EOS2

ACCESSORIES

EOS2 curtains can be supplied with the following accessories, to be ordered separately:

AD SR Safety Relays	▶ See page 183
FMC floor mounting columns	▶ See page 220
SP deflection mirrors	▶ See page 223
LAD laser alignment device	▶ See page 224
SAV E vibrations dampers	▶ See page 225
SFB swivel fixing brackets	▶ See page 226
Connectors	▶ See list hereunder:

CONNECTORS EOS2 (EOS2 A emitter and receiver / EOS2 X emitter)

Model	Code	Description
CD 5	1330950	M12 straight connector, 5 poles, pre-wired cable 5 m
CD 10	1330956	M12 straight connector, 5 poles, pre-wired cable 10 m
CD 15	1330952	M12 straight connector, 5 poles, pre-wired cable 15 m
CD 20	1330957	M12 straight connector, 5 poles, pre-wired cable 20 m
CD 25	1330949	M12 straight connector, 5 poles, pre-wired cable 25 m
CD 50	1330965	M12 straight connector, 5 poles, pre-wired cable 50 m
CD 95	1330951	M12 90° angle connector, 5 poles, pre-wired cable 5 m
CD 910	1330958	M12 90° angle connector, 5 poles, pre-wired cable 10 m
CD 915	1330953	M12 90° angle connector, 5 poles, pre-wired cable 15 m
CDM 9	1330954	M12 straight connector, 5 poles with screw terminal, PG9 cable gland
CDM 99	1330955	M12 angle connector, 5 poles with screw terminal, PG9 cable gland

CONNECTORS EOS2 X receivers

Model	Code	Description
C8D 5	1330980	M12 straight connector, 8 poles, pre-wired cable 5 m
C8D 10	1330981	M12 straight connector, 8 poles, pre-wired cable 10 m
C8D 15	1330982	M12 straight connector, 8 poles, pre-wired cable 15 m
C8D 25	1330967	M12 straight connector, 8 poles, pre-wired cable 25 m
C8D 40	1330966	M12 straight connector, 8 poles, pre-wired cable 40 m
C8D 95	1330983	M12 90° angle connector, 8 poles, pre-wired cable 5 m
C8D 910	1330984	M12 90° angle connector, 8 poles, pre-wired cable 10 m
C8D 915	1330985	M12 90° angle connector, 8 poles, pre-wired cable 15 m
C8DM 11	1330978	M12 straight connector, 8 poles with screw terminal, PG9/11 cable gland
C8DM 911	1330979	M12 90° angle connector, 8 poles with screw terminal, PG9/11 cable gland

CONNECTION BETWEEN MASTER AND SLAVE

Model	Code	Description
CDS 03	1330990	0,3 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 3	1360960	3 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 5	1360961	5 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 10	1360962	10 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 25	1360963	25 m pre-wired cable with 2 straight connectors, M12 5-pole

VISION

VISION

The Vision Type 2 family of safety light curtains is the ideal solution for the protection of the majority of industrial applications in Category 2.

Its features include:
- 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 VX / VXL / MXL models, external device monitoring (EDM) and the Start / Restart interlock function.
- The built-in auto-test function, activated automatically and periodically, without interruption of the operation of the machine being controlled.
- The breadth of the range, including Master / Slave models for cascade connection of two light curtains, the VXL models, with the lowest cost/performance ratio and the MXL models with built-in Muting function.
- The utmost reliability in the field, thanks to the rugged construction and to the high level of immunity to external disturbances (optical, EMC, etc.).

Special versions in WT/WTH watertight housing available on request.

Vision light curtains may be connected to the dedicated safety interfaces series AD SR, or directly to contactors actuated and controlled by the light curtain, or to MOSAIC or to suitable commercial safety modules or safety PLCs.

Cross section

35 mm

45 mm

1:2 scale
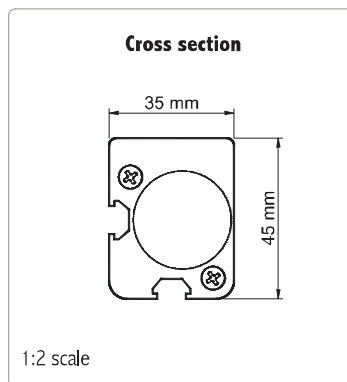
Type 2 – SIL 2 – SILCL 2 – PL d – Cat. 2

VISION

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 following table
Max. range 6 m	Max. range 16 m	Max. range selectable 6 or 18 m	Max. range selectable 22 or 60 m	Master and Slave models for serial connection of two light curtains even of different height and resolution	Max. range 8 m	Built-in Muting function with 2 sensors operating logic
The ideal Type 2 safety light curtain for a simple interface with safety modules or PLC		The ideal Type 2 safety light curtain for directly controlling and monitoring the circuits of the machine, without the need for external safety modules	The ideal safety light curtain for protection applications with a long range, also on several sides using deflection mirrors	Ideal solution for connecting two light curtains in series and constituting a combined detection of the hand and of the presence of a person or of two different sides of the machine	Similar to the VX models but available in a limited number of versions; especially conceived to satisfy the most frequent application needing at a very competitive price	Can offer a complete range of essential functions and satisfy the most common application needs where the Muting function is required, together with a very competitive price
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 and M12 8-pole connectors for receiver				Electrical connections: M12 5-pole connectors for emitter and 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						

THE VISION MXL RANGE

MXL SERIES

MXL and MXL U SERIES
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.

MXL
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).

MXL U
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

MXL L SERIES
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

MXL T SERIES
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.

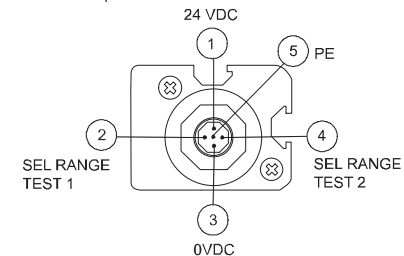# ◼ VISION V

MAIN FEATURES

Automatic start/restart.
Two self-testing solid state PNP safety outputs.
Periodic auto-test every 0.5 sec.
All connections and configuration by means of M12 connectors.
Use of unshielded cables up to 100 m.
Suppression of optical interference by means of range selection.
Start/Restart interlock and EDM via external AD SR1 interface.
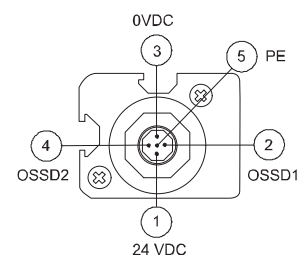
TECHNICAL FEATURES

Safety level	Type 2 according to IEC/TS 61496-2 SIL 2 – SILCL 2 according to IEC 61508 - IEC 62061 PL d – Cat. 2 according to ISO 13849-1
Protected heights (mm)	160 ... 1810
Resolutions (mm)	20, 30, 40, 50, 90
Number of beams for body detection in access control	2, 3, 4
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
Signalling	LEDs for light curtain's status and diagnostic
Restart	automatic
Power supply (VDC)	24 ± 20%
Electrical connections	M12 5-pole
Max. cable length (m)	100
Operating temperature (°C)	0 ... 55
Protection rating	IP 65
Fastening modes	back slot, side slot or to the top and lower end with swivel brackets
Cross section (mm)	35 x 45

Emitter - 5 poles

24 VDC
1
5 PE
2
4
SEL RANGE TEST 1
SEL RANGE TEST 2
3
0VDC

Receiver - 5 poles

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

Safety level:

TYPE 2

SIL 2 – SILCL 2
PL d – Cat. 2

Models L - Max. range: 6 m
Models H - Max. range: 16 m

Resolution 20 mm

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
Number of 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

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
Number of 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

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
Number of 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

Resolution 50 mm

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
Number of 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

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 1659L	V 1809L
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
Number of 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

2, 3, 4 beams

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

⊠ REER

VISION VX
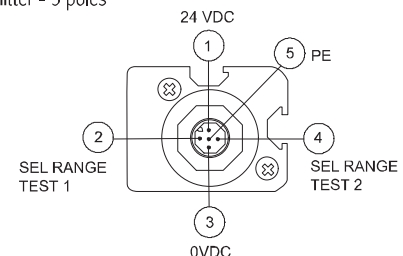### WITH BUILT-IN CONTROL FUNCTIONS

Two self-testing solid state PNP safety outputs.
Periodic auto-test every 0.5 sec.
Built-in Start/Restart interlock, selectable.
Feedback input for control of external relays (EDM).
All connections and configuration by means of M12 connectors.
Use of unshielded cables up to 100 m.
Suppression of optical interference by means of range selection.
Master and Slave models for serial connection of 2 light curtains.
Maximum length of the connections between Master and Slave: 50 metres, with unshielded cable.
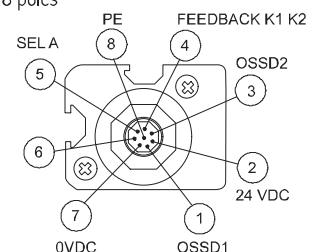Models with 2, 3 and 4 beams Long Range, max. 60 meters.

TECHNICAL FEATURES

Safety level	Type 2 according to IEC/TS 61496-2 SIL 2 – SILCL 2 according to IEC 61508 - IEC 62061 PL d – Cat. 2 according to ISO 13849-1
Protected heights (mm)	160 ... 1810
Resolutions (mm)	20, 30, 40, 50, 90
Number of beams for body detection in access control	2, 3, 4
Max. range (m)	selectable 6 or 18 selectable 22 or 60 for 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
Signalling	seven-segment display and LEDs for light curtain's status and diagnostic
Start/Restart	automatic or manual, selectable
External Device Monitoring	feedback input
Power supply (VDC)	24 ± 20%
Electrical connections for VX and VX Master	M12 5-pole for emitter M12 8-pole for receiver
Electrical connections between Master and Slave	M12 5-pole for emitter and receiver
Max. cable length (m)	100 (50 between master and slave)
Operating temperature °C	0 ... 55
Protection rating	IP 65
Fastening modes	back slot, side slot or to the top and lower end with swivel brackets
Cross section (mm)	35 x 45

CE TÜV SÜD c(UL)us LISTED E S P E

Safety level
TYPE 2
SIL 2 – SILCL 2 **PL d – Cat. 2**

Emitter - 5 poles

24 VDC
1
5 PE
2
4
SEL RANGE TEST 1
SEL RANGE TEST 2
3
0VDC

Receiver - 8 poles

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

VISION VX
WITH BUILT-IN CONTROL FUNCTIONS

Models with 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
Number of 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
Number of 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
Number of 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

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	1344408	1344410	1344411
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of 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
Number of 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

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

| 2, 3, 4 beams	VX 2B	VX 3B	VX 4B		VX* 2B LR	VX* 3B LR	VX* 4B LR
Ordering codes	1344600	1344601	1344602		1344603	1344604	1344605
Number of 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

* Range 60 m

VISION VX
WITH BUILT-IN CONTROL FUNCTIONS

Master/Slave models permit series connection of two safety light curtains achieving two main advantages:
a single pair of safety outputs;
no interference between light curtains installed adjacent to one another.
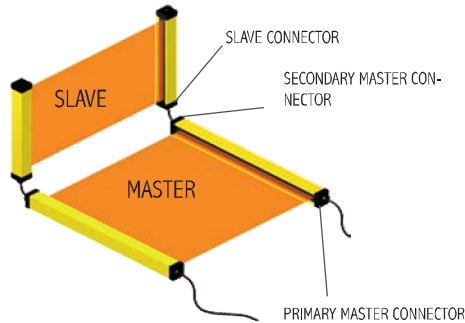
EXAMPLE OF SERIAL CONNECTION BETWEEN MASTER AND SLAVE LIGHT CURTAINS

It is possible to combine any Master model with any Slave model.

All the electrical connections are made using 5-pole M12 connectors, except for the Master receiver, which requires an 8-pole M12 connector.

Pre-wired cables with 2 connectors are available for the connection between Master and Slave.
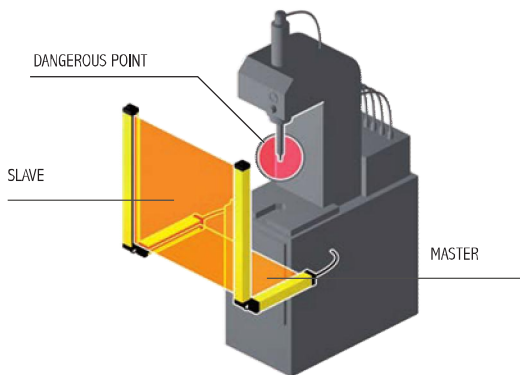
EXAMPLE OF SERIAL CONNECTION BETWEEN MASTER AND SLAVE LIGHT CURTAINS

The Master light curtain is positioned horizontally for detecting the presence of the person while the vertical Slave light curtain detects finger or hand.

However, it is possible to invert the combination and have the Master light curtain positioned vertically for hand protection and the Slave light curtain horizontally for detecting the presence of the person.

The application illustrated is one of the most common: the horizontal light curtain is used for eliminating the possibility for the operator not to be detected between the vertical light curtain and the dangerous machine at the start or restart of the system.
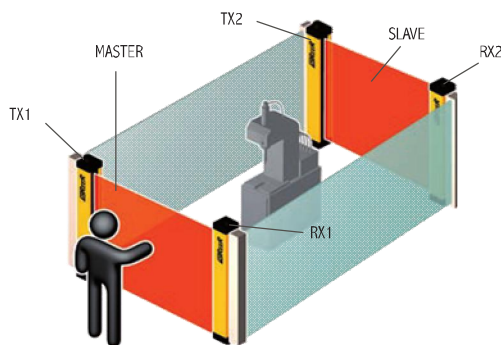
EXAMPLE OF SERIAL CONNECTION BETWEEN MASTER AND SLAVE LIGHT CURTAINS FOR THE PROTECTION OF 2 SIDES OF THE MACHINE

In the Vision VX light curtains, the length of the connection cable between Master and Slave can be up to 50 metres.

This characteristic enables the application of 2 light curtains in series positioned on the front and back of the dangerous machine, with a single connection towards the power supply and control circuits of the machine.

VISION VX
WITH BUILT-IN CONTROL FUNCTIONS

MASTER/SLAVE models with 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
Number of 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
Number of beams		10	15	20	25	30	35	40	50
Overall height (mm) *		411	561	711	861	1011	1161	1311	1611

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
Number of beams		8	12	16	20	24	28	32	40
Overall height (mm) *		411	561	711	861	1011	1161	1311	1611

MASTER 2, 3 beams	VX 2BM	VX 3BM
Ordering codes	1344620	1344621
SLAVE 2, 3 beams	VX 2BS	VX 3BS
Ordering codes	1344640	1344641
Number of 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.

► **"ACCESSORIES" on page 154**

VISION VXL
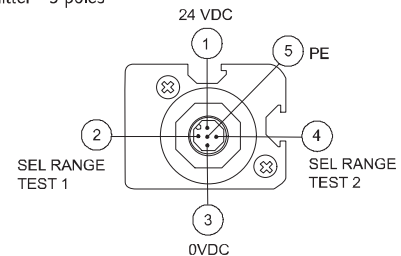## WITH BUILT-IN CONTROL FUNCTIONS

MAIN FEATURES

Built-in Start/Restart interlock, selectable.
Two self-testing solid state PNP safety outputs.
Periodic auto-test every 0,5 sec.
Feedback input for control of external relays (EDM).
All connections and configuration by means of M12 connectors.
Use of unshielded cables up to 100 m.

TECHNICAL FEATURES

Safety level	Type 2 according to IEC/TS 61496-2 SIL 2 – SILCL 2 according to IEC 61508 - IEC 62061 PL d – Cat. 2 according to ISO 13849-1
Protected heights (mm)	160 ... 1810
Resolutions (mm)	30, 40
Number of beams for body detection in access control	2, 3, 4
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
Signalling	LEDs for light curtain's status and diagnostic
Start/Restart	automatic or manual, selectable
External Device Monitoring	feedback input
Power supply (VDC)	24 ± 20%
Electrical connections	M12 5-pole for emitter M12 8-pole for receiver
Max. cable length (m)	100
Operating temperature (°C)	0 ... 55
Protection rating	IP 65
Fastening modes	back slot, side slot or to the top and lower end with swivel brackets
Cross section (mm)	35 x 45

Safety level:

TYPE 2

SIL 2 – SILCL 2
PL d – Cat. 2

Emitter - 5 poles

```
                    24 VDC
                      1          5   PE

SEL RANGE    2                        4   SEL RANGE
TEST 1                                    TEST 2

                      3
                    0VDC
```

Receiver - 8 poles

```
                 PE       FEEDBACK K1 K2
        SEL A    8          4
          5                            OSSD2
                                       3

          6                            2
                                       24 VDC

          7          1
        0VDC      OSSD1
```

Models with 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
Number of 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
Number of 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

2, 3, 4 beams	VXL 2B	VXL 3B	VXL 4B
Ordering codes	1344720	1344721	1344722
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111
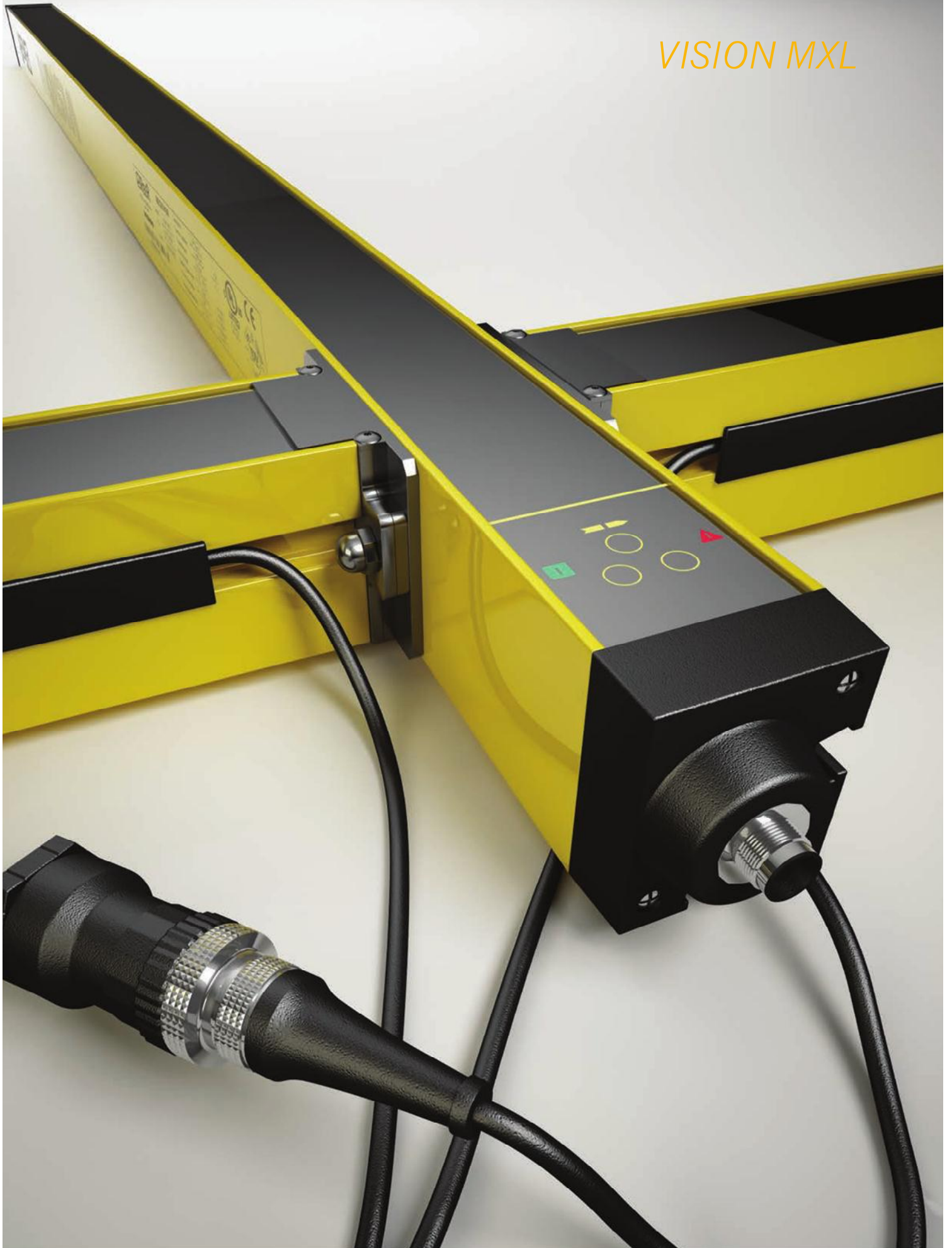
VISION MXL
WITH MUTING FUNCTION

Vision MXL is a range of safety light curtains for the protection of dangerous systems with Muting function. Models MXL L and MXL T are available with integrated Muting sensors.

MXL features include the following:
- Extremely easy connection and installation, through the use of standard connectors and unshielded cables up to 100 m
- 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
- Integrated Muting function and 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
- Excellent field reliability, assured by robust construction and high-level immunity from external interference (optical, EMC, etc.)
- Comprehensive range, offering outstanding cost effectiveness.

For Vision MXL light curtains is available a range of specific accessories including pre-wired cable and MXJB Connection Boxes, complete with Restart and Override controls, plus Muting lamp and integrated safety relays for straightforward, quick and reliable interfacing of the safety light curtains with the machine being controlled.

MAIN FEATURES

Integrated Muting function with two-sensors bi-directional or mono-directional logic.
High flexibility in terms of interface configurations, Muting logics and time-out.
Selectable overrides (two types).

Muting enable input.
Each configuration is implemented via hardware through main M16 12-pole connector.
No need for software configuration via PC.

Unshielded cables up to 100 m.

Two safety PNP static outputs, auto-controlled.

Periodic auto-test every 0.5 sec.

Integrated selectable Start/Restart interlock.

Feedback input for controlling external relays (EDM).

Models MXL L and MXL T with integrated Muting sensors, pre-aligned, adjustable for height and angle.

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.

### Type 2 – SIL 2 – SILCL 2 – PL d – Cat. 2

VISION MXL
WITH MUTING FUNCTION

Vision MXL offer a cost-effective solution for the most common palletized 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)

MXL
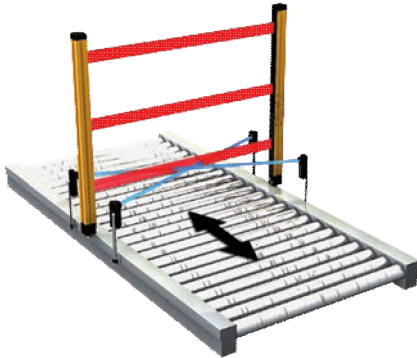
Two-way Muting with 2 sensors. Entry/Exit

- Max. time between the 2 Muting activation signals: 4 sec.
- Possible use with any type of external Muting sensors such as photocells, proximity switches, limit switches, etc.
- Muting Time-out 30 sec, 90 min or infinite, selectable.
- Muting Enable input.

Characteristics

- Suitable 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.

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). **See page 39.**

MXL U

One-way Muting with 2 sensors – Exit only

- Max. time between the 2 Muting activation signals: 4 sec.
- Possible use with any type of external Muting sensors such as photocells, proximity switches, limit switches, etc.
- Muting Time-out 30 sec, 90 min or infinite, selectable.
- Muting Enable input.

Characteristics

- 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.

Safety level
TYPE 2
SIL 2 – SILCL 2 PL d – Cat. 2

C€   TÜV SÜD   c ⓊL us LISTED E S P E

MXL L

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

- 2, 3 beams models.
- Max. time between the 2 Muting activation signals: 4 sec.
- Operating range: 1 ... 2,5 meters.
- Muting sensor elements adjustable in height and angle.
- Muting Time-out 30 sec, 90 min or infinite, selectable.
- Muting Enable input.

Characteristics

- 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 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.

MXL T

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

- 2, 3 beams models.
- Max. time between the 2 Muting activation signals: 4 sec.
- Operating range: 1 ... 2,5 meters.
- Muting sensor elements adjustable in height and angle.
- Muting Time-out 30 sec, 90 min or infinite, selectable.
- Muting Enable input.

Characteristics

- Reduced installation time and costs.
- 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.
- 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
WITH MUTING FUNCTION

GENERAL TECHNICAL DATA

Safety level	Type 2 according to IEC/TS 61496-2 SIL 2 — SILCL 2 according to IEC 61508 - IEC 62061 PL d — Cat. 2 according to ISO 13849-1
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)
Signalling	LEDs for light curtain's and Muting sensors status and diagnostic
Start/Restart	automatic or manual, selectable
External Device Monitoring	external device monitoring feedback input with enabling selectable
Max. Muting Time-out	30 sec., 90 min. or infinite selectable
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%
Electrical connections	M12 5-pole for emitter M16 12-pole for receiver
Max. cable length (m)	100
Operating temperature (°C)	0 … 55
Protection rating	IP 65
Cross section (mm)	35 x 45

MXL and MXL U SERIES

Protected heights (mm)	160 … 1210 for 30 mm Resolution 160 … 1810 for 40 mm Resolution
Resolutions available (mm)	30, 40
Number of beams for access control	2, 3, 4
Max. range (m)	8
MXL Muting logic	two-way with 2 sensors, for personnel access control and two way material transit
MXL U Muting logic	one-way with 2 sensors, for material exit only
Muting Sensors	external Muting sensors with relay or PNP output (dark-on logic)

MXL L SERIES

Number of beams	2, 3
Operating range (m)	1 … 2,5
Muting logic	one-way with 2 sensors
Muting Sensors	optoelectronics with 2 crossed beams built-in — pre-aligned — pre-wired, with adjustable height and angle

MXL T SERIES

Number of beams	2, 3
Operating range (m)	1 … 2,5
Muting logic	two-way with 2 sensors
Muting Sensors	optoelectronics with 2 crossed beams built-in — pre-aligned — pre-wired, with adjustable height and angle

VISION MXL
WITH MUTING FUNCTION

Model MXL - Two-way (entry/exit)- Max. range 8 m
Model MXL U - One-way (only exit) - Max. range 8 m
Model MXL T - Two-way (entry/exit) - Max. range from 1 to 2,5 m
Model MXL L - One-way (only exit) - Max. range from 1 to 2,5 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
Number of 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
Number of 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

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
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111

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

SENSOR ELEMENT ADJUSTMENT - MXL L and MXL T versions

MAXIMUM ANGULAR ADJUSTMENT ALLOWED: ± 8°

MAXIMUM VERTICAL ADJUSTMENT ALLOWED: ± 70 mm
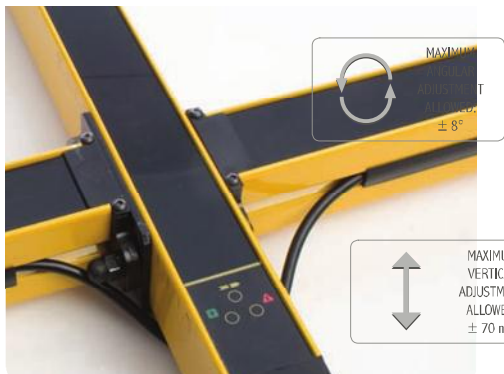
The sensor elements present in the Vision MXL L and MXL T versions are adjustable in height and angle.

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.

► **"ACCESSORIES" on page 153**

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.

MAIN FEATURES

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

MXJB is pre-set as manual Restart. By means the dedicated 5 meters cable CJBR5A, available as accessory, it is possible to make it work as automatic Restart.


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

TECHNICAL FEATURES

MODELS	MXJB 1	MXJB 3
Ordering codes	1360934	1360935
Safety relay output	2 NO 2A 250 VAC	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 and MXJB 4 boxes each NO safety output line is interrupted twice by the two relays

DIMENSIONS (mm)

MODELS STANDARD AND SLAVE   **MODELs MASTER**
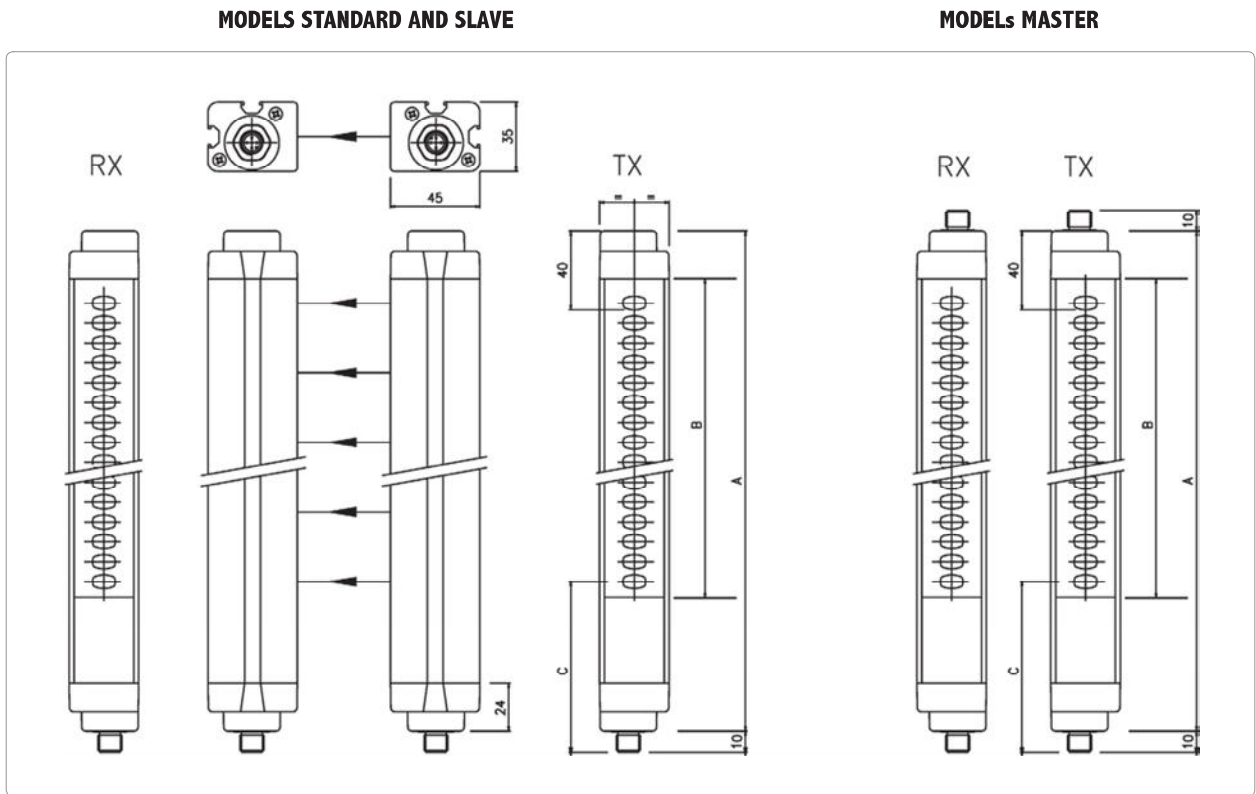
Models	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800
A	251	401	551	701	851	1001	1151	1301	1451	1601	1751	1901
B (protected area)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
C	85											
Mounting	Complete set of 4 LS type brackets included in the package							Complete set of 6 LS type brackets included in the package				

Models	2B	3B	4B
A	701	1001	1101
B	510*	810*	910*
C	135		
Mounting	Complete set of 4 LS type brackets included in the package		

* for these models the protected height is only indicative and is calculated based on the beams spacing.

⚠️ !

When the light curtain works in the presence of strong vibrations (presses, weaving machines etc.), in order to avoid damages to the light curtain it is necessary to use the anti-vibration dampers SAV (available as accessories)
When long range protections or perimeter protections employing mirrors have to be realised it is advisable to use the LAD laser pointer as an alignment aid, as well as the adjustable swivel fastening brackets SFB.

■ VISION

VISION MXL L

REFERENCE	2B	3B
A	711	1011

MXL L

330
292
42
A
100
35
45
35

Receiver

330
292
42
100
35
35
45
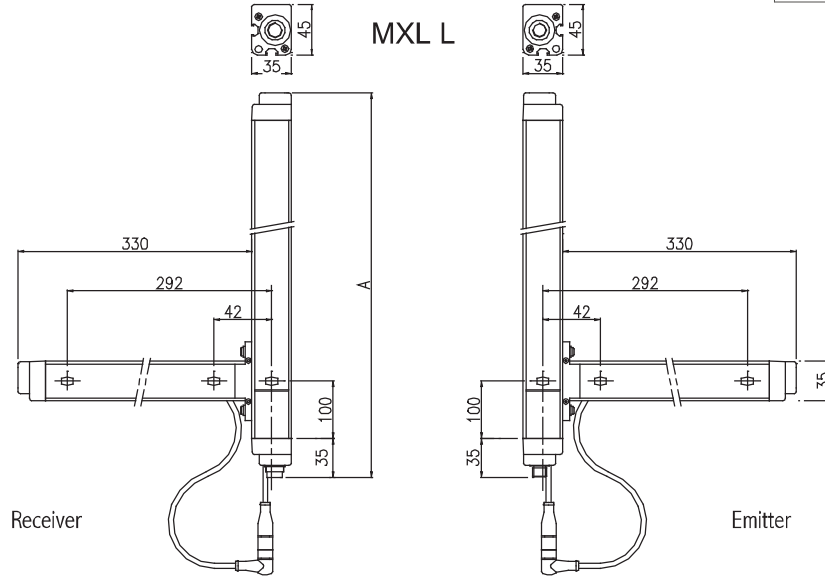
Emitter

VISION MXL T

REFERENCE	2B	3B
A	711	1011

MXL T

230
192
330
292
A
100
35
45
35

Receiver

330
292
230
192
35
100
35
45
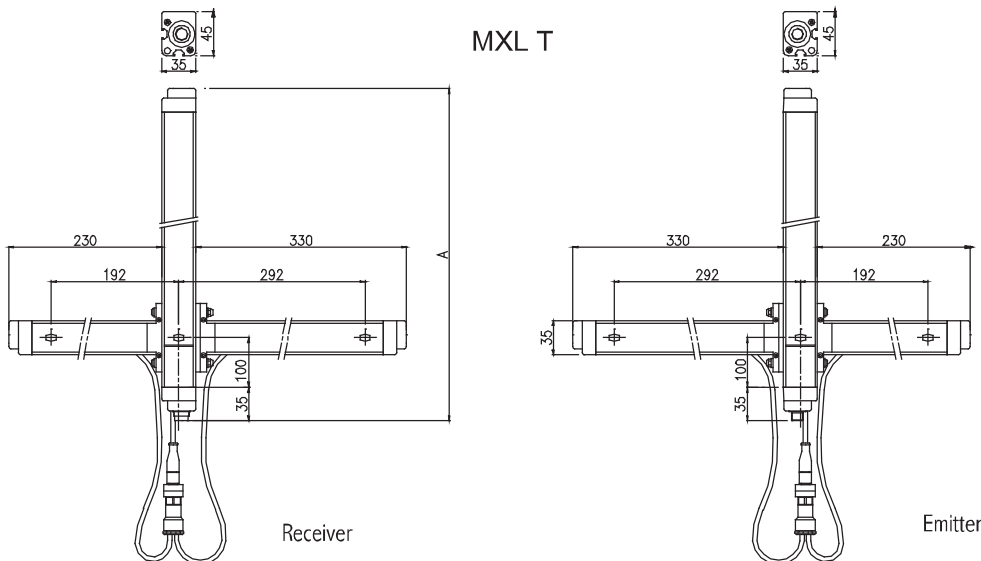
Emitter

Note: The muting arms can be ordered separately.

▶ **See page 83**

ORDERING INFORMATION

Each Vision light curtain comprises:
Emitter and Receiver pair
Mounting brackets and T-nuts
CD-ROM containing the multi-language instruction manual complete with CE declaration of conformity
Quick installation guide

ACCESSORIES

For Vision light curtains the following accessories, to be ordered separately, are available:

AD SR Safety Relays	► See page 183
FMC floor mounting columns	► See page 220
SP deflection mirrors	► See page 223
LAD laser alignment device	► see page 224
SAV vibrations dampers	► See page 225
SFB swivel fixing brackets	► See page 226
Connectors	► See list hereunder
Addition muting arm for L Muting SLA and T Muting STA	► See page 83

Models	Code	Description
CONNECTORS FOR VISION V emitters and riceivers / VX-VXL-MXL-MXL U emitters		
CD 5	1330950	M12 straight connector 5 poles pre-wired, cable 5 m
CD 10	1330956	M12 straight connector 5 poles pre-wired, cable 10 m
CD 15	1330952	M12 straight connector 5 poles pre-wired, cable 15 m
CD 20	1330957	M12 straight connector 5 poles pre-wired, cable 20 m
CD 25	1330949	M12 straight connector 5 poles pre-wired, cable 25 m
CD 50	1330965	M12 straight connector 5 poles pre-wired, cable 50 m
CD 95	1330951	M12 90° angle connector, 5 poles, pre-wired cable 5 m
CD 910	1330958	M12 90° angle connector, 5 poles, pre-wired cable 10 m
CD 915	1330953	M12 90° angle connector, 5 poles, pre-wired cable 15 m
CDM 9	1330954	M12 straight connector, 5 poles with screw terminal, PG9 cable gland
CDM 99	1330955	M12 angle connector, 5 poles with screw terminal, PG9 cable gland
CONNECTORS FOR VISION VX and VXL riceivers		
C8D 5	1330980	M12 straight connector 8 poles pre-wired, cable 5 m
C8D 10	1330981	M12 straight connector 8 poles pre-wired, cable 10 m
C8D 15	1330982	M12 straight connector 8 poles pre-wired, cable 15 m
C8D 25	1330967	M12 straight connector 8 poles pre-wired, cable 25 m
C8D 40	1330966	M12 straight connector 8 poles pre-wired, cable 40 m
C8D 95	1330983	M12 90° angle connector, 8 poles, pre-wired cable 5 m
C8D 910	1330984	M12 90° angle connector, 8 poles, pre-wired cable 10 m
C8D 915	1330985	M12 90° angle connector, 8 poles, pre-wired cable 15 m
C8DM 9	1330986	M12 straight connector 8 poles with screw terminal, PG9 cable gland
C8DM 911	1330987	M12 90° angle connector, 8 poles, with screw terminal, PG9 cable gland
C8DM 11	1330988	M12 straight connector, 8 poles with screw terminal, PG9/11 cable gland
C8DM 911	1330989	M12 90° angle connector, 8 poles, with screw terminal, PG9/11 cable gland

VISION

ACCESSORIES

Models	Code	Descrription
CONNECTORS FOR VISION MXL receivers		
C12D 3	1330991	M16 straight connector 12 poles pre-wired, cable 3 m
C12D 5	1330992	M16 straight connector 12 poles pre-wired, cable 5 m
C12D 10	1330993	M16 straight connector 12 poles pre-wired, cable 10 m
C12D 15	1330996	M16 straight connector 12 poles pre-wired, cable 15 m
C12D 25	1330948	M16 straight connector 12 poles pre-wired, cable 25 m
CM 16	1330997	M16 straight connector 12 poles, solder terminal connector
CABLES WITH 2 CONNECTORS FOR VISION MXL EMITTERS AND MXJ Box		
CJBE 3	1360960	3 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 5	1360961	5 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 10	1360962	10 m pre-wired cable with 2 straight connectors, M12 5 pole
CABLES WITH 2 CONNECTORS FOR VISION MXL RECEIVERS AND MXJ Box		
CMBR 3	1360975	3 m pre-wired cable with 1 straight connector, M16 12-pole and 1 straight connector, M23 19-pole
CMBR 5	1360976	5 m pre-wired cable with 1 straight connector, M16 12-pole and 1 straight connector, M23 19-pole
CMBR 5 A	1360978	5 m pre-wired cable with 1 straight connector, M16 12-pole and 1 straight connector, M23 19-pole for automatic Restart
CMBR 10	1360977	10 m pre-wired cable with 1 straight connector, M16 12-pole and 1 straight connector, M23 19-pole
CONNECTION BETWEEN MASTER AND SLAVE		
CDS 03	1330990	0,3 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 3	1360960	3 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 5	1360961	5 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 10	1360962	10 m pre-wired cable with 2 straight connectors, M12 5-pole
CJBE 25	1360963	25 m pre-wired cable with 2 straight connectors, M12 5 pole