

Safety. Detection. Control.



# ADMIRAL - VISION

Type 4 - Type 2 Safety Light Curtains

Product catalogue

Issue 1

 **REER**

## OVERVIEW

## ADMIRAL

Long range versions  
Up to 80 meters

Hardware configuration  
No programming necessary

IP65

Blanking functions  
Ideal to protect  
press brakes

Dual beams system  
Ideal for outdoor  
applications

Muting functions  
With additional accessory  
Muting arms

Finger, Hand, Body  
detection and Multibeam  
for access control

Type 4 Safety Light Curtains  
See page 4

# VISION

Hand, Body detection and  
Multibeam for access  
control

Muting function  
With additional accessory  
Muting arms

IP65

Hardware configuration  
No programming necessary

Long range versions  
Up to 60 meters



Type 2 Safety Light Curtains  
See page 22

## MAIN FEATURES

The **Admiral Type 4 range** of safety light curtains is the ideal solution for the protection of the majority of high-risk industrial applications. Its features includes:



Extremely easy connection and installation, thanks to the M12 connectors and the use of standard cables

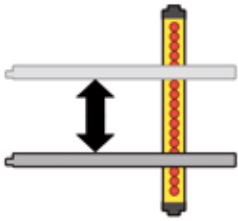


Integration of the main safety functions, including self monitoring of the safety circuits and, for the X models, external device monitoring (EDM) and the Start / Restart interlock function



### BLANKING FUNCTION

Information on the blanking function can be found in the Safety Guide. The Floating Blanking function is available on the **Admiral AX BK models**.



Floating Blanking allows the detected object to move freely inside the light curtain's protected field, under the condition that the intercepted beams are adjacent and that their number is not higher than the configured one.

The ideal light curtain for protecting press brakes, automatic machines and robotised areas, where the material being processed or moving parts of

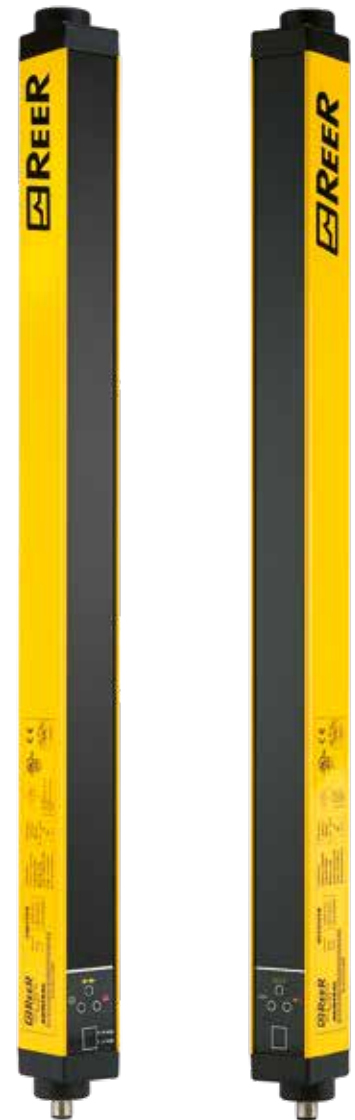
the machine cross the field protected by the light curtain.

#### Configuration modes of the blanking function

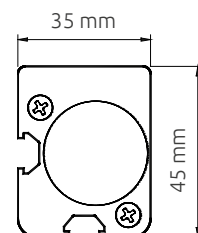
Mode	Type of blanking configuration	N. of beams in blanking	Detection characteristics
A1	1 beam without compulsory object presence	1	1 beam can be obstructed with the light curtain remaining in an ON condition
A2	2 beams without compulsory object presence	2	1 or 2 adjacent beams can be obstructed with the light curtain remaining in an ON condition
A3	3 beams without compulsory object presence	3	1, 2 or 3 adjacent beams can be obstructed with the light curtain remaining in an ON condition
B1	2 beams with compulsory object presence	1/2	At least 1 beam and no more than 2 adjacent beams must be obstructed for the light curtain to remaining in an ON condition
B2	3 beams with compulsory object presence	1/2/3	At least 1 beam and no more than 3 adjacent beams must be obstructed for the light curtain to remaining in an ON condition

### WARNING

*The AX BK light curtains with blanking function do not have the feedback input (EDM); therefore, they cannot be combined with the AD SR0 and AD SR0A relay modules but they should be connected with the AD SR1 or AD SRM safety interfaces. The use of the blanking function and the type of configuration selected depend on the characteristics of the application to be protected. You need to verify, based on the risk analysis of your application, whether the use of this function is permitted or not and what configuration it is possible to use. Reer SpA does not assume responsibility for the improper use of the blanking function and for any consequent damage. The use of the blanking function may need a recalculation of the safety distance due to the modified detection capability.*



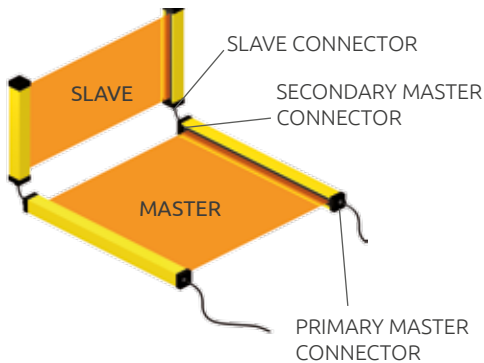
Cross section



1:2 scale

## CASCADING FUNCTION

Master/slave models with built-in control functions



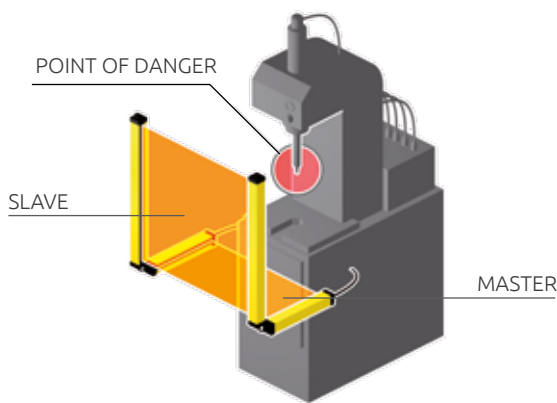
Master/Slave models allow series connection of two light curtains with the following major benefits:

- Combined detection (hand + presence of a person or protection of more sides of the machine)
- Single pair of safety outputs is used
- No interference between light curtains installed adjacent to one another

All electrical connections made using M12 5-pole connectors, except for Master receivers which necessitate the adoption of M12 8-pole connectors.

Pre-wired cables with twin connectors are available for the connection between Master and Slave.

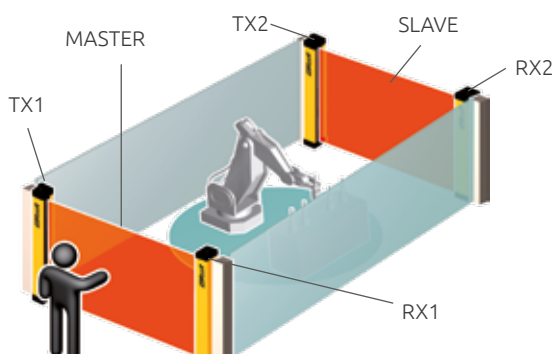
### Applications examples



The application shown is one of the most common: horizontal curtains are used to prevent the operator from being undetected in the space between vertical light curtain and dangerous machine, upon system start-up or restarting.

Master light curtain is placed horizontally for detection of the person and Slave light curtain is placed vertically to detect fingers or hands.

The arrangement can be reversed to have the Master light curtain vertical for finger and hand detection and the Slave light curtain horizontal for detecting the presence of a person.



Example of series connection of master and slave light curtains for protection of two sides of the machine.

Thus, two series connected curtains may be located one at the front of the machine and the other at the rear, with a single connection to the machine power and control circuitry.

## DUAL BEAM SYSTEM

Special version of the Admiral Long Range features an innovative **Dual Beam System**.

Ideal light curtain in outdoor applications or in harsh environments for decreasing the sensitivity of the light curtain to small objects that could interrupt the light link, i.e. birds or leaves but also heavy rain or snow.





## MUTING FUNCTION

Additional arms with built-in Muting crossed beams photoelectric sensors, combined with the Admiral light curtains series form a one way access control system with L logic (exit only) or a bi-directional access control system with T logic (entry and exit).

Can be mounted on Admiral light curtains of any height and resolution.

### IMPORTANT NOTE

*The Muting function is created by using an external interface module (Mosaic or AD SRM), where both the light curtains and the sensors of the Muting arms are connected.*

Installation note: the arm transmitter must be mounted on the light curtain receiver and vice versa.



#### One-way Muting with 2 sensors – Exit only 2 integrated photoelectric sensors with crossed beams

The light curtain only allows pallet outfeed.

The Muting function can only be activated from inside the protected zone. No possibility to activate a Muting sequence from the outside.

Elimination of bulk outside the protected area, as the Muting sensors are only present inside the area.

Correct Muting sequence even in the presence of a pallet with reduced width and/or length or not centred with respect to the conveyor.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. i.e. Muting enabled only when the conveyor is moving.



#### Two-way Muting with 2 sensors – Entry/Exit 2 integrated photoelectric sensors with crossed beams

Standard solution for the most common entry/exit pallet applications.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. i.e. Muting enabled only when the conveyor is moving.



0 ... +55 °C

0 ... +55 °C Operating temperature



IP65 protection rate

Special versions in WT/WTH IP67 protection rate watertight housing with or without heating system. See "ADMIRAL WT / WTH" on page 16

## THE ADMIRAL RANGE

ADMIRAL AD	ADMIRAL AX	ADMIRAL AXM - AXS	ADMIRAL AX LR (Long Range)	ADMIRAL AX LR DB (Dual Beam)	ADMIRAL AX BK (Blanking)
Automatic Start/Restart	Built-in manual or automatic re-start, selectable	Master and Slave models for serial connection of two light curtains	Max. range 60 m	Special version of the Admiral Long Range features a Dual Beam System	Built-in functions of floating blanking with 5 selectable configurations
Start/Restart interlock and EDM via external AD SR1 interface	Feedback input for control of external relays (EDM)				Start/Restart interlock and EDM via external AD SR1 interface
Electrical connections: M12 5-pole connectors for emitter and receiver	Electrical connections: M12 5-pole for emitter M12 8-pole for receiver				
Selectable operating range: 0 ... 6 m - low range 1 ... 18 m - high range  14 mm resolution models: 0 ... 2 m - low range 0 ... 5 m - high range			Selectable operating range:  10 ... 22 m - low range 18 ... 60 m - high range	Selectable operating range:  12 ... 25 m - low range 22 ... 80 m - high range	Selectable operating range: 0 ... 6 m - low range 3 ... 18 m - high range  14 mm resolution models: 0 ... 2 m - low range 0 ... 5 m - high range
Types of detection: Finger detection: 14 mm resolution Hand detection: 20, 30, 40 mm resolution Body detection (in a dangerous area): 50, 90 mm resolution Access control: 2, 3, 4 beams for body detection			Types of detection: Access control: 2, 3, 4 beams for body detection	Types of detection: Access control: 2, 3, 4 beams for body detection	Types of detection: Finger detection: 14 mm resolution Hand detection: 20, 40 mm resolution Body detection (in a dangerous area): 90 mm resolution
2 self-testing solid state PNP safety outputs protected against short circuits and overloads					

## APPROVALS

- 2006/42/EC: "Machine Directive"
- 2014/30/EU: "Electromagnetic Compatibility Directive"
- 2014/35/EU: "Low Voltage Directive"
- IEC 61496-1 (ed. 3) "Safety of machinery - Electro sensitive protective equipment - General requirements and tests"
- IEC 61496-2 (ed. 3) "Safety of machinery - Electro-sensitive protective equipment - Particular requirements for equipment using active opto-electronic protective devices (AOPDs)"
- IEC 62061 (ed. 1) "Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- ISO 13849-1:2006 (Cat. 4, PL e) "Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design"
- EN 50178:1997 "Electronic equipment for use in power installations"
- EN 55022:2010 "Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement"
- UL (C+US) mark for USA and Canada
- ANSI / UL 1998: "Safety Software in Programmable Components"
- The mark TS indicates that the product has been approved by the government of Taiwan

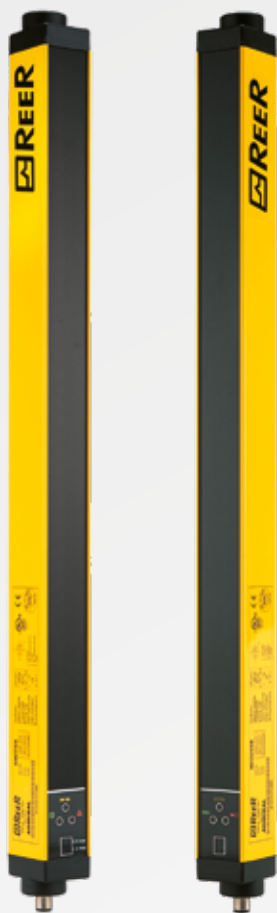
SAFETY LEVEL

TYPE 4

SILCL 3  
PL e - Cat. 4

# ADMIRAL AD

## WITH AUTOMATIC START/RESTART



### Resolution (mm)

14, 20, 30,  
40, 50, 90

### Start/Restart

Automatic

### Access control

2, 3, 4  
beams

### Safety outputs

2

### SAFETY LEVEL

**TYPE 4**

SILCL 3  
PL e - Cat. 4

All connections and configurations by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain.

Protected heights: 160 mm ... 2250 mm (2250 only for 30, 40, 50 and 90 mm resolution).



## TECHNICAL FEATURES

Max. range (m)	Selectable 2 or 5 for 14 mm resolution Selectable 6 or 18 for 20, 30, 40, 50, 90 mm resolutions and 2, 3, 4 beams
Response time (ms)	6 ... 27
Safety outputs	2 PNP - 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	Seven-segment display and LEDs for light curtain's status and diagnostic
Power supply (VDC)	24 ± 20%
Fastening	Back slot, side slot or to the top and lower end with swivel brackets

## CABLES NEEDED

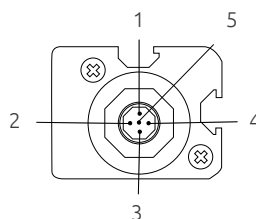
- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)

## ACCESSORIES

- Start/Restart interlock and EDM through external interface. See [AD SR1 on page 46](#)
- Muting function through external interface. See [AD SRM on page 47](#)
- Additional Muting arms. See [SLA, STA on page 56](#)
- Support columns. See [page 57](#)
- Deflecting mirrors. See [page 60](#)
- Laser alignment device. See [page 62](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

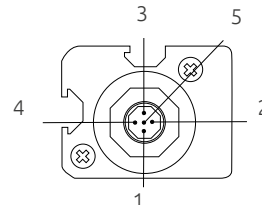
## CONNECTORS

Emitter  
M12 5-pole



1 - 24 VDC  
2 - RANGE - TEST1  
3 - 0 VDC  
4 - RANGE - TEST2  
5 - PE

Receiver  
M12 5-pole



1 - 24 VDC  
2 - OSSD1  
3 - 0 VDC  
4 - OSSD2  
5 - PE



## PART NUMBERS

Finger detection - AD models - Max. range: selectable 2 or 5 m



Resolution 14 mm	AD 151	AD 301	AD 451	AD 601	AD 751	AD 901	AD 1051	AD 1201	AD 1351	AD 1501	AD 1651	AD 1801
Ordering codes	1330000	1330001	1330002	1330003	1330004	1330005	1330006	1330007	1330008	1330009	1330010	1330011
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Hand detection - AD models - Max. range: selectable 6 or 18 m



Resolution 20 mm	AD 152	AD 302	AD 452	AD 602	AD 752	AD 902	AD 1052	AD 1202	AD 1352	AD 1502	AD 1652	AD 1802
Ordering codes	1330100	1330101	1330102	1330103	1330104	1330105	1330106	1330107	1330108	1330109	1330110	1330111
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 30 mm	AD 153	AD 303	AD 453	AD 603	AD 753	AD 903	AD 1053	AD 1203	AD 1353	AD 1503	AD 1653	AD 1803	AD 1953	AD 2103	AD 2253
Ordering codes	1330200	1330201	1330202	1330203	1330204	1330205	1330206	1330207	1330208	1330209	1330210	1330211	1330212	1330213	1330216
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361



Resolution 40 mm	AD 304	AD 454	AD 604	AD 754	AD 904	AD 1054	AD 1204	AD 1354	AD 1504	AD 1654	AD 1804	AD 1954	AD 2104	AD 2254
Ordering codes	1330301	1330302	1330303	1330304	1330305	1330306	1330307	1330308	1330309	1330310	1330311	1330312	1330314	1330017
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361

Body detection - AD models - Max. range: selectable 6 or 18 m



Resolution 50 mm	AD 305	AD 455	AD 605	AD 755	AD 905	AD 1055	AD 1205	AD 1355	AD 1505	AD 1655	AD 1805	AD 1955	AD 2105	AD 2255
Ordering codes	1330401	1330402	1330403	1330404	1330405	1330406	1330407	1330408	1330409	1330410	1330411	1330412	1330415	1330018
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	8	12	16	20	24	28	32	36	40	44	48	52	56	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361



Resolution 90 mm	AD 309	AD 459	AD 609	AD 759	AD 909	AD 1059	AD 1209	AD 1359	AD 1509	AD 1659	AD 1809	AD 1959	AD 2109	AD 2259
Ordering codes	1330501	1330502	1330503	1330504	1330505	1330506	1330507	1330508	1330509	1330510	1330511	1330512	1330515	1330019
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	5	7	9	11	13	15	17	19	21	23	25	27	29	31
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361

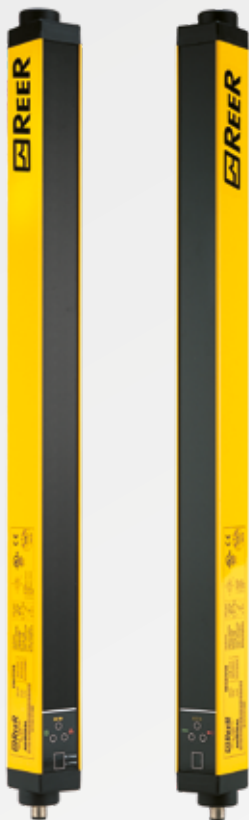
Access control - AD models - Max. range: selectable 6 or 18 m



2, 3, 4 beams	AD 2B	AD 3B	AD 4B
Ordering codes	1330600	1330601	1330602
Nr. beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111

# ADMIRAL AX

## WITH BUILT-IN CONTROL FUNCTIONS



### Resolution (mm)

14, 20, 30,  
40, 50, 90

### Start/Restart

Manual or Automatic

### Access control

2, 3, 4  
beams

### Safety outputs

2

### SAFETY LEVEL

**TYPE 4**

SILCL 3  
PL e - Cat. 4

Start/restart interlock, selectable.

Integrated feedback input for external device monitoring (EDM).

All connections and configurations by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain.

Protected heights: 160 mm ... 2250 mm (2250 only for 30, 40, 50 and 90 mm resolution).

**NOTE:** available resolution 100 mm (long range up to 50 m) on request only.



## TECHNICAL FEATURES

Max. range (m)	Selectable 2 or 5 for 14 mm resolution
	Selectable 6 or 18 for 20, 30, 40, 50, 90 mm resolutions and 2, 3, 4 beams
	Selectable 22 or 60 for 2, 3, 4 beams Long Range
	Selectable 25 or 80 for 2, 3 beams Long Range DB
Response time (ms)	3 ... 27
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	Seven-segment display and LEDs for light curtain's status and diagnostic
Power supply (VDC)	24 ± 20%
Fastening	Back slot, side slot or to the top and lower end with swivel brackets

## CABLES NEEDED

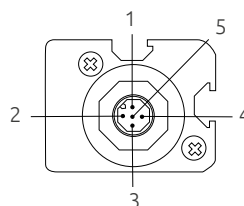
- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 8-pole. (C8D x, C8S x SB, C8D 9x, C8DM 9, C8DM 11). See [page 52](#)

## ACCESSORIES

- Muting function through external interface.  
See: [AD SRM on page 47](#)
- Safety relay. See [AD SR0 - AD SR0A on page 48](#)
- Additional Muting arms. See [SLA, STA on page 56](#)
- Support columns. See [page 57](#)
- Deflecting mirrors. See [page 60](#)
- Laser alignment device. See [page 62](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

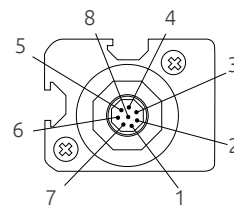
## CONNECTORS

Emitter  
M12 5-pole



1 - 24 VDC  
2 - RANGE - TEST1  
3 - 0 VDC  
4 - RANGE - TEST2  
5 - PE

Receiver  
M12 8-pole



1 - OSSD1  
2 - 24 VDC  
3 - OSSD2  
4 - K1 K2 FEEDBACK  
5 - SEL A  
6 - SEL B  
7 - 0 VDC  
8 - PE

## PART NUMBERS

Finger detection - AX models - Max. range: selectable 2 or 5 m



Resolution 14 mm	AX 151	AX 301	AX 451	AX 601	AX 751	AX 901	AX 1051	AX 1201	AX 1351	AX 1501	AX 1651	AX 1801
Ordering codes	1334000	1334001	1334002	1334003	1334004	1334005	1334006	1334007	1334008	1334009	1334010	1334011
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Hand detection - AX models - Max. range: selectable 6 or 18 m



Resolution 20 mm	AX 152	AX 302	AX 452	AX 602	AX 752	AX 902	AX 1052	AX 1202	AX 1352	AX 1502	AX 1652	AX 1802
Ordering codes	1334100	1334101	1334102	1334103	1334104	1334105	1334106	1334107	1334108	1334109	1334110	1334111
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 30 mm	AX 153	AX 303	AX 453	AX 603	AX 753	AX 903	AX 1053	AX 1203	AX 1353	AX 1503	AX 1653	AX 1803	AX 1953	AX 2103	AX 2253
Ordering codes	1334200	1334201	1334202	1334203	1334204	1334205	1334206	1334207	1334208	1334209	1334210	1334211	1334450	1334414	1334456
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361



Resolution 40 mm	AX 304	AX 454	AX 604	AX 754	AX 904	AX 1054	AX 1204	AX 1354	AX 1504	AX 1654	AX 1804	AX 1954	AX 2104	AX 2254
Ordering codes	1334301	1334302	1334303	1334304	1334305	1334306	1334307	1334308	1334309	1334310	1334311	1334451	1334454	1334457
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361

Body detection - AX models - Max. range: selectable 6 or 18 m



Resolution 50 mm	AX 305	AX 455	AX 605	AX 755	AX 905	AX 1055	AX 1205	AX 1355	AX 1505	AX 1655	AX 1805	AX 1955	AX 2105	AX 2255
Ordering codes	1334401	1334402	1334403	1334404	1334405	1334406	1334407	1334408	1334409	1334410	1334411	1334452	1334413	1334458
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	8	12	16	20	24	28	32	36	40	44	48	52	56	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361



Resolution 90 mm	AX 309	AX 459	AX 609	AX 759	AX 909	AX 1059	AX 1209	AX 1359	AX 1509	AX 1659	AX 1809	AX 1959	AX 2109	AX 2259
Ordering codes	1334501	1334502	1334503	1334504	1334505	1334506	1334507	1334508	1334509	1334510	1334511	1334453	1334455	1334459
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	5	7	9	11	13	15	17	19	21	23	25	27	29	31
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361

Access control - AX models - Max. range: selectable 6 or 18 m



2, 3, 4 beams

	AX 2B	AX 3B	AX 4B
Ordering codes	1334600	1334601	1334602
Nr. beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111

AX LR Models - Max. range: selectable 22 or 60 m

AX LR DB Models - Max. range: selectable 25 or 80 m

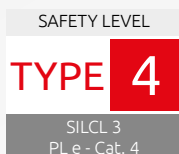
AX 2B LR	AX 3B LR	AX 4B LR	AX 2B LR DB	AX 3B LR DB
1334603	1334604	1334605	1334606	1334607
2	3	4	2	3
500	400	300	500	400
510	810	910	510	810
711	1011	1111	772	1072

# ADMIRAL AXM / AXS

## MASTER/SLAVE MODELS WITH BUILT-IN CONTROL FUNCTIONS



Resolution (mm)	Start/Restart
14, 20, 30, 50	Manual or Automatic
Access control	Safety outputs
2, 3 beams	2



Master/Slave models permit series connection of the light curtains.

Integrated feedback input for external device monitoring (EDM).

All connections and configurations by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain. (50 m between Master and Slave with M12 5-pole for emitter and receiver).

Protected heights: 160 mm ... 1510 mm.



### TECHNICAL FEATURES

Max. range (m)	Selectable 2 or 5 for 14 mm resolution Selectable 6 or 18 for 20, 30, 50 mm resolutions and 2, 3, 4 beams
Response time (ms) Master + Slave	$t_{tot} = t_{slave} + t_{master} + 1,8$
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	Seven-segment display and LEDs for light curtain's status and diagnostic
Power supply (VDC)	24 ± 20%
Fastening	Back slot, side slot or to the top and lower end with swivel brackets

### CABLES NEEDED

- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 8-pole.  
See [page 52](#) (C8D x, C8S x SB, C8D 9x, C8DM 9, C8DM 11)
- Between Master and Slave: M12 5-pole.  
See [page 54](#) (CDS 03, CJBEx)

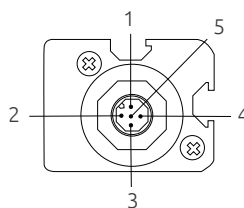
### ACCESSORIES

- Laser alignment device. See [page 62](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

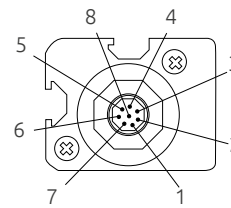
### CONNECTORS

Master Emitter,  
Master secondary  
connector and Slave  
M12 5-pole

Master Receiver  
M12 8-pole



- 1 - 24 VDC
- 2 - RANGE - TEST1
- 3 - 0 VDC
- 4 - RANGE - TEST2
- 5 - PE



- 1 - OSSD1
- 2 - 24 VDC
- 3 - OSSD2
- 4 - K1 K2 FEEDBACK
- 5 - SEL A
- 6 - SEL B
- 7 - 0 VDC
- 8 - PE

## MASTER/SLAVE MODELS WITH BUILT-IN CONTROL FUNCTIONS

## PART NUMBERS

Finger detection - AX M, AX S models - Max. range: selectable 2 or 5



MASTER Resolution 14 mm	-	AX 301M	AX 451M	AX 601M	AX 751M	AX 901M	AX 1051M	AX 1201M	AX 1501M
Ordering codes	-	1334021	1334022	1334023	1334024	1334025	1334026	1334027	1334029
SLAVE Resolution 14 mm	AX 151S	AX 301S	AX 451S	AX 601S	AX 751S	AX 901S	AX 1051S	AX 1201S	AX 1501S
Ordering codes	1334040	1334041	1334042	1334043	1334044	1334045	1334046	1334047	1334049
Protected height (mm)	160	310	460	610	760	910	1060	1210	1510
Nr. beams	15	30	45	60	75	90	105	120	150
Overall height (mm) *	261	411	561	711	861	1011	1161	1311	1611

Hand detection - AX M, AX S models - Max. range: selectable 6 or 18 m



MASTER Resolution 20 mm	-	AX 302M	AX 452M	AX 602M	AX 752M	AX 902M	AX 1052M	AX 1202M	AX 1502M
Ordering codes	-	1334121	1334122	1334123	1334124	1334125	1334126	1334127	1334129
SLAVE Resolution 20 mm	AX 152S	AX 302S	AX 452S	AX 602S	AX 752S	AX 902S	AX 1052S	AX 1202S	AX 1502S
Ordering codes	1334140	1334141	1334142	1334143	1334144	1334145	1334146	1334147	1334149
Protected height (mm)	160	310	460	610	760	910	1060	1210	1510
Nr. beams	15	30	45	60	75	90	105	120	150
Overall height (mm) *	261	411	561	711	861	1011	1161	1311	1611



MASTER Resolution 30 mm	-	AX 303M	AX 453M	AX 603M	AX 753M	AX 903M	AX 1053M	AX 1203M	AX 1503M
Ordering codes	-	1334221	1334222	1334223	1334224	1334225	1334226	1334227	1334229
SLAVE Resolution 30 mm	AX 153S	AX 303S	AX 453S	AX 603S	AX 753S	AX 903S	AX 1053S	AX 1203S	AX 1503S
Ordering codes	1334240	1334241	1334242	1334243	1334244	1334245	1334246	1334247	1334249
Protected height (mm)	160	310	460	610	760	910	1060	1210	1510
Nr. beams	8	16	24	32	40	48	56	64	80
Overall height (mm) *	261	411	561	711	861	1011	1161	1311	1611

Body detection - AX M, AX S models - Max. range: selectable 6 or 18 m



MASTER Resolution 50 mm	-	AX 305M	AX 455M	AX 605M	AX 755M	AX 905M	AX 1055M	AX 1205M	AX 1505M
Ordering codes	-	1334421	1334422	1334423	1334424	1334425	1334426	1334427	1334429
SLAVE Resolution 50 mm	AX 305S	AX 455S	AX 605S	AX 755S	AX 905S	AX 1055S	AX 1205S	AX 1505S	AX 1505S
Ordering codes	1334441	1334442	1334443	1334444	1334445	1334446	1334447	1334449	1334449
Protected height (mm)	310	460	610	760	910	1060	1210	1510	1510
Nr. beams	8	12	16	20	24	28	32	40	40
Overall height (mm) *	411	561	711	861	1011	1161	1311	1611	1611

Access control - AX M, AX S models - Max. range: selectable 6 or 18 m

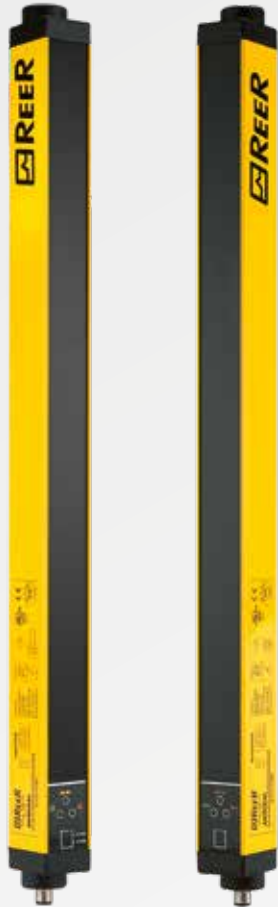


MASTER 2, 3 beams	AX 2BM	AX 3BM
Ordering codes	1334620	1334621
SLAVE 2, 3 beams	AX 2BS	AX 3BS
Ordering codes	1334640	1334641
Nr. beams	2	3
Beam spacing (mm)	500	400
Protected height (mm)	510	810
Overall height (mm) *	711	1011

\* Overall height is referred to the slave models.  
In the Master models the total light curtain height is increased by 10 mm due to the presence of the secondary connector

# ADMIRAL AX BK

## WITH BLANKING FUNCTION


**Resolution  
(mm)**

 14, 20,  
40, 90

**Start/  
Restart**

Automatic

**Access  
control**

 2, 3, 4  
beams

**Safety  
outputs**

2

SAFETY LEVEL

**TYPE 4**

 SILCL 3  
PL e - Cat. 4

Built-in floating blanking function with 5 configuration modes.

All connections and configurations by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain.

Master and Slave models for serial connection of 2 light curtains.

Start/Restart interlock and EDM via external AD SR1 interface.

Protected heights: 160 mm ... 1810 mm.

### TECHNICAL FEATURES

Max. range (m)	Selectable 2 or 5 for 14 mm resolution Selectable 6 or 18 for 20, 40, 90 mm resolution
Response time (ms)	6 ... 27
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	Seven-segment display and LEDs for light curtain's status and diagnostic
Blanking	Floating, selectable
Blanking configurations	5 modes: 1, 2 or 3 beams without compulsory object presence 1 or 2 beams with compulsory object presence
Power supply (VDC)	24 ± 20%
Fastening	Back slot, side slot or to the top and lower end lower end with swivel brackets

### CABLES NEEDED

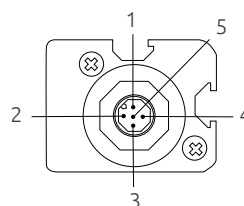
- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 8-pole.  
See [page 52](#) (C8D x, C8S x SB, C8D 9x, C8DM 9, C8DM 11)
- Between Master and Slave: M12 5-pole.  
See [page 54](#) (CDS 03, CJBE x)

### ACCESSORIES

- Start/Restart interlock and EDM through external interface. See [AD SR1 on page 46](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

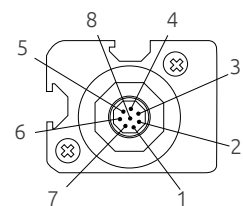
### CONNECTORS

Emitter, Master  
secondary connector  
and Slave  
M12 5-pole



1 - 24 VDC  
2 - RANGE - TEST1  
3 - 0 VDC  
4 - RANGE - TEST2  
5 - PE

Receiver, Master  
primary connector  
M12 8-pole



1 - OSSD1  
2 - 24 VDC  
3 - OSSD2  
4 - SEL C  
5 - SEL A  
6 - SEL B  
7 - 0 VDC  
8 - PE






# ADMIRAL AX BK


## WITH BLANKING FUNCTION


### PART NUMBERS

Finger detection - AX BK models - Max. range: selectable 2 or 5 m


	AX 151 BK	AX 301 BK	AX 451 BK	AX 601 BK	AX 751 BK	AX 901 BK	AX 1051 BK	AX 1201 BK	AX 1351 BK	AX 1501 BK	AX 1651 BK	AX 1801 BK
Resolution 14 mm												
Ordering codes	1334060	1334061	1334062	1334063	1334064	1334065	1334066	1334067	1334068	1334069	1334070	1334071
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Hand detection - AX BK models - Max. range: selectable 6 or 18 m

	AX 152 BK	AX 302 BK	AX 452 BK	AX 602 BK	AX 752 BK	AX 902 BK	AX 1052 BK	AX 1202 BK	AX 1352 BK	AX 1502 BK	AX 1652 BK	AX 1802 BK
Resolution 20 mm												
Ordering codes	1334160	1334161	1334162	1334163	1334164	1334165	1334166	1334167	1334168	1334169	1334170	1334171
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

		AX 304 BK	AX 454 BK	AX 604 BK	AX 754 BK	AX 904 BK	AX 1054 BK	AX 1204 BK	AX 1354 BK	AX 1504 BK	AX 1654 BK	AX 1804 BK	AX 1954 BK	AX 2104 BK	AX 2254 BK
Resolution 40 mm	-														
Ordering codes	-	1334361	1334362	1334363	1334364	1334365	1334366	1334367	1334368	1334369	1334370	1334371	1334461	1334465	1334468
Protected height (mm)	-	310	460	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	-	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Overall height (mm)	-	411	561	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361

Body detection - AX BK models - Max. range: selectable 6 or 18 m


				AX 609 BK	AX 759 BK	AX 909 BK	AX 1059 BK	AX 1209 BK	AX 1359 BK	AX 1509 BK	AX 1659 BK	AX 1809 BK	AX 1959 BK	AX 2109 BK	AX 2259 BK
Resolution 90 mm	-	-	-												
Ordering codes	-	-	-	1334563	1334564	1334565	1334566	1334567	1334568	1334569	1334570	1334571	1334463	1334572	1334470
Protected height (mm)	-	-	-	610	760	910	1060	1210	1360	1510	1660	1810	1960	2110	2260
Nr. beams	-	-	-	9	11	13	15	17	19	21	23	25	27	29	31
Overall height (mm)	-	-	-	711	861	1011	1161	1311	1461	1611	1761	1911	2061	2211	2361

### Cascating versions with blanking


The Master with Blanking models are combined with the Slave models of the Admiral series AX.

Maximum length of the connections between Master and Slave: 50 meters, with standard unshielded cable.

Finger detection - Master models with blanking - Max. range: selectable 2 or 5 m

		AX 301 BKM	AX 451 BKM	AX 601 BKM	AX 751 BKM	AX 901 BKM	AX 1051 BKM	AX 1201 BKM		AX 1501 BKM
Resolution 14 mm	-								-	
Ordering codes	-	1334081	1334082	1334083	1334084	1334085	1334086	1334088	-	1334089
Protected height (mm)	-	310	460	610	760	910	1060	1210	-	1510
Nr. beams	-	30	45	60	75	90	105	120	-	150
Overall height (mm)	-	421	571	721	871	1021	1171	1321	-	1671

Hand detection - Master models with blanking - Max. range: selectable 6 or 18 m

		AX 302 BKM	AX 452 BKM	AX 602 BKM	AX 752 BKM	AX 902 BKM	AX 1052 BKM	AX 1202 BKM		AX 1502 BKM
Resolution 20 mm	-								-	
Ordering codes	-	1334181	1334182	1334183	1334184	1334185	1334186	1334187	-	1334189
Protected height (mm)	-	310	460	610	760	910	1060	1210	-	1510
Nr. beams	-	30	45	60	75	90	105	120	-	150
Overall height (mm)	-	421	571	721	871	1021	1171	1321	-	1671

The blanking function is only present on the Master models with resolution 14 and 20 mm.

# ADMIRAL WT / WTH

## IP67 WATERTIGHT ENCLOSURE

HEATED  
VERSION  
AVAILABLE



Access  
control

2, 3, 4  
beams

Start/  
Restart

Manual or  
Automatic

Safety  
outputs

2

SAFETY LEVEL

**TYPE 4**

SILCL 3  
PL e - Cat. 4

Watertight enclosures allow light curtains and light grids to be used in a harsh working environments with exposure to water and steam.

IP67 protection rate.

### TECHNICAL FEATURES

Technical features for the light curtain	Admiral AX LR
Operating temperature (°C)	WT: 0 ... +55 WTH: -25 ... +50 (With heating system)
Max. water pressure jets	40 bar (between 10° and 40° C)
Max. range (m)	AX LR - 18 or 50 selectable AX LR DB - 20 or 60 selectable WTH only
Electrical connections	10-metre cable pre-wired with cable gland
WTHF heated power consumption	24 VDC - 20 W x Protected Height (m)
Fastening	Set of 4 WFB ring brackets (included)

### WATERTIGHT ENCLOSURE

The watertight enclosure is made of:

- Polycarbonate transparent housing
- Valve to drain humidity and avoid condensation
- PVC sealing caps

### APPLICATIONS

- Washing systems
- Industry applications with higher exposure to water sprays and jets
- Outdoor applications

## ADMIRAL WT / WTH

IP67 WATERTIGHT ENCLOSURE

## PART NUMBERS

Access control - AX LR WT / WTH models - Max. range: selectable 18 or 50 m



2, 3, 4 beams

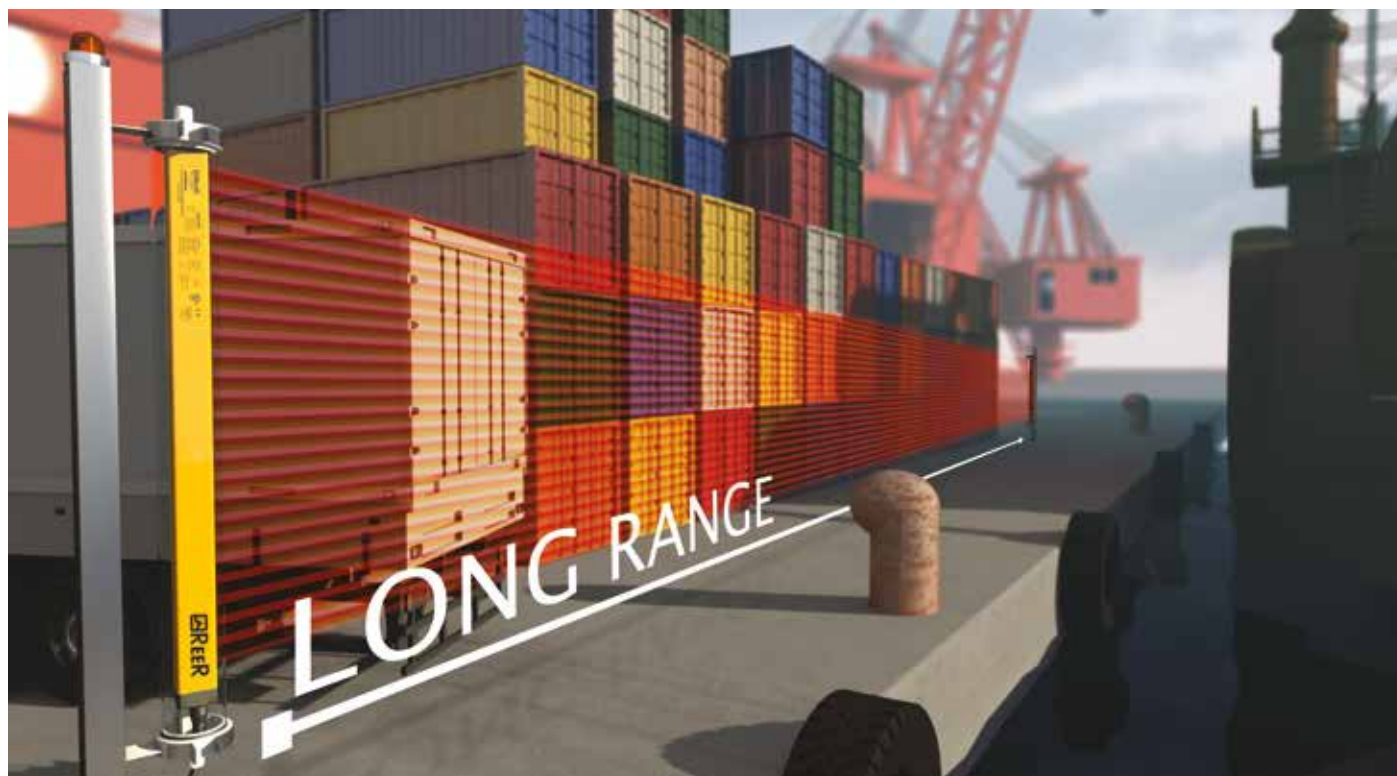
	AX 2B LR WT	AX 3B LR WT	AX 4B LR WT	AX 2B LR WTH	AX 3B LR WTH	AX 4B LR WTH
Ordering codes	1134603	1134604	1134605	1139603	1139604	1139605
Nr. beams	2	3	4	2	3	4
Overall height (mm)	841	1141	1241	841	1141	1241

Access control - AX LR DB WTH models - Max. range: selectable 20 or 60 m



2, 3, 4 beams

	AX 2B LR DB WTH	AX 3B LR DB WTH
Ordering codes	1139606	1139607
Nr. beams	2	3
Overall height (mm)	900	1200

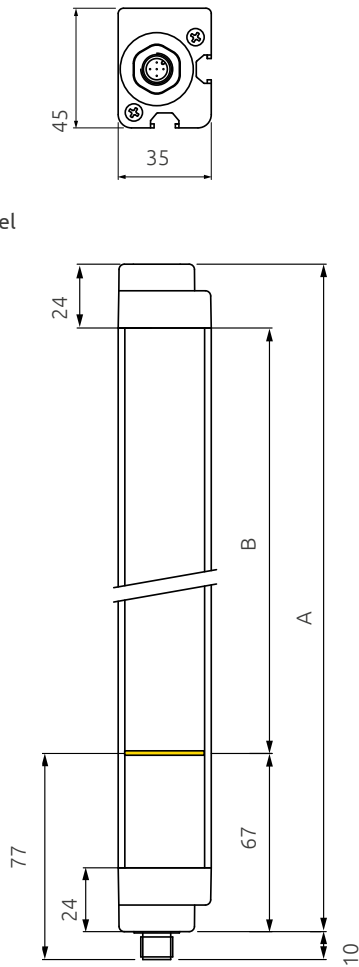


Port applications

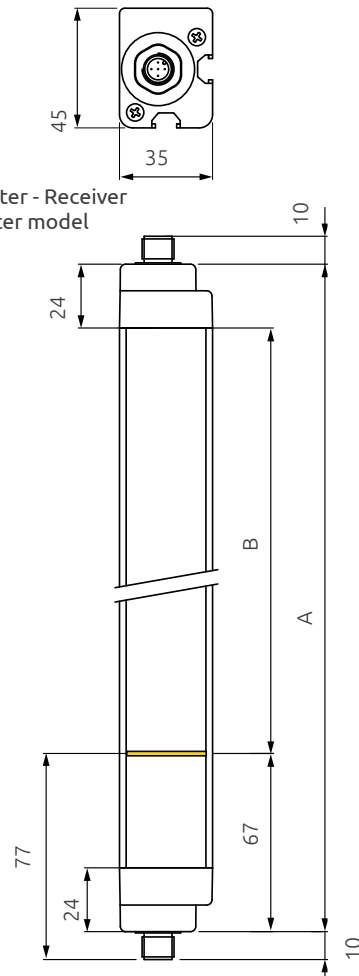
## MECHANICAL DATA

## DIMENSIONS

Emitter - Receiver  
Standard model and Slave model



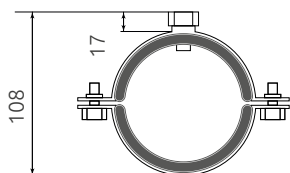
Emitter - Receiver  
Master model



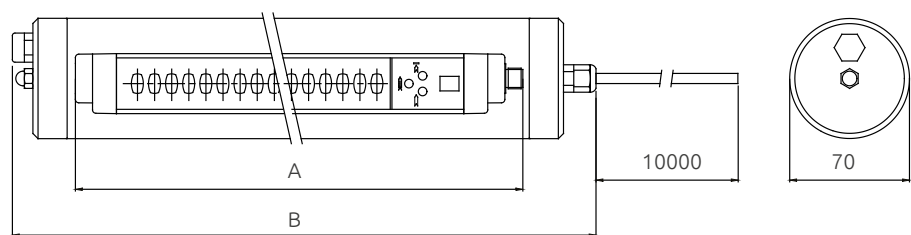
Models	2B	3B	4B
A (mm)	701	1001	1101
B (mm)	500	800	900
Mounting	Set of 4 LS type brackets included		

Models	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
A (mm)	251	401	551	701	851	1001	1151	1301	1451	1601	1751	1901	2061	2211	2361
B (mm)	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
Mounting	Set of 4 LS type brackets included							Set of 6 LS type brackets included							

## Watertight enclosure



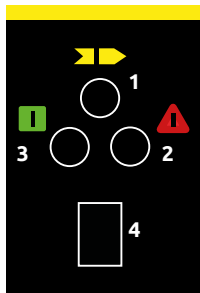
WFB ring brackets (included)



$B = A (\text{Overall height}) + 130 \text{ mm}$

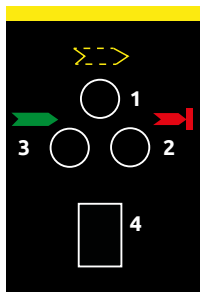
Dimension: mm

## STATUS DISPLAY



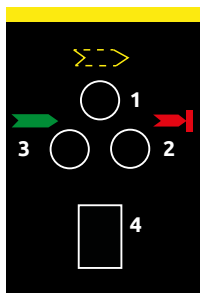
### Emitter - All ADMIRAL models

1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			L / H	TEST condition
			L	GUARD condition. Low range
			H	GUARD condition. High range
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual



### Receiver - ADMIRAL AD

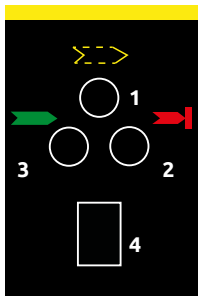
1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			-	BREAK condition
			-	Received beam signal intensity is weak
			-	GUARD condition
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual



### Receiver ADMIRAL AX, ADMIRAL AX MASTER

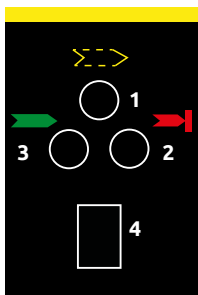
1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			C	C displayed for 10 sec. - Manual restart with feedback disabled
			C	C displayed for 10 sec. - Manual restart with feedback enabled
			C	C displayed for 10 sec. - Automatic restart with feedback disabled
			C	C displayed for 10 sec. - Automatic restart with feedback enabled
			-	BREAK condition
			d	BREAK condition with weak signal
			-	CLEAR condition. Waiting for restart
			d	CLEAR condition with weak signal
			-	Master in CLEAR, Slave in BREAK conditions (Master Models only)
			d	Master in CLEAR, Slave in BREAK conditions with weak signal. (Master Models only)
			-	GUARD condition
			d	GUARD condition with weak signal
				Receiver initialization
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual

## Receiver ADMIRAL AX SLAVE and ADMIRAL AX BK SLAVE



1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			-	BREAK condition
			d	BREAK condition with weak signal
			-	GUARD condition
			d	GUARD condition with weak signal
			-	Receiver initialization
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual

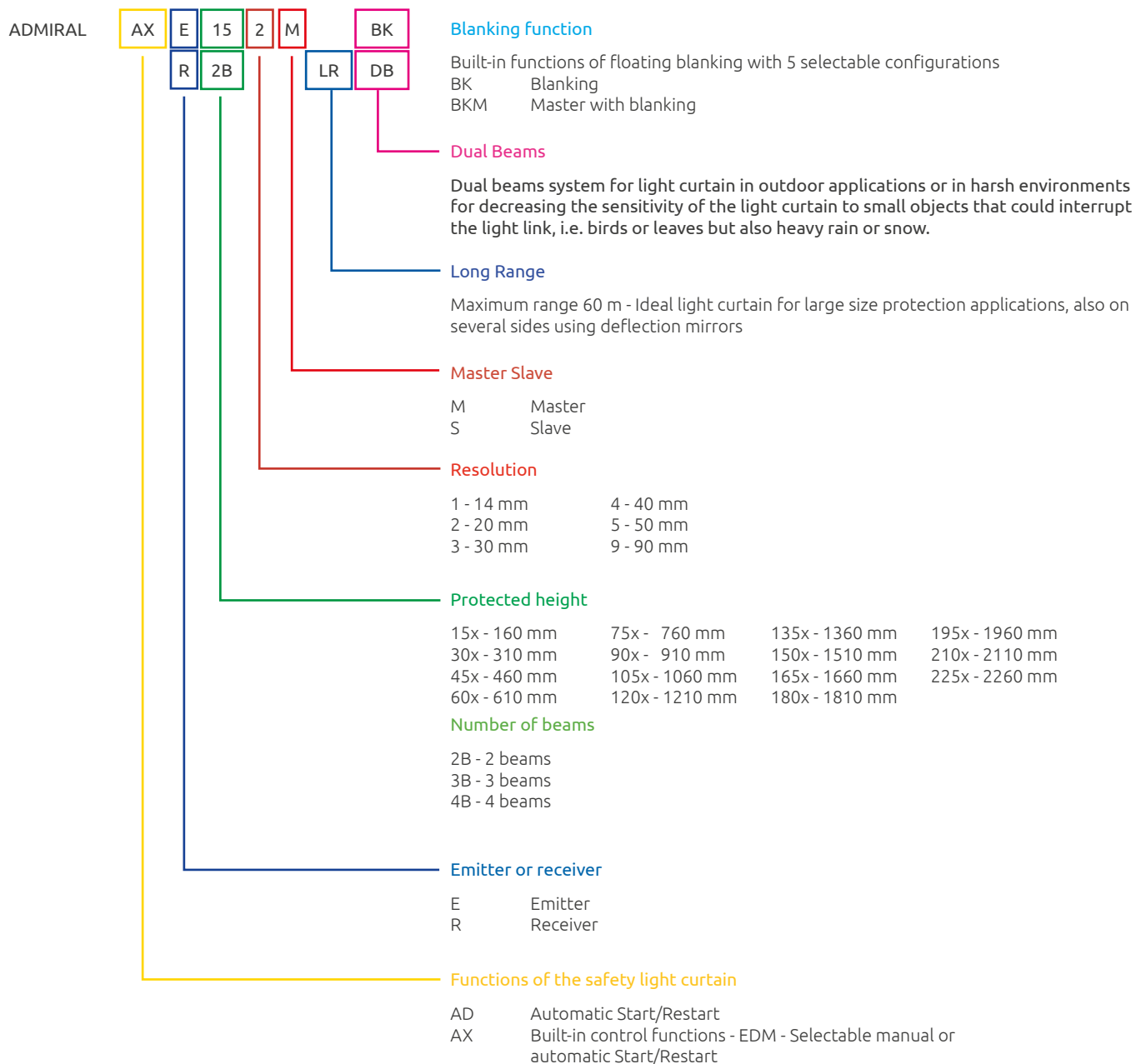
## Receiver ADMIRAL AX BK only



1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			C	C displayed for 10 sec. - Blanking Mode A1 See table on page 3
			C	C displayed for 10 sec. - Blanking Mode A2 See table on page 3
			C	C displayed for 10 sec. - Blanking Mode A3 See table on page 3
			C	C displayed for 10 sec. - Blanking Mode B1 See table on page 3
			C	C displayed for 10 sec. - Blanking Mode B2 See table on page 3
			-	BREAK condition
			-	BREAK condition with weak signal
			b	BREAK condition in case of Mode B1/B2 blaking
			b	BREAK condition in case of Mode B1/B2 blaking with weak signal
			J	Master in CLEAR, Slave in BREAK conditions (Master Models only)
			J	Master in CLEAR, Slave in BREAK conditions with weak signal. (Master Models only)
			-	GUARD condition without blanking
			-	GUARD condition without blanking with weak signal
			r	Active blanking conditions
			r	Active blanking conditions with weak signal
			-	Receiver initialization
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual



## CODE LEGEND



### Example:

ADMIRAL AXE 759 BK =

- Type 4 safety light curtain ADMIRAL family
- Built-in control functions - EDM - Selectable manual or automatic Start/Restart
- Emitter
- Protected height: 760 mm
- Resolution: 90 mm
- Blanking

# VISION

## MAIN FEATURES

The **Vision Type 2 range** of safety light curtains is the ideal solution for the protection of the majority of high-risk industrial applications in Category 2. Its features includes:



Extremely easy connection and installation, thanks to the M12 connectors and the use of standard cables

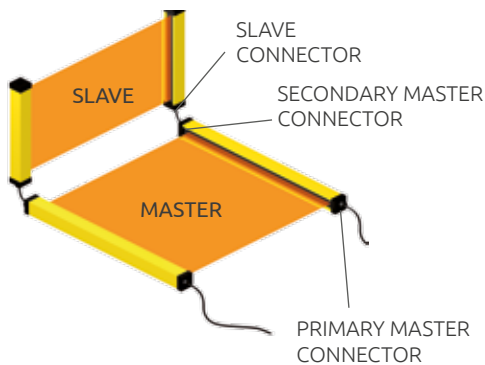


Integration of the main safety functions, including self monitoring of the safety circuits and, for the X models, external device monitoring (EDM) and the Start / Restart interlock function



## CASCADING FUNCTION

Master/Slave models with built-in control functions



Master/Slave models allow series connection of two light curtains with the following major benefits:

- Combined detection (hand + presence of a person or protection of more sides of the machine)
- Single pair of safety outputs is used
- No interference between light curtains installed adjacent to one another

All electrical connections made using M12 5-pole connectors, except for Master receivers which necessitate the adoption of M12 8-pole connectors.

Pre-wired cables with twin connectors are available for the connection between Master and Slave.

## Applications examples

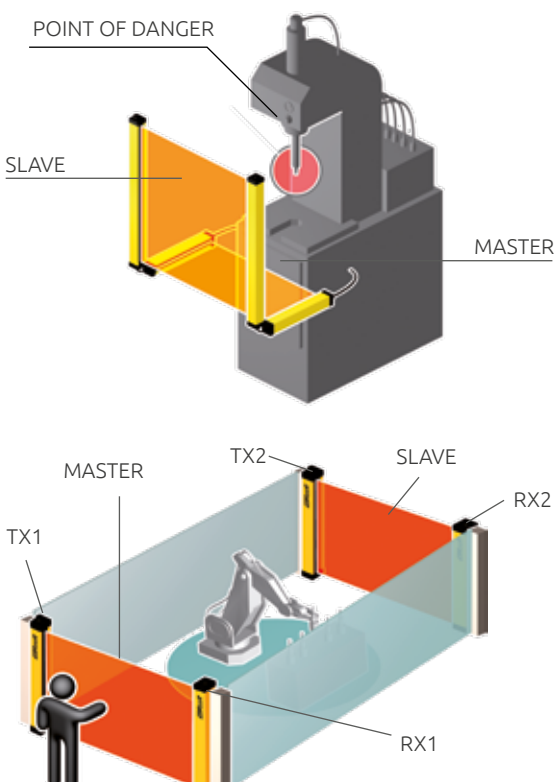
The application shown is one of the most common: horizontal curtains are used to prevent the operator from being undetected in the space between vertical light curtain and dangerous machine, upon system start-up or restarting.

Master light curtain is placed horizontally for detection of the person and Slave light curtain is placed vertically to detect fingers or hands.

The arrangement can be reversed to have the Master light curtain vertical for finger and hand detection and the Slave light curtain horizontally for detecting the presence of a person.

Example of series connection of master and slave light curtains for protection of two sides of the machine.

Thus, two series connected curtains may be located one at the front of the machine and the other at the rear, with a single connection to the machine power and control circuitry.



## MUTING FUNCTION

Additional arms with built-in Muting crossed beams photoelectric sensors, combined with the Vision light curtains series form a one way access control system with L logic (exit only) or a bi-directional access control system with T logic (entry and exit).

Can be mounted on Vision light curtains of any height and resolution.

### IMPORTANT NOTE

*The Muting function is created by using an external intercase module (Mosaic or AD SRM), where both the light curtains and the sensors of the Muting arms are connected.*

Installation note: the arm transmitter must be mounted on the light curtain receiver and vice versa.



**One-way Muting with 2 sensors – Exit only**  
2 integrated photoelectric sensors with crossed beams

The light curtain only allows pallet outfeed.

The Muting function can only be activated from inside the protected zone. No possibility to activate a Muting sequence from the outside.

Elimination of bulk outside the protected area, as the Muting sensors are only present inside the area.

Correct Muting sequence even in the presence of a pallet with reduced width and/or length or not centred with respect to the conveyor.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. i.e. Muting enabled only when the conveyor is moving.



**Two-way Muting with 2 sensors – Entry/Exit**  
2 integrated photoelectric sensors with crossed beams

Standard solution for the most common entry/exit pallet applications.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. i.e. Muting enabled only when the conveyor is moving.

### VISION MXL SERIES with integrated Muting functions

*Vision MXL is a range of safety light curtains with integrated Muting function. Set-up of each function can be done through main connector. No need external module. Models MXL L and MXL T are available with integrated Muting sensors.*



**0 ... +55 °C**

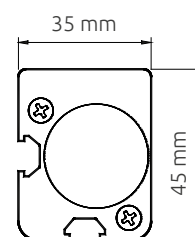
0 ... +55 °C Operating temperature



IP65 protection rate

Special versions in WT/WTH IP67 protection rate watertight housing with or without heating system. See "VISION VX WT/WTH" on page 34

Cross section






1:2 scale

## THE VISION RANGE

VISION V L	VISION V H	VISION VX	VISION VX LR (Long Range)	VISION VX M - S	VISION VXL	VISION MXL (see next table)
Operating range: 0 ... 6 m	Operating range: 1 ... 16 m	Selectable operating range: 0 ... 6 m - low range 1 ... 18 m - high range	Selectable operating range: 10 ... 22 m - low range 18 ... 60 m - high range	Selectable operating range: 0 ... 6 m - low range 3 ... 18 m - high range	Operating range: 0,3 ... 8 m	Operating range: 0,3 ... 8 m MXL and MXL U 1 ... 2,5 m MXL L 1 ... 2,5 m MXL T
Types of detection: Resolution 20, 30, 40 mm for hand detection Resolution 50, 90 mm for detection of the body in a hazardous area 2, 3, 4 beams for detection of the body in access control			Types of detection: 2, 3, 4 beams for detection of the body in access monitoring	Types of detection: Resolution 30, 40, 50 mm for hand detection 2, 3 beams for detection of the body in access control	Types of detection: Resolution 30, 40 mm for hand detection 2, 3, 4 beams for detection of the body in access control	
Electrical connections: M12 5-pole connectors		Electrical connections: M12 5-pole connectors for emitter M12 8-pole connectors for receiver				Electrical connections: M12 5-pole connectors for emitter M16 12-pole connectors for receiver
Automatic Start/Restart		Built-in manual or automatic Start/Restart selectable				
External relay monitoring (EDM) through external AD SR1 interface		Feedback input for control of external relays (EDM)				
2 self-testing solid state PNP safety outputs protected against short circuits and overloads						

## VISION MXL RANGE WITH MUTING FUNCTION

MXL-SERIES		<b>MXL and MXL U SERIES</b> Both have two dedicated inputs on the M16 connector for connection of external Muting sensors of any type such as photocells, proximity switches, limit switches, etc.	<b>MXL</b> The MXL series is recommended for Muting applications: Where personnel is supposed to access the area under control during the non-dangerous part of the machine cycle (e. g. manual load/unload of product). For two-way transit of material through the gate to be controlled by the light curtain (e.g. palletizers).
			<b>MXL U</b> Only for Muting applications where one-way transit (exit only) of material through the gate is controlled by the light curtain (e.g. palletizers).
MXL L SERIES		<b>MXL L SERIES</b> The MXL L series, with 2 or 3 beams for access control, uses an original system of 2 horizontal arms (one for the emitter and one for the receiver) with built-in, pre-wired and pre-aligned photoelectric Muting sensors. The arms can be adjusted in height and angle in order to create a detection plane that is more or less angled, with the purpose to achieve correct and constant detection of the material in transit and therefore reliable operation of the protection system. This ensures the maximum speed and simplicity of installation. The MXL L series manages the Muting function in one-way mode and is particularly suitable for protecting the outfeed gates of palletizing systems.	
MXL T SERIES		<b>MXL T SERIES</b> The MXL T series, with 2 or 3 beams for access control, features four horizontal arms (two for the emitter and two for the receiver) with built-in, pre-wired and pre-aligned photoelectric Muting sensors. The arms can be adjusted in height and angle in order to create a detection plane that is more or less angled, with the purpose to achieve correct and constant detection of the material in transit and therefore reliable operation of the protection system. This ensures the maximum speed and simplicity of installation. The MXL T series manages the Muting function in two-way mode for the protection of the infeed/outfeed gates in palletizing systems.	

## APPROVALS

- 2006/42/EC: "Machine Directive"
- 2014/30/EU: "Electromagnetic Compatibility Directive"
- 2014/35/EU: "Low Voltage Directive"
- IEC 61496-1 (ed.3) "Safety of machinery - Electro sensitive protective equipment - General requirements and tests"
- IEC 61496-2 (ed.3) "Safety of machinery - Electro-sensitive protective equipment - Particular requirements for equipment using active opto-electronic protective devices (AOPDs)"
- IEC 62061 (ed.1) "Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- EN ISO 13849-1:2008 "Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design"
- EN 50178:1997 "Electronic equipment for use in power installations"
- EN 55022:2010 "Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement"
- UL (C+US) mark for USA and Canada
- ANSI / UL 1998: "Safety Software in Programmable Components"

### New safety parameters for Type 2 light curtains

With the publication of Edition 3 of the harmonized EN 61496-1 standard it is no longer possible to use a Type 2 safety light curtains for safety functions assessed as SIL 2 / PL d.

If a safety level of SIL 2 / PL d (or higher) is required and it is nevertheless intended to use a safety light curtain, then it will be necessary to use a Type 4 safety light curtain.

This regulatory requirement derives from the fact that the reduction of risk that can be obtained via a photoelectric safety light curtain is not only a function of the safety level of its electronic parts, but is also determined by its systematic capabilities (for example: environmental influences, EMC, optical performance and detection principle).

The systematic capability of a Type 2 photoelectric light curtain may in fact not be sufficient to ensure adequate risk reduction for SIL 2 / PL d applications. The standard also establishes that the labelling of Type 2 safety light curtains must indicate such limitation to SIL 1 / PL c.

The PFH<sub>d</sub> values declared for the electronic control part of the device, on the other hand, are not limited and therefore it is possible to use the PFH<sub>d</sub> value provided by the manufacturer of the device in the global assessment of the safety function, even if it exceeds the SIL 1 / PL c range.

SAFETY LEVEL

TYPE 2

SIL CL 1  
PL c - Cat. 2

## VISION V

WITH AUTOMATIC START/RESTART



Resolution (mm)
20, 30 40, 50, 90

Start/Restart
Automatic

Access control
2, 3, 4 beams

Safety outputs
2

SAFETY LEVEL

TYPE 2

SILCL 1  
PL c - Cat. 2

Start/Restart interlock and EDM via external AD SR1 interface.

All connections and configuration by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain.

Protected heights: 160 mm ... 1810 mm.



## TECHNICAL FEATURES

Max. range (m)	6 for Vision V L models 16 for Vision V H models
Response time (ms)	5,5 ... 28
Safety outputs	2 PNP auto-controlled - 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	LEDs for light curtain's status and diagnostic
Power supply (VDC)	24 ± 20%
Fastening	Back slot, side slot or to the top and lower end with swivel brackets

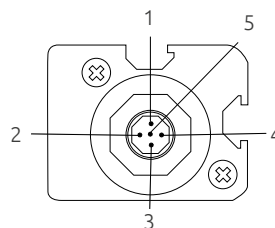
## CABLES NEEDED

- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)

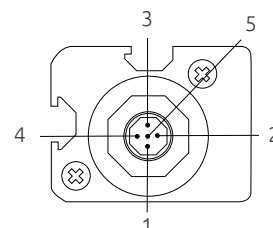
## ACCESSORIES

- Start/Restart interlock and EDM through external interface. See [AD SR1 on page 46](#)
- Muting function through external interface. See [AD SRM on page 47](#)
- Additional Muting arms. See [SLA, STA on page 56](#)
- Support columns. See [page 57](#)
- Deflecting mirrors. See [page 60](#)
- Laser alignment device. See [page 62](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

## CONNECTORS

Emitter  
M12 5-pole

1 - 24 VDC  
2 - TEST1  
3 - 0 VDC  
4 - NC  
5 - PE

Receiver  
M12 5-pole

1 - 24 VDC  
2 - OSSD1  
3 - 0 VDC  
4 - OSSD2  
5 - PE



## PART NUMBERS

Hand detection - VL models - Max. range: 6 m    VH models - Max. range: 16 m



Resolution 20 mm	V 152L	V 302L	V 452L	V 602L	V 752L	V 902L	V 1052L	V 1202L	V 1352L	V 1502L	V 1652L	V 1802L
Ordering codes	1340100	1340101	1340102	1340103	1340104	1340105	1340106	1340107	1340108	1340109	1340110	1340111
Resolution 20 mm	V 152H	V 302H	V 452H	V 602H	V 752H	V 902H	V 1052H	V 1202H	V 1352H	V 1502H	V 1652H	V 1802H
Ordering codes	1340120	1340121	1340122	1340123	1340124	1340125	1340126	1340127	1340128	1340129	1340130	1340131
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 30 mm	V 153L	V 303L	V 453L	V 603L	V 753L	V 903L	V 1053L	V 1203L	V 1353L	V 1503L	V 1653L	V 1803L
Ordering codes	1340200	1340201	1340202	1340203	1340204	1340205	1340206	1340207	1340208	1340209	1340210	1340211
Resolution 30 mm	V 153H	V 303H	V 453H	V 603H	V 753H	V 903H	V 1053H	V 1203H	V 1353H	V 1503H	V 1653H	V 1803H
Ordering codes	1340220	1340221	1340222	1340223	1340224	1340225	1340226	1340227	1340228	1340229	1340230	1340231
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	8	16	24	32	40	48	56	64	72	80	88	96
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 40 mm	V 304L	V 454L	V 604L	V 754L	V 904L	V 1054L	V 1204L	V 1354L	V 1504L	V 1654L	V 1804L
Ordering codes	1340301	1340302	1340303	1340304	1340305	1340306	1340307	1340308	1340309	1340310	1340311
Resolution 40 mm	V 304H	V 454H	V 604H	V 754H	V 904H	V 1054H	V 1204H	V 1354H	V 1504H	V 1654H	V 1804H
Ordering codes	1340321	1340322	1340323	1340324	1340325	1340326	1340327	1340328	1340329	1340330	1340331
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	10	15	20	25	30	35	40	45	50	55	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Body detection - VL models - Max. range: 6 m    VH models - Max. range: 16 m



Resolution 50 mm	V 305L	V 455L	V 605L	V 755L	V 905L	V 1055L	V 1205L	V 1355L	V 1505L	V 1655L	V 1805L
Ordering codes	1340401	1340402	1340403	1340404	1340405	1340406	1340407	1340408	1340409	1340410	1340411
Resolution 50 mm	V 305H	V 455H	V 605H	V 755H	V 905H	V 1055H	V 1205H	V 1355H	V 1505H	V 1655H	V 1805H
Ordering codes	1340421	1340422	1340423	1340424	1340425	1340426	1340427	1340428	1340429	1340430	1340431
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	8	12	16	20	24	28	32	36	40	44	48
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 90 mm	V 309L	V 459L	V 609L	V 759L	V 909L	V 1059L	V 1209L	V 1359L	V 1509L	V 1659L	V 1809L
Ordering codes	1340501	1340502	1340503	1340504	1340505	1340506	1340507	1340508	1340509	1340510	1340511
Resolution 90 mm	V 309H	V 459H	V 609H	V 759H	V 909H	V 1059H	V 1209H	V 1359H	V 1509H	V 1659H	V 1809H
Ordering codes	1340521	1340522	1340523	1340524	1340525	1340526	1340527	1340528	1340529	1340530	1340531
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	5	7	9	11	13	15	17	19	21	23	25
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Access control - VL models - Max. range: 6 m    VH models - Max. range: 16 m



2, 3, 4 beams	V 2B L	V 3B L	V 4B L	V 2B H	V 3B H	V 4B H
Ordering codes	1340600	1340601	1340602	1340610	1340611	1340612
Nr. beams	2	3	4	2	3	4
Beam spacing (mm)	500	400	300	500	400	300
Protected height (mm)	510	810	910	510	810	910
Overall height (mm)	711	1011	1111	711	1011	1111

# VISION VX

## WITH BUILT-IN CONTROL FUNCTIONS


**Resolution  
(mm)**

 20, 30  
40, 50, 90

**Start/  
Restart**

 Manual or  
Automatic

SAFETY LEVEL

**TYPE 2**

 SILCL 1  
PL c - Cat. 2

**Access  
control**

 2, 3, 4  
beams

**Safety  
outputs**

2

Built-in Start/Restart interlock, selectable.

Feedback input for control of external relays (EDM).

All connections and configuration by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain.

Protected heights: 160 mm ... 1810 mm.



### TECHNICAL FEATURES

Max. range (m)	Selectable 6 or 18 Selectable 22 or 60 (2, 3, 4 beams Long Range)
Response time (ms)	5,5 ... 28
Safety outputs	2 PNP auto-controlled - 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	Seven-segment display and LEDs for light curtain's status and diagnostic
Power supply (VDC)	24 ± 20%
Fastening	Back slot, side slot or to the top and lower end with swivel brackets

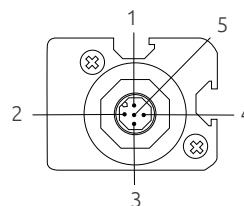
### CABLES NEEDED

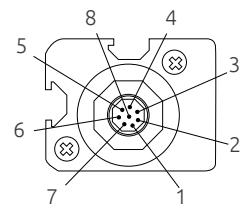
- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 8-pole.  
See: [page 52](#) (C8D x, C8S x SB, C8D 9x, C8DM 9, C8DM 11)

### ACCESSORIES

- Muting function through external interface.  
See [AD SRM on page 47](#)
- Safety relay. See [AD SR0, AD SR0A on page 46](#)
- Additional Muting arms. See [SLA, STA on page 56](#)
- Support columns. See [page 57](#)
- Deflecting mirrors. See [page 60](#)
- Laser alignment device. See [page 62](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

### CONNECTORS

 Emitter  
M12 5-pole

 1 - 24 VDC  
2 - RANGE - TEST1  
3 - 0 VDC  
4 - RANGE - TEST2  
5 - PE

 Receiver  
M12 8-pole

 1 - OSSD1  
2 - 24 VDC  
3 - OSSD2  
4 - K1 K2 FEEDBACK  
5 - SEL A  
6 - SEL B  
7 - 0 Vcc  
8 - PE

## PART NUMBERS

Hand detection - VX models - Max. range: selectable 6 m or 18 m



Resolution 20 mm	VX 152	VX 302	VX 452	VX 602	VX 752	VX 902	VX 1052	VX 1202	VX 1352	VX 1502	VX 1652	VX 1802
Ordering codes	1344100	1344101	1344102	1344103	1344104	1344105	1344106	1344107	1344108	1344109	1344110	1344111
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 30 mm	VX 153	VX 303	VX 453	VX 603	VX 753	VX 903	VX 1053	VX 1203	VX 1353	VX 1503	VX 1653	VX 1803
Ordering codes	1344200	1344201	1344202	1344203	1344204	1344205	1344206	1344207	1344208	1344209	1344210	1344211
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	8	16	24	32	40	48	56	64	72	80	88	96
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 40 mm	VX 304	VX 454	VX 604	VX 754	VX 904	VX 1054	VX 1204	VX 1354	VX 1504	VX 1654	VX 1804
Ordering codes	1344301	1344302	1344303	1344304	1344305	1344306	1344307	1344308	1344309	1344310	1344311
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	10	15	20	25	30	35	40	45	50	55	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Body detection - VX models - Max. range: selectable 6 m or 18 m



Resolution 50 mm	VX 305	VX 455	VX 605	VX 755	VX 905	VX 1055	VX 1205	VX 1355	VX 1505	VX 1655	VX 1805
Ordering codes	1344401	1344402	1344403	1344404	1344405	1344406	1344407	1344408	1344409	1344410	1344411
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	8	12	16	20	24	28	32	36	40	44	48
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 90 mm	VX 309	VX 459	VX 609	VX 759	VX 909	VX 1059	VX 1209	VX 1359	VX 1509	VX 1659	VX 1809
Ordering codes	1344501	1344502	1344503	1344504	1344505	1344506	1344507	1344508	1344509	1344510	1344511
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	5	7	9	11	13	15	17	19	21	23	25
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Access control - VX models - Max. range: selectable 6 m or 18 m



2, 3, 4 beams	VX 2B	VX 3B	VX 4B
Ordering codes	1344600	1344601	1344602
Nr. beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111

VX LR models - Max range: selectable 22 m or 60 m

VX 2B LR	VX 3B LR	VX 4B LR
1344603	1344604	1344605
2	3	4
500	400	300
510	810	910
711	1011	1111

# VISION VXM / VXS

## MASTER/SLAVE MODELS WITH BUILT-IN CONTROL FUNCTIONS



### Resolution (mm)

20, 40, 50

### Start/Restart

Manual or Automatic

### Access control

2, 3 beams

### Safety outputs

2

### SAFETY LEVEL

**TYPE 2**

SILCL 1  
PL c - Cat. 2

Feedback input for external device monitoring (EDM).

All connections and configurations by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain. (50 m between Master and Slave with M12 5-pole for emitter and receiver).

Protected heights: 160 mm ... 1810 mm.

## TECHNICAL FEATURES

Max. range (m)	Selectable 6 or 18
Response time (ms) Master + Slave	$t_{tot} = t_{slave} + t_{master} + 1,8$
Safety outputs	2 PNP auto-controlled - 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	Seven-segment display and LEDs for light curtain's status and diagnostic
Power supply (VDC)	$24 \pm 20\%$
Fastening	Back slot, side slot or to the top and lower end with swivel brackets

## CABLES NEEDED

- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 8-pole.  
See [page 52](#) (C8D x, C8S x SB, C8D 9x, C8DM 9, C8DM 11)
- Between Master and Slave: M12 5-pole.  
See [page 54](#) (CDS 03, CJBE x)

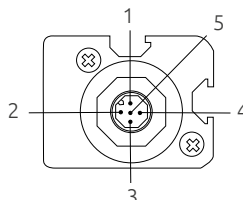
## ACCESSORIES

- Laser alignment device. See [page 62](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

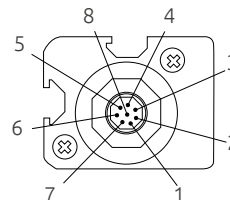
## CONNECTORS

Master Emitter,  
Master secondary  
connector and Slave  
M12 5-pole

Master Receiver  
M12 8-pole



1 - 24 VDC  
2 - RANGE - TEST1  
3 - 0 VDC  
4 - RANGE - TEST2  
5 - PE



1 - OSSD1  
2 - 24 VDC  
3 - OSSD2  
4 - K1 K2 FEEDBACK  
5 - SEL A  
6 - SEL B  
7 - 0 Vcc  
8 - PE



## MASTER/SLAVE MODELS WITH BUILT-IN CONTROL FUNCTIONS

## PART NUMBERS

Hand detection - VX M, VX S models - Max. range: selectable 6 m or 18 m



MASTER

Resolution 30 mm	VX 153M	VX 303M	VX 453M	VX 603M	VX 753M	VX 903M	VX 1053M	VX 1203M	VX 1503M
Ordering codes	1344220	1344221	1344222	1344223	1344224	1344225	1344226	1344227	1344229
SLAVE									
Resolution 30 mm	VX 153S	VX 303S	VX 453S	VX 603S	VX 753S	VX 903S	VX 1053S	VX 1203S	VX 1503S
Ordering codes	1344240	1344241	1344242	1344243	1344244	1344245	1344246	1344247	1344249
Protected height (mm)	160	310	460	610	760	910	1060	1210	1510
Nr. beams	8	16	24	32	40	48	56	64	80
Overall height (mm) *	261	411	561	711	861	1011	1161	1311	1611



MASTER

Resolution 40 mm	VX 304M	VX 454M	VX 604M	VX 754M	VX 904M	VX 1054M	VX 1204M	VX 1504M
Ordering codes	1344321	1344322	1344323	1344324	1344325	1344326	1344327	1344329
SLAVE								
Resolution 40 mm	VX 304S	VX 454S	VX 604S	VX 754S	VX 904S	VX 1054S	VX 1204S	VX 1504S
Ordering codes	1344341	1344342	1344343	1344344	1344345	1344346	1344347	1344349
Protected height (mm)	310	460	610	760	910	1060	1210	1510
Nr. beams	10	15	20	25	30	35	40	50
Overall height (mm) *	411	561	711	861	1011	1161	1311	1611

Body detection - VX M, VX S models - Max. range: selectable 6 m or 18 m



MASTER

Resolution 50 mm	VX 305M	VX 455M	VX 605M	VX 755M	VX 905M	VX 1055M	VX 1205M	VX 1505M
Ordering codes	1344421	1344422	1344423	1344424	1344425	1344426	1344427	1344429
SLAVE								
Resolution 50 mm	VX 305S	VX 455S	VX 605S	VX 755S	VX 905S	VX 1055S	VX 1205S	VX 1505S
Ordering codes	1344441	1344442	1344443	1344444	1344445	1344446	1344447	1344449
Protected height (mm)	310	460	610	760	910	1060	1210	1510
Nr. beams	8	12	16	20	24	28	32	40
Overall height (mm) *	411	561	711	861	1011	1161	1311	1611

Access control - VX M, VX S models - Max. range: selectable 6 m or 18 m



MASTER

2, 3 beams	VX 2BM	VX 3BM
Ordering codes	1344620	1344621
SLAVE		
2, 3 beams	VX 2BS	VX 3BS
Ordering codes	1344640	1344641
Nr. beams	2	3
Beam spacing (mm)	500	400
Protected height (mm)	510	810
Overall height (mm) *	711	1011

\* Overall height is referred to the slave model.

In the Master models, the total light curtain height is increased by 10 mm due to the presence of the secondary connector.

Maximum length of the connections between Master and Slave: 50 meters, with standard unshielded cable.

# VISION VXL

## WITH BUILT-IN CONTROL FUNCTIONS (ENTRY-LEVEL)


**Resolution  
(mm)**

20, 40

**Start/  
Restart**
Manual or  
Automatic
**Access  
control**
2, 3, 4  
beams
**Safety  
outputs**

2

SAFETY LEVEL

**TYPE 2**
SILCL 1  
PL c - Cat. 2

Built-in Start/Restart interlock, selectable.

Feedback input for control of external relays (EDM).

All connections and configuration by means of M12 connectors. Unshielded cables up to 100 meter long can be used to connect the light curtain.

Protected heights: 160 mm ... 1810 mm.

### TECHNICAL FEATURES

Max. range (m)	8
Response time (ms)	2 ... 25
Safety outputs	2 PNP - 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Status display	LEDs for light curtain's status and diagnostic
Power supply (VDC)	24 ± 20%
Fastening	Back slot, side slot or to the top and lower end with swivel brackets

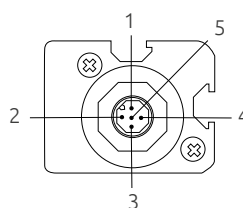
### CABLES NEEDED

- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M12 8-pole.  
See [page 52](#) (C8D x, C8S x SB, C8D 9x, C8DM 9, C8DM 11)

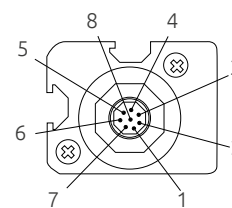
### ACCESSORIES

- Muting function through external interface.  
See [AD SRM on page 47](#)
- Safety relay. See [AD SR0, AD SR0A on page 46](#)
- Support columns. See [page 57](#)
- Deflecting mirrors. See [page 60](#)
- Laser alignment device. See [page 62](#)
- Vibration dumpers. See [page 61](#)
- Brackets. See [page 61](#)

### CONNECTORS

**Emitter  
M12 5-pole**


1 - 24 VDC  
2 - RANGE - TEST1  
3 - 0 VDC  
4 - RANGE - TEST2  
5 - PE

**Receiver  
M12 8-pole**


1 - OSSD1  
2 - 24 VDC  
3 - OSSD2  
4 - K1 K2 FEEDBACK  
5 - SEL A  
6 - SEL B  
7 - 0 Vcc  
8 - PE





## WITH BUILT-IN CONTROL FUNCTIONS (ENTRY-LEVEL)

## PART NUMBERS

Hand detection - VXL models - Max. range: 8 m



Resolution 30 mm	VXL 153	VXL 303	VXL 453	VXL 603	VXL 753	VXL 903	VXL 1053	VXL 1203
Ordering codes	1344700	1344701	1344702	1344703	1344704	1344705	1344706	1344707
Protected height (mm)	160	310	460	610	760	910	1060	1210
Nr. beams	8	16	24	32	40	48	56	64
Overall height (mm)	261	411	561	711	861	1011	1161	1311



Resolution 40 mm	VXL 304	VXL 454	VXL 604	VXL 754	VXL 904	VXL 1054	VXL 1204	VXL 1354	VXL 1504	VXL 1654	VXL 1804
Ordering codes	1344711	1344712	1344713	1344714	1344715	1344716	1344717	1344723	1344719	1344724	1344725
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	10	15	20	25	30	35	40	45	50	55	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

Access control - VXL models - Max. range: 8 m



2, 3, 4 beams	VXL 2B	VXL 3B	VXL 4B
Ordering codes	1344720	1344721	1344722
Nr. beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111

# VISION VX WT / WTH

## IP67 WATERTIGHT ENCLOSURE

### TECHNICAL FEATURES

Technical features for the light curtain	VISION VX LR
Operating temperature (°C)	WT: 0 ... +55 WTH: -25 ... +50 - With heating system
Max. water pressure jets	40 bar (between 10° and 40° C)
Max. range (m)	18 or 50 selectable
Electrical connections	10-metre cable pre-wired with cable gland
WTHF heated power consumption	24 VDC - 20 W x Protected Height (m)
Fastening	Set of 4 WFB ring brackets (included)

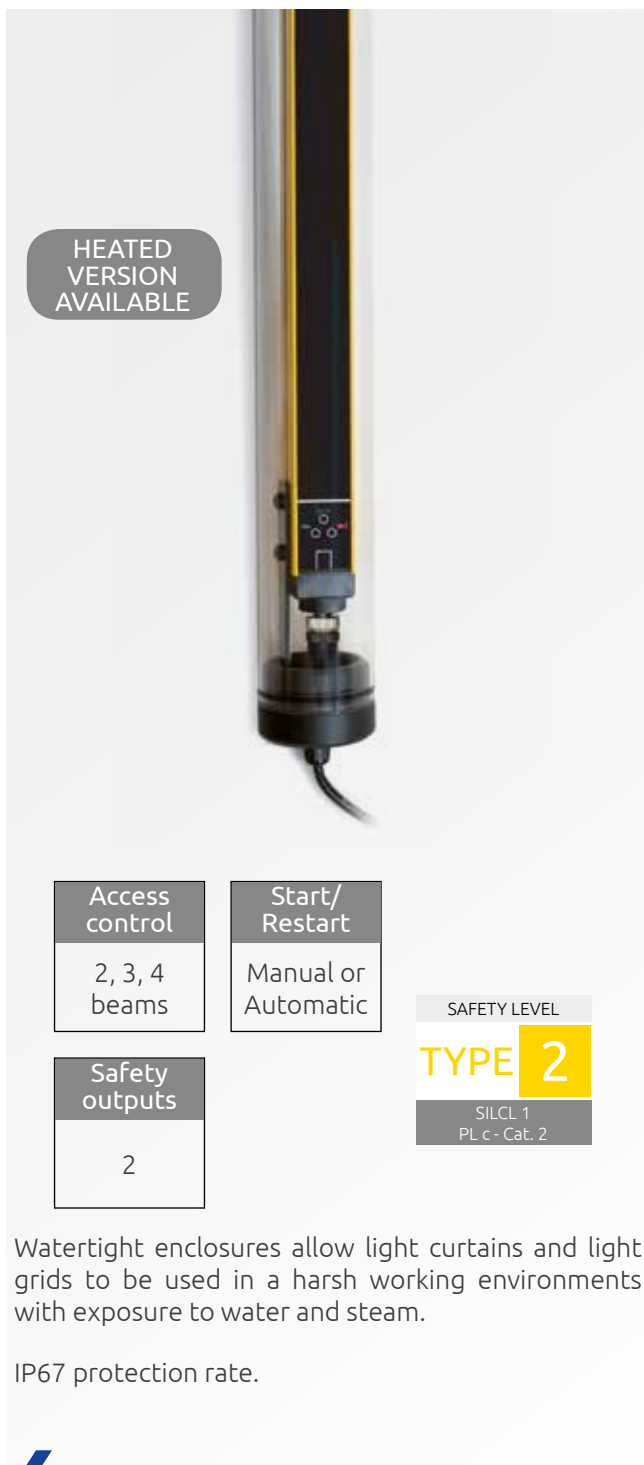
### WATERTIGHT ENCLOSURE

The watertight enclosure is made of:

- Polycarbonate transparent housing
- Valve to drain humidity and avoid condensation
- PVC sealing caps

### APPLICATIONS

- Washing systems
- Industry applications with higher exposure to water sprays and jets
- Outdoor applications



Watertight enclosures allow light curtains and light grids to be used in a harsh working environments with exposure to water and steam.

IP67 protection rate.

### PART NUMBERS

Access control - VX LR WT / WTH models - Max. range selectable 18 or 50 m

	VX	VX	VX	VX	VX	VX
2, 3, 4 beams	2B LR WT	3B LR WT	4B LR WT	2B LR WTH	3B LR WTH	4B LR WTH
Ordering codes	1244603	1244604	1244605	1249603	1249604	1249605
Nr. beams	2	3	4	2	3	4
Overall height (mm)	841	1141	1241	841	1141	1241

# VISION MXL

## WITH MUTING FUNCTIONS

Vision MXL is a range of safety light curtains for the protection of dangerous systems with integrated Muting function. Models MXL L and MXL T are available with integrated Muting sensors, pre-aligned, adjustable for height and angle.

- Integrated Muting function with two-sensors (bi-directional or mono-directional logic). Integrated Muting sensors on models MXL L and MXL T
- Set-up of each function can be done through main connector. No need of software configuration. High flexibility in terms of interface configurations, Muting logics and time-out. Selectable overrides (two types)
- Integration of the main safety functions including auto-control of static outputs, control of external contactors (EDM) and Start/Restart interlock
- Integrated auto-test, activated automatically and periodically, without discontinuity to the operation of the machine being controlled
- Interconnection box MXJB for quick connection of light curtains and availability of the main controls needed for operation close to the gate to be protected

Vision MXL offer a cost-effective solution for the most common palletizer applications.

With the MXL L and MXL T models, system installation is fast and simple; moreover, compliance with the standards requirements regarding the geometry of the Muting sensors and all the other safety parameters is guaranteed (IEC/TS 62046).

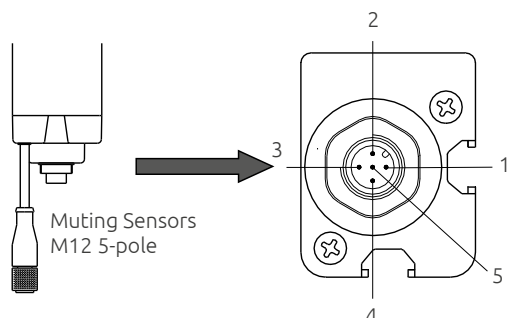


### MUTING SENSOR ARMS ADJUSTMENT - MXL L - MXL T

The Muting sensor arms of Vision MXL L and MXL T are adjustable in height and angle.

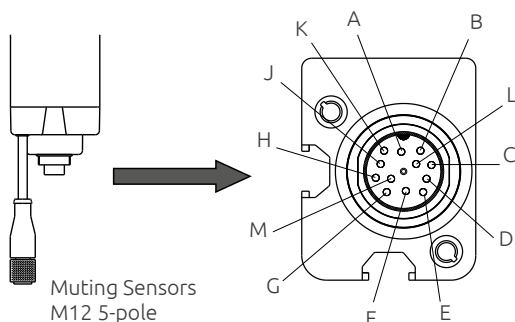
This important and unique feature enables the inclination of the detection plane of the sensors to obtain correct and constant detection of irregular materials in transit.

### CONNECTORS



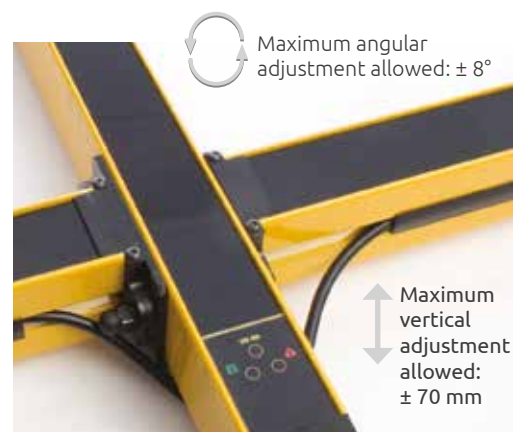
Emitter  
M12 5-pole

- 1 - 24 VDC
- 2 - TEST
- 3 - 0 VDC
- 4 - NC
- 5 - PE



Receiver  
M16 12-pole

- A - OSSD1
- B - SUPPLY B 24 VDC
- C - MUTING ENABLE
- D - SUPPLY A 24 VDC
- E - TIMEOUT
- F - OVERRIDE
- G - LAMPADA MUTING
- H - PE
- J - K1 K2 FEEDBACK / RESTART
- L - S1
- M - S2
- K - OSSD2



# VISION MXL

## WITH MUTING FUNCTIONS



### Resolution (mm)

30, 40

### Start/Restart

Manual or Automatic

### Access control

2, 3, 4 beams

### Safety outputs

2

### SAFETY LEVEL

**TYPE 2**

 SILCL 1  
PL c - Cat. 2

Start/Restart interlock, selectable.

Integrated feedback input for control of external relays (EDM).

Possible use with any type of external Muting sensors such as photocells, proximity switches, limit switches, etc.

Protected heights:

160 ... 1210 for 30 mm resolution.

160 ... 1810 for 40 mm resolution.

## APPLICATIONS

Suitable solution for the most common entry/exit palletiser applications.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. i.e. Muting enabled only when the conveyor is moving.

MXL series is recommended also in those applications where personnel is allowed to access the monitored area during the non-dangerous part of the machine cycle. (i.e. manual material loading/unloading).

## MXL TWO-WAY MUTING WITH 2 SENSORS - ENTRY/EXIT

### TECHNICAL FEATURES

Max. range (m)	8
Response time (ms)	4 ... 37
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Muting lamp output	24 VDC - 0,5 ... 5 W
Muting enable input	0 or 24 VDC (active high)
Muting sensors	External Muting sensors with relay or PNP output (dark-on logic)
Status display	LEDs for light curtain's and Muting sensors status and diagnostic
Max. Muting time-out	30 sec., 90 min. or infinite selectable
Max. time between the 2 Muting activation signal (sec).	4
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
Power supply (VDC)	24 ± 20%
Max. cable length (m)	100

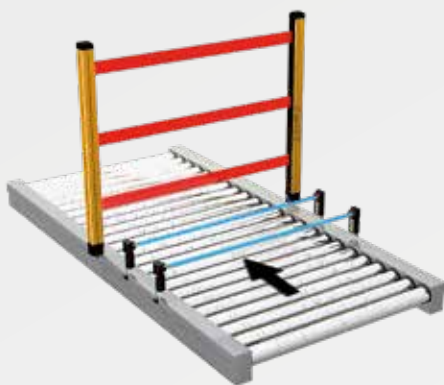
### CABLES NEEDED

- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M16 12-pole. See [page 55](#) (C12D x)
- Cables with 2 connectors for MXL emitter and MXJ connection box. See [page 54](#) (CJBE x)
- Cables with 2 connectors for MXL receiver and MXJ connection box. See [page 55](#) (CMBR x)

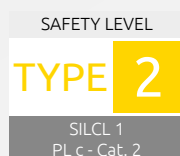
### ACCESSORIES

- Safety relay. See [AD SR0, AD SR0A on page 46](#)
- MXJ connection box. See [page 49](#)
- Support columns. See [page 57](#)
- Brackets. See [page 61](#)





Resolution (mm)	Start/Restart
30, 40	Manual or Automatic
Access control	Safety outputs
2, 3, 4 beams	2



Start/Restart interlock, selectable.

Integrated feedback input for control of external relays (EDM).

Possible use with any type of external Muting sensors such as photocells, proximity switches, limit switches, etc.

Protected heights:  
160 ... 1210 for 30 mm resolution.  
160 ... 1810 for 40 mm Resolution.

## APPLICATIONS

The light curtain only allows pallet outfeed.

The Muting function can only be activated from inside the protected zone.

Correct Muting sequence even in the presence of a pallet with reduced width and/or length or not centred with respect to the conveyor.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. i.e. Muting enabled only when the conveyor is moving.

## MXL U ONE-WAY MUTING WITH 2 SENSORS - EXIT ONLY

### TECHNICAL FEATURES

Max. range (m)	8
Response time (ms)	4 ... 37
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Muting lamp output	24 VDC - 0,5 ... 5 W
Muting enable input	0 or 24 VDC (active high)
Muting sensors	External Muting sensors with relay or PNP output (dark-on logic)
Status display	LEDs for light curtain's and Muting sensors status and diagnostic
Max. Muting time-out	30 sec., 90 min. or infinite selectable
Max. time between the 2 Muting activation signal (sec.)	4
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
Power supply (VDC)	24 ± 20%
Max. cable length (m)	100

### CABLES NEEDED

- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M16 12-pole. See [page 55](#) (C12D x)
- Cables with 2 connectors for MXL emitter and MXJ connection box. See [page 54](#) (CJBE x)
- Cables with 2 connectors for MXL receiver and MXJ connection box. See [page 55](#) (CMBR x)

### ACCESSORIES

- Safety relay. See [AD SR0, AD SR0A](#) on [page 46](#)
- MXJ connection box. See [page 49](#)
- Support columns. See [page 57](#)
- Brackets. See [page 61](#)



# VISION MXL

## WITH MUTING FUNCTIONS

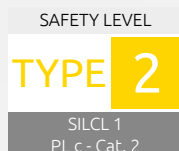


Access control
2, 3 beams

Start/Restart
Manual or Automatic

Safety outputs
2

Muting logic
L One-way



Start/Restart interlock, selectable.

Integrated feedback input for control of external relays (EDM).

Muting sensor elements adjustable in height and angle.

### APPLICATIONS

The light curtain only allows pallet outfeed. Reduced installation time and costs.

With MXL L models, sensors are positioned in compliance with the regulations regarding the geometry of Muting sensors (IEC TS 62046) and all the other safety parameters; this makes it possible to avoid dangers arising from positioning errors and from possible tampering. The Muting function can only be activated from inside the protected zone.

Correct Muting sequence even in the presence of a pallet with reduced width and/or length or not centred with respect to the conveyor.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. i.e. Muting enabled only when the conveyor is moving.

## MXL L 2 INTEGRATED PHOTO-ELECTRIC SENSORS WITH CROSSED BEAMS - EXIT ONLY

### TECHNICAL FEATURES

Max. range (m)	1 ... 2,5
Response time (ms)	4 ... 37
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Muting lamp output	24 VDC - 0,5 ... 5 W
Muting enable input	0 or 24 VDC (active high)
Muting sensors	Optoelectronics with 2 crossed beams built-in – pre-aligned – pre-wired, with adjustable height and angle
Status display	LEDs for light curtain's and Muting sensors status and diagnostic
Max. Muting time-out	30 sec., 90 min. or infinite selectable
Max. time between the 2 Muting activation signal (sec).	4
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
Power supply (VDC)	24 ± 20%
Max. cable length (m)	100

### CABLES NEEDED

- Emitter: M12 5-pole. See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M16 12-pole. See [page 55](#) (C12D x)
- Cables with 2 connectors for MXL emitter and MXJ connection box. See [page 54](#) (CJBE x)
- Cables with 2 connectors for MXL receiver and MXJ connection box. See [page 55](#) (CMBR x)

### ACCESSORIES

- Safety relay. See [AD SR0, AD SR0A on page 46](#)
- MXJ connection box. See [page 49](#)
- Support columns. See [page 57](#)
- Brackets. See [page 61](#)







Access control	Start/Restart
2, 3 beams	Manual or Automatic
Safety outputs	Muting logic
2	T Two-way

SAFETY LEVEL

**TYPE 2**

SILCL 1  
PL c - Cat. 2

Start/Restart interlock, selectable.

Integrated feedback input for control of external relays (EDM).

Muting sensor elements adjustable in height and angle.

## APPLICATIONS

Suitable solution for the most common entry/exit palletiser applications.

With MXL T models, sensors are positioned in compliance with the regulations regarding the geometry of Muting sensors (IEC TS 62046) and all the other safety parameters; this makes it possible to avoid dangers arising from positioning errors and from possible tampering.

Muting enable input allows to start a Muting sequence only when needed by the machine cycle. I.e. Muting enabled only when the conveyor is moving.

## MXL T 2 INTEGRATED PHOTO-ELECTRIC SENSORS WITH CROSSED BEAMS - ENTRY/EXIT

### TECHNICAL FEATURES

Max. range (m)	1 ... 2,5
Response time (ms)	4 ... 37
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Muting lamp output	24 VDC - 0,5 ... 5 W
Muting enable input	0 or 24 VDC (active high)
Muting sensors	Optoelectronics with 2 crossed beams built-in – pre-aligned – pre-wired, with adjustable height and angle
Status display	LEDs for light curtain's and Muting sensors status and diagnostic
Max. Muting time-out	30 sec., 90 min. or infinite selectable
Max. time between the 2 Muting activation signal (sec.)	4
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
Power supply (VDC)	24 ± 20%
Max. cable length (m)	100

### CABLES NEEDED

- Emitter: M12 5-pole.  
See [page 50](#) (CD x, CD x SB, CD 9x, CDM 9)
- Receiver: M16 12-pole. See [page 55](#) (C12D x)
- Cables with 2 connectors for MXL emitter and MXJ connection box. See [page 54](#) (CJBE x)
- Cables with 2 connectors for MXL receiver and MXJ connection box. See [page 55](#) (CMBR x)

### ACCESSORIES

- Safety relay. See [AD SR0, AD SR0A](#) on [page 46](#)
- MXJ connection box. See [page 49](#)
- Support columns. See [page 57](#)
- Brackets. See [page 61](#)





## VISION MXL

## WITH MUTING FUNCTIONS

## PART NUMBERS

Hand detection - MXL, MXL U models - Max. range 8 m



MXL Resolution 30 mm	MXL 153	MXL 303	MXL 453	MXL 603	MXL 753	MXL 903	MXL 1053	MXL 1203
Ordering codes	1344800	1344801	1344802	1344803	1344804	1344805	1344806	1344807



MXL U Resolution 30 mm	MXL U 153	MXL U 303	MXL U 453	MXL U 603	MXL U 753	MXL U 903	MXL U 1053	MXL U 1203
Ordering codes	1344850	1344851	1344852	1344853	1344854	1344855	134486	1344857
Protected height (mm)	160	310	460	610	760	910	1060	1210
Nr. beams	8	16	24	32	40	48	56	64
Overall height (mm)	261	411	561	711	861	1011	1161	1311



MXL Resolution 40 mm	MXL 304	MXL 454	MXL 604	MXL 754	MXL 904	MXL 1054	MXL 1204	MXL 1354	MXL 1504	MXL 1654	MXL 1804
Ordering codes	1344811	1344812	1344813	1344814	1344815	1344816	1344817	1344823	1344819	1344824	1344825



MXL U Resolution 40 mm	MXL U 304	MXL U 454	MXL U 604	MXL U 754	MXL U 904	MXL U 1054	MXL U 1204	MXL U 1354	MXL U 1504	MXL U 1654	MXL U 1804
Ordering codes	1344861	1344862	1344863	1344864	1344865	1344866	1344867	1344868	1344869	1344870	1344871
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Nr. beams	10	15	20	25	30	35	40	45	50	55	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1861	1911

Access control - MXL, MXL U models - Max. range 8 m



MXL 2, 3, 4 beams	MXL 2B	MXL 3B	MXL 4B
Ordering codes	1344820	1344821	1344822



MXL U 2, 3, 4 beams	MXL U 2B	MXL U 3B	MXL U 4B
Ordering codes	1344880	1344881	1344882
Nr. beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111

Access control - MXL L, MXL T models - Max. range 2,5 m



MXL L 2, 3 beams	MXL L 2B	MXL L 3B
Ordering codes	1344830	1344831
Nr. beams	2	3
Beam spacing (mm)	500	400
Protected height (mm)	510	810
Overall height (mm)	711	1011
Muting sensors	2 crossed beams	

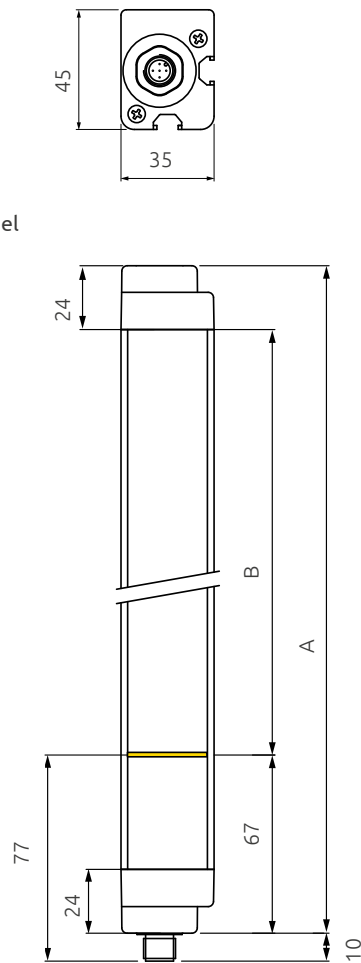


MXL T 2, 3 beams	MXL T 2B	MXL T 3B
Ordering codes	1344840	1344841
Nr. beams	2	3
Beam spacing (mm)	500	400
Protected height (mm)	510	810
Overall height (mm)	711	1011
Muting sensors	2 crossed beams	

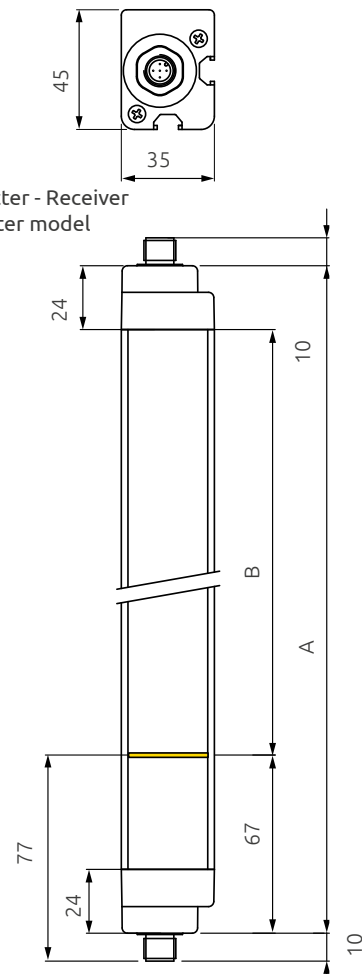
## MECHANICAL DATA

### DIMENSIONS

Emitter - Receiver  
Standard model and Slave model



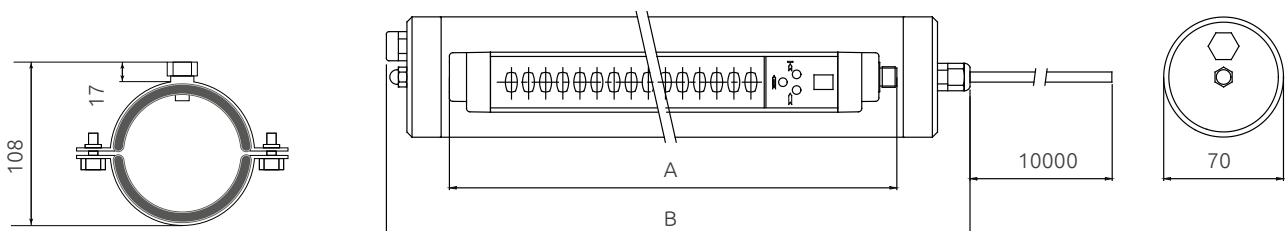
Emitter - Receiver  
Master model



Models	2B	3B	4B
A (mm)	701	1001	1101
B (mm)	500	800	900
Mounting	Set of 4 LS type brackets included		

Models	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
A (mm)	251	401	551	701	851	1001	1151	1301	1451	1601	1751	1901	2061	2211	2361
B (mm)	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
Mounting	Set of 4 LS type brackets included							Set of 6 LS type brackets included							

### Watertight enclosure

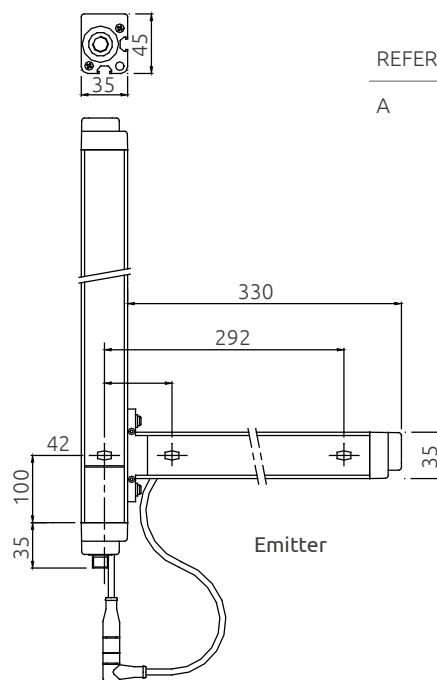
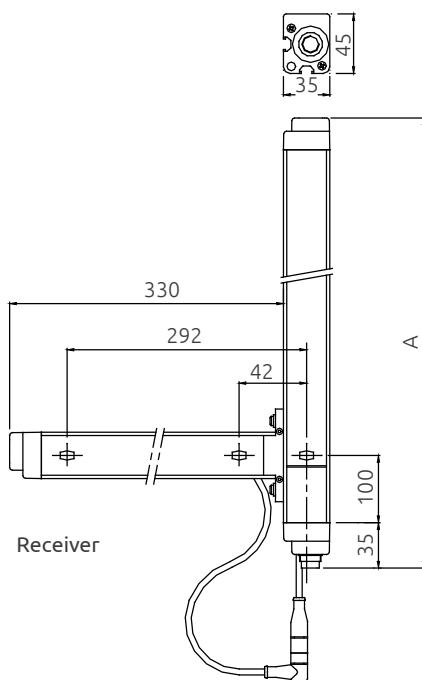


WFB ring brackets (included)

$B = A (\text{Overall height}) + 130 \text{ mm}$

Dimension: mm

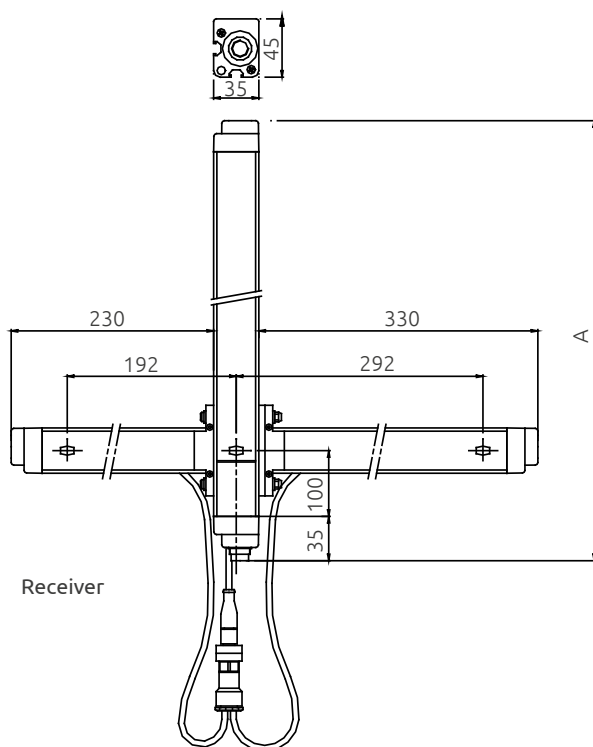
## VISION MXL L



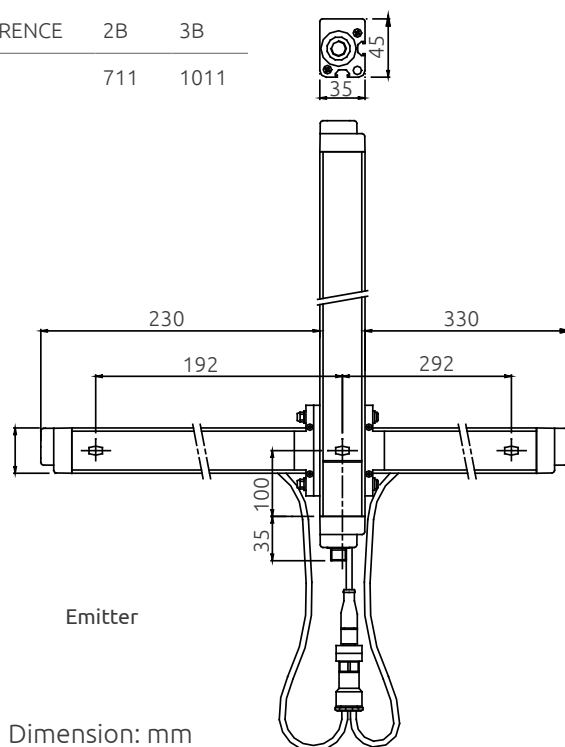
REFERENCE	2B	3B
A	711	1011

Dimension: mm

## VISION MXL T



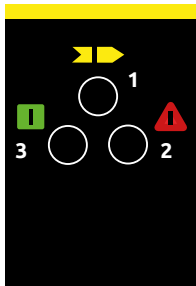
REFERENCE	2B	3B
A	711	1011



Dimension: mm

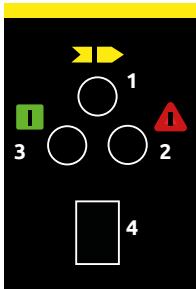
NOTE: the Muting arms can be ordered separately.

## STATUS DISPLAY



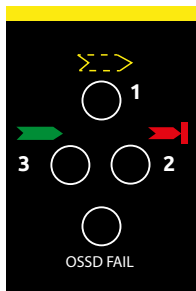
### Emitter - VISION V, VISION VXL, VISION MXL

1 - Yellow led	2 - Red led	3 - Green led	Meaning
			System power-on - Initial TEST
			TEST condition
			GUARD condition. Normal functioning



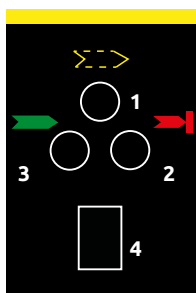
### Emitter - VISION VX

1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			L / H	TEST condition
			L	GUARD condition. Low range
			H	GUARD condition. High range
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual



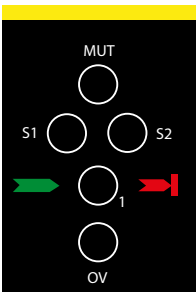
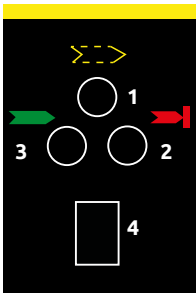
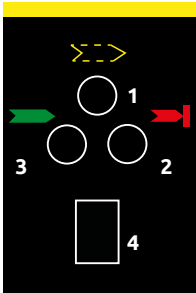
### Receiver - VISION V, VISION VXL

1 - Yellow led	2 - Red led	3 - Green led	OSSD FAIL	Meaning
				System power-on
				Manual/automatic restart with feedback enabled/disabled. See technical manual (VISION VXL models only)
				BREAK condition
				Received beam signal intensity is weak
				GUARD condition



### Receiver - VISION VX, VISION VX MASTER

1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			C	C displayed for 10 sec. - Manual restart with feedback disabled
			C	C displayed for 10 sec. - Manual restart with feedback enabled
			C	C displayed for 10 sec. - Automatic restart with feedback disabled
			C	C displayed for 10 sec. - Automatic restart with feedback enabled
			-	BREAK condition
			d	BREAK condition with weak signal
			-	CLEAR condition. Waiting for restart
			d	CLEAR condition with weak signal



blinking			-	Master in CLEAR, Slave in BREAK conditions (Master Models only)
			d	Master in CLEAR, Slave in BREAK conditions with weak signal. (Master Models only)
			-	GUARD condition
			d	GUARD condition with weak signal
				Receiver initialization
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual

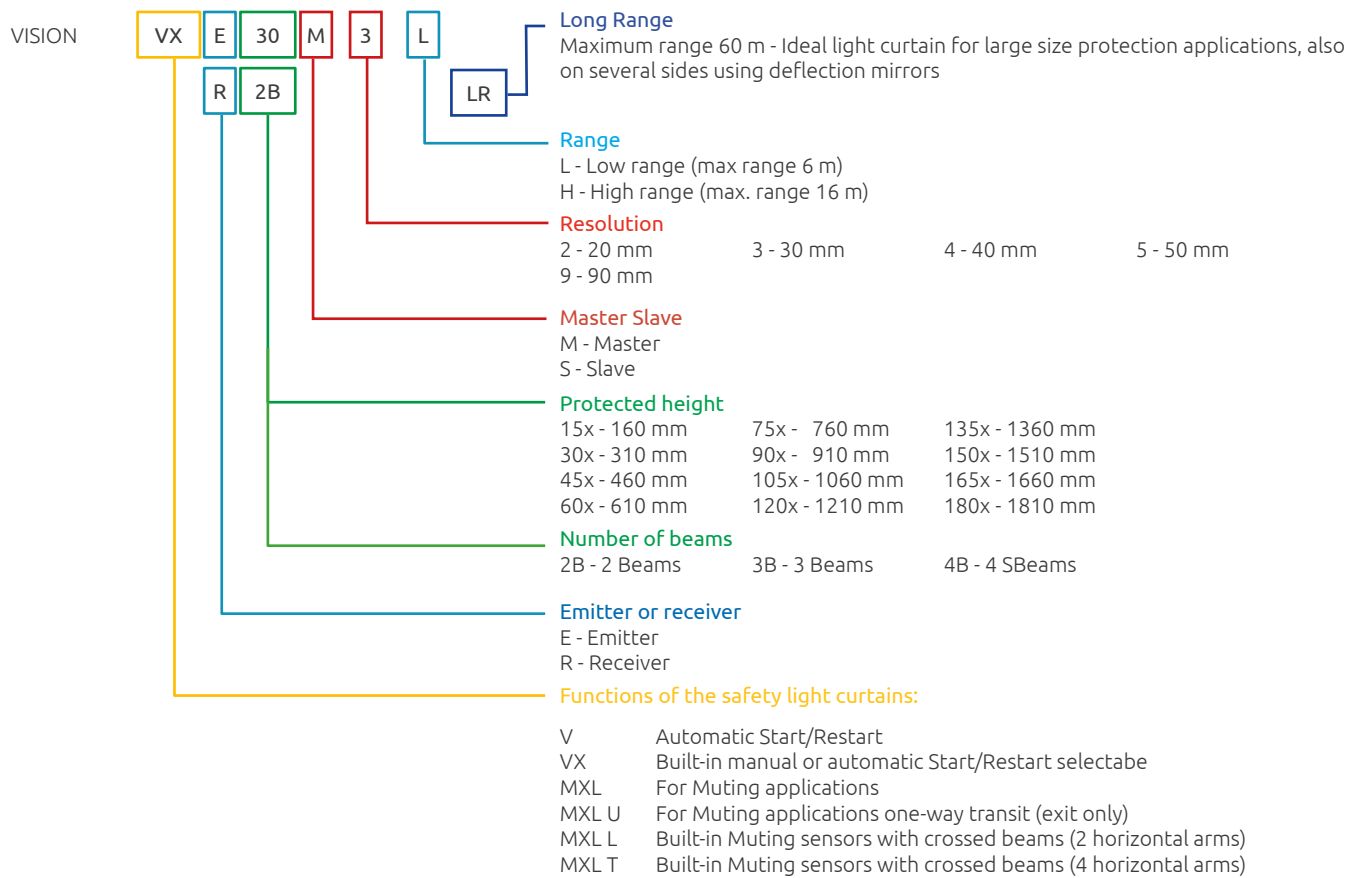
## Receiver - VISION VX SLAVE

1 - Yellow led	2 - Red led	3 - Green led	4 - Display	Meaning
			8	System power-on - Initial TEST
			-	BREAK condition
			d	BREAK condition with weak signal
			-	GUARD condition
			d	GUARD condition with weak signal
			-	Receiver initialization
			CODE	FAIL condition - The type of fault is identified by the code number on display. See technical manual

## Receiver - VISION MXL

1 - Three-color led	OV Override led	S1 - Sensor led	S2 - Sensor led	MUT - Muting led	Meaning
					System power-on - Initial TEST
					First 5 s. Manual restart with Muting timeout = 30 s.
					First 5 s. Manual restart with Muting timeout = 90 min.
					First 5 s. Manual restart with Muting timeout = infinite
					First 5 s. Automatic restart with Muting timeout = 30 s.
					First 5 s. Automatic restart with Muting timeout = 90 min.
					First 5 s. Automatic restart with Muting timeout = infinite
					BREAK condition
					CLEAR condition
					MUTING condition
					GUARD condition
					OVERRIDE condition
	blinking				OVERRIDE request with BREAK
	blinking				OVERRIDE request with S1 or S2 occupied

## CODE LEGEND



### Example:

VISION MXL E T 2B =

- Type 2 safety light curtain VISION family
- Emitter
- 2 Beams
- Built-in control functions
- Built-in Muting sensors with crossed beams (2 horizontal arms)

# INTERFACES



SAFETY LEVEL

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

Interface module with self-testing solid state safety outputs for safety light curtains Admiral and Vision.

- Guided-contact safety relays
- Start/Restart interlock
- EDM Feedback input for extra external contactors monitoring

## APPROVALS

- 2006/42/EC: "Machine Directive"
- 2014/30/EU: "Electromagnetic Compatibility Directive"
- 2014/35/EU: "Low Voltage Directive"
- IEC 61496-1:2012 "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)"
- IEC 62061:2005 "Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- ISO 13849-1:2006 "Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design"
- EN 50178:1997 "Electronic equipment for use in power installations"
- EN 55022:2010 "Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement"
- UL (C+US) mark for USA and Canada
- The S-Mark carries the same weight in Korea as the CE-Mark does in Europe

## AD SR1 TYPE 4 INTERFACE

### TECHNICAL FEATURES

Safety relay outputs	2 NO - 2 A 250 VAC
Status output	PNP – 100 mA at 24 VDC
Response time (ms)	≤ 20
Start/Restart command according to IEC 61496-1	Manual or automatic Start/Restart selectable on terminal block
Status display	LED indication of input/output status and diagnosis
Power supply (VDC)	24 ± 20%
Electrical connections	On terminal blocks
Operating temperature (°C)	0 ... +55
Protection rating	IP20 for housing IP2X for terminal blocks
Fastening	DIN rail fastening according to EN 50022-35 standard
Dimensions h x w x d (mm)	99 x 22,5 x 114

### PART NUMBERS

AD SR1 safety interface includes multi-language instruction manual and CE declaration of conformity.

Ordering code: **1330900**







SAFETY LEVEL

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

Interface module with self-testing solid state safety outputs and 2-sensor logic integrated Muting for safety light curtains Admiral and Vision.

- Guided contact safety relays
- Start/Restart interlock
- EDM Feedback input for extra external contactors monitoring
- Muting Time-out selectable
- Integrated Override with 2 operating modes selectable
- Muting Enable input

## APPROVALS

- 2006/42/EC: "Machine Directive"
- 2014/30/EU: "Electromagnetic Compatibility Directive"
- 2014/35/EU: "Low Voltage Directive"
- IEC 61496-1:2012 "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)"
- IEC 62061:2005 "Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- ISO 13849-1:2006 "Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design"
- EN 50178:1997 "Electronic equipment for use in power installations"
- EN 55022:2010 "Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement"
- UL (C+US) mark for USA and Canada
- The S-Mark carries the same weight in Korea as the CE-Mark does in Europe

## AD SRM

### TYPE 4 INTERFACE WITH INTEGRATED MUTING

#### TECHNICAL FEATURES

Inputs for Muting sensors	2 inputs 0 or 24 VDC - PNP or Relay - Dark-on
Muting Enable input	0 or 24 VDC - PNP or Relay
Safety relay outputs	2 NO - 2A 250 VAC.
Status output	PNP - 100 mA at 24 VDC
Muting lamp output	24 VDC; 0,5 ... 5 W
Response time (ms)	≤ 20
Start/Restart command according to IEC 61496-1	Manual or Automatic Start/Restart selectable on terminal block
Status display	LED indications of input/output status, Muting sensor inputs, diagnosis
Muting time-out	30 sec. or infinite, selectable
Override	2 operating modes selectable: - manual action with hold to run - automatic with pulse command
Override time-out (min.)	15.
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)	99 x 35 x 114

#### PART NUMBERS

AD SRM safety interface includes multi-language instruction manual and CE declaration of conformity

Ordering code: **1330904**



# INTERFACES



Interface relay modules for safety light curtains Admiral and Vision with feedback input for EDM.

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

**NOTE:** AD SR0 and AD SR0A modules can only be connected to safety sensors equipped with feedback input for monitoring external relays (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 TÜV 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 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 SRO and AD SROA modules include multi-language instruction manual and CE declaration of conformity.

Ordering codes AD SR0: 1330902  
AD SR0A: 1330903



- Start/Restart push button
- Key selector switch for Override control function
- Muting-on indicator lamp
- Light curtain connectors
- Dip-switch for light curtain functions configuration
- 2 guided-contacts safety relays operated and controlled by the light curtain
- Internal terminal blocks for cable connections
- Selector for connection of external Muting lamp
- Selector for internal or external relay control
- Connection for Muting enable input
- Connection with cable gland for cable passage in output towards the machine

## APPROVALS

- 2004/108/EC "Electromagnetic Compatibility (EMC)"
- 2006/95/EC "Low Voltage Directive (LVD)"
- UL (C+US) mark for USA and Canada



## MXJB

### CONNECTION BOX FOR VISION MXL LIGHT CURTAINS

Connection boxes MXJB are accessory devices designed for quick, reliable connection of Vision MXL light curtains and to ensure that major operating controls needed for operation are available in the guarded area.

## TECHNICAL FEATURES

Safety relay output	MXJB 1: 2 NO 2A 250 VAC
	MXJB 3: 2 NO + 1 NC 2A 250 VAC
Start/Restart button	Yes
Override command	Yes
Built-in Muting-lamp	Yes
Connectors	M23 19-pole for receiver connection
	M12 5-pole for emitter connection
Dimensions h x w x d (mm)	110 x 180 x 110

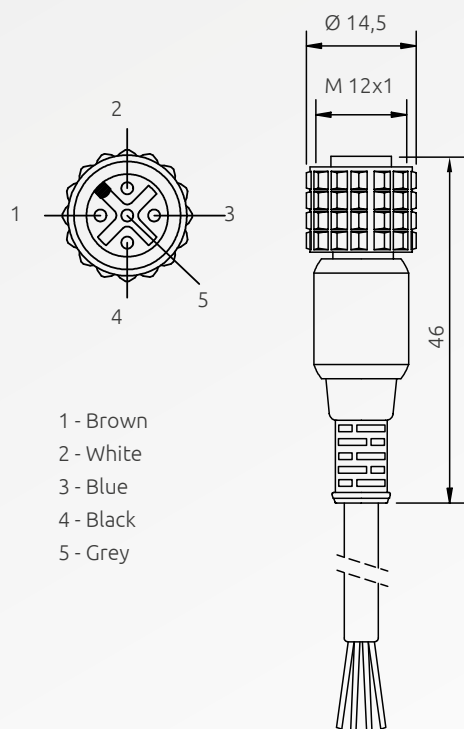
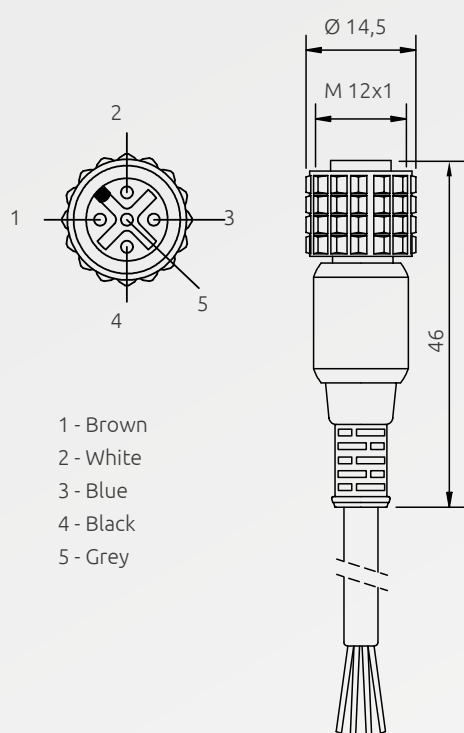
\* In MXJB 3 box each NO safety output line is interrupted twice by the two relays

MXJB is pre-set with manual Restart  
Using the dedicated 5 meters cable CJBR5A, available as accessory, it is possible to configure it with automatic Restart

## PART NUMBERS

Ordering codes MXJB 1: **1360934**  
MXJB 3 : **1360935**

## CABLES



## CD x

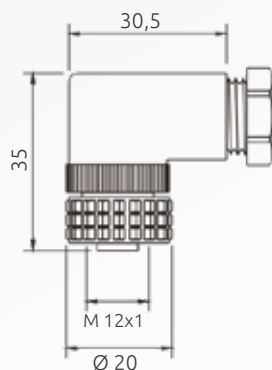
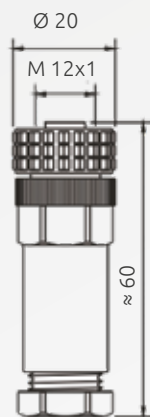
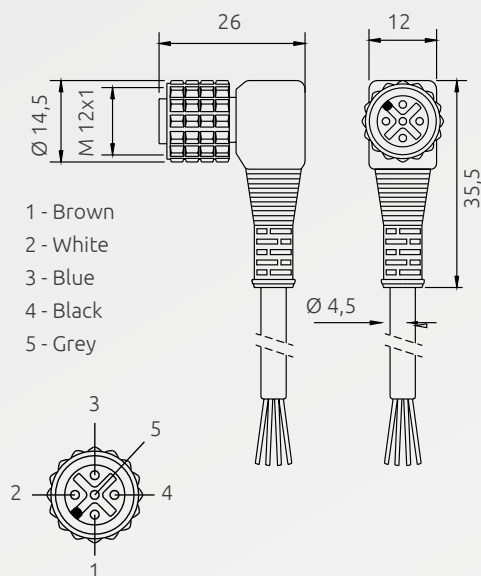
## M12 STRAIGHT CONNECTOR 5-POLE

Models	Codes	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

Models	Codes	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



## CD 9x

### M12 90° ANGLE CONNECTOR 5-POLE

Models	Codes	Description
CD 95	1330951	Pre-wired cable 5 m
CD 910	1330958	Pre-wired cable 10 m
CD 915	1330953	Pre-wired cable 15 m

## CDM 9

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

Model	Code
CDM 9	1330954

## C8DM 9

### M12 STRAIGHT CONNECTOR 8-POLE SCREW TERMINAL, PG9 CABLE GLAND

Model	Code
C8DM 9	1330986

## CDM 99

### M12 90° ANGLE CONNECTOR 5-POLE SCREW TERMINAL, PG9 CABLE GLAND

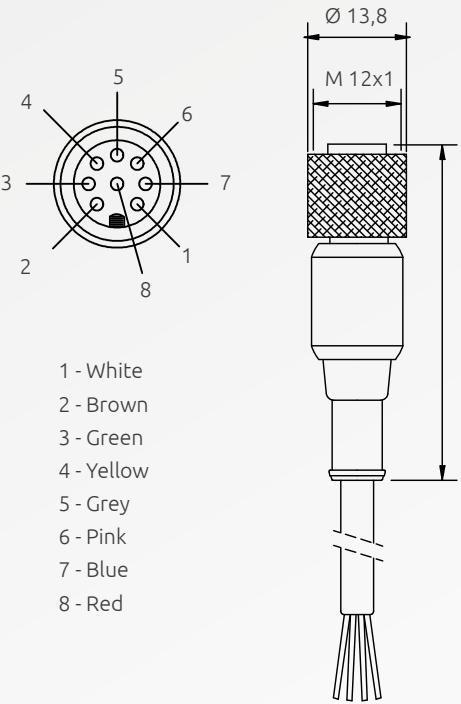
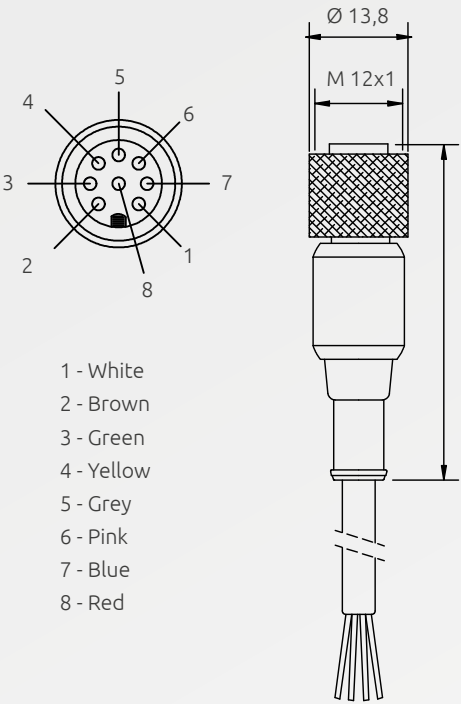
Model	Code
CDM 99	1330955

## C8DM 99

### M12 90° ANGLE CONNECTOR 8-POLE SCREW TERMINAL, PG9 CABLE GLAND

Model	Code
C8DM 99	1330955

# CABLES

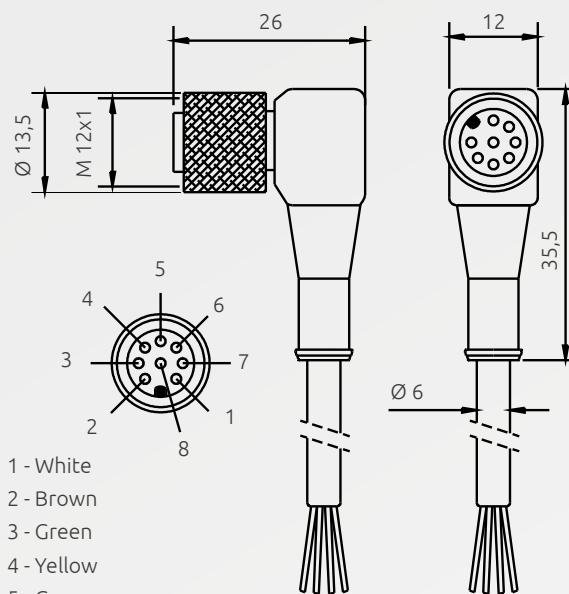


## C8D x M12 STRAIGHT CONNECTOR 8-POLE

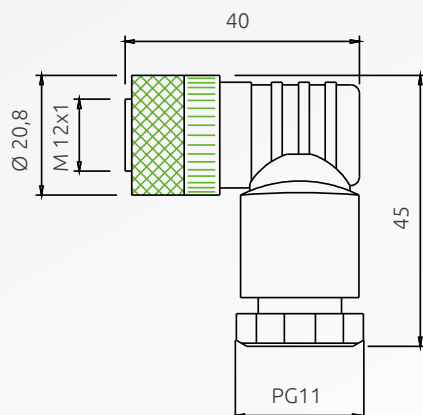
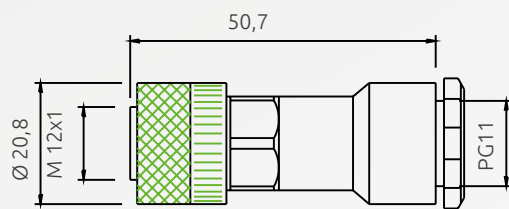
Models	Codes	Description
C8D 5	1330980	Pre-wired cable 5 m
C8D 10	1330981	Pre-wired cable 10 m
C8D 15	1330982	Pre-wired cable 15 m
C8D 25	1330967	Pre-wired cable 25 m
C8D 40	1330966	Pre-wired cable 40 m

## C8D x SB M12 STRAIGHT CONNECTOR 8-POLE, SHIELDED

Model	Codes	Description
C8D 5 SB	1330880	Pre-wired shielded cable 5 m
C8D 10 SB	1330881	Pre-wired shielded cable 10 m
C8D 15 SB	1330882	Pre-wired shielded cable 15 m



- 1 - White
- 2 - Brown
- 3 - Green
- 4 - Yellow
- 5 - Grey
- 6 - Pink
- 7 - Blue
- 8 - Red



## C8D 9x

### M12 90° ANGLE CONNECTOR 8-POLE

Models	Codes	Description
C8D 95	1330983	Pre-wired cable 5 m
C8D 910	1330984	Pre-wired cable 10 m
C8D 915	1330985	Pre-wired cable 15 m

## C8DM 11

### M12 STRAIGHT CONNECTOR 8-POLE SCREW TERMINAL, PG11 CABLE GLAND

Model	Code
C8DM 11	1330978

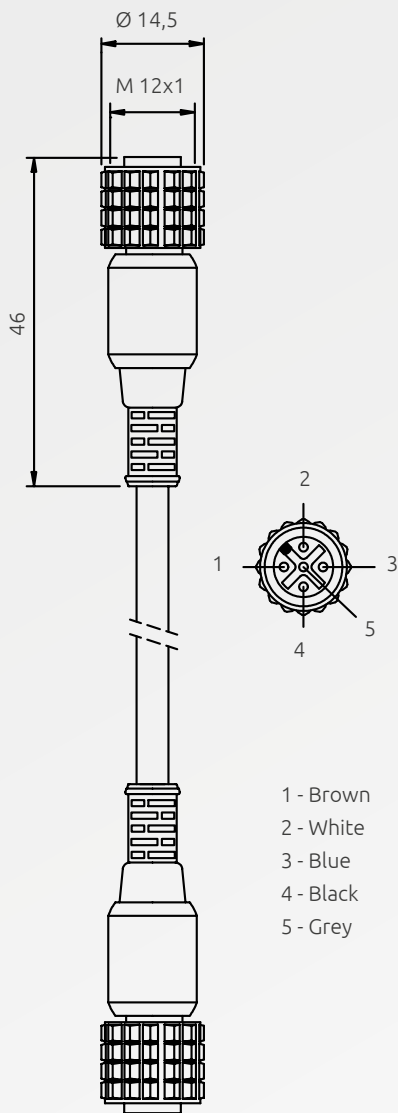
## C8DM 911

### M12 90° ANGLE CONNECTOR 8-POLE SCREW TERMINAL, PG11 CABLE GLAND

Model	Code
C8DM 911	1330979



# CABLES



## CDS 03

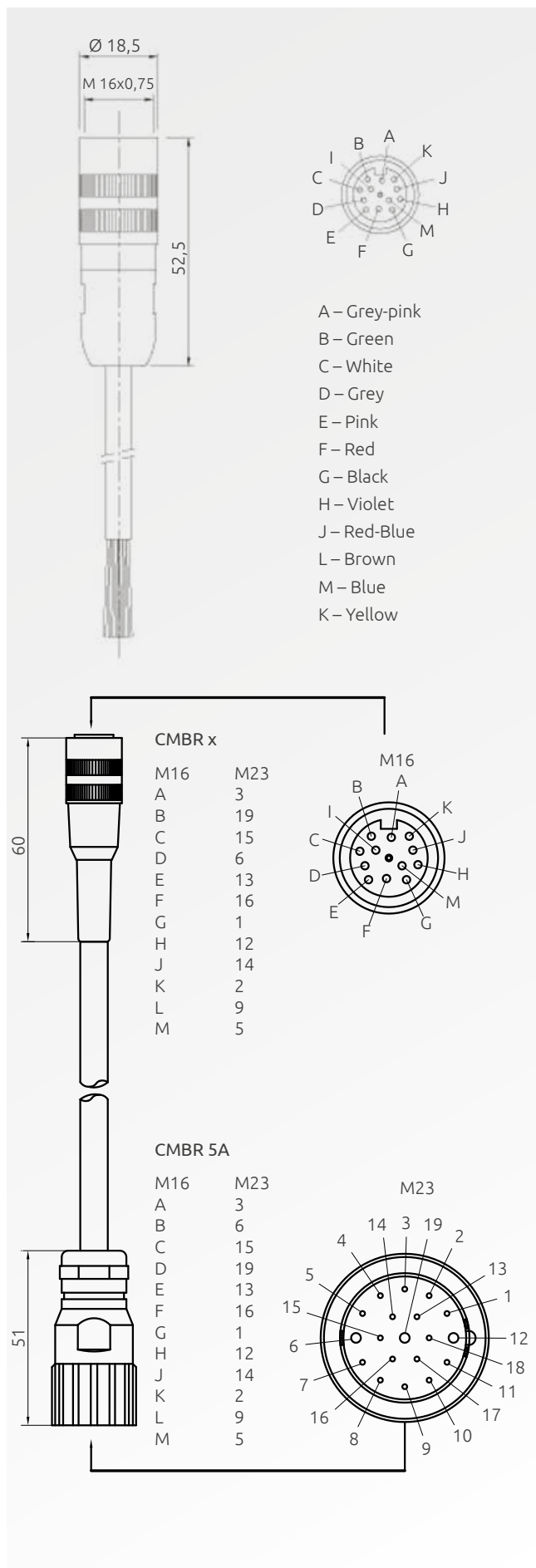
### CABLE WITH 2 STRAIGHT CONNECTORS M12 5-POLE

Model	Code	Description
CDS 03	1330990	Pre-wired cable 0,3 m

## CJBE x

### CABLE WITH 2 STRAIGHT CONNECTORS M12 5-POLE

Model	Codes	Description
CJBE 3	1360960	Pre-wired cable 3 m
CJBE 5	1360961	Pre-wired cable 5 m
CJBE 10	1360962	Pre-wired cable 10 m
CJBE 25	1360963	Pre-wired cable 25 m



## C12D x

### M16 STRAIGHT CONNECTOR 12-POLE

Model	Codes	Description
C12D 3	1330917	Pre-wired cable 3 m
C12D 5	1330918	Pre-wired cable 5 m
C12D 10	1330919	Pre-wired cable 10 m
C12D 15	1330924	Pre-wired cable 15 m
C12D 25	1330925	Pre-wired cable 25 m
CM 16	1330916	Solder terminal connector

## CMBR x

### M16 STRAIGHT CONNECTORS 12-POLE AND M23 STRAIGHT CONNECTORS 19-POLE

Model	Codes	Description
CMBR 3	1360985	Pre-wired cable 3 m
CMBR 5	1360986	Pre-wired cable 5 m
CMBR 10	1360987	Pre-wired cable 10 m

## CMBR 5A

### M16 STRAIGHT CONNECTORS 12-POLE AND M23 STRAIGHT CONNECTORS 19-POLE FOR AUTOMATIC RESTART

Model	Code	Description
CMBR 5A	1360988	pre-wired cable 5 m

# MUTING ARMS



The 2 SLA additional arms with built-in Muting crossed beams photoelectric sensors, combined with Admiral or Vision light curtains, form a one way access control system with L logic (exit only). The Muting function is created by using an external interface module (Mosaic or AD SRM) where both the light curtains and the sensors of the arms are connected.

**Installation note:** the Muting arm transmitter must be mounted on the light curtain receiver and vice-versa.

## PART NUMBERS

Ordering code: 1330920



The 4 STA additional arms with built-in Muting crossed beams photoelectric sensors, combined with Admiral or Vision light curtains, form a bi-directional access control system with T logic (entry and exit). The Muting function is created by using an external interface module (Mosaic or AD SRM) where both the light curtains and the sensors of the arms are connected.

**Installation note:** the Muting arm transmitter must be mounted on the light curtain receiver and vice-versa.

## PART NUMBERS

Ordering code: 1330921

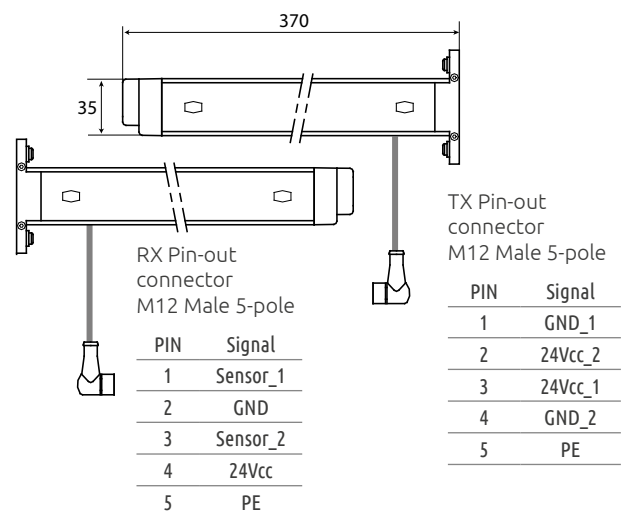
## SLA

### ARMS FOR L MUTING

Can be mounted on Admiral or Vision light curtains of any height and resolution.

## TECHNICAL FEATURES

Built-in sensors	2 crossed beams
Max. range (m)	1 - 2,5



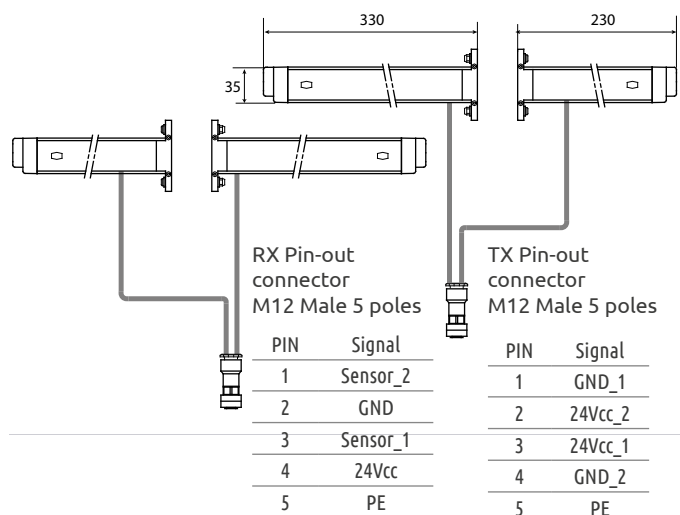
## STA

### ARMS FOR T MUTING

Can be mounted on Admiral or Vision light curtains of any height and resolution.

## TECHNICAL FEATURES

Built-in sensors	2 crossed beams
Max. range (m)	1 - 2,5





Support columns for ReeR 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.



PG11 Cable gland  
FMC BR Models

Steel base with springs for a perfect adjustment of the column vertical axis. FMC BR models for light curtains complete with PG11 rear union for light curtain cable sheath.

Columns 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.

Steel foundation inserts included with the product.

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



## FMC B / FMC BR

### FLOOR SUPPORT COLUMNS FOR LIGHT CURTAINS

#### PART NUMBERS

##### Columns

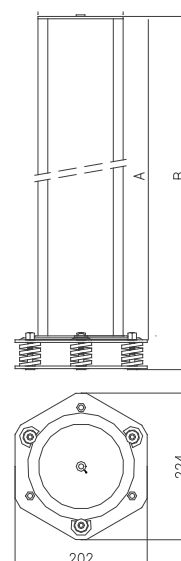
Standard Models	FMC B 2	FMC B 3	FMC B 4	FMC B 1700	FMC B 2000
Ordering codes	1200610	1200611	1200612	1200618	1200616
Models with PG11 rear union for cable sheath	FMC B 2 R	FMC B 3 R	FMC B 4 R	FMC B 1700 R	FMC B 2000 R
Ordering codes	1200613	1200614	1200615	1200617	1200619
A - Height (mm)	1000	1200	1330	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

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

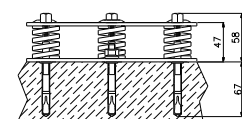
##### Note for ordering

The column ordering codes does not include the base which must be ordered separately (CB FMC and FMC CBL models)

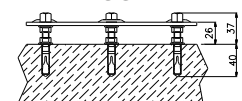


A: column height  
B: column height with base FMC CB or FMC CBL

FMC CB



FMC CBL



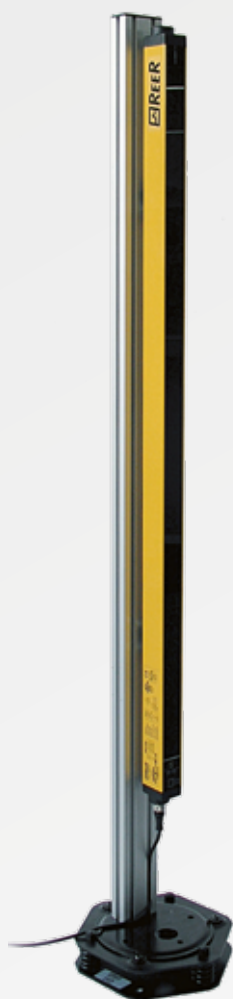
## COLUMNS

## FMC-B12 / B18

### SUPPORT COLUMNS

#### PART NUMBERS

Model	FMC-B12	FMC-B18
Ordering codes	1200502	1200505
Dimensions (mm)	60 x 30	80 x 80
Height (mm)	1200	1800
Overall height with FMC CB base (mm)	1255	1255
Overall height with FMC CBL base (mm)	1237	1237

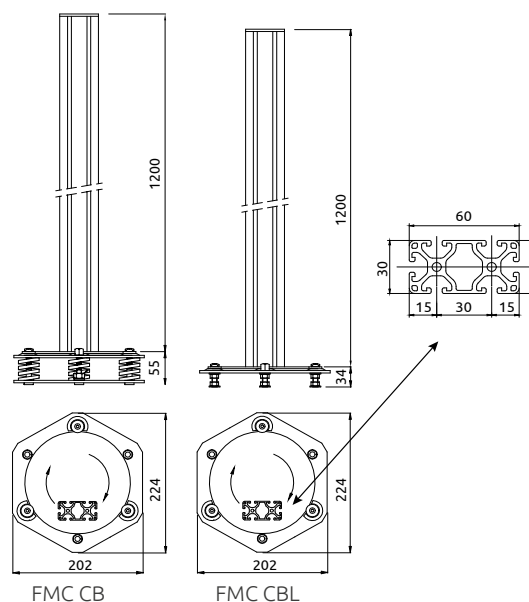


Simplified version for 2, 3, 4 beams light grids. It permits the use with light grids with integrated Muting sensors.

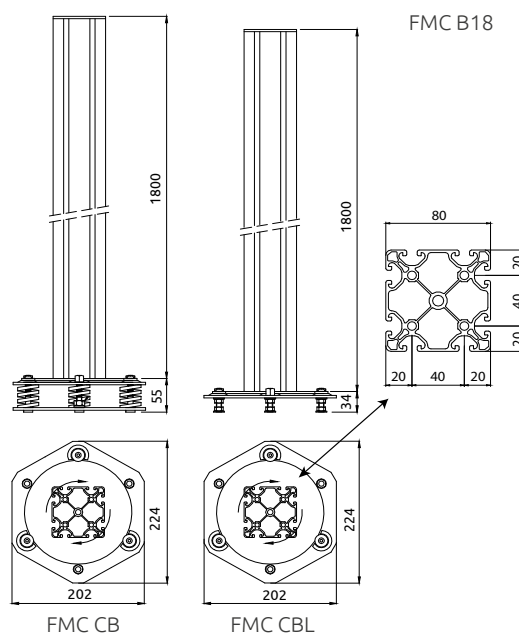
#### Note for ordering

The column ordering codes does not include the base which must be ordered separately (CB FMC and FMC CBL models)

FMC B12



FMC B18



FMC S



FMC SB



Support columns for 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 allows 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".

## FMC S / FMC SB

### COLUMNS WITH DEFLECTING MIRROR

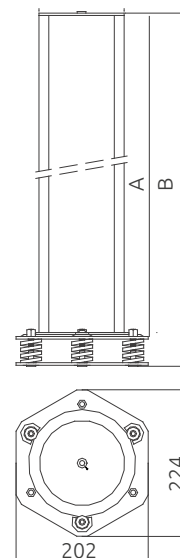
#### PART NUMBERS

Models	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

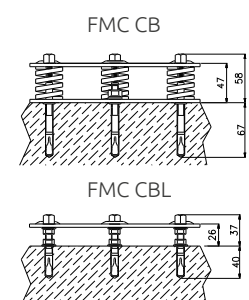
Models	FMC SB2	FMC SB3	FMC SB4
Ordering codes	1200645	1200646	1200647
Description	2 mirrors for 2 beams light curtains	3 mirrors for 3 beams light curtains	4 mirrors for 4 beams light curtains
A - Height (mm)	1000	1200	1330
B - Overall height with FMC CB base (mm)	1055	1255	1385
B - Overall height with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

#### Note for ordering

The column ordering codes does not include the base which must be ordered separately (CB FMC and FMC CBL models)



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

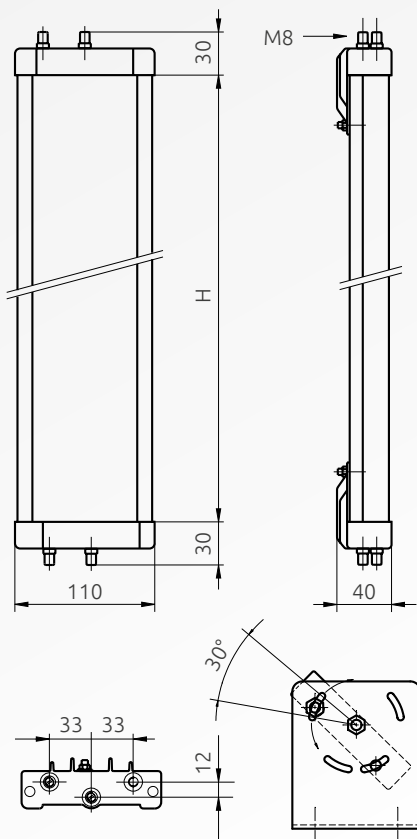


## MIRRORS



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 multiple safety light curtains allow perimeter protection of up to 4 sides.



## SP DEFLECTING MIRRORS

### TECHNICAL FEATURES

Section bar	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

### PARTS NUMBERS

Mirror Model	Ordering codes	Height H in picture (mm)	For light curtains with protected height (mm)	For light grids with:
SP 100 S	1201805	250	160	
SP 200 S	1201800	370	250	
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
- Mirror used will decrease the maximum working range between the Emitter and the Receiver by 15%
- In order to ensure compliance mirror must be placed at the minimum safety distance 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".





The SAV vibration dampers have been designed to avoid mechanical damage to the light curtains installed in those applications with a high level of vibrations.

The unprotected light curtains might resent the vibrations produced by e.g. presses, weaving machines, etc.



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 the SFB swivel brackets is recommended to align those light curtains which are employed in applications having a long range or using deflecting mirrors.

## SAV 3, SAV 4

### VIBRATION DAMPERS

#### PARTS NUMBERS

Model	Ordering codes	Description	For light curtains with protected height mm / beams
SAV 3	1200088	set 2 vibrations dampers	160... 1060 / 2,3,4 beams
SAV 4	11200089	set 3 vibrations dampers	1210 ... 1810
One set must be ordered for each pair of light curtain (emitter + receiver)			

## SFB

### SWIVEL BRACKETS

#### PARTS NUMBERS

Model	Ordering code	Description
SFB	1330974	set of 4 swivel brackets
One set must be ordered for each pair of light curtain (emitter + receiver)		

## OTHERS

## LAD 2

## LASER ALIGNEMENT DEVICE

## / TECHNICAL FEATURES

Light source	Laser diode – wavelength 650 nm
Class light source	II – EN 60825-1
Range m	100
Beam divergence (mrd)	< 0,5
Max. power (mW)	1
Power supply (VDC)	3 (2 AAA batteries)
Fastening	Quick fastening to the light curtains
Dimensions h x w x d (mm)	117 x 48 x 80

LAD 2 laser alignment device allows a fast and reliable optical alignment of ReeR safety light curtains; also compatible with the use of the FMC floor mounting columns.

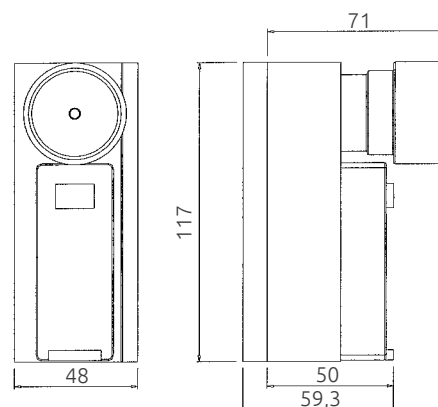
LAD 2 devices emit a laser beam with visible red light with useful range up to 100 m.

The use is recommended for aligning light curtains that operate over long distances or multiple sides with the use of deflecting mirrors.

## / PARTS NUMBERS

Includes multi-language instruction manual.

Ordering code LAD 2: 1220301



## TR

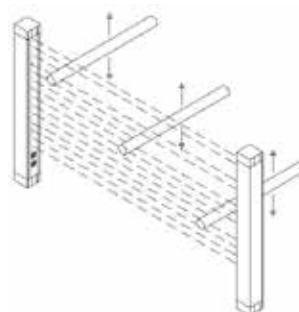
## TEST RODS

## / PART NUMBERS

Model	Ordering codes	Diameter
TR 14	1330960	Ø 14 mm
TR 20	1330961	Ø 20 mm
TR 30	1330962	Ø 30 mm
TR 40	1330963	Ø 40 mm
TR 50	1330964	Ø 50 mm

The test rod is an opaque cylinder used after the installation of a safety light curtain to verify 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 in the off state.





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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.

ReeR is ISO 9001, ISO 14001 and BS OHSAS 18001 certified.



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