



## 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.

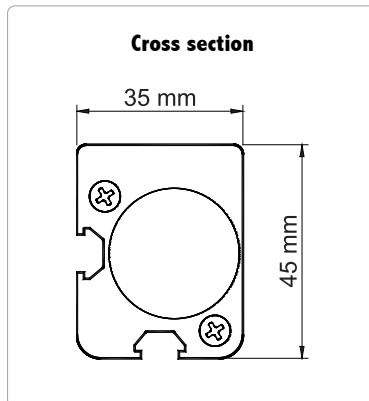
Its features include:

- 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 (see page 194) available on request.

Special models in conformity with the "ATEX Directive" 94/9/CE – Dust Zone 22 - Gas Zone 2 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.



### Safety level: **Type 2 – SIL 2 – SILCL 2 – PL d – Cat. 2**

- 2006/42/EC "Machinery Directive"
- 2004/108/EC "Electromagnetic Compatibility (EMC)"
- 2006/95/EC "Low Voltage Directive (LVD)"
- IEC/EN 61496-1 Ed. 2.1, IEC/TS 61496-2 Ed. 2 "Safety of machinery - Electro-sensitive protective equipment- General requirements and tests"
- EN ISO 13849-1 "Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design"
- IEC/EN 62061 "Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- IEC 61508 "Functional safety of electrical/electronic/programmable electronic safety-related systems"
- IEC/TS 62046 Ed. 2 "Safety of machinery – Application of protective equipment to detect the presence of persons"
- UL (C+US) mark for USA and Canada
- ANSI / UL 1998 "Safety Software in Programmable Components".



## THE VISION RANGE

### VISION V

- 6 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
- 2 self-testing solid state PNP safety outputs protected against short circuits and overloads
- Automatic Start/Restart
- Electrical connections with M12 5-pole connectors

The ideal Type 2 safety light curtain for a simple interface with safety modules or PLC.

### VISION VX

- 6 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 detection of the body in access control
  - 2 self-testing solid state PNP safety outputs protected against short circuits and overloads
  - Electrical connections with M12 5-pole connectors for emitter and M12 8-pole connectors for receiver
  - Built-in manual or automatic Start/Restart selectable
  - Feedback input for control of external relays (EDM)
  - Master and Slave models for serial connection of two light curtains even of different height and resolution
- 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 Master / Slave models are also the 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.

### VISION VX LR Long Range

- 2 - 3 - 4 beams for detection of the body in access monitoring
  - Max. range 60 m
  - M12 5-pole connector for emitter and M12 8-pole for receiver
  - Integrated, selectable manual or automatic Start/Restart
  - Feedback input for external relay monitoring (EDM).
- The ideal safety light curtain for protection applications with a long range, also on several sides using deflection mirrors.

### VISION VXL

- 3 types of detection:
    - resolution 30 - 40 mm for hand detection
    - 2 - 3 - 4 beams for detection of the body in access control
  - 2 self-testing solid state PNP safety outputs protected against short circuits and overloads
  - Electrical connections with M12 5-pole connectors for emitter and M12 8-pole connectors for receiver
  - Built-in manual or automatic Start/Restart selectable
  - Feedback input for control of external relays (EDM)
- Vision VXL, similar to the VX models but available in a limited number of versions and with max. range of 8 meters; especially conceived to satisfy the most frequent application needs at a very competitive price.

### VISION MXL

- Built-in Muting function with 2 sensors operating logic
  - 3 types of detection:
    - resolution 30 - 40 mm for hand detection
    - 2 - 3 - 4 beams for detection of the body in access control
  - 2 self-testing solid state PNP safety outputs protected against short circuits and overloads
  - Electrical connections with M12 5-pole connectors for emitter and M16 12-pole connectors for receiver
  - Built-in manual or automatic Start/Restart selectable
  - Feedback input for control of external relays (EDM)
- Vision MXL - following the same approach as the VXL series - 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.

# VISION V

## MAIN FEATURES

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 interace.

## TECHNICAL FEATURES

<b>Safety level</b>	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
<b>Protected heights (mm)</b>	160 – 1810
<b>Resolutions (mm)</b>	20 - 30 - 40 - 50 - 90
<b>Number of beams for body detection in access control</b>	2 - 3 - 4
<b>Max. range (m)</b>	6 for V...L models 16 for V...H models
<b>Response time (ms)</b>	5,5 – 28
<b>Safety outputs</b>	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
<b>Signalling</b>	LEDs for light curtain's status and diagnostic
<b>Restart</b>	automatic
<b>Power supply (VDC)</b>	24 ± 20%
<b>Electrical connections</b>	M12 - 5 poles for emitter and receiver
<b>Max. cable length (m)</b>	100
<b>Operating temperature (°C)</b>	0 to 55
<b>Protection rating</b>	IP 65
<b>Fastening modes</b>	3: back slot, side slot or to the top and lower end
<b>Cross section (mm)</b>	35 x 45



Safety level:

**Type 2**

**SIL 2 – SILCL 2**  
**PL d – Cat. 2**



## VISION V



Resolution 20 mm	V 152	V 302	V 452	V 602	V 752	V 902	V 1052	V 1202	V 1352	V 1502	V 1652	V 1802
Protected heights (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
Max. range. (m)	6 (V...L models) - 16 (V...H models)											



Resolution 30 mm	V 153	V 303	V 453	V 603	V 753	V 903	V 1053	V 1203	V 1353	V 1503	V 1653	V 1803
Protected heights (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
Max. range. (m)	6 (V...L models) - 16 (V...H models)											



Resolution 40 mm	V 304	V 454	V 604	V 754	V 904	V 1054	V 1204	V 1354	V 1504	V 1654	V 1804
Protected heights (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
Max. range. (m)	6 (V...L models) - 16 (V...H models)										



Resolution 50 mm	V 305	V 455	V 605	V 755	V 905	V 1055	V 1205	V 1355	V 1505	V 1655	V 1805
Protected heights (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
Max. range. (m)	6 (V...L models) - 16 (V...H models)										



Resolution 90 mm	V 309	V 459	V 609	V 759	V 909	V 1059	V 1209	V 1359	V 1509	V 1659	V 1809
Protected heights (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
Max. range. (m)	6 (V...L models) - 16 (V...H models)										



2-3-4 beams	V 2B	V 3B	V 4B
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected heights (mm)	510	810	910
Overall height (mm)	711	1011	1111
Max. range. (m)	6 (V...L models) - 16 (V...H models)		

## ORDERING INFORMATION (for ordering codes see page 223)

### Each Vision light curtain comprises:

- Emitter and Receiver pair, including integrated sensor (only for L and T models)
- 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 180
- LAD laser alignment device see page 210
- FMC floor mounting columns see page 206
- SP deflection mirrors see page 209
- SFB swivel fixing brackets see page 212
- SAV vibrations dampers see page 211
- Connectors see below:

#### Model Description

#### CONNECTORS FOR VISION V emitter and receiver / VX – VXL - MXL emitter

CD 5	M12 straight connector, 5 poles, pre-wired cable 5 m
CD 10	M12 straight connector, 5 poles, pre-wired cable 10 m
CD 15	M12 straight connector, 5 poles, pre-wired cable 15 m
CD 20	M12 straight connector, 5 poles, pre-wired cable 20 m
CD 25	M12 straight connector, 5 poles, pre-wired cable 25 m
CD 50	M12 straight connector, 5 poles, pre-wired cable 50 m
CD 95	M12 90° angle connector, 5 poles, pre-wired cable 5 m
CD 910	M12 90° angle connector, 5 poles, pre-wired cable 10 m
CD 915	M12 90° angle connector, 5 poles, pre-wired cable 15 m
CDM 9	M12 straight connector, 5 poles with screw terminal, PG9 cable gland
CDM 99	M12 angle connector, 5 poles with screw terminal, PG9 cable gland

#### CONNECTORS FOR VISION VX – VXL - receiver

C8D 5	M12 straight connector, 8 poles, pre-wired cable 5 m
C8D 10	M12 straight connector, 8 poles, pre-wired cable 10 m
C8D 15	M12 straight connector, 8 poles, pre-wired cable 15 m
C8D 25	M12 straight connector, 8 poles, pre-wired cable 25 m
C8D 40	M12 straight connector, 8 poles, pre-wired cable 40 m
C8D 95	M12 90° angle connector, 8 poles, pre-wired cable 5 m
C8D 910	M12 90° angle connector, 8 poles, pre-wired cable 10 m
C8D 915	M12 90° angle connector, 8 poles, pre-wired cable 15 m
C8DM 9	M12 straight connector, 8 poles with screw terminal, PG9 cable gland
C8DM 99	M12 angle connector, 8 poles with screw terminal, PG9 cable gland
C8DM 11	M12 straight connector, 8 poles with screw terminal, PG9/11 cable gland
C8DM 911	M12 angle connector, 8 poles with screw terminal, PG9/11 cable gland

## ACCESSORIES

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

**CONNECTORS FOR VISION MXL - RECEIVER**

C12D 3	M16 straight connector, 12 poles, pre-wired cable 3 m
C12D 5	M16 straight connector, 12 poles, pre-wired cable 5 m
C12D 10	M16 straight connector, 12 poles, pre-wired cable 10 m
C12D 15	M16 straight connector, 12 poles, pre-wired cable 15 m
C12D 25	M16 straight connector, 12 poles, pre-wired cable 25 m
CM 16	M16 straight connector, 12 poles, solder terminal connector

**CABLES WITH 2 CONNECTORS FOR VISION MXL EMITTERS AND MXI Box**

CIBE 3	3 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 5	5 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 10	10 m pre-wired cable with 2 straight connectors, M12, 5 poles

**CABLES WITH 2 CONNECTORS FOR VISION MXL RECEIVERS AND MXI Box**

CMBR 3	3 m pre-wired cable with 1 straight connector, M16, 12 poles and 1 straight connector, M23, 19 poles
CMBR 5	5 m pre-wired cable with 1 straight connector, M16, 12 poles and 1 straight connector, M23, 19 poles
CMBR 5 A	5 m pre-wired cable with 1 straight connector, M16, 12 poles and 1 straight connector, M23, 19 poles for automatic Restart
CMBR 10	10 m pre-wired cable with 1 straight connector, M16, 12 poles and 1 straight connector, M23, 19 poles

**CONNECTION BETWEEN MASTER AND SLAVE**

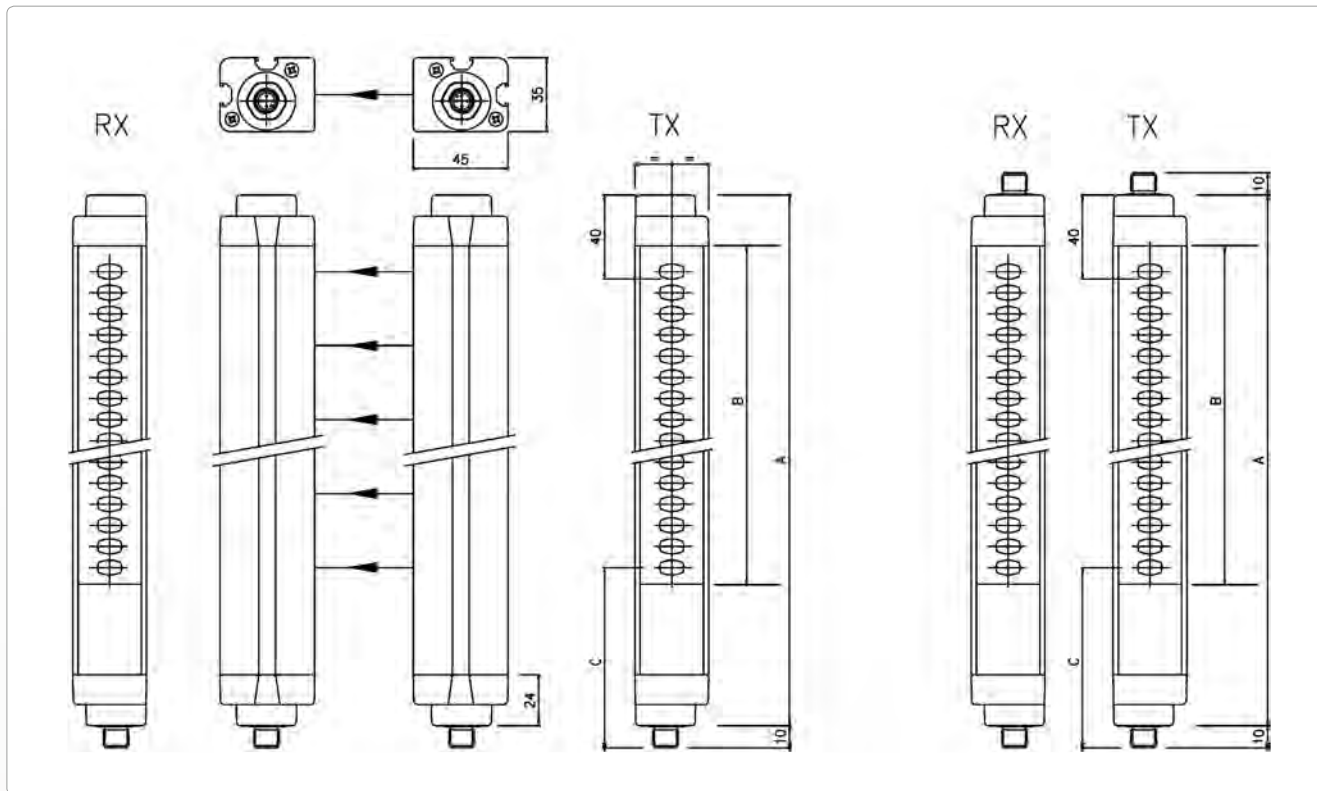
CDS 03	0.3 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 3	3 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 5	5 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 10	10 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 25	25 m pre-wired cable with 2 straight connectors, M12 5 poles



## DIMENSIONS (mm)

### STANDARD AND SLAVE MODELS

### MASTER MODELS



Model	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	2 LS type brackets with 2 inserts							3 LS type brackets with 3 inserts				

Model	2B	3B	4B
A	701	1001	1101
B	510	810	910
C	135		
Mounting	2 LS type brackets with 2 inserts		



## WARNING!

- 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.