Safety. Detection. Control.

SAFEGATE

Access Guarding Made Easy

Product catalogue

Issue 1

REER

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 mouting columns

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

SAFETY LEVEL
TYPE 4
SIL 3 - SILCL 3
PL e - Cat. 4

Configuration with MA Muting arms with integrated sensors

Configuration with MZ Muting brackets with M5 multi-beam photocells

Pre-configured and pre-wired Muting arms

M5 multi-beam Muting photocells

Ideal for sensing unconventional objects

MAIN FEATURES

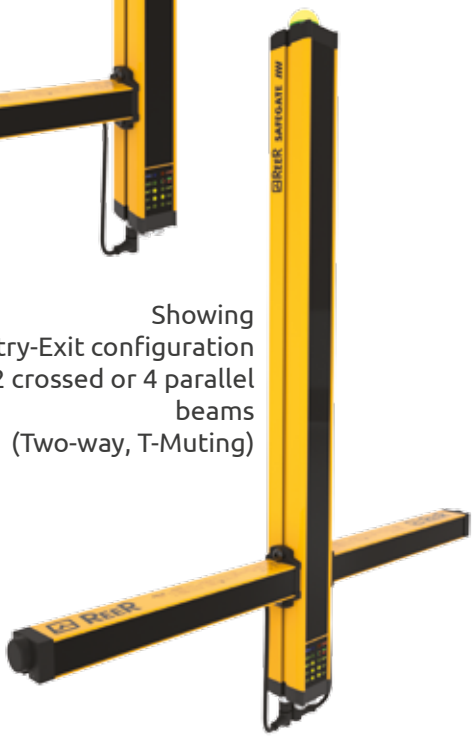
Safegate Type 4 range of access control barriers is the ideal solution for the protection of a vast number of high-risk industrial applications, in particular those requiring a high level of integration of the Muting functions.

- 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 pallalel (P) beams
  - Entry-Exit (T-Muting) with crossed (X) beams
  - Entry-Exit (T-Muting) with pallalel (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 M5 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

-30 ... +55 °C operating temperature

IP65 IP67

IP65 and IP67 protection rate

THE SAFEGATE RANGE

Safegate Models

Hardware configuration

SM

Hardware configuration
With integrated Status and Muting lamp

SMO

Hardware or Software configuration
With integrated Status and Muting lamp

SMPO

Muting logic

HARDWARE

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

SOFTWARE

L2X L2P
T2X T4P
configurations

Software configuration via
Safegate Configurator Software

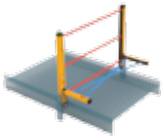
Muting sensors

MA

Muting arms with integrated sensors

MA L2X

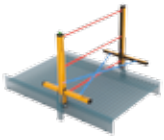
2 integrated sensors (emitter and receiver)



L Muting logic
Crossed beams
One-way
Exit-only

MA T2X

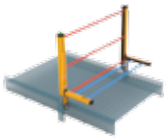
2 integrated sensors (emitter and receiver)



T Muting logic
Crossed beams
Two-way
Entry-Exit

MA L2P TRX

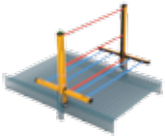
2 integrated sensors (transceiver)



L Muting logic
Parallel beams
One-way
Exit-only

MA T4P TRX

4 integrated sensors (transceiver)



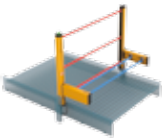
T Muting logic
Parallel beams
Two-way
Entry-Exit

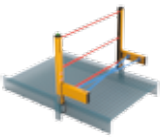
MZ

Muting brackets with M⁵ sensors

MZ L2XP

2 M⁵ multi-beam sensors

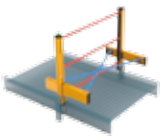




L Muting logic
Crossed or
Parallel beams
One-way
Exit-only

MZ T2X

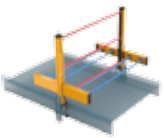
2 M⁵ multi-beam sensors



T Muting logic
Crossed beams
Two-way
Entry-Exit

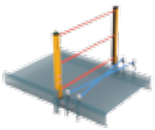
MZ T4P

4 M⁵ multi-beam sensors



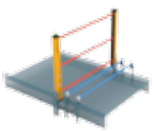
T Muting logic
Parallel beams
Two-way
Entry-Exit

External M⁵ sensors (or photocells)



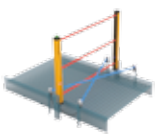
L Muting logic
Crossed beams
One-way
Exit-only

2 sensors



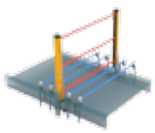
L Muting logic
Parallel beams
One-way
Exit-only

2 sensors



T Muting logic
Crossed beams
Two-way
Entry-Exit

2 sensors

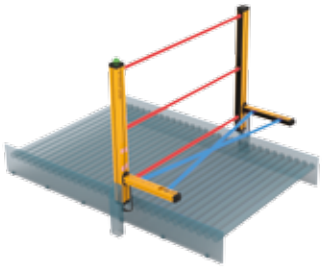


T Muting logic
Parallel beams
Two-way
Entry-Exit

4 sensors

MUTING TYPES

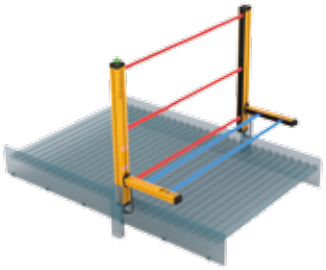
L2X LOGIC WITH CROSSED BEAMS - ONE-WAY MUTING WITH 2 SENSORS



- 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.

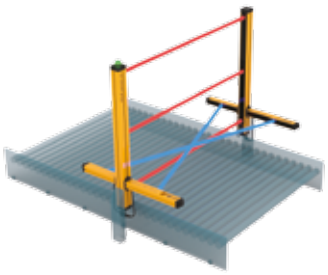
L2P LOGIC WITH PARALLEL BEAMS - ONE-WAY MUTING WITH 2 SENSORS



- 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

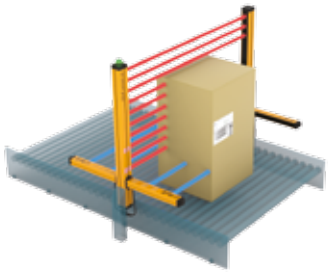
Characteristics
Suitable solution for the most common pallet infeed/outfeed applications.
Ideal solution in case of a continuous flow of pallets even without separation between the pallets.

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.

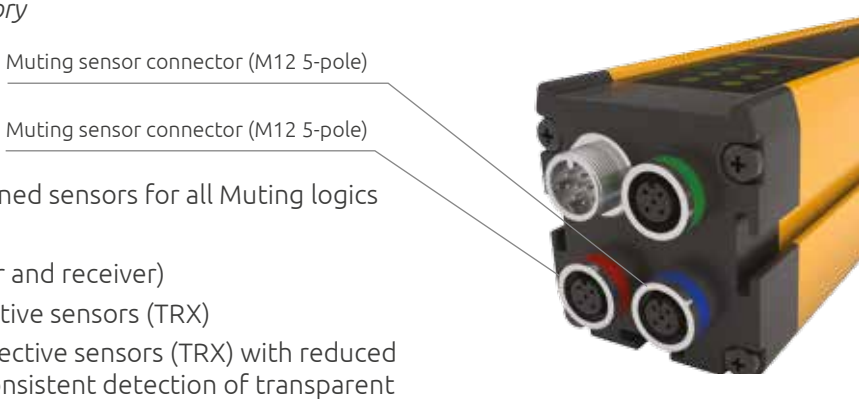
PARTIAL MUTING



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.

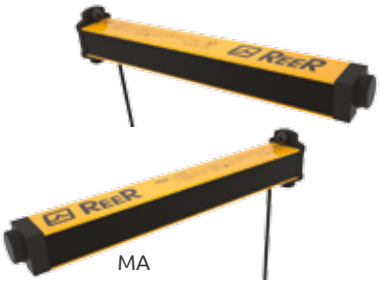
MUTING SENSORS

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*



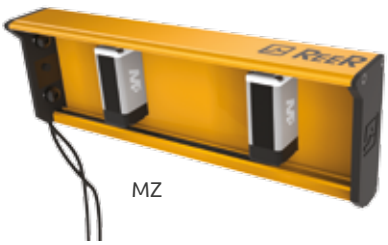
Muting arms (MA) with pre-wired and pre-aligned sensors for all Muting logics configurations:

- 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 M⁵ multi-beam sensors for all Muting logics configurations:

- MZ L2XP - 2 M⁵ multi-beam photocells. Acting on the position of the sensors, it can be configured with crossed or parallel beams
- MZ L2P V - 2 M⁵ multi-beam photocell with parallel beams with longer brackets available for high-speed conveyors
- MZ T2X - 2 M⁵ multi-beam photocells with crossed beams
- MZ T4P - 4 M⁵ multi-beam photocells with parallel beams
- MZ T4P V - 4 M⁵ 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”

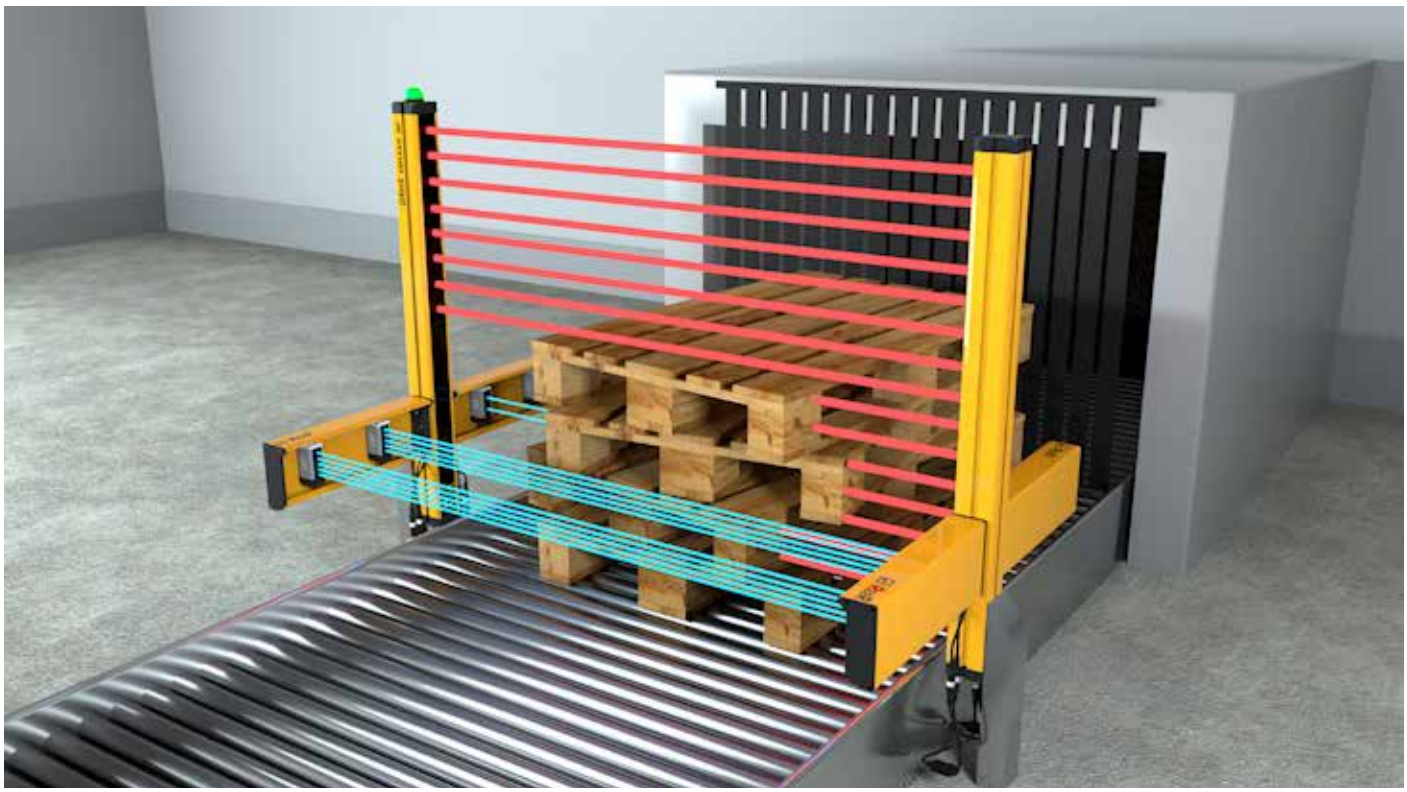
PL e - Cat. 4 Safety Level

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

SAFETY LEVEL
TYPE 4
SIL 3 - SILCL 3
PL e - Cat. 4

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

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 (M5 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 Two-way

Access control	Safety output	Muting Sensors
2, 3, 4 beams	2	External 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.

PENDING

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). Infinite (only for Two-way sequential Muting logic)
Override function	Built-in override function with 2 operating modes selectable: - manual action with hold to run - automatic with pulse command
Max. override time-out (min.)	15 Maximum number of consecutive override: 30
Power supply (VDC)	24 ± 20%
Muting logics	Hardware configurable One-way muting with 2 sensors Two-way muting with 2 or 4 sensors
Muting sensors	- MA Muting arms kits - MZ Muting brackets kits - External, with relay or PNP output (dark-on logic)

CABLES NEEDED

- Emitter: M12 5-pole. See page 30 (CD x, CDM 9, CDM 99)
- Receiver: M12 12-pole. See page 31 (CS12Dx)

ACCESSORIES

- MA Muting arms kits. See page 21
- MZ Muting brackets kits. See page 25
- Y-splitter: M12 5-pole for the connection of 4 Muting sensors. See page 32 (CSY12RX, CSY12TX)
- Safety relays. See page 29
- Support columns. See page 33
- Deflecting mirrors. See page 35
- Brackets. See page 36

SM

HARDWARE CONFIGURATION

CONNECTORS

Emitter
M12 5-pole - Female

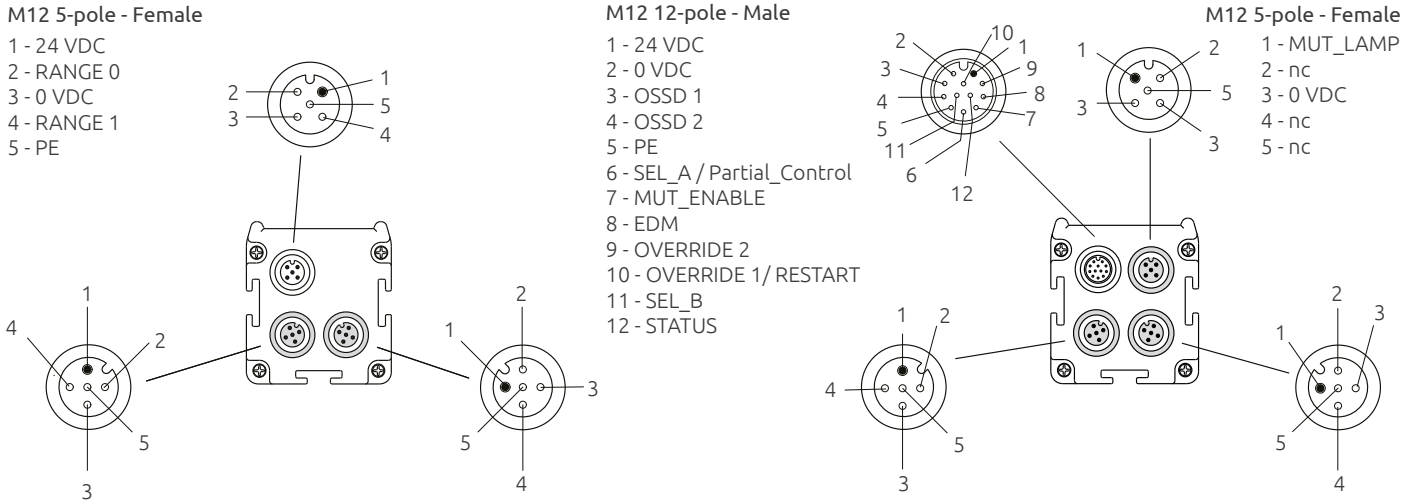
1 - 24 VDC
2 - RANGE 0
3 - 0 VDC
4 - RANGE 1
5 - PE

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

SMO

HARDWARE CONFIGURATION, WITH INTEGRATED STATUS AND MUTING LAMP

STATUS LAMP

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 Two-way

Access control	Safety output	Muting Sensors
2, 3, 4 beams	2	External 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.

PENDING

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	30 sec. or 9 hours selectable (for any type of Muting logic). Infinite (only for Two-way sequential Muting logic)
Override function	Built-in override function with 2 operating modes, selectable: - manual action with hold to run - automatic with pulse command
Max. override time-out (min.)	15 Maximum number of consecutive override: 30
Power supply (VDC)	24 ± 20%
Muting logics	Hardware configurable One-way muting with 2 sensors Two-way muting with 2 or 4 sensors
Muting sensors	- MA Muting arms kits - MZ Muting brackets kits - External, with relay or PNP output (dark-on logic)

CABLES NEEDED

- Emitter: M12 5-pole. See page 30 (CD x, CDM 9, CDM 99)
- Receiver: M12 12-pole. See page 31 (CS12Dx)

ACCESSORIES

- MA Muting arms kits. See page 21
- MZ Muting brackets kits. See page 25
- Y-splitter: M12 5-pole for the connection of 4 Muting sensors. See page 32 (CSY12RX, CSY12TX)
- Safety relays. See page 29
- Support columns. See page 33
- Deflecting mirrors. See page 35
- Brackets. See page 36

SMO

HARDWARE CONFIGURATION, WITH INTEGRATED STATUS AND MUTING LAMP

CONNECTORS

Emitter
M12 5-pole - Female

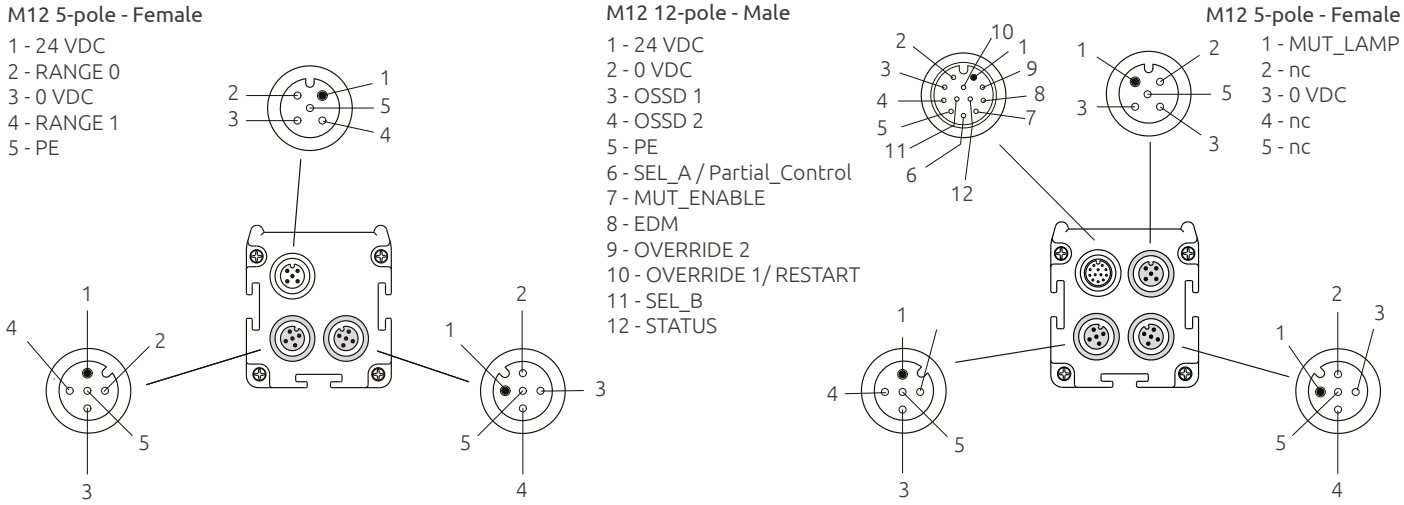
1 - 24 VDC
2 - RANGE 0
3 - 0 VDC
4 - RANGE 1
5 - PE

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

SMPO

PROGRAMMABLE, WITH INTEGRATED STATUS AND MUTING LAMP

STATUS LAMP

PROGRAMMABLE

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 Two-way

Access control	Safety output	Muting Sensors
2, 3, 4 beams	2	External 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 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.

PENDING

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 Maximum number of consecutive override: 30
Power supply (VDC)	24 ± 20%
Muting logics	Hardware or software configurable One-way muting with 2 sensors Two-way muting with 2 or 4 sensors
Muting sensors	- MA Muting arms kits - MZ Muting brackets kits - External with relay or PNP output (dark-on logic)

CABLES NEEDED

- Emitter: M12 5-pole. See page 30 (CD x, CDM 9, CDM 99)
- Receiver: M12 12-pole. See page 31 (CS12Dx)
- USB-M12 5-pole adapter. See page 31 (CS12USB)

ACCESSORIES

- MA Muting arms kits. See page 21
- MZ Muting brackets kits. See page 25
- Y-splitter: M12 5-pole for the connection of 4 Muting sensors. See page 32 (CSY12RX, CSY12TX)
- 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

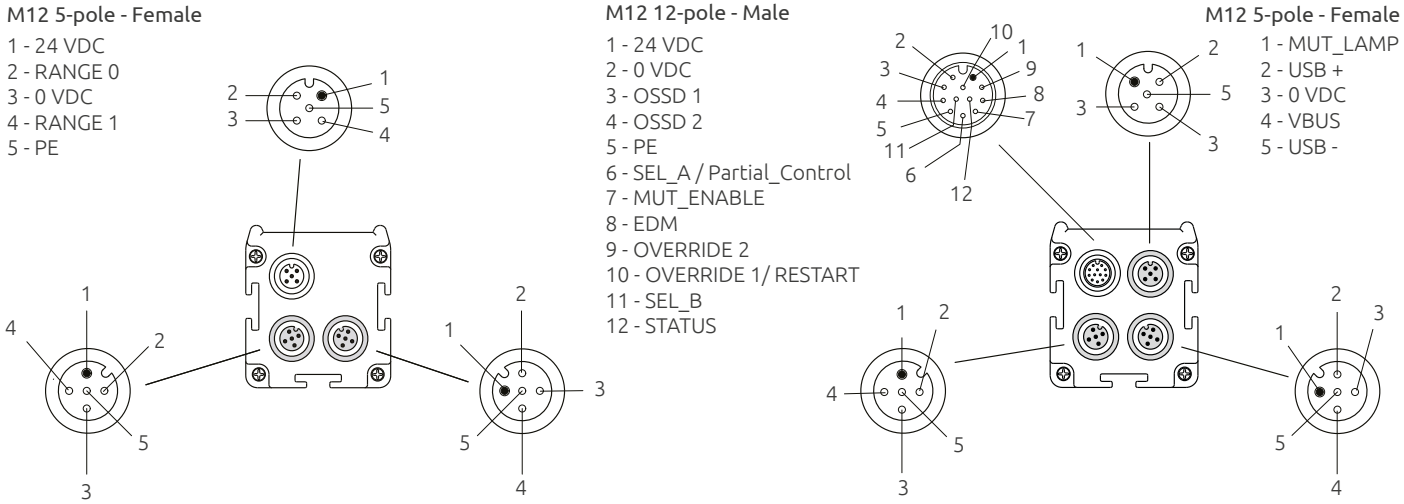
1 - 24 VDC
2 - RANGE 0
3 - 0 VDC
4 - RANGE 1
5 - PE

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

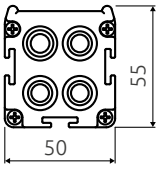
SMPO 2, 3, 4 beams	SMPO 2B	SMPO 3B	SMPO 4B
Ordering codes	1390680	1390681	1390682
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	710	1010	1110

MECHANICAL DATA

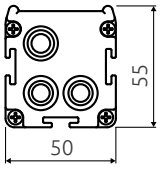
SM, SMO AND SMPO MODELS

Hand detection models
(resolution 30, 40 mm)

Receiver RX

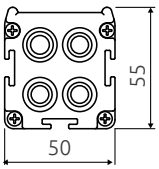


Emitter TX

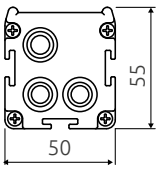


Access control models
(2,3,4 beams)

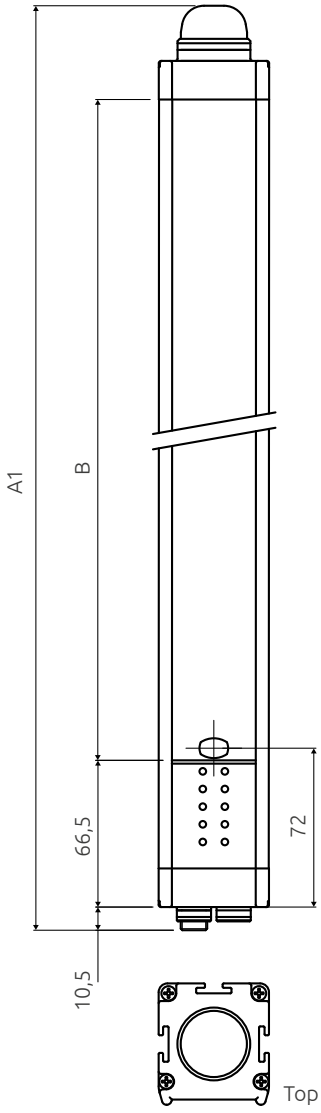
Receiver RX

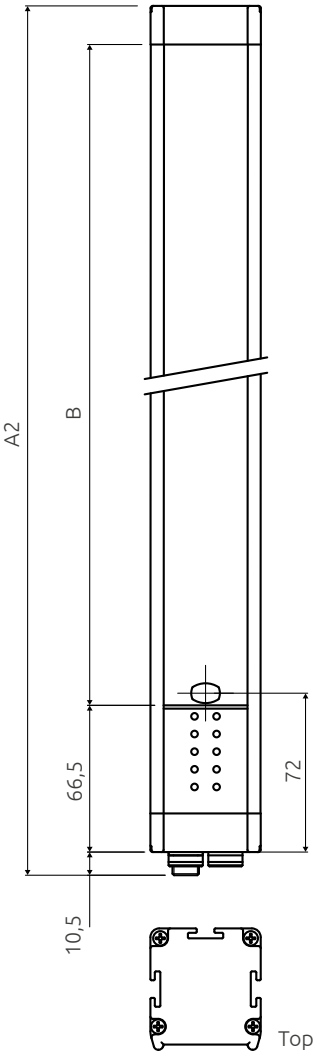


Emitter TX

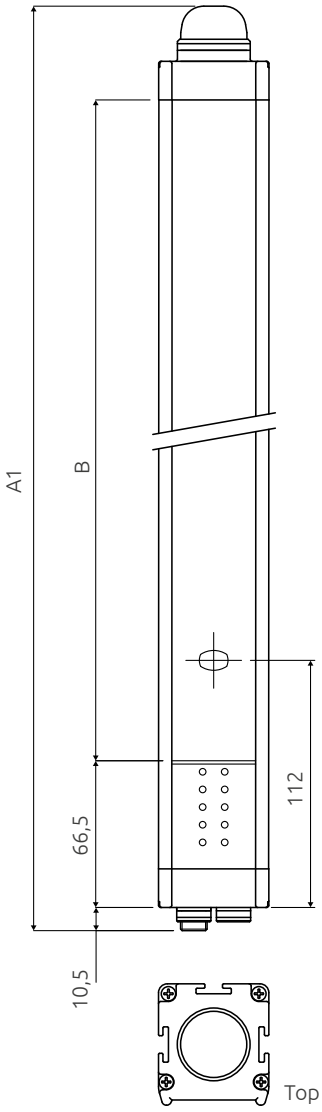


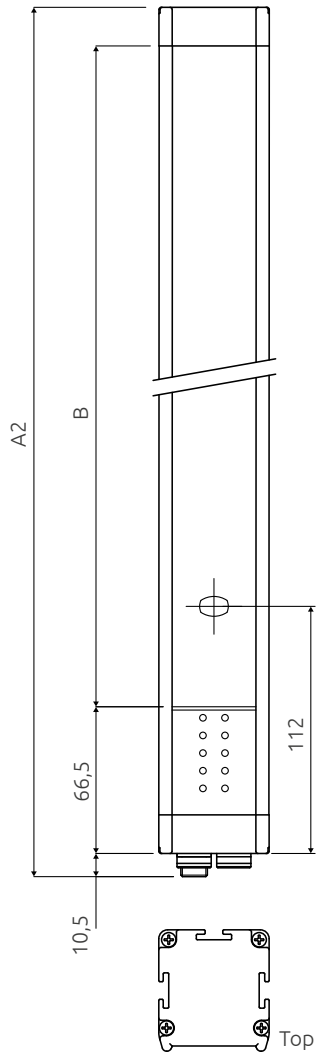
With integrated
Status and Muting lamp





With integrated
Status and Muting lamp





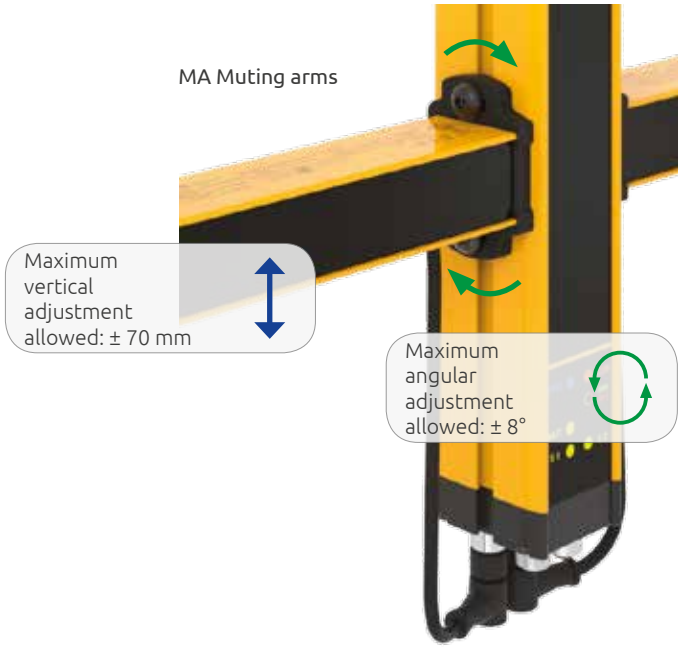
Model	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2B	3B	4B
A1 (mm)	420	570	720	870	1020	1170	1320	1470	1620	1770	1920	2070	2220	2370	710	1010	1110
A2 (mm)	395	545	695	845	995	1145	1295	1445	1595	1745	1895	2045	2195	2345	685	985	1085
B (mm)	300	450	600	750	900	1050	1200	1350	1500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

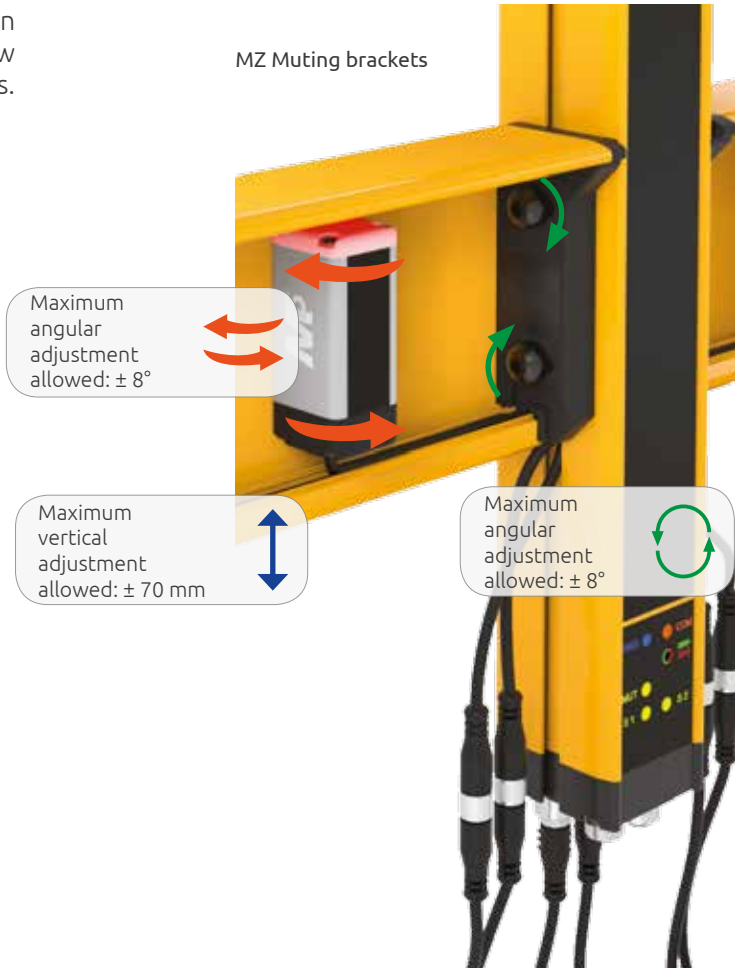
All MA Muting arms are adjustable in height and angle.

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.



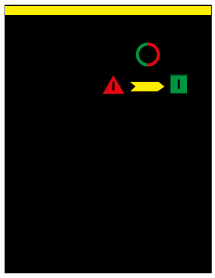
MZ Muting brackets with M5 multi-beams photocells, in addition to the height and angular adjustment, also allow angular adjustment of the M5 sensors on their vertical axis.



INTEGRATED STATUS AND MUTING LAMP

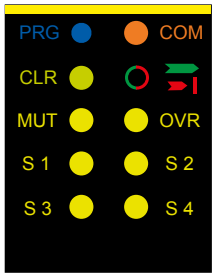
	Flashing		*Flashing*	*Flashing*		*Flashing*
GUARD Normal operations	CLEAR Waiting for restart	MUTING Muting in progress	OVERRIDE Override in progress	OVERRIDE REQUEST Waiting for an override	BREAK Occupied curtain (at least one beam occupied)	FAIL Error condition

DISPLAY



Emitter SM - SMO - SMPO Models

1 - Tri-colour LED	Description
	Power on - Initial Test
Flashing	Fail condition
	Test condition
	Normal operation

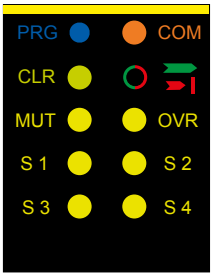


Receiver SM - SMO - SMPO Models

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
	Flashing	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

Number of flashes					Description
LED bi-colour	CLR	MUT	OVR	S1 S2 S3 S4	
🔴🟢	🟡	🟡	🟡	🟡🟡🟡🟡	
2					Configuration error SEL_A/SEL_B/EDM
3					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

SM	P	O	E	30	3
			R	2B	

Resolution

3 - 30 mm
4 - 40 mm

Protected height

30x - 310 mm	105x - 1060 mm	180x - 1810 mm
45x - 460 mm	120x - 1210 mm	195x - 1969 mm
60x - 610 mm	135x - 1360 mm	210x - 2110 mm
75x - 760 mm	150x - 1510 mm	225x - 2260 mm
90x - 910 mm	165x - 1660 mm	

Number of beams

2B - 2 beams	3B - 3 beams	4B - 4 beams

Emitter or receiver

E	Emitter
R	Receiver

Status and muting lamp

O	Integrated

Programmability of the light curtain

P	Programmable light curtain

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

SAFEGATE

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

MUTING ARMS

MA L2X

MUTING ARMS KIT - L MUTING LOGIC WITH 2 CROSSED BEAMS

Crossed beams Muting arms with 2 through-beam sensors.

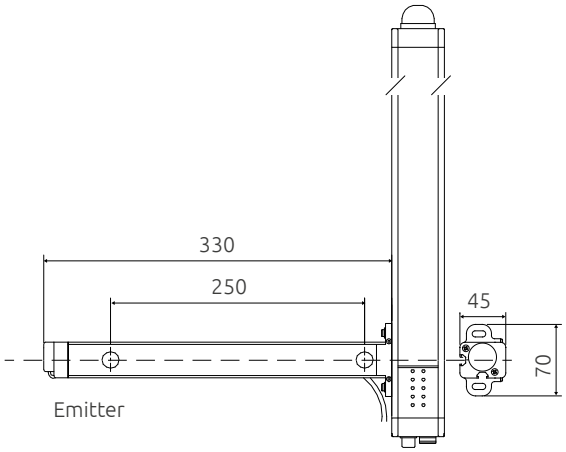
Can be used in conjunction with Safegate access control barriers to create a One-way access control system with Exit-only L-Muting logic.

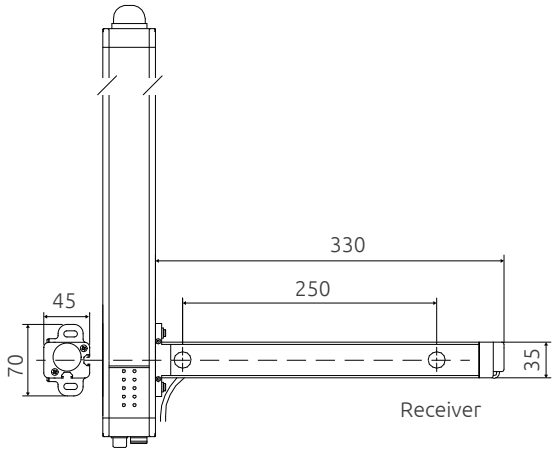
The kit includes: 2 Muting arms (emitter and receiver) with pre-wired and pre-aligned Muting sensors, screws and fixing brackets.

TECHNICAL FEATURES

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

DIMENSIONS





Dimensions: mm

MUTING ARMS

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.

MA L2P TRX / G / V

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

TECHNICAL FEATURES

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

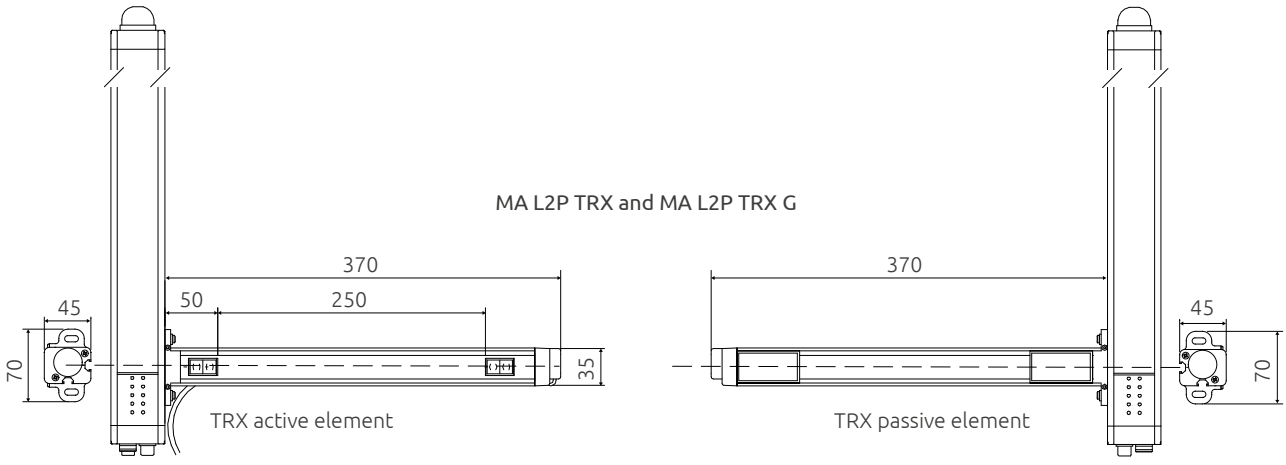
Special versions

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

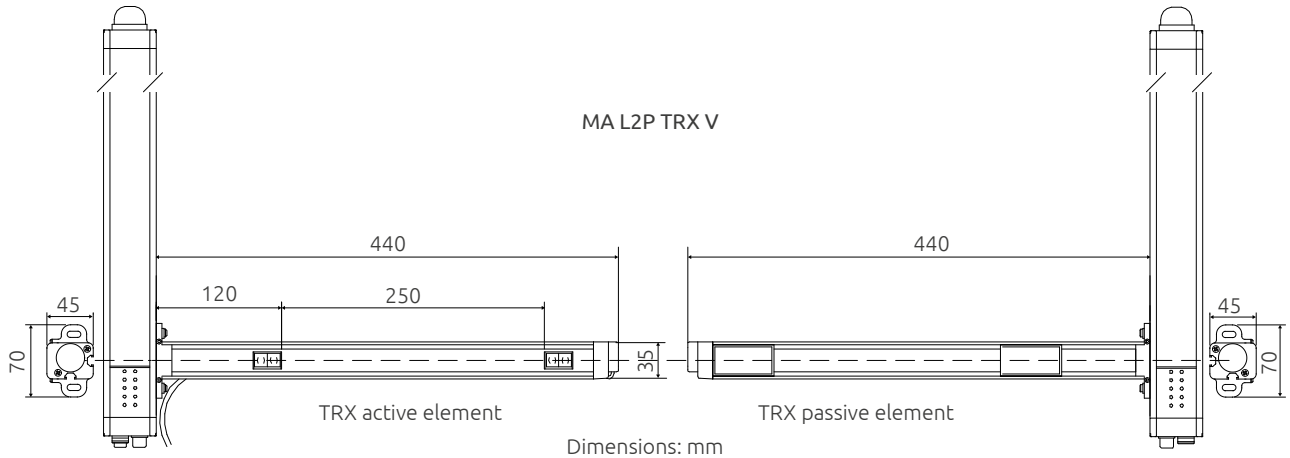
MA L2P TRX V with longer built-in Muting arms for high-speed conveyors.

DIMENSIONS

MA L2P TRX and MA L2P TRX G



MA L2P TRX V



Dimensions: mm

MUTING ARMS

MA T2X

MUTING ARMS KIT - T MUTING LOGIC WITH 2 CROSSED BEAMS

TECHNICAL FEATURES

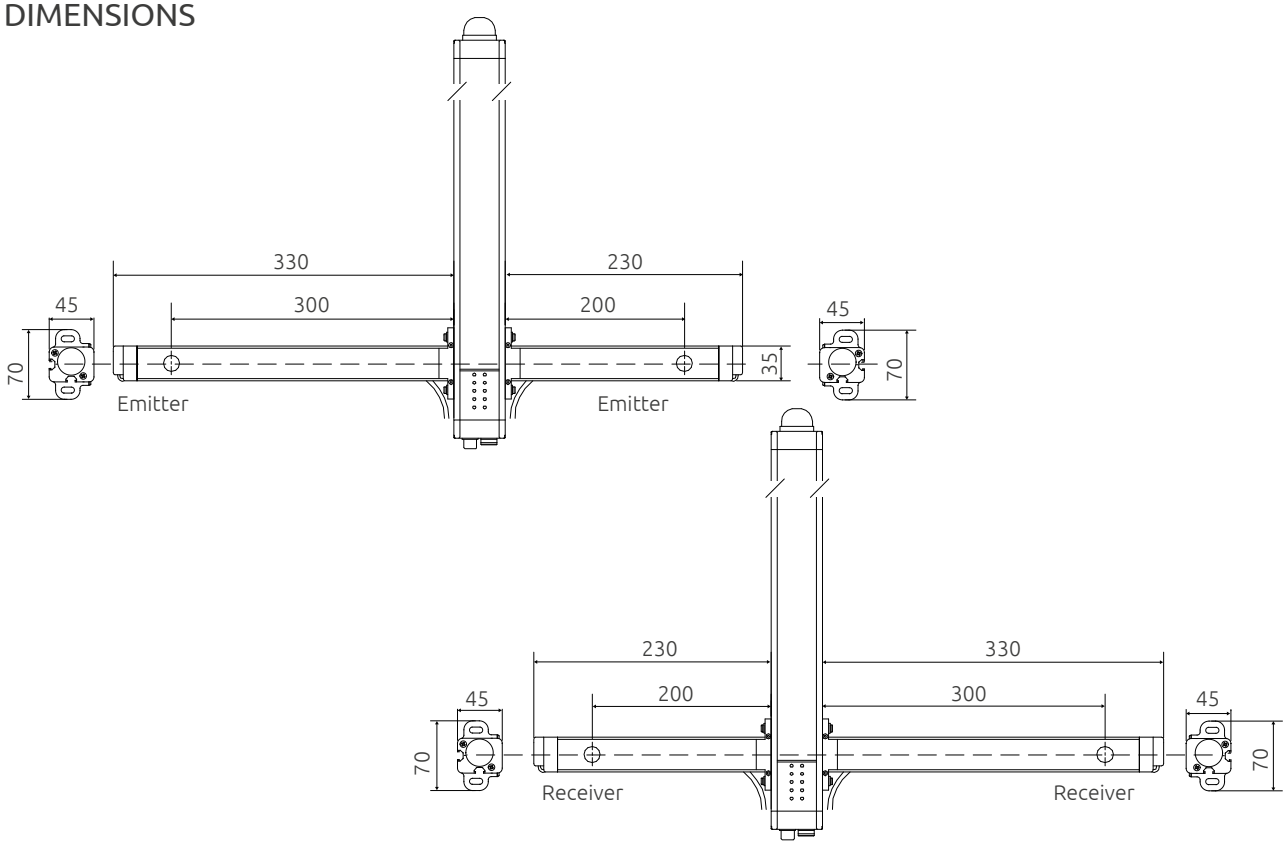
Model	MA T2X
Ordering codes	1390802
Opto-electronic sensors	2 crossed beams
Operative range (m)	1 ... 2,5

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

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.

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) MA T4P TRX V (longer Muting arms for high-speed conveyors)
Ordering codes	MA T4P TRX - 1390805 MA T4P TRX G - 1390814 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)

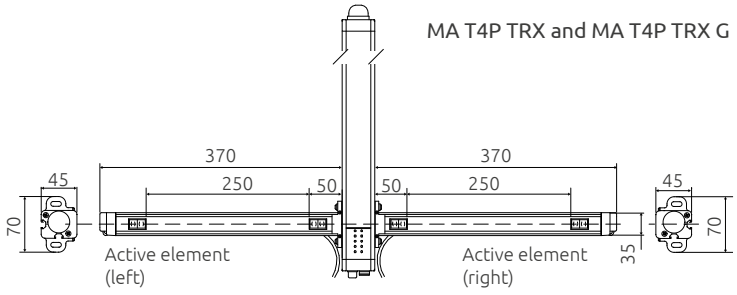
Special versions

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

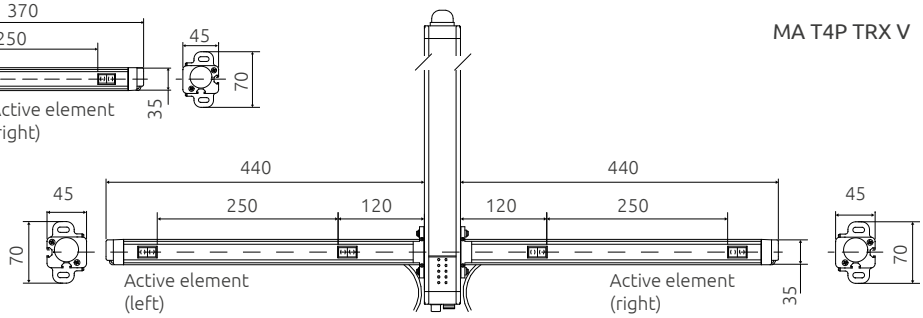
MA T4P TRX V version with longer built-in Muting arms for high-speed conveyors.

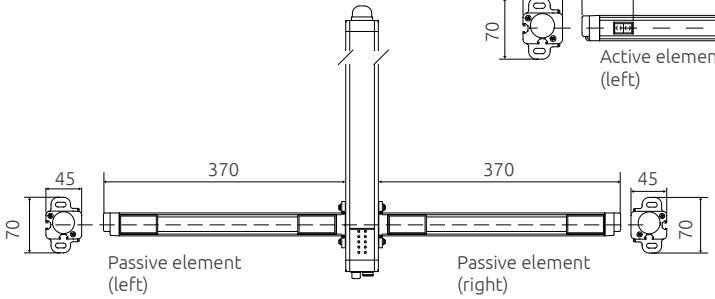
DIMENSIONS

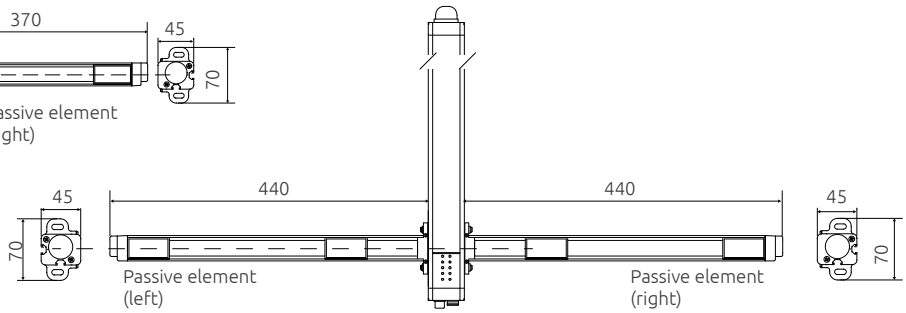
MA T4P TRX and MA T4P TRX G



MA T4P TRX V







Dimensions: mm

MUTING BRACKETS

MZ L2XP / MZ L2P V

MUTING BRACKETS KIT - L LOGIC WITH CROSSED OR PARALLEL BEAMS

Crossed or parallel beams Muting brackets with 2 M5 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 M5 multi-beam photocells (emitter and receiver), screws and fixing brackets.

Special versions

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

TECHNICAL FEATURES

Model	MZ L2XP MZ L2P V (longer Muting brackets for high speed conveyors)
Ordering codes	MZ L2XP - 1390808 MZ L2P V - 1390811
Opto-electronic sensors	MZ L2XP - 2 M5 crossed or parallel beams MZ L2P V - 2 M5 parallel beams
Operative range (m)	0 ... 3,5

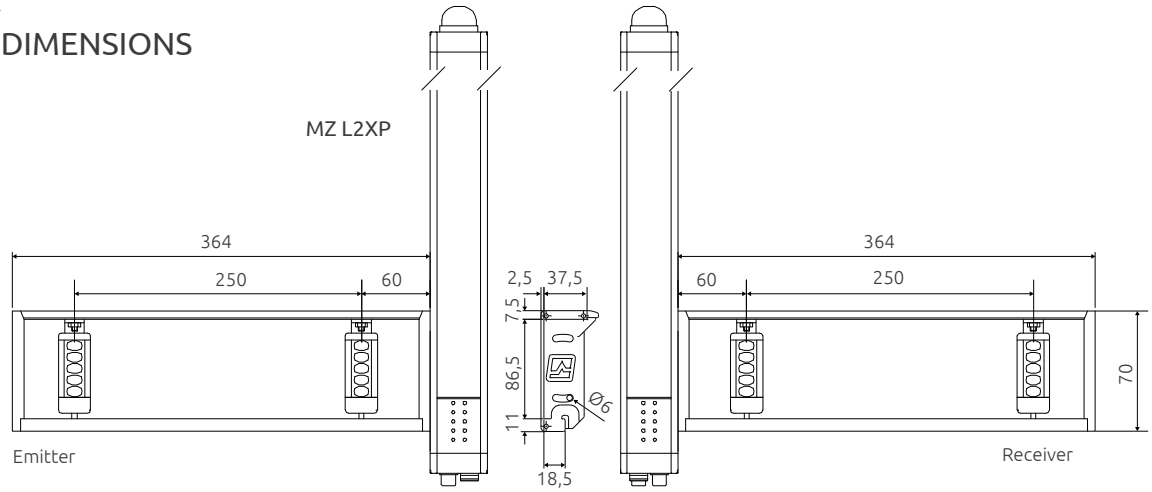
WARNING!

This model defaults in P (parallel beams) configuration. To change to X (crossed beams) configuration, the M5 multi-beam photocells, on one of the brackets, must be reversed and re-oriented accordingly.

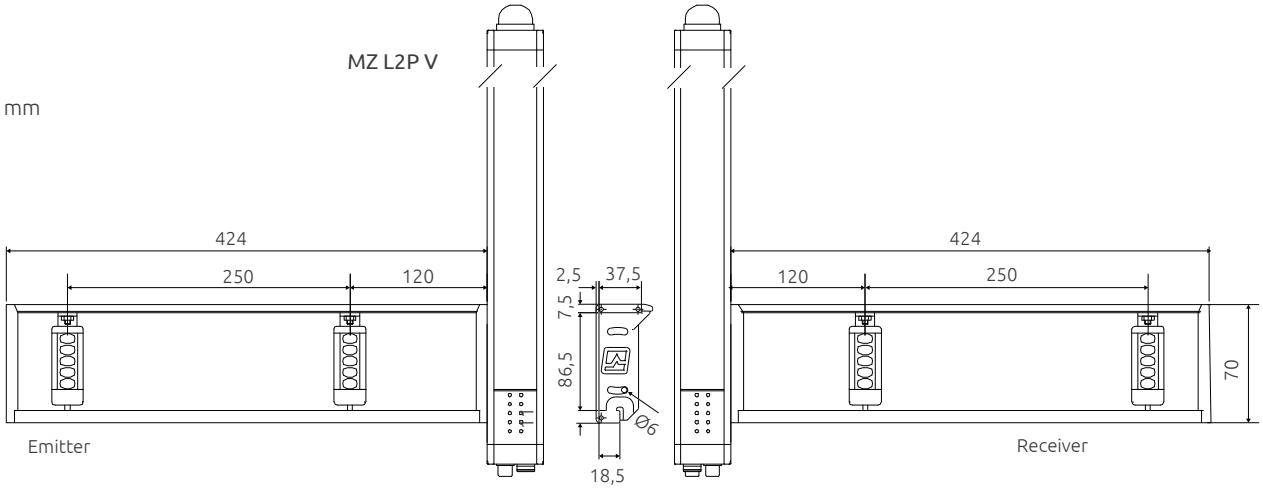
To avoid any interference, the two M5 multi-beam photocells use different encodings.

DIMENSIONS

MZ L2XP



MZ L2P V



Dimensions: mm

MUTING BRACKETS

MZ T2X

MUTING BRACKETS KIT - T LOGIC WITH CROSSED BEAMS

TECHNICAL FEATURES

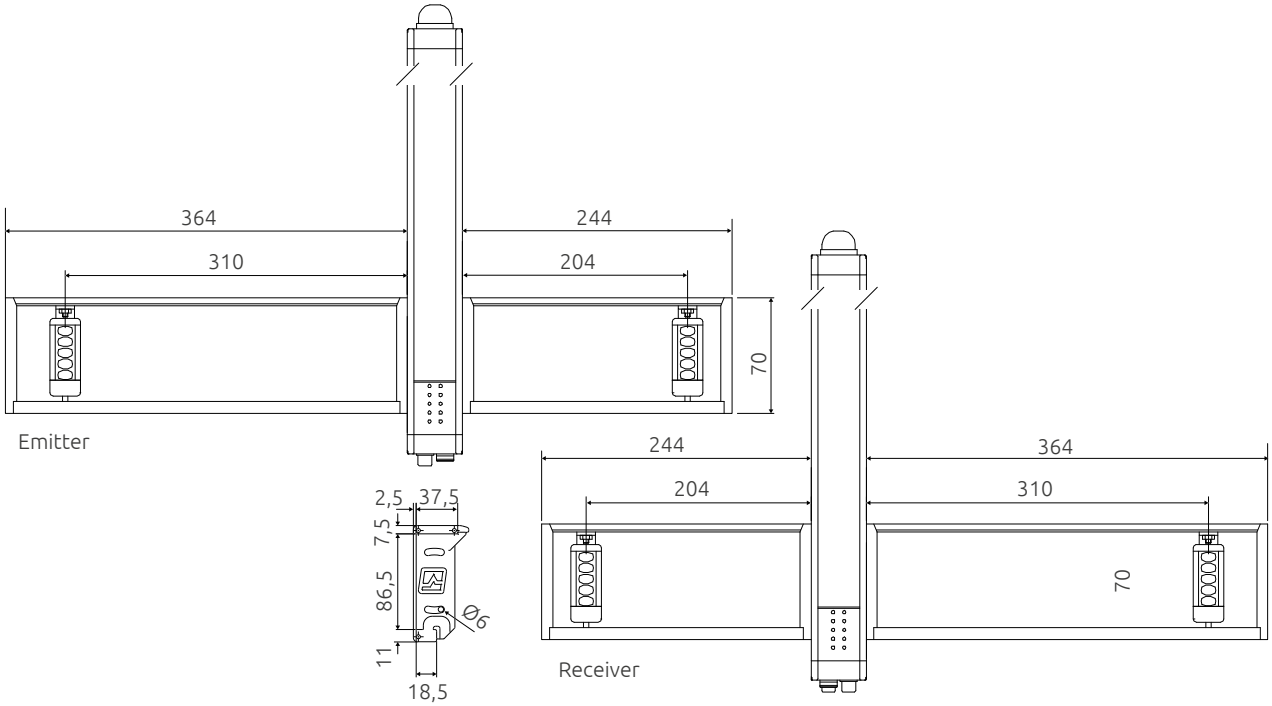
Model	MZ T2X
Ordering codes	1390809
Opto-electronic sensors	2 M5 crossed beams
Operative range (m)	0 ... 3,5

Crossed beams Muting brackets with 2 M5 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 M5 multi-beam photocells (emitter and receiver), screws and fixing brackets.

DIMENSIONS



Dimensions: mm

MUTING BRACKETS

Special versions

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

MZ T4P / V

MUTING BRACKETS KIT - T LOGIC WITH PARALLEL BEAMS

TECHNICAL FEATURES

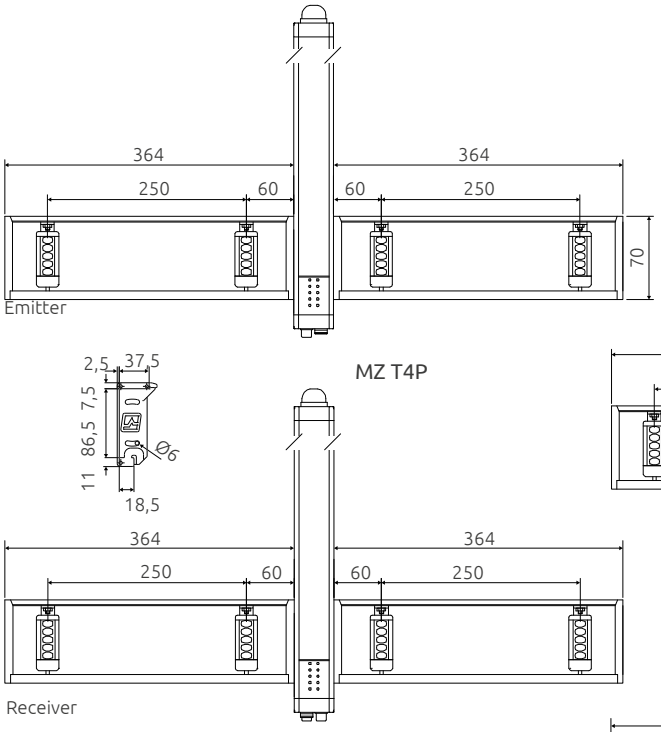
Model	MZ T4P MZ T4P V (longer Muting brackets for high speed conveyors)
Ordering codes	MZ T4P - 1390810 MZ T4P V - 1390812
Opto-electronic sensors	4 M5 parallel beams
Operative range (m)	0 ... 3,5

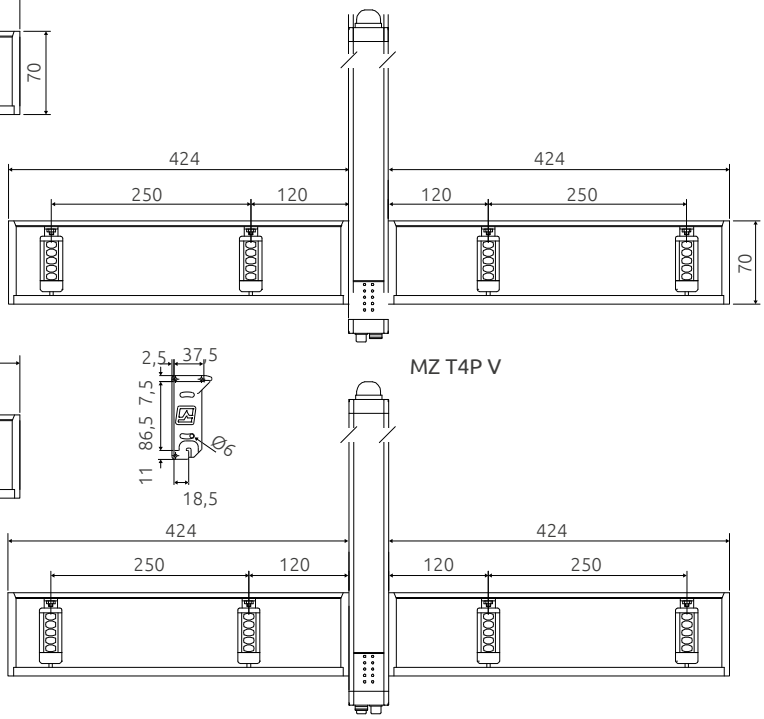
Parallel beams Muting brackets with 4 M5 multi-beam photocells.

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 M5 multi-beam photocells (emitter and receiver), screws and fixing brackets. *The kit does not include the Y-splitter cables that must be ordered separately.*

DIMENSIONS





CABLES NEEDED

Y-splitter: M12 5-pole for the connection of 4 Muting sensors. See page 32. For this configuration, the use of the following is necessary:
- two Y-splitter cables CSY12RX (1390904) for receiver
- two Y-splitter cables CSY12TX (1390903) for emitter

Dimensions: mm

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 difficoult 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 obstucted)

Operating temperature -30 ... +55 °C

-30 ... +55 °C

IP65 protection rate

M5

MULTI-BEAM PHOTOCELL

TECHNICAL FEATURES

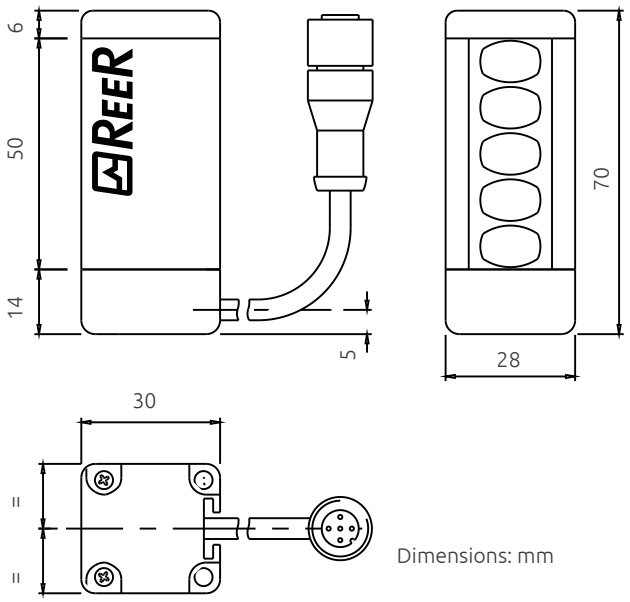
Operative range (m)	0 ... 3,5
Measurement time (ms)	< 100
Power supply (VDC)	24 ± 20%
Power comsumption at 24 VDC (W)	1
Number of beams	5
Beam spacing (mm)	10
Outputs on receiver	0 or 24V (PNP 100 mA 24 VDC) dark-on
Immunity to the ambient light (lx)	> 10000 (solar)
Emission angle	± 5°
Emission wavelenght (nm)	940 modulated infrared
Electrical connections	900 mm cable with M12 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 M5 (A coding): **1250910**
Ordering code M5 (B coding): **1250911**

Note: The use of different coding is recommended for the installation of two M5 multi-beam photocells next to each other in order to avoid interference.

DIMENSIONS



Dimensions: mm

AD SR0 - AD SR0A

SAFETY RELAY MODULES FOR DEVICES WITH INTEGRATED FEEDBACK INPUT FOR EDM

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)

TECHNICAL FEATURES

Safety relay outputs	**AD SR0** 2 NO + 1 NC - 2 A 250 VAC 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 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

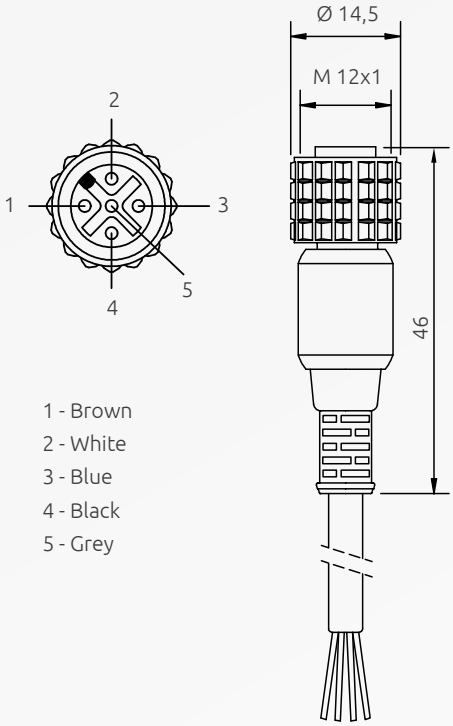
AD SR0 and AD SR0A module includes multi-language instruction manual and CE declaration of conformity.

Ordering codes
AD SR0: **1330902**
AD SR0A: **1330903**

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.

CABLES

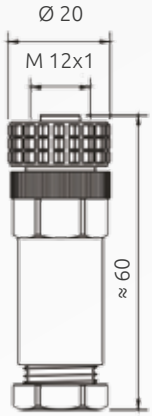


CD x

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

Emitter connection.

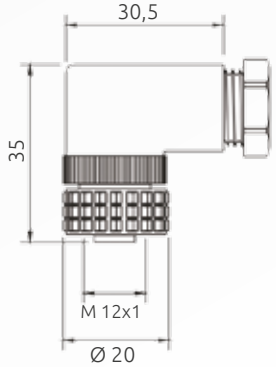


CDM 9

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

Model	Code
CDM 9	1330954

Emitter connection.



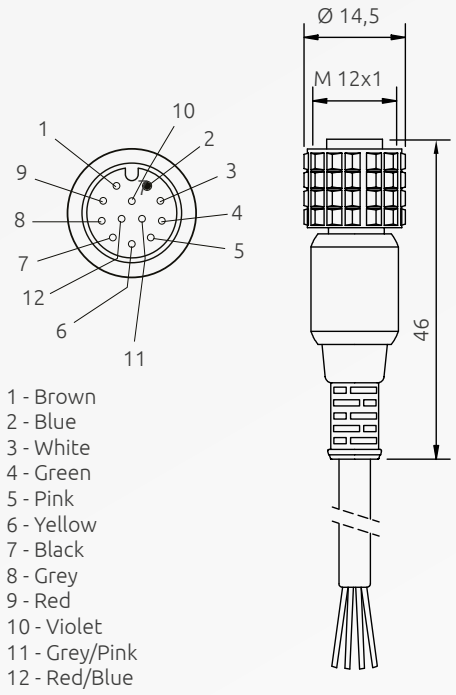
CDM 99

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

Model	Code
CDM 99	1330955

Emitter connection.

CABLES



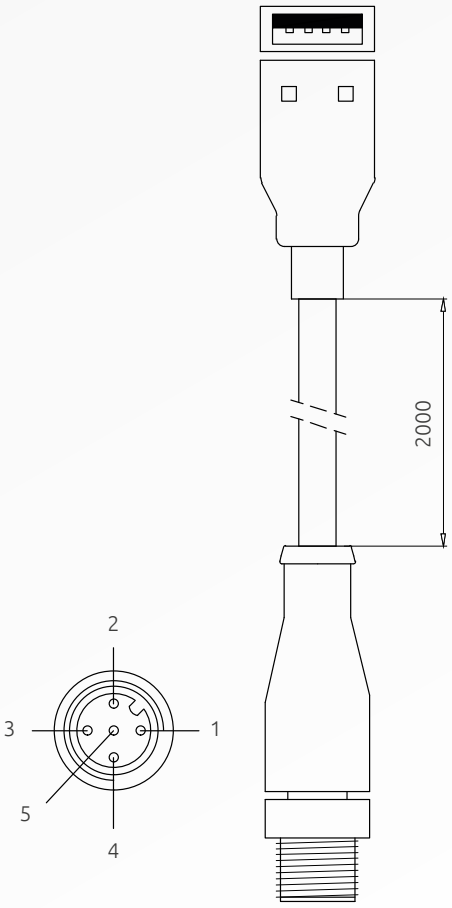
1 - Brown
2 - Blue
3 - White
4 - Green
5 - Pink
6 - Yellow
7 - Black
8 - Grey
9 - Red
10 - Violet
11 - Grey/Pink
12 - Red/Blue

CS12Dx

M12 STRAIGHT CONNECTOR 12-POLE

Model	Code	Description
CS12D3	1390900	Pre-wired cable 3 m
CS12D5	1390901	Pre-wired cable 5 m
CS12D10	1390902	Pre-wired cable 10 m
CS12D15	1390906	Pre-wired cable 15 m
CS12D20	1390907	Pre-wired cable 20 m

Receiver connection.



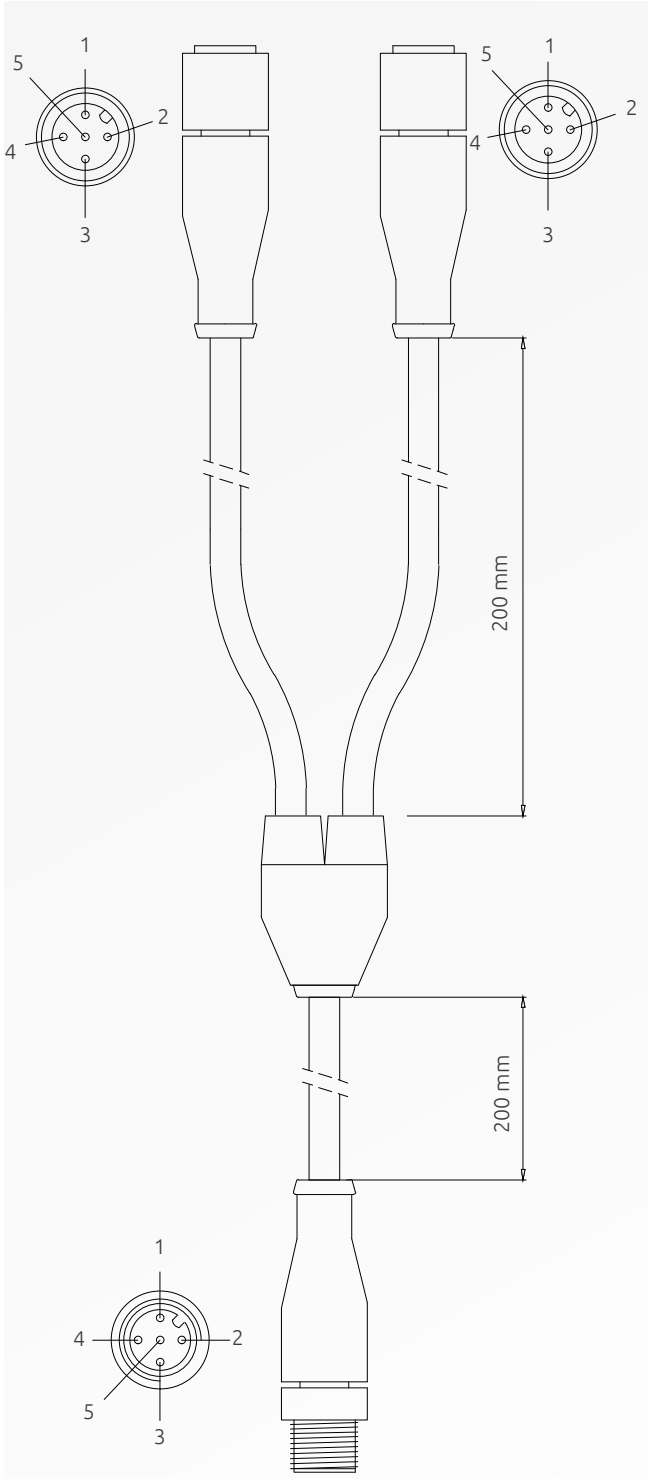
CS12USB

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.

COLUMNS

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

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 coulum with reduced hight
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).

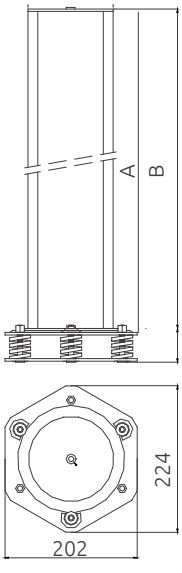
Support columns for Safegate safety light curtains, designed to provide secure fastening to the floor, fast installation, and a simple and precise adjustment of the optical alignment of the system.

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.

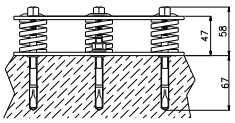
Built-in spirit level for a correct positioning of the vertical axis.



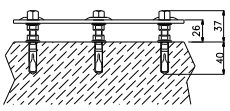
A: column height

B: column height with base FMC CB or FMC CBL

FMC CB



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

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 recomended the use of this models.

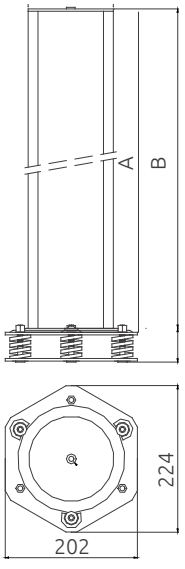
Optical power reduction factor: 15% for each mirror.

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

NOTE: for more information on how to chose mirrors, please refers to ReeR website, section “Light Curtains - Applications”.

Note for ordering

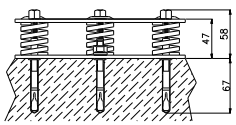
Column ordering codes do not include the base which must be ordered separately (FMC CB and FMC CBL models). See page 33 "Bases for columns"



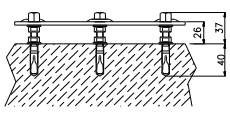
A: column height

B: column height with base FMC CB or FMC CBL

FMC CB



FMC CBL

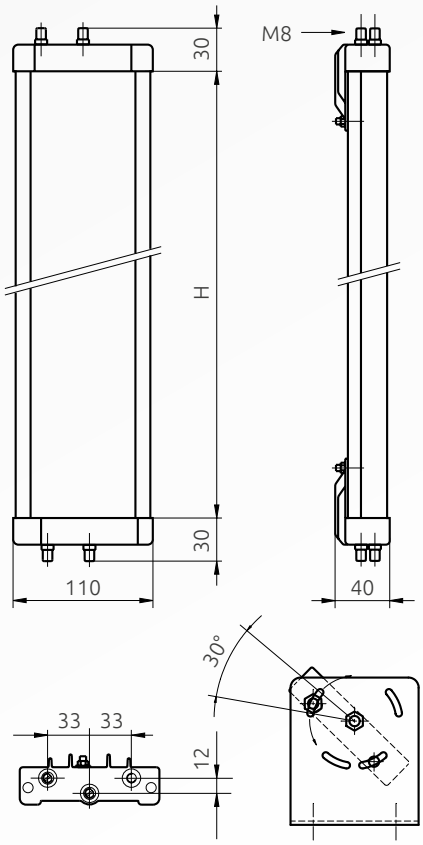


SP

DEFLECTING MIRRORS

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.



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 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 alignement device is recomended for a quick and reliable alignment of the system expecially when using longer range light curtains or grids

NOTE: for more information on how to chose mirrors, please refers 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.

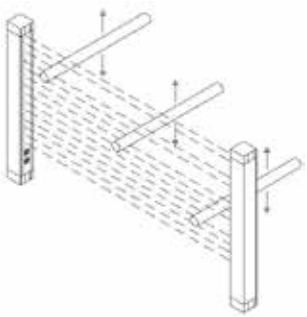
The test is carried out by slowly moving the test rod (Ø = Resolution) in the centre and then along each side of the protected area. During this procedure the Green LED on the Receiver must always remain switched off.

TR

TEST RODS

PART NUMBERS

Model	Ordering codes	Diameter
TR 30	1330962	ø 30 mm
TR 40	1330963	ø 40 mm



NOTES

NOTES

At ReeR we put our Customers always first

ReeR after sales service is committed to support all customers that need technical guidance regarding functionality, handling and installation of our products.

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More than 50 years of quality and innovation

Founded in Turin (Italy) in 1959, ReeR distinguished itself for its strong commitment to innovation and technology.

A steady growth throughout the years allowed ReeR to become a point of reference in the safety automation industry at a worldwide level.

The Safety Division is in fact today a world leader in the development and manufacturing of safety optoelectronic sensors and controllers.

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since 1959

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