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# Safety light curtains

## Preventa XUSL

### Catalogue



Simply easy!™



## Safety light curtains Preventa XUSL

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# Safety detection solutions

## Preventa

### Safety light curtains

#### Presentation

#### Protection of personnel

Safety light curtains are electro-sensitive protective equipment (ESPE) designed for the protection of persons operating or working in the vicinity of machinery, by stopping the hazardous movement of parts as soon as one of the light beams is broken.

In particular, they provide protection to help ensure the **safety of personnel** operating hazardous machinery (annex IV of Directive 2006/42/EC) but they are equally suitable for use with many other types of machines. They make it possible to help protect personnel while allowing free access to machines.

The absence of mechanical protectors reduces the time required for loading, inspection, or adjustment operations as well as making access easier.

#### Directives and standards

#### Conformity to standards

**Preventa XUSL2 and XUSL4 safety light curtains conform to the following standards:**

- European Machinery Directive 2006/42/EC and European Use of Work Equipment Directive 2009/104/EC
- Low Voltage Directive 2006/95/EC and the Electromagnetic Compatibility Directive 2004/108/EC
- EN/IEC 61496-1 and EN/IEC 61496-2
- IEC 62061 and IEC 61508 (electro-sensitive protective equipment (ESPE))
- EN/ISO 13849-1
- EN/ISO 13855 (installation conditions, safety distances)

These light curtains are cULus and TÜV certified.

#### Application sectors

#### Main applications

Preventa XUSL2 and XUSL4 safety light curtains are used to detect fingers, hands, and bodies in the vicinity of hazardous machinery, such as:

- robotic systems
- assembly and packaging lines
- turret punch presses
- palletizers
- packaging machines
- assembly machines
- welding equipment
- handling equipment (rollers, winders, and unwinders)
- machine tools
- equipment for the agri-food industry
- mechanical and hydraulic presses

#### Safety rules

#### Detection of failures

##### Detection of failures liable to compromise safety and stopping of the machine

The design of the machine and its control system must be appropriate to the safety light curtain selected in order to immediately stop the machine's hazardous movement as soon as the hazardous zone, protected by the light curtain, is entered.

It must not be possible to enter the protected zone without breaking the light beams. The safety light curtain must therefore be installed in such a manner that the light beams cannot be avoided.

The machine can only be restarted if no hazard exists and no personnel are present in the hazardous zone.

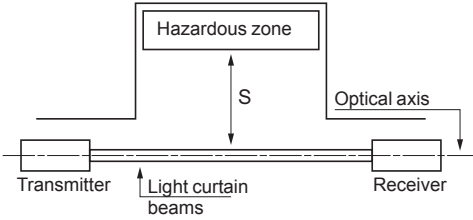
The risk that persons might be inside the hazardous zone but out of the protective light beams must be addressed.

# Safety detection solutions

## Preventa

### Safety light curtains

#### Positioning of safeguards



Standard EN/ISO 13855 (1) defines the parameters for the positioning of safeguards. In particular:

- the safety distance between the light curtain and the hazardous zone
- the body approach speed
- multi-beam devices
- multiple single-beam light curtains (2, 3, or 4 beams)

Calculation of minimum safety distance S between the light curtain and the hazardous zone

$$S = K(t_1 + t_2) + C \text{ (general formula)}$$

S = minimum distance in mm

K = approach speed of body (or part of the body) in mm/s

t<sub>1</sub> = response time of protection device in s

t<sub>2</sub> = stopping time of machine (hazardous movements) in s

C = additional distance in mm

■ For multi-beam light curtains:

**K = 2,000 mm/s**

**C = 8 (R - 14)** where R = resolution of the safety light curtain mm

■ For multiple single-beam light curtains or light curtains with 2, 3, or 4 beams:

**K = 1,600 mm/s**

**C = 850 mm** for multiple single beams

The protected heights are as follows:

Number of light beams	Protected height (mm)
4	300, 600, 900, 1,200
3	300, 700, 1,100
2	400, 900

#### Special rules for presses

The use of safety light curtains and mechanical protectors on metal working presses is governed by specific standards and rules.

The standards specify that safeguarding methods should be selected that reduce the risk as far as possible, considering the significant hazards and the production method so that, if a person enters the protective field while the hazardous movement is in progress, the machine stops as quickly as possible. "Quick stopping" means stopping of the ram before the operator can reach the hazardous zone, taking into account their speed of movement.

**The continuous self-monitoring function of safety light curtains is essential for metal working press applications.** If a failure is detected in the protection device, the potentially hazardous machine movement must be stopped automatically.

Once the protected zone is clear, the movement that was started and then interrupted by entry into the zone must not resume its normal travel, even after a Reset button has been pressed. Resetting must restart the movement from the beginning of the cycle. **The safety light curtain must only allow starting of a hazardous movement if its correct operation has been proved** (by pushing a test rod into the hazardous zone, or by means of an automatic device) and if a Reset button (start interlock) has been reactivated.

The safety distance S is calculated in a special way for:

- mechanical presses: refer to **EN 692**
- hydraulic presses, pneumatic folding machines, shears, bending and shaping machines: refer to **EN 693**

(1) To calculate the safety distance according to the standard applicable in the United States (OSHA 1910.217), refer to the calculation formulae given in the "Preventa XUSL User Manual".

# Safety detection solutions

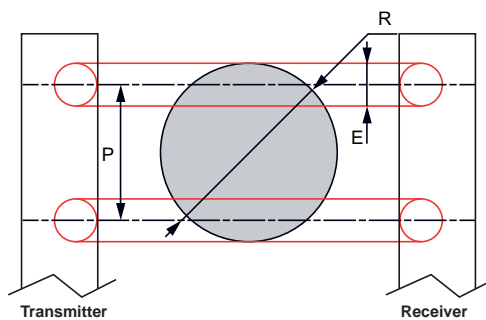
## Preventa

### Safety light curtains

#### Functions and definitions

##### Resolution (R)

This is the smallest diameter (of an object) that type 4 or type 2 safety light curtains are able to detect with absolute certainty.



$$R = P + E$$

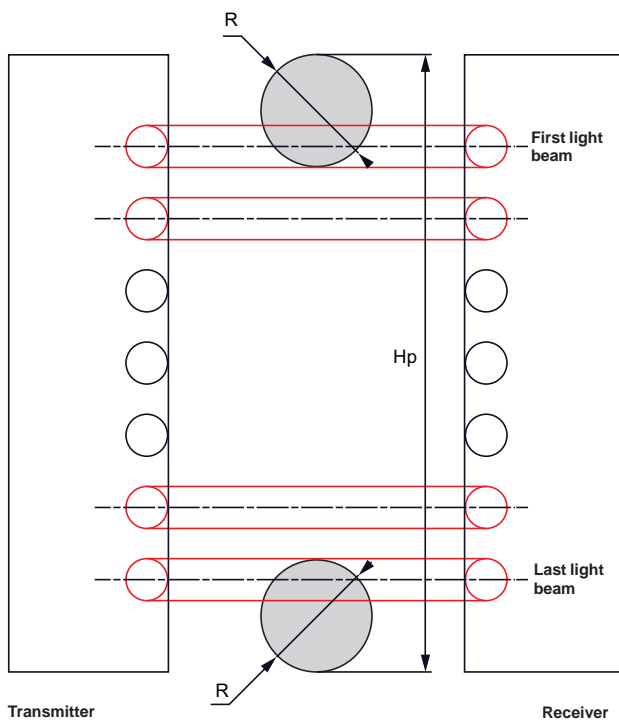
P: distance between the mid point of the 2 adjacent light beams

E: diameter of the light beams

R: resolution (or detection capability)

##### Protected height (Hp)

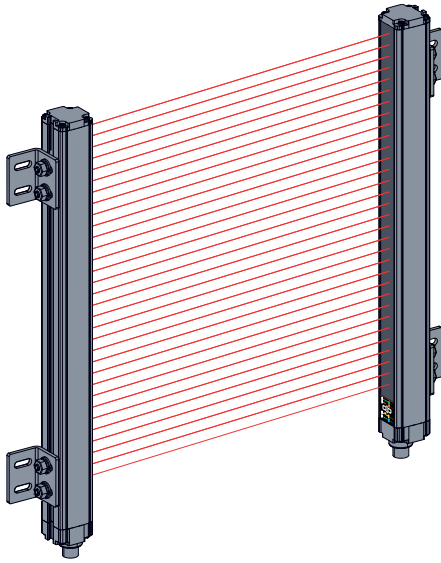
The protected height is the zone (or height) within which an object of diameter at least equal to the resolution (or detection capability) R is detected with absolute certainty.



# Safety detection solutions

## Preventa

### Safety light curtains



#### Functions and definitions (continued)

##### Operation of a safety light curtain

A safety light curtain is an optical protection system with infrared beams that provides protection for operators in the vicinity of hazardous zones. Any moving parts in this zone are stopped if at least one of the light beams is broken.

The system comprises a transmitter and a receiver positioned facing each other and controlled by a microprocessor. They are not physically interconnected. A row of diodes in the transmitter emits infrared beams to a row of photosensitive cells in the receiver.

The infrared diodes are triggered consecutively and the photosensitive cells are synchronized to detect the corresponding light beam only. When the detection zone is clear, both OSSD redundant outputs are enabled (ON) and the equipment connected downstream operates normally.

When an object larger than or equal in size to the resolution breaks at least one of the beams, both OSSD redundant outputs switch to the OFF state to send the stop command to the machine.

##### Type 2 and type 4 definitions

There are significant differences between XUSL2 (type 2) and XUSL4 (type 4) safety light curtains that need to be clarified. Types 2 and 4 are defined in standard IEC 61496-1.

It is the responsibility of the user or systems integrator to verify that the appropriate safety light curtain - type 2 or type 4 - is used according to the expected level of risk presented by the machine.

In order to select the correct product, it is necessary to carry out a risk assessment of the application.

##### Type 2

Type 2 safety light curtains test their internal circuits periodically (e.g. every 500 ms for XUSL2E). If a failure occurs between two test sequences, it will only be detected at the time of the next test.

A type 2 device has reduced capability in comparison with a type 4 device (for example, it has a wider aperture angle and a longer response time).

These light curtains are designed for use in applications where the risk assessment has identified a low risk of injury to operators.

Type 2 light curtains are less expensive than type 4 devices due to their simplified architecture. They are only capable of hand and body detection.

XUSL2 safety light curtains are type 2 (IEC 61496-1), SIL 2 (IEC 61508), SILCL2 (IEC 62061), and PLd - Cat. 2 (EN/ISO 13849-1) compatible.

##### Type 4

In contrast to type 2 devices, type 4 safety light curtains are designed based on an automatic self-monitoring redundant architecture.

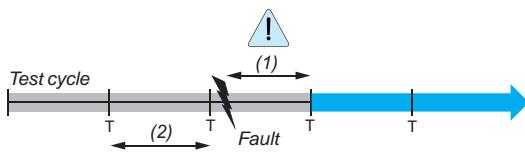
This architecture allows the immediate detection of a failure within a given response time.

Type 4 safety light curtains are suitable for applications where the risk assessment has identified moderate or high risk of injury to operators.

Type 4 safety light curtains are capable of providing finger, hand, and body detection. XUSL4 light curtains offer a shorter response time and a narrower beam aperture angle than XUSL2 light curtains.

XUSL4 light curtains are type 4 (IEC 61496-1), SIL 3 (IEC 61508), SILCL3 (IEC 62061), and PLe - Cat. 4 (EN/ISO 13849-1) compatible.

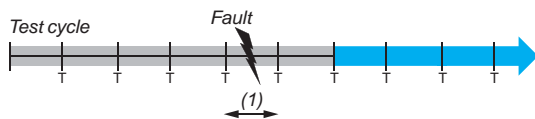
#### Operating fault detected for type 2 safety light curtain:



Grey bar : OSSD outputs, ON  
Blue bar : OSSD outputs, OFF

(1) Risk  
(2) Test period: 500 ms

#### Operating fault detected for type 4 safety light curtain:



Grey bar : OSSD outputs, ON  
Blue bar : OSSD outputs, OFF

(1) Maximum response time

# Safety detection solutions

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### Safety light curtains

#### Functions and definitions (continued)

##### Risk assessment

Risk assessment and risk reduction form part of an iterative process described in standards EN ISO12100, IEC 61496-1, IEC 61508, and IEC 62061 (SIL), and EN/ISO 13849 (PL).

There are different techniques for evaluating hazards, none of which can be considered as the best risk assessment method. The standards describe general principles, but do not specify precisely what to do in each case.

For safety-related data, refer to the PFHd (Probability of dangerous Failure per Hour" according to IEC 61508) value indicated for each XUSL2E and XUSL4E light curtain reference (see pages 10 to 17).

##### Response time

European standard EN ISO13855 incorporates the various aspects of response time in the formula for calculating the minimum safety distance. The total response time (T) corresponding to the overall stopping performance of the system is calculated using the following formula:

$$T = t_1 + t_2$$

**t<sub>1</sub>** is the response time of the protection device (in seconds).

It is the total time between detection by the device and switching of the output component.

Response time t<sub>1</sub> is indicated for XUSL2E and XUSL4E light curtains (see pages 10 to 17).

**t<sub>2</sub>** is the stopping time of the machine and, in particular, of its hazardous movements (in seconds).

This information is provided by the machine manufacturer. It is the time between the stop command and the actual stop of the hazardous mechanical components.

The response time of the machine control system (a relay or a safety controller for example) is included in "t<sub>2</sub>".

##### Selecting the sensing distance

Two different maximum sensing distances can be selected for each XUSL4E and XUSL2E safety light curtain: short and long.

Both sensing distances can be selected by wiring.

##### Sensing distance for XUSL2E safety light curtains

**Hand and body detection, standard sensing distance:**

Short sensing distance: 0...4 m. Long sensing distance: 0...12 m

##### Sensing distance for XUSL4E safety light curtains

**Finger detection, standard sensing distance:**

Short sensing distance: 0...3 m. Long sensing distance: 1...6 m

**Hand and body detection, standard sensing distance:**

Short sensing distance: 0...4 m. Long sensing distance: 0...12 m

**Hand and body detection, increased sensing distance:**

Short sensing distance: 0...10 m. Long sensing distance: 3...20 m

##### Sensing distance for XUSL2E safety light curtains with IP 69K sealed tube

**Hand detection:**

Short sensing distance: 0...3 m. Long sensing distance: 3...10 m

##### Sensing distance for XUSL4E safety light curtains with IP 69K sealed tube

**Finger detection:**

Short sensing distance: 0...2 m. Long sensing distance: 1...5 m

**Hand and body detection**

Short sensing distance: 0...8 m. Long sensing distance: 3...17 m

##### Automatic or manual start mode

AUTO/MAN (automatic/manual): this is what standard EN/IEC 61496 calls start (or restart) interlock of the safety light curtain:

- In AUTO mode: On power-up, if the detection zone is not occupied, or after the beams have been cleared, the safety light curtain resets itself automatically. Both OSSD outputs change to the "closed" position (ON).



# Safety detection solutions

## Preventa

### Safety light curtains

#### Functions and definitions (continued)

##### Automatic or manual start mode (continued)

- In MANUAL mode: On power-up (regardless of whether the detection zone is occupied or not), or after the beams have been cleared, the safety light curtain maintains both OSSD outputs in the “open” position (OFF). Pressing (and releasing) the reset button effectively resets the light curtain, if the detection zone is not entered. Both OSSD outputs change to the “closed” position (ON).

**Note:** In all cases, a general machine run command will trigger its start-up.

##### External device monitoring

External device monitoring (EDM) is an important safety function. It monitors the interface between the safety light curtains and the protected machine:

- to check that the external devices, such as contactors and relays, are responding correctly to the light curtain outputs
  - to detect any inconsistency between the two external control devices that could prevent a stop command from reaching the equipment connected downstream (e.g. power contactors or solenoid valve relays)
- The EDM controls the external contactors K1/K2. To do this, the NC contacts of the external contactors, connected in series, are monitored.

##### Test function

This function is designed to simulate entry into the detection zone (a break in transmission). An external control unit (e.g. a safety PLC) can then verify correct operation of the entire system (monitoring downstream equipment).

##### Signaling

LED display of operating modes and detected faults.

##### Muting function available with XPSLCMUT1160 module

Muting is the temporary suspension of the protection function provided by the safety light curtain.

Activation or deactivation is achieved by means of standard sensors (OsiSense XU “dark on” photoelectric sensors with PNP output).

When activated, a signal is sent to the control system. This function is used to allow objects to access the hazardous zone during the process.

Signaling informs the operator or operators that they are not protected.

##### Master/slave multi-segments for type 4 light curtains

Multi-segments help protect multiple zones via a series connection.

Only the first segment, known as the “master”, is connected to the control cabinet or enclosure.

This master segment, which can detect fingers, hands, or bodies, can support up to 2 other intermediate segments, known as “slaves”, connected via extension cables to the M12 connectors on the top of the segment.

Slave segments can be of different resolutions (R) and protected heights than the “master”, without restricting the overall protected height.

They are totally dependent on the functions configured in the master segment.

The maximum distance for connection cables between 2 slave segments is 50 meters.

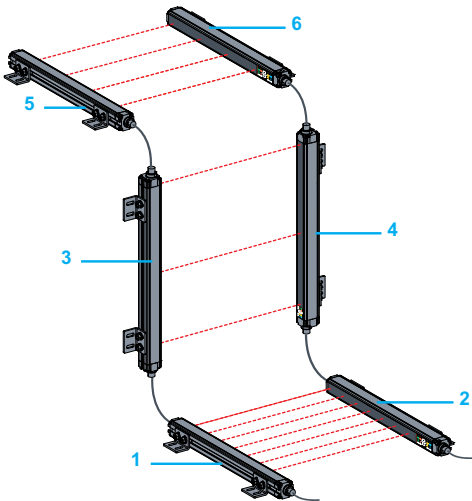
##### Light curtains with IP 69K sealed protection tube

Safety light curtains with protection tube are supplied mounted and pre-wired. The materials used are suitable for the food industry.

The sealed tubes provide additional protection to the light curtains against humidity, condensation, cleaning products, and certain chemical products.

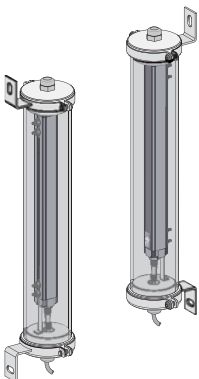
Light curtains with sealed protection tube can be supplied as follows:

- Operating temperature **with** heating system: -25° to +55 °C
- Operating temperature **without** heating system: -10° to +55 °C



Master/slave multi-segment light curtains: example of daisy-chained function

- 1 Master (transmitter)
- 2 Master (receiver)
- 3 Slave 2 (transmitter)
- 4 Slave 2 (receiver)
- 5 Slave 1 (transmitter)
- 6 Slave 1 (receiver)



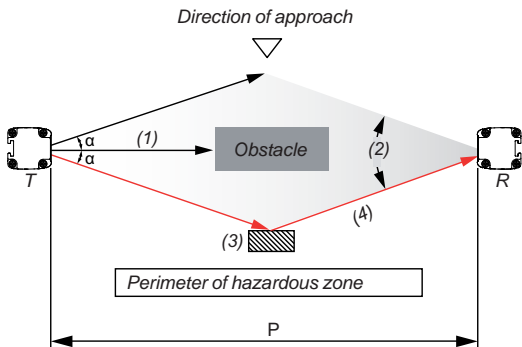
Light curtains with IP 69K sealed protection tube

# Safety detection solutions

## Preventa

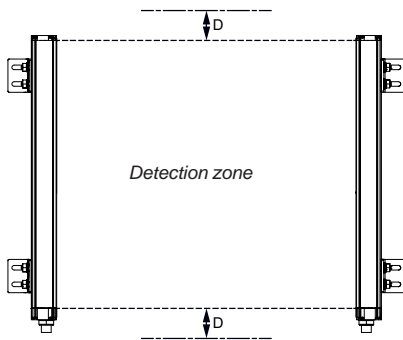
### Safety light curtains

#### Reflective surface positioned sideways:



- (1) Optical axis
- (2) Operating width of light beam
- (3) Reflective surface
- (4) Reflected beam (prevents light beam being broken)
- T: Transmitter
- R: Receiver

#### Reflective surface positioned lengthways:



#### Installation precautions

##### Reflective surface

The devices must be installed such that the transmitter and associated receiver are mounted facing each other and correctly aligned for both height and angle.

The aperture angle of the optics and transmitter/receiver alignment tolerance are:  
 $\alpha = 2.5^\circ$  (type 4)  
 $\alpha = 5^\circ$  (type 2)

Reflective surfaces located alongside the optical axis could result in stray reflections interfering with the light beams that are the furthest away from the axis and, consequently, prevent detection of an object entering the hazardous zone. The direct light beam could then be joined by a stray reflected beam and this latter beam would not be broken when the object is in the axis.

For this reason, EN/IEC 61496-2 specifies a minimum distance **D** whereby:

**For type 2 (XUSL2E light curtains):**

If  $P \leq 3$  m, then  $D = 262$  mm

If  $P > 3$  m, then  $D = \tan(5^\circ) \times 1,000 \times P$  (m) =  $87.49 \times P$  (m)

**P** = Transmitter/Receiver distance (m)

**D** = minimum distance between the light curtain and reflective surface (mm)

**For type 4 (XUSL4E light curtains):**

If  $P \leq 3$  m, then  $D = 131$  mm

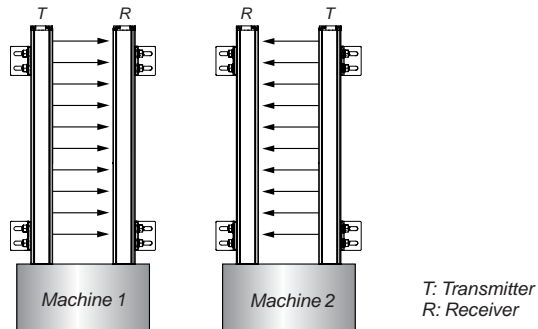
If  $P > 3$  m, then  $D = \tan(2.5^\circ) \times 1,000 \times P$  (m) =  $43.66 \times P$  (m)

##### Mutual interference

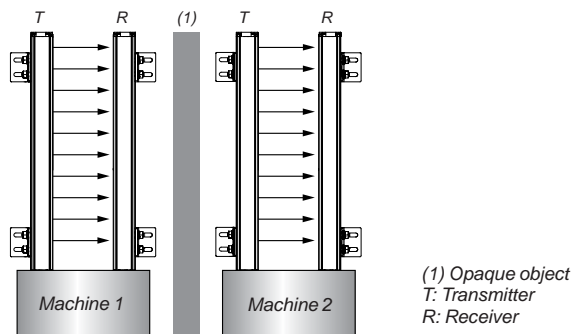
Certain installation configurations may require the installation of 2 (or more) safety light curtains side by side.

To help prevent interference between safety light curtains, the following installation is recommended.

##### Receivers installed back-to-back



##### Light curtains separated by an opaque object, to break the light beams one at a time



# Safety detection solutions

## Preventa

### Safety light curtains

#### Installation precautions (continued)

##### Environments subject to interference

Industrial applications sometimes place products in extreme operating conditions, mainly due to:

##### ■ Electromagnetic interference

- conforming to level 3 according to EN/IEC 61496-1
- resistance to interference caused by variable speed drives

##### ■ Light interference

- conforming to EN/IEC 61496-2

##### Additional devices

Safety light curtains can only be used on machines on which the movement of working components can be **stopped at any time during a hazardous phase**.

These light curtains provide a stop signal, not a control instruction. This stop signal must be stored.

Clearing of the light curtain must not result in restarting of moving parts. Subsequent restarting must only be possible by means of deliberate operation of the appropriate control device, after having checked that there is no longer any danger.

**Electrical interfacing between the light curtain and the machine circuits must correspond to the machine standard specifications.**

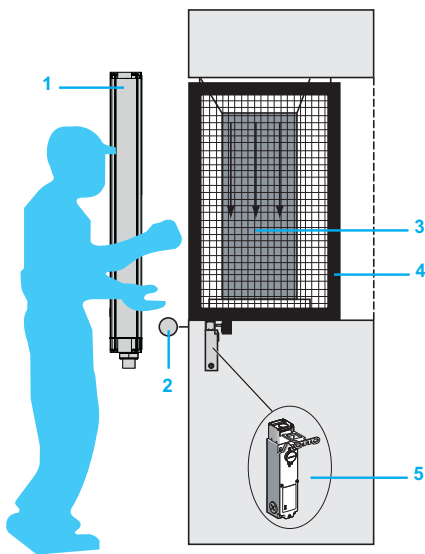
Where safety light curtains do not provide an adequate degree of protection due to their location, additional suitable protection devices or additional light curtains must be used in order to prevent operators from entering the protective light curtain and reaching the hazardous zone (EN/ISO 13857), or from remaining in the area between the hazardous zone and the safety light curtain (EN/ISO 13855).

The position and size of these additional protection devices must be such that it is **impossible for operators to reach the hazardous zone** in any way whatsoever (over the top, from beneath, from behind, or from the side) **without breaking at least one of the light curtain beams**.

These additional devices must be:

- either fixed  
(if possible, screwed or welded to the machine)
- or moving  
(with continuous monitoring of their position if they have to open)

It must be impossible for operators to disconnect or cut-out the switching circuits for these additional devices.



- 1 Safety light curtain
- 2 Mechanical barrier
- 3 Hazard zone
- 4 Example of additional device
- 5 Safety interlock switches (Preventa XCSLF or XCSLE)

# Safety detection solutions Preventa

Safety light curtains, type 4  
Standard sensing distance



XUSL4E14F016N

XUSL4E14F031N



XUSL4E30H016N

XUSL4E30H031N

## Transmitter-receiver pairs for finger detection (1) (2)

Resolution 14 mm. Sensing distance 0...3 or 1...6 m, selectable by wiring

- 2 PNP outputs
- TM (mission time): 20 years

Protected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
160	213	15	4	1.03 x 10 <sup>-8</sup>	XUSL4E14F016N	0.400
310	363	30	5.5	1.27 x 10 <sup>-8</sup>	XUSL4E14F031N	0.700
460	513	45	7.5	1.52 x 10 <sup>-8</sup>	XUSL4E14F046N	1.000
610	663	60	9	1.75 x 10 <sup>-8</sup>	XUSL4E14F061N	1.200
760	813	75	11	2.00 x 10 <sup>-8</sup>	XUSL4E14F076N	1.500
910	963	90	13	2.24 x 10 <sup>-8</sup>	XUSL4E14F091N	1.700
1,060	1,113	105	14.5	2.49 x 10 <sup>-8</sup>	XUSL4E14F106N	2.000
1,210	1,263	120	16.5	2.73 x 10 <sup>-8</sup>	XUSL4E14F121N	2.300
1,360	1,413	135	18	2.98 x 10 <sup>-8</sup>	XUSL4E14F136N	2.500
1,510	1,563	150	20	3.22 x 10 <sup>-8</sup>	XUSL4E14F151N	2.800
1,660	1,713	165	22	3.48 x 10 <sup>-8</sup>	XUSL4E14F166N	3.000
1,810	1,863	180	23.5	3.71 x 10 <sup>-8</sup>	XUSL4E14F181N	3.300

## Transmitter-receiver pairs for hand detection (1) (2)

Resolution 30 mm. Sensing distance 0...4 or 0...12 m, selectable by wiring

- 2 PNP outputs
- TM (mission time): 20 years

Protected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
160	213	8	4	7.08 x 10 <sup>-9</sup>	XUSL4E30H016N	0.400
260	313	13	5	8.06 x 10 <sup>-9</sup>	XUSL4E30H026N	0.600
310	363	16	5.5	8.20 x 10 <sup>-9</sup>	XUSL4E30H031N	0.700
460	513	23	7.5	9.47 x 10 <sup>-9</sup>	XUSL4E30H046N	1.000
610	663	31	9	1.06 x 10 <sup>-8</sup>	XUSL4E30H061N	1.200
760	813	38	10.5	1.19 x 10 <sup>-8</sup>	XUSL4E30H076N	1.500
910	963	46	12.5	1.30 x 10 <sup>-8</sup>	XUSL4E30H091N	1.700
1,060	1,113	53	14	1.43 x 10 <sup>-8</sup>	XUSL4E30H106N	2.000
1,210	1,263	61	15.5	1.54 x 10 <sup>-8</sup>	XUSL4E30H121N	2.300
1,360	1,413	68	17	1.67 x 10 <sup>-8</sup>	XUSL4E30H136N	2.500
1,510	1,563	76	19	1.78 x 10 <sup>-8</sup>	XUSL4E30H151N	2.800
1,660	1,713	83	20.5	1.90 x 10 <sup>-8</sup>	XUSL4E30H166N	3.000
1,810	1,863	91	22	2.02 x 10 <sup>-8</sup>	XUSL4E30H181N	3.300

## Transmitter-receiver pairs for body detection (1) (2)

2, 3, or 4 beams. Sensing distance 0...4 or 0...12 m, selectable by wiring

- 2 PNP outputs
- TM (mission time): 20 years

Protected height	Total height	Light beams Number/spacing	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
510	677	2 / 500 mm	2.5	6.89 x 10 <sup>-9</sup>	XUSL4E2BB051N	1.100
810	977	3 / 400 mm	3	7.55 x 10 <sup>-9</sup>	XUSL4E3BB081N	1.600
910	1,077	4 / 300 mm	3	8.21 x 10 <sup>-9</sup>	XUSL4E4BB091N	1.700

(1) The safety light curtains are supplied with mounting brackets and screws.

(2) Connection cables and test rods must be ordered separately (see pages 20 and 21).

# Safety detection solutions

## Preventa

Safety light curtains, type 4  
Increased sensing distance



XUSL4E30H016L

XUSL4E30H031L

### Transmitter-receiver pairs for hand detection (1) (2)

Resolution 30 mm. Sensing distance 0...10 or 3...20 m, selectable by wiring

- 2 PNP outputs
- TM (mission time): 20 years

Protected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
160	213	8	3	$9.13 \times 10^{-9}$	XUSL4E30H016L	0.400
310	363	16	4	$1.04 \times 10^{-8}$	XUSL4E30H031L	0.700
460	513	23	5	$1.16 \times 10^{-8}$	XUSL4E30H046L	1.000
610	663	31	6	$1.28 \times 10^{-8}$	XUSL4E30H061L	1.200
760	813	38	6.5	$1.41 \times 10^{-8}$	XUSL4E30H076L	1.500
910	963	46	7.5	$1.53 \times 10^{-8}$	XUSL4E30H091L	1.700
1,060	1,113	53	8.5	$1.66 \times 10^{-8}$	XUSL4E30H106L	2.000
1,210	1,263	61	9.5	$1.78 \times 10^{-8}$	XUSL4E30H121L	2.300
1,360	1,413	68	10	$1.91 \times 10^{-8}$	XUSL4E30H136L	2.500
1,510	1,563	76	11	$2.03 \times 10^{-8}$	XUSL4E30H151L	2.800
1,660	1,713	83	12	$2.16 \times 10^{-8}$	XUSL4E30H166L	3.000
1,810	1,863	91	13	$2.29 \times 10^{-8}$	XUSL4E30H181L	3.300

### Transmitter-receiver pairs for body detection (1) (2)

2, 3, or 4 beams. Sensing distance 0...10 or 3...20 m, selectable by wiring

- 2 PNP outputs
- TM (mission time): 20 years

Protected height	Total height	Light beams Number/spacing	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
510	677	2 / 500 mm	2.5	$9.15 \times 10^{-9}$	XUSL4E2BB051L	1.100
810	977	3 / 400 mm	2.5	$9.99 \times 10^{-9}$	XUSL4E3BB081L	1.600
910	1,077	4 / 300 mm	2.5	$1.08 \times 10^{-8}$	XUSL4E4BB091L	1.700

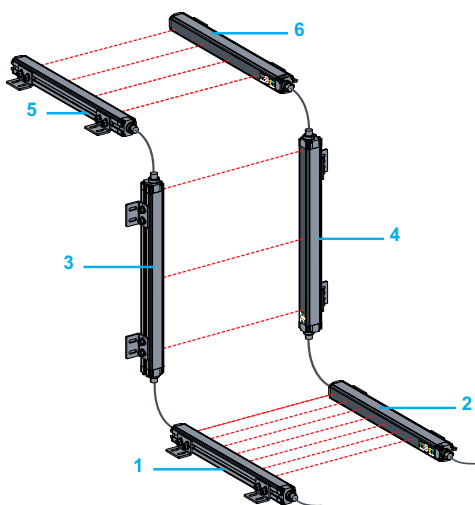
(1) The safety light curtains are supplied with mounting brackets and screws.

(2) Connection cables and test rods must be ordered separately (see pages 20 and 21).

# Safety detection solutions Preventa

## Safety light curtains, type 4

Master/slave. Standard sensing distance



Example of daisy-chained function

- 1 Master (transmitter)
- 2 Master (receiver)
- 3 Slave 2 (transmitter)
- 4 Slave 2 (receiver)
- 5 Slave 1 (transmitter)
- 6 Slave 1 (receiver)



XUSL4E14F031NM  
XUSL4E14F046NS2

### Master transmitter-receiver pairs (1) (2)

- 2 PNP outputs
- TM (mission time): 20 years

Protected height	Total height	Light beams Number/spacing	Response time (3)	PFHd IEC 61508	Reference	Weight
mm	mm					kg
<b>For finger detection</b>						
<b>Resolution 14 mm. Sensing distance 0...3 or 1...6 m, selectable by wiring</b>						
310	387	30	5.5	1.27 x 10 <sup>-8</sup>	XUSL4E14F031NM	0.720
460	537	45	7.5	1.52 x 10 <sup>-8</sup>	XUSL4E14F046NM	1.020
610	687	60	9	1.75 x 10 <sup>-8</sup>	XUSL4E14F061NM	1.220
760	837	75	11	2.00 x 10 <sup>-8</sup>	XUSL4E14F076NM	1.520

### For hand detection

Resolution 30 mm. Sensing distance 0...4 or 0...12 m, selectable by wiring

460	537	16	7.5	9.47 x 10 <sup>-9</sup>	XUSL4E30H046NM	1.020
610	687	23	9	1.06 x 10 <sup>-8</sup>	XUSL4E30H061NM	1.220
760	837	31	10.5	1.19 x 10 <sup>-8</sup>	XUSL4E30H076NM	1.520
910	987	38	12.5	1.30 x 10 <sup>-8</sup>	XUSL4E30H091NM	1.720
1,060	1,137	46	14	1.43 x 10 <sup>-8</sup>	XUSL4E30H106NM	2.020

### For body detection

2, 3, or 4 beams. Sensing distance 0...4 or 0...12 m, selectable by wiring

510	677	2 / 500 mm	2.5	6.89 x 10 <sup>-9</sup>	XUSL4E2BB051NM	1.100
810	977	3 / 400 mm	3	7.55 x 10 <sup>-9</sup>	XUSL4E3BB081NM	1.600
910	1,077	4 / 300 mm	3	8.21 x 10 <sup>-9</sup>	XUSL4E4BB091NM	1.700

### Slave 2 transmitter-receiver pairs (1) (2)

#### For finger detection

Resolution 14 mm. Sensing distance 0...3 or 1...6 m, selectable by wiring

460	537	45	7.5	1.52 x 10 <sup>-8</sup>	XUSL4E14F046NS2	1.020
610	687	60	9	1.75 x 10 <sup>-8</sup>	XUSL4E14F061NS2	1.220
760	837	75	11	2.00 x 10 <sup>-8</sup>	XUSL4E14F076NS2	1.520

#### For hand detection

Resolution 30 mm. Sensing distance 0...4 or 0...12 m, selectable by wiring

460	537	23	7.5	9.47 x 10 <sup>-9</sup>	XUSL4E30H046NS2	1.020
610	687	31	9	1.06 x 10 <sup>-8</sup>	XUSL4E30H061NS2	1.220
760	837	38	10.5	1.19 x 10 <sup>-8</sup>	XUSL4E30H076NS2	1.520
910	987	46	12.5	1.30 x 10 <sup>-8</sup>	XUSL4E30H091NS2	1.720
1,060	1,137	53	14	1.43 x 10 <sup>-8</sup>	XUSL4E30H106NS2	2.020

#### For body detection

2, 3, or 4 beams. Sensing distance 0...4 or 0...12 m, selectable by wiring

510	677	2 / 500 mm	2.5	6.89 x 10 <sup>-9</sup>	XUSL4E2BB051NS2	1.100
810	977	3 / 400 mm	3	7.55 x 10 <sup>-9</sup>	XUSL4E3BB081NS2	1.600
910	1,077	4 / 300 mm	3	8.21 x 10 <sup>-9</sup>	XUSL4E4BB091NS2	1.700

(1) The safety light curtains are supplied with mounting brackets and screws.

(2) Connection cables and test rods must be ordered separately (see pages 20 and 21).

(3) The response time of a daisy-chained function must include the response time of each of the component segments (see the calculation table on the next page).

**Other versions:** Master/slave light curtains can be ordered for other protection heights than those listed above. Please contact our Customer Care Center.

# Safety detection solutions

## Preventa

### Safety light curtains, type 4

Master/slave. Standard sensing distance



XUSL4E●●●●●●●●NS1

Slave 1 transmitter-receiver pairs (1) (2)						
Protected height	Total height	Light beams Number/spacing	Response time (3)	PFHd IEC 61508	Reference	Weight
mm	mm					kg
<b>For finger detection</b>						
<b>Resolution 14 mm. Sensing distance 0...3 or 1...6 m, selectable by wiring</b>						
310	363	30	5.5	$1.27 \times 10^{-8}$	XUSL4E14F031NS1	0.720
460	513	45	7.5	$1.52 \times 10^{-8}$	XUSL4E14F046NS1	1.020
610	663	60	9	$1.75 \times 10^{-8}$	XUSL4E14F061NS1	1.220
760	813	75	11	$2.00 \times 10^{-8}$	XUSL4E14F076NS1	1.520
<b>For hand detection</b>						
<b>Resolution 30 mm. Sensing distance 0...4 or 0...12 m, selectable by wiring</b>						
460	513	23	7.5	$9.47 \times 10^{-9}$	XUSL4E30H046NS1	1.020
610	663	31	9	$1.06 \times 10^{-8}$	XUSL4E30H061NS1	1.220
760	813	38	10.5	$1.19 \times 10^{-8}$	XUSL4E30H076NS1	1.520
910	963	46	12.5	$1.30 \times 10^{-8}$	XUSL4E30H091NS1	1.720
1,060	1,113	53	14	$1.43 \times 10^{-8}$	XUSL4E30H106NS1	2.020
<b>For body detection</b>						
<b>2, 3, or 4 beams. Sensing distance 0...4 or 0...12 m, selectable by wiring</b>						
510	653	2 / 500 mm	2.5	$6.89 \times 10^{-9}$	XUSL4E2BB051NS1	1.100
810	953	3 / 400 mm	3	$7.55 \times 10^{-9}$	XUSL4E3BB081NS1	1.600
910	1,053	4 / 300 mm	3	$8.21 \times 10^{-9}$	XUSL4E4BB091NS1	1.700

(1) The safety light curtains are supplied with mounting brackets and screws.

(2) Connection cables and test rods must be ordered separately (see pages 20 and 21).

(3) The response time of a daisy-chained function must include the response time of each of the component segments. See the calculation table below:

#### Calculation of response time for Master/slave light curtains, type 4, standard sensing distance

**Resolution 14 mm**  $R_{t_{tot}} = [0.06 \times (No_{slave1} + No_{mater}) + 0.9636] \times 2$

$$R_{t_{tot}} = [0.06 \times (No_{slave1} + No_{slave2} + No_{mater}) + 1.0036] \times 2$$

**Resolution 30 mm and multi-beam**  $R_{t_{tot}} = [0.11 \times (No_{slave1} + No_{mater}) + 0.9376] \times 2$

$$R_{t_{tot}} = [0.11 \times (No_{slave1} + No_{slave2} + No_{mater}) + 1.0508] \times 2$$

*No.*: Number of light beams

*Rt<sub>tot</sub>*: Total response time

**Other versions:** Master/slave light curtains can be ordered for other protection heights than those listed above. Please contact our Customer Care Center.



# Safety detection solutions

## Preventa

### Safety light curtains, type 4

With IP 69K sealed protection tube, no heating system



XUSL4E14F031NWC



XUSL4E30H031LWC

#### Transmitter-receiver pairs with IP 69K sealed protection tube for finger detection (1) (2)

Resolution 14 mm. Sensing distance 0...2 or 1...5 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -10 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
310	470	30	5.5	$1.27 \times 10^{-8}$	XUSL4E14F031NWC	3.560
460	620	45	7.5	$1.52 \times 10^{-8}$	XUSL4E14F046NWC	4.050
610	770	60	9	$1.75 \times 10^{-8}$	XUSL4E14F061NWC	4.560
760	920	75	11	$2.00 \times 10^{-8}$	XUSL4E14F076NWC	5.550

#### Transmitter-receiver pairs with IP 69K sealed protection tube for hand detection (1) (2)

Resolution 30 mm. Sensing distance 0...8 or 3...17 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -10 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
310	470	16	5.5	$1.04 \times 10^{-8}$	XUSL4E30H031LWC	3.560
460	620	23	7.5	$1.16 \times 10^{-8}$	XUSL4E30H046LWC	4.050
610	770	31	9	$1.28 \times 10^{-8}$	XUSL4E30H061LWC	4.560
760	920	38	10.5	$1.41 \times 10^{-8}$	XUSL4E30H076LWC	5.050
910	1,070	46	12.5	$1.53 \times 10^{-8}$	XUSL4E30H091LWC	5.550
1,060	1,220	53	14	$1.66 \times 10^{-8}$	XUSL4E30H106LWC	6.060

#### Transmitter-receiver pairs with IP 69K sealed protection tube for body detection (1) (2)

Sensing distance 0...8 or 3...17 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -10 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Light beams Number/ spacing	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
510	677	2 / 500 mm	2.5	$9.15 \times 10^{-9}$	XUSL4E2BB051LWC	3.810
810	977	3 / 400 mm	3	$9.99 \times 10^{-9}$	XUSL4E3BB081LWC	4.430
910	1,077	4 / 300 mm	3	$1.08 \times 10^{-8}$	XUSL4E4BB091LWC	4.660

(1) These safety light curtains are supplied mounted in a sealed protection tube and pre-wired (10 m PVC cable). Mounting brackets are included. Light curtains with protection tube can be mounted on XUSZSS●●● rails.

(2) Test rods must be ordered separately (see page 20).

**Other versions:** Light curtains with sealed protection tube can be ordered for other protection heights than those listed above. Please contact our Customer Care Center.



# Safety detection solutions

## Preventa

### Safety light curtains, type 4

With IP 69K sealed protection tube and heating system

#### Transmitter-receiver pairs with IP 69K sealed protection tube for finger detection (1) (2)

Resolution 14 mm. Sensing distance 0...2 or 1...5 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -25 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
310	470	30	5.5	$1.27 \times 10^{-8}$	XUSL4E14F031NWH	3.560
460	620	45	7.5	$1.52 \times 10^{-8}$	XUSL4E14F046NWH	4.050
610	770	60	9	$1.75 \times 10^{-8}$	XUSL4E14F061NWH	4.560
760	920	75	11	$2.00 \times 10^{-8}$	XUSL4E14F076NWH	5.550

#### Transmitter-receiver pairs with IP 69K sealed protection tube for hand detection (1) (2)

Resolution 30 mm. Sensing distance 0...8 or 3...17 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -25 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
460	620	23	7.5	$1.16 \times 10^{-8}$	XUSL4E30H046LWH	4.050
610	770	31	9	$1.28 \times 10^{-8}$	XUSL4E30H061LWH	4.560
760	920	38	10.5	$1.41 \times 10^{-8}$	XUSL4E30H076LWH	5.050
910	1,070	46	12.5	$1.53 \times 10^{-8}$	XUSL4E30H091LWH	5.550
1,060	1,220	53	14	$1.66 \times 10^{-8}$	XUSL4E30H106LWH	6.060



XUSL4E30H046LWH

#### Transmitter-receiver pairs with IP 69K sealed protection tube for body detection (1) (2)

Sensing distance 0...8 or 3...17 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -25 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Light beams Number/ spacing	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
510	677	2 / 500 mm	2.5	$9.15 \times 10^{-9}$	XUSL4E2BB051LWH	3.810
810	977	3 / 400 mm	3	$9.99 \times 10^{-9}$	XUSL4E3BB081LWH	4.430
910	1,077	4 / 300 mm	3	$1.08 \times 10^{-8}$	XUSL4E4BB091LWH	4.660

(1) These safety light curtains are supplied mounted in a sealed protection tube and pre-wired (10 m PVC cable). Mounting brackets are included. Light curtains with protection tube can be mounted on XUSZSS●●● rails.

(2) Test rods must be ordered separately (see page 20).

**Other versions:** Light curtains with sealed protection tube can be ordered for other protection heights than those listed above. Please contact our Customer Care Center.

# Safety detection solutions

## Preventa

Safety light curtains, type 2  
Standard sensing distance



XUSL2E30H016N

XUSL2E30H031N

### Transmitter-receiver pairs for hand detection (1) (2)

Resolution 30 mm. Sensing distance 0...4 or 0...12 m, selectable by wiring

- 2 PNP outputs
- TM (mission time): 20 years

Pro- tected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
160	213	8	4.5	$2.04 \times 10^{-8}$	XUSL2E30H016N	0.400
260	313	13	5.5	$2.55 \times 10^{-8}$	XUSL2E30H026N	0.600
310	363	16	6	$2.66 \times 10^{-8}$	XUSL2E30H031N	0.700
460	513	23	8	$3.30 \times 10^{-8}$	XUSL2E30H046N	1.000
610	663	31	10	$3.92 \times 10^{-8}$	XUSL2E30H061N	1.200
760	813	38	11	$4.57 \times 10^{-8}$	XUSL2E30H076N	1.500
910	963	46	13	$5.19 \times 10^{-8}$	XUSL2E30H091N	1.700
1,060	1,113	53	14.5	$5.83 \times 10^{-8}$	XUSL2E30H106N	2.000
1,210	1,263	61	16	$6.45 \times 10^{-8}$	XUSL2E30H121N	2.300
1,360	1,413	68	17.5	$7.09 \times 10^{-8}$	XUSL2E30H136N	2.500
1,510	1,563	76	19.5	$7.71 \times 10^{-8}$	XUSL2E30H151N	2.800
1,660	1,713	83	21	$8.35 \times 10^{-8}$	XUSL2E30H166N	3.000
1,810	1,863	91	22.5	$8.98 \times 10^{-8}$	XUSL2E30H181N	3.300

### Transmitter-receiver pairs for body detection (1) (2)

Sensing distance 0...4 or 0...12 m, selectable by wiring

- 2 PNP outputs
- TM (mission time): 20 years

Pro- tected height	Total height	Light beams Number/ spacing	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
510	677	2 / 500 mm	3	$1.71 \times 10^{-8}$	XUSL2E2BB051N	1.120
810	977	3 / 400 mm	3.5	$1.87 \times 10^{-8}$	XUSL2E3BB081N	1.620
910	1,077	4 / 300 mm	3.5	$2.02 \times 10^{-8}$	XUSL2E4BB091N	1.720

(1) The safety light curtains are supplied with mounting brackets and screws.

(2) Connection cables and test rods must be ordered separately (see pages 20 and 21).

# Safety detection solutions

## Preventa

### Safety light curtains, type 2

With IP 69K sealed protection tube

Standard sensing distance



XUSL2E30H046NWC

#### Transmitter-receiver pairs with IP 69K sealed protection tube, for hand detection, without heating system (1) (2)

Resolution 30 mm. Sensing distance 0...3 or 3...10 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -10 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
460	620	23	8	$3.30 \times 10^{-8}$	XUSL2E30H046NWC	4.050
610	770	31	10	$3.92 \times 10^{-8}$	XUSL2E30H061NWC	4.560
760	920	38	11	$4.57 \times 10^{-8}$	XUSL2E30H076NWC	5.050
910	1,070	46	13	$5.19 \times 10^{-8}$	XUSL2E30H091NWC	5.550
1,060	1,220	53	14.5	$5.83 \times 10^{-8}$	XUSL2E30H106NWC	6.060

#### Transmitter-receiver pairs with IP 69K sealed protection tube, for hand detection, with heating system (1) (2)

Resolution 30 mm. Sensing distance 0...3 or 3...10 m, selectable by wiring

- 2 PNP outputs
- Operating temperature range: -25 °C...+55 °C
- Resistance to acidic and alkaline cleaning agents, and aliphatic hydrocarbons
- TM (mission time): 20 years

Pro- tected height	Total height	Number of light beams	Response time (t1)	PFHd IEC 61508	Reference	Weight
mm	mm		ms			kg
460	620	23	8	$3.30 \times 10^{-8}$	XUSL2E30H046NWH	4.050
610	770	31	10	$3.92 \times 10^{-8}$	XUSL2E30H061NWH	4.560
760	920	38	11	$4.57 \times 10^{-8}$	XUSL2E30H076NWH	5.050
910	1,070	46	13	$5.19 \times 10^{-8}$	XUSL2E30H091NWH	5.550
1,060	1,220	53	14.5	$5.83 \times 10^{-8}$	XUSL2E30H106NWH	6.060

(1) These safety light curtains are supplied mounted in a sealed protection tube and pre-wired (10 m PVC cable). Mounting brackets are included. Light curtains with protection tube can be mounted on XUSZSS●●● rails.

(2) Test rods must be ordered separately (see page 20).

#### Other versions:

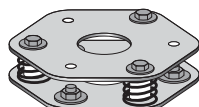
Light curtains with sealed protection tube can be ordered for other protection heights than those listed above. Light curtains with sealed protection tube for body protection are also available. Please contact our Customer Care Center.

# Safety detection solutions Preventa

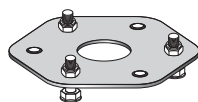
Accessories for safety light curtains  
types 2 and 4



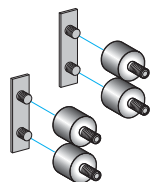
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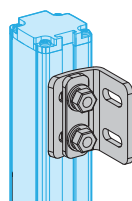
XUSZFB2



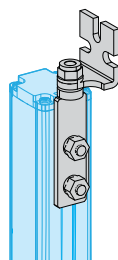
XUSZFB1



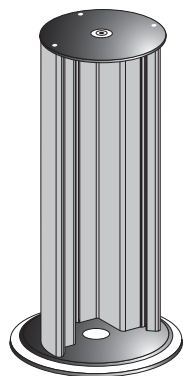
XUSZVA4



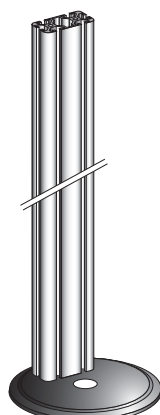
XUSZBSC



XUSZBSS4



XUSZSC



XUSZSS125

### Power supplies (1)

#### Single-phase (N-L1) or 2-phase (L1-L2) connection

Input voltage	Secondary		Reference	Weight kg
	Output voltage	Nominal power Nominal current		
100...120 V ~ 200...500 V ~ -15%, +10% 50/60 Hz	24...28.8 V=	72 W 3 A	ABL8RPS24030	0.300
		120 W 5 A	ABL8RPS24050	0.700
		240 W 10 A	ABL8RPS24100	1.000

### Floor mounting bases for columns and rails

Description	Height	Reference	Weight kg
Double base with springs for level adjustment	47 mm	XUSZFB2	2.200
Single base	26 mm	XUSZFB1	1.000

### Anti-vibration kits

Kit contents	Protected height mm	For use with	Reference	Weight kg
■ 4 shock absorbers ■ 2 mounting inserts	160	XUSLE000016	XUSZVA4	0.050
■ 8 shock absorbers ■ 4 mounting inserts	260...1,060	XUSLE000026 to XUSLE000106	XUSZVA8	0.100
■ 12 shock absorbers ■ 6 mounting inserts	1,210...1,810	XUSLE000121 to XUSLE000181	XUSZVA12	0.150

### Mounting accessories

Description	Protected height mm	For use with	Reference	Weight kg
Pack of 4 curved brackets (14° rotation of light curtain)	160...1,060	XUSLE000016 to XUSLE000106	XUSZBSC4	0.200
Pack of 6 curved brackets (14° rotation of light curtain)	1,060...1,810	XUSLE000106 to XUSLE000181	XUSZBSC6	0.300
Pack of 4 adjustable brackets (180° rotation of light curtain)	160...1,810	XUSLE000016 to XUSLE000181	XUSZBSS4 (2)	0.150

### Aluminum mounting columns and rails for light curtains

Height of column mm	Protected height mm	For use with	Reference	Weight kg
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#### Without mirror adapter, with built-in spirit level

1,000	610	XUSLE000016 to XUSLE000061	XUSZSC105	3.500
1,200	1,060	XUSLE000076 to XUSLE000106	XUSZSC138	4.400
1,670	1,360	XUSLE000121 to XUSLE000136	XUSZSC172	5.300
1,970	1,810	XUSLE000151 to XUSLE000181	XUSZSC202	6.000

#### Without mirror adapter, with built-in spirit level and cable gland Pg 11

1,000	610	XUSLE000016 to XUSLE000061	XUSZSC105R	3.700
1,200	1,060	XUSLE000076 to XUSLE000106	XUSZSC138R	4.500
1,670	1,360	XUSLE000121 to XUSLE000136	XUSZSC172R	5.500
1,970	1,810	XUSLE000151 to XUSLE000181	XUSZSC202R	6.200

#### Aluminum mounting rail

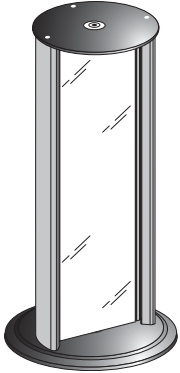
1,200	1,210	XUSLE000016 to XUSLE000121	XUSZSS125	1.300
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(1) Manual or automatic reset power supplies compliant with EN 61000-3-2. For more information, visit our website [www.schneider-electric.com](http://www.schneider-electric.com).

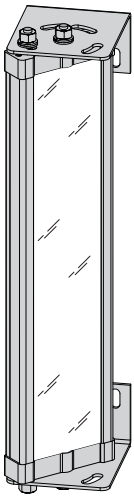
(2) XUSZBSS4 adjustable brackets are not compatible with XUSZWPE protective covers and XUSZWPEFC mounting clamps.

# Safety detection solutions Preventa

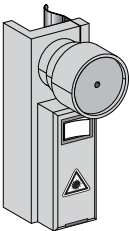
Accessories for safety light curtains  
types 2 and 4



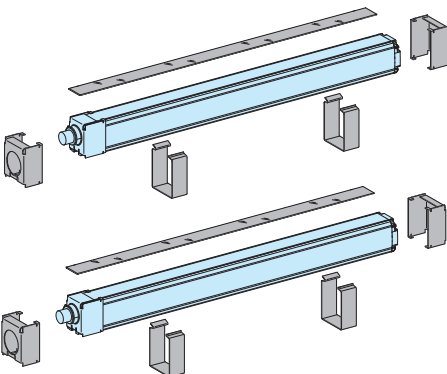
XUSZMF●●●



XUSZMD●●●



XUSZLPE



XUSZWPE●●● + XUSZWPEFC

## Aluminum mounting columns with mirror adapters

Height of column mm	Protected height mm	For use with	Reference	Weight kg
1,200	910	XUSLE●●●016 to XUSLE●●●091	XUSZMF125	5.800
1,330	1,060	XUSLE●●●091 to XUSLE●●●106	XUSZMF138	6.400
1,670	1,360	XUSLE●●●106 to XUSLE●●●136	XUSZMF172	8.000
1,970	1,810	XUSLE●●●136 to XUSLE●●●181	XUSZMF202	9.000

## Adjustable mirror adapters (1)

Height of mirror mm	Protected height mm	For use with	Reference	Weight kg
250	160	XUSLE●●●016	XUSZMD016	0.900
400	310	XUSLE●●●026 and XUSLE●●●031	XUSZMD031	1.400
540	460	XUSLE●●●046	XUSZMD046	1.800
715	610	XUSLE●●●061 and 2-beam light curtains	XUSZMD061	2.400
885	760	XUSLE●●●076	XUSZMD076	2.800
1,060	910	XUSLE●●●091 and 3-beam light curtains	XUSZMD091	3.300
1,230	1,060	XUSLE●●●106 and 4-beam light curtains	XUSZMD106	3.800
1,400	1,210	XUSLE●●●121	XUSZMD121	4.400
1,450	1,360	XUSLE●●●136	XUSZMD136	4.500
1,600	1,510	XUSLE●●●151	XUSZMD151	5.000
1,750	1,660	XUSLE●●●166	XUSZMD166	5.500
1,900	1,810	XUSLE●●●181	XUSZMD181	6.000

## Laser alignment tool

Description	Reference	Weight kg
For aligning transmitters and receivers when used with or without a mirror	XUSZLPE (2)	0.800

## Polycarbonate protective covers (3)

Height mm	For use with	Reference	Weight kg
195	XUSLE●●●016	XUSZWPE015 (4)	0.080
345	XUSLE●●●031	XUSZWPE030 (4)	0.140
495	XUSLE●●●046	XUSZWPE045 (4)	0.200
635	XUSLE2BB051	XUSZWPE050 (4)	0.210
645	XUSLE●●●061	XUSZWPE060 (4)	0.260
795	XUSLE●●●076	XUSZWPE075 (4)	0.310
935	XUSLE3BB081	XUSZWPE080 (4)	0.330
945	XUSLE●●●091	XUSZWPE090 (4)	0.380
1,035	XUSLE4BB091	XUSZWPE091 (4)	0.410
1,095	XUSLE●●●106	XUSZWPE105 (4)	0.440
1,245	XUSLE●●●121	XUSZWPE120 (4)	0.500
1,395	XUSLE●●●136	XUSZWPE135 (4)	0.560
1,545	XUSLE●●●151	XUSZWPE150 (4)	0.620
1,695	XUSLE●●●166	XUSZWPE165 (4)	0.680
1,845	XUSLE●●●181	XUSZWPE180 (4)	0.740

## Pack of mounting clamps for protective covers

Description	Reference	Weight kg
Stainless steel clamps for XUSZWPE●●● for light curtain pair (transmitter + receiver) ■ 4 end clamps ■ 4 retaining clamps	XUSZWPEFC	0.150

(1) Supplied with 2 mounting brackets.

(2) Suitable for all light curtains except for those mounted in IP 69K sealed protection tube.

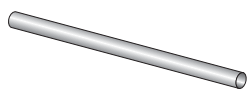
(3) The protective covers are not compatible with XUSZBSS4 adjustable brackets.

(4) Sold in lots of 4.

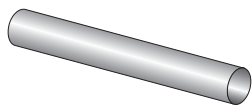
# Safety detection solutions

## Preventa

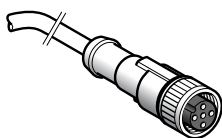
Accessories for safety light curtains  
types 2 and 4



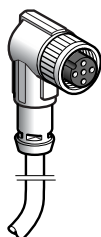
XUSZTR14



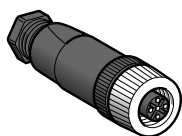
XUSZTR30



XZCP1164L●



XZCP1264L●



XZCC12FDM50B



XZCC12FCM50B

### Test rods for checking safety light curtains

∅	For use with	Reference	Weight
mm			kg
14	XUSL4E14F●●	XUSZTR14 (1)	0.020
30	XUSL4E30H●● and XUSL2E30H●●	XUSZTR30 (1)	0.070

### M12, 5-pin connection accessories (transmitter)

#### Pre-wired connectors

Connection	Type	Cable length	Reference	Weight
		m		kg
M12 female connector, PUR cable	Straight	2	XZCP1164L2	0.050
		5	XZCP1164L5	0.250
		10	XZCP1164L10	0.500
		15	XZCP1164L15	0.750
		20	XZCP1164L20	1.000
		25	XZCP1164L25	1.250
	Angled	2	XZCP1264L2	0.100
		5	XZCP1264L5	0.250
		10	XZCP1264L10	0.500
		15	XZCP1264L15	0.750
		20	XZCP1264L20	1.000
		25	XZCP1264L25	1.250

### Connectors for screw terminal connections

Description	Type	Cable length	Reference	Weight
		m		kg
M12 female connectors, metal clamping ring, 7 mm plastic cable gland (Pg 7)	Straight	–	XZCC12FDM50B	0.030
	Angled	–	XZCC12FCM50B	0.030

### M12, 5-pin connection accessories (transmitter and receiver)

#### Connection cables for master/slave segments

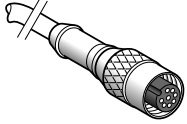
Description	Type	Cable length	Reference	Weight
		m		kg
2 x M12 female connectors, PUR cable	Straight	0.3	XZCR1111064D03	0.060
		3	XZCR1111064D3	0.180
		5	XZCR1111064D5	0.300
		10	XZCR1111064D10	0.600
		25	XZCR1111064D25	1.500

(1) The test rods are not supplied with the safety light curtains; they must be ordered separately.

# Safety detection solutions

## Preventa

Accessories for safety light curtains  
types 2 and 4



XZCP29P11L●●

### M12, 8-pin connection accessories (receiver)

#### Pre-wired connectors

Connection	Type	Cable length	Reference	Weight
		m		kg
M12 female connector, PUR cable	Straight	2	XZCP29P11L2	0.100
		5	XZCP29P11L5	0.250
		10	XZCP29P11L10	0.500
		15	XZCP29P11L15	0.750
		25	XZCP29P11L25	1.250
	Angled	2	XZCP53P11L2	0.100
		5	XZCP53P11L5	0.250
		10	XZCP53P11L10	0.500
		15	XZCP53P11L15	0.750
		25	XZCP53P11L25	1.250

#### Connectors for screw terminal connections

Description	Type	Cable length	Reference	Weight
		m		kg
M12 female connectors, metal clamping ring, 7 mm plastic cable gland (Pg 7)	Straight	–	XZCC12FDM80B	0.030
	Angled	–	XZCC12FCM80B	0.030

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