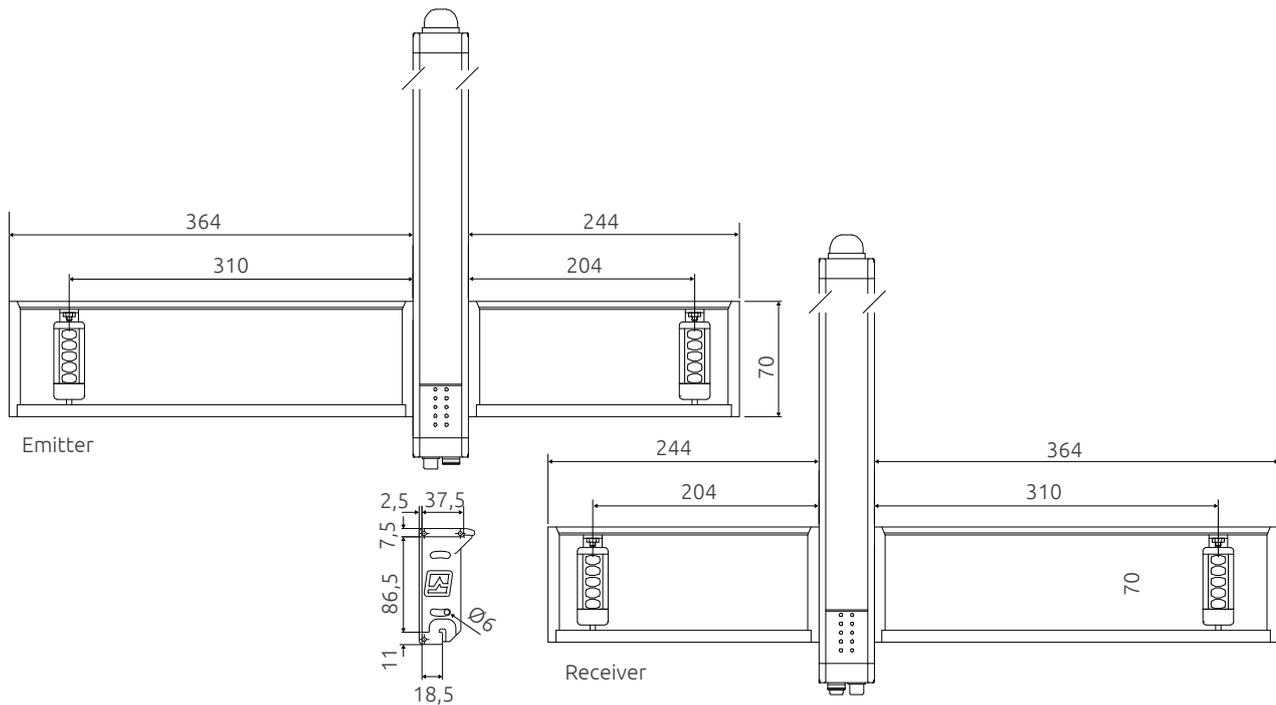
|                         |                                |
|-------------------------|--------------------------------|
| Model                   | MZ T2X                         |
| Ordering codes          | 1390809                        |
| Opto-electronic sensors | 2 M <sup>5</sup> crossed beams |
| Operative range (m)     | 0 ... 3,5                      |

Crossed beams Muting brackets with 2 M<sup>5</sup> multi-beam photocells.

Can be used in conjunction with Safegate access control barriers to create a Two-way access control system with Entry-Exit T-Muting logic.

The kit includes: 4 Muting brackets with 2 M<sup>5</sup> multi-beam photocells (emitter and receiver), screws and fixing brackets.

## DIMENSIONS



Dimensions: mm

## MUTING BRACKETS

## MZ T4P / V

## MUTING BRACKETS KIT - T LOGIC WITH PARALLEL BEAMS



## TECHNICAL FEATURES

| Model                   | MZ T4P<br>MZ T4P V (longer Muting brackets for high speed conveyors) |
|-------------------------|--|
| Ordering codes          | MZ T4P - 1390810<br>MZ T4P V - 1390812                               |
| Opto-electronic sensors | 4 M <sup>5</sup> parallel beams                                      |
| Operative range (m)     | 0 ... 3,5  |

Parallel beams Muting brackets with 4 M<sup>5</sup> multi-beam photocells.

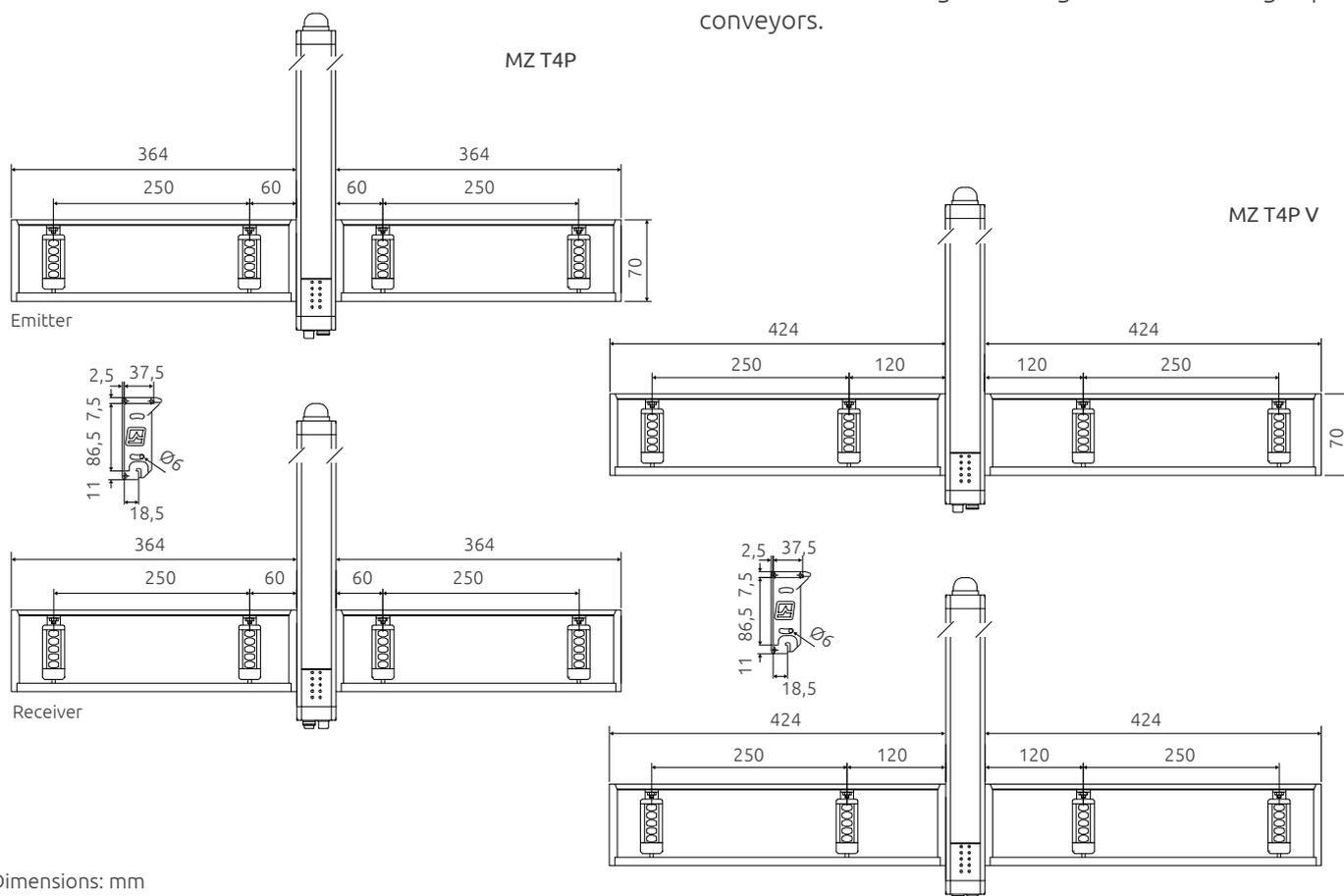
Can be used in conjunction with Safegate access control barriers to create a Two-way access control system with Entry-Exit T-Muting logic.

The kit includes: 4 Muting brackets with 4 M<sup>5</sup> multi-beam photocells (emitter and receiver), screws and fixing brackets.

## Special versions

MZ T4P V with longer Muting brackets for high-speed conveyors.

## DIMENSIONS





Backlit top cover with status LED

Through-beam barrier type photocell with 5 beams.

Ideal for installation as Muting sensor, allows to detect also the most difficult objects like, for example, piles of pallets.

With a compact metal housing and a polycarbonate protective front window, it offers the right degree of robustness ideal also in the most demanding environments.

The integrated status signaling lamp allows to easily verify the status of the system.

## STATUS DISPLAY

|          | LED   | State | Description                                     |
|----------|---|-------|---|
| Emitter  |  | ON    | Beam emitted                                    |
|          |  | OFF   | No beam   |
| Receiver |  | ON    | Controlled area is free                         |
|          |  | ON    | Break condition (controlled area is obstructed) |



Operating temperature -30 ... +55 °C

**-30 ... +55 °C**



IP65 protection rate



## M<sup>5</sup>

### MULTI-BEAM PHOTOCELL

## TECHNICAL FEATURES

|                                    |  |
|------------------------------------|--|
| Operative range (m)                | 0 ... 3,5  |
| Measurement time (ms)              | < 100  |
| Power supply (VDC)                 | 24 ± 20%   |
| Power consumption at 24 VDC (W)    | 1  |
| Number of beams                    | 5  |
| Beam spacing (mm)                  | 10   |
| Outputs on receiver                | 0 or 24V (PNP 100 mA<br>24 VDC) dark-on                |
| Immunity to the ambient light (lx) | > 10000 (solar)  |
| Emission angle                     | ± 5°   |
| Emission wavelength (nm)           | 940 modulated infrared                                 |
| Electrical connections             | 900 mm cable with M12<br>5-pole (emitter and receiver) |
| Fastening                          | Back slot  |
| Dimension h x w x d (mm)           | 70 x 28 x 30   |
| Cable length (mm)                  | 900  |

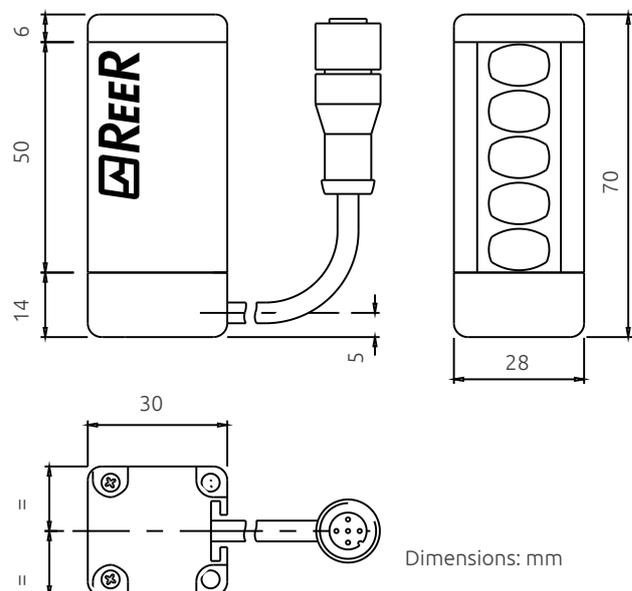
## PART NUMBERS

Ordering code M<sup>5</sup> (A coding): 1250910

Ordering code M<sup>5</sup> (B coding): 1250911

**Note:** The use of different coding is recommended for the installation of two M<sup>5</sup> multi-beam photocells next to each other in order to avoid interference.

## DIMENSIONS





AD SR0 and AD SR0A safety relay modules. Can be connected to Safegate safety light curtains or with any light curtain equipped with feedback input for monitoring external relays (EDM).

- Guided-contact safety relays
- Additional NC contact line for the monitoring by light curtain (EDM)

Certified by  
**TÜV Rheinland**  
Product Safety GmbH

This product uses two guided contact safety relays manufactured by DOLD (type OA or OA 5643 5644) and certified by TUEV Rheinland.

## AD SR0 - AD SR0A

SAFETY RELAY MODULES FOR DEVICES WITH INTEGRATED FEEDBACK INPUT FOR EDM

### TECHNICAL FEATURES

|                            |  |
|----------------------------|--|
| Safety relay outputs       | AD SR0   |
|                            | 2 NO + 1 NC - 2 A 250 VAC<br>Each NO safety output line is interrupted twice by the two relays |
|                            | AD SR0A  |
|                            | 2 NO - 2 A 250 VAC   |
| Response time (ms)         | ≤ 20   |
| Power supply (VDC)         | 24 ± 20%   |
| Electrical connections     | On terminal block  |
| Operating temperature (°C) | 0 ... +55  |
| Protection rating          | IP20 for housing<br>IP2X for terminal block  |
| Fastening                  | DIN rail fastening according to EN 50022-35 standard   |
| Dimensions h x w x d (mm)  | 101 x 35 x 120   |

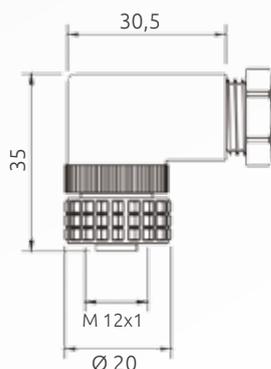
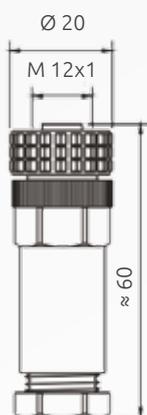
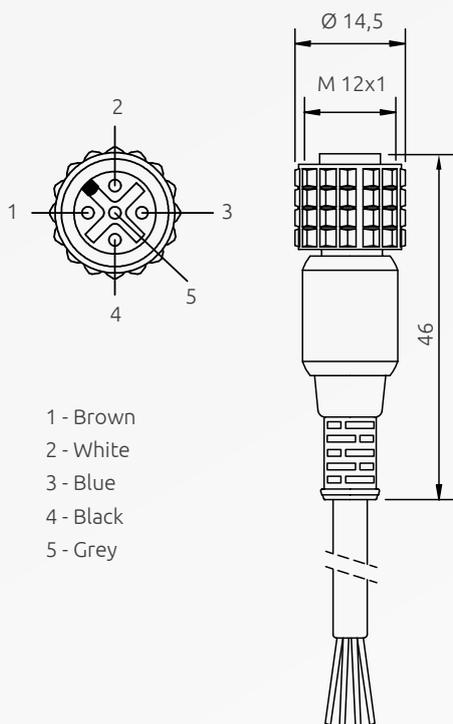
### PART NUMBERS

AD SR0 and AD SR0A module includes multi-language instruction manual and CE declaration of conformity.

Ordering codes    AD SR0: 1330902  
                          AD SR0A: 1330903



## CABLES



## CD x

## M12 STRAIGHT CONNECTOR 5-POLE

| Model | Code    | Description          |
|-------|---------|----------------------|
| CD 5  | 1330950 | Pre-wired cable 5 m  |
| CD 10 | 1330956 | Pre-wired cable 10 m |
| CD 15 | 1330952 | Pre-wired cable 15 m |
| CD 20 | 1330957 | Pre-wired cable 20 m |
| CD 25 | 1330949 | Pre-wired cable 25 m |
| CD 50 | 1330965 | Pre-wired cable 50 m |

## CD x SB

## M12 STRAIGHT CONNECTOR 5-POLE, SHIELDED

| Model    | Code    | Description                   |
|----------|---------|-------------------------------|
| CD 5 SB  | 1330850 | Pre-wired shielded cable 5 m  |
| CD 10 SB | 1330856 | Pre-wired shielded cable 10 m |
| CD 15 SB | 1330852 | Pre-wired shielded cable 15 m |

Emitter connection.

## CDM 9

## M12 STRAIGHT CONNECTOR 5-POLE SCREW TERMINAL, PG9 CABLE GLAND

| Model | Code    |
|-------|---------|
| CDM 9 | 1330954 |

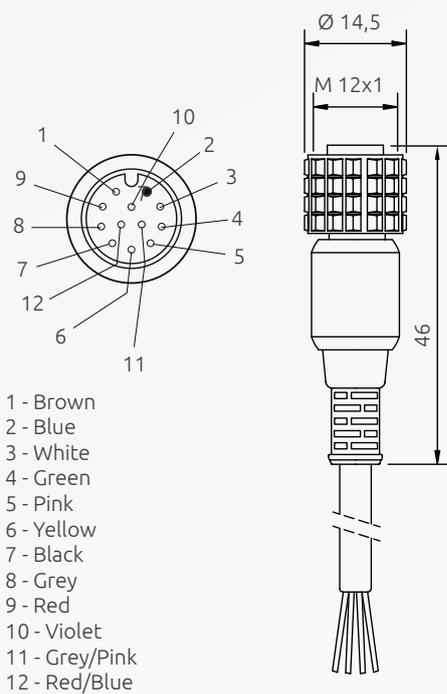
Emitter connection.

## CDM 99

## M12 STRAIGHT CONNECTOR 5-POLE SCREW TERMINAL, PG9 CABLE GLAND

| Model  | Code    |
|--------|---------|
| CDM 99 | 1330955 |

Emitter connection.

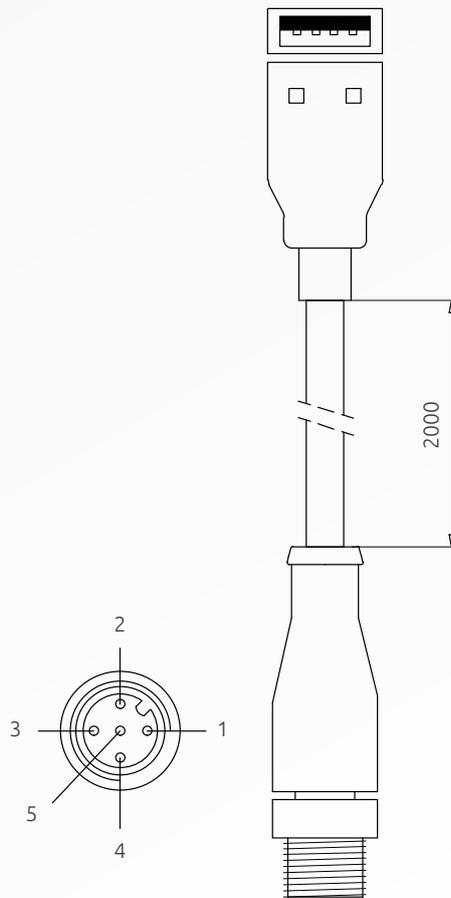


## CS12Dx

### M12 STRAIGHT CONNECTOR 12-POLE

| Model   | Code    | Description          |
|---------|---------|----------------------|
| CD12D3  | 1390900 | Pre-wired cable 3 m  |
| CD12D5  | 1390901 | Pre-wired cable 5 m  |
| CD12D10 | 1390902 | Pre-wired cable 10 m |
| CD12D15 | 1390906 | Pre-wired cable 15 m |
| CD12D20 | 1390907 | Pre-wired cable 20 m |

Receiver connection.



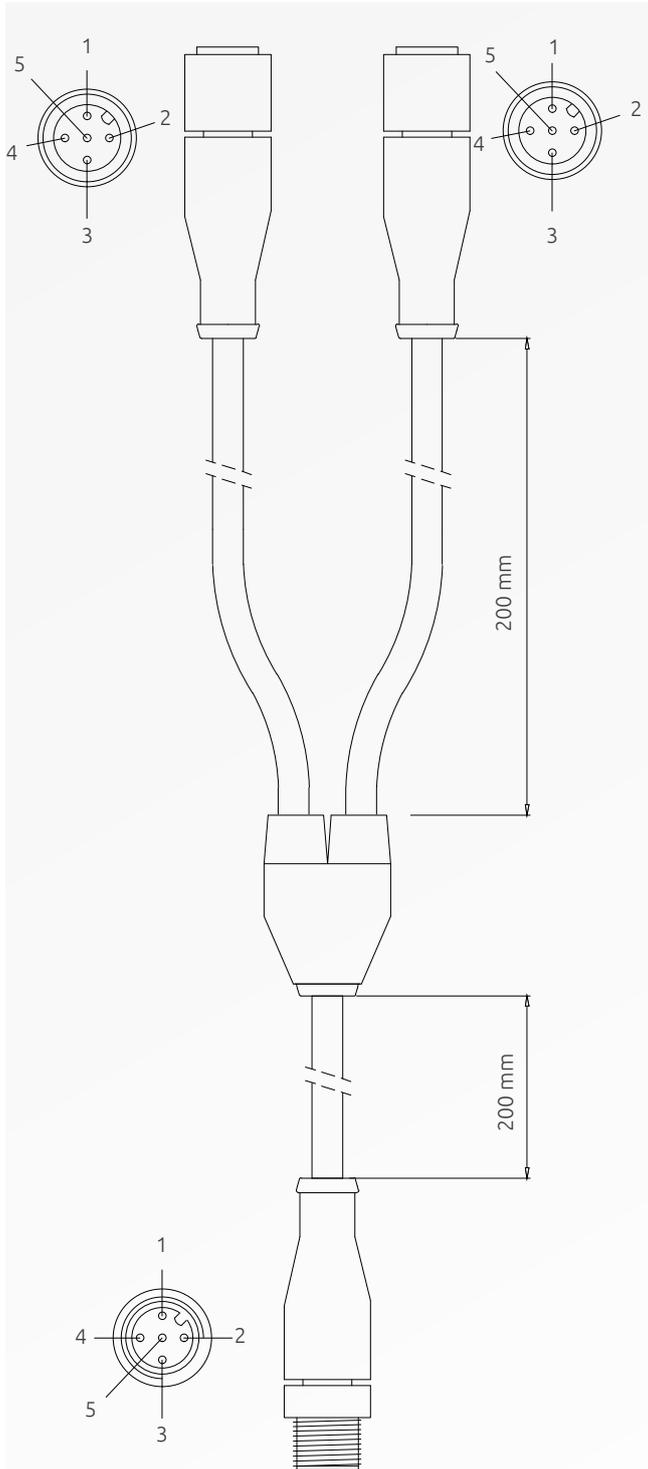
## CS12USB

### USB-M12 5-POLE ADAPTER

| Model   | Code    |
|---------|---------|
| CS12USB | 1390905 |

SMPO light curtains programming.

## CABLES



## CSY12RX

M12 5-POLE Y-SPLITTER TO CONNECT 4  
MUTING SENSORS - RECEIVER

| Model   | Code    |
|---------|---------|
| CSY12RX | 1390904 |

## CSY12TX

M12 5-POLE Y-SPLITTER TO CONNECT 4  
MUTING SENSORS - EMITTER

| Model   | Code    |
|---------|---------|
| CSY12TX | 1390903 |

Y-splitter for Muting sensors.

## FMC SG

### FLOOR-MOUNTED SUPPORT COLUMNS

#### PART NUMBERS

##### Columns

| Model                                     | FMC SGB2 | FMC SGB3 | FMC SGB4 | FMC SG1700                      | FMC SG2000                      |
|---|----------|----------|----------|---------------------------------|---------------------------------|
| Ordering codes                            | 1200700  | 1200701  | 1200702  | 1200703                         | 1200704                         |
| A - Height (mm)                           | 1000     | 1200     | 1330     | 1670                            | 1970                            |
| B - Overall height with FMC CB base (mm)  | 1055     | 1255     | 1385     | 1725                            | 2025                            |
| B - Overall height with FMC CBL base (mm) | 1037     | 1237     | 1367     | 1707                            | 2007                            |
| For light curtains with:                  | 2 beams  | 3 beams  | 4 beams  | Controlled height up to 1360 mm | Controlled height up to 1660 mm |

##### Bases for columns

| Model          | FMC CB          | FMC CBL                             |
|----------------|-----------------|-------------------------------------|
| Ordering codes | 1200500         | 1200501                             |
| Description    | Base for column | Base for column with reduced height |
| Height (mm)    | 55              | 37                                  |

Steel foundation inserts included with the product.

##### Note for ordering

Column ordering codes do not include the base which must be ordered separately (FMC CB and FMC CBL models).

MA Muting arms and MZ Muting brackets can be mounted directly to the column



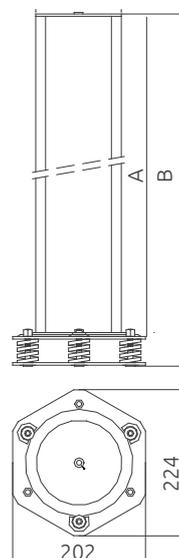
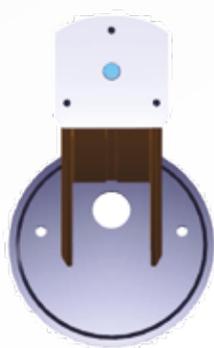
Support columns for Safegate safety light curtains, designed to provide secure fastening to the floor, fast installation, and a simple and precise adjustment of the optical alignment of the system.

Steel base with spring system for a perfect adjustment of the column vertical axis.

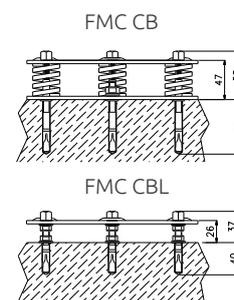
Made by aluminium extrusion poles, with adjustable angular orientation. Easy assembling and disassembling of the light curtain with easy adjustment of the first beam's height.

Allow the installation of the MA Muting arms or MZ Muting brackets on the column itself.

Built-in spirit level for a correct positioning of the vertical axis.



A: column height  
B: column height with base FMC CB or FMC CBL



# MIRRORS

## FMC S / FMC SB

### COLUMNS WITH DEFLECTING MIRRORS

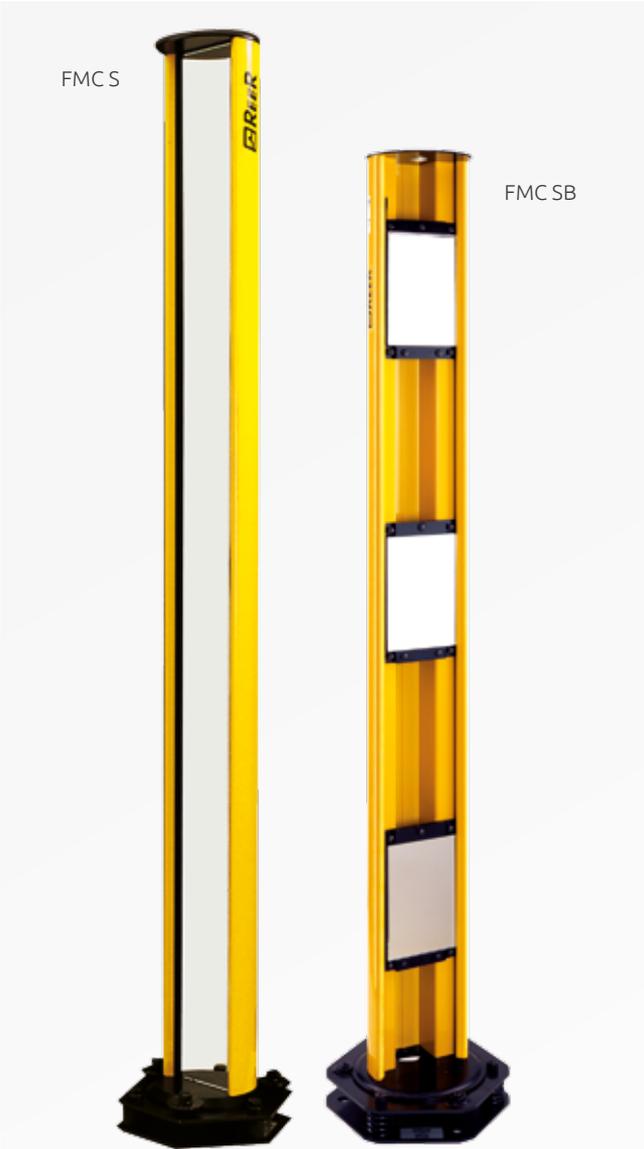
#### PART NUMBERS

| Model                                     | FMC S2  | FMC S3  | FMC S4  | FMC S 1700  | FMC S 2000  |
|---|---|---|---|---|---|
| Ordering codes                            | 1200620   | 1200621   | 1200622   | 1200625   | 1200623   |
| Description                               | Single mirror for 2 beams and controlled height up to 700 mm light curtains | Single mirror for 3 beams and controlled height up to 900 mm light curtains | Single mirror for 4 beams and controlled height up to 900 mm light curtains | Single mirror for controlled height up to 1360 mm | Single mirror for controlled height up to 1660 mm |
| A - Height (mm)                           | 1000  | 1200  | 1330  | 1670  | 1970  |
| B - Overall height with FMC CB base (mm)  | 1055  | 1255  | 1385  | 1725  | 2025  |
| B - Overall height with FMC CBL base (mm) | 1037  | 1237  | 1367  | 1707  | 2007  |

| Model                                     | FMC SB2                              | FMC SB3                              | FMC SB4                              |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| Ordering codes                            | 1200645                              | 1200646                              | 1200647                              |
| Description                               | 2 mirrors for 2 beams light curtains | 3 mirrors for 3 beams light curtains | 4 mirrors for 4 beams light curtains |
| A - Height (mm)                           | 1000                                 | 1200                                 | 1330                                 |
| B - Overall height with FMC CB base (mm)  | 1055                                 | 1255                                 | 1385                                 |
| B - Overall height with FMC CBL base (mm) | 1037                                 | 1237                                 | 1367                                 |

#### Note for ordering

Column ordering codes do not include the base which must be ordered separately (FMC CB and FMC CBL models). See page 33 "Bases for columns"



Support columns with deflecting mirrors, designed to provide secure fastening to the floor, fast installation, and a simple and precise adjustment of the optical alignment of the system.

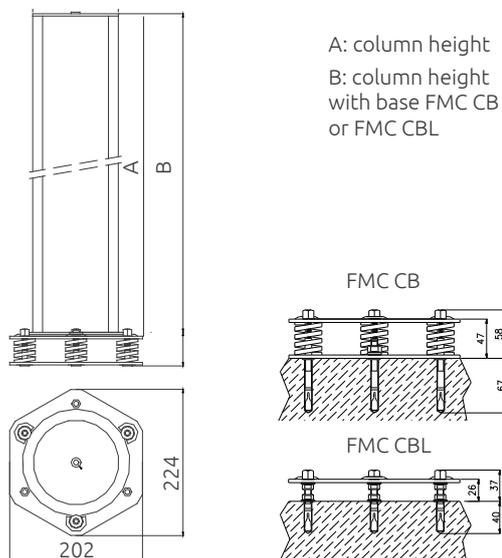
FMC S models with pre-assembled deflecting mirrors, allow perimeter protections of up to 4 sides.

FMC SB models with pre-installed independent adjustable deflecting mirrors for safety light grids with 2, 3 and 4 beams. For applications with multiple sides and/or with a large protected perimeter is recommended the use of this models.

Optical power reduction factor: 15% for each mirror.

Special models equipped with mirror with protective anti-fragmentation film available on request.

NOTE: for more information on how to choose mirrors, please refer to Reer website, section "Light Curtains - Applications".



## SP

## DEFLECTING MIRRORS

## TECHNICAL FEATURES

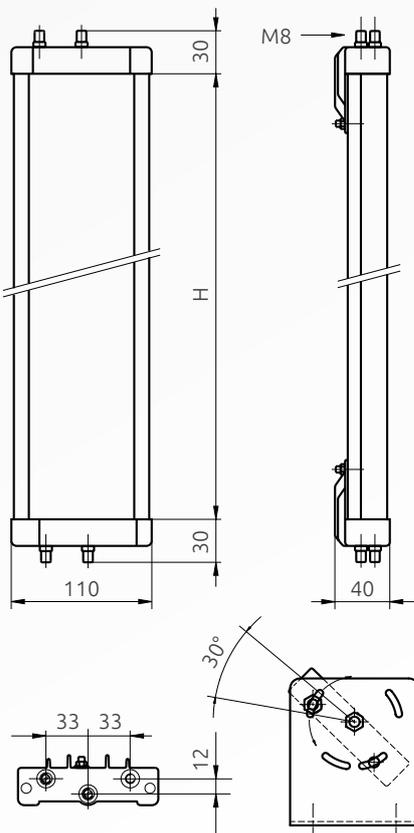
|                                     |                                    |
|-------------------------------------|------------------------------------|
| Material                            | Extruded aluminium                 |
| Mirror pre-fitted with heights (mm) | 250 ... 1900                       |
| Angular orientation                 | Adjustable using supplied brackets |
| Optical power reduction factor      | 15% (for each mirror)              |
| Protective anti-fragmentation film  | Available on request               |

## PART NUMBERS

| Model     | Ordering codes | Height H in picture (mm) | For light curtains with protected height (mm) | For light grids with: |
|-----------|----------------|--------------------------|---|-----------------------|
| SP 300 S  | 1201806        | 400                      | 310   |                       |
| SP 400 S  | 1201801        | 540                      | 460   |                       |
| SP 600 S  | 1201811        | 715                      | 610   | 2 beams               |
| SP 700 S  | 1201802        | 885                      | 760   |                       |
| SP 900 S  | 1201812        | 1065                     | 910   | 3 beams               |
| SP 1100 S | 1201803        | 1230                     | 1060  | 4 beams               |
| SP 1200 S | 1201810        | 1400                     | 1210  |                       |
| SP 1300 S | 1201807        | 1450                     | 1360  |                       |
| SP 1500 S | 1201808        | 1600                     | 1510  |                       |
| SP 1600 S | 1201813        | 1750                     | 1660  |                       |
| SP 1800 S | 1201809        | 1900                     | 1810  |                       |

The SP deflecting mirrors allow to create perimeter protection of areas with access points on multiple sides, with a considerable reduction of costs.

This solution eliminates the need to use more than one safety light curtain. Can be used to create perimeter protection of up to 4 sides.



The following rules should be taken into consideration when using deflecting mirrors:

- Total working distance (range) given by the sum of the lengths of all sides giving access to the protected area
- Each mirror used will decrease the maximum working range between the Emitter and the Receiver by 15%
- In order to ensure compliance mirrors must be placed at the minimum safety distance on each side from the danger zone
- The use of the LAD laser alignment device is recommended for a quick and reliable alignment of the system especially when using longer range light curtains or grids

**NOTE:** for more information on how to choose mirrors, please refer to Reer website, section "Light Curtains - Applications".

## OTHERS



The SFB swivel brackets allow the rotation of the light curtain around its longitudinal axis, as well as the adjustment of its vertical and horizontal position.

The use of swivel brackets is recommended to align light curtains in long range applications or when deflecting mirrors are used and mild adjustment could be necessary.

## SFB SG

## ADJUSTABLE BRACKETS

## PARTS NUMBERS

| Model   | Ordering codes | Description  |
|---------|----------------|--|
| SFB 4SG | 1390950        | Set of 4 adjustable brackets for protected heights up to 1050 mm |
| SFB 6SG | 1390951        | Set of 6 adjustable brackets for protected heights from 1200 mm  |



The test rod is an opaque cylinder to test the light curtain checking that no beams are bypassed due to the presence of reflecting surfaces.

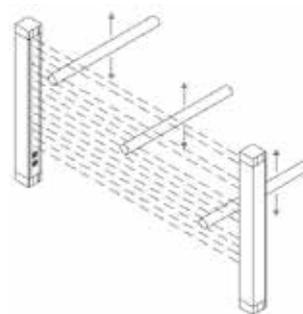
The test is carried out by slowly moving the test rod ( $\emptyset$  = Resolution) in the centre and then along each side of the protected area. During this procedure the Green LED on the Receiver must always remain switched off.

## TR

## TEST RODS

## PART NUMBERS

| Model | Ordering codes | Diameter          |
|-------|----------------|-------------------|
| TR 30 | 1330962        | $\emptyset$ 30 mm |
| TR 40 | 1330963        | $\emptyset$ 40 mm |









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