PHOTOELECTRIC SAFETY SENSORS

Edition 2006

PEPPERL+FUCHS
SENSING YOUR NEEDS

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Photoelectric safety sensors

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- Rotary encoders
- Counters, tachometers and switching mechanisms
- Sensor systems
  AS interface
  Identifikation systems

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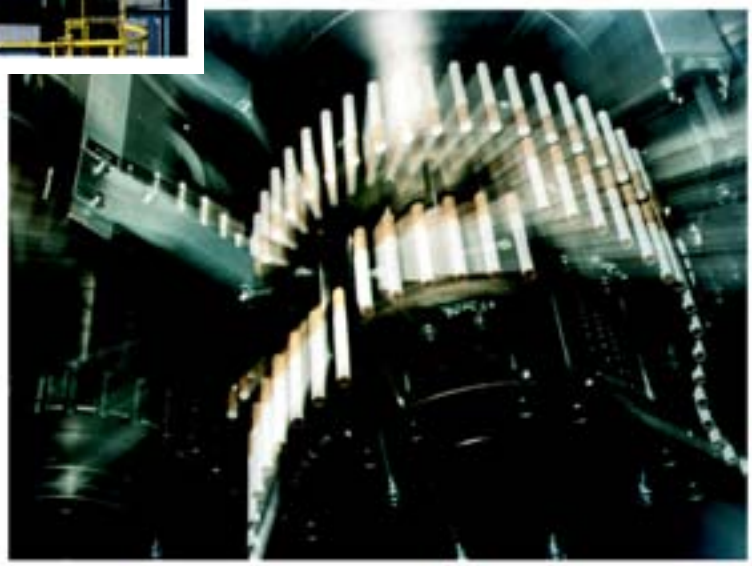
Global presence of a strong product brand



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Visolux – synonym for photoelectric competence

Modern automation technology keeps changing our lives. The effects reach from industrial manufacturing and processing to daily life with the apparent automatic opening of doors in department stores, supermarkets and public transport.

A condition for most automation solutions is - besides the achievements of microelectronics - a correspondingly powerful sensor technology which plays a key role in the background. Sensors constantly provide current information on process states and events to the controls. Most automation solutions would be unthinkable without these important components.

Whilst automation in the private sphere is usually to provide comfort and ease, the automated operation in the industrial environment tends to pay real money. Costs for routine processes and monitoring tasks can be reduced to a minimum and enable the efficient operation which is indispensible today

Market leader expands offer

The VISOLUX brand name, in the Pepperl+Fuchs business sector, stands for factory automation for all photoelectric sensors, including door/gate/lift sensors and sensors for safety applications. In an almost 60 year history our company has developed into one of the most reputable sensor manufacturers with a global presence. The company often takes the technological lead.

Responsible for products, solutions, and questions about photoelectric sensors, the VISOLUX division was seamlessly integrated into the Pepperl+Fuchs tradition and philosophy: with innovative and high-quality development of rational automation solutions making it possible for customers to gain decisive advantages in global competition. Simultaneously, the photoelectric sensor competence centre profits from the global distribution network and world-wide manufacturing facilities of the parent corporation, with locations in all important industrial regions in Europe, Asia, and America.

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Photoelectronics with key importance

Photoelectronic sensors are of key importance today when the goal is to detect or monitor objects without touching them. They are used wherever e.g. positioning, classification or counting is required. The applications range from the automobile industry, machine design, and assembly automation to warehousing and conveyor systems, packaging machines, the printing and paper industries, surveillance and safety technology.

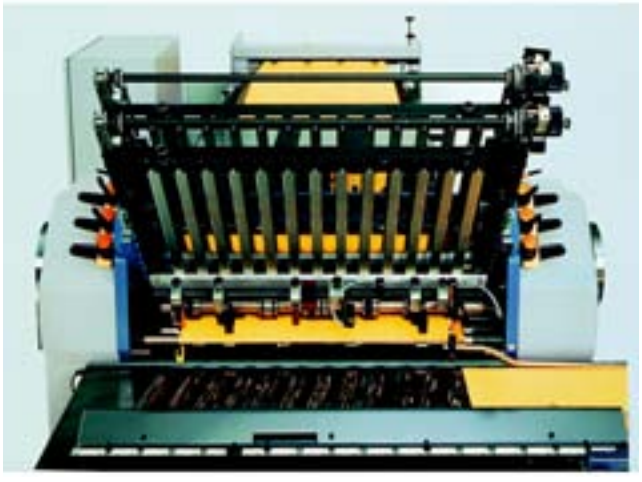
Extensive product line

With its extensive product line, Pepperl+Fuchs/ Visolux, as end-to-end supplier and market leader, has correspondingly mature end products. So the solutions of the photoelectronic specialists are always easy to optimise for individual applications.

The spectrum includes standard light barriers in the most varied designs, light scanners, colour sensors, laser systems, and data transmission light barriers, vision sensors, distance measurement devices, barcode scanners, light curtains, light grids, and safety light barriers. The latter can be used in non-contact safety applications.

For applications in which a one-beam optical detector is not sufficient, there is a broad spectrum of light grids available. They are used for the profile control of pallets, monitoring of lift doors or the paper tear protection in printing machines and much more.

Data light barriers, finally, provide wireless data transmission using light on linearly moving vehicles to avoid stoppage from cable breaks or communications errors from contact bounces with traditional sliding contacts.



The comfortable and at the same time safe operation

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of doors and gates is the subject of the industry-specific sensor technology from Pepperl+Fuchs/Visolux. Whether this is for opening pulse generators, the monitoring and startup control of escalators in public buildings, the control of the approach area of industrial gates or the closing edge protection of lift doors.

An assortment of different operating principles is employed on this very wide range of special sensors offered by Pepperl+Fuchs/Visolux to the manufacturer and.

Need customer-specific solutions?

If the right sensor cannnot be found in the Visolux line, or if problems crop up which cannot be solved with standard products off the rack, the Pepperl+Fuchs/Visolux development team is ready for action. In numerous customer-specific solutions, the photoelectronic specialists have already demonstrated their flexibility and performance.

The potential ranges from the modification of designs through the extension of individual functions to the closer cooperation with customers in the development of novel solution concepts.

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Selection table based on model line

Figure	Model line	Device design		Principle of operation				Limit detection range
		Series	Category	Safety through-beam sensors	Safety light grids	Safety light curtains	Safety control units	
	Safety through-beam sensors for control units	SLA5	4	●				5 m
		SL12	2	●				10 m
		SLA12	4	●				10 m
		SL29	2	●				65 m
		SLA29	4	●				65 m
		SLA40	4	●				4 m
	Safety light grids for control units	SLP...-2	4		●			65 m
		SLP...-3	4		●			65 m
		SLP...-4	4		●			65 m
	Safety light grids with integrated control unit	SLPC...-2	4		●			65 m
		SLPC...-3	4		●			65 m
		SLPC...-4	4		●			65 m
		SLPCM...-2	4		●			65 m
		SLPCM...-3	4		●			65 m
		SLPCM...-4	4		●			65 m
		SLC-2	4		●			20 m
		SLC-3	4		●			20 m
		SLC-4	4		●			20 m
	Safety light curtains with integrated control unit	SLC14-...	4			●		5 m
		SLC30-...	4			●		15 m
		SLC60-...	4			●		15 m
		SLC90-...	4			●		15 m
	Control units	SC2-2	2				●	depends on the optical barriers used
		SC4-2	4				●	
		SB4 SafeBox					●	

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Light type		Operating voltage				Output		Connection			Housing material		Functions						From page
Red light	Infrared	24 V	115 V	230 V	Power supply via control unit	Relay	Semiconductor	Connector	Terminalcompartment/clamps	Fixed cable	Plastic	Metal	Pre-fault indication	Startup/restart interlock	Relay monitor	Muting	Emergency case muting	Double muting	
●					●			●		●	●		●						24
●					●			●		●	●	●	●						
●					●			●		●	●	●	●						
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●					●				●			●	●						
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		●				●			●		●		●	●	●				
		●			●	●			●		●		●	●	●	●	●	●	

[1] with SB4 Safebox control unit

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General

The law prescribes protective measures wherever a machine in normal operation or the occurence of one or several errors might cause pose a hazard to people or equipment.

These measures are based on European law (Directive 89/392/EC) and the Machinery Directive.

Thus, some considerations are necessary to determine the "right" protective equipment.

1. The risk analysis

1.1 Risk analysis according to EN 1050 (ISO 14121 A standard)

The basic idea of the European safety standardisation is to determine the risk of plant or a machine (risk analysis, risk graph).

The risk assessment evaluates the complete or partial loss of the safety function, which is caused by errors. This risk assessment is based on EN 1050.

Typical hazards include:

mechanical hazards

S Severity of the injury

- S1 Slight (usually reversible) injury
- S2 Serious (usually irreversible) injury, including death

F Frequency and/or duration of the exposure to hazard

- F1 Rarely to more often and/or short duration of the exposure
- F2 Frequently to continuously and/or long duration of the exposure

P Possibility to avoid the hazard

- P1 Possible under certain conditions
- P2 Hardly possible

Burns

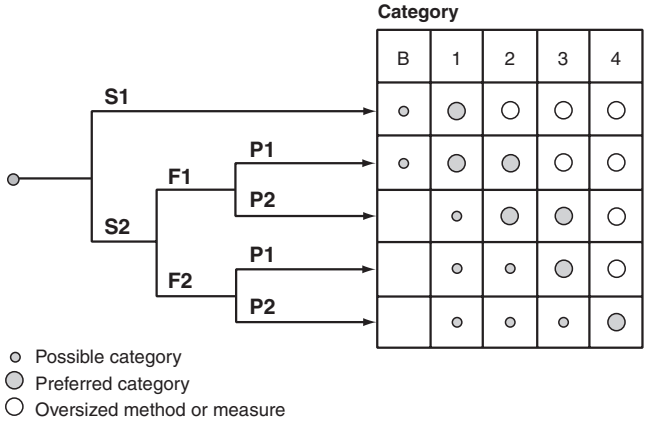
The risk analysis is carried out according to the following pattern:

Depending on the results of this analysis, the plant or machine is assigned to a certain category. This has the advantage that the requirements on the safety system and its costs can be adpated to the actual risk.

Moreover, the assessment of a category depends on the area of application.

For the process industrie, for instance, different classifications apply than for machine engineering. This is due to the fact that the consequences of an accident in a chemical plant may be quite different from that of an accident involving a press.

Estimation of risk



1.2 Risk assessment according to EN 954-1(B standard)

As the risk assessment is often time-consuming and complex, many of these analyses for typical machines have already been carried out and published as standards. These are referred to as C standards. Examples of C standards are defined at the end of the catalogue under "Additional information".

If there are no corresponding C standards, EN 954-1, in which 5 categories are defined, applies to the machine.

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In the context of EN 954-1, the following requirements apply for safety-relevant parts of controls and components:

Category B : Use of tried and testen components and principles.

Category 1 : Use of intrinsic safety approved components and principles.

Category 2 : Use of testable components, cyclical testing.

Category 3 : Individual error is detected and does not result in the loss of the safety function.

Category 4 : Self-monitoring. No loss of the safety function if individual errors occur or in the case of an accumulation of several errors.

1.3 Electro-sensitive protective equipment (ESPE)

The electro-sensitive protective equipment which is refererred to here includes photoelectric safety devices such as safety light barriers, safety light grids, safety light curtains and the corresponding control units.

Usually, electro-sensitive protective equipment is divided into 2 categories:

ESPE-T Type 2, according to IEC/EN 61496-1
Inspection of the safety function by means of regular testing, category 2 of the Machine Safety (EN 954-1).

ESPE-S Type 4, according to IEC/EN 61496-1
Self-monitoring, category 4 of the Machine Safety (EN 954-1).

According to the category, they contain one or two input signal switching devices (OSSD).

Additionally, special requirements for the optical properties of the sensor are defined.

Type 2 Opening angle 10°
Typ 4 Opening angle 5°

The photoelectric safety devices introduced in this catalogue either correspond to type 2 or type 4 and thus comply with the highest safety requirements.

2. Definition of the detection characteristics

Photoelectric safety devices are used if larger distances or areas must be contactlessly monitored. The following basic differentiations are made:

- Access protection (personal safety)
- Interference protection(hand, finger safety)

The optical characteristics (mainly range and resolution) dpend on this operational range.

2.1 Access protection

For personal safety mainly light barriers or light grids will be used.

Dependent on the hazard location to be monitored certain installation topologies are recommended or mandated.

- in EN 294 safety distances to prevent reaching hazard locations with the upper extremeties.
- in EN 811 definition of safety distances with regard to the reaching of operator limbs into danger areas.
- in EN 999 determination of sufficient safety distances.
- C standards see chapter "Additional information".

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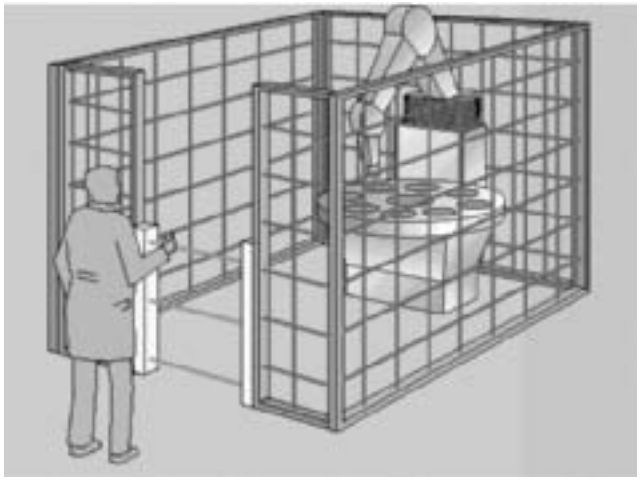
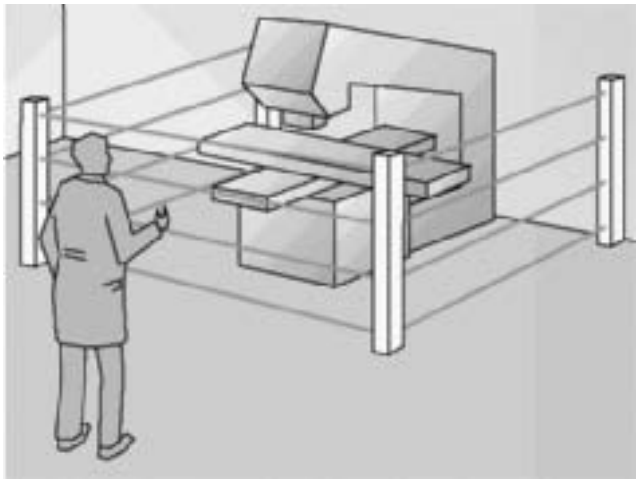
To ensure safety of personnel, combinations of mechanical and photoelectric safety devices are often used. In addition, redirection mirrors offer multi-sided protection.

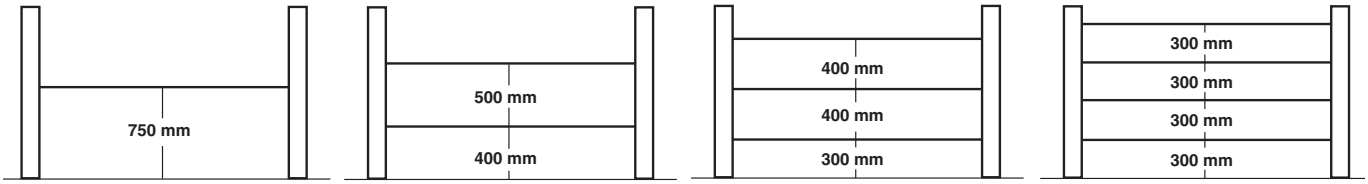


3 beam light grid protection



multi-directional protection using redirection mirrors

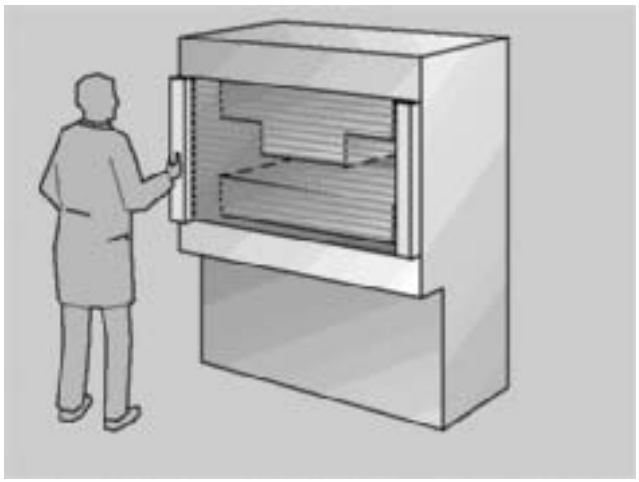
Examples for beam distances above floor level in accordance with EN 999:



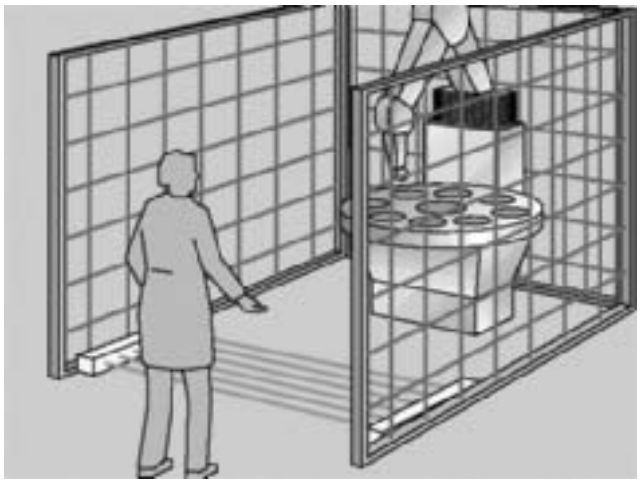
1 beam | 2 beams | 3 beams | 4 beams

2.2 Protection against reaching

Light curtains are used predominantly to protect against reaching.
In this case a higher resolution is required, usually 14 mm (finger safety), 30 mm (hand safety), 60 mm and 90 mm (bypass protection).



Reach protection through light curtain



light curtain for bypass protection

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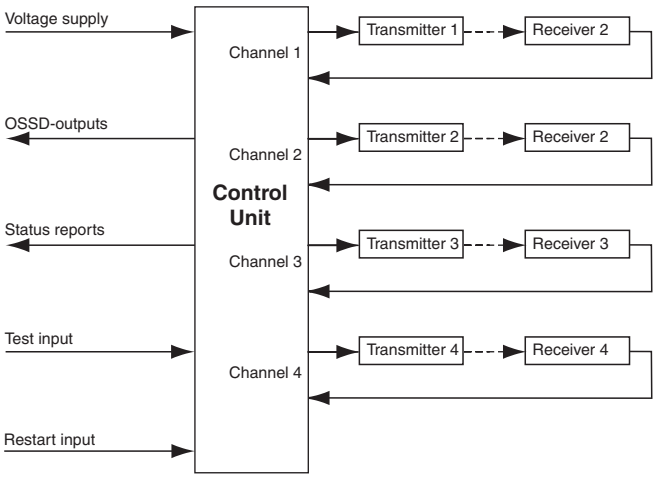
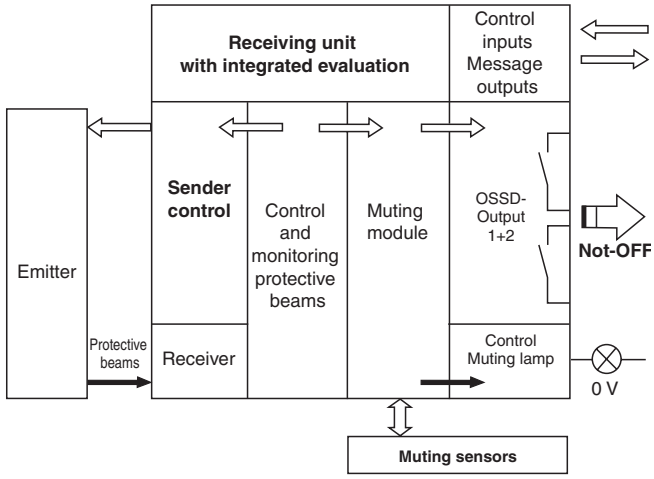
2.3 Signal Evaluation

The signal evaluation fo individual light barriers is normally located in a separate control unit.
For light grids both designs with integrated evaluation and with external signal evaluation are available. For light curtains the evaluation is normally integrated.



Individual light barriers with separate evaluation



Light grid/light curtain with integrated evaluation

3. Installation of the photoelectronic protection device

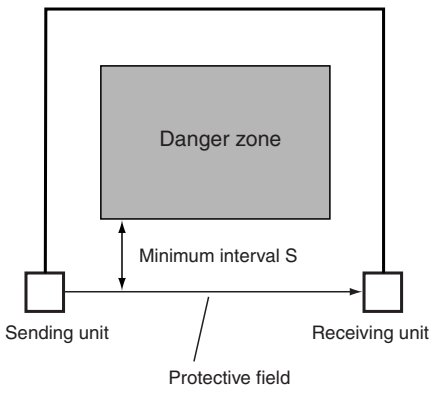
3.1 Determining the safety distance

When fitting an photoelectronic safety device to a hazard location, a minimum distance between the protected area and the hazard location must be observed. This distance is to ensure that the movement causing the hazard will have come to rest before any person can touch it.

The distance is calculated from the after-running time of the machine, the response time of the safety system and the speed of movement of the person entering the danger area (EN 999, EN 294).

According to EN 999, the minimum distance can be calculated using the formula:

$$S = K \times T + C$$



Accordingly,

S: S minimum safety distance in mm, i.e. the distance from the hazardous area to the protected area

K: Constant in mm/s for the approach speed.

T: Total response time in s.

$$T = t_1 + t_2$$

t_1: Response time of the safety device

e.g. 20 ms (semiconducator OSSD) or.
40 ms (relay OSSD)

t_2: Machine after-running time

C: additional distance according to the table.

Number of beams/resolution	14 mm	30 mm	60 mm	90 mm	2,3,4 beams	1 beam*)
C	0 mm	128 mm	850 mm	850 mm	850 mm	1200 mm

*) provided the risk analysis permits a 1 beam protection.

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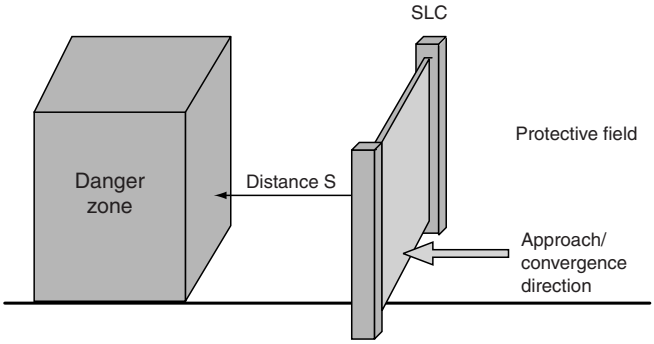
3.1.1 Safety distances for light curtains (EN 999)

Vertical approach

Calculation example:

With K = 2000 mm/s
and C = 0 mm for SLC 14...
or C = 128 mm for SLC 30...

the calculation formula for the distance S of 105 mm to up to 500 mm is:



$$S = 2000\frac{mm}{s} \bullet (t_1 + t_2) + C$$

Note:

If S is greater than 500 mm, K = 1600 mm/s can be used.

$$S = 1600\frac{mm}{s} \bullet (t_1 + t_2) + C$$

S must be at least 500 mm. Smaller results must be corrected to a minimum distance of 500 mm.

Example: vertical layout

t_1 = 50 ms, t_2 = 300 ms
Hand protection C = 128 mm

$$S = 2000\frac{mm}{s} \bullet 350 \bullet 10^{-3}s + 128mm$$

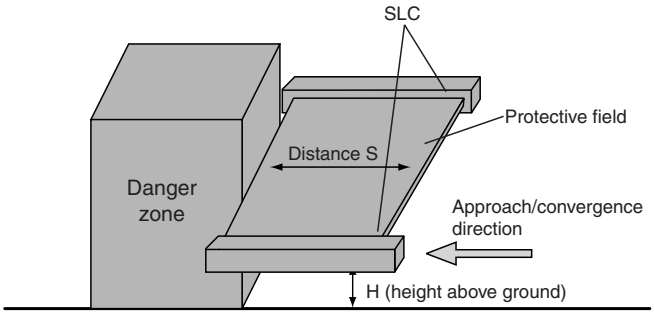
$$S = 700mm + 128mm$$

$$S = 828mm$$

The minimum distance from the protected field to the danger location must be 828 mm.

Parallel approach

For the horizontal layout of the safety light curtain the safety distance S also depends on the height of the light curtain above the floor. The maximum permitted height H is1000 mm. At a height greater than 300 mm there is a risk of access from below the safety light curtain. This must be taken into account during the risk analysis; alternatively additional barriers might be needed. The safety distance can be calculated as follows:



$$S = 1600\frac{mm}{s} \bullet (t_1 + t_2) + (1200mm - 0,4H)$$

where (1200 mm - 0.4 H) ≥ 850 mm (EN 999).

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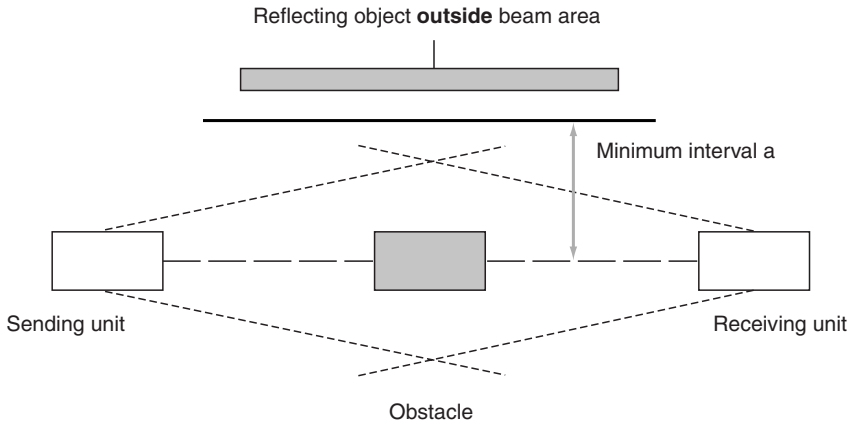
3.1.2 Safety beam distances for access protection

According to EN 999, the following heights are recommended for individual beams that are parallel to the floor:

Number of beams	Height above reference plane in mm
1	750
2	400, 900
3	300, 700, 1100
4	300, 600, 900, 1200
5	
6	Lowest beam ≤300
7	Highest beam ≥900
8	

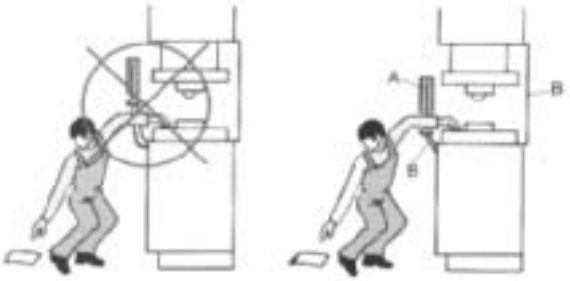
3.1.3 Light beam reflection around an obstacle

It must be ensured that reflecting objects which may cause a light beam reflection around an obstacle are not located within the transmitting or receiving lobe (EN 61496-2).

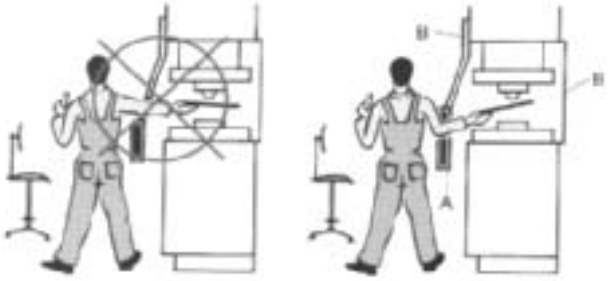


3.2 Installation notes

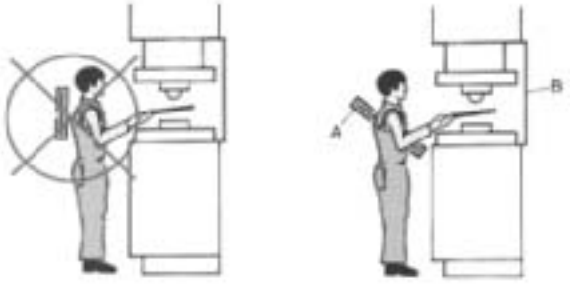
The safety light curtain must be arranged in such a way that it is never possible to bypass the protective field from above, below or behind. If the distance to the safety light curtain is too great, additional safety devices must be fitted (see sample illustrations).



There must be no gap below the protective field through which it is possible to reach into the danger area (A: protective field, B: mechanical protection).



The operator must be prevented from reaching into the danger area from above (A: protective field, B: mechanical protection).



The machine operator must not get between the light curtain and the hazard location (A: protective field, B: mechanical protection).

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4. Output switching

Pepperl+Fuchs/Visolux protection devices of type 4 are self-monitoring to type BWS-S and meet the requirements of control category 4 (machine safety).

They feature two output signal switching devices OSSD (**O**utput **S**ignal **S**witching **D**evice).

The switching devices are available either as semiconductors with separated potential or optionally with monitored forced NO contacts.

5. Additional functions

5.1 Startup/restart lock

The startup/restart lock prevents the hazardous movement from automatically restarting after the protective field has been penetrated.

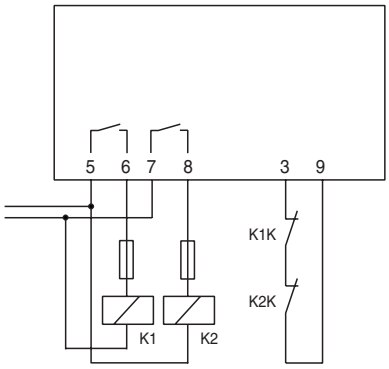
The button for the startup/restart release must be positioned from where the danger area is easily visible and where it is not possible to operate this button from within the danger area.

Startup release message:

To signal that all protective beams are clear after a beam interruption or after powering up, all BWS have an output which is enabled if the protective field is clear. This function will only be enabled during operation with startup/ restart lock to notify the user that the startup release can be operated.

5.2 Relay monitor

The relay monitor is designed to monitor externally connected relays. The relay monitor must be wired as shown here. Any number of NC contacts can be switched by any number of relays. The minimum number of relays is, however, 2.



K1 and K2 in the illustration are forced relays. The NC contacts K1K and K2K (control contacts) must guarantee a safe contact at 24 V/5 mA. Add-on auxiliary contacts or contacts of auxiliary relays normally meet this requirement. Between the control contacts and other contacts under 230 V alternating voltage a surge voltage resistance of 6 kV must be guaranteed by the relay manufacturer. The operating circuit of the relay must be secured with a fuse of a nominal rating of max. 60% of the load capacity of the relay contacts. The relays are monitored with a delay of 200 ms after the switching operation. If the new switching state has not been reached after 200 ms, the ESPE enters into a locking state and indicates the error on the diagnostic display.

5.3 Muting

In the muting mode the protective function of a ESPE will be intentionally bridged. This function is necessary to transport materials in or out of a danger area using an automatic conveying system. A precondition for this bridging are at least 2 enabled muting sensors and a muting lamp.

The selection and layout of the muting sensors must ensure a differentiation between people and conveyed material. Whilst the muting function is enabled the access to the danger area must be blocked, if necessary by the conveyed material itself.

Various muting modes can be set at the muting-capable safety systems of Pepperl+Fuchs/Visolux to achieve an adaptation to different applications. Different muting modes can bes set at the evaluation device Safebox or the light grid SLPCM dependent on the actual application. Sequential and parallel muting are possible.

With dual muting two hazard locations can be monitored simultaneously.

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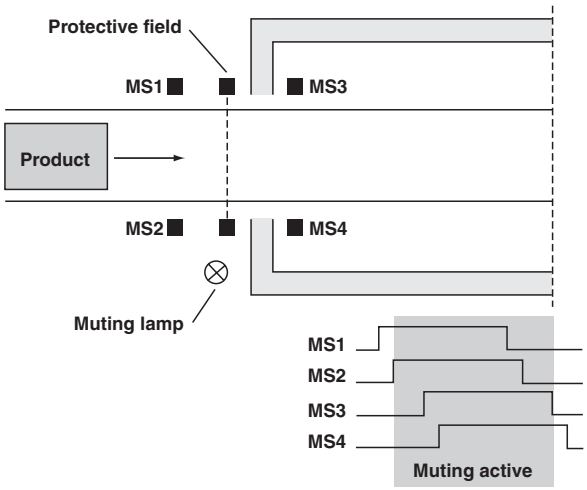
5.3.1 Mode of operation

Evaluation of the muting sensors

Depending on the arrangement, the muting sensors are activated within a short period of time or successively. The sequence of the activation can be monitored by selecting between parallel and sequential muting.

Parallel muting

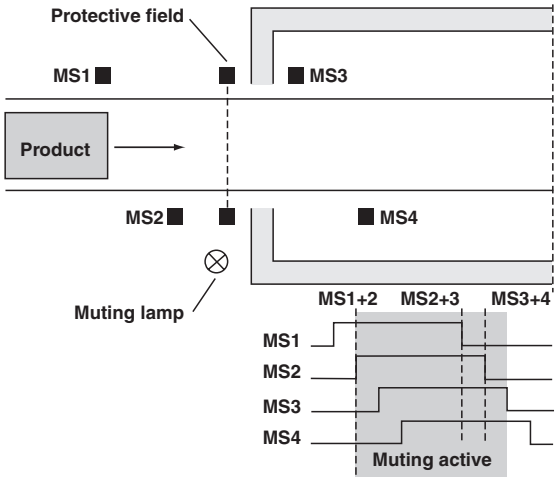
In the parallel muting operating mode, the muting sensor arranged in pairs (MS1 and MS2 or MS3 and MS4) must be activated within 2 s. If only one of the muting sensors has been activated in this time, it will be locked. Locking will block the muting from being enabled. This lock will only be removed if the sensor is no longer active.



Sequential muting

In contrast to parallel muting where the activated sensors MS1 and MS2 or MS3 t and MS4 fulfil the muting condition, sequential muting also allows sensors MS2 and MS3 to keep the muting condition.

The muting sensors are activated successively. The arrangement of the sensors is to be selected in such a way that a person cannot unintentionally activate 2 sensors.



Muting monitoring

To avoid a dangerous continuous muting in the case of a failure of the muting sensors, muting is operated either with a time window limit or a protection beam limit. Time window-limited muting should be used if the objects that are supposed to pass the protection beams unhindered have crossed the protection beams within approx. 240 s. If the muting process cannot be completed within this time window, protection beam limited muting can be used. It must be ensured that muting is stopped approx. 115 ms after all protection beams have been released.

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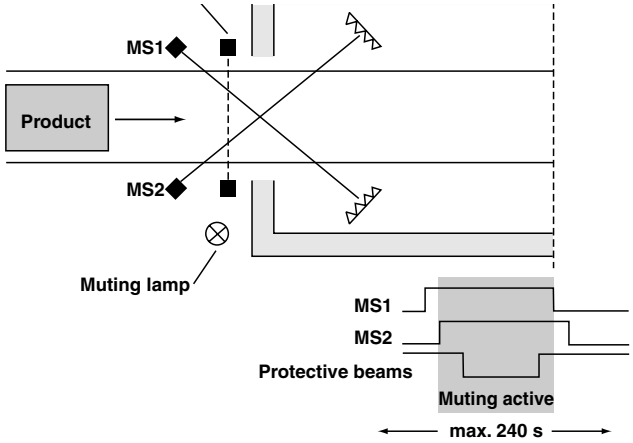
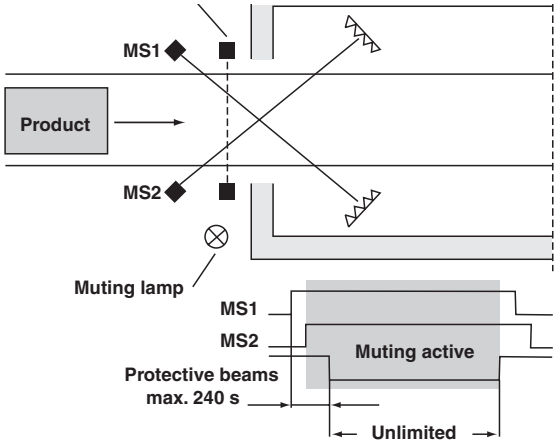
Time window-limited muting

If time window-limited muting is selected, each muting sensor is monitored in terms of time. Each sensor may only be activated for a maximum of 240 s. This means that the muting object must have passed the sensor within this period of time. If this time is exceeded, the evaluation unit locks the sensor. If the sensor is locked, muting can no longer be activated. The sensor can only be released again after it has been deactivated.



Protection beam-limited muting

In the case of protection beam-limited muting, muting sensors are evaluated with respect to time after their activation. Two activated muting sensors initiate the muting procedure. At the latest 240 s after activation (applies separately for each muting sensor), at least one protection beam must be interrupted. In contrast to time window-limited muting, the time measurement is stopped, thus enabling muting with no time limit. Approx. 115 ms after the protective field is evacuated (all protective beams are clear) and the passage is clear again, the muting process will finish.



5.3.2 Muting sensors

Muting sensors are supposed to detect the muting objects. If an object is detected, the output of the muting sensor switches through its supply voltage. For this purpose, sensors with relay or pnp output are suitable. In a de-energised state, the output of the muting sensor must not be active. The sensor output should be capable of reliably switching a load current of 8 mA at 20 V.

As muting sensors, the following sensors can be used, for example:

- Reflective light barriers (light activation) with object-mounted reflector,
- Reflective light barriers (interrupt activation) with fixed reflector,
- Single-direction light barriers (interrupt activation),
- Optical sensors,
- Inductive sensors,
- Mechanical switches.

5.3.3 Muting lamp

When using muting a signal lamp for indicating the muting state with a minimum luminous area of 1 cm^2 and a minimum luminosity of 200 cd/m^2 must be used. Monitoring the connected lamp ensures that the muting signal lamp fulfils its function correctly. If the muting signal lamp is faulty the BWS enters into the locking state and indicates the error on the display. During power-up, when executing the reset command and during the time the muting is enabled, the muting lamp will be monitored.

To increase the system availability 2 muting signal lamps can be connected in parallel. This is conditional on both signal lamps being visible simultaneously and in close proximity to each other during any approach to the access.

Without the use of muting muting signal lamps are not required.

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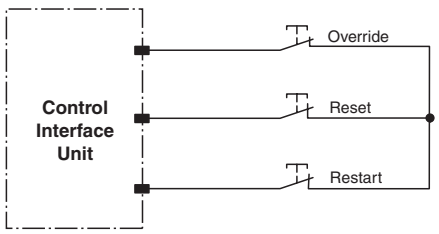
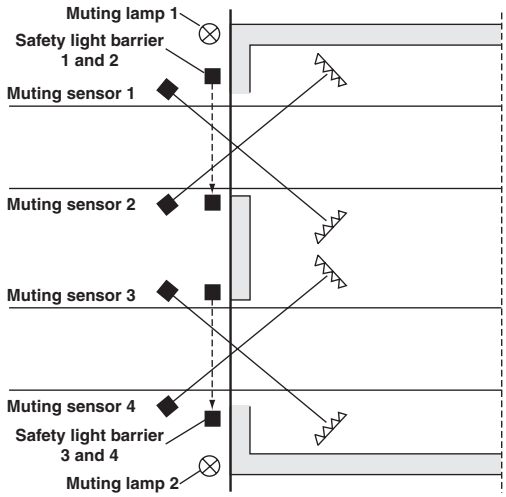
5.3.4 Emergency muting

If the plant must be started up again for removing a blocking object from the protected area and the muting sensors, the emergency muting function is available. In the case of emergency muting, the locked muting sensors are evaluated again for a duration of 3s ... 4 s. Consequently, the OSSDs are switched on again for 3 s ... 4 s. Emergency muting is initiated using the override push button. This initialisation can be retriggered, i.e. by actuating the push button again within 3 s, the duration of the on status of the OSSDs can always be extended until the object has left the muting sensor area.



5.3.5 Double muting

If the double muting operating mode is selected, 2 entries to a hazardous area can be protected and muted using one muting module and one sensor card module.



This operating mode divides the sensor inputs of the sensor card module to the left of the muting module, the muting sensor inputs, the muting lamps and the override inputs into 2 separate areas.

The two created muting areas work completely independently from each another.

In the case of double muting, all other operating modes that can be selected (e.g. protection beam limit or time limit) are effective for both muting areas.

5.3.6 Grouping

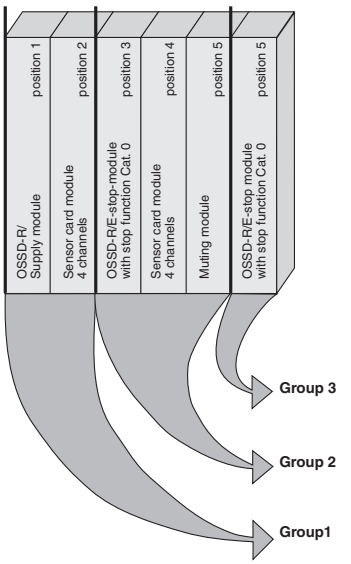
There may be several switch groups in a Safebox. This makes sense if not the entire system is to be taken out of operation in the case of an interruption of a safety device, but only the affected drive.

A special software is utilised for complex systems with grouping. This allows for several OSSD modules with stop function category 0 to be operated in a Safebox. A SafeBox contains exactly as many shut-off groups as it has OSSD modules with stop function 0. Each shut-off group may have sensor card modules, muting modules or OSSD modules with a time-delay shut-off function. All modules to the right of an OSSD module form a group.

Arrangement of the modules

The following modules may belong to a group:

- Sensor card modules
- Muting modules
- Stop function cat.1 modules
- The OSSD modules set to stop function cat.1 are also assigned to a group. These switch off with a delay after the OSSD module in stop function cat. 0 module of the group.
- Muting modules generate a muting procedure for the sensor module fitted immediately to the left of the muting module.
- Additional sensor modules of the group are not influenced by the muting module.



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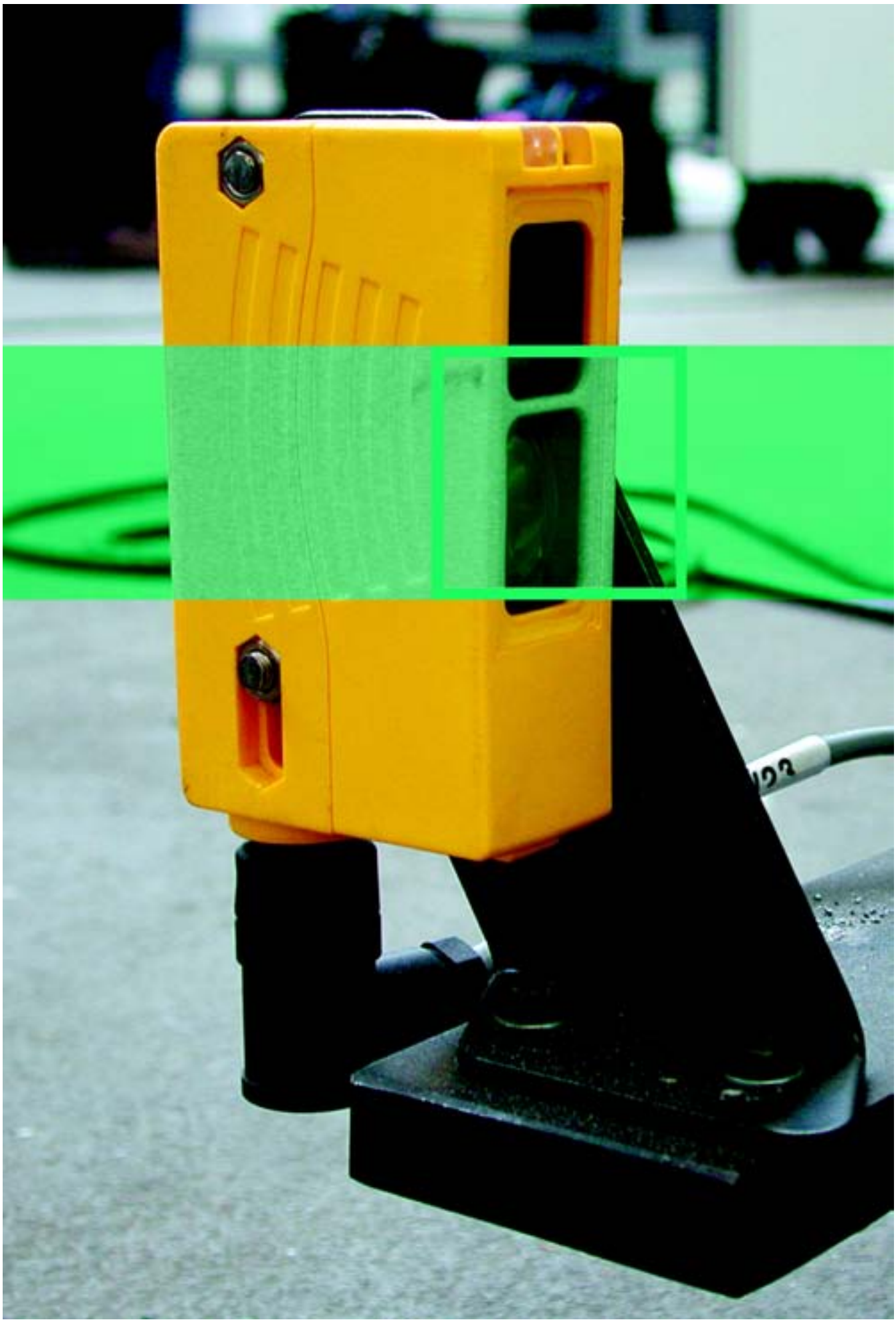

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Description

Single direction light barriers of type SL/SLA together with a control unit of series **SafeBox** or **SC** form an photoelectronic protection device of category 2 or 4 (EN 954-1) or type 2 or 4 (according to IEC/EN 61496).

The protection device can be in single or multiple beam design.

A single direction light barrier consists of a sender and a receiver.

The single direction light barriers SL/SLA, the control unit SafeBox or SC, muting sensors and other user-selectable safety devices (e.g. E-stop) combine into a modular protection system.

1 to 8 light barriers can be connected to a control unit. The light barriers can be mixed freely, but a light barrier must consist of a sender and receiver of the same type.

The supply voltage required for the light barrier is provided by the control unit. The control unit also triggers the sender and evaluates the signal transmitted by the receiver (e.g. light beam interruption.

Series SL/SLA are available in different designs and ranges.

Dependent on the type of light barrier used the range can be up to 65 m.

Protection from several directions can be achieved with the use of redirection mirrors (extra).

Applications

Normally used for increased risk of injury. For example for access control of pallet systems, robots, wood processing machines, packaging machines, overhead warehouse shelves and machine lines.

Operating	Type code	Control unit	Category	Detection range	Page
	**SLA5** **SLA5/92**	**SafeBox**	**4**	**0 m ... 5 m**	**26**
	SLA5S **SLA5S/92**	**SafeBox**	**4**	**0 m ... 5 m**	**28**
	SL12	**SafeBox / SC2**	**2**	**0 m ... 10 m**	**30**
	SLA12	**SafeBox / SC4**	**4**	**0 m ... 10 m**	**32**
	SL29	**SafeBox / SC2**	**2**	**0 m ... 65 m**	**34**
	SL29/116	**SafeBox / SC2**	**2**	**0 m ... 65 m**	**36**
	SLA29	**SafeBox / SC4**	**4**	**0 m ... 65 m**	**38**
	SLA29/116	**SafeBox / SC4**	**4**	**0 m ... 65 m**	**40**
	SLA40 **SLA40/92**	**SafeBox**	**4**	**0 m ... 4 m**	**42**

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Features

- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Operation on control units of SB4 (SafeBox)**

For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

		Ordering code	SLA5	SLA5/33 K=5m	SLA5/33 K=10m	SLA5/92
Construction type(S2)	Rectangular type		◆	◆	◆	◆
Effective detection range	0 ... 5 m		◆	◆	◆	◆
Number of protective field beams	1		◆	◆	◆	◆
Light source	LED		◆	◆	◆	◆
Approvals	TÜV		◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)		◆	◆	◆	◆
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆
Light type	red, modulated light		◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆
Function display	LED yellow/green in receiver: off: Interruption yellow: transmission green: reception with sufficient stability control		◆	◆	◆	◆
Pre-fault indication	LED functional display yellow		◆	◆	◆	◆
Operating voltage	Power supply via control unit		◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)		◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)		◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆
Protection degree	IP65		◆	◆	◆	◆
Connection	Fixed cable, 10 m; 0.25 mm^2				◆	
	Fixed cable 2 m; 0.25 mm^2		◆			
	Fixed cable, 5 m; 0.25 mm^2			◆		
	M12 connector, 4-pin					◆
Housing	ABS plastic, RLA 1021 (yellow) painted		◆	◆	◆	◆
Optical face	Plastic lens		◆	◆	◆	◆
Mass	Per 95 g		◆	◆	◆	◆
System components						
Emitter	SLA5-T		◆			
	SLA5-T/33 K=10m				◆	
	SLA5-T/33 K=5m			◆		
	SLA5-T/92					◆
Receiver	SLA5-R		◆			
	SLA5-R/33 K=10m				◆	
	SLA5-R/33 K=5m			◆		
	SLA5-R/92					◆

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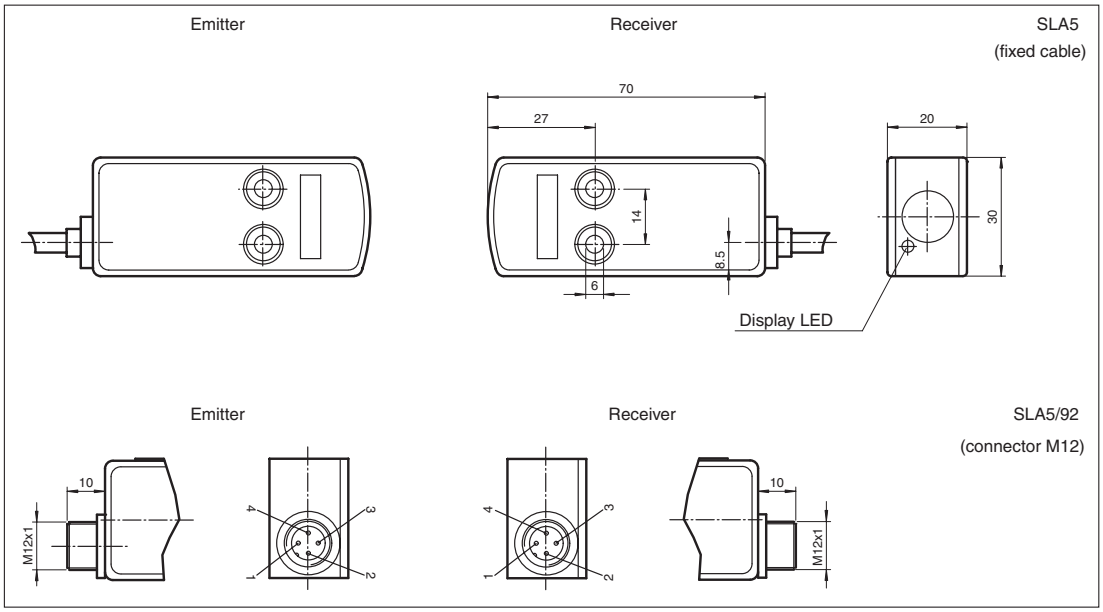
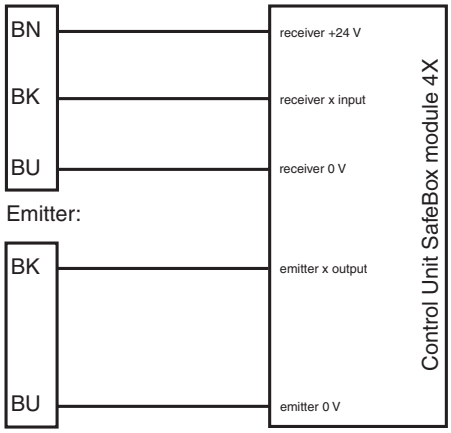
Dimensions



Electrical connection

Design with fixed cable

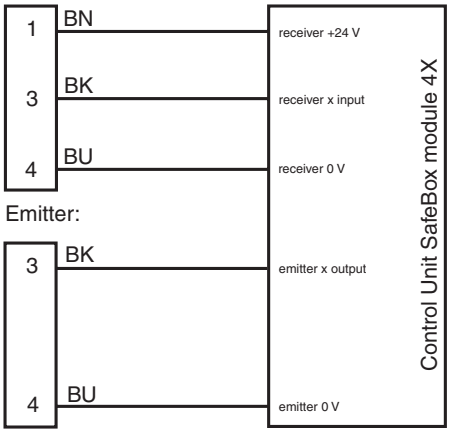
Receiver:



Emitter:

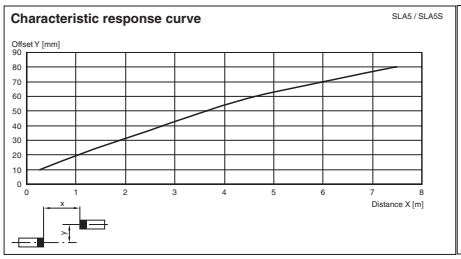
Design with connector plug

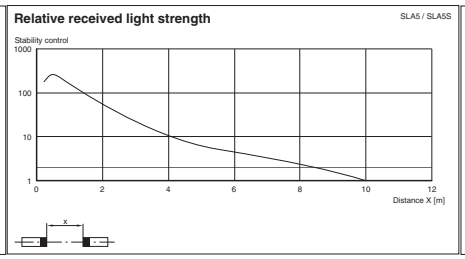
Receiver:

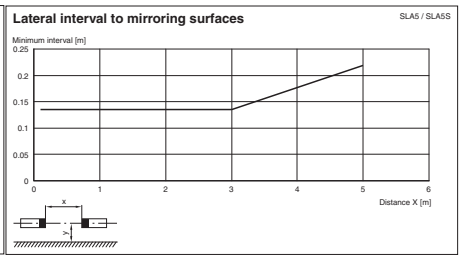


Emitter:

Diagrams







System accessories

Control units

SB4 (SafeBox)

Cable sockets (only for option /92)

straight: V1-G-2M-PVC
V1-G-5M-PVC
V1-G-10M-PVC

angled: V1-W-2M-PVC
V1-W-5M-PVC
V1-W-10M-PVC

Further accessories

Redirection mirror
SLA-1-M

Date of edition 05/17/2006

Features

- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Optical-system lateral**
- **Red transmission light**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Operation on control units of SB4 (SafeBox)**

For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

		Ordering code	SLA5S	SLA5S/33 K=5m	SLA5S/92
Construction type(S2)	Rectangular type		◆	◆	◆
Effective detection range	0 ... 5 m		◆	◆	◆
Number of protective field beams	1		◆	◆	◆
Light source	LED		◆	◆	◆
Approvals	TÜV		◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆
Marking	CE		◆	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)		◆	◆	◆
Safety category according to IEC/EN 61496	4		◆	◆	◆
Light type	red, modulated light		◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆
Function display	LED yellow/green in receiver: off: Interruption yellow: transmission green: reception with sufficient stability control		◆	◆	◆
Pre-fault indication	LED functional display yellow		◆	◆	◆
Operating voltage	Power supply via control unit		◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)		◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)		◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆
Protection degree	IP65		◆	◆	◆
Connection	Fixed cable 2 m; 0.25 mm²		◆		
	Fixed cable, 5 m; 0.25 mm²			◆	
	M12 connector, 4-pin				◆
Housing	ABS plastic, RLA 1021 (yellow) painted		◆	◆	◆
Optical face	Plastic lens		◆	◆	◆
Mass	Per 95 g		◆	◆	◆
System components					
Emitter	SLA5S-T		◆		
	SLA5S-T/33 K=5m			◆	
	SLA5S-T/92				◆
Receiver	SLA5S-R		◆		
	SLA5S-R/33 K=5m			◆	
	SLA5S-R/92				◆

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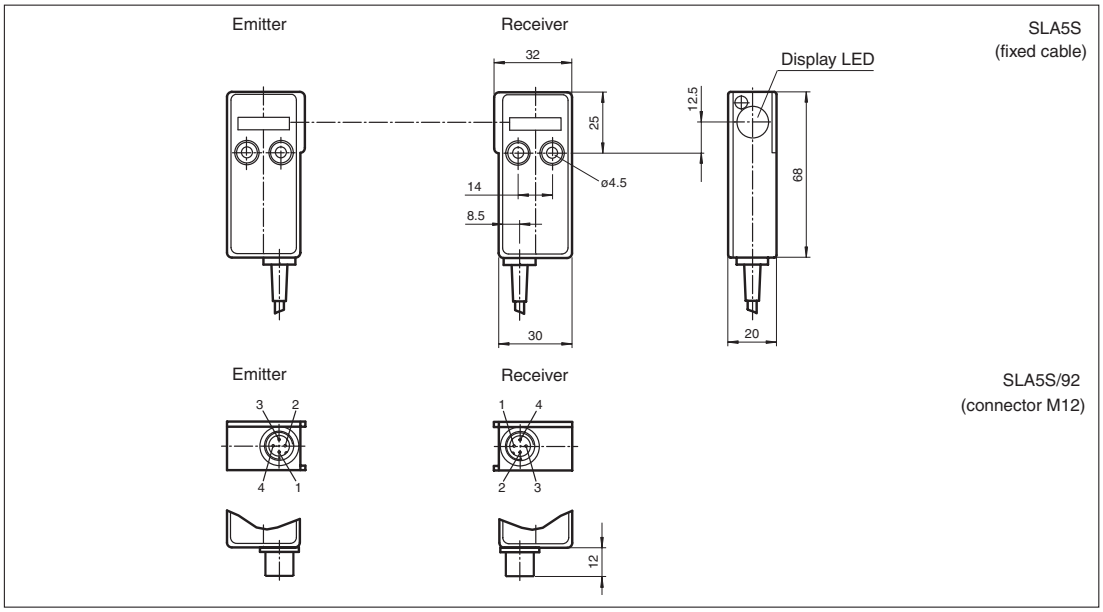
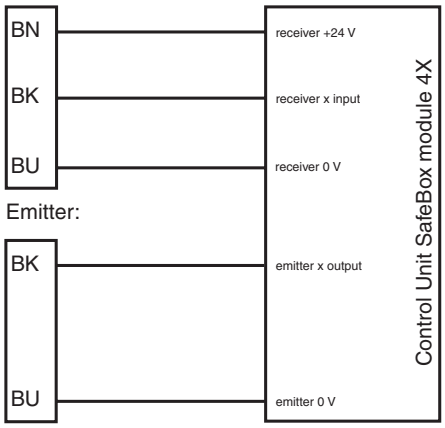
Dimensions



Electrical connection

Design with fixed cable

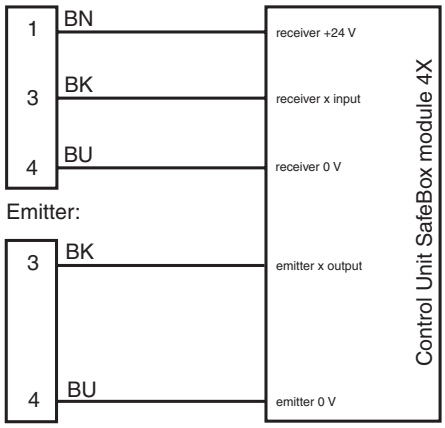
Receiver:



Emitter:

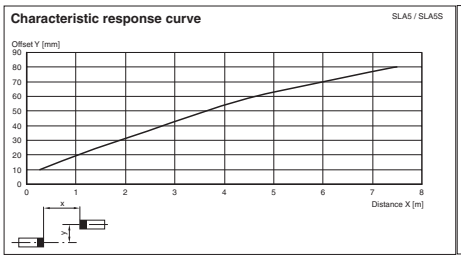
Design with connector plug

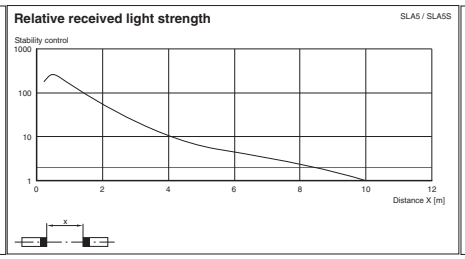
Receiver:

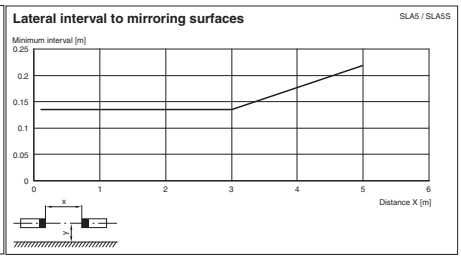


Emitter:

Diagrams







System accessories

Control units

SB4 (SafeBox)

Cable sockets (only for option /92)

straight: V1-G-2M-PVC
V1-G-5M-PVC
V1-G-10M-PVC

angled: V1-W-2M-PVC
V1-W-5M-PVC
V1-W-10M-PVC

Further accessories

Redirection mirror
SLA-1-M

Date of edition 05/17/2006

Features

- **Detection range up to 10 m**
- **Test input (Type 2 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Integrated alignment aid**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Waterproof, protection class IP67**
- **Operation on control units of series SC2-2**

For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

	Ordering code	SL12/124	SL12/115
Construction type(S2)	Miniature housing	◆	◆
Effective detection range	0.2 ... 10 m	◆	◆
Threshold detection range	16 m	◆	◆
Light source	LED, 660 nm	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Alignment aid	LED red	◆	◆
Safety category according to IEC/EN 61496	2	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 10 °	◆	◆
Series	MLV12	◆	◆
Operating display	LED green	◆	◆
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point	◆	◆
Operating voltage	Power supply via control unit	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP67 according to EN 60529	◆	◆
Connection	2.5 m fixed cable, 5-core, Euronorm		◆
	connector, 5-pin with metal thread M12 x 1, may be rotated 90°	◆	
Housing	Frame: die-cast zinc, nickel-plated Laterals: plastic PC, glass-fiber reinforced	◆	◆
Optical face	Plastic pane	◆	◆
Mass	per device 60 g	◆	◆
System components	Ordering data	◆	◆
Emitter	SL12-T/115		◆
	SL12-T/124	◆	
Receiver	SL12-R/115		◆
	SL12-R/124	◆	

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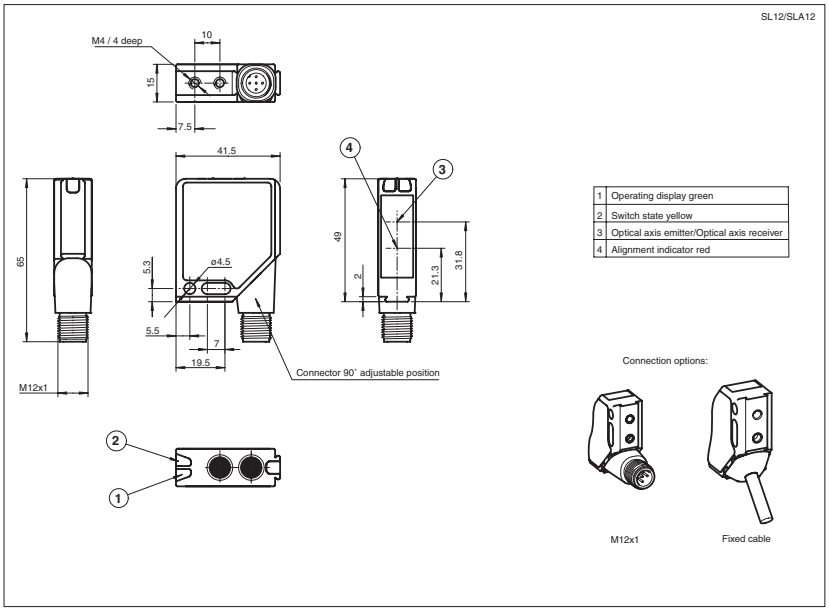
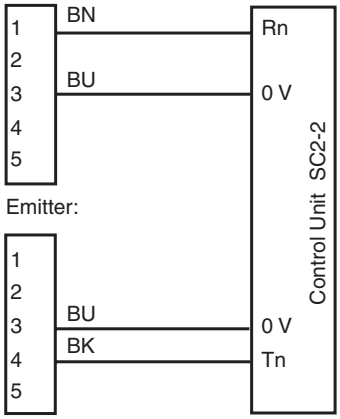
Dimensions



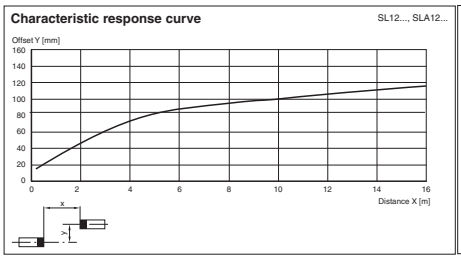
Electrical connection

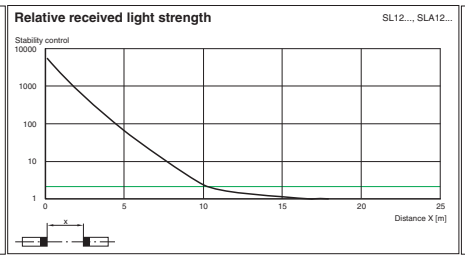
Receiver:

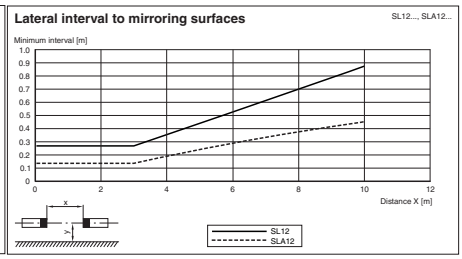


Emitter:

Diagrams







System accessories

Control units

SC2-2

Cable sockets (not for option /115)

straight: V15-G-2M-PVC
V15-G-5M-PVC
V15-G-10M-PVC

angled: V15-W-2M-PVC
V15-W-5M-PVC
V15-W-10M-PVC

Mounting aids

OMH-06
OMH-MLV12-HWG
OMH-MLV12-HWK
OMH-K01
OMH-K02

Further accessories

Redirection mirror
SLA-1-M

Date of edition 05/17/2006

Features

- **Detection range up to 10 m**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Integrated alignment aid**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Waterproof, protection class IP67**
- **Operation on control units of series SB4 (SafeBox) and SC4-2**

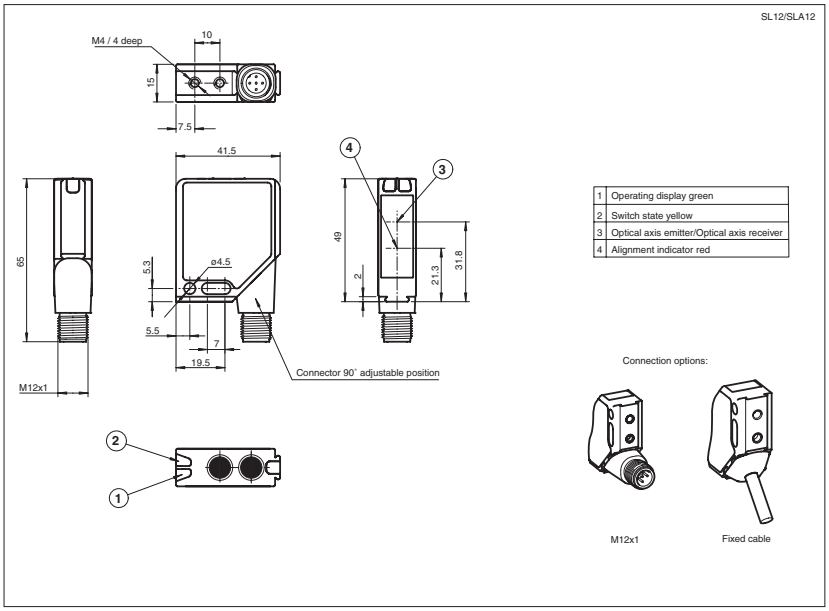
For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

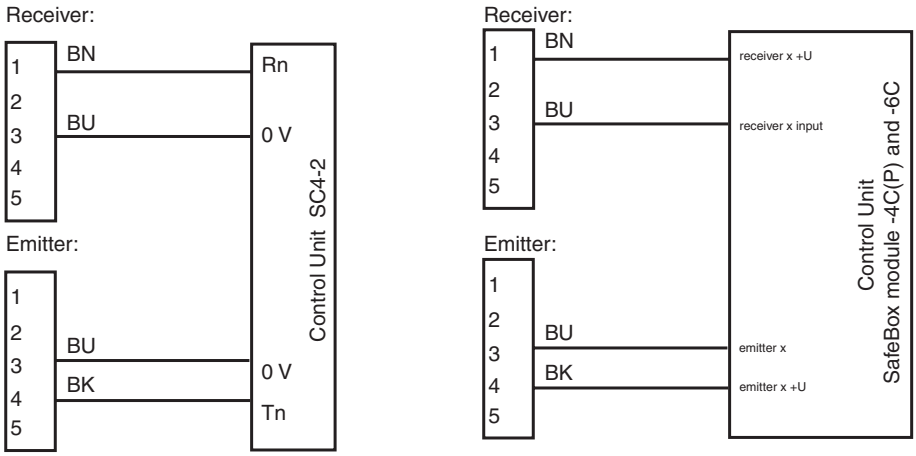
		Ordering code SLA12/124	SLA12/115
Construction type(S2)	Miniature housing	◆	◆
Focke Ident-No.			
Effective detection range	0.2 ... 10 m	◆	◆
Threshold detection range	16 m	◆	◆
Light source	LED, 660 nm	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Alignment aid	LED red	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Series	MLV12	◆	◆
Operating display	LED green	◆	◆
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point	◆	◆
Operating voltage	Power supply via control unit	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP67 according to EN 60529	◆	◆
Connection	2.5 m fixed cable, 5-core, Euronorm		◆
	connector, 5-pin with metal thread M12 x 1, may be rotated 90°	◆	
Housing	Frame: die-cast zinc, nickel-plated Laterals: plastic PC, glass-fiber reinforced RAL 1021 (yellow)	◆	◆
Optical face	Plastic pane	◆	◆
Mass	per device 60 g	◆	◆
System components	Ordering data	◆	◆
Emitter	SLA12-T/115		◆
	SLA12-T/124	◆	
Receiver	SLA12-R/115		◆
	SLA12-R/124	◆	

Date of edition 05/17/2006

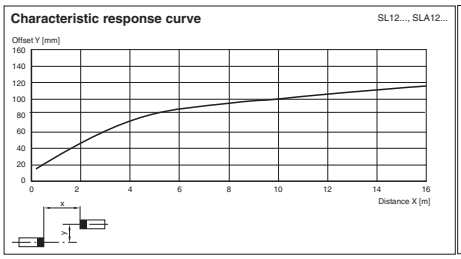
Dimensions

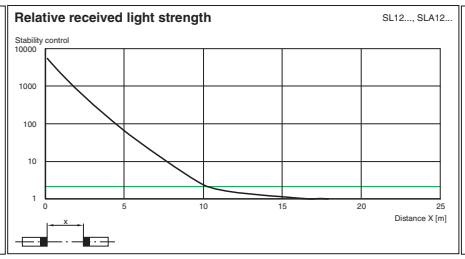


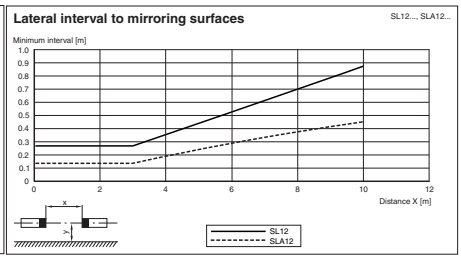
Electrical connection



Diagrams







System accessories

Control units

SC4-2
SB4 (SafeBox)

Cable sockets (not for option /115)

straight: V15-G-2M-PVC
V15-G-5M-PVC
V15-G-10M-PVC

angled: V15-W-2M-PVC
V15-W-5M-PVC
V15-W-10M-PVC

Mounting aids

OMH-06
OMH-MLV12-HWG
OMH-MLV12-HWK
OMH-K01
OMH-K02

Further accessories

Redirection mirror
SLA-1-M

Date of edition 05/17/2006

Features

- **Test input (Type 2 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Integrated alignment aid**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Protection degree IP67**
- **Operation on control units of series SC2-2**
- **Extended temperature range up to -35 °C with heated front panel**
  SL29/105/106
  SL29/35/105/106 R=65M

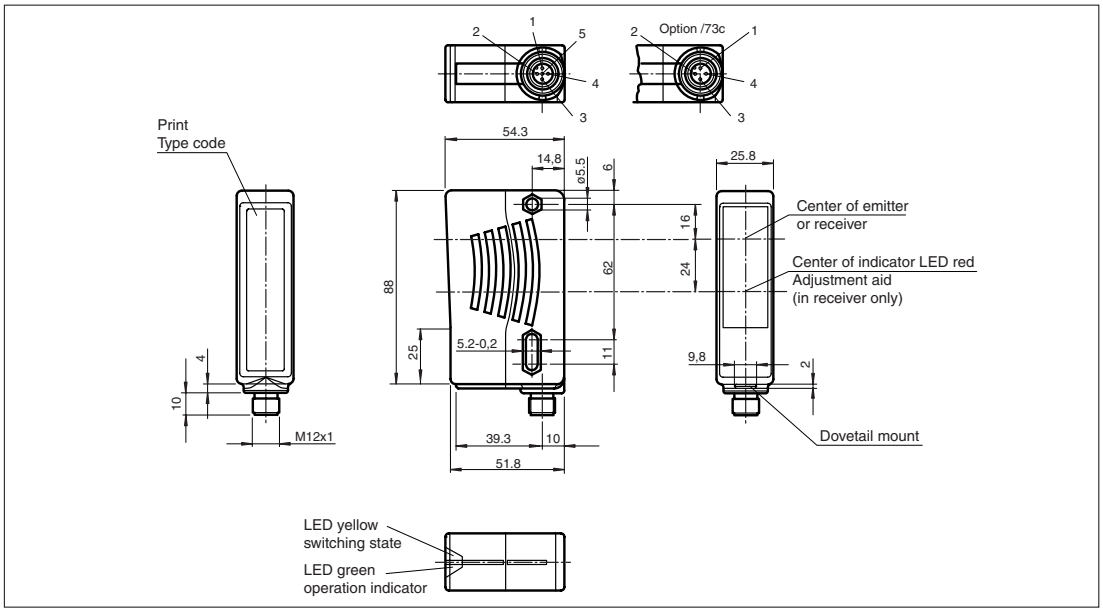
For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

Ordering code		SL29/105/106	SL29/35/105/106 R=65M	SL29/73c	SL29/35/73c R=65M
Construction type(S2)	Rectangular type	◆	◆	◆	◆
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Threshold detection range	40 m	◆		◆	
	85 m		◆		◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Alignment aid	LED red	◆	◆	◆	◆
Safety category according to IEC/EN 61496	2	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 10 °	◆	◆	◆	◆
Series	29	◆	◆	◆	◆
Operating display	LED green	◆	◆	◆	◆
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point	◆	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)			◆	◆
	-35 ... 55 °C (238 ... 328 K) with heated optical face, fixed voltage 24 V DC ± 20 %/50 mA	◆	◆		
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP67 according to EN 60529	◆	◆	◆	◆
Connection	M12 connector, 4-pin			◆	◆
	M12 connector, 5 pin	◆	◆		
Housing	Plastic ABS, front part black, back part yellow (RAL1021)	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	per device 70 g	◆	◆	◆	◆
System components	Ordering data	◆	◆	◆	◆
Emitter	SL29-T/105/106	◆			
	SL29-T/35/105/106 R=65m		◆		
	SL29-T/35/73c R=65m				◆
	SL29-T/73c			◆	
Receiver	SL29-R/105/106	◆			
	SL29-R/35/105/106 R=65m		◆		
	SL29-R/35/73c R=65m				◆
	SL29-R/73c			◆	

Date of edition 05/17/2006

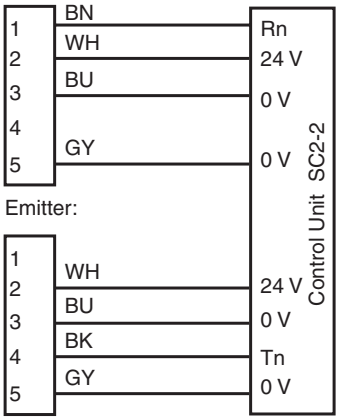
Dimensions



Electrical connection

Design with connector (Option /106)

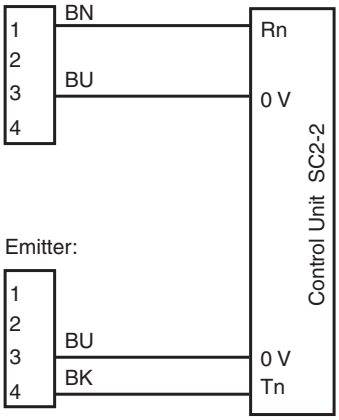
Receiver:



Emitter:

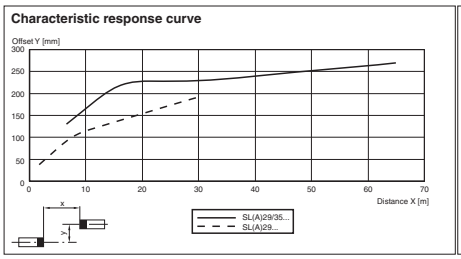
Design with connector

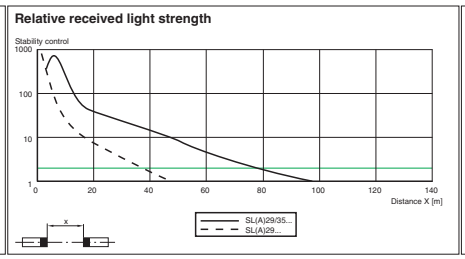
Receiver:

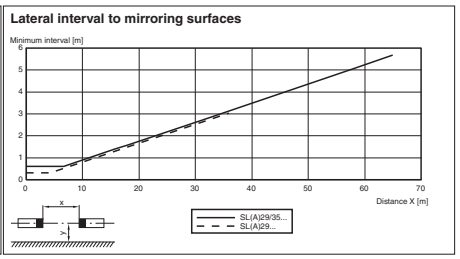


Emitter:

Diagrams







System accessories

Control units

SC2-2

Cable sockets

Option /73c:

straight:	V1-G-2M-PVC
	V1-G-5M-PVC
	V1-G-10M-PVC
angled:	V1-W-2M-PVC
	V1-W-5M-PVC
	V1-W-10M-PVC

Option /105:

straight:	V15-G-2M-PVC
	V15-G-5M-PVC
	V15-G-10M-PVC
angled:	V15-W-2M-PVC
	V15-W-5M-PVC
	V15-W-10M-PVC

Option /116: no

Mounting aids

OMH-21
OMH-22
OMH-05
OMH-MLV11-K

Further accessories

Laser alignment aid
BA SLA28

Redirection mirror
SLA-1-M

Date of edition 05/17/2006

Features

- **Test input (Type 2 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Integrated alignment aid**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Protection degree IP67**
- **Operation on control units of series SC2-2**
- **Extended temperature range up to -35 °C with heated front panel**
  SL29/106/116
  SL29/35/106/116 R=65m

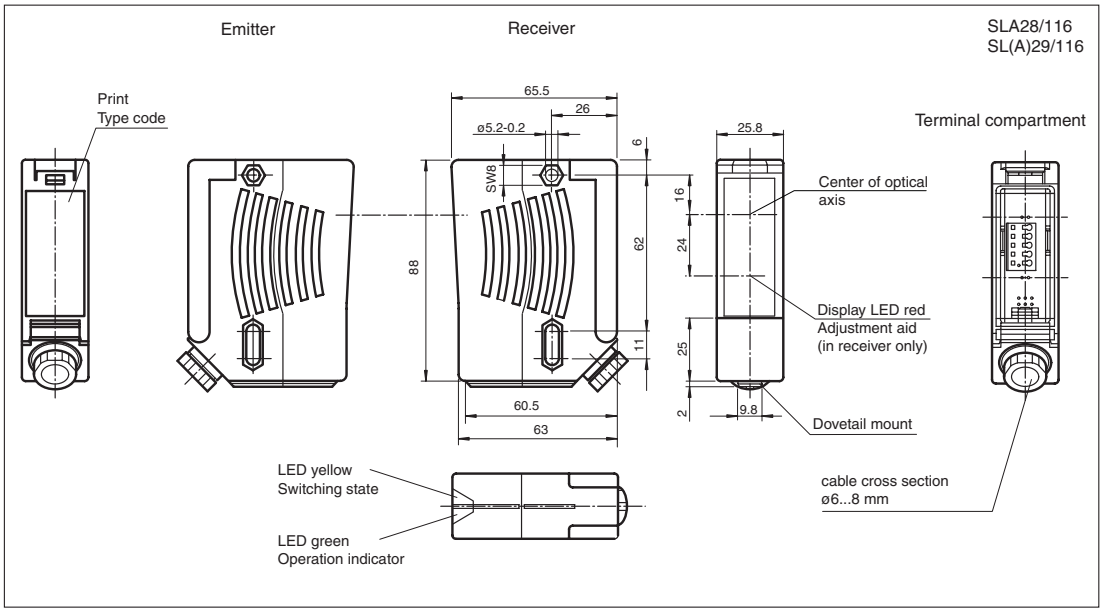
For required control units refer to chapter „Control units"
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

	Ordering code	SL29/116	SL29/35/116 R=65m	SL29/106/116	SL29/35/106/116 R=65m
Construction type(S2)	Rectangular type	◆	◆	◆	◆
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Threshold detection range	40 m	◆		◆	
	85 m		◆		◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Alignment aid	LED red	◆	◆	◆	◆
Safety category according to IEC/EN 61496	2	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 10 °	◆	◆	◆	◆
Series	29	◆	◆	◆	◆
Operating display	LED green	◆	◆	◆	◆
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point	◆	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆		
	-35 ... 55 °C (238 ... 328 K) with heated optical face, fixed voltage 24 V DC ± 20 %/50 mA			◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP67 according to EN 60529	◆	◆	◆	◆
Connection	terminal compartment	◆	◆	◆	◆
Housing	Plastic ABS, front part black, back part yellow (RAL1021)	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	per device 70 g	◆	◆	◆	◆
System components	Ordering data	◆	◆	◆	◆
Emitter	SL29-T/106/116			◆	
	SL29-T/116	◆			
	SL29-T/35/106/116 R=65m				◆
	SL29-T/35/116 R=65m		◆		
Receiver	SL29-R/106/116			◆	
	SL29-R/116	◆			
	SL29-R/35/106/116 R=65m				◆
	SL29-R/35/116 R=65m		◆		

Date of edition 05/17/2006

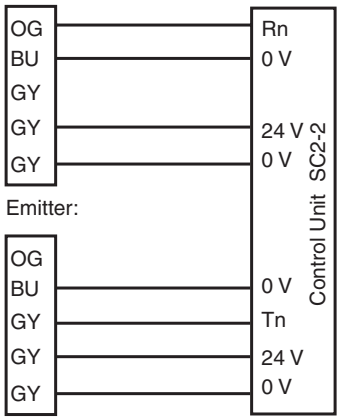
Dimensions



Electrical connection

Design with terminal compartment (Option /106)

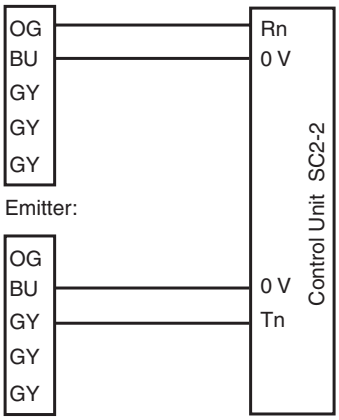
Receiver:



Emitter:

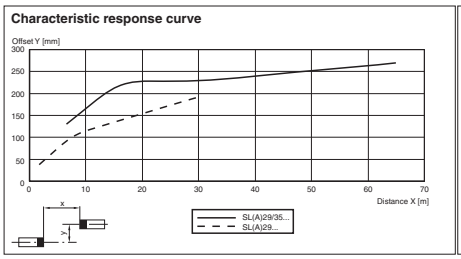
Design with terminal compartment

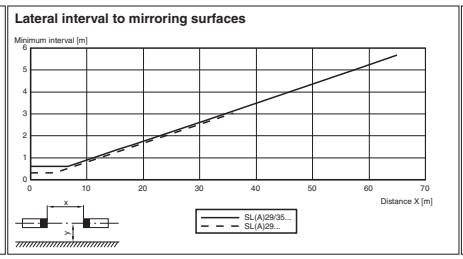
Receiver:

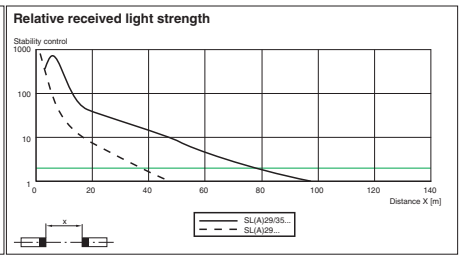


Emitter:

Diagrams







System accessories

Control units

SC2-2

Cable sockets

Option /73c:

straight: V1-G-2M-PVC
V1-G-5M-PVC
V1-G-10M-PVC

angled: V1-W-2M-PVC
V1-W-5M-PVC
V1-W-10M-PVC

Option /105:

straight: V15-G-2M-PVC
V15-G-5M-PVC
V15-G-10M-PVC

angled: V15-W-2M-PVC
V15-W-5M-PVC
V15-W-10M-PVC

Option /116: no

Mounting aids

OMH-21
OMH-22
OMH-05
OMH-MLV11-K

Further accessories

Laser alignment aid
BA SLA28

Redirection mirror
SLA-1-M

Date of edition 05/17/2006

Features

- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Integrated alignment aid**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Waterproof, protection class IP67**
- **Operation on control units of series SB4 (SafeBox) and SC4-2**
- **Extended temperature range up to -35 °C with heated front panel**
  SLA29/105/106
  SLA29/35/105/106 R=65m

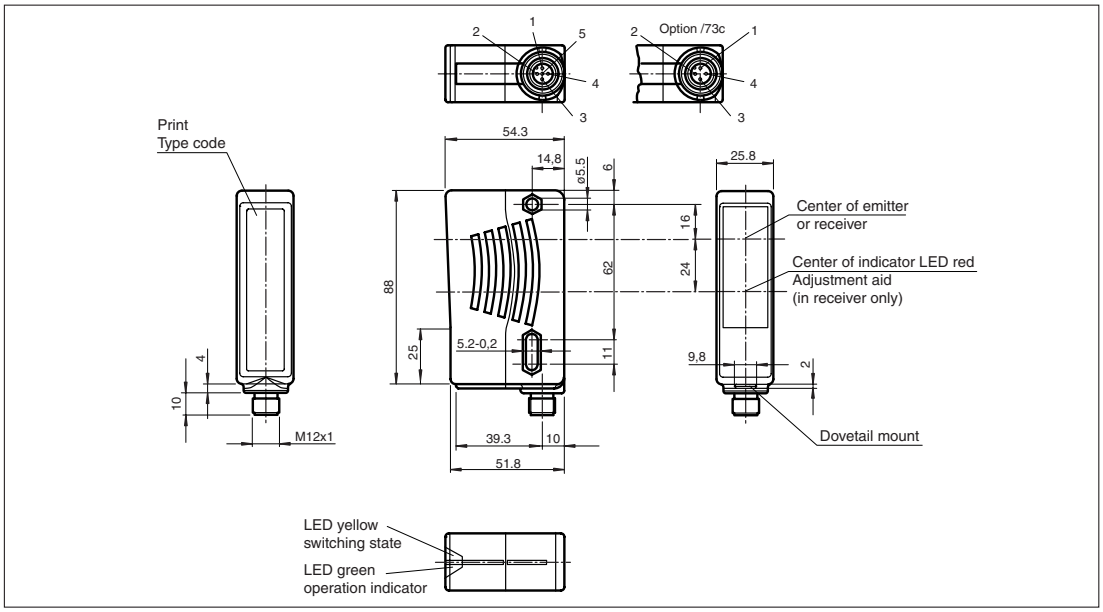
For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

Ordering code		SLA29/105/106	SLA29/35/105/106 R=65m	SLA29/73c	SLA29/35/73c R=65m
Construction type(S2)	Rectangular type	◆	◆	◆	◆
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Threshold detection range	40 m	◆		◆	
	85 m		◆		◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Alignment aid	LED red in receiver	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Series	29	◆	◆	◆	◆
Operating display	LED green	◆	◆	◆	◆
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point	◆	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)			◆	◆
	-35 ... 55 °C (238 ... 328 K) with heated optical face, fixed voltage 24 V DC ± 20 %/50 mA	◆	◆		
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP67 according to EN 60529	◆	◆	◆	◆
Connection	M12 connector, 4-pin			◆	◆
	M12 connector, 5 pin	◆	◆		
Housing	ABS plastic, RLA 1021 (yellow) painted	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	per device 70 g	◆	◆	◆	◆
System components	Ordering data	◆	◆	◆	◆
Emitter	SLA29-T/105/106	◆			
	SLA29-T/35/105/106 R=65m		◆		
	SLA29-T/35/73c R=65m				◆
	SLA29-T/73c			◆	
Receiver	SLA29-R/105/106	◆			
	SLA29-R/35/105/106 R=65m		◆		
	SLA29-R/35/73c R=65m				◆
	SLA29-R/73c			◆	

Date of edition 05/17/2006

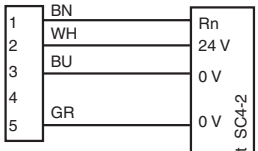
Dimensions



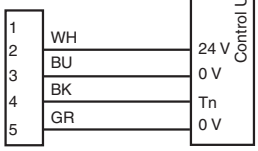
Electrical connection

Design with connector (Option /106)

Receiver:

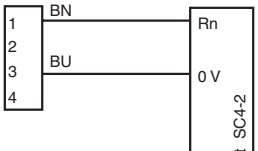


Emitter:

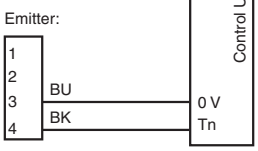


Design with connector

Receiver:

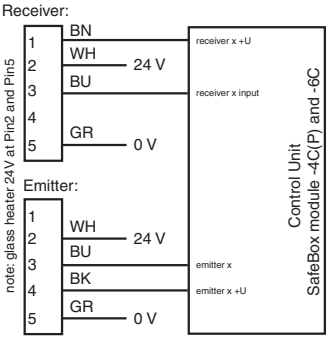


Emitter:



Design with connector (Option /106)

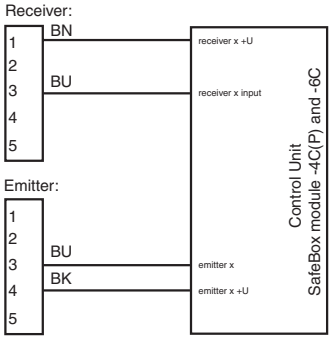
Receiver:



Emitter:

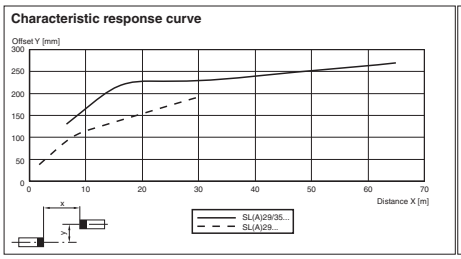
Design with connector

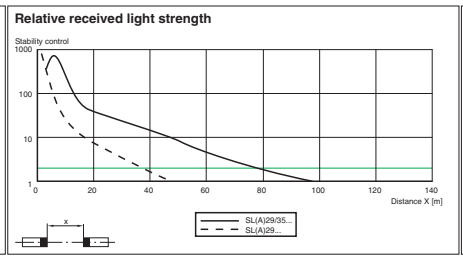
Receiver:

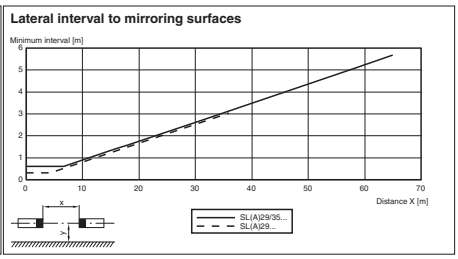


Emitter:

Diagrams







System accessories

Control units

SC4-2
SB4 (SafeBox)

Cable sockets

Option /73c:

straight: V1-G-2M-PVC
V1-G-5M-PVC
V1-G-10M-PVC

angled: V1-W-2M-PVC
V1-W-5M-PVC
V1-W-10M-PVC

Option /105:

straight: V15-G-2M-PVC
V15-G-5M-PVC
V15-G-10M-PVC

angled: V15-W-2M-PVC
V15-W-5M-PVC
V15-W-10M-PVC

Option /116: no

Mounting aids

OMH-21
OMH-22
OMH-05
OMH-MLV11-K

Further accessories

Laser alignment aid BA SLA28

Muting Set MS SLP/SLA28

Redirection mirror SLA-1-M

Date of edition 05/17/2006

Features

- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Integrated alignment aid**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Sturdy housing**
- **Waterproof, protection class IP67**
- **Operation on control units of series SB4 (SafeBox) and SC4-2**
- **Extended temperature range up to -35 °C with heated front panel**
  SLA29/106/116

For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

	Ordering code	SLA29/116	SLA29/35/116 R=65m	SLA29/106/116
Construction type(S2)	Rectangular type	◆	◆	◆
Effective detection range	0.2 ... 30 m	◆		◆
	6 ... 65 m		◆	
Threshold detection range	40 m	◆		◆
	85 m		◆	
Light source	LED	◆	◆	◆
Approvals	TÜV	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆
Marking	CE	◆	◆	◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆
Alignment aid	LED red in receiver	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆
Light type	red, modulated light	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆
Series	29	◆	◆	◆
Operating display	LED green	◆	◆	◆
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆	
	-35 ... 55 °C (238 ... 328 K) with heated optical face, fixed voltage 24 V DC ± 20 %/50 mA			◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆
Protection degree	IP67 according to EN 60529	◆	◆	◆
Connection	terminal compartment	◆	◆	◆
Housing	ABS plastic, RLA 1021 (yellow) painted	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆
Mass	per device 70 g	◆	◆	◆
System components	Ordering data	◆	◆	◆
Emitter	SLA29-T/106/116			◆
	SLA29-T/116	◆		
	SLA29-T/35/116 R=65m		◆	
Receiver	SLA29-R/106/116			◆
	SLA29-R/116	◆		
	SLA29-R/35/116 R=65m		◆	

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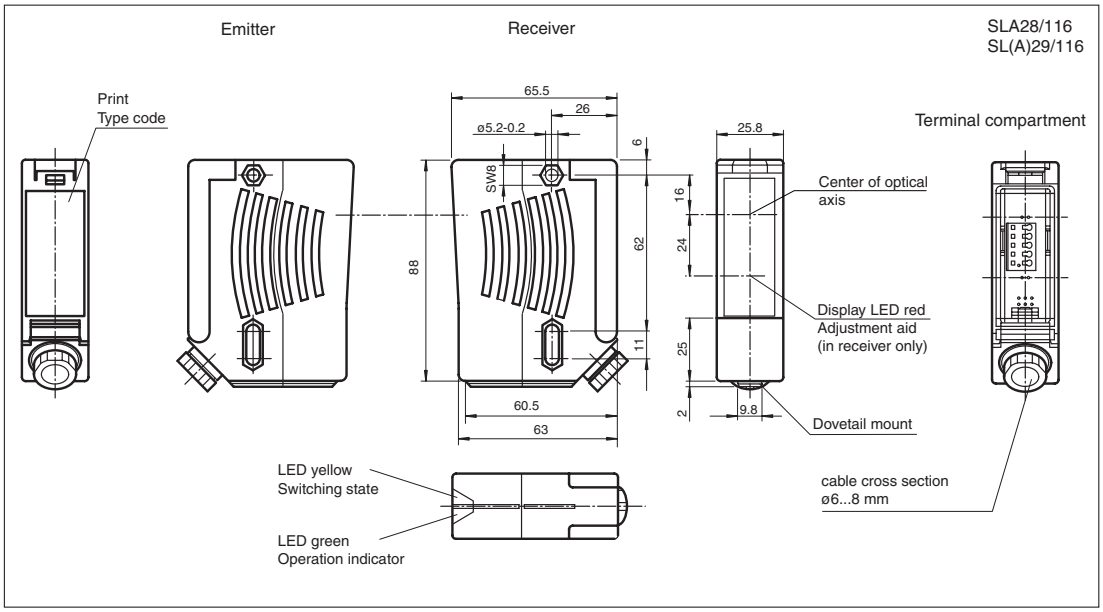
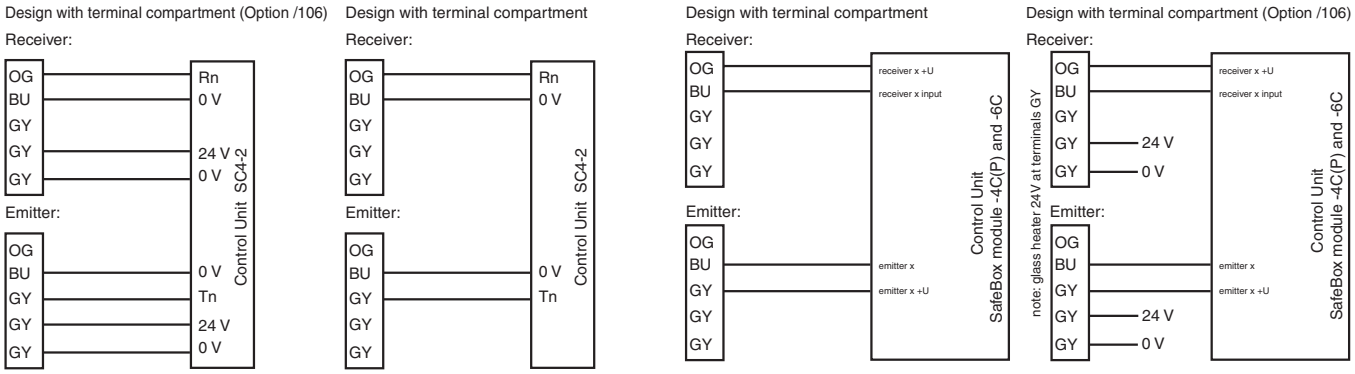
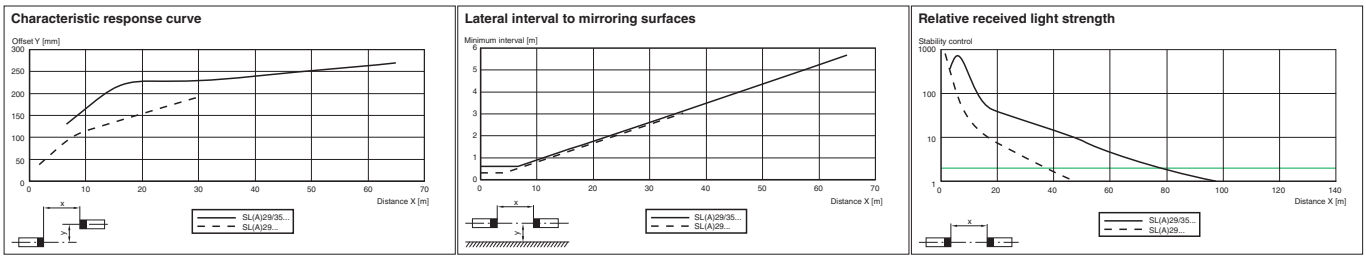
Dimensions



Electrical connection



Diagrams



System accessories

Control units

SC4-2
SB4 (SafeBox)

Cable sockets

Option /73c:

straight: V1-G-2M-PVC
V1-G-5M-PVC
V1-G-10M-PVC

angled: V1-W-2M-PVC
V1-W-5M-PVC
V1-W-10M-PVC

Option /105:

straight: V15-G-2M-PVC
V15-G-5M-PVC
V15-G-10M-PVC

angled: V15-W-2M-PVC
V15-W-5M-PVC
V15-W-10M-PVC

Option /116: no

Mounting aids

OMH-21
OMH-22
OMH-05
OMH-MLV11-K

Further accessories

Laser alignment aid BA SLA28

Muting Set MS SLP/SLA28

Redirection mirror SLA-1-M

Date of edition 05/17/2006

Features

- **Detection range up to 4 m**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Clearly visible LED functional display and pre-fault indicator on the receiver**
- **Metal housing**
- **Connection via M12 connector or fixed cable**
- **Operation on control units of SB4 (SafeBox)**
- **Protection type IP67 optional**

For required control units refer to chapter „Control units“
For suitable mounting aids and more refer to chapter „Accessories.

Technical data

	Ordering code	SLA40	SLA40-2442/33 K=2m	SLA40/33 K=5m	SLA40/33 K=10m	SLA40-2442	SLA40/92
Construction type(S2)	Rectangular type	◆	◆	◆	◆	◆	◆
Effective detection range	0 ... 4 m	◆	◆	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆
Series	SLA	◆	◆	◆	◆	◆	◆
Function display	LED yellow/green in receiver: off: Interruption yellow: transmission green: reception with sufficient stability control	◆	◆	◆	◆	◆	◆
Pre-fault indication	LED functional display yellow	◆	◆	◆	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆	◆
Protection degree	IP65	◆		◆	◆		◆
	IP67		◆			◆	
Connection	Fixed cable, 10 m; 0.25 mm²				◆		
	Fixed cable 2 m; 0.25 mm²	◆	◆				
	Fixed cable, 5 m; 0.25 mm²			◆			
	M12 connector, 4-pin					◆	◆
Material							
Housing	aluminium pressure moulding, RLA 1021 (yellow) painted	◆	◆	◆	◆	◆	◆
Optical face	Glass	◆		◆	◆		◆
	Plastic pane		◆			◆	
Mass	Per 100 g	◆	◆	◆	◆	◆	◆
System components							
Emitter	SLA40-T	◆					
	SLA40-T-2442					◆	
	SLA40-T-2442 K=2m		◆				
	SLA40-T/33 K=10m				◆		
	SLA40-T/33 K=5m			◆			
	SLA40-T/92						◆
Receiver	SLA40-R	◆					
	SLA40-R-2442					◆	
	SLA40-R-2442 K=2m		◆				
	SLA40-R/33 K=10m				◆		
	SLA40-R/33 K=5m			◆			
	SLA40-R/92						◆

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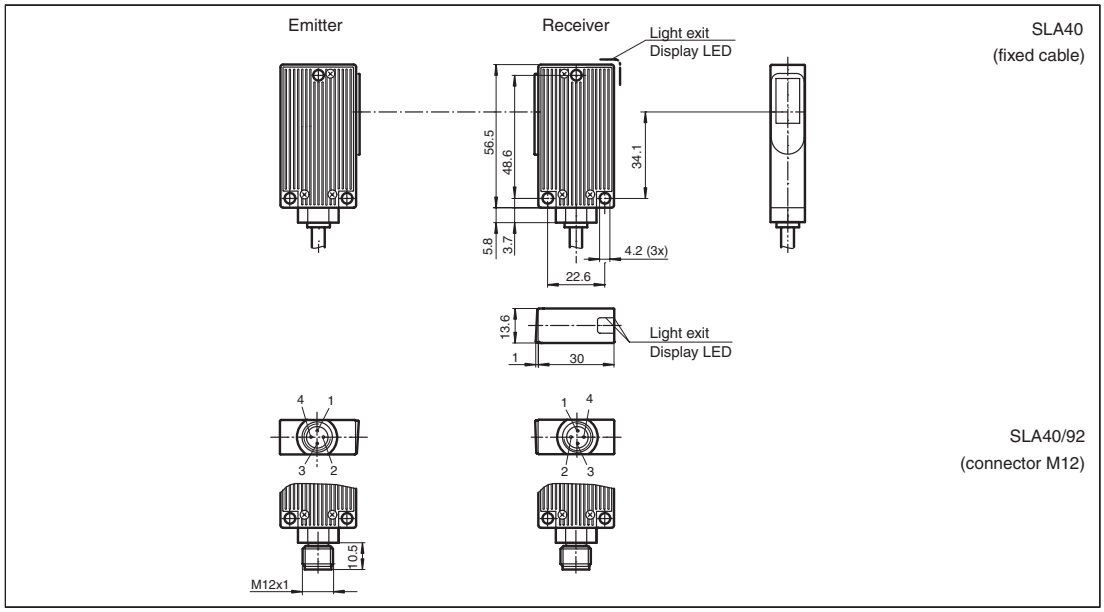
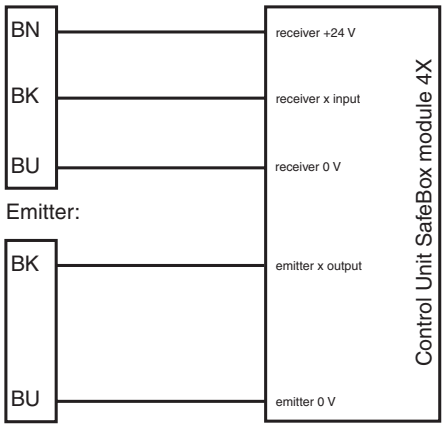
Dimensions



Electrical connection

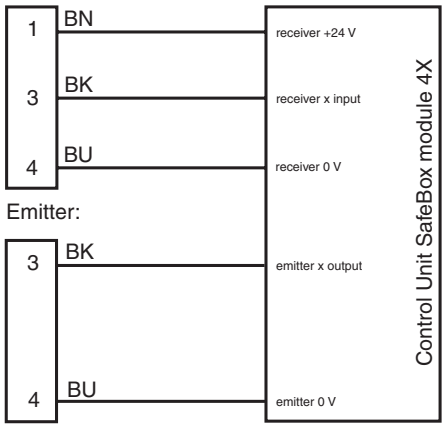
Design with fixed cable

Receiver:

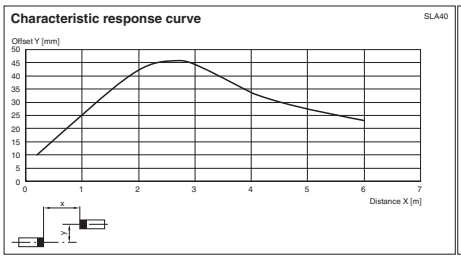


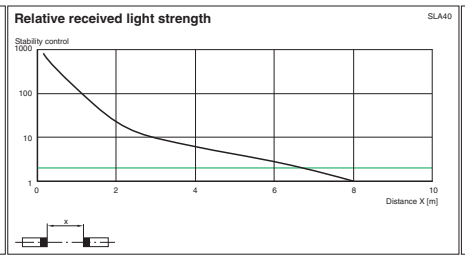
Design with connector plug

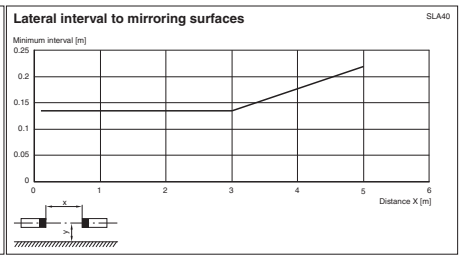
Receiver:



Diagrams







System accessories

Control units

SB4 (SafeBox)

Cable sockets (only option /92)

straight: V1-G-2M-PVC
V1-G-5M-PVC
V1-G-10M-PVC

angled: V1-W-2M-PVC
V1-W-5M-PVC
V1-W-10M-PVC

Mounting aids

OMH-40

Further accessories

Redirection mirror
SLA-1-M

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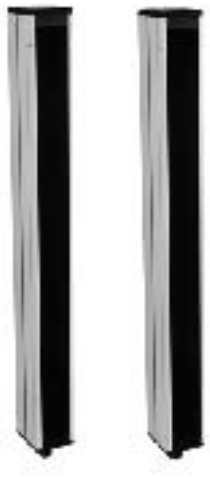


SLP Description

Safety light grids of type SLP combine with the control devices of series **SafeBox** into a multi-beam photoelectronical protection device of category 4 (EN 954-1) or type 4 (according to EN 61496). This is therefore a self-monitoring system.

A safety light grid consits of a sender SLP and a receiver SLP.

The safety light grids SLP, the control unit, muting sensors and other user-selectable safety devices (e.g. E-stop) combine into a modular protection system.

Several safety light grids can be connected to a control unit. They can be mixed freely, but a safety light grid must consist of a sender and receiver of the same type.

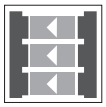
The supply voltage required for the safety light grid is provided by the control unit. The control unit also triggers the sender and evaluates the signals transmitted by the receivers (e.g. light beam interruption). Series SLP is available in different designs and ranges. Dependent on the type of light grid used the range can be up to 65 m.

Protection from several directions can be achieved with the redirection mirrors of series **SLP-X-M**.

Series SLP8-2 implements a 2 beam protection consisting of a transceiver (sender and receiver in a single profile) and a mirror column. This layout means that the electrical connection is only necessary on one side.

Applications

Access and danger area protections for pallet systems, robots, wood processing machines, packaging machines, overhead warehouse shelves and machine lines.

Operating principle	Type code	Number of beams	Detection range	Page
	**SLP8-2**	**2**	**0 m ... 8 m**	**46**
	SLP...-2	**2**	**0 m ... 65 m**	**48**
	SLP...-3	**3**	**0 m ... 65 m**	**50**
	SLP...-4	**4**	**0 m ... 65 m**	**52**

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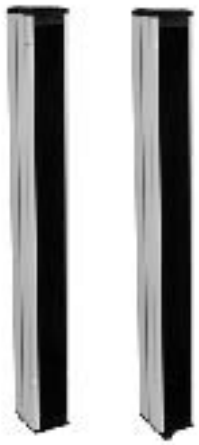

Features

- **Detection range 8 m**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Red transmission light**
- **Integrated function display**
- **Pre-fault indication**
- **Operation on control units of SB4 (SafeBox)**

For required units refer to chapter „Control units“"
For suitable mounting aids and more refer to chapter „Accessories“

Technical data

		Ordering code: SLP8-2	SLP8-2-L
Effective detection range	0.2 ... 8 m	◆	◆
Number of beams	2	◆	◆
Beam spacing	500 mm	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Light source	LED	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Function display	LED red: per receiver channel off: Interruption flashes: receiver continuously on: reception with sufficient stability control	◆	◆
Muting display	Indicator lamp		◆
Pre-fault indication	Functional display flashing	◆	◆
Operating display	LED red in transceiver	◆	◆
Operating voltage	Power supply via control unit	◆	◆
Protection class	III	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 2100 g	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
System components			
Transceiver	SLP8-2-A	◆	
	SLP8-2-A-L		◆
Mirror pillar	SLP8-2-M	◆	◆

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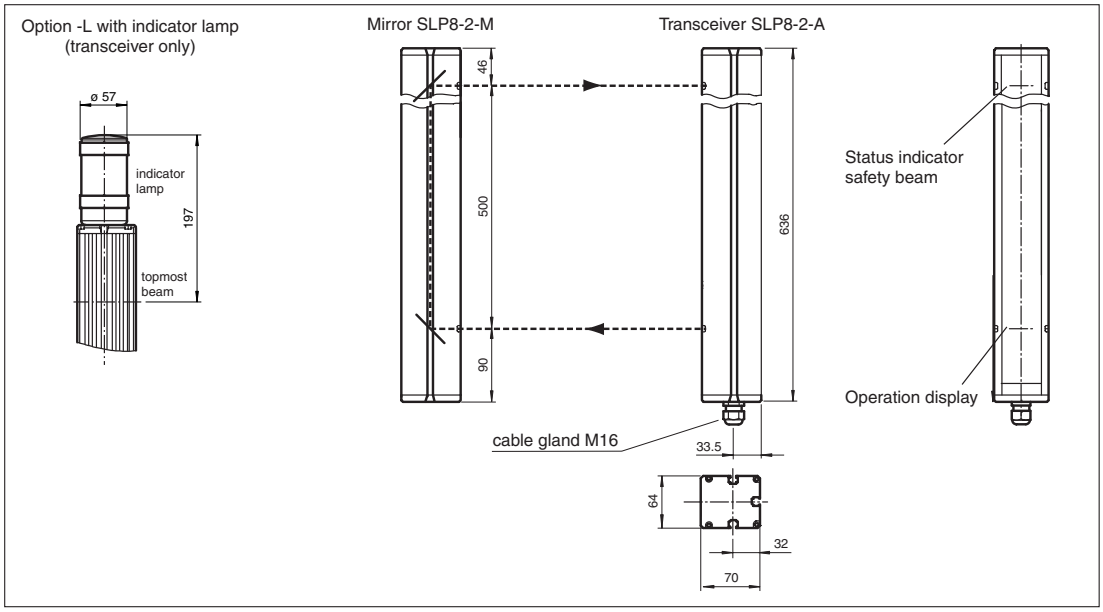
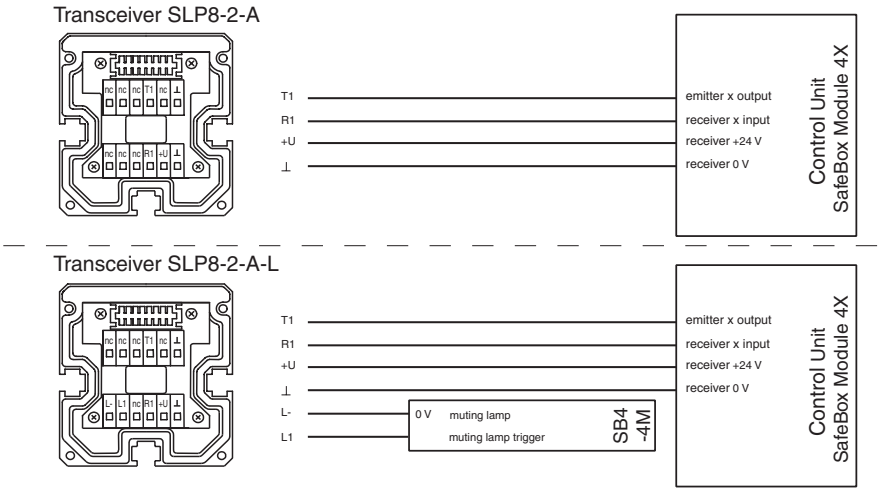
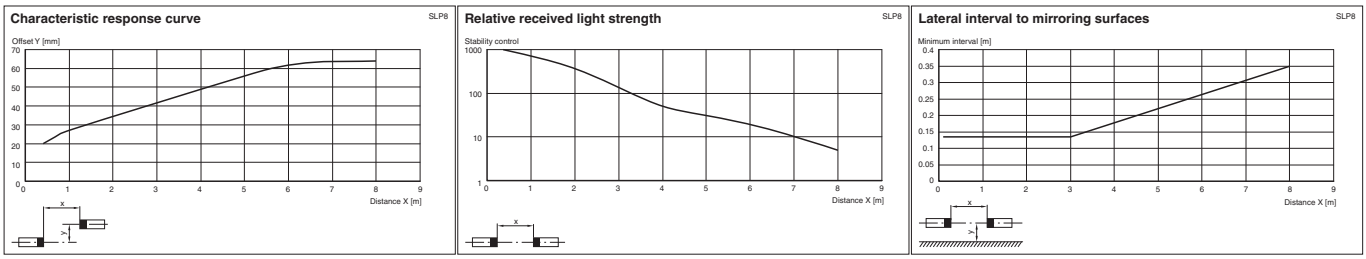
Dimensions



Electrical connection



Diagrams



System accessories

- Control unit SafeBox
- Mounting set MS SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Ground pillar UC SLP/SLC
- Housing for pillar
  Enclosure UC SLP/SLC
- Collision protector
  Damping UC SLP/SLC
- Profile alignment aid
- Laser alignment aid SLP
- Redirection mirror for multi-side protection of hazardous areas
  SLP-...-M
- Muting Set
  MS SLP/SLA28
  MS SLPCM

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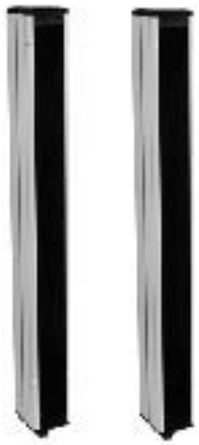

Features

- **Detection range up to 65 m**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Red transmission light**
- **Integrated function display**
- **Pre-fault indication**
- **Operation on control units of SB4 (SafeBox)**

For required units refer to chapter „Control units“"
For suitable mounting aids and more refer to chapter „Accessories“

Technical data

		Ordering code: SLP10-2	SLP10-2L	SLP30-2	SLP65-2
Effective detection range	0.2 ... 10 m	◆	◆		
	12 ... 65 m				◆
	6 ... 30 m			◆	
Number of beams	2	◆	◆	◆	◆
Beam spacing	500 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Function display	LED red: per receiver channel off: Interruption flashes: receiver continuously on: reception with sufficient stability control	◆	◆	◆	◆
Muting display	Indicator lamp		◆		
Pre-fault indication	Functional display flashing	◆	◆	◆	◆
Operating display	LED red in receiver	◆	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 2100 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP10-2-T	◆	◆		
	SLP30-2-T			◆	
	SLP65-2-T				◆
Receiver	SLP10-2-R	◆			
	SLP10-2-R-L		◆		
	SLP30-2-R			◆	
	SLP65-2-R				◆

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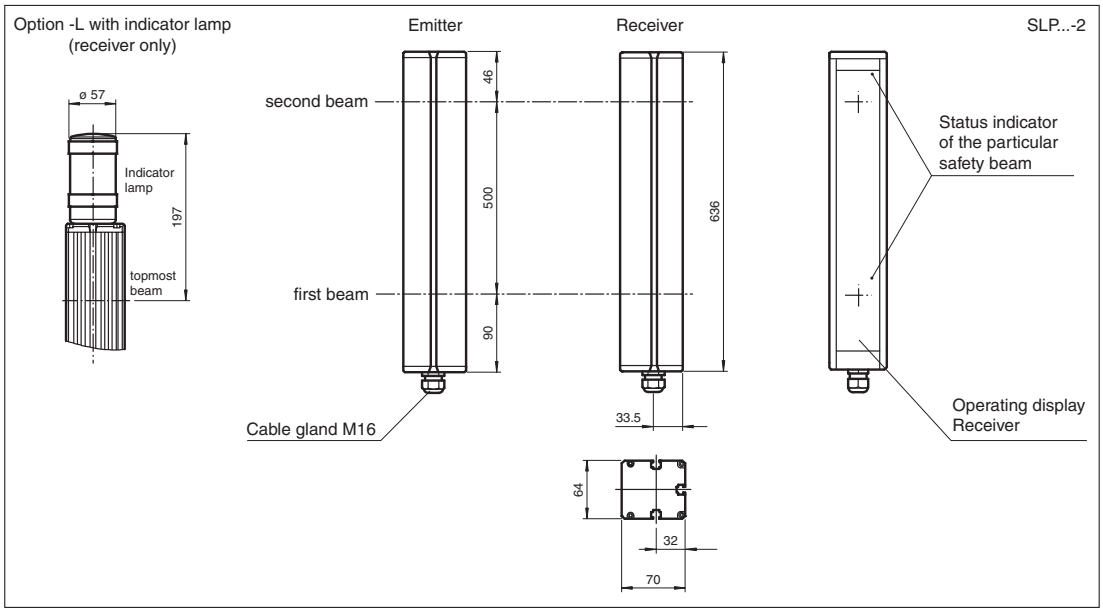
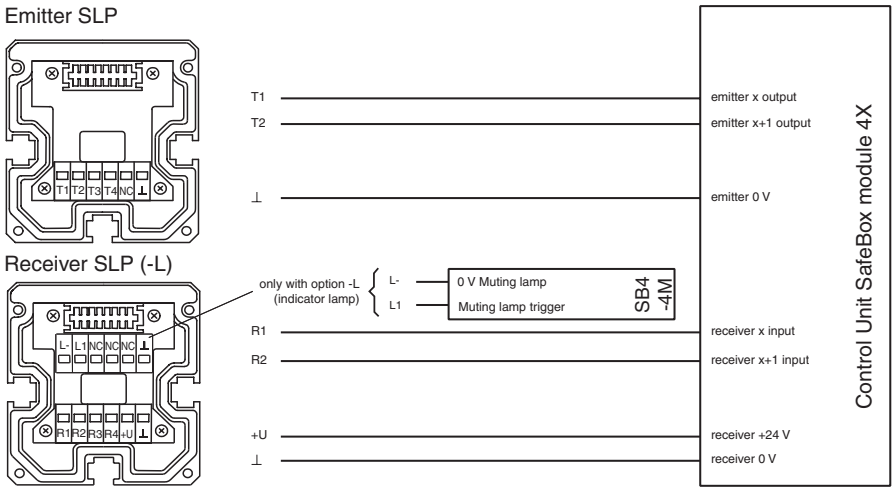
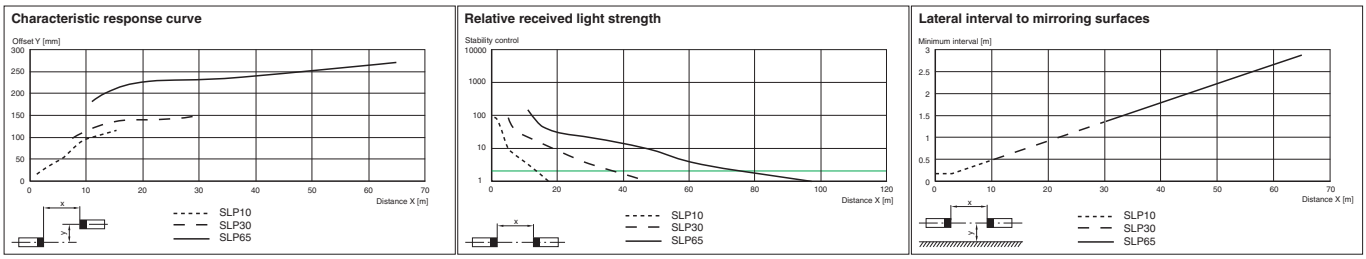
Dimensions



Electrical connection



Diagrams



System accessories

- Control unit SafeBox
- Mounting set MS SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Ground pillar UC SLP/SLC
- Housing for pillar
  Enclosure UC SLP/SLC
- Collision protector
  Damping UC SLP/SLC
- Profile alignment aid
- Laser alignment aid SLP
- Redirection mirror for multi-side protection of hazardous areas
  SLP-...-M
- Muting Set
  MS SLP/SLA28
  MS SLPCM

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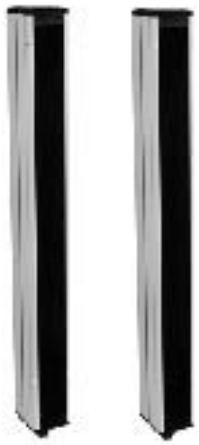

Features

- **Detection range up to 65 m**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **3-Radial design**
- **Beam spacing 400 mm**
- **Red transmission light**
- **Integrated function display**
- **Pre-fault indication**
- **Operation on control units of SB4 (SafeBox)**

For required units refer to chapter „Control units“"
For suitable mounting aids and more refer to chapter „Accessories“

Technical data

		Ordering code: SLP10-3	SLP10-3-L	SLP30-3	SLP65-3
Effective detection range	0.2 ... 10 m	◆	◆		
	12 ... 65 m				◆
	6 ... 30 m			◆	
Number of beams	3	◆	◆	◆	◆
Beam spacing	400 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Function display	LED red: per receiver channel off: Interruption flashes: receiver continuously on: reception with sufficient stability control	◆	◆	◆	◆
Muting display	Indicator lamp		◆		
Pre-fault indication	Functional display flashing	◆	◆	◆	◆
Operating display	LED red in receiver	◆	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3200 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP10-3-T	◆	◆		
	SLP30-3-T			◆	
	SLP65-3-T				◆
Receiver	SLP10-3-R	◆			
	SLP10-3-R-L		◆		
	SLP30-3-R			◆	
	SLP65-3-R				◆

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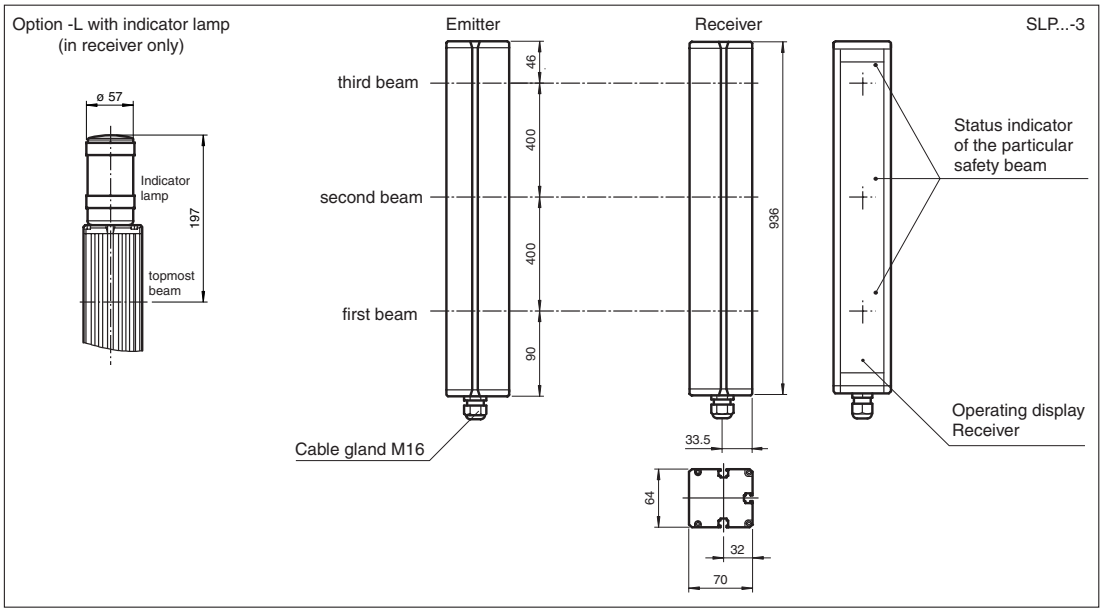
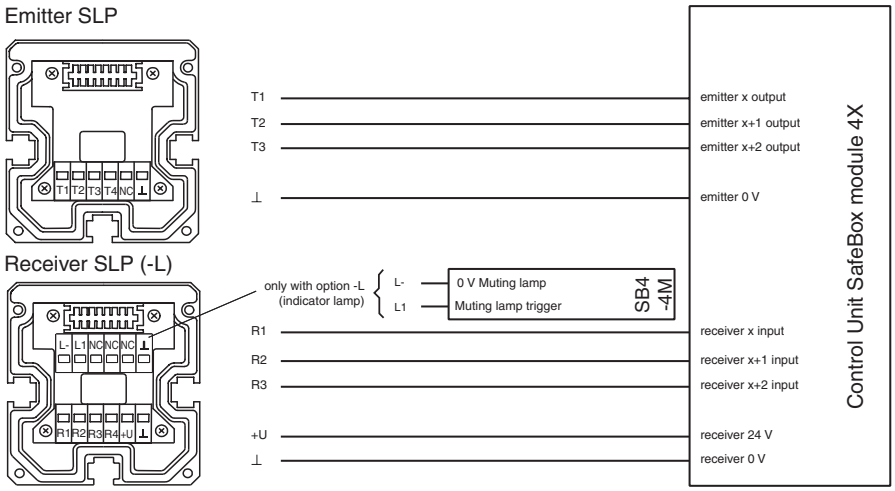
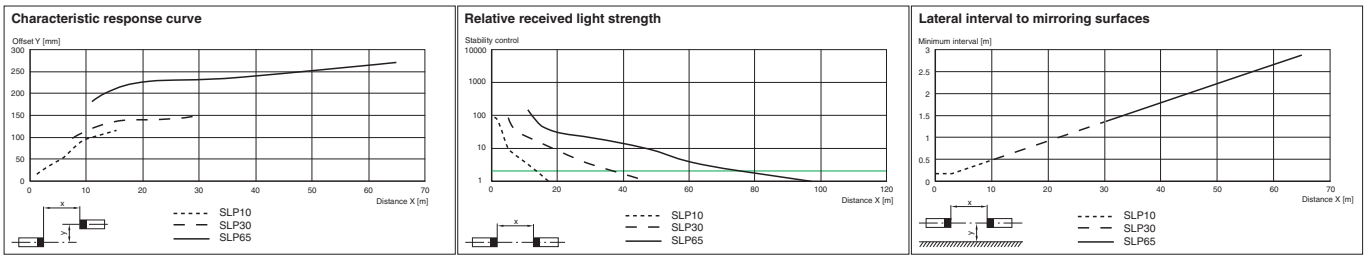
Dimensions



Electrical connection



Diagrams



System accessories

- Control unit SafeBox
- Mounting set MS SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Ground pillar UC SLP/SLC
- Housing for pillar
  Enclosure UC SLP/SLC
- Collision protector
  Damping UC SLP/SLC
- Profile alignment aid
- Laser alignment aid SLP
- Redirection mirror for multi-side protection of hazardous areas
  SLP-...-M
- Muting Set
  MS SLP/SLA28
  MS SLPCM

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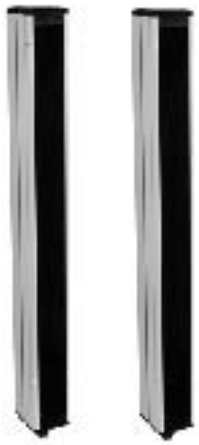

Features

- **Detection range up to 65 m**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **4-Radial design**
- **Beam spacing 300 mm**
- **Red transmission light**
- **Integrated function display**
- **Pre-fault indication**
- **Operation on control units of SB4 (SafeBox)**

For required units refer to chapter „Control units“"
For suitable mounting aids and more refer to chapter „Accessories“

Technical data

		Ordering code: SLP10-4	SLP10-4-L	SLP30-4	SLP65-4
Effective detection range	0.2 ... 10 m	◆	◆		
	12 ... 65 m				◆
	6 ... 30 m			◆	
Number of beams	4	◆	◆	◆	◆
Beam spacing	300 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Function display	LED red: per receiver channel off: Interruption flashes: receiver continuously on: reception with sufficient stability control	◆	◆	◆	◆
Muting display	Indicator lamp		◆		
Pre-fault indication	Functional display flashing	◆	◆	◆	◆
Operating display	LED red in receiver	◆	◆	◆	◆
Operating voltage	Power supply via control unit	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Ambient temperature	-20 ... 60 °C (253 ... 333 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3500 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP10-4-T	◆	◆		
	SLP30-4-T			◆	
	SLP65-4-T				◆
Receiver	SLP10-4-R	◆			
	SLP10-4-R-L		◆		
	SLP30-4-R			◆	
	SLP65-4-R				◆

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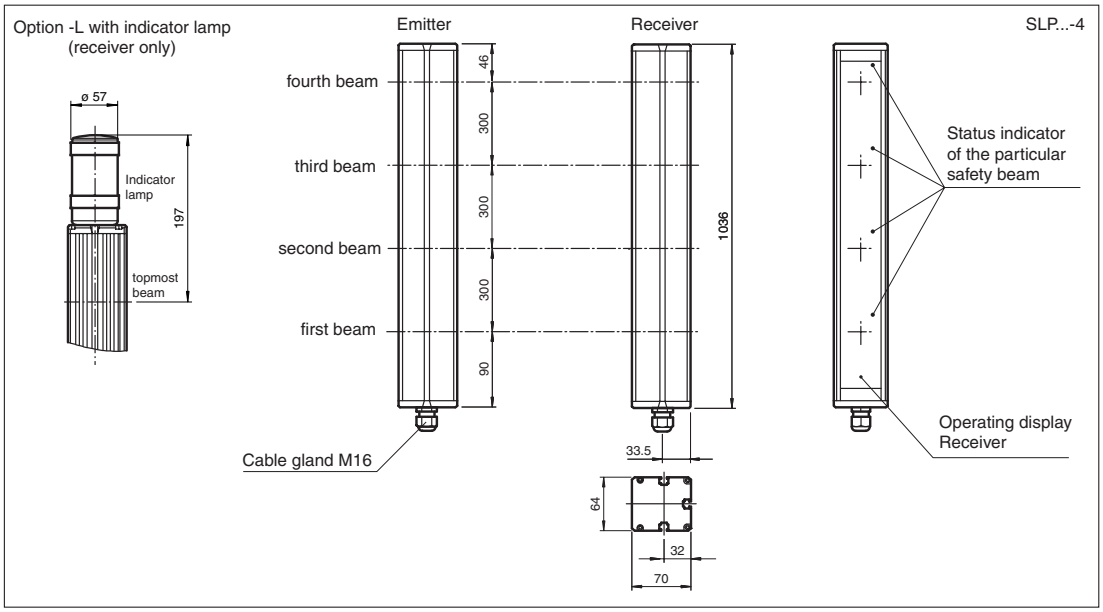
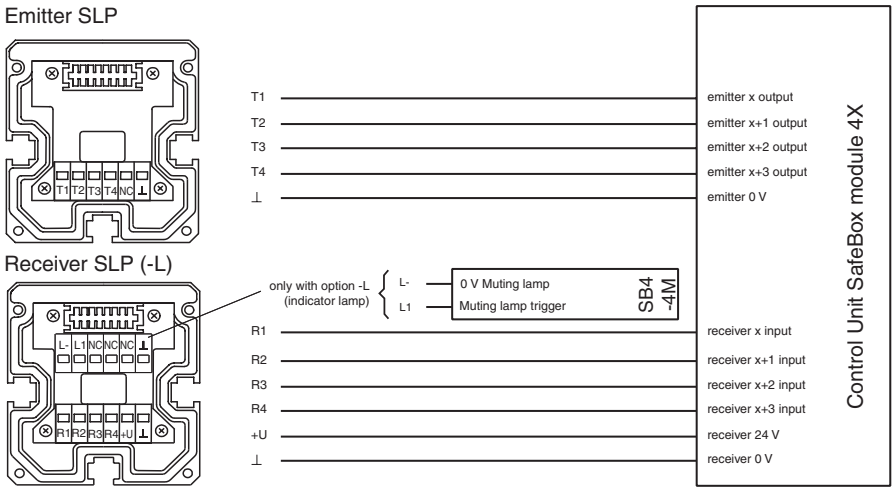
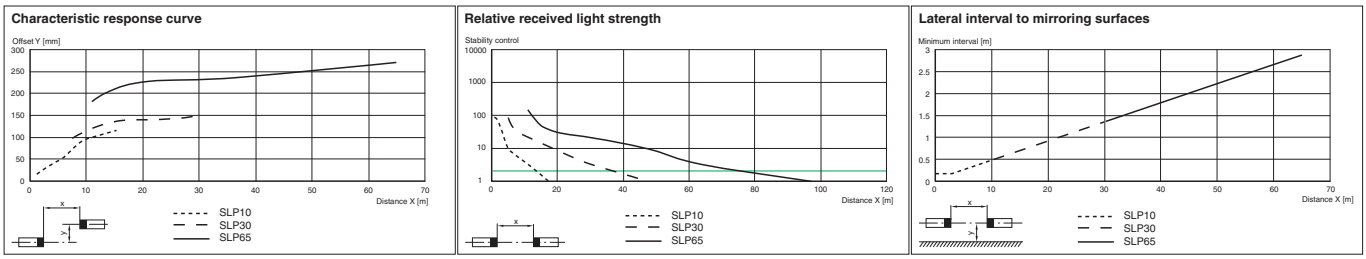
Dimensions



Electrical connection



Diagrams



System accessories

- Control unit SafeBox
- Mounting set MS SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Ground pillar UC SLP/SLC
- Housing for pillar
  Enclosure UC SLP/SLC
- Collision protector
  Damping UC SLP/SLC
- Profile alignment aid
- Laser alignment aid SLP
- Redirection mirror for multi-side protection of hazardous areas
  SLP-...-M
- Muting Set
  MS SLP/SLA28
  MS SLPCM

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Date of edition 17.05.2006

The safety light grids SLPC/SLP, SLPCM/SLP and SLC are electro-sensitive equipment devices of category 4 (EN 954-1) or type 4 (according to IEC/EN 61496). They are self-monitoring systems.

Description safety light grid SLC

The safety light grid of series SLC consists of a sender SLC-x and the corresponding receiver from series SLC. No external control unit is required. All evaluation functions (e.g. startup/restart lock, relay monitor) are integrated in the receiver of the SLC. The safety outputs (OSSD) are designed as either semiconductor outputs with separated potential or monitored forced NO contacts.

A cable connection between sender and receiver is not required. A protection from several directions can be achieved with redirection mirrors of series SLP-x-M. Muting applications can be implemented in combination with the control unit SafeBox. The protection category IP67 provides safe protection against harmful environmental impact.

Use in explosive areas

These devices can now also be used in explosive areas of zone 2 and zone 22 (option /133).
This also complies with the specification that only devices and protection systems approved in accordance with Directive 94/9/EC (ATEX) should be used in explosive areas.

Description SLPC

The safety light grid of series SLPC consists of a sender SLP and a corresponding receiver from series SLPC. No external control unit is required. All evaluation functions (e.g. startup/restart lock, relay monitor) are integrated in the receiver of the SLPC. The system is self-monitoring. The safety outputs (OSSD) are designed as either semiconductor outputs with separated potential or monitored forced NO contacts.

Description SLPCM

The safety light grid of series SLPCM consists of a sender SLP and a corresponding receiver from series SLPCM. No external control unit is required. All control functions, including for the operating modes muting and emergency muting, are integrated in the receiver of the SLPCM. The system is self-monitoring. The safety outputs (OSSD) are designed as either semiconductor outputs with separated potential or monitored forced NO contacts.

Applications

Access and danger area protections for pallet systems, robots, wood processing machines, packaging machines, overhead warehouse shelves and machine lines.

Operating principle	Type code	Number of beams	Feature	Operating range	Beginning on page
	SLC-2	2	internal control unit	0.2 m ... 20 m	56
	SLC-3	3			
	SLC-4	4			
	SLC-2/133	2	internal control unit for explosive areas in zone 2 and 22	0.2 m ... 20 m	58
	SLC-3/133	3			
	SLC-4/133	4			
	SLPC 8-2	2	internal control unit	0.2 m ... 8 m	60
	SLPC...2	2	internal control unit	0.2 m ... 65 m	62
	SLPC...3	3			68
	SLPC...4	4			74
	SLPCM 8-2	2	internal control unit, with muting	0.2 m ... 8 m	80
	SLPCM...2	2	internal control unit, with muting	0.2 m ... 65 m	82
	SLPCM...3	3			88
	SLPCM...4	4			94

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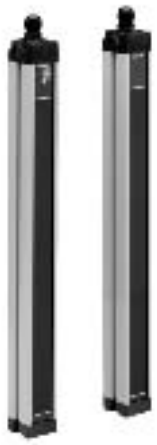

Features

- **Detection range up to 20 m**
- **2, 3, and 4-beam design**
- **Beam distance 300, 400 and 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Start/Restart disable**
- **Protection degree IP67**
- **7-segment diagnostic display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**
  SLC-2/31
  SLC-3/31
  SLC-4/31

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code:	SLC-2	SLC-3	SLC-4	SLC-2/31	SLC-3/31	SLC-4/31
Effective detection range	0.2 ... 20 m		◆	◆	◆	◆	◆	◆
Light source	IRED		◆	◆	◆	◆	◆	◆
Approvals	TÜV, cULus		◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆	◆	◆
Obstacle size	50 mm		◆	◆	◆	◆	◆	◆
Beam spacing	300 mm				◆			◆
	400 mm			◆			◆	
	500 mm		◆			◆		
Number of beams			2	3	4	2	3	4
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable		◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light		◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter		◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver		◆	◆	◆	◆	◆	◆
Function display	in receiver: LED red: OSSD off; LED green: OSSD on; LED yellow: Protected area free, system start-ready		◆	◆	◆	◆	◆	◆
Pre-fault indication	LED orange		◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding		◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)		◆	◆	◆			
	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)					◆	◆	◆
Protection class	III		◆	◆	◆	◆	◆	◆
No-load supply current	Emitter: 100 mA , receiver 150 mA		◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA		◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s		◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test		◆	◆	◆	◆	◆	◆
Function input	Start release		◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs		◆	◆	◆			
	2 relay outputs, compelled connection NO-contact					◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status		◆	◆	◆	◆	◆	◆
Switching voltage	Operating voltage -2 V		◆	◆	◆			
	50 V					◆	◆	◆
Switching current	max. 0.5 A		◆	◆	◆			
	max. 2 A					◆	◆	◆
Switch power	100 VA					◆	◆	◆
Response time	10 ms		◆	◆	◆			
	30 ms					◆	◆	◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)		◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)		◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆	◆	◆
Protection degree	IP67		◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2		◆	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin, Plug connector DIN 43 651 Hirschmann, 6-pin+PE, Plug connector M26x11 Hirschmann, 11-pin+PE		◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆	◆	◆
Optical face	Plastic pane		◆	◆	◆	◆	◆	◆
Mass	Per [g]		2100	3000	3450	2100	3000	3450
Dimensions	Length of housing 1007 mm			◆			◆	
	Length of housing 1157 mm				◆			◆
	Length of housing 707 mm		◆			◆		
System components								
Emitter	SLC-2-T		◆			◆		
	SLC-3-T			◆			◆	
	SLC-4-T				◆			◆
Receiver	SLC-2-R		◆					
	SLC-2-R/31					◆		
	SLC-3-R			◆				
	SLC-3-R/31						◆	
	SLC-4-R				◆			
	SLC-4-R/31							◆

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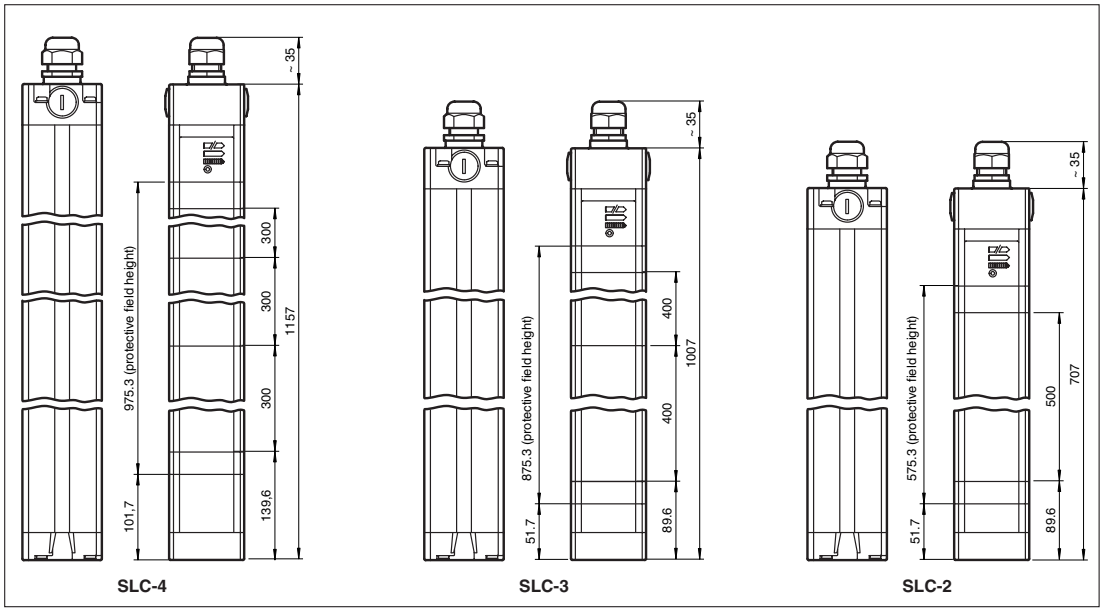
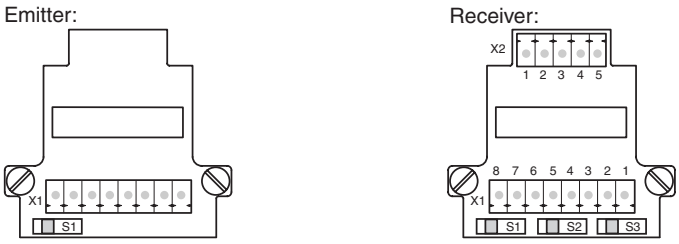
Dimensions

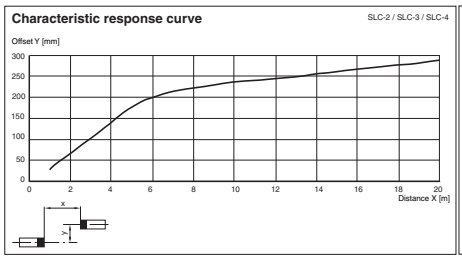


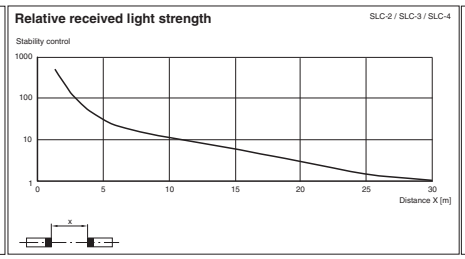
Electrical connection

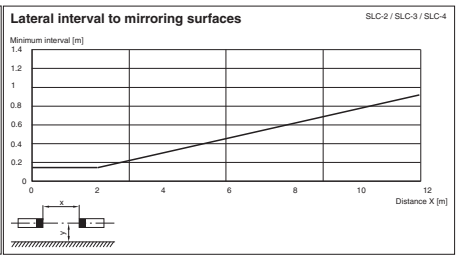


terminal	emitter	receiver (relay output)	receiver (semiconductor output)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Test (input)
X1:3		OSSD2.2 (output)	0 V OSSD
X1:4		OSSD1.2 (output)	24 V OSSD
X1:5		OSSD2.1 (output)	OSSD2 (output)
X1:6		OSSD1.1 (output)	OSSD1 (output)
X1:7	0 V AC/DC	0 V AC/DC	0 V DC
X1:8	24 V AC/DC	24 V AC/DC	24 V DC
X2:1	not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		24 V reference potential for I/O	n. c.
X2:4		0 V reference potential for I/O	n. c.
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams

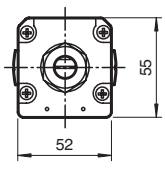






Additional information

Profile dimensions, front view



System accessories

- Mounting set SLC
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Mirror 2, 3 or 4-beam for SLC (for multi-side securing of hazardous areas)
- Laser alignment aid BA SLC
- Profile alignment aid PA SLP/SLC
- Ground pillar UC SLP/SLC
- Housing for ground pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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Features

- **ATEX-approval for zone 2 and zone 22**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Safety outputs OSSD, external status displays OSSD**
- **Start/Restart disable**
- **7-segment diagnostic display**
- **Pre-fault indication**
- **Protection degree IP66**
- **Beam spacing 300 mm**
  SLC-4/133
- **Beam spacing 400 mm**
  SLC-3/133
- **Beam spacing 500 mm**
  SLC-2/133

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLC-2/133	SLC-3/133	SLC-4/133
Effective detection range	0.2 ... 20 m	◆	◆	◆
Light source	IRED	◆	◆	◆
Approvals	TÜV, cULus	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆
Marking	zone 2: Ex II 3 G EEx nA II T4; Zone 22: Ex II 3 D IP66 T 90°C	◆	◆	◆
Obstacle size	50 mm	◆	◆	◆
Beam spacing	300 mm			◆
	400 mm		◆	
	500 mm	◆		
Number of beams	2	◆		
	3		◆	
	4			◆
Safety category according to IEC/EN 61496	4	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆
Series	SLC	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆
Function display	in receiver: LED red: OSSD off, LED green: OSSD on, LED yellow: Protected area free, system start-ready	◆	◆	◆
Pre-fault indication	LED orange	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆
Protection class	III	◆	◆	◆
No-load supply current	Emitter: 100 mA , receiver 150 mA	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆
Function input	Start release	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆
Switching voltage	Operating voltage -2 V	◆	◆	◆
Switching current	max. 0.5 A	◆	◆	◆
Response time	10 ms	◆	◆	◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆
Length of housing	1010 mm		◆	
	1157 mm			◆
	707 mm	◆		
Housing width	52 mm	◆	◆	◆
Housing depth	55 mm	◆	◆	◆
Protection degree	IP66	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm²	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆
Mass	Per 2100 g	◆		
	Per 3000 g		◆	
	Per 3450 g			◆
System components				
Emitter	SLC-2-T/133	◆		
	SLC-3-T/133		◆	
	SLC-4-T/133			◆

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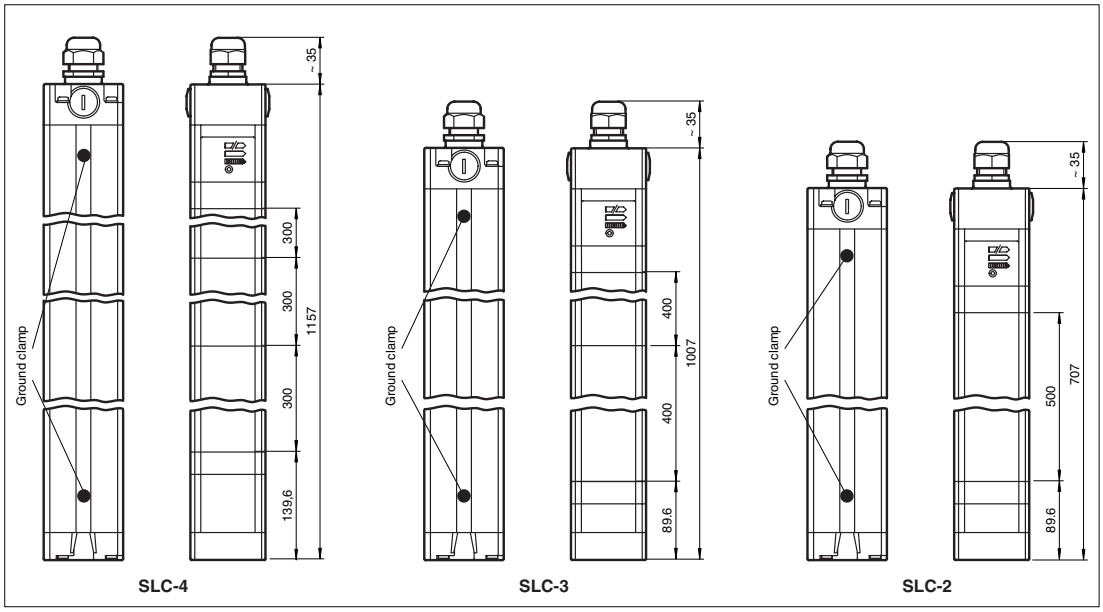
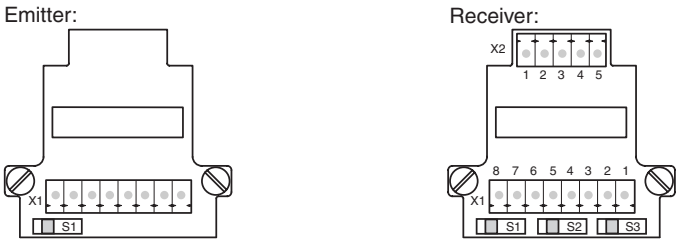
Dimensions

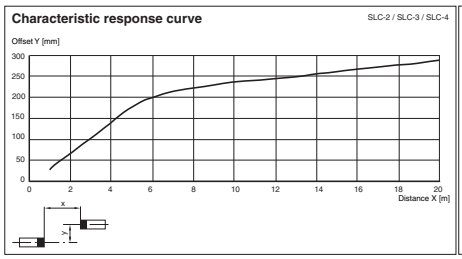


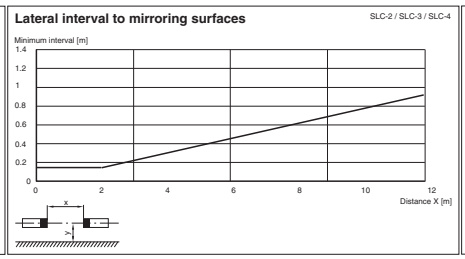
Electrical connection

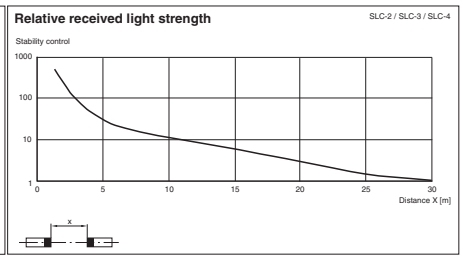


terminal	emitter	receiver (relay output)	receiver (semiconductor output)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Test (input)
X1:3		OSSD2.2 (output)	0 V OSSD
X1:4		OSSD1.2 (output)	24 V OSSD
X1:5		OSSD2.1 (output)	OSSD2 (output)
X1:6		OSSD1.1 (output)	OSSD1 (output)
X1:7	0 V AC/DC	0 V AC/DC	0 V DC
X1:8	24 V AC/DC	24 V AC/DC	24 V DC
X2:1	not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		24 V reference potential for I/O	n. c.
X2:4		0 V reference potential for I/O	n. c.
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams

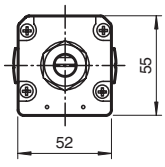






Additional information

Profile dimensions, front view



System accessories

- Mounting set SLC
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Mirror 2, 3 or 4-beam for SLC (for multi-side securing of hazardous areas)
- Laser alignment aid BA SLC
- Profile alignment aid PA SLP/SLC
- Ground pillar UC SLP/SLC
- Housing for ground pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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SLPC8-2/..

Safety light grid with integrated control unit

Features

- **Detection range up to 8 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Minimum wiring expense due to transceiver with passive mirror column**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLPC8-2	SLPC8-2/31
Focke Ident-No.			
Effective detection range	0.2 ... 8 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	500 mm	◆	◆
Number of beams	2	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in transceiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 2300 g	◆	◆
System components			
Transceiver	SLPC8-2-A	◆	
	SLPC8-2-A/31		◆
Mirror pillar	SLP8-2-M	◆	◆

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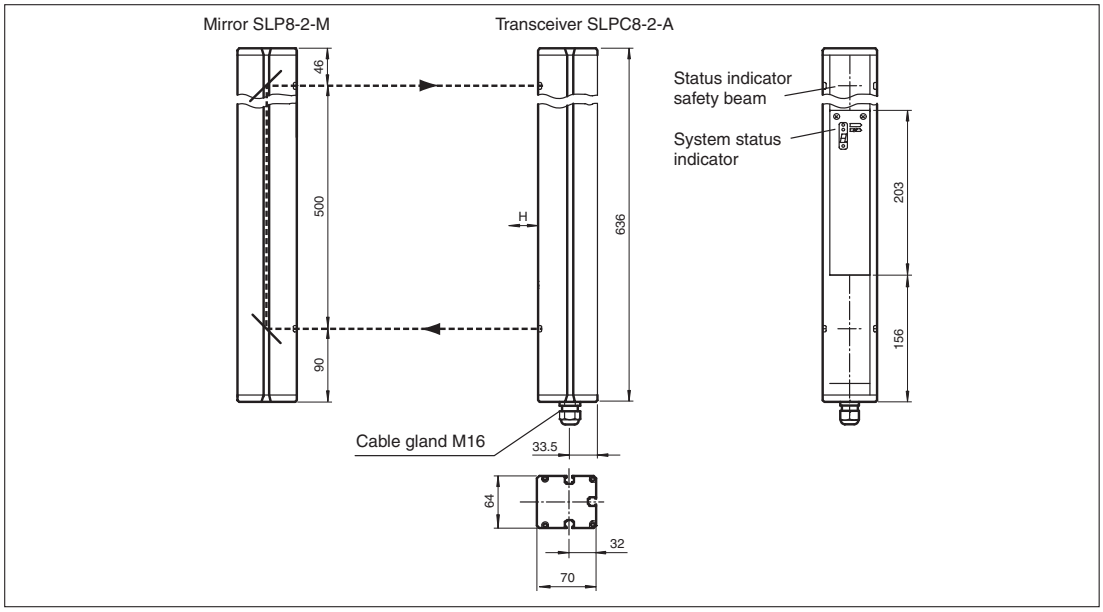
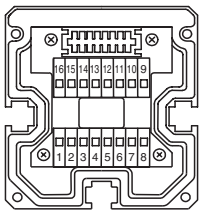
Dimensions



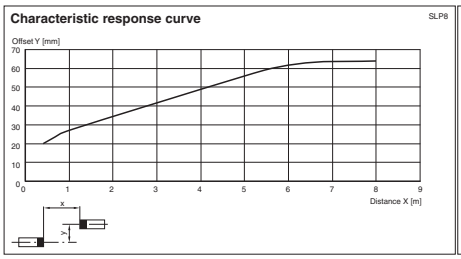
Electrical connection

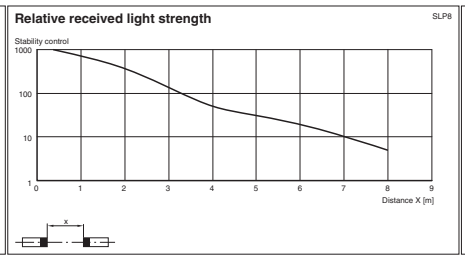
Transceiver SLPC8-2-A

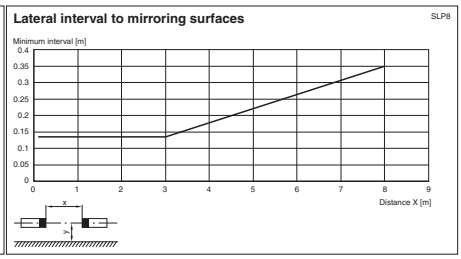


Transceiver SLPC... (semiconductor output)	Transceiver SLPC.../31 (relay output)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar
  Enclosure UC SLP/SLC
- Collision protector
  Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas
  SLP-2-M

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Features

- **Detection range up to 10 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC10-2	SLPC10-2/31
Effective detection range	0.2 ... 10 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	500 mm	◆	◆
Number of beams	2	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 2300 g	◆	◆
System components			
Emitter	SLP10-2-T	◆	◆
Receiver	SLPC10-2-R	◆	
	SLPC10-2-R/31		◆

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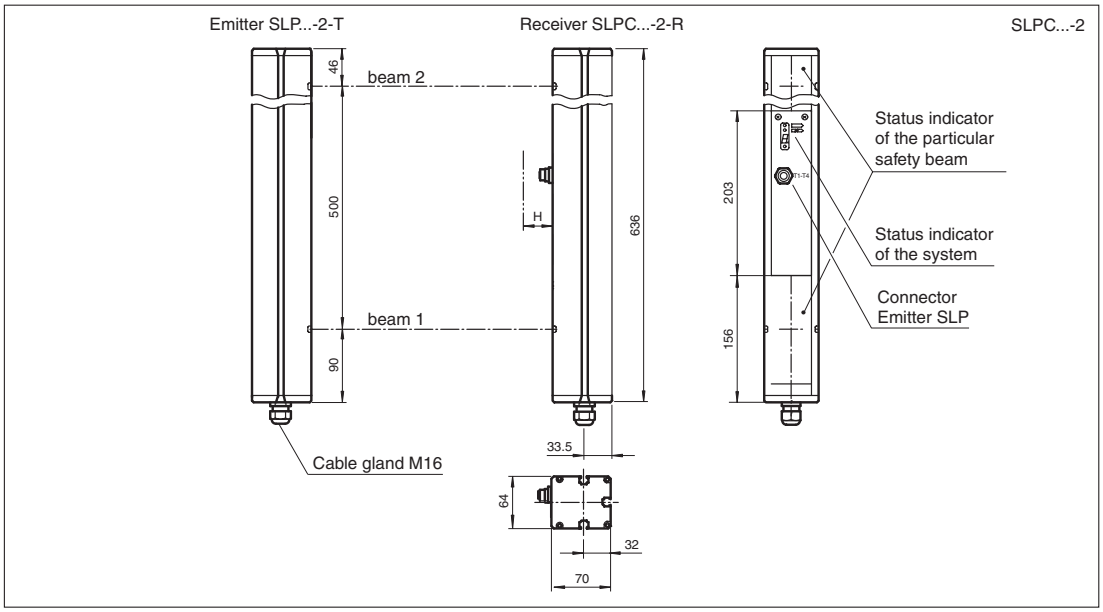
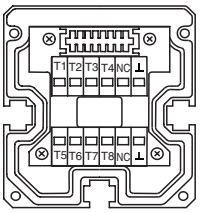
Dimensions



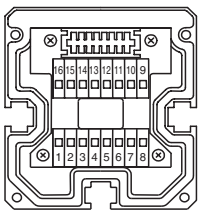
Electrical connection

Emitter SLP



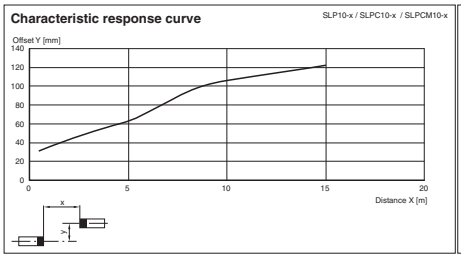
T1 - Emitter channel 1
T2 - Emitter channel 2
⊥ - 0 V

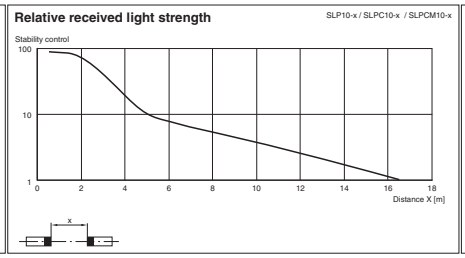
Receiver SLPC

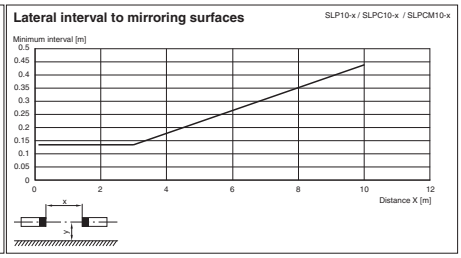


Receiver SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams

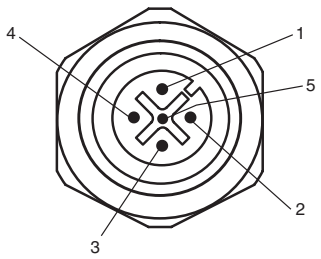






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas

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Features

- **Detection range up to 30 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC30-2	SLPC30-2/31
Effective detection range	6 ... 30 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	500 mm	◆	◆
Number of beams	2	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 2300 g	◆	◆
System components			
Emitter	SLP30-2-T	◆	◆
Receiver	SLPC30-2-R	◆	
	SLPC30-2-R/31		◆

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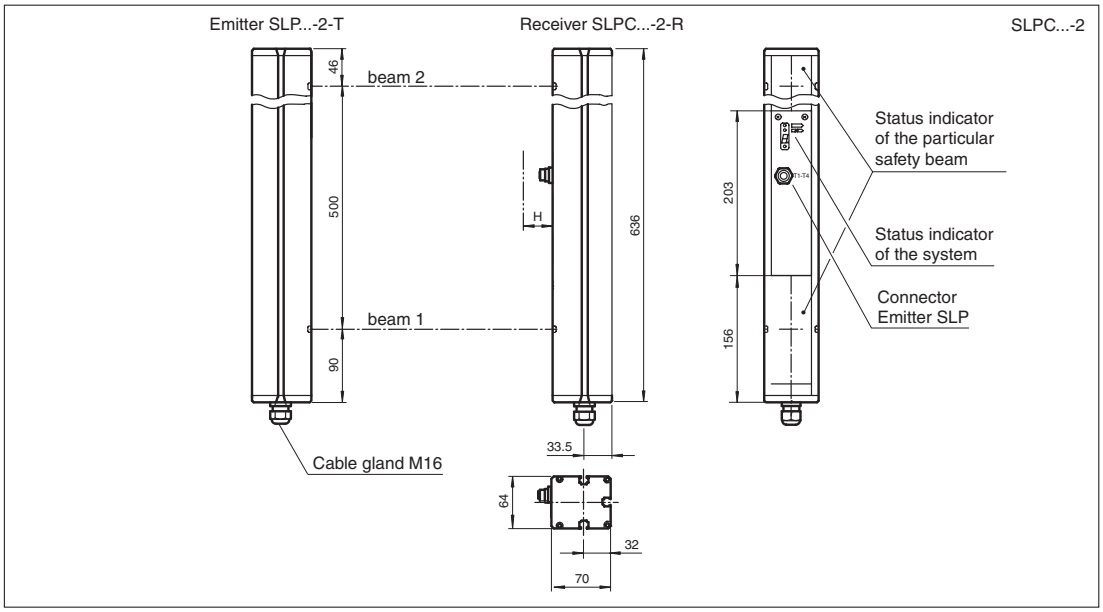
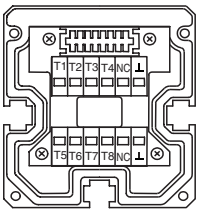
Dimensions



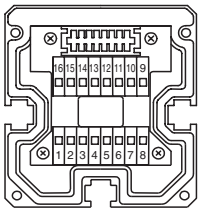
Electrical connection

Emitter SLP



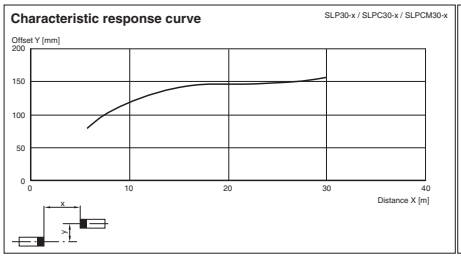
T1 - Emitter channel 1
T2 - Emitter channel 2
⊥ - 0 V

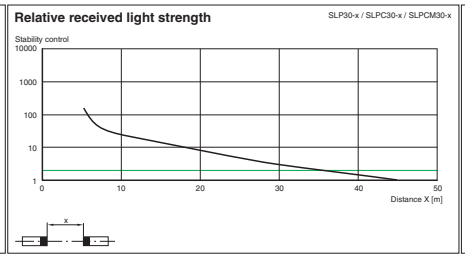
Receiver SLPC

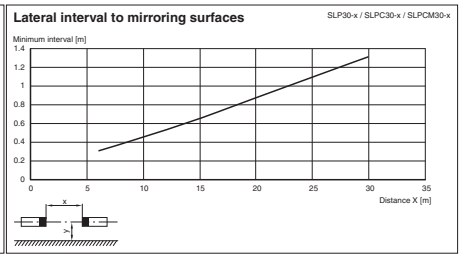


Receiver SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams

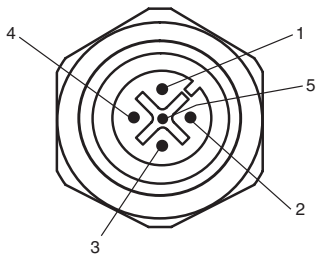






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-2-M

Date of edition 05/17/2006

Features

- **Detection range up to 65 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC65-2	SLPC65-2/31
Effective detection range	12 ... 65 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	500 mm	◆	◆
Number of beams	2	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 2300 g	◆	◆
System components			
Emitter	SLP65-2-T	◆	◆
Receiver	SLPC65-2-R	◆	
	SLPC65-2-R/31		◆

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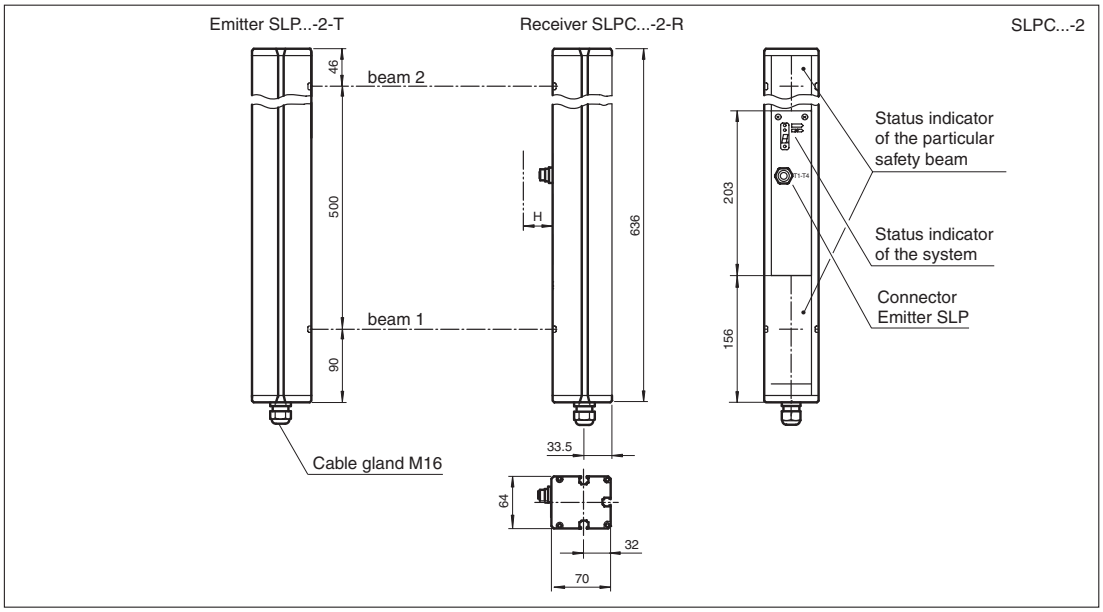
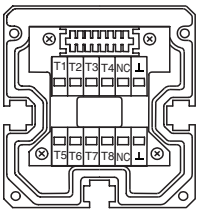
Dimensions



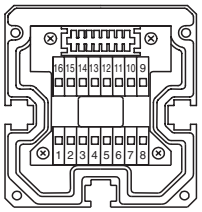
Electrical connection

Emitter SLP



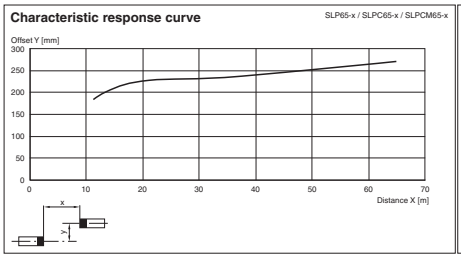
T1 - Emitter channel 1
T2 - Emitter channel 2
⊥ - 0 V

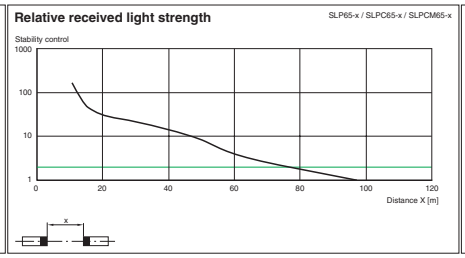
Receiver SLPC

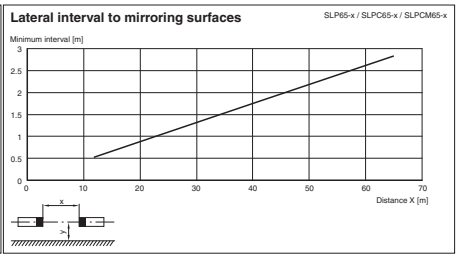


Receiver SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams

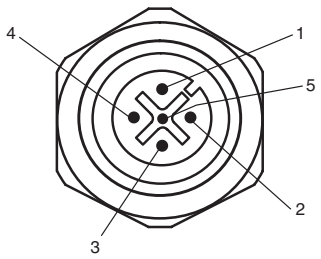






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-2-M

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Features

- **Detection range up to 10 m**
- **3-Radial design**
- **Beam spacing 400 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC10-3	SLPC10-3/31
Effective detection range	0.2 ... 10 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	400 mm	◆	◆
Number of beams	3	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 3400 g	◆	◆
System components			
Emitter	SLP10-3-T	◆	◆
Receiver	SLPC10-3-R	◆	
	SLPC10-3-R/31		◆

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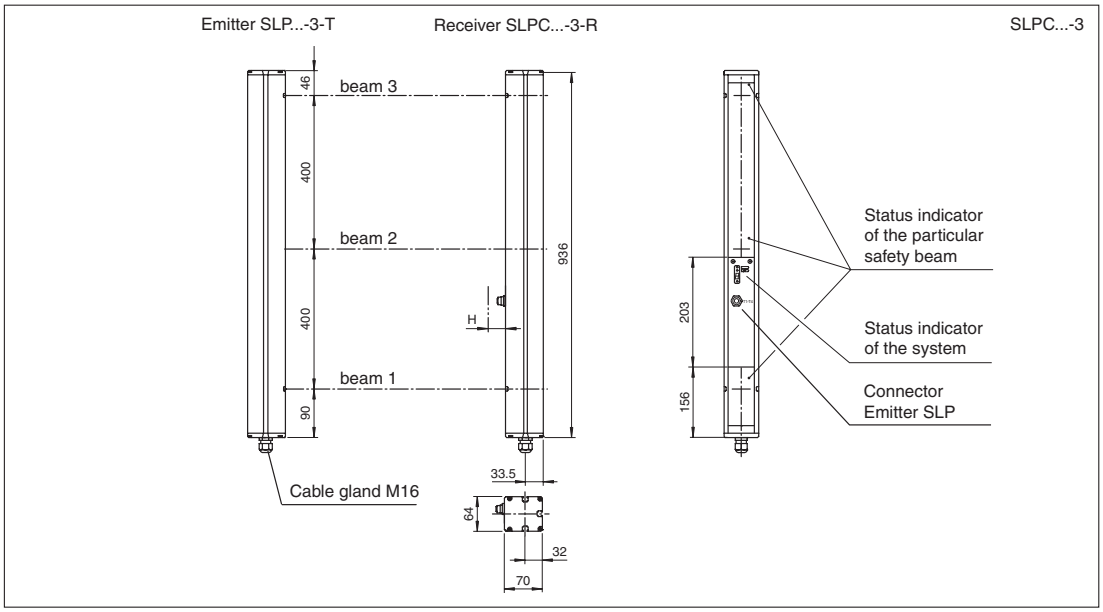
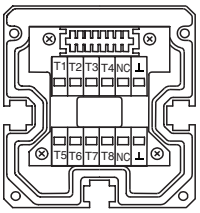
Dimensions



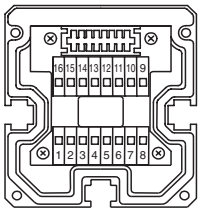
Electrical connection

Emitter SLP



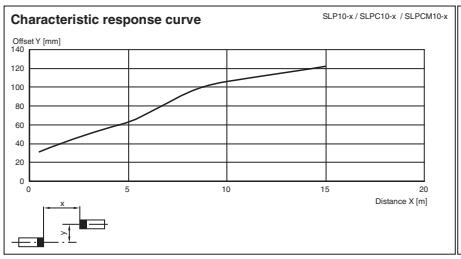
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
⊥ - 0 V

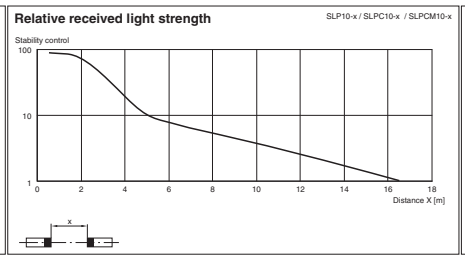
Receiver SLPC

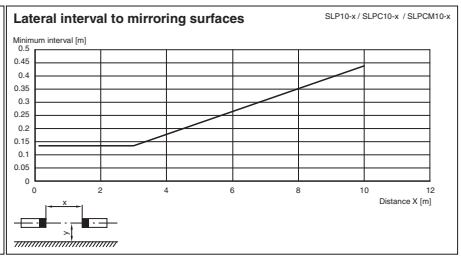


Receicer SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - input, Relay monitor 10 - input, Start release 11 - input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams

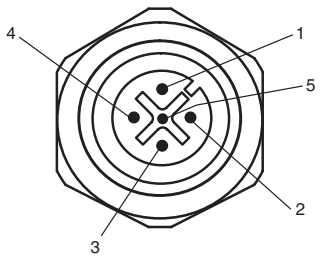






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-3-M

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Features

- **Detection range up to 30 m**
- **3-Radial design**
- **Beam spacing 400 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC30-3	SLPC30-3/31
Effective detection range	6 ... 30 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	400 mm	◆	◆
Number of beams	3	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 3400 g	◆	◆
System components			
Emitter	SLP30-3-T	◆	◆
Receiver	SLPC30-3-R	◆	
	SLPC30-3-R/31		◆

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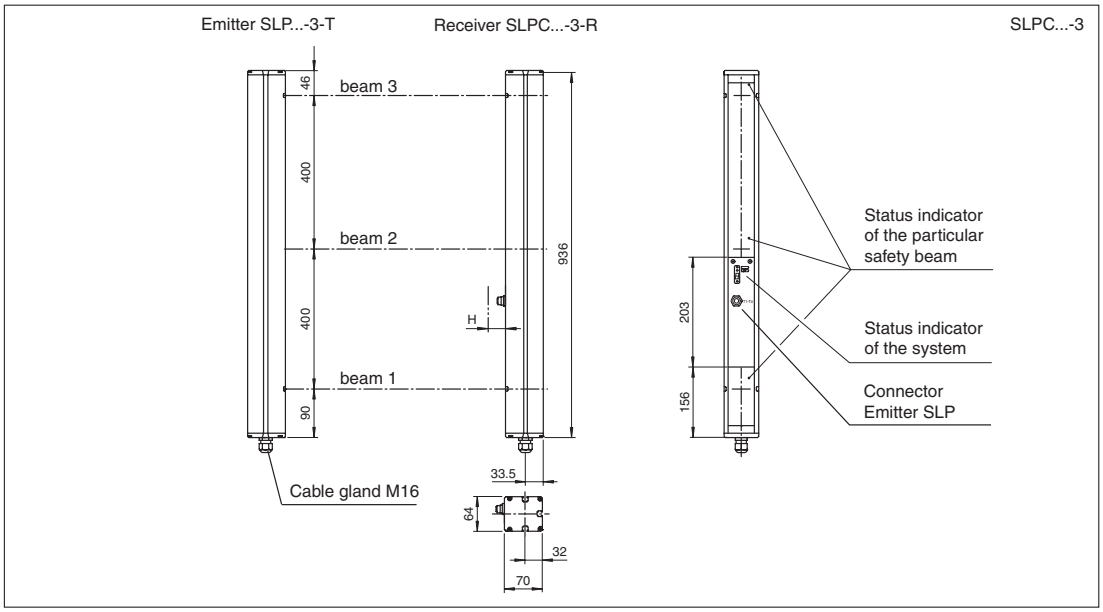
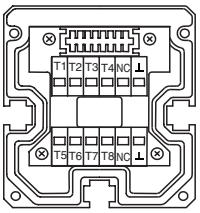
Dimensions



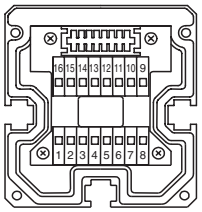
Electrical connection

Emitter SLP



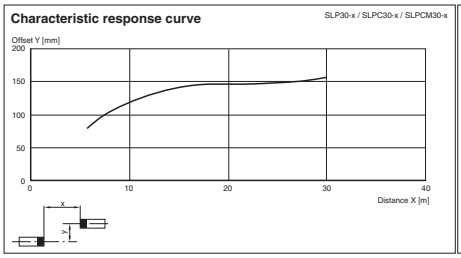
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
⊥ - 0 V

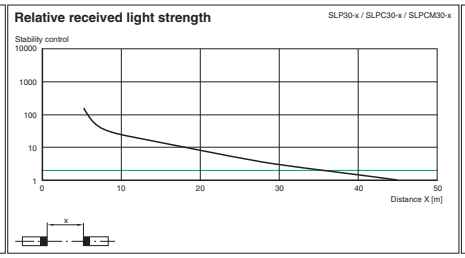
Receiver SLPC

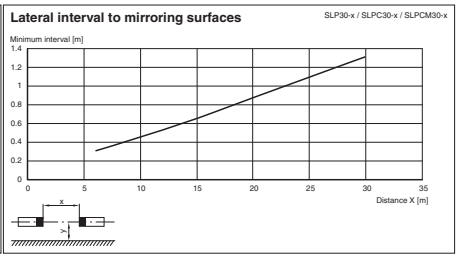


Receicer SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - input, Relay monitor 10 - input, Start release 11 - input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams

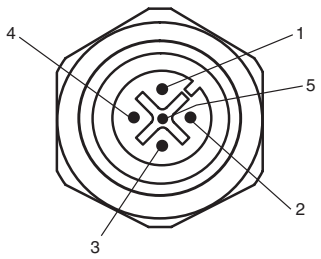






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-3-M

Date of edition 05/17/2006

Features

- **Detection range up to 65 m**
- **3-Radial design**
- **Beam spacing 400 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC65-3	SLPC65-3/31
Effective detection range	12 ... 65 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	400 mm	◆	◆
Number of beams	3	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 3400 g	◆	◆
System components			
Emitter	SLP65-3-T	◆	◆
Receiver	SLPC65-3-R	◆	
	SLPC65-3-R/31		◆

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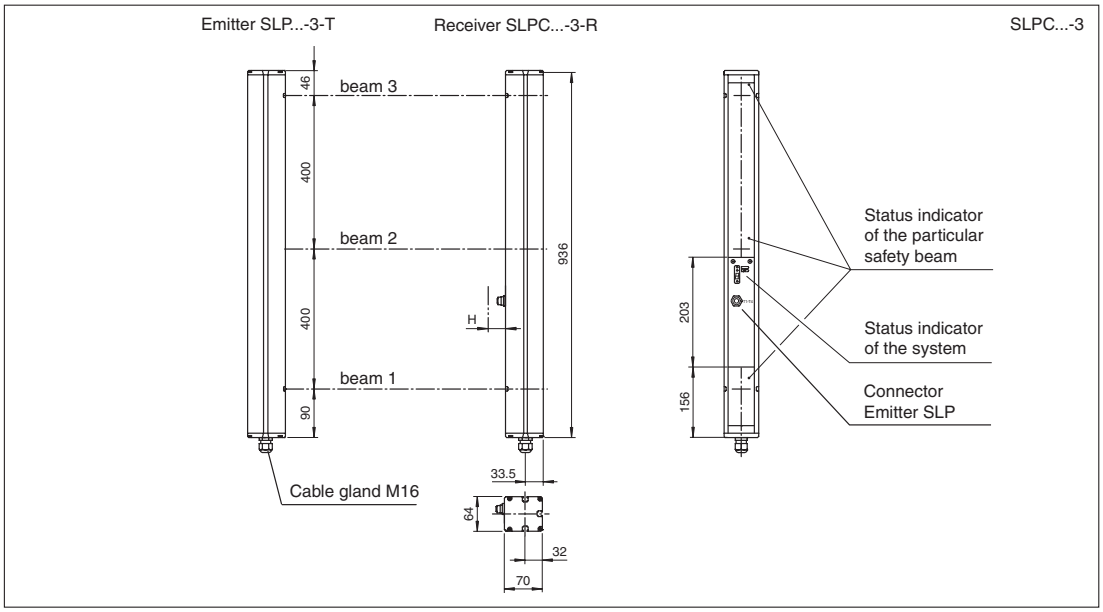
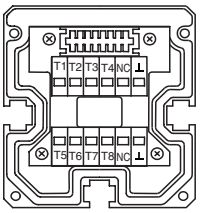
Dimensions



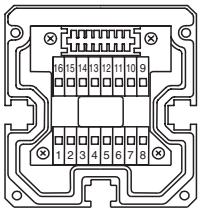
Electrical connection

Emitter SLP



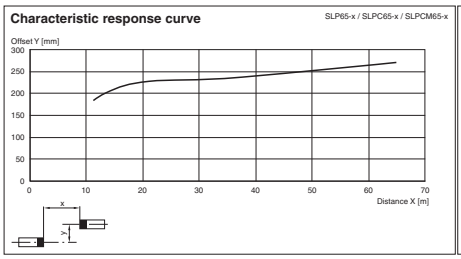
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
⊥ - 0 V

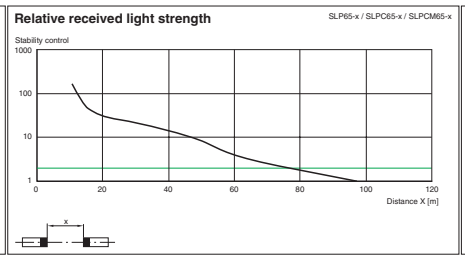
Receiver SLPC

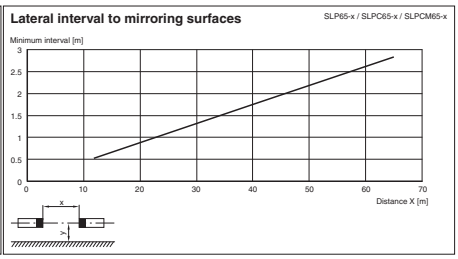


Receicer SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - input, Relay monitor 10 - input, Start release 11 - input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams

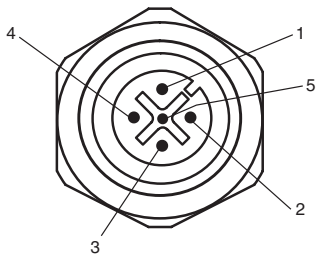






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-3-M

Date of edition 05/17/2006

Features

- **Detection range up to 10 m**
- **4-Radial design**
- **Beam spacing 300 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

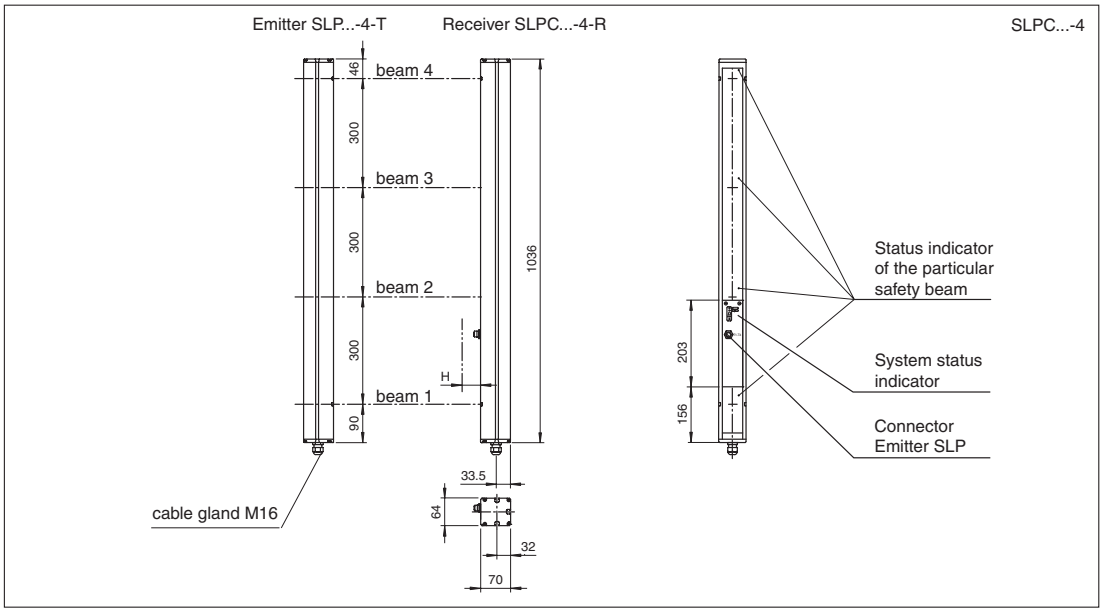
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC10-4	SLPC10-4/31
Effective detection range	0.2 ... 10 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	300 mm	◆	◆
Number of beams	4	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 3700 g	◆	◆
System components			
Emitter	SLP10-4-T	◆	◆
Receiver	SLPC10-4-R	◆	
	SLPC10-4-R/31		◆

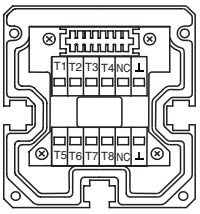
Date of edition 05/17/2006

Dimensions



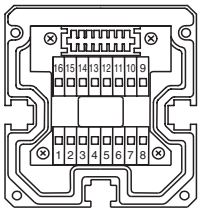
Electrical connection

Emitter SLP



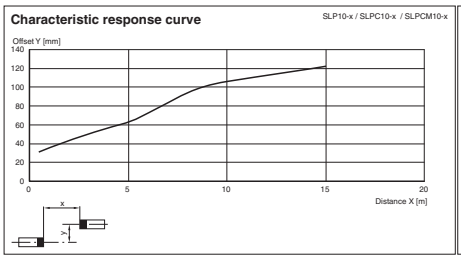
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
T4 - Emitter channel 4
- 0 V

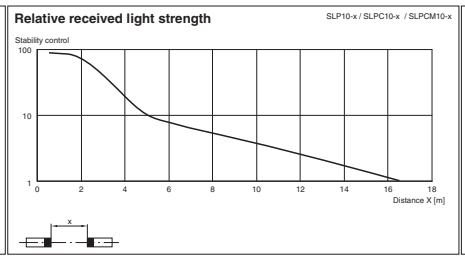
Receiver SLPC

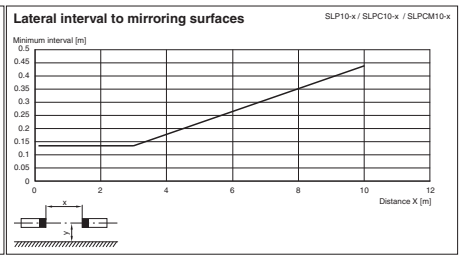


Receiver SLPC (semi-conductor outputs)	Receiver SLPC/31 (relay output)
1 - Fuctional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-Output, Soiled optics 13 - n.c. 14 - PNP-Output, Startup readiness 15 - PNP-Output, Indicator OSSD OFF 16 - PNP-Output, Indicator OSSD ON	

Diagrams

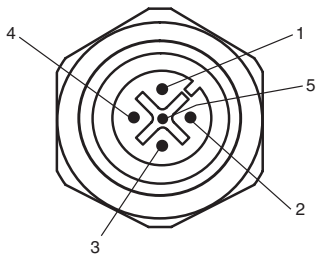






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3
5	Transmitter channel 4

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-4-M

Date of edition 05/17/2006

Features

- **Detection range up to 30 m**
- **4-Radial design**
- **Beam spacing 300 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

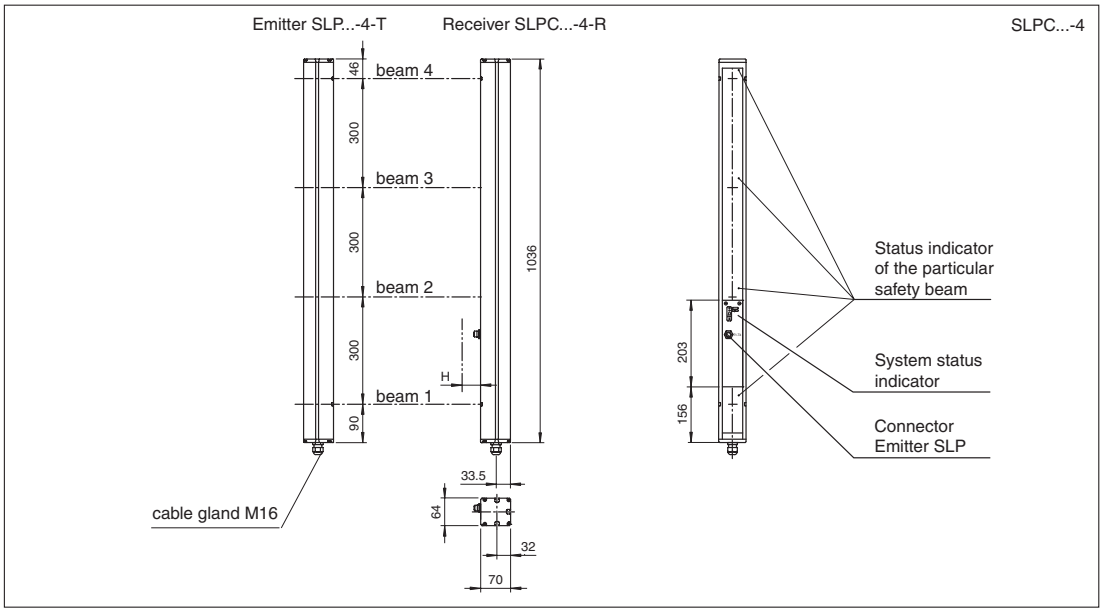
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC30-4	SLPC30-4/31
Effective detection range	6 ... 30 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	300 mm	◆	◆
Number of beams	4	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 3700 g	◆	◆
System components			
Emitter	SLP30-4-T	◆	◆
Receiver	SLPC30-4-R	◆	
	SLPC30-4-R/31		◆

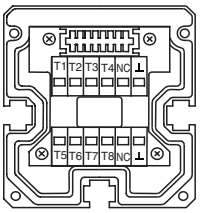
Date of edition 05/17/2006

Dimensions



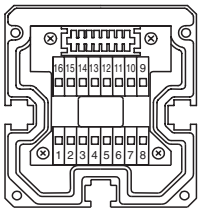
Electrical connection

Emitter SLP



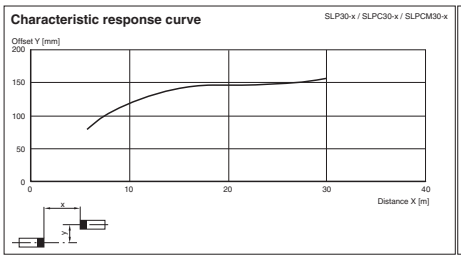
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
T4 - Emitter channel 4
\- 0 V

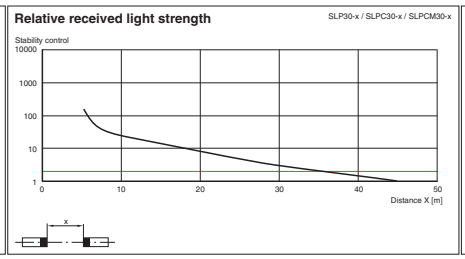
Receiver SLPC

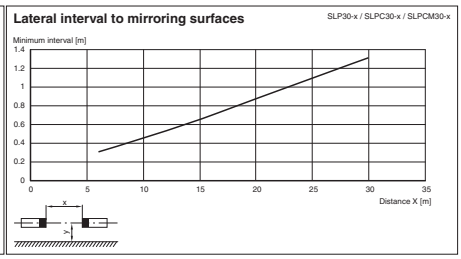


Receiver SLPC (semi-conductor outputs)	Receiver SLPC/31 (relay output)
1 - Fuctional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-Output, Soiled optics 13 - n.c. 14 - PNP-Output, Startup readiness 15 - PNP-Output, Indicator OSSD OFF 16 - PNP-Output, Indicator OSSD ON	

Diagrams

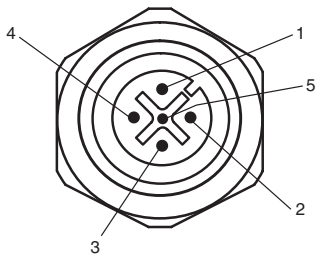






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3
5	Transmitter channel 4

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-4-M

Date of edition 05/17/2006

SLPC65-4/..

Safety light grid with integrated control unit

Features

- **Detection range up to 65 m**
- **4-Radial design**
- **Beam spacing 300 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

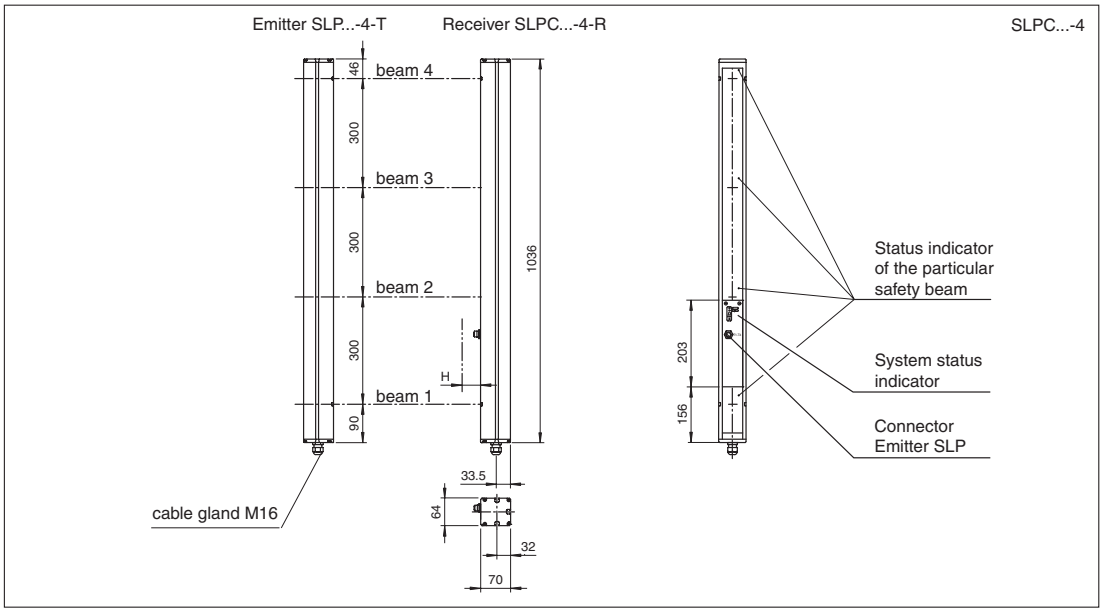
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPC65-4	SLPC65-4/31
Effective detection range	12 ... 65 m	◆	◆
Light source	LED	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Beam spacing	300 mm	◆	◆
Number of beams	4	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Light type	red, modulated light	◆	◆
Angle of divergence	< 5 °	◆	◆
Diagnosis display	7-segment display	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on	◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆
Protection class	III	◆	◆
No-load supply current	max. 250 mA	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Test input	Reset-input for system test	◆	◆
Function input	Relay monitor, start release	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	
	2 relay outputs, compelled connection NO-contact		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off		◆
	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	
Switching voltage	Operating voltage -2 V	◆	
	20 ... 60 V DC, 12 ... 25 V AC_{rms}		◆
Switching current	max. 0.5 A	◆	
	0.01 ... 2 A		◆
Switch power	100 VA		◆
Response time	20 ms	◆	
	40 ms		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆
Protection degree	IP65	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic pane	◆	◆
Mass	Per 3700 g	◆	◆
System components			
Emitter	SLP65-4-T	◆	◆
Receiver	SLPC65-4-R	◆	
	SLPC65-4-R/31		◆

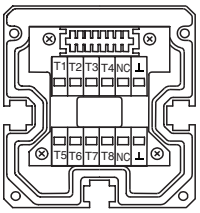
Date of edition 05/17/2006

Dimensions



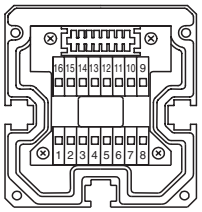
Electrical connection

Emitter SLP



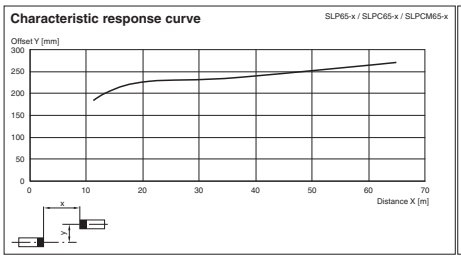
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
T4 - Emitter channel 4
- 0 V

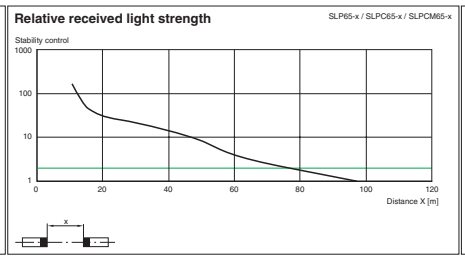
Receiver SLPC

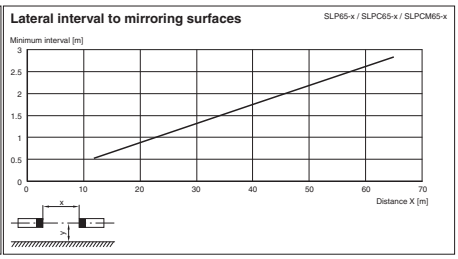


Receiver SLPC (semi-conductor outputs)	Receiver SLPC/31 (relay output)
1 - Fuctional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-Output, Soiled optics 13 - n.c. 14 - PNP-Output, Startup readiness 15 - PNP-Output, Indicator OSSD OFF 16 - PNP-Output, Indicator OSSD ON	

Diagrams

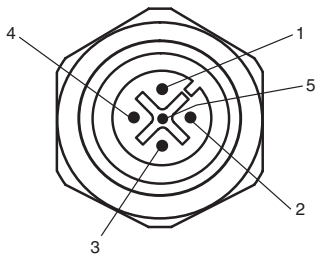






Additional information

Socket assignment on the front side of the device



T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3
5	Transmitter channel 4

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas SLP-4-M

Date of edition 05/17/2006

SLPCM8-2-... Safety light grid with integrated control unit

Features

- **Detection range up to 8 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Minimum wiring expense due to transceiver with passive mirror column**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Pre-fault indication**

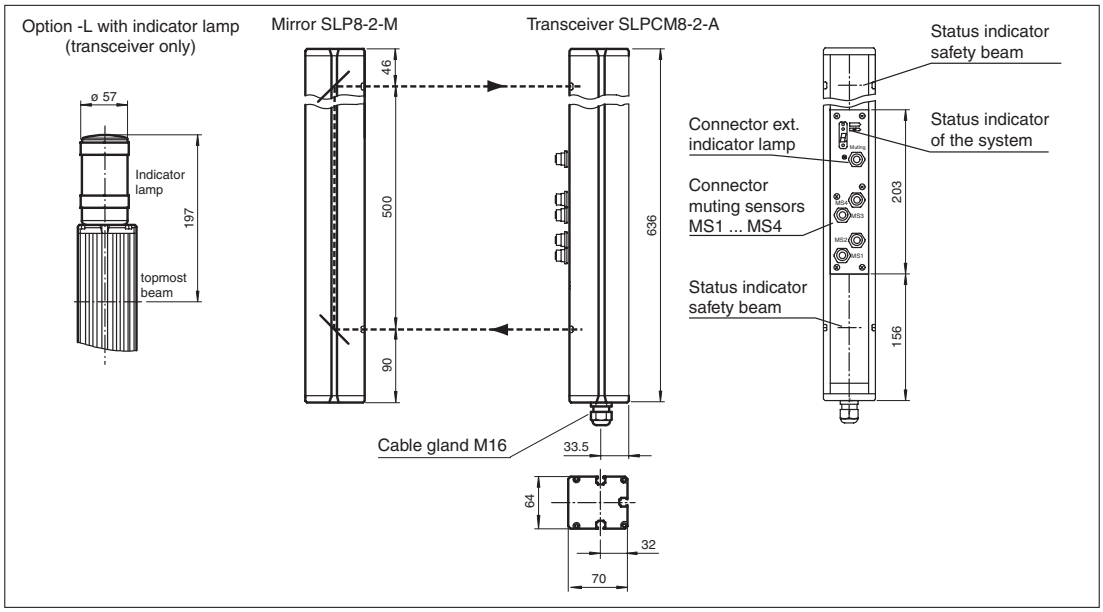
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code:			
		SLPCM8-2	SLPCM8-2/31	SLPCM8-2-L	SLPCM8-2-L/31
Effective detection range	0.2 ... 8 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	500 mm	◆	◆	◆	◆
Number of beams	2	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in transceiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for muting lamp, etc, muting sensors, lamp socket for muting lamp, etc.			◆	◆
	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 2300 g	◆	◆	◆	◆
System components					
Transceiver	SLPCM8-2-A	◆			
	SLPCM8-2-A-L			◆	
	SLPCM8-2-A-L/31				◆
	SLPCM8-2-A/31		◆		
Mirror pillar	SLP8-2-M	◆	◆	◆	◆

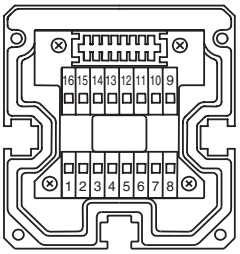
Date of edition 05/17/2006

Dimensions



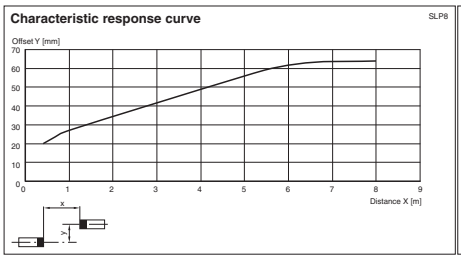
Electrical connection

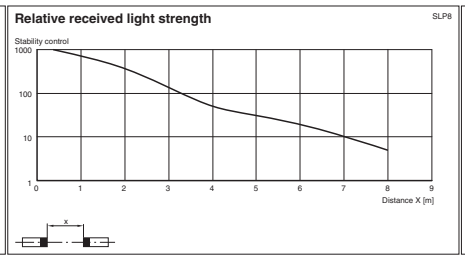
Transceiver SLPCM8-2-A

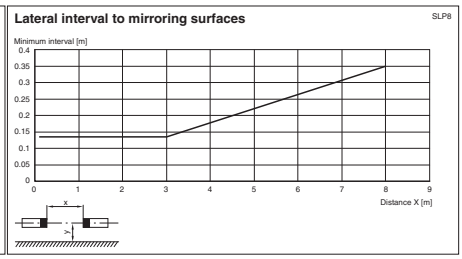


Transceiver SLPCM... (semiconductor output)	Transceiver SLPCM.../31 (Relay output)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Meldung OSSD AUS 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SPC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-2-M

Date of edition 05/17/2006

Features

- **Detection range up to 10 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code:	SLPCM10-2	SLPCM10-2/31	SLPCM10-2-L	SLPCM10-2-L/31
Effective detection range	0.2 ... 10 m		◆	◆	◆	◆
Light source	LED		◆	◆	◆	◆
Approvals	TÜV		◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)		◆	◆	◆	◆
Beam spacing	500 mm		◆	◆	◆	◆
Number of beams	2		◆	◆	◆	◆
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes		◆	◆	◆	◆
Light type	red, modulated light		◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆
Diagnosis display	7-segment display		◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation		◆	◆	◆	◆
Muting display	Indicator lamp				◆	◆
Pre-fault indication	LED red next to receiver flashes		◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment		◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated		◆	◆	◆	◆
Protection class	III		◆	◆	◆	◆
No-load supply current	max. 250 mA		◆	◆	◆	◆
Activation current	approx. 10 mA		◆	◆	◆	◆
Activation time	0.03 ... 1 s		◆	◆	◆	◆
Test input	Reset-input for system test		◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)		◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA		◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs		◆		◆	
	2 relay outputs, compelled connection NO-contact			◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp		◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket				◆	◆
Switching voltage	Operating voltage -2 V		◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC_{rms}			◆		◆
Switching current	max. 0.5 A		◆		◆	
	0.01 ... 2 A			◆		◆
Switch power	100 VA			◆		◆
Response time	20 ms		◆		◆	
	40 ms			◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)		◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)		◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆
Protection degree	IP65		◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors		◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.				◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE		◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆
Optical face	Plastic pane		◆	◆	◆	◆
Mass	Per 2300 g		◆	◆	◆	◆
System components						
Emitter	SLP10-2-T		◆	◆	◆	◆
Receiver	SLPCM10-2-R		◆			
	SLPCM10-2-R-L				◆	
	SLPCM10-2-R-L/31					◆
	SLPCM10-2-R/31			◆		

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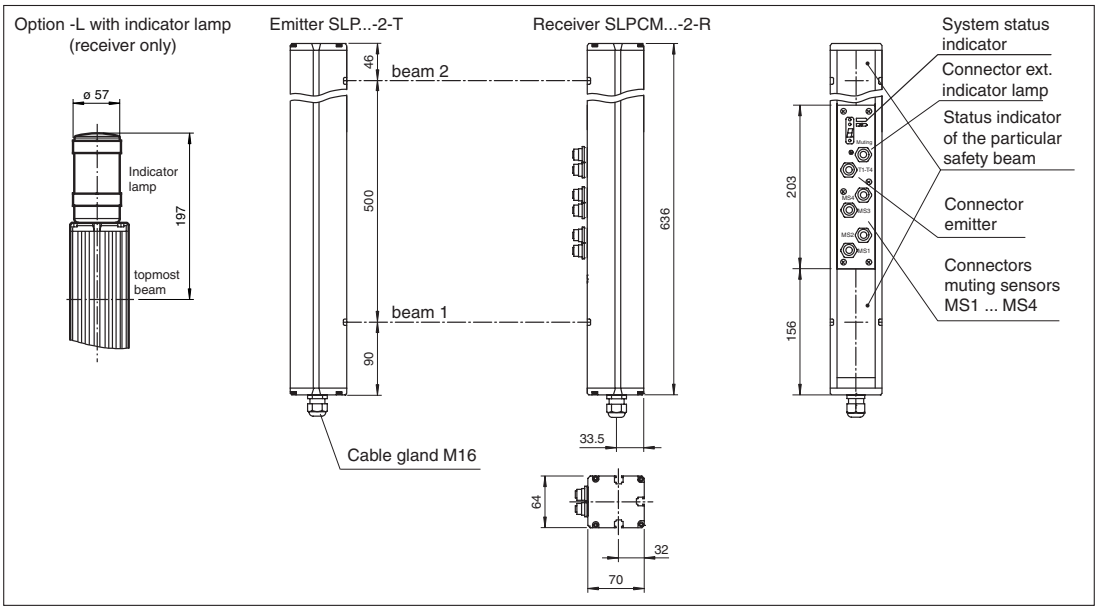
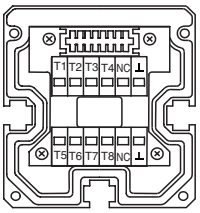
Dimensions



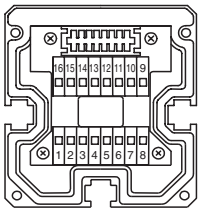
Electrical connection

Emitter SLP



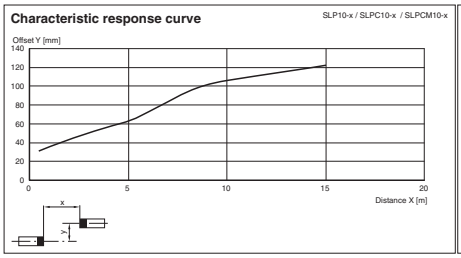
T1 - Emitter channel 1
T2 - Emitter channel 2
⊥ - 0 V

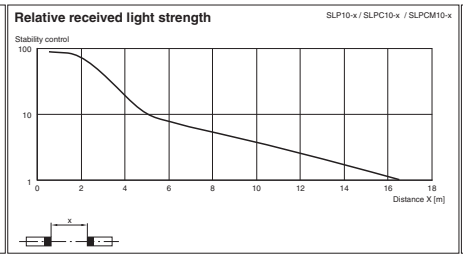
Receiver SLPCM

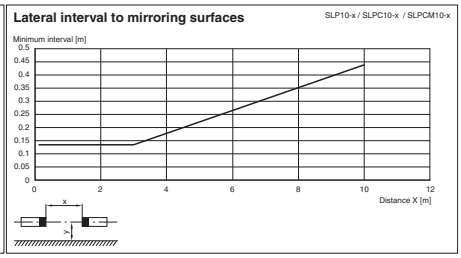


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-2-M

Date of edition 05/17/2006

Features

- **Detection range up to 30 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLPCM30-2	SLPCM30-2/31	SLPCM30-2-L	SLPCM30-2-L/31
Effective detection range	6 ... 30 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	500 mm	◆	◆	◆	◆
Number of beams	2	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC_{rms}		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 2300 g	◆	◆	◆	◆
System components					
Emitter	SLP30-2-T	◆	◆	◆	◆
Receiver	SLPCM30-2-R	◆			
	SLPCM30-2-R-L			◆	
	SLPCM30-2-R-L/31				◆
	SLPCM30-2-R/31		◆		

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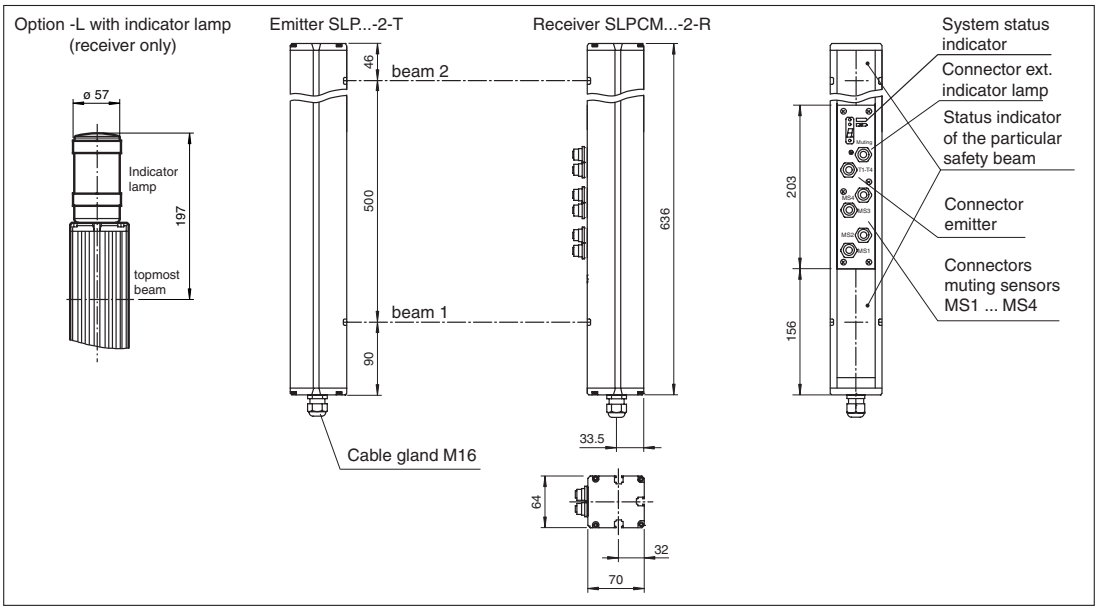
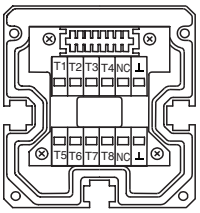
Dimensions



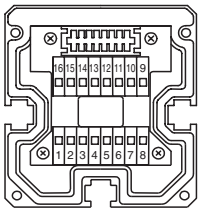
Electrical connection

Emitter SLP



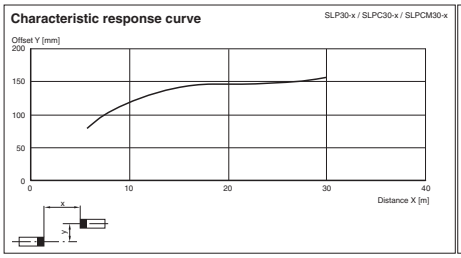
T1 - Emitter channel 1
T2 - Emitter channel 2
⊥ - 0 V

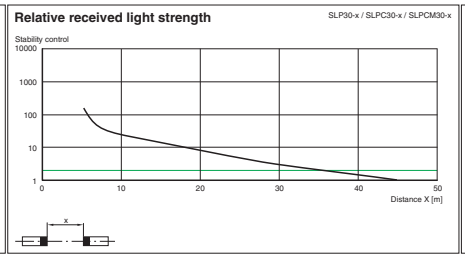
Receiver SLPCM

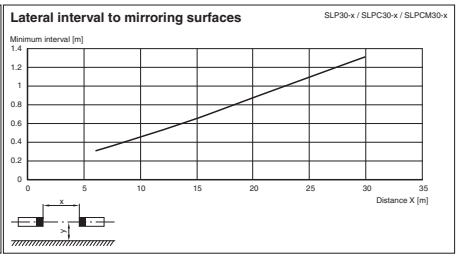


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-2-M

Date of edition 05/17/2006

Features

- **Detection range up to 65 m**
- **2-Radial design**
- **Beam spacing 500 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLPCM65-2	SLPCM65-2/31	SLPCM65-2-L	SLPCM65-2-L/31
Effective detection range	12 ... 65 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	500 mm	◆	◆	◆	◆
Number of beams	2	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 2300 g	◆	◆	◆	◆
System components					
Emitter	SLP65-2-T	◆	◆	◆	◆
Receiver	SLPCM65-2-R	◆			
	SLPCM65-2-R-L			◆	
	SLPCM65-2-R-L/31				◆
	SLPCM65-2-R/31		◆		

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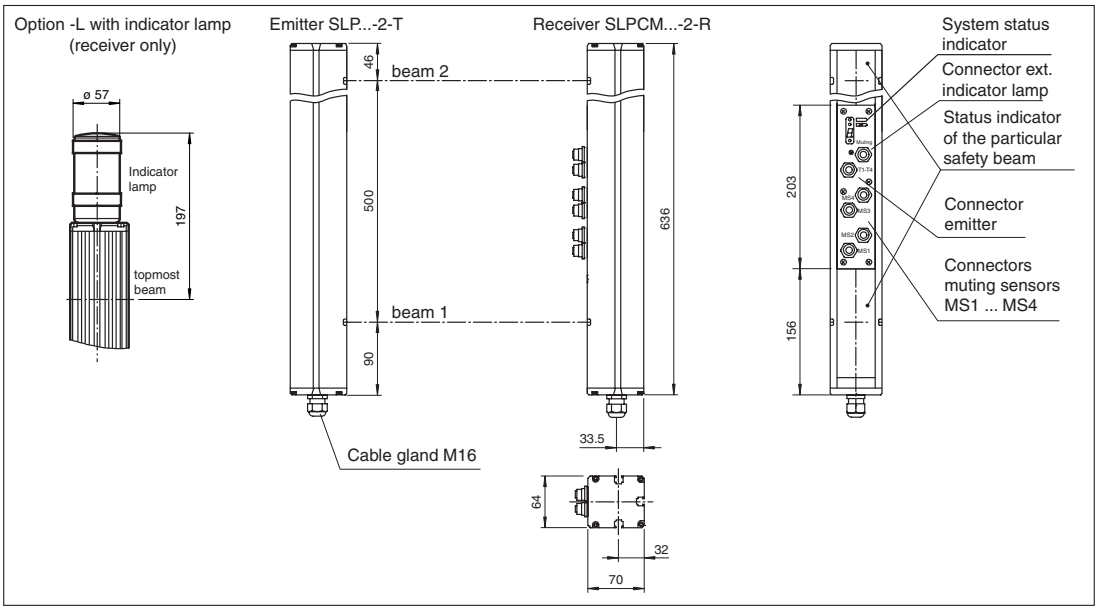
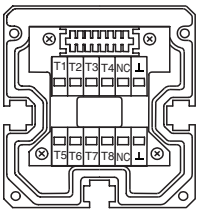
Dimensions



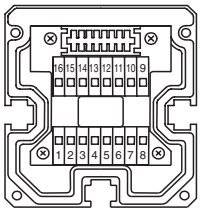
Electrical connection

Emitter SLP



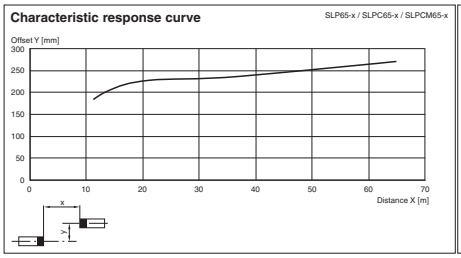
T1 - Emitter channel 1
T2 - Emitter channel 2
⊥ - 0 V

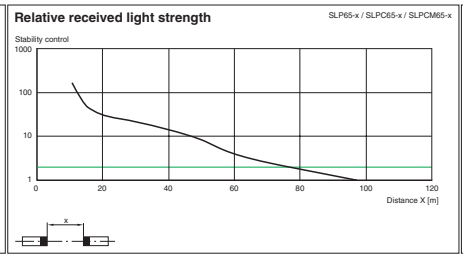
Receiver SLPCM

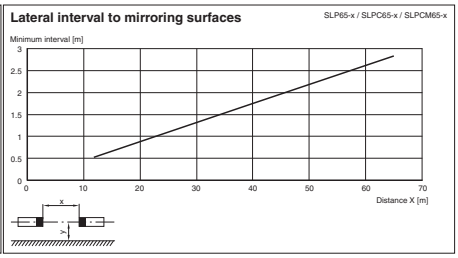


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-2-M

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Features

- **Detection range up to 10 m**
- **3-Radial design**
- **Beam spacing 400 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLPCM10-3	SLPCM10-3/31	SLPCM10-3-L	SLPCM10-3-L/31
Effective detection range	0.2 ... 10 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	400 mm	◆	◆	◆	◆
Number of beams	3	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC_{rms}		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3400 g	◆	◆	◆	◆
System components					
Emitter	SLP10-3-T	◆	◆	◆	◆
Receiver	SLPCM10-3-R	◆			
	SLPCM10-3-R-L			◆	
	SLPCM10-3-R-L/31				◆
	SLPCM10-3-R/31		◆		

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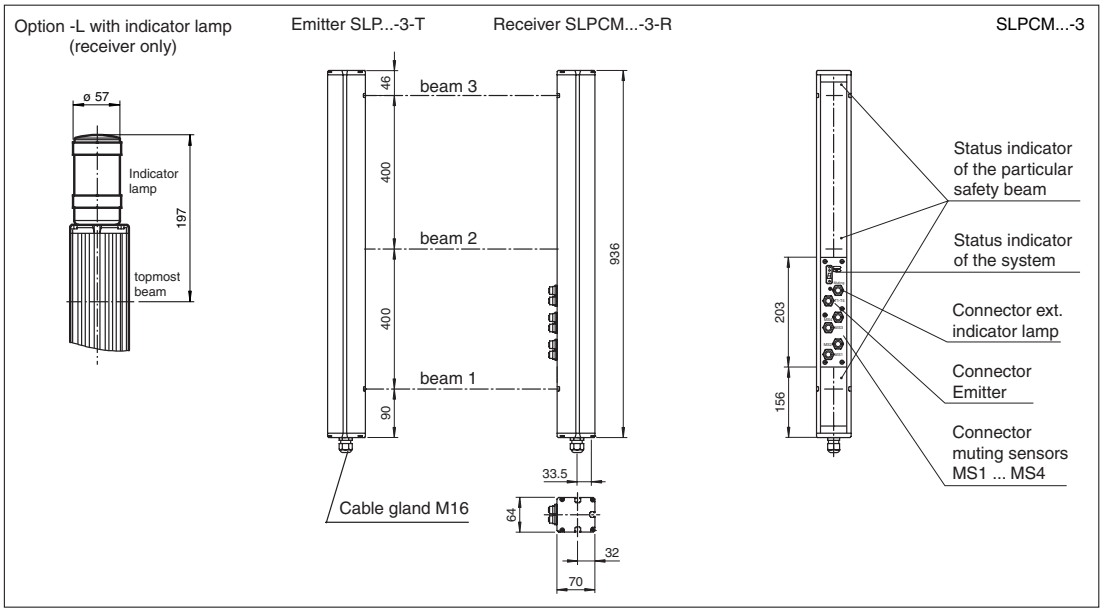
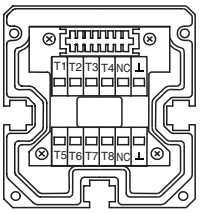
Dimensions



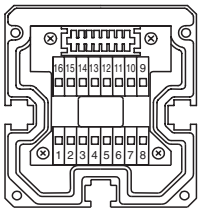
Electrical connection

Emitter SLP



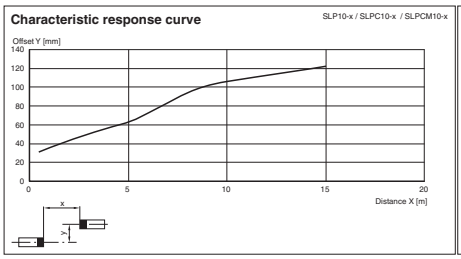
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
⊥ - 0 V

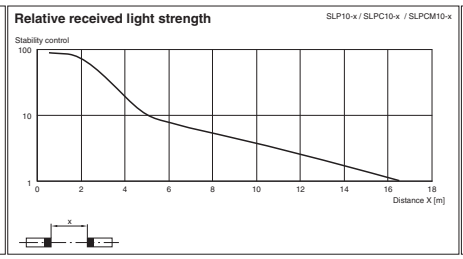
Receiver SLPCM

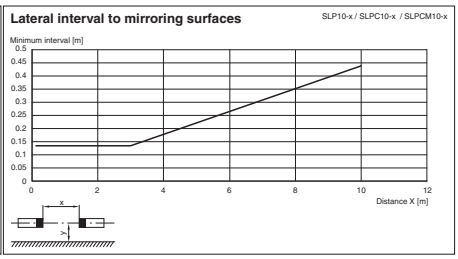


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-3-M

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Features

- **Detection range up to 30 m**
- **3-Radial design**
- **Beam spacing 400 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLPCM30-3	SLPCM30-3/31	SLPCM30-3-L	SLPCM30-3-L/31
Effective detection range	6 ... 30 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	400 mm	◆	◆	◆	◆
Number of beams	3	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC_{rms}		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3400 g	◆	◆	◆	◆
System components					
Emitter	SLP30-3-T	◆	◆	◆	◆
Receiver	SLPCM30-3-R	◆			
	SLPCM30-3-R-L			◆	
	SLPCM30-3-R-L/31				◆
	SLPCM30-3-R/31		◆		

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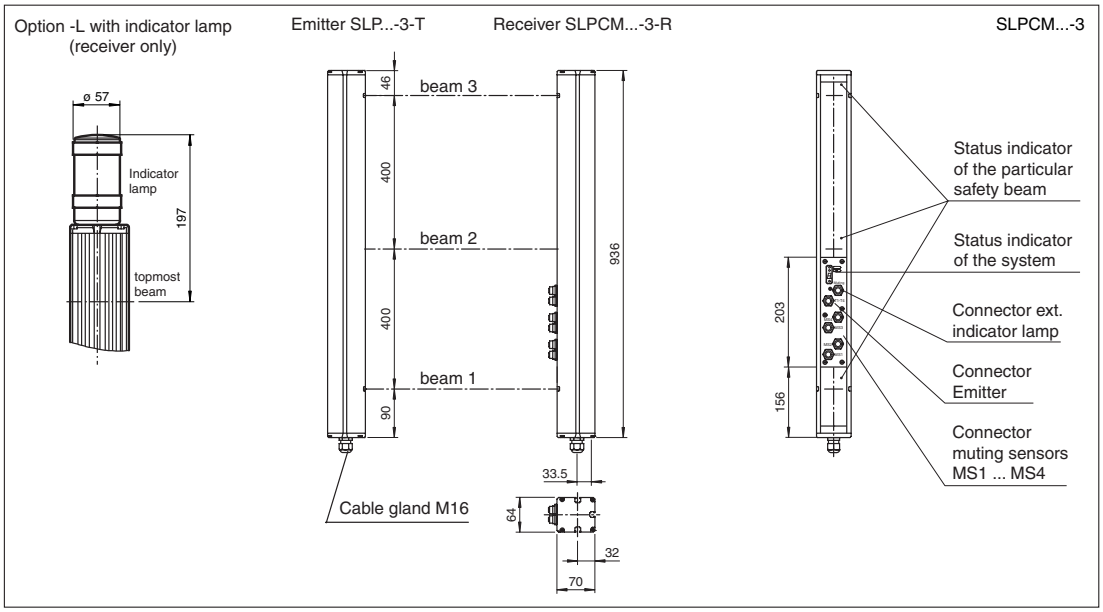
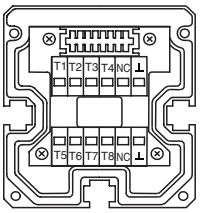
Dimensions



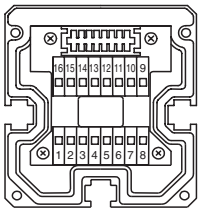
Electrical connection

Emitter SLP



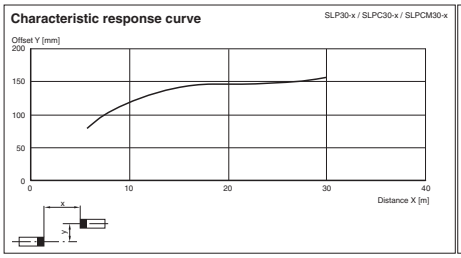
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
⊥ - 0 V

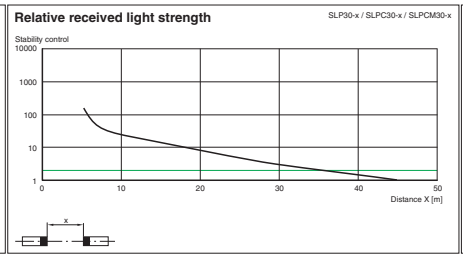
Receiver SLPCM

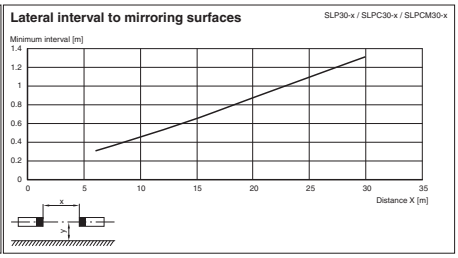


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-3-M

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Features

- **Detection range up to 65 m**
- **3-Radial design**
- **Beam spacing 400 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:	SLPCM65-3	SLPCM65-3/31	SLPCM65-3-L	SLPCM65-3-L/31
Effective detection range	12 ... 65 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	400 mm	◆	◆	◆	◆
Number of beams	3	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC_{rms}		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3400 g	◆	◆	◆	◆
System components					
Emitter	SLP65-3-T	◆	◆	◆	◆
Receiver	SLPCM65-3-R	◆			
	SLPCM65-3-R-L			◆	
	SLPCM65-3-R-L/31				◆
	SLPCM65-3-R/31		◆		

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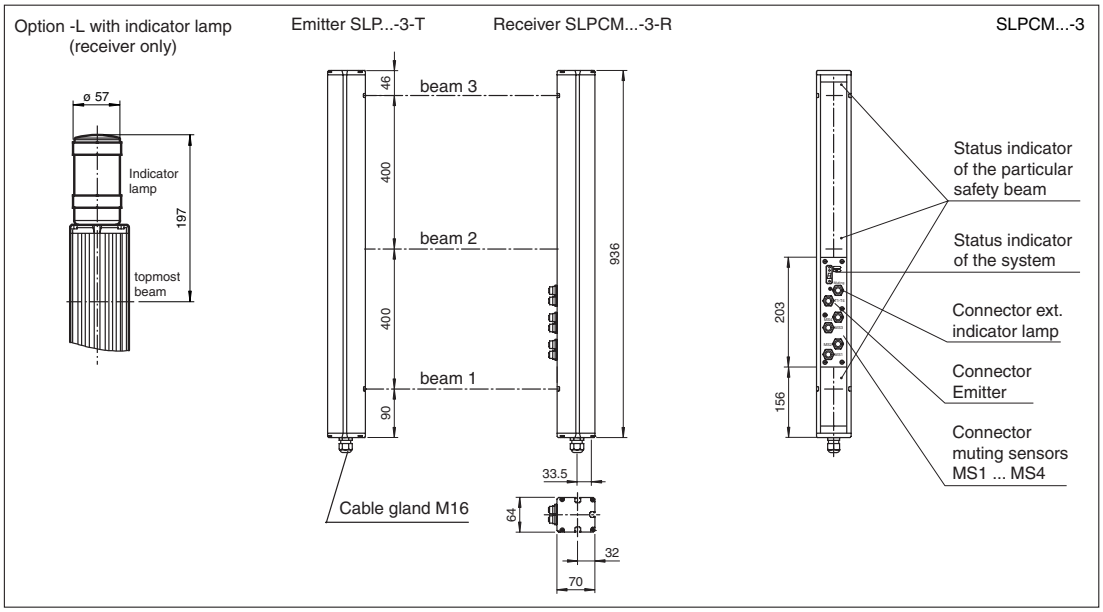
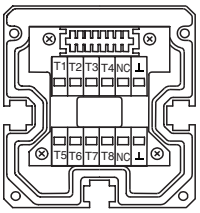
Dimensions



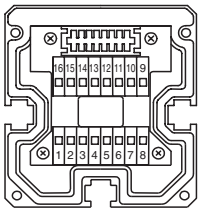
Electrical connection

Emitter SLP



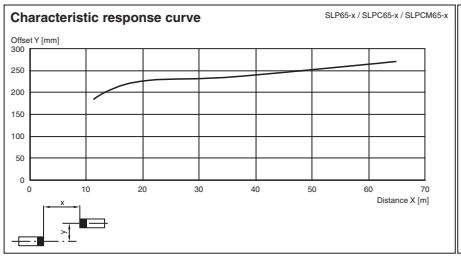
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
⊥ - 0 V

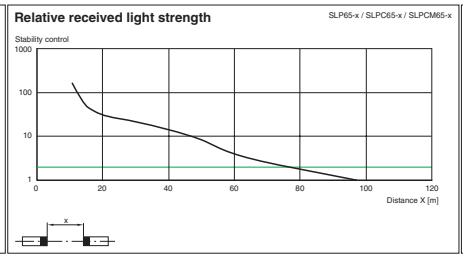
Receiver SLPCM

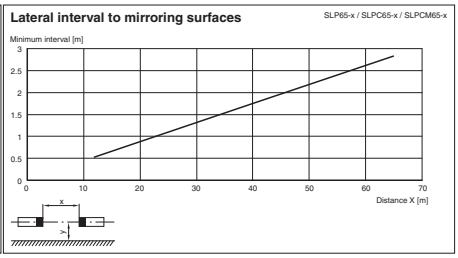


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLP
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-3-M

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Features

- **Detection range up to 10 m**
- **4-Radial design**
- **Beam spacing 300 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLPCM10-4	SLPCM10-4/31	SLPCM10-4-L	SLPCM10-4-L/31
Effective detection range	0.2 ... 10 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	300 mm	◆	◆	◆	◆
Number of beams	4	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC_{rms}		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3700 g	◆	◆	◆	◆
System components					
Emitter	SLP10-4-T	◆	◆	◆	◆
Receiver	SLPCM10-4-R	◆			
	SLPCM10-4-R-L			◆	
	SLPCM10-4-R-L/31				◆
	SLPCM10-4-R/31		◆		

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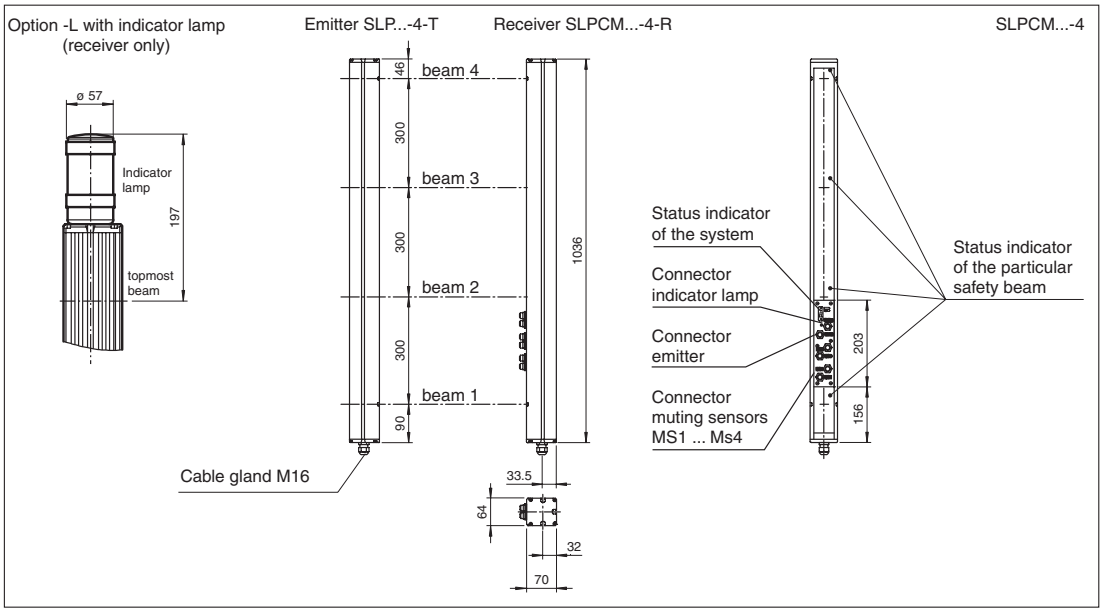
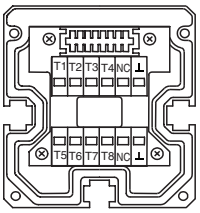
Dimensions



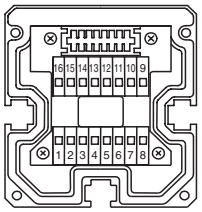
Electrical connection

Emitter SLP



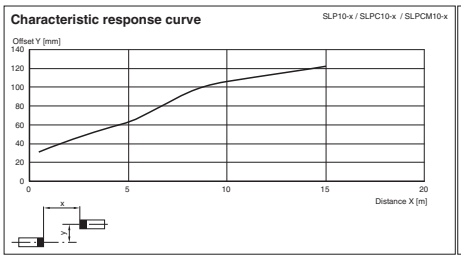
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
T4 - Emitter channel 4
⊥ - 0 V

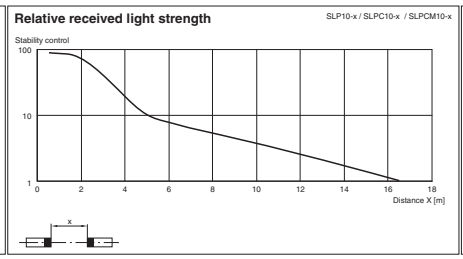
Receiver SLPCM

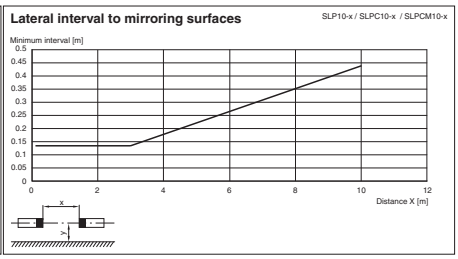


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3
5	Transmitter channel 4

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLC
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-4-M

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Features

- **Detection range up to 30 m**
- **4-Radial design**
- **Beam spacing 300 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

Ordering code:		SLPCM30-4	SLPCM30-4/31	SLPCM30-4-L	SLPCM30-4-L/31
Effective detection range	6 ... 30 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	300 mm	◆	◆	◆	◆
Number of beams	4	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel, off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3700 g	◆	◆	◆	◆
System components					
Emitter	SLP30-4-T	◆	◆	◆	◆
Receiver	SLPCM30-4-R	◆			
	SLPCM30-4-R-L			◆	
	SLPCM30-4-R-L/31				◆
	SLPCM30-4-R/31		◆		

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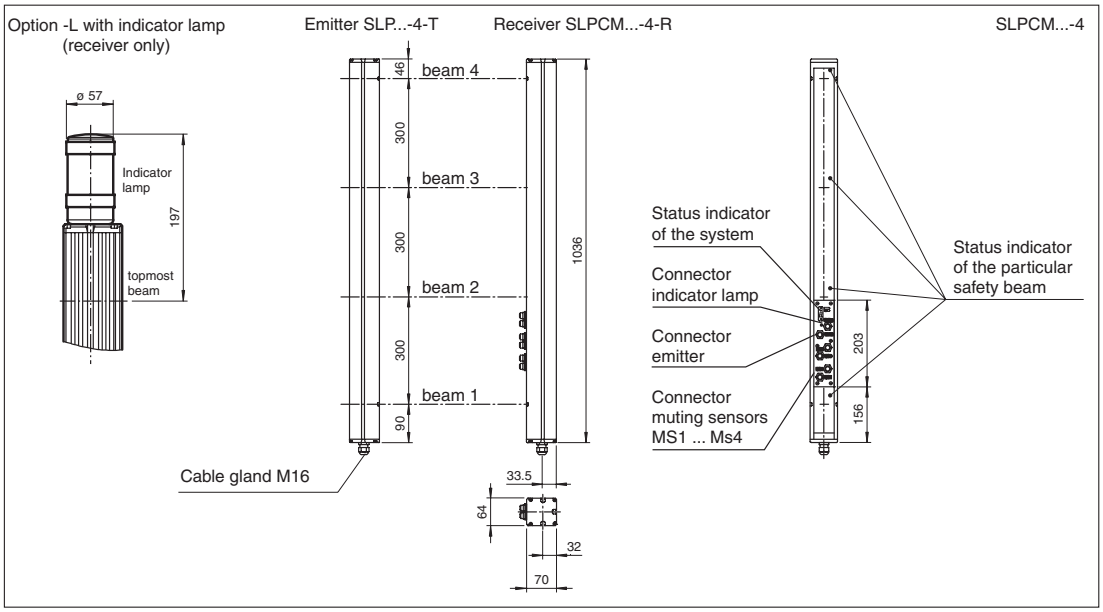
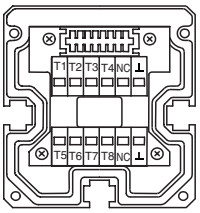
Dimensions



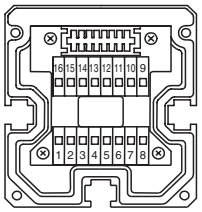
Electrical connection

Emitter SLP



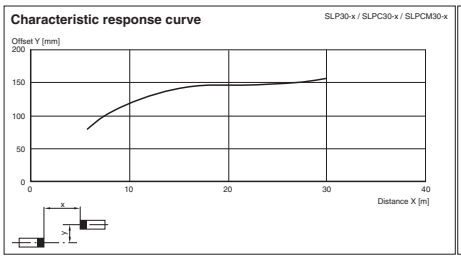
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
T4 - Emitter channel 4
⊥ - 0 V

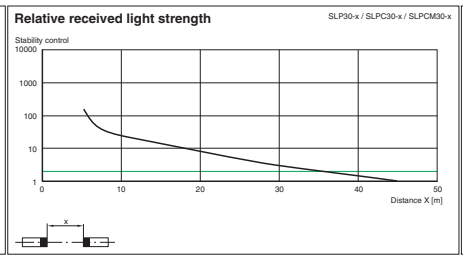
Receiver SLPCM

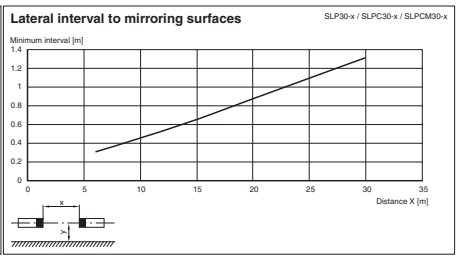


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3
5	Transmitter channel 4

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLC
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-4-M

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Features

- **Detection range up to 65 m**
- **4-Radial design**
- **Beam spacing 300 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Red transmission light**
- **Usable with or without start/restart disable**
- **Sequential and parallel muting in various operating modes**
- **Emergency muting for the correction of the material jam**
- **Integrated relay monitor**
- **7-segment diagnostic display**
- **Integrated function display**
- **Pre-fault indication**
- **OSSD outputs as semiconductor or relay outputs**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories“.

Technical data

		Ordering code: SLPCM65-4	SLPCM65-4/31	SLPCM65-4-L	SLPCM65-4-L/31
Effective detection range	12 ... 65 m	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Obstacle size	static: 32 mm, dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Beam spacing	300 mm	◆	◆	◆	◆
Number of beams	4	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Light type	red, modulated light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Function display	LED red: per receiver channel off: interruption, flashes: receiver, continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off, LED green: OSSD on, LED yellow: types of muting operation	◆	◆	◆	◆
Muting display	Indicator lamp			◆	◆
Pre-fault indication	LED red next to receiver flashes	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Output of the pre-fault indication	1 PNP, $+U_B$ -2 V, max. 300 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆		◆	
	2 relay outputs, compelled connection NO-contact		◆		◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆		
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			◆	◆
Switching voltage	Operating voltage -2 V	◆		◆	
	20 ... 60 V DC, 12 ... 25 V AC $_{rms}$		◆		◆
Switching current	max. 0.5 A	◆		◆	
	0.01 ... 2 A		◆		◆
Switch power	100 VA		◆		◆
Response time	20 ms	◆		◆	
	40 ms		◆		◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆
Storage temperature	-20 ... 70 °C (253 ... 343 K)	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆
Protection degree	IP65	◆	◆	◆	◆
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	◆	◆		
	Cable screwed connection M16 , terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc			◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆
Mass	Per 3700 g	◆	◆	◆	◆
System components					
Emitter	SLP65-4-T	◆	◆	◆	◆
Receiver	SLPCM65-4-R	◆			
	SLPCM65-4-R-L			◆	
	SLPCM65-4-R-L/31				◆
	SLPCM65-4-R/31		◆		

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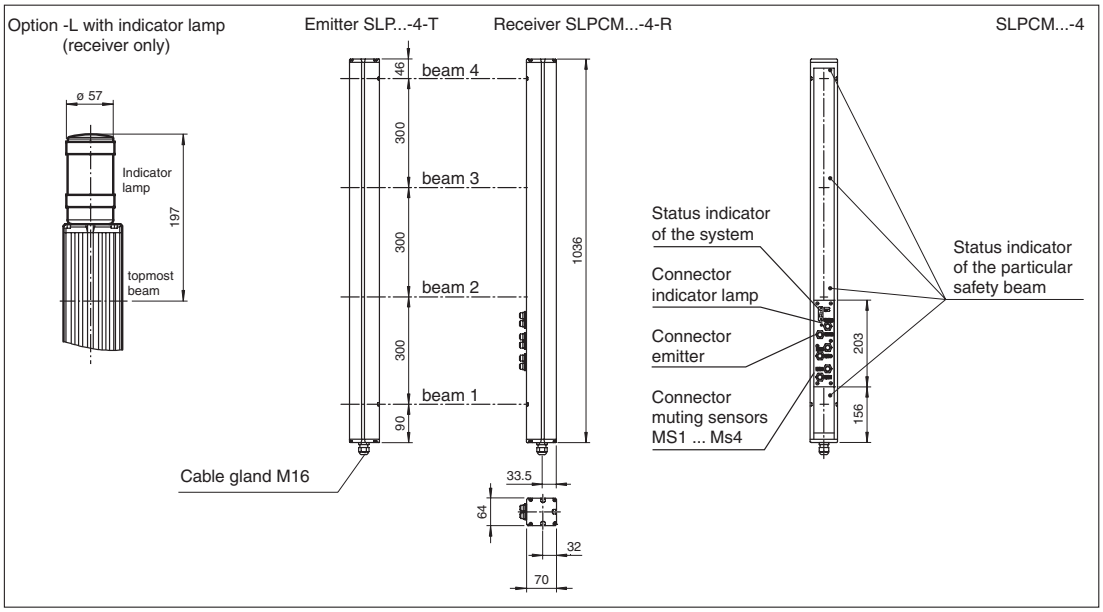
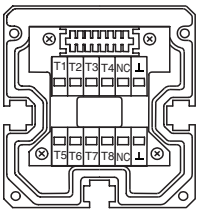
Dimensions



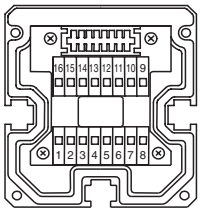
Electrical connection

Emitter SLP



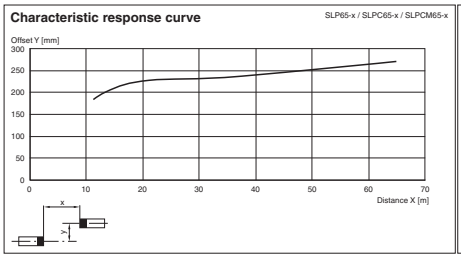
T1 - Emitter channel 1
T2 - Emitter channel 2
T3 - Emitter channel 3
T4 - Emitter channel 4
⊥ - 0 V

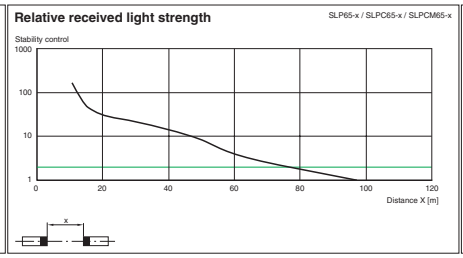
Receiver SLPCM

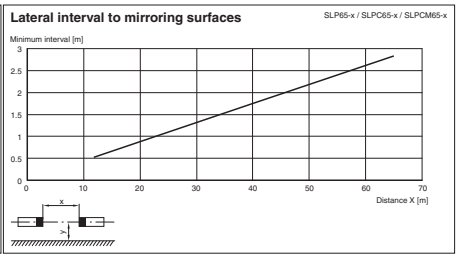


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp 14 - PNP-output, Startup readiness 15 - PNP-output, Indicator OSSD OFF 16 - PNP-output, Indicator OSSD ON	

Diagrams







Additional information

Indicator lamp control

Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)

T1 - T4 transmitter control

Socket	Function
1	Transmitter channel 1
2	Transmitter channel 2
3	0 V
4	Transmitter channel 3
5	Transmitter channel 4

Muting sensor inputs MS1 - MS4

Socket	Function
1	+ 24 V
3	0 V
4	Sensor signal

System accessories

- Mounting set MS SLC
- Profile alignment aid PA SLP/SLC
- Laser alignment aid BA SLP
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Redirection mirror SLP-4-M

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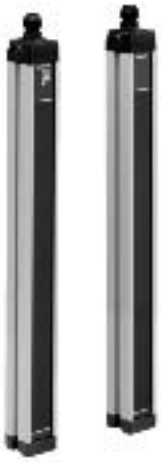

SLC light curtain description

The safety light curtain SLC consists of a sender and receiver unit forming an photoelectronic protection device of category 4 (EN 954-1) or type 4 (according to IEC/EN 61496). It is a self-monitoring system.

The protective field is created by infrared light beams. The minimum resolution of an object to be safely detected within the whole protective field area depends on the distance between the individual light beams. Resolutions of 14 mm, 30 mm, 60 mm and 90 mm are available. The detection capability can thus be adapted to the most varied applications. Depending on the degree of resolution ranges up to 15 m and protective field heights up to 1800 mm can be achieved. Higher protective fields upon request.

All evaluation functions (e.g. startup/restart lock) are integrated in the receiver of the SLC. There is no need for an electrical connection between sender and receiver. The safety outputs (OSSD) in the receiver are either semiconductor outputs with separated potential or monitored forced NO contacts.

In addition to the typcial sender/receiver configuration master/slave combinations can also be installed. This means that one or two sender slaves can be allocated to each sender master and one or two receiver slaves to each receiver master. This makes it possible to implement parallel horizontal and vertical layouts. The resolution between master and slaves may differ. The sum of the protection beams of master and slaves must not exceed the maximum number of 96.

A protection from several directions can be achieved with mirrors of the series **SLC-XXX-M**.

Muting applications can be implemented in combination with the control unit **SafeBox**.

The protection category IP67 ensures safe protection against harmful environmental impact.

Use in explosive areas

These devices can also be used in explosive areas of zone 2 and zone 22 (option /133).
This also complies with the specification that only devices and protection systems approved in accordance with Directive 94/9/EC (ATEX) should be used in explosive areas.

Applications

The safety light curtain SLC can, for example, be used to protect entry points to danger areas e.g. automatic handling machines, robots, and welding or assembly lines. A vertical/horizontal hazard protection can, for example, provide for a combined reach and bypass protection.

Operating principle	Type	Function	Resolution	Protection field height	Operating range	Page
	SLC14-...	with semiconductor output	14 mm finger protection	up to 1800 mm	0.2 m ... 5 m	102
	SLC14-.../31	with relay output				104
	SLC14-...-S	slave component		up to 750 mm		106
	SLC30-...	with semiconductor output	30 mm hand protection	up to 1800 mm	0.2 m ... 15 m	108
	SLC30-.../31	with relay output				110
(Option /133)	SLC30-...-S	slave component		up to 1650 mm		112
	SLC60-...	with semiconductor output	60 mm bypass protection	up to 1800 mm	0.2 m ... 15 m	114
	SLC60-.../31	with relay output				116
	SLC60-...-S	slave component				118
	SLC90-...	with semiconductor output	90 mm bypass protection	up to 1800 mm	0.2 m ... 15 m	120
	SLC90-.../31	with relay output				122
	SLC90-...-S	slave component				124

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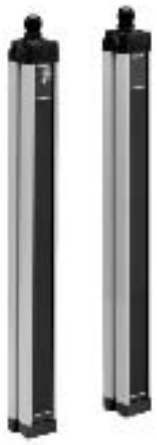

Features

- **Detection range up to 5 m**
- **Resolution 14 mm (finger protection)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Ordering code		SLC14-150	SLC14-300	SLC14-450	SLC14-600	SLC14-750	SLC14-900	SLC14-1050/130	SLC14-1200/130	SLC14-1350/130	SLC14-1500/130	SLC14-1650/130	SLC14-1800/130
Effective detection range	0.2 ... 5 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 5 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800
Number of beams		16	32	48	64	80	96	112	128	144	160	176	192
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical resolution	14 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function display	in receiver: LED red: OSSD off, LED green: OSSD on[cr]LED yellow: Protected area free, system start-ready	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Pre-fault indication	LED orange	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching voltage	Operating voltage -2 V	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching current	max. 0.5 A	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Response time	[ms]	10	14	18	22	26	30	22	25	28	31	34	36
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1160	1310	1460	1610	1760	1910
Protection degree	IP67	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 ,terminal compartment with screw terminals, lead cross-section max. 1.5 mm²	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin, Plug connector DIN 43 651 Hirschmann, 6-pin+PE, Plug connector M26x11 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Mass	Per [g]	750	1200	1650	2100	2550	3000	3450	3900	4350	4800	5250	5700
System components													
Emitter	SLC 14 - 1050 -T/ 130							◆					
	SLC 14 - 1200 -T/ 130								◆				
	SLC 14 - 1350 -T/ 130									◆			
	SLC 14 - 1500 -T/ 130										◆		
	SLC 14 - 1650 -T/ 130											◆	
	SLC 14 - 1800 -T/ 130												◆
	SLC14-150-T	◆											
	SLC14-300-T		◆										
	SLC14-450-T			◆									
	SLC14-600-T				◆								
	SLC14-750-T					◆							
	SLC14-900-T						◆						
Receiver	SLC 14 - 1050 -R/ 130							◆					
	SLC 14 - 1200 -R/ 130								◆				
	SLC 14 - 1350 -R/ 130									◆			
	SLC 14 - 1500 -R/ 130										◆		
	SLC 14 - 1650 -R/ 130											◆	
	SLC 14 - 1800 -R/ 130												◆
	SLC14-150-R	◆											
	SLC14-300-R		◆										
	SLC14-450-R			◆									
	SLC14-600-R				◆								
	SLC14-750-R					◆							
	SLC14-900-R						◆						

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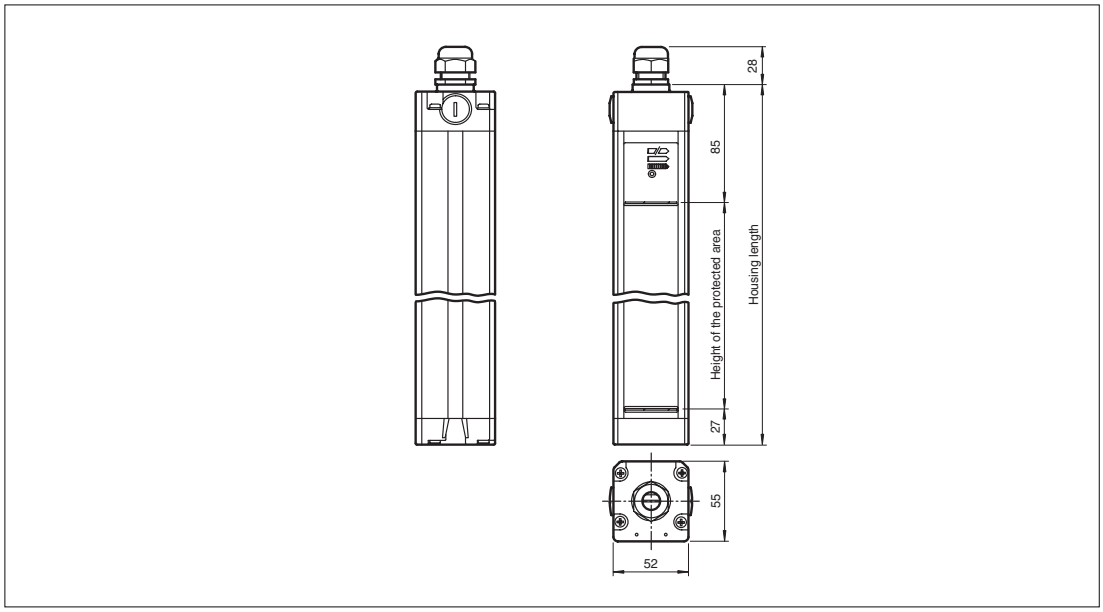
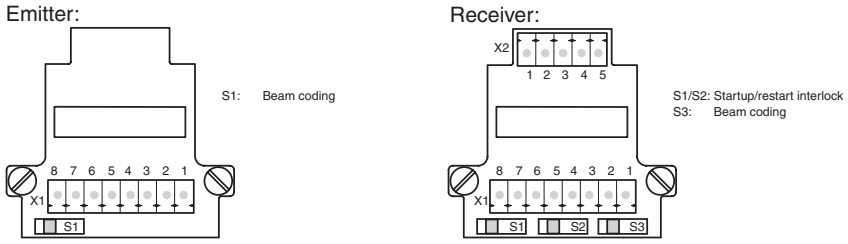
Dimensions

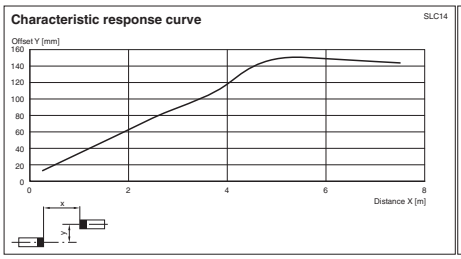


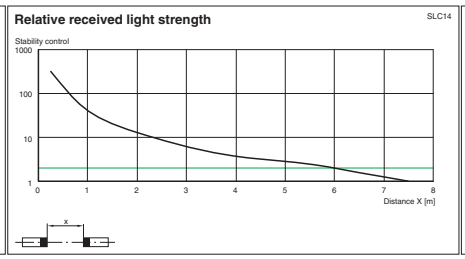
Electrical connection

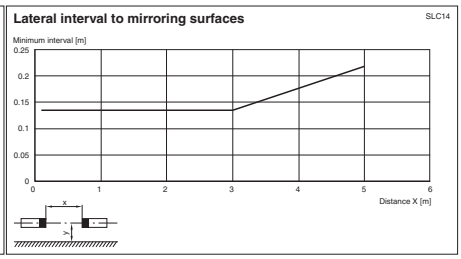


Terminal	Emitter	Receiver SLC...-R (semiconductor output)	Receiver SLC...-R/129 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		Test (input)	Relay monitor
X1:3		0 V OSSD	0 V OSSD
X1:4		24 V OSSD	24 V OSSD
X1:5		OSSD2 (output)	OSSD2 (output)
X1:6		OSSD1 (output)	OSSD1 (output)
X1:7	0 V AC/DC	0 V DC	0 V DC
X1:8	24 V AC/DC	24 V DC	24 V DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		n.c.	n.c.
X2:4		n.c.	n.c.
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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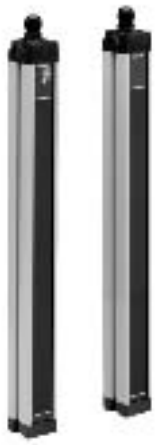

Features

- **Detection range up to 5 m**
- **Resolution 14 mm (finger protection)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**
- **Very short response time**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Ordering code		SLC14-150/31	SLC14-300/31	SLC14-450/31	SLC14-600/31	SLC14-750/31	SLC14-900/31	SLC14-1050/31/130	SLC14-1200/31/130	SLC14-1350/31/130	SLC14-1500/31/130	SLC14-1650/31/130	SLC14-1800/31/130
Effective detection range	0.2 ... 5 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 5 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800
Number of beams		16	32	48	64	80	96	112	128	144	160	176	192
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical resolution	14 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function display	in receiver: LED red: OSSD off, LED green: OSSD on,LED yellow: Protected area free, system start-ready	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Pre-fault indication	LED orange	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching voltage	50 V	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching current	max. 2 A	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switch power	100 VA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Response time	[ms]	30	34	38	42	46	50	42	45	48	51	54	56
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1160	1310	1460	1610	1760	1910
Protection degree	IP67	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20, terminal compartment with screw terminals, lead cross-section max. 1.5 mm²	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin, Plug connector DIN 43 651 Hirschmann, 6-pin+PE, Plug connector M26x11 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Mass	Per [g]	750	1200	1650	2100	2550	3000	3450	3900	4350	4800	5250	5700
System components													
Emitter	SLC 14 - 1050 -T/ 130							◆					
	SLC 14 - 1200 -T/ 130								◆				
	SLC 14 - 1350 -T/ 130									◆			
	SLC 14 - 1500 -T/ 130										◆		
	SLC 14 - 1650 -T/ 130											◆	
	SLC 14 - 1800 -T/ 130												◆
	SLC14-150-T	◆											
	SLC14-300-T		◆										
	SLC14-450-T			◆									
	SLC14-600-T				◆								
	SLC14-750-T					◆							
	SLC14-900-T						◆						
Receiver	SLC 14 - 1050 -R/ 31 / 130							◆					
	SLC 14 - 1200 -R/ 31 / 130								◆				
	SLC 14 - 1350 -R/ 31 / 130									◆			
	SLC 14 - 1500 -R/ 31 / 130										◆		
	SLC 14 - 1650 -R/ 31 / 130											◆	
	SLC 14 - 1800 -R/ 31 / 130												◆
	SLC14-150-R/31	◆											
	SLC14-300-R/31		◆										
	SLC14-450-R/31			◆									
	SLC14-600-R/31				◆								

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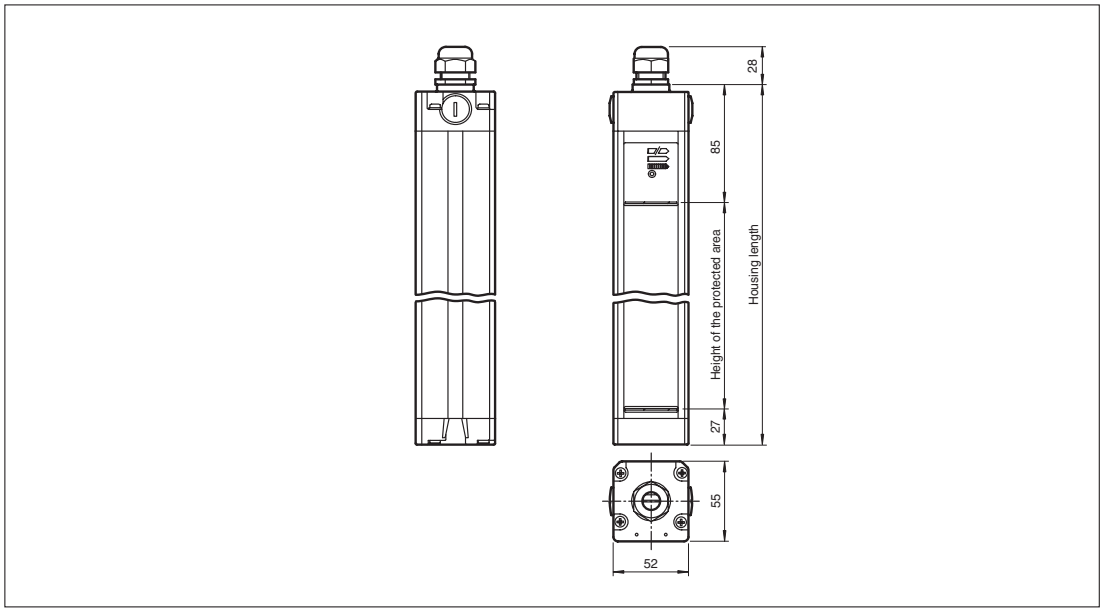
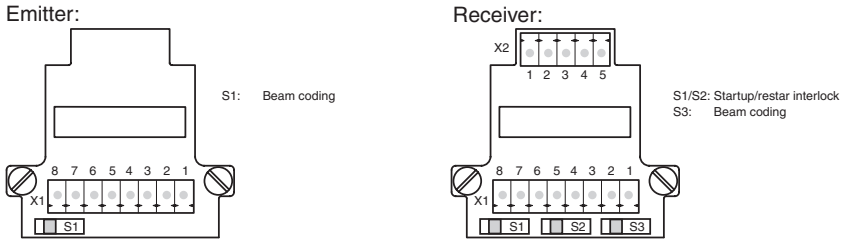
Dimensions

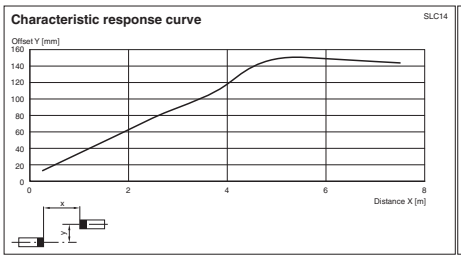


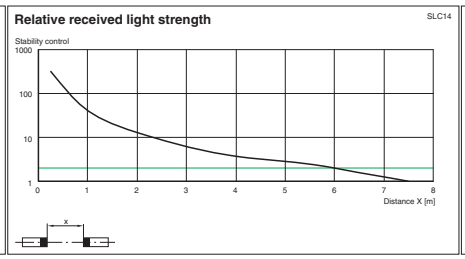
Electrical connection

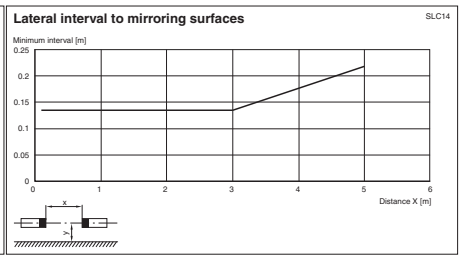


terminal	emitter	receiver SLC...-R/31 (relay output)	receiver SLC...-R/31 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Relay monitor
X1:3		OSSD2.2 (output)	OSSD2.2 (output)
X1:4		OSSD1.2 (output)	OSSD1.2 (output)
X1:5		OSSD2.1 (output)	OSSD2.1 (output)
X1:6		OSSD1.1 (output)	OSSD1.1 (output)
X1:7	0 V AC/DC	0 V AC/DC	0 V AC/DC
X1:8	24 V AC/DC	24 V AC/DC	24 V AC/DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		24 V reference potential for I/O	24 V reference potential for I/O
X2:4		0 V reference potential for I/O	0 V reference potential for I/O
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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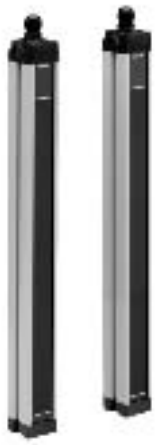

Features

- **Detection range up to 5 m**
- **Resolution 14 mm (finger protection)**
- **Protection field height up to 750 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with ATEX certificates for zone 2 and 22 and protection degree IP66 (Option 133)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Ordering code		SLC14-150-S	SLC14-300-S	SLC14-450-S	SLC14-600-S	SLC14-750-S
Effective detection range	0.2 ... 5 m	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 5 m	◆	◆	◆	◆	◆
Height of the protected area	[mm]	150	300	450	600	750
Number of beams		16	32	48	64	80
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆
Operating mode	in the master device	◆	◆	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆	◆	◆
Optical resolution	14 mm	◆	◆	◆	◆	◆
Angle of divergence	[klein] 5 °	◆	◆	◆	◆	◆
Operating display	in the master device	◆	◆	◆	◆	◆
Diagnosis display	in the master device	◆	◆	◆	◆	◆
Function display	in the master device	◆	◆	◆	◆	◆
Pre-fault indication	in the master device	◆	◆	◆	◆	◆
Operating elements	in the master device	◆	◆	◆	◆	◆
Operating voltage	from master	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆
No-load supply current	from master	◆	◆	◆	◆	◆
Test input	in the master device	◆	◆	◆	◆	◆
Function input	in the master device	◆	◆	◆	◆	◆
Safety output	in the master device	◆	◆	◆	◆	◆
Signal output	in the master device	◆	◆	◆	◆	◆
Response time	depends on height of protective field	◆	◆	◆	◆	◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860
Protection degree	IP67	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 ,[cr]terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆	◆
Mass	Per [g]	750	1200	1650	2100	2550
System components						
Emitter	SLC14-150-T-S	◆				
	SLC14-300-T-S		◆			
	SLC14-450-T-S			◆		
	SLC14-600-T-S				◆	
	SLC14-750-T-S					◆
Receiver	SLC14-150-R-S	◆				
	SLC14-300-R-S		◆			
	SLC14-450-R-S			◆		
	SLC14-600-R-S				◆	
	SLC14-750-R-S					◆

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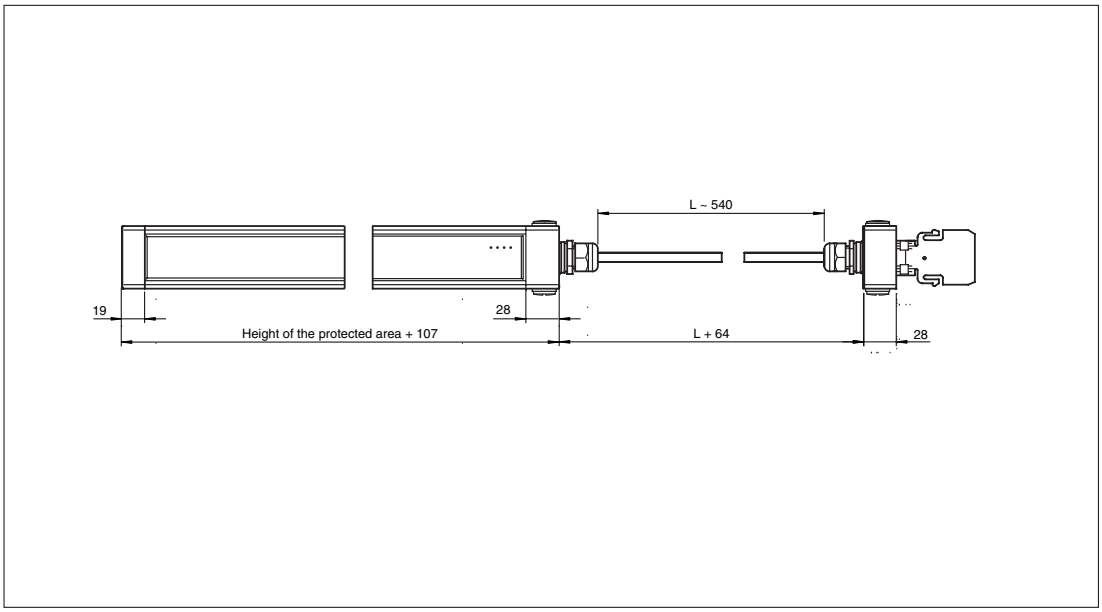
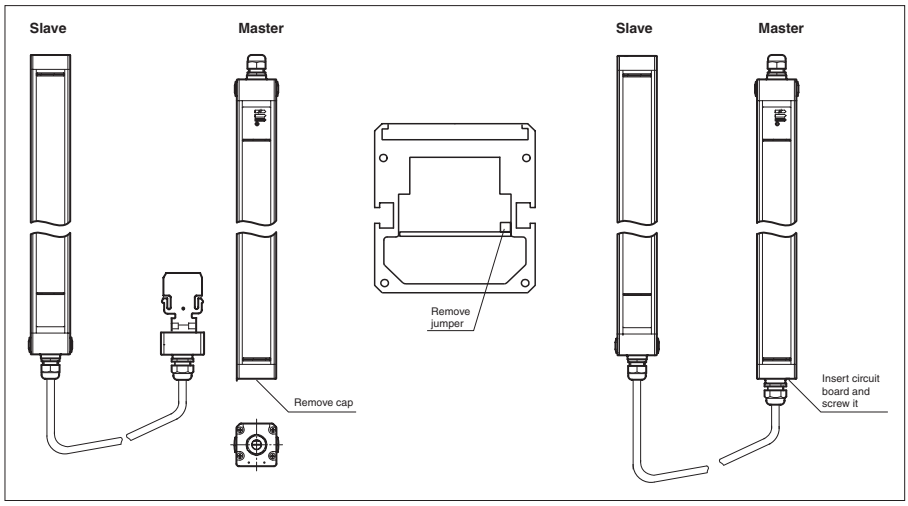
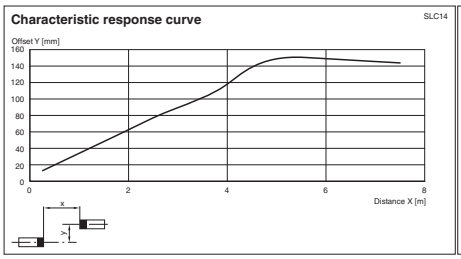
Dimensions

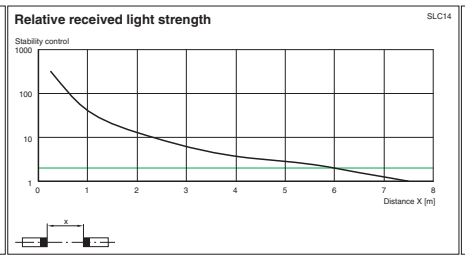


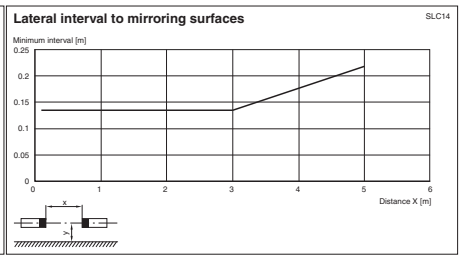
Electrical connection



Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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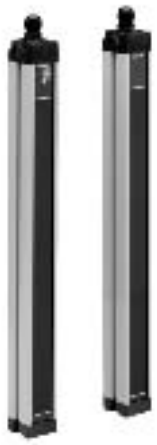

Features

- **Detection range up to 15 m**
- **Resolution 30 mm (hand protection)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**
- **Optional with ATEX certificates for zone 2 and 22 and protection degree IP66 (Option 133)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Ordering code		SLC30-150	SLC30-300	SLC30-450	SLC30-600	SLC30-750	SLC30-900	SLC30-1200	SLC30-1350	SLC30-1500	SLC30-1650	SLC30-1800
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]	150	300	450	600	750	900	1200	1350	1500	1650	1800
Number of beams		8	16	24	32	40	48	64	72	80	88	96
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical resolution	30 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	[klein] 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function display	in receiver: LED red: OSSD off, LED green: OSSD on, LED yellow: Protected area free, system start-ready	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Pre-fault indication	LED orange	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching voltage	Operating voltage -2 V	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching current	max. 0.5 A	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Response time	[ms]	10	10	12	14	16	18	22	24	26	28	30
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1310	1460	1610	1760	1910
Protection degree	IP67	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin, Plug connector DIN 43 651 Hirschmann, 6-pin+PE, Plug connector M26x11 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Mass	Per [g]	750	1200	1650	2100	2550	3000	3900	4350	4800	5250	5700
System components												
Emitter	SLC30-1200-T							◆				
	SLC30-1350-T								◆			
	SLC30-150-T	◆										
	SLC30-1500-T									◆		
	SLC30-1650-T										◆	
	SLC30-1800-T											◆
	SLC30-300-T		◆									
	SLC30-450-T			◆								
	SLC30-600-T				◆							
	SLC30-750-T					◆						
	SLC30-900-T						◆					
Receiver	SLC30-1200-R							◆				
	SLC30-1350-R								◆			
	SLC30-150-R	◆										
	SLC30-1500-R									◆		
	SLC30-1650-R										◆	
	SLC30-1800-R											◆
	SLC30-300-R		◆									
	SLC30-450-R			◆								
	SLC30-600-R				◆							
	SLC30-750-R					◆						
	SLC30-900-R						◆					

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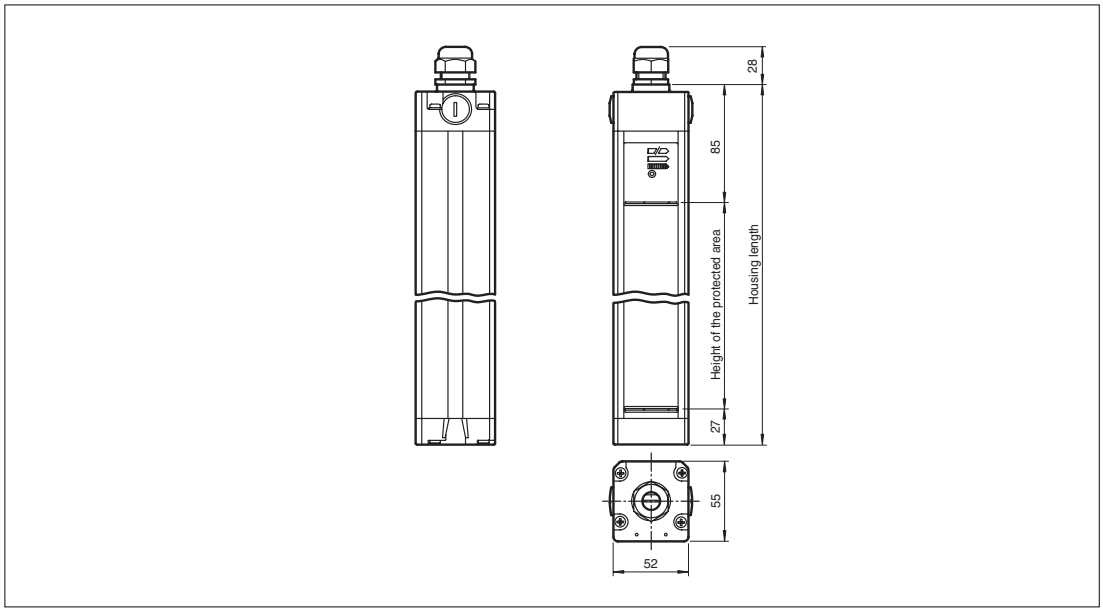
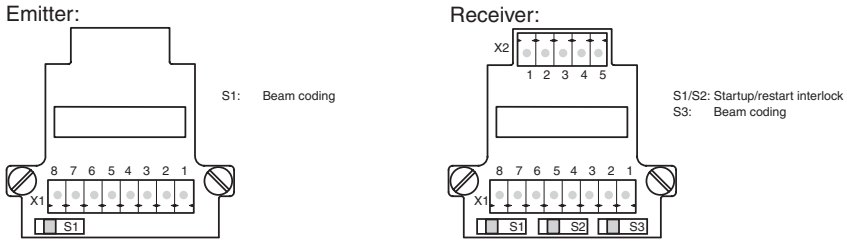
Dimensions

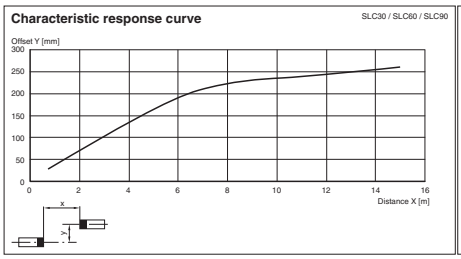


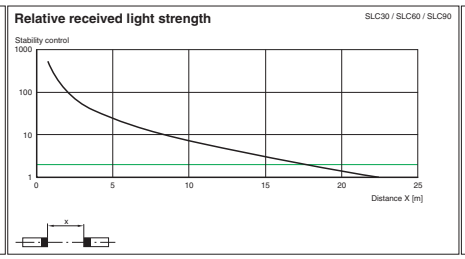
Electrical connection

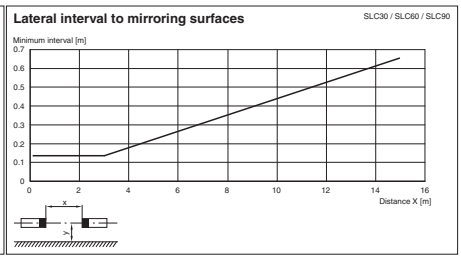


Terminal	Emitter	Receiver SLC...-R (semiconductor output)	Receiver SLC...-R/129 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		Test (input)	Relay monitor
X1:3		0 V OSSD	0 V OSSD
X1:4		24 V OSSD	24 V OSSD
X1:5		OSSD2 (output)	OSSD2 (output)
X1:6		OSSD1 (output)	OSSD1 (output)
X1:7	0 V AC/DC	0 V DC	0 V DC
X1:8	24 V AC/DC	24 V DC	24 V DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		n.c.	n.c.
X2:4		n.c.	n.c.
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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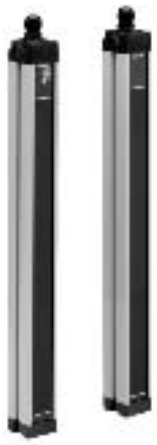

Features

- **Detection range up to 15 m**
- **Resolution 30 mm (hand protection)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Ordering code	SLC30-150/31	SLC30-300/31	SLC30-450/31	SLC30-600/31	SLC30-750/31	SLC30-900/31	SLC30-1050/31	SLC30-1200/31	SLC30-1350/31	SLC30-1500/31	SLC30-1650/31	SLC30-1800/31
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800
Number of beams		8	16	24	32	40	48	56	64	72	80	88	96
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical resolution	30 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	[klein] 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function display	in receiver:[cr]LED red: OSSD off, LED green: OSSD on,LED yellow: Protected area free, system start-ready	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Pre-fault indication	LED orange	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching voltage	50 V	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching current	max. 2 A	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switch power	100 VA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Response time	[ms]	30	30	32	34	36	38	40	42	44	46	48	50
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1160	1310	1460	1610	1760	1910
Protection degree	IP67	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20,terminal compartment with screw terminals, lead cross-section max. 1.5 mm²	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin,Plug connector DIN 43 651 Hirschmann, 6-pin+PE,Plug connector M26x11 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Mass	Per [g]	750	1200	1650	2100	2550	3000	3450	3900	4350	4800	5250	5700
System components													
Emitter	SLC30-1050-T							◆					
	SLC30-1200-T								◆				
	SLC30-1350-T									◆			
	SLC30-150-T	◆											
	SLC30-1500-T										◆		
	SLC30-1650-T											◆	
	SLC30-1800-T												◆
	SLC30-300-T		◆										
	SLC30-450-T			◆									
	SLC30-600-T				◆								
	SLC30-750-T					◆							
	SLC30-900-T						◆						
Receiver	SLC30-1050-R/31							◆					
	SLC30-1200-R/31								◆				
	SLC30-1350-R/31									◆			
	SLC30-150-R/31	◆											
	SLC30-1500-R/31										◆		
	SLC30-1650-R/31											◆	
	SLC30-1800-R/31												◆
	SLC30-300-R/31		◆										
	SLC30-450-R/31			◆									
	SLC30-600-R/31				◆								
	SLC30-750-R/31					◆							
	SLC30-900-R/31						◆						

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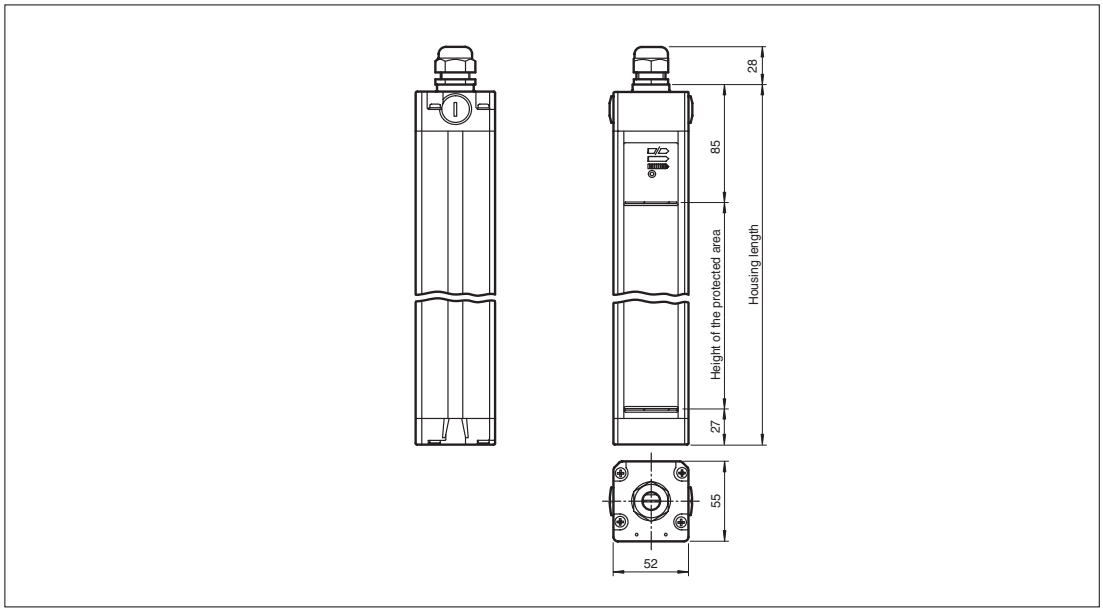
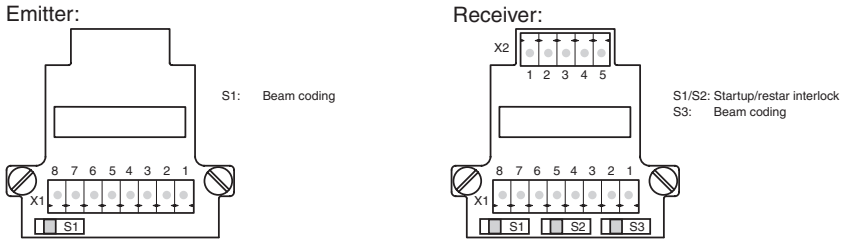
Dimensions

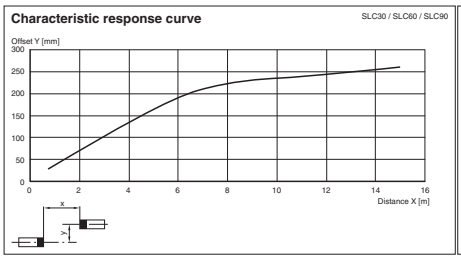


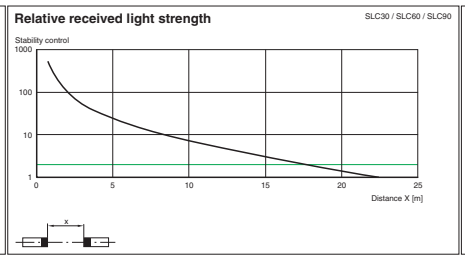
Electrical connection

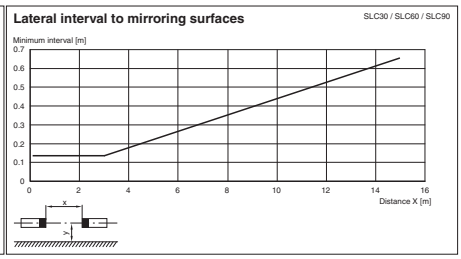


terminal	emitter	receiver SLC...-R/31 (relay output)	receiver SLC...-R/31 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Relay monitor
X1:3		OSSD2.2 (output)	OSSD2.2 (output)
X1:4		OSSD1.2 (output)	OSSD1.2 (output)
X1:5		OSSD2.1 (output)	OSSD2.1 (output)
X1:6		OSSD1.1 (output)	OSSD1.1 (output)
X1:7	0 V AC/DC	0 V AC/DC	0 V AC/DC
X1:8	24 V AC/DC	24 V AC/DC	24 V AC/DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		24 V reference potential for I/O	24 V reference potential for I/O
X2:4		0 V reference potential for I/O	0 V reference potential for I/O
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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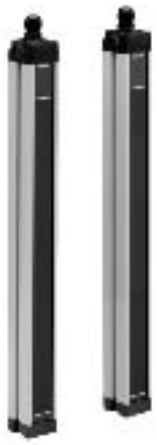

Features

- **Detection range up to 15 m**
- **Resolution 30 mm (hand protection)**
- **Protection field height up to 1650 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with ATEX certificates for zone 2 and 22 and protection degree IP66 (Option 133)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Ordering code		SLC30-150-S	SLC30-300-S	SLC30-450-S	SLC30-600-S	SLC30-750-S	SLC30-900-S	SLC30-1050-S	SLC30-1200-S	SLC30-1350-S	SLC30-1500-S	SLC30-1650-S
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]	150	300	450	600	750	900	1050	1200	1350	1500	1650
Number of beams		8	16	24	32	40	48	56	64	72	80	88
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical resolution	30 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	[klein] 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function display	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Pre-fault indication	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	from master	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	from master	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Response time	depends on height of protective field	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1160	1310	1460	1610	1760
Protection degree	IP67	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 ,[cr]terminal compartment with screw terminals, lead cross-section max. 1.5 mm²	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Mass	Per [g]	750	1200	1650	2100	2550	3000	3450	3900	4350	4800	5250
System components												
Emitter	SLC30-1050-T-S							◆				
	SLC30-1200-T-S								◆			
	SLC30-1350-T-S									◆		
	SLC30-150-T-S	◆										
	SLC30-1500-T-S										◆	
	SLC30-1650-T-S											◆
	SLC30-300-T-S		◆									
	SLC30-450-T-S			◆								
	SLC30-600-T-S				◆							
	SLC30-750-T-S					◆						
	SLC30-900-T-S						◆					
Receiver	SLC30-1050-R-S							◆				
	SLC30-1200-R-S								◆			
	SLC30-1350-R-S									◆		
	SLC30-150-R-S	◆										
	SLC30-1500-R-S										◆	
	SLC30-1650-R-S											◆
	SLC30-300-R-S		◆									
	SLC30-450-R-S			◆								
	SLC30-600-R-S				◆							
	SLC30-7500-R-S					◆						
	SLC30-900-R-S						◆					

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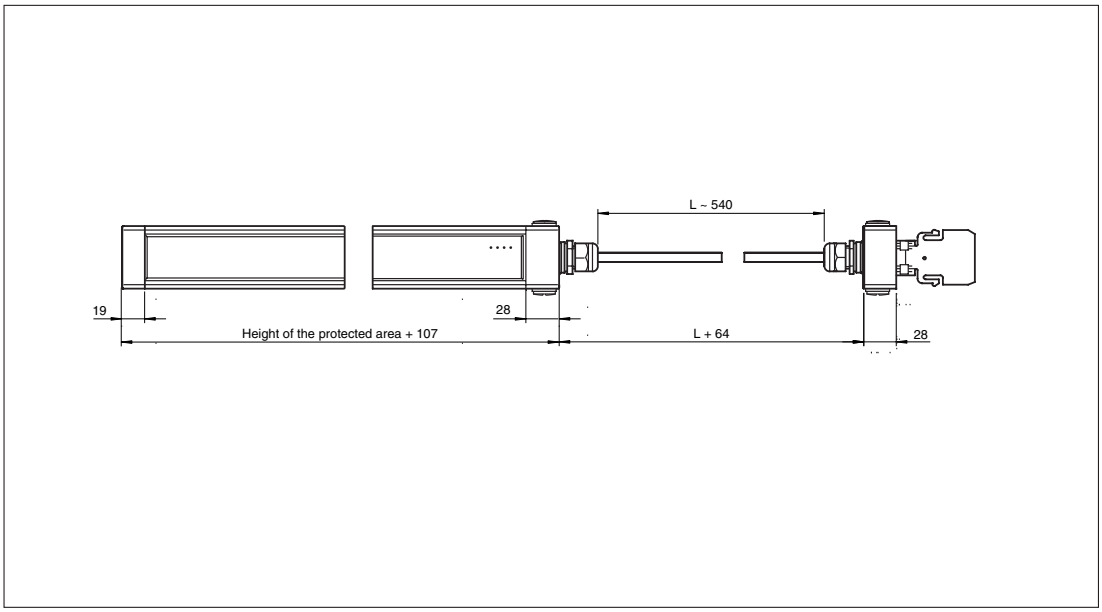
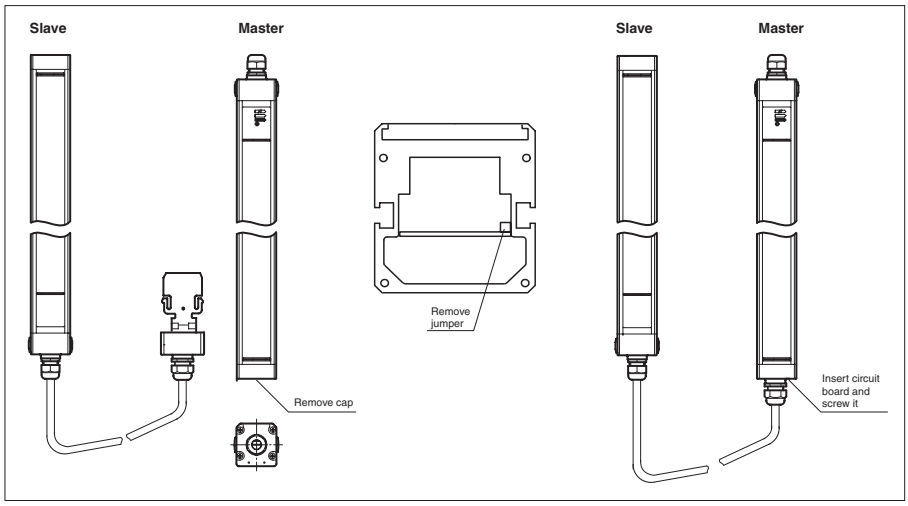
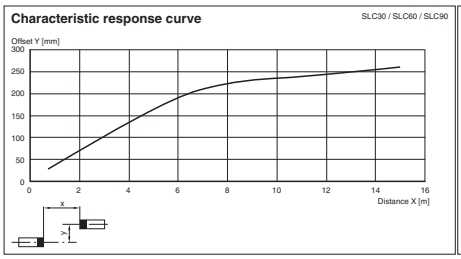
Dimensions

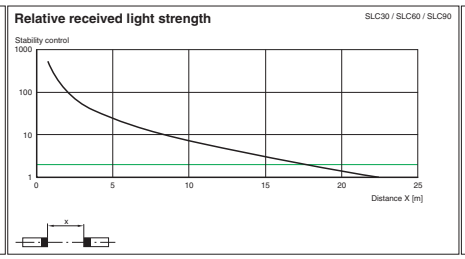


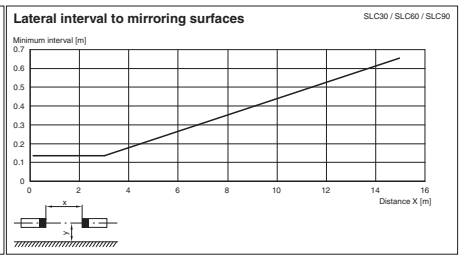
Electrical connection



Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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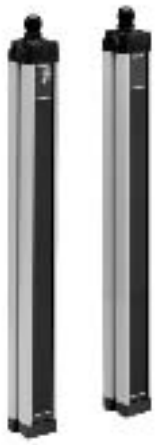

Features

- **Detection range up to 15 m**
- **Resolution 60 mm (protection against access from the rear)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**
- **Optional with ATEX certificates for zone 2 and 22 and protection degree IP66**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

		Ordering code	SLC60-300	SLC60-600	SLC60-900	SLC60-1200	SLC60-1500	SLC60-1800
Effective detection range	0.2 ... 15 m		◆	◆	◆	◆	◆	◆
Light source	IRED		◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL		◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m		◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]		300	600	900	1200	1500	1800
Number of beams			8	16	24	32	40	48
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable		◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light		◆	◆	◆	◆	◆	◆
Optical resolution	60 mm		◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter		◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver		◆	◆	◆	◆	◆	◆
Function display	in receiver: LED red: OSSD off, LED green: OSSD on, LED yellow: Protected area free, system start-ready		◆	◆	◆	◆	◆	◆
Pre-fault indication	LED orange		◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding		◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)		◆	◆	◆	◆	◆	◆
Protection class	III		◆	◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA		◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA		◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s		◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test		◆	◆	◆	◆	◆	◆
Function input	Start release		◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs		◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status		◆	◆	◆	◆	◆	◆
Switching voltage	Operating voltage -2 V		◆	◆	◆	◆	◆	◆
Switching current	max. 0.5 A		◆	◆	◆	◆	◆	◆
Response time	[ms]		10	10	12	14	16	18
Ambient temperature	0 ... 55 °C (273 ... 328 K)		◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)		◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆	◆	◆
Length of housing L	[mm]		410	710	1010	1310	1610	1910
Protection degree	IP67		◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 ,[cr]terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2		◆	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin, Plug connector DIN 43 651 Hirschmann, 6-pin+PE, Plug connector M26x11 Hirschmann, 11-pin+PE		◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆	◆	◆
Optical face	Plastic pane		◆	◆	◆	◆	◆	◆
Mass	Per [g]		1200	2100	3000	3900	4800	5700
System components								
Emitter	SLC60-1200-T					◆		
	SLC60-1500-T						◆	
	SLC60-1800-T							◆
	SLC60-300-T		◆					
	SLC60-600-T			◆				
	SLC60-900-T				◆			
Receiver	SLC60-1200-R					◆		
	SLC60-1500-R						◆	
	SLC60-1800-R							◆
	SLC60-300-R		◆					
	SLC60-600-R			◆				
	SLC60-900-R				◆			

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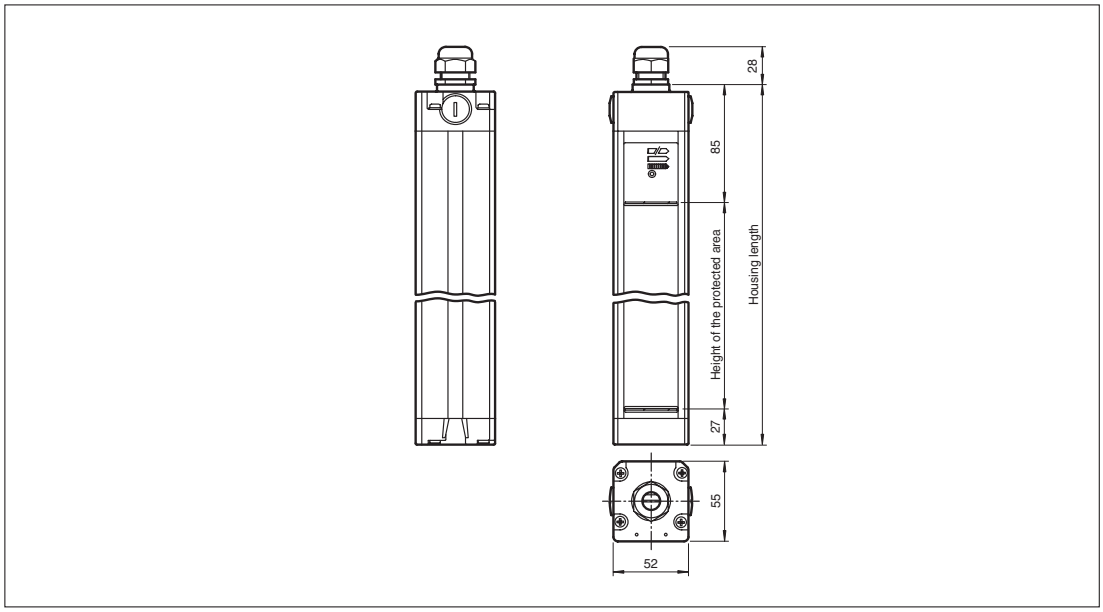
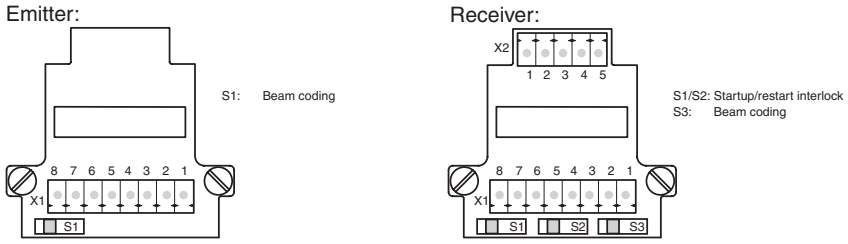
Dimensions

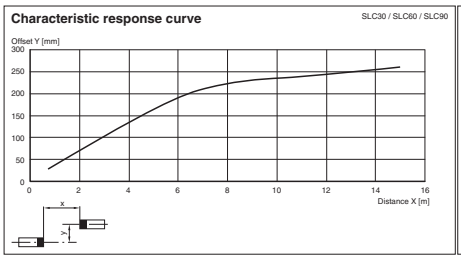


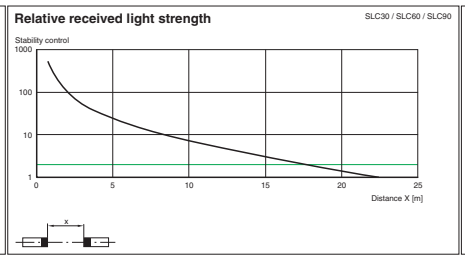
Electrical connection

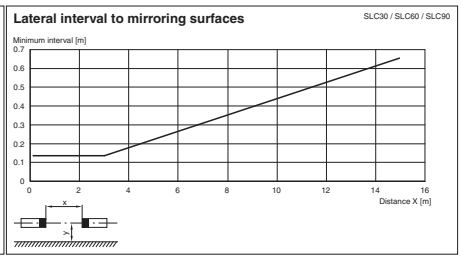


Terminal	Emitter	Receiver SLC...-R (semiconductor output)	Receiver SLC...-R/129 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		Test (input)	Relay monitor
X1:3		0 V OSSD	0 V OSSD
X1:4		24 V OSSD	24 V OSSD
X1:5		OSSD2 (output)	OSSD2 (output)
X1:6		OSSD1 (output)	OSSD1 (output)
X1:7	0 V AC/DC	0 V DC	0 V DC
X1:8	24 V AC/DC	24 V DC	24 V DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		n.c.	n.c.
X2:4		n.c.	n.c.
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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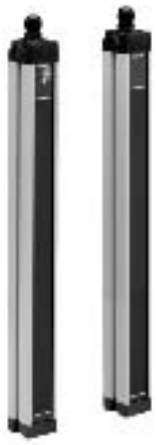

Features

- **Detection range up to 15 m**
- **Resolution 60 mm (protection against access from the rear)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

		Ordering code	SLC60-300/31	SLC60-600/31	SLC60-900/31	SLC60-1200/31	SLC60-1500/31	SLC60-1800/31
Effective detection range	0.2 ... 15 m		◆	◆	◆	◆	◆	◆
Light source	IRED		◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL		◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m		◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]		300	600	900	1200	1500	1800
Number of beams			8	16	24	32	40	48
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable		◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light		◆	◆	◆	◆	◆	◆
Optical resolution	60 mm		◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter		◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver		◆	◆	◆	◆	◆	◆
Function display	in receiver:LED red: OSSD off, LED green: OSSD on, LED yellow: Protected area free, system start-ready		◆	◆	◆	◆	◆	◆
Pre-fault indication	LED orange		◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding		◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)		◆	◆	◆	◆	◆	◆
Protection class	III		◆	◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA		◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA		◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s		◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test		◆	◆	◆	◆	◆	◆
Function input	Start release		◆	◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact		◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status		◆	◆	◆	◆	◆	◆
Switching voltage	50 V		◆	◆	◆	◆	◆	◆
Switching current	max. 2 A		◆	◆	◆	◆	◆	◆
Switch power	100 VA		◆	◆	◆	◆	◆	◆
Response time	[ms]		30	30	32	34	36	38
Ambient temperature	0 ... 55 °C (273 ... 328 K)		◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)		◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆	◆	◆
Length of housing L	[mm]		410	710	1010	1310	1610	1910
Protection degree	IP67		◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm²		◆	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin Plug connector DIN 43 651 Hirschmann, 6-pin+PE Plug connector M26x11 Hirschmann, 11-pin+PE		◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆	◆	◆
Optical face	Plastic pane		◆	◆	◆	◆	◆	◆
Mass	Per [g]		1200	2100	3000	3900	4800	5700
System components								
Emitter	SLC60-1200-T					◆		
	SLC60-1500-T						◆	
	SLC60-1800-T							◆
	SLC60-300-T		◆					
	SLC60-600-T			◆				
	SLC60-900-T				◆			
Receiver	SLC60-1200-R/31					◆		
	SLC60-1500-R/31						◆	
	SLC60-1800-R/31							◆
	SLC60-300-R/31		◆					
	SLC60-600-R/31			◆				
	SLC60-900-R/31				◆			

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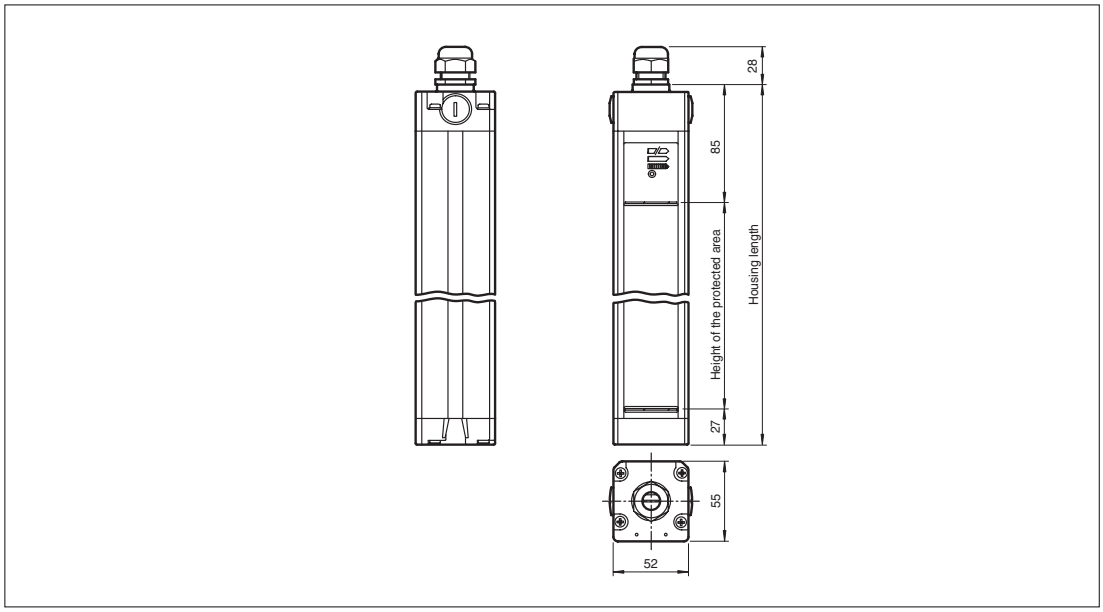
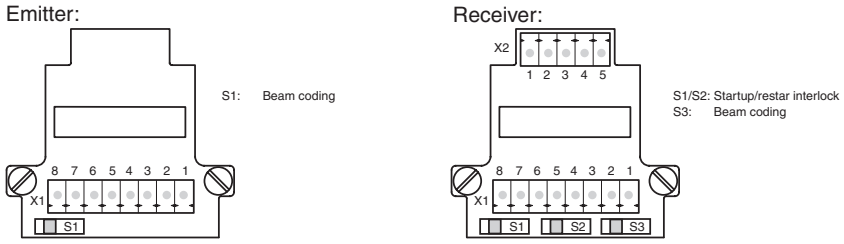
Dimensions

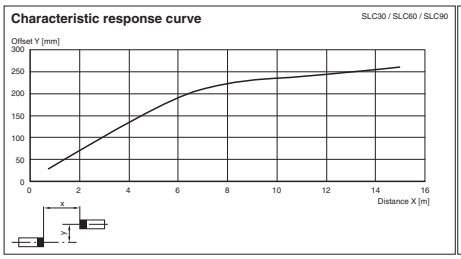


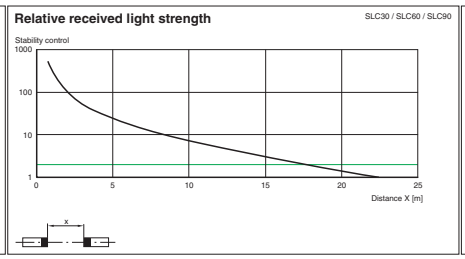
Electrical connection

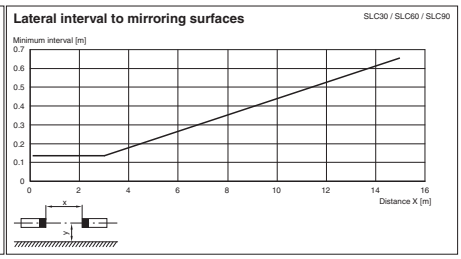


terminal	emitter	receiver SLC...-R/31 (relay output)	receiver SLC...-R/31 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Relay monitor
X1:3		OSSD2.2 (output)	OSSD2.2 (output)
X1:4		OSSD1.2 (output)	OSSD1.2 (output)
X1:5		OSSD2.1 (output)	OSSD2.1 (output)
X1:6		OSSD1.1 (output)	OSSD1.1 (output)
X1:7	0 V AC/DC	0 V AC/DC	0 V AC/DC
X1:8	24 V AC/DC	24 V AC/DC	24 V AC/DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		24 V reference potential for I/O	24 V reference potential for I/O
X2:4		0 V reference potential for I/O	0 V reference potential for I/O
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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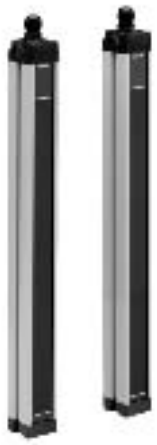

Features

- **Detection range up to 15 m**
- **Resolution 60 mm (protection against access from the rear)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with ATEX certificates for zone 2 and 22 and protection degree IP66 (Option 133)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

		Ordering code	SLC60-300-S	SLC60-600-S	SLC60-900-S	SLC60-1200-S	SLC60-1500-S	SLC60-1800-S
Effective detection range	0.2 ... 15 m		◆	◆	◆	◆	◆	◆
Light source	IRED		◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL		◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m		◆	◆	◆	◆	◆	◆
Height of the protected area	[mm]		300	600	900	1200	1500	1800
Number of beams			8	16	24	32	40	48
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆	◆	◆
Operating mode	in the master device		◆	◆	◆	◆	◆	◆
Light type	infrared, modulated light		◆	◆	◆	◆	◆	◆
Optical resolution	60 mm		◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆	◆	◆
Operating display	in the master device		◆	◆	◆	◆	◆	◆
Diagnosis display	in the master device		◆	◆	◆	◆	◆	◆
Function display	in the master device		◆	◆	◆	◆	◆	◆
Pre-fault indication	in the master device		◆	◆	◆	◆	◆	◆
Operating elements	in the master device		◆	◆	◆	◆	◆	◆
Operating voltage	from master		◆	◆	◆	◆	◆	◆
Protection class	III		◆	◆	◆	◆	◆	◆
No-load supply current	from master		◆	◆	◆	◆	◆	◆
Test input	in the master device		◆	◆	◆	◆	◆	◆
Function input	in the master device		◆	◆	◆	◆	◆	◆
Safety output	in the master device		◆	◆	◆	◆	◆	◆
Signal output	in the master device		◆	◆	◆	◆	◆	◆
Response time	depends on height of protective field		◆	◆	◆	◆	◆	◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)		◆	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)		◆	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆	◆	◆
Length of housing L	[mm]		410	710	1010	1310	1610	1910
Protection degree	IP67		◆	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2		◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆	◆	◆
Optical face	Plastic pane		◆	◆	◆	◆	◆	◆
Mass	Per [g]		1200	2100	3000	3900	4800	5700
System components								
Emitter	SLC60-1200-T-S					◆		
	SLC60-1500-T-S						◆	
	SLC60-1800-T-S							◆
	SLC60-300-T-S		◆					
	SLC60-600-T-S			◆				
	SLC60-900-T-S				◆			
Receiver	SLC60-1200-R-S					◆		
	SLC60-1500-R-S						◆	
	SLC60-1800-R-S							◆
	SLC60-300-R-S		◆					
	SLC60-600-R-S			◆				
	SLC60-900-R-S				◆			

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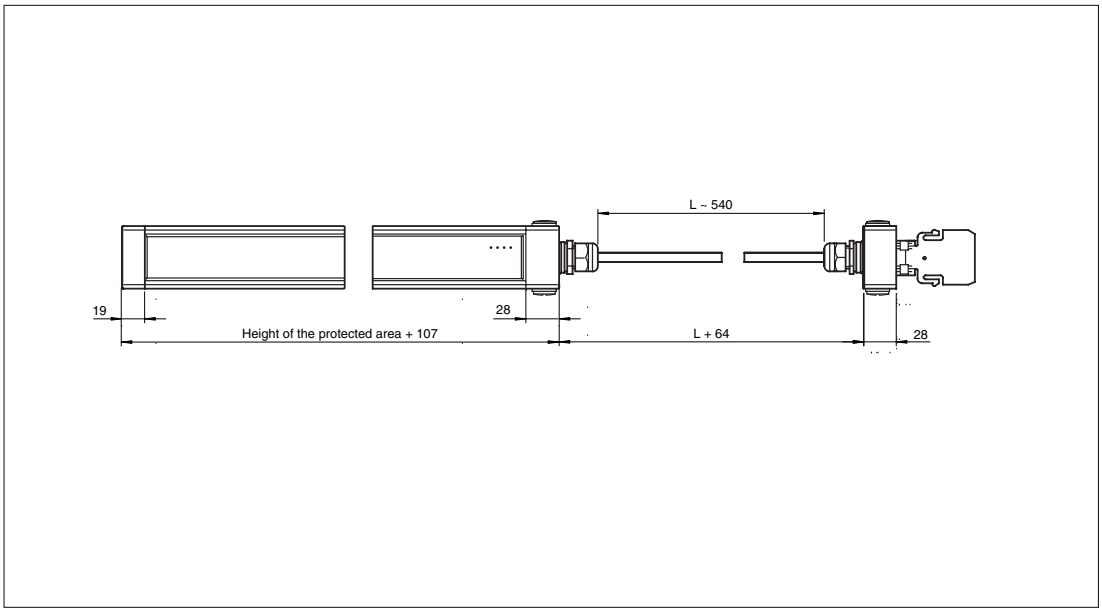
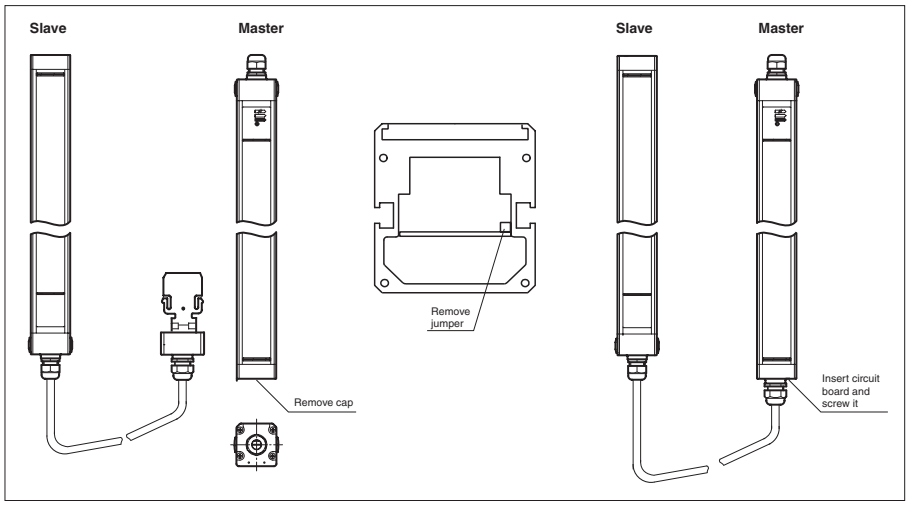
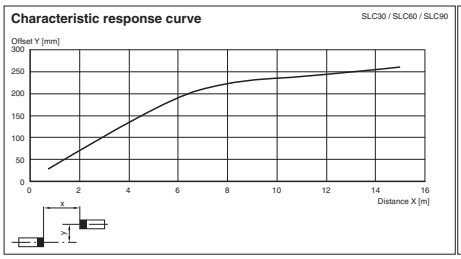
Dimensions

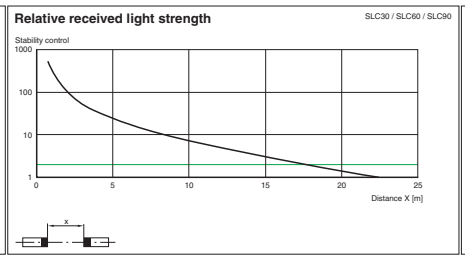


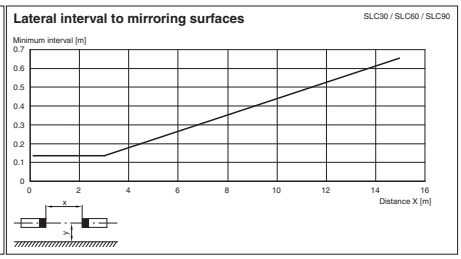
Electrical connection



Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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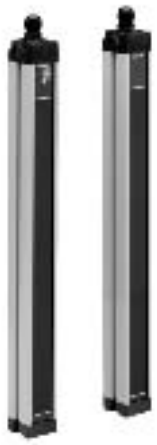

Features

- **Detection range up to 15 m**
- **Resolution 90 mm (protection against access from the rear)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**
- **Optional with ATEX certificates for zone 2 and 22 and protection degree IP66 (Option 133)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Ordering code		SLC90-600	SLC90-900	SLC90-1200	SLC90-1500	SLC90-1800
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆
Height of the protected area	[mm]	600	900	1200	1500	1800
Number of beams		8	12	16	20	24
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆
Light type	infrared, modulated light	◆	◆	◆	◆	◆
Optical resolution	90 mm	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆
Function display	in receiver: LED red: OSSD off, LED green: OSSD on, LED yellow: Protected area free, system start-ready	◆	◆	◆	◆	◆
Pre-fault indication	LED orange	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆
Switching voltage	Operating voltage -2 V	◆	◆	◆	◆	◆
Switching current	max. 0.5 A	◆	◆	◆	◆	◆
Response time	10 ms	◆	◆	◆		
	11 ms				◆	
	12 ms					◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)	◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)	◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing	◆	◆	◆	◆	◆
Length of housing L	[mm]	710	1010	1310	1610	1910
Protection degree	IP67	◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2	◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin, Plug connector DIN 43 651 Hirschmann, 6-pin+PE, Plug connector M26x11 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆
Optical face	Plastic pane	◆	◆	◆	◆	◆
Mass	Per [g]	2100	3000	3900	4800	5700
System components						
Emitter	SLC90-1200-T			◆		
	SLC90-1500-T				◆	
	SLC90-1800-T					◆
	SLC90-600-T	◆				
	SLC90-900-T		◆			
Receiver	SLC90-1200-R			◆		
	SLC90-1500-R				◆	
	SLC90-1800-R					◆
	SLC90-600-R	◆				
	SLC90-900-R		◆			

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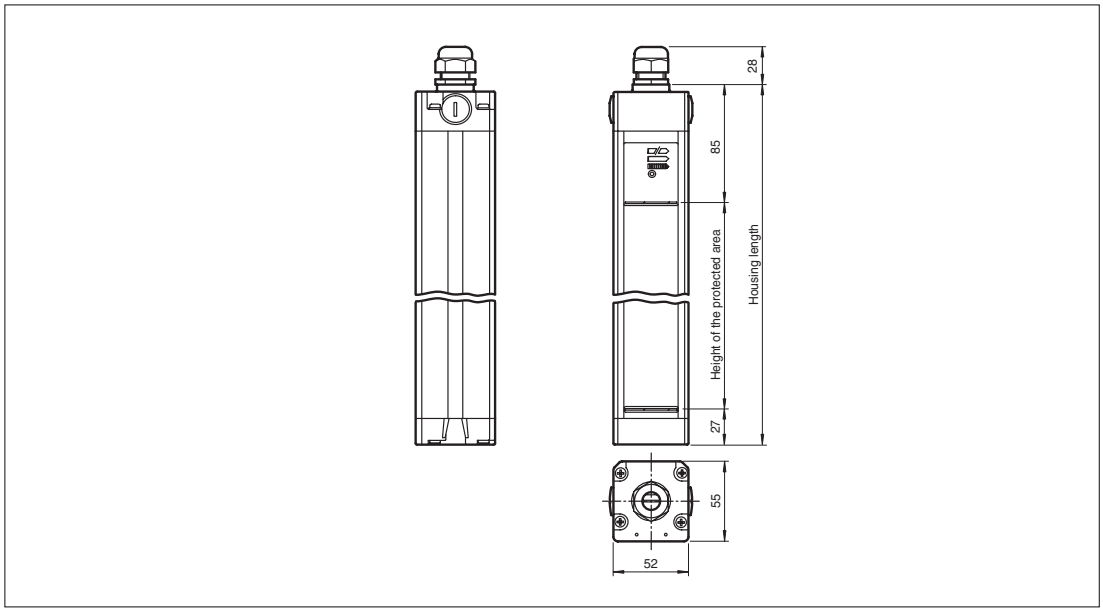
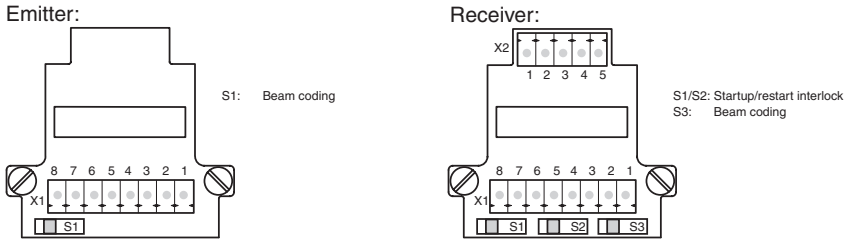
Dimensions

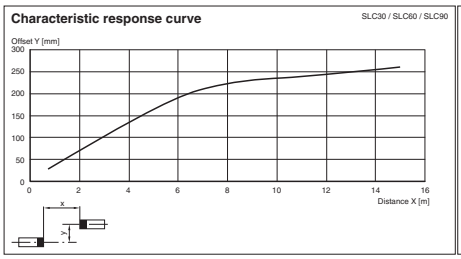


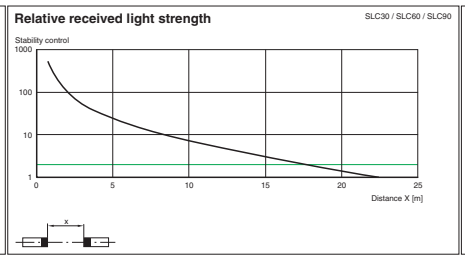
Electrical connection

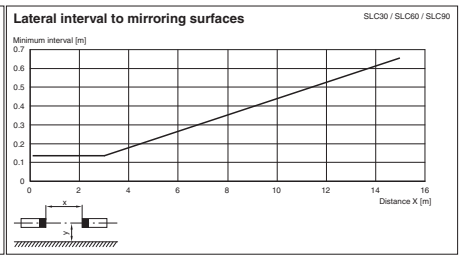


Terminal	Emitter	Receiver SLC...-R (semiconductor output)	Receiver SLC...-R/129 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		Test (input)	Relay monitor
X1:3		0 V OSSD	0 V OSSD
X1:4		24 V OSSD	24 V OSSD
X1:5		OSSD2 (output)	OSSD2 (output)
X1:6		OSSD1 (output)	OSSD1 (output)
X1:7	0 V AC/DC	0 V DC	0 V DC
X1:8	24 V AC/DC	24 V DC	24 V DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		n.c.	n.c.
X2:4		n.c.	n.c.
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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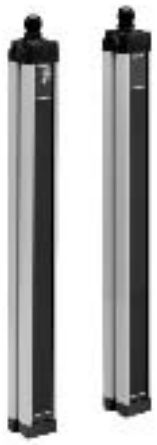

Features

- **Detection range up to 15 m**
- **Resolution 90 mm (protection against access from the rear)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with relay monitor (Option 129)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

		Ordering code	SLC90-600/31	SLC90-900/31	SLC90-1200/31	SLC90-1500/31	SLC90-1800/31
Effective detection range3	0.2 ... 15 m		◆	◆	◆	◆	◆
Light source	IRED		◆	◆	◆	◆	◆
Approvals	TÜV, UL		◆	◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m		◆	◆	◆	◆	◆
Height of the protected area	[mm]		600	900	1200	1500	1800
Number of beams			8	12	16	20	24
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable		◆	◆	◆	◆	◆
Light type	infrared, modulated light		◆	◆	◆	◆	◆
Optical resolution	90 mm		◆	◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆	◆
Operating display	7-segment display in emitter		◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver		◆	◆	◆	◆	◆
Function display	in receiver: LED red: OSSD off, LED green: OSSD on, LED yellow: Protected area free, system start-ready		◆	◆	◆	◆	◆
Pre-fault indication	LED orange		◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding		◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)		◆	◆	◆	◆	◆
Protection class	III		◆	◆	◆	◆	◆
No-load supply current	Emitter: ≤ 100 mA receiver: ≤ 150 mA		◆	◆	◆	◆	◆
Activation current	approx. 10 mA		◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s		◆	◆	◆	◆	◆
Test input	Reset-input for system test		◆	◆	◆	◆	◆
Function input	Start release		◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact		◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status		◆	◆	◆	◆	◆
Switching voltage	50 V		◆	◆	◆	◆	◆
Switching current	max. 2 A		◆	◆	◆	◆	◆
Switch power	100 VA		◆	◆	◆	◆	◆
Response time	30 ms		◆	◆	◆		
	31 ms					◆	
	32 ms						◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)		◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)		◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆	◆
Length of housing L	[mm]		710	1010	1310	1610	1910
Protection degree	IP67		◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2		◆	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin, Plug connector DIN 43 651 Hirschmann, 6-pin+PE, Plug connector M26x11 Hirschmann, 11-pin+PE		◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆	◆
Optical face	Plastic pane		◆	◆	◆	◆	◆
Mass	Per [g]		2100	3000	3900	4800	5700
System components							
Emitter	SLC90-1200-T				◆		
	SLC90-1500-T					◆	
	SLC90-1800-T						◆
	SLC90-600-T		◆				
	SLC90-900-T			◆			
Receiver	SLC90-1200-R/31				◆		
	SLC90-1500-R/31					◆	
	SLC90-1800-R/31						◆
	SLC90-600-R/31		◆				
	SLC90-900-R/31			◆			

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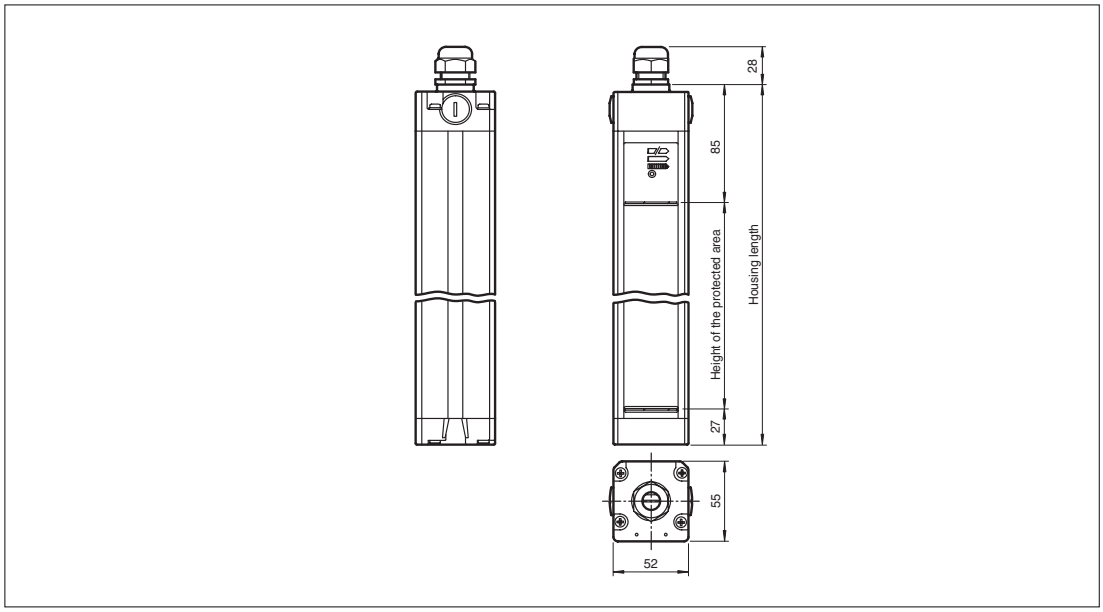
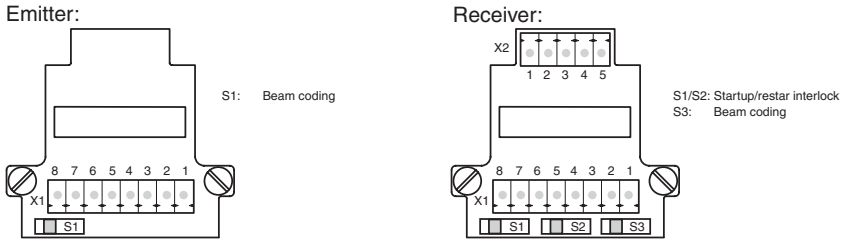
Dimensions

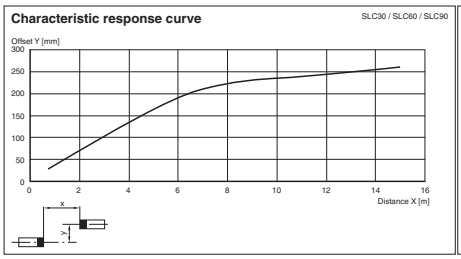


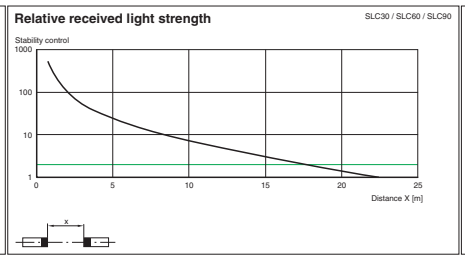
Electrical connection

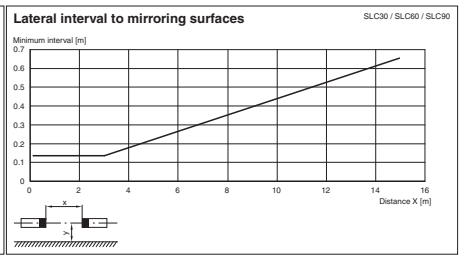


terminal	emitter	receiver SLC...-R/31 (relay output)	receiver SLC...-R/31 (Relay monitor)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Relay monitor
X1:3		OSSD2.2 (output)	OSSD2.2 (output)
X1:4		OSSD1.2 (output)	OSSD1.2 (output)
X1:5		OSSD2.1 (output)	OSSD2.1 (output)
X1:6		OSSD1.1 (output)	OSSD1.1 (output)
X1:7	0 V AC/DC	0 V AC/DC	0 V AC/DC
X1:8	24 V AC/DC	24 V AC/DC	24 V AC/DC
X2:1	Not placed on board	Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3		24 V reference potential for I/O	24 V reference potential for I/O
X2:4		0 V reference potential for I/O	0 V reference potential for I/O
x2:5		Startup readiness (input)	Startup readiness (input)

Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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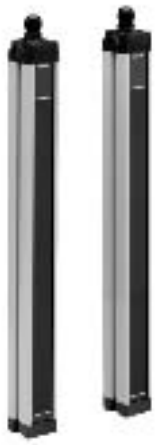

Features

- **Detection range up to 15 m**
- **Resolution 90 mm (protection against access from the rear)**
- **Protective field height up to 1800 mm**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Master/Slave detection, Plug and Play**
- **Start/Restart disable**
- **Protection degree IP67**
- **Integrated function display**
- **Pre-fault indication**
- **Safety outputs OSSD in potential-separated semiconductor design or with monitored, compelled connection NC-contacts**
- **Optional with ATEX certificates for zone 2 and 22 and protection degree IP66 (Option 133)**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

		Ordering code	SLC90-600-S	SLC90-900-S	SLC90-1200-S	SLC90-1500-S	SLC90-1800-S
Effective detection range	0.2 ... 15 m		◆	◆	◆	◆	◆
Light source	IRED		◆	◆	◆	◆	◆
Approvals	TÜV, UL		◆	◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m		◆	◆	◆	◆	◆
Height of the protected area	[mm]		600	900	1200	1500	1800
Number of beams			8	12	16	20	24
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆	◆
Operating mode	in the master device		◆	◆	◆	◆	◆
Light type	infrared, modulated light		◆	◆	◆	◆	◆
Optical resolution	90 mm		◆	◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆	◆
Operating display	in the master device		◆	◆	◆	◆	◆
Diagnosis display	in the master device		◆	◆	◆	◆	◆
Function display	in the master device		◆	◆	◆	◆	◆
Pre-fault indication	in the master device		◆	◆	◆	◆	◆
Operating elements	in the master device		◆	◆	◆	◆	◆
Operating voltage	from master		◆	◆	◆	◆	◆
Protection class	III		◆	◆	◆	◆	◆
No-load supply current	from master		◆	◆	◆	◆	◆
Test input	in the master device		◆	◆	◆	◆	◆
Function input	in the master device		◆	◆	◆	◆	◆
Safety output	in the master device		◆	◆	◆	◆	◆
Signal output	in the master device		◆	◆	◆	◆	◆
Response time	depends on height of protective field		◆	◆	◆	◆	◆
Ambient temperature	0 ... 55 °C (273 ... 328 K)		◆	◆	◆	◆	◆
Storage temperature	-25 ... 70 °C (248 ... 343 K)		◆	◆	◆	◆	◆
Relative humidity	max. 95 %, not condensing		◆	◆	◆	◆	◆
Length of housing L	[mm]		710	1010	1310	1610	1910
Protection degree	IP67		◆	◆	◆	◆	◆
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm^2		◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆	◆
Optical face	Plastic pane		◆	◆	◆	◆	◆
Mass	Per [g]		2100	3000	3900	4800	5700
System components							
Emitter	SLC90-1200-T-S				◆		
	SLC90-1500-T-S					◆	
	SLC90-1800-T-S						◆
	SLC90-600-T-S		◆				
	SLC90-900-T-S			◆			
Receiver	SLC90-1200-R-S				◆		
	SLC90-1500-R-S					◆	
	SLC90-1800-R-S						◆
	SLC90-600-R-S		◆				
	SLC90-900-R-S			◆			

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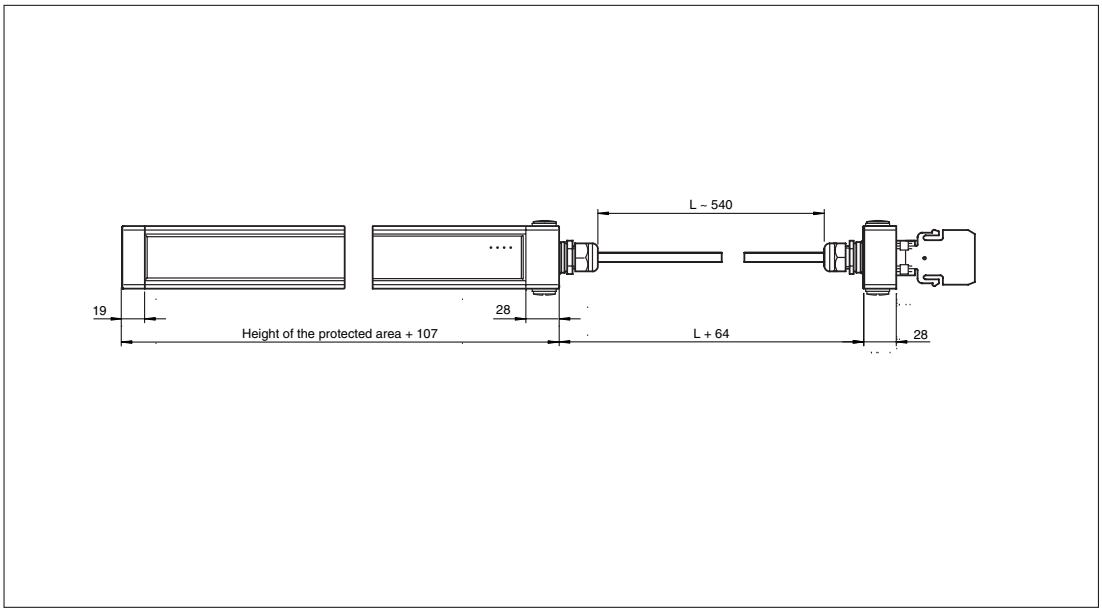
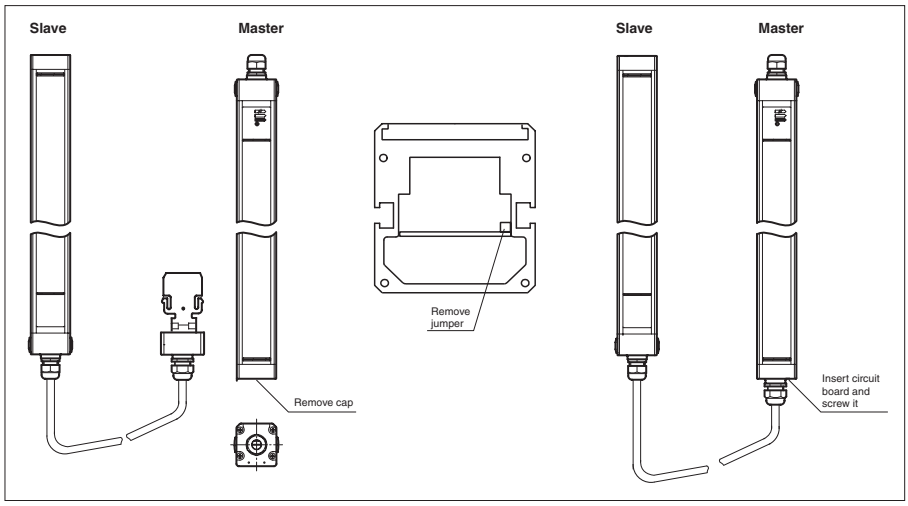
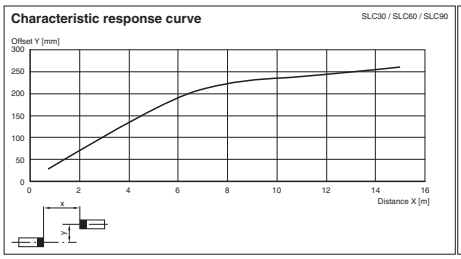
Dimensions

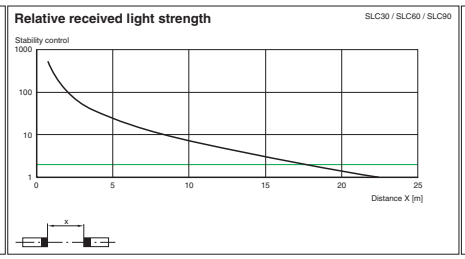


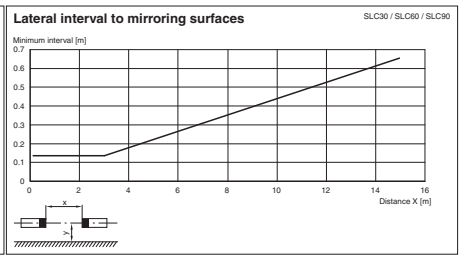
Electrical connection



Diagrams







System accessories

- Mounting set SLC
- Test rods SLC14/SLC30/SLC60
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Profile alignment aid
- Laser alignment aid SLC
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

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Description

System SC2/SC4

The SC2/SC4 is a control unit for a safety light barrier system with 1 or 2 single direction light barriers (consisting of a sender and receiver) of category 2 or 4 (EN 954-1) or of type 2 or 4 (IEC 61496).

Together the control unit and the single direction light barriers of series **SL or SLA 12/29** form a modular protection system.

The SC2/SC4 produces the required supply voltages, triggers the light senders and evaluates the signals transmitted by the receivers. A corresponding safety-relevant control signal (two forced relays) will then be available at the output. Dependent on the type of light barriers used the range can be up to 65 m.

Operating modes like relays monitor and startup/restart locking ensure that the required tasks will be met. The operating modes can be adjusted and modified by the user according to the application.

Applications

Normally used for increased risk of injury. For example for access control of pallet systems, robots, wood processing machines, packaging machines, overhead warehouse shelves and machine lines.

Type code	Number of channels	Category acc. to EN 954-1	Operating voltage	Page
SC2-2	2	2	24 V DC	128
SC4-2	2	4	24 V DC	130

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Features

- **Evaluation device for safety through-beam sensors SL12 and SL29**
- **Test input (Type 2 according to IEC/EN 61496-1)**
- **Operating mode can be selected by means of DIP switches**
- **Start/Restart disable**
- **Relay monitor**
- **Pre-fault indication**
- **Safety outputs OSSD, external status displays OSSD**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

General specifications	
Approvals	TÜV
Tests	IEC/EN 61496
Marking	CE
Safety category according to IEC/EN 61496	2
Indicators/operating means	
Diagnosis display	2 LEDs red for error display
Function display	LED red: OSSD OFF LED green: OSSD ON LED yellow : Start readiness LED yellow (2x): indicator lamp channel 1 ... 2
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 2
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	24 V DC, -15 %/+20 %
No-load supply current I_0	160 mA
Input	
Activation current	approx. 10 mA
Activation time	0.05 ... 1 s
Test input	Input for system test
Output	
Safety output	2 relay outputs, compelled connection NO-contact
Signal output	Output for displaying the switching state of the OSSDs
Switching voltage	20 ... 230 V AC/DC
Switching current	AC: max. 3.5 A ; DC, max. 3.5 A (Limit switching power 60 W)
Response time	30 ms
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	230 g

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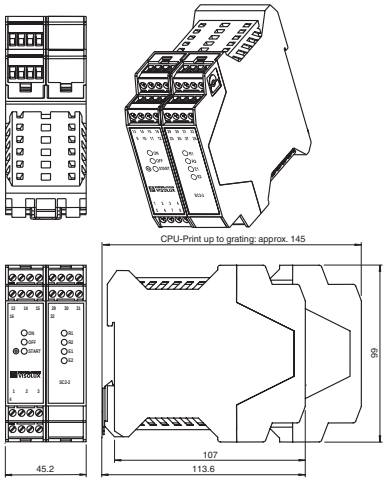
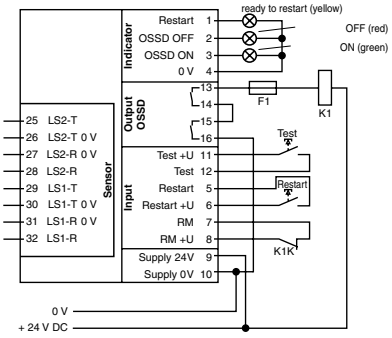
Dimensions



Electrical connection



Connections of the OSSD module

Terminal/Assignment		Function
1	PNP output readiness for startup message	Option for connecting external indicator lamps to indicate restart (start) or error message
2	PNP output OSSD reporting OFF	Option for connecting external indicator lamps to indicate the OSSD state Off
3	PNP output OSSD reporting ON	Option for connecting external indicator lamps to indicate the OSSD state On
4	0 V internal	Reference point for pnp outputs
5	Startup enable for input (RI)	Normally open contact for start/restart interlock. It should be wired in if no function is activated
6	24 V internal	
7	Relay monitor input (RM)	Relay monitor input.
8	24 V internal	It should be wired in if no function is activated (see section 3.2)
9	24 V DC	Supply voltage connection, protected from reverse polarity
10	0 V	
11	24 V internal	Normally open contact for testing or error enable
12	Test input	
13	OSSD1.1	OSSD relay output 1 NO (normally open)
14	OSSD1.2	
15	OSSD2.1	OSSD relay output 2 NO
16	OSSD2.2	

Connections for light barrier module

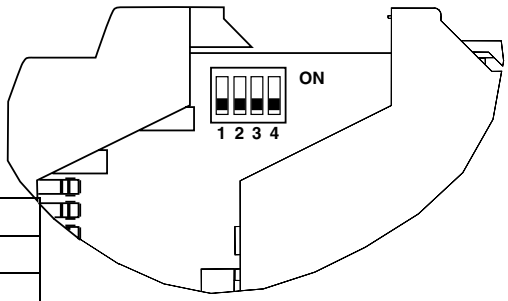
Terminal/Assignment		Function
25	LS2-T2	Transmitter 2 connection
26	LS2-T 0 V	
27	LS2-R 0 V	Receiver 2 connection
28	LS2-R	
29	LS1-T	Transmitter 1 connection
30	LS1-T 0 V	
31	LS1-R 0 V	Receiver 1 connection
32	LS1-R	

Notes

Operating modes

The operating modes of the SC2 can be adjusted using DIP switches. Two switches must be activated to set an operating mode. The DIP switches are located inside the housing of the light barrier module.

When the control unit is delivered, the relay monitor (RM) is turned off and start / restart interlock (RI) is turned on.



	DIP-switch			
	1	2	3	4
Start/restart interlock (RI)			X	X
Relay monitor (RM)	X	X		

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Features

- **Evaluation device for safety through-beam sensors SLA12 and SLA29**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Operating mode can be selected by means of DIP switches**
- **Start/Restart disable**
- **Relay monitor**
- **Pre-fault indication**
- **Clearly visible LED functional display**
- **7-segment diagnostic display**
- **Safety outputs OSSD, external status displays OSSD**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

General specifications	
Approvals	TÜV
Tests	IEC/EN 61496
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Diagnosis display	7-segment display
Function display	LED red: OSSD OFF LED green: OSSD ON LED yellow : Start readiness LED yellow (2x): indicator lamp channel 1 ... 2
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 2
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	24 V DC, -15 %/+20 %
No-load supply current I_0	160 mA
Input	
Activation current	approx. 10 mA
Activation time	0.05 ... 1 s
Test input	Reset-input for system test
Output	
Safety output	2 relay outputs, compelled connection NO-contact
Signal output	Output for displaying the switching state of the OSSDs
Switching voltage	20 ... 230 V AC/DC
Switching current	AC: 0.01 ... 2 A DC see diagram of limit load curve
Response time	30 ms
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	230 g

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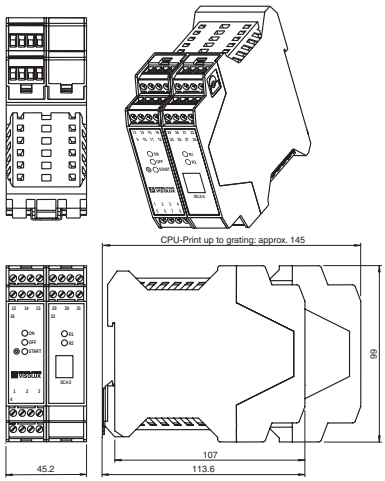
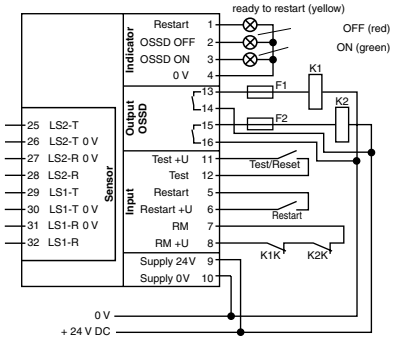
Dimensions



Electrical connection



Connections of the OSSD module

Terminal/Assignment		Function
1	PNP output readiness for startup message	Option for connecting external indicator lamps to indicate restart (start) or error message
2	PNP output OSSD reporting OFF	Option for connecting external indicator lamps to indicate the OSSD state Off
3	PNP output OSSD reporting ON	Option for connecting external indicator lamps to indicate the OSSD state On
4	0 V internal	Reference point for pnp outputs
5	Startup enable for input (RI)	Normally open contact for start/restart interlock. It should be wired in if no function is activated
6	24 V internal	
7	Relay monitor input (RM)	Relay monitor input.
8	24 V internal	It should be wired in if no function is activated (see section 3.2)
9	24 V DC	Supply voltage connection, protected from reverse polarity
10	0 V	
11	24 V internal	Normally open contact for testing or error enable
12	Test input	
13	OSSD1.1	OSSD relay output 1 NO (normally open)
14	OSSD1.2	
15	OSSD2.1	OSSD relay output 2 NO
16	OSSD2.2	

Connections for light barrier module

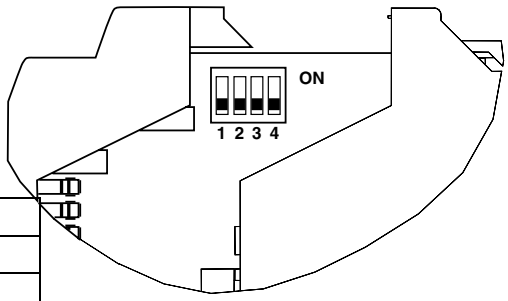
Terminal/Assignment		Function
25	LS2-T2	Transmitter 2 connection
26	LS2-T 0 V	
27	LS2-R 0 V	Receiver 2 connection
28	LS2-R	
29	LS1-T	Transmitter 1 connection
30	LS1-T 0 V	
31	LS1-R 0 V	Receiver 1 connection
32	LS1-R	

Notes

Operating modes

The operating modes of the SC2 can be adjusted using DIP switches. Two switches must be activated to set an operating mode. The DIP switches are located inside the housing of the light barrier module.

When the control unit is delivered, the relay monitor (RM) is turned off and start / restart interlock (RI) is turned on.



	DIP-switch			
	1	2	3	4
Start/restart interlock (RI)			X	X
Relay monitor (RM)	X	X		

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Description

System SafeBox

The safety solution permits the connection of all components of a machine protection system to a single control unit and can be configured flexibly due to its modular design.

The SafeBox is suitable for connection and control of photoelectric safety sensors, mechanical safety systems, and safety switches in Category 1 through 4 as in EN 954-1.

The system is approved in accordance with IEC 61496-1 and EN 61508 (SIL3) and thus features the device approval based on the new standard.

Besides connecting the numerous safety sensors it also supports e.g. the emergency stop functions of categories 0 and 1 as well as the various muting modes.

The SafeBox complies with protection category IP20 and has been designed for switch cabinet installation.

The basis of each SafeBox consists of a robust component rack with backplane taking between two and eight extension modules. The backplane is used for the mechanical and electrical connection and responsible for the power supply to the individual modules.

Amongst the available module types are OSSD modules (output signal switching device), 4-channel CPU modules (4CP, 4XP, 4CG, 4XG), sensor card modules for 4 and for 6 channels, muting modules, E-stop modules and blind modules.

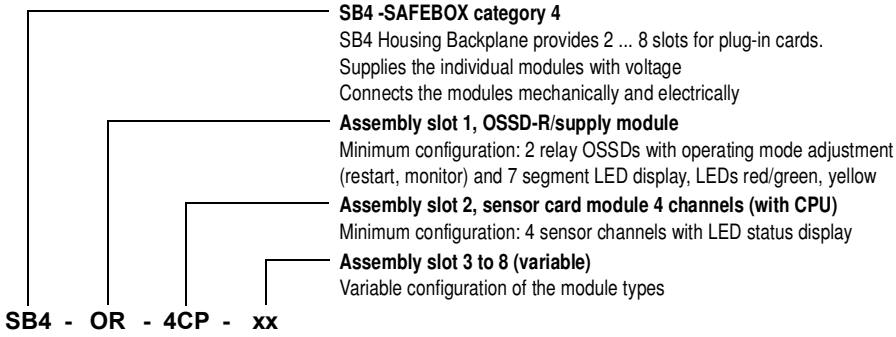
SafeBox

In total the SafeBox thereby enables the connection of light barriers, light grids and light curtains for:

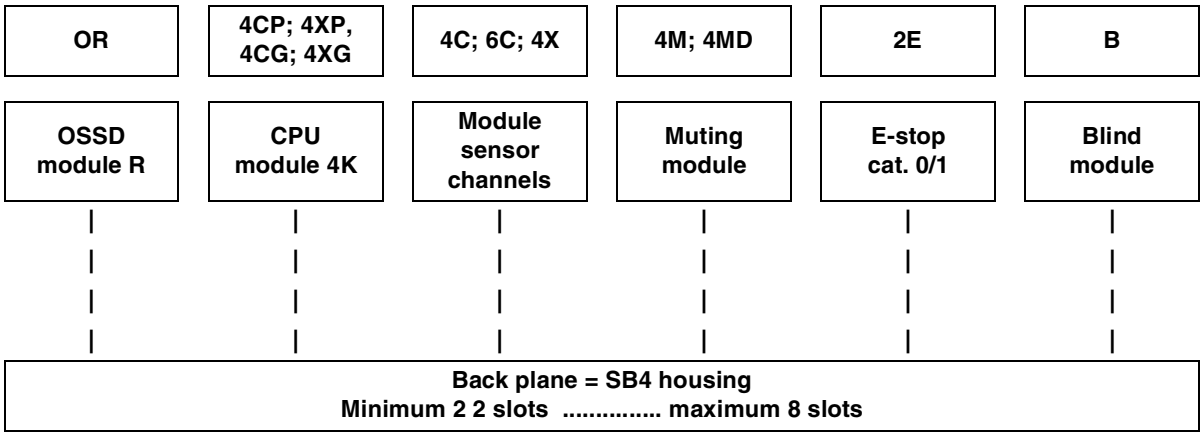
- electro-sensitive protective equipment (ESPE)
- of emergency stop buttons
- position switches
- switching pads and switching panels
- magnetic switches
- door contacts and other one and two channel safety elements.

Type code

The identification of the individual SafeBox versions is structured in such a way that the device structure can be recognised immediately. For each assembly used, the module type of the respective assembly is stated starting from the left.



SafeBox design



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Module types:

OR	OSSD module relay
4CP	Sensor card module with 4 channels with CPU
4CG	Sensor card module with 4 channels with CPU (for several separate shut-off circuits within one SafeBox)
4C	Sensor card module with 4 channels
4XP	Sensor card module with 4 channels with CPU
4XG	Sensor card module with 4 channels with CPU (for several separate shut-off circuits within one SafeBox)
4X	Sensor card module with 4 channels
6C	Sensor card module with 6 channels
4M	Muting module with 4 channels
4MD	Muting module with 4 channels for permanent muting
2E	OSSD-E stop module with preset stop function cat. 0 and activated 2 sensor inputs
B	Blind module

Matrix Safebox module types

	module	Light barrier type	Light grid	Light curtains	Safety device
	**4CP**	**SLA12, SLA29**		**-**	**E-stop, switching panels, magnetic scwitches**
	4XP	**SLA5(S); SLA40**	**SLP...**	**SLC**	**E-stop, switching pad**
	4CG	**SLA12, SLA29**		**-**	**E-stop, switching panels, magnetic scwitches**
	4XG	**SLA5(S); SLA40**	**SLP...**	**SLC**	**E-stop, switching pad**
	**4C**	**SLA12, SLA29**		**-**	**E-stop, switching panels, magnetic scwitches**
	4X	**SLA5(S); SLA40**	**SLP...**	**SLC**	**Switching pads E-stop**
	6C	**SLA12, SLA29**		**-**	**E-stop, switching pads, magnetic scwitches**
	**4M**	**Muting sensors**			
	4MD	**Muting sensors**			
	**2E**				**1 channel E-stop (2x)**

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Standard device variants

For realising typical ESPE applications, there are SB4 control units which are predefined for these applications. They are suitable for access protection at one or more access points of hazardous areas.

SB4-OR-4CP : 4 channel control unit

A maximum of 4 safety light barriers can be connected to this control unit. Instead of the light barriers, other contact safety equipment can be connected. By default, the restart interlock is activated.

SB4-OR-4CP-4C : 8 channel control unit

The SB4-OR-4CP-4C can be used for connecting 1 to 8 safety light barriers.

The large number of sensor channels makes this control unit suitable for protecting several entries. Instead of the light barriers, other contact safety equipment can be connected. By default, the restart interlock is activated.

SB4-OR-4CP-4M : 4 channel control unit for muting applications

This control unit can be used for muting applications of 1 to 4 safety light barriers. Due to the adjustment options via the DIP switches of the muting module, an optimum adaptation to the applications is possible.

For example, if two entries to the protected area, which are protected by 2 protection beams, are to be equipped with muting, this protection can be realised by the double muting operating mode with an control unit. The startup/restart lock has been enabled at factory.

Additional application examples:

SB4-OR-4CP-6C-4C-2E : Modular control unit with a time-delayed output signal

Monitoring of 4 safety light barriers, 3 emergency stop buttons (dual-channel) and 2 protective door contacts. In the case of a beam interruption, the system is switched off with a delay.

SB4-OR-4CG-2E-4C-2E-B-B : Modular control unit for group formation

4 sensor channels for safety devices of group 1 and 4 sensor channels for safety devices with muting function and time-delay shut-off in group 2.

2 blind caps as optional extension options e.g. for group 3.

SB4-OR-4XP-4M : Modular control unit 4 channel with 4 additional muting channels

4 sensor channels for 2 safety light curtains and 2 times 2 muting channels for double muting.

Type code	Sensor channel number	Muting channel number	Operating voltage	Page
SB4-OR-4CP	4	0	24 V DC	136
SB4-OR-4CP-4C	8	0	24 V DC	138
SB4-OR-4CP-4M	4	4	24 V DC	140

Easy to configure and flexible, we adapt the SafeBox to your application.
Please enquire!

Date of edition 05/17/2006

Features

- **Evaluation device for safety through-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)**
- **4 sensor channels**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Operating mode can be selected by means of DIP switches**
- **Start/Restart disable**
- **Relay monitor**
- **Pre-fault indication**
- **Clearly visible LED functional display**
- **7-segment diagnostic display**
- **Safety outputs OSSD, external status displays OSSD**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Diagnosis display	7-segment display
Function display	LED red: OSSD OFF LED green: OSSD ON Yellow LED: start readiness channel 1 - 4 LED yellow: switching state (receiver)
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Electrical specifications	
Operating voltage	24 V DC, ± 20 %
No-load supply current I_0	max. 500 mA
Input	
Activation current	approx. 7 mA
Activation time	0.4 ... 1.2 s
Test input	Reset-input for system test
Output	
Safety output	2 relay outputs, compelled connection NO-contact
Signal output	Output for displaying the switching state of the OSSDs
Switching voltage	10 V ... 250 V AC/DC
Switching current	min. 10 mA , max. 6 A AC/DC
Switch power	DC: max. 24 VA AC: max. 230 VA
Response time	30 ms
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	320 g

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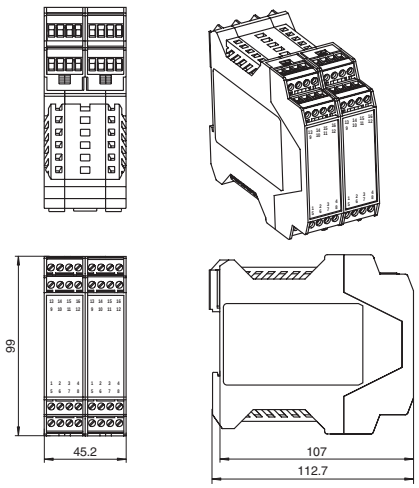
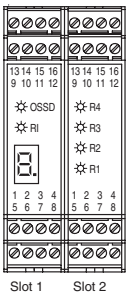
Dimensions



Electrical connection



Terminal Slot 1

Terminal	Function
1	Reset input; normally closed contact
2	Restart input (RI); normally closed contact
3	24 V DC connection for reset, restart and RM
4	Relay monitor (RM)
5 - 6	OSSD1; potential free relay contact; normally open contact
7 - 8	OSSD2; potential free relay contact; normally open contact
9	Signal output OSSD OFF
10	Signal output OSSD ON
11	Signal output restart
12	Leave free (n.c.)
13	+24 V DC supply voltage
14	0 V DC supply voltage
15	Earth
16	Leave free (n.c.)

Terminal Slot 2

Terminal	Function	Channel assignment
1	Receiver 2 input	Input
2	Receiver 2 +U	Channel 2
3	Transmitter 2 +U	
4	Transmitter 2 output	Output
5	Receiver 1 input	Input
6	Receiver 1 +U	Channel 1
7	Transmitter 1 +U	
8	Transmitter 1 output	Output
9	Transmitter 3 output	Output
10	Transmitter 3 +U	Channel 3
11	Receiver 3 +U	
12	Receiver 3 input	Input
13	Transmitter 4 output	Output
14	Transmitter 4 +U	Channel 4
15	Receiver 4 +U	
16	Receiver 4 input	Input

Notes

Function

The evaluation system SB4 is an ESPE of type 4 (EN 61496-1 or IEC 61496-1) or category 4 (EN 954-1). This system is also designed and tested according to IEC 61508. It meets the requirements for the SIL3.

The operating instructions supplied with the device must be observed for planning, installation and operation.

A maximum of 4 safety light barriers can be connected to the evaluation device. Instead of the light barriers, other contact safety equipment can be connected.

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Features

- **Evaluation device for safety through-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)**
- **8 sensor channels**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Operating mode can be selected by means of DIP switches**
- **Start/Restart disable**
- **Relay monitor**
- **Pre-fault indication**
- **Clearly visible LED functional display**
- **7-segment diagnostic display**
- **Safety outputs OSSD, external status displays OSSD**

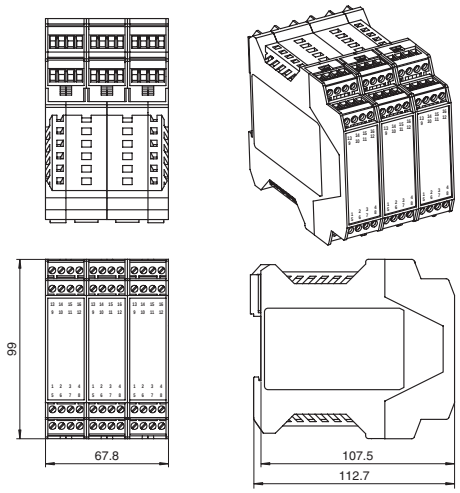
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

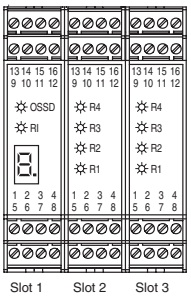
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Diagnosis display	7-segment display
Function display	LED red: OSSD OFF LED green: OSSD ON Yellow LED: start readiness channel 1 - 8 LED yellow: switching state (receiver)
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 8
Electrical specifications	
Operating voltage	24 V DC, ± 20 %
No-load supply current I_0	max. 500 mA
Input	
Activation current	approx. 7 mA
Activation time	0.4 ... 1.2 s
Test input	Reset-input for system test
Output	
Safety output	2 relay outputs, compelled connection NO-contact
Signal output	Output for displaying the switching state of the OSSDs
Switching voltage	10 V ... 250 V AC/DC
Switching current	min. 10 mA , max. 6 A AC/DC
Switch power	DC: max. 24 VA AC: max. 230 VA
Response time	38 ms
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	430 g

Date of edition 05/17/2006

Dimensions



Electrical connection



Terminal Slot 1

Terminal	Function
1	Reset input; normally closed contact
2	Restart input (RI); normally closed contact
3	24 V DC connection for reset, restart and RM
4	Relay monitor (RM)
5 - 6	OSSD1; potential free relay contact; normally open contact
7 - 8	OSSD2; potential free relay contact; normally open contact
9	Signal output OSSD OFF
10	Signal output OSSD ON
11	Signal output restart
12	Leave free (n.c.)
13	+24 V DC supply voltage
14	0 V DC supply voltage
15	Earth
16	Leave free (n.c.)

Terminal Slot 2 and Slot 3

Terminal	Function	Channel assignment
1	Receiver 2 input	Input
2	Receiver 2 +U	Channel 2
3	Transmitter 2 +U	
4	Transmitter 2 output	Output
5	Receiver 1 input	Input
6	Receiver 1 +U	Channel 1
7	Transmitter 1 +U	
8	Transmitter 1 output	Output
9	Transmitter 3 output	Output
10	Transmitter 3 +U	Channel 3
11	Receiver 3 +U	
12	Receiver 3 input	Input
13	Transmitter 4 output	Output
14	Transmitter 4 +U	Channel 4
15	Receiver 4 +U	
16	Receiver 4 input	Input

Notes

Function

The evaluation system SB4 is an ESPE of type 4 (EN 61496-1 or IEC 61496-1) or category 4 (EN 954-1). This system is also designed and tested according to IEC 61508. It meets the requirements for the SIL3.

The operating instructions supplied with the device must be observed for planning, installation and operation.

A maximum of 8 safety light barriers can be connected to the evaluation device. Instead of the light barriers, other contact safety equipment can be connected.

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SB4-OR-4CP-4M — Control unit

Features

- **Evaluation device for safety through-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)**
- **4 sensor channels**
- **Self-monitoring (type 4 according to IEC/EN 61496-1)**
- **Operating mode can be selected by means of DIP switches**
- **Start/Restart disable**
- **Relay monitor**
- **Sequential and parallel muting in various operating modes**
- **Double muting**
- **Emergency muting for the correction of the material jam**
- **Pre-fault indication**
- **Clearly visible LED functional display**
- **7-segment diagnostic display**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Diagnosis display	7-segment display
Function display	LED red: OSSD OFF LED green: OSSD ON Yellow LED: start readiness channel 1 - 4 LED yellow: switching state (receiver)
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Electrical specifications	
Operating voltage	24 V DC, ± 20 %
No-load supply current I_0	500 mA
Input	
Activation current	approx. 7 mA
Activation time	0.4 ... 1.2 s
Test input	Reset-input for system test
Output	
Safety output	2 relay outputs, compelled connection NO-contact
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp
Switching voltage	10 V ... 250 V AC/DC
Switching current	min. 10 mA , max. 6 A AC/DC
Switch power	DC: max. 24 VA AC: max. 230 VA
Response time	38 ms
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	430 g

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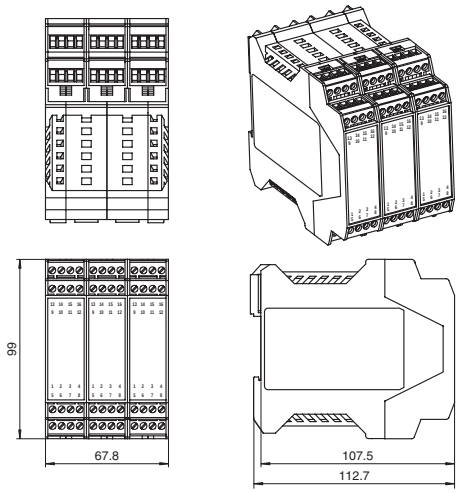
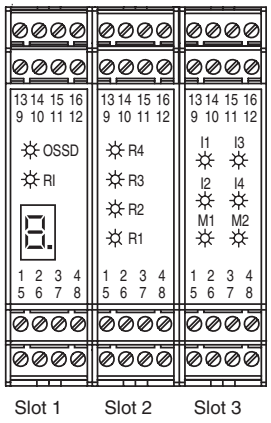
Dimensions



Electrical connection



Terminal Slot 1

Terminal	Function
1	Reset input; normally closed contact
2	Restart input (RI); normally closed contact
3	24 V DC connection for reset, restart and RM
4	Relay monitor (RM)
5 - 6	OSSD1; potential free relay contact; normally open contact
7 - 8	OSSD2; potential free relay contact; normally open contact
9	Signal output OSSD OFF
10	Signal output OSSD ON
11	Signal output restart
12	Leave free (n.c.)
13	+24 V DC supply voltage
14	0 V DC supply voltage
15	Earth
16	Leave free (n.c.)

Terminal Slot 2

Terminal	Function	Channel assignment
1	Receiver 2 input	Input
2	Receiver 2 +U	Channel 2
3	Transmitter 2 +U	
4	Transmitter 2 output	Output
5	Receiver 1 input	Input
6	Receiver 1 +U	Channel 1
7	Transmitter 1 +U	
8	Transmitter 1 output	Output
9	Transmitter 3 output	Output
10	Transmitter 3 +U	Channel 3
11	Receiver 3 +U	
12	Receiver 3 input	Input
13	Transmitter 4 output	Output
14	Transmitter 4 +U	Channel 4
15	Receiver 4 +U	
16	Receiver 4 input	Input

Terminal Slot 3

Terminal	Function
1	24 V sensor supply
2	Sensor 2 IN
3	Sensor 4 IN
4	0 V sensor supply
5	24 V sensor supply
6	Sensor 1 IN
7	Sensor 3 IN
8	0 V sensor supply
9	Input override 1
10	24 V override 1
11	24 V override 2
12	Input override 2
13	+24 V DC supply voltage for muting lamps
14	0 V DC supply voltage for muting lamps
15	Output muting lamp 1
16	Output muting lamp 2

Notes

Function

The evaluation system SB4 is an ESPE of type 4 (EN 61496-1 or IEC 61496-1) or category 4 (EN 954-1). This system is also designed and tested according to IEC 61508. It meets the requirements for the SIL3.

The operating instructions supplied with the device must be observed for planning, installation and operation.

A maximum of 4 safety light barriers can be connected to the evaluation device. Instead of the light barriers, other contact safety equipment can be connected.

The module on slot 3 realises the muting function. Detailed notes on the functions can be found in the instruction manual.

The user has to ensure that he only connects to the sensor card, which is assigned to the muting module, those sensors for which muting is required. These are, for example, light barriers and light grids.

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SafeBox module types

SB4 MODULES OR - OSSD-R/Supply module

The OSSD-R/supply module contains the power supply of the SafeBox, 2 OSSDs, the relay monitor and the restart connection. This module is located in slot 1 and only exists once.

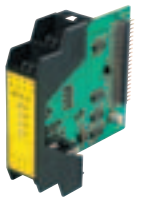
SB4 MODULES 4CP or 4XP - 4 channel sensor module with microcontroller

The 4 channel sensor card modules facilitate the connection of safety devices in one or two channel design. They contain the microcontroller of the SafeBox. Only one of these modules is contained in each Safebox SB4 and is located in slot 2.

SB4 MODULES 4CG or 4XG - 4 channel sensor module with microcontroller for grouping

The 4 channel sensor card modules facilitate the connection of safety devices in one or two channel design. They contain the microcontroller of the SafeBox. Only one of these modules is contained in each Safebox SB4 and is located in slot 2.

This module permits several separate shut-off circuits within one Safebox.



SB4 MODULES 4C or 4X - 4 channel sensor modules

SB4 MODULES 6C or 6X - 6 channel sensor modules

The 4- or 6-channel sensor card modules make it possible to connect safety devices in single-channel or dual-channel design.

SB4 MODULES 4M and 4MD - muting modules

The muting module realises the muting functions for the sensor channels of the four to six channel sensor card module immediately to the right of the module.

SB4 MODULES 2E - E-Stop module

The OSSD-R/E-Stop module is a module of the emergency stop category 1 and permits the time-delayed shut-down of one or several plant components (0 s ... 10 s). It can also be used as an independent E-stop module of category 0 (grouping).

Type code	Sensor channels	Category acc. to EN 954-1	Usage	Page
SB4 Module OR	2 relays OSSD	4	OSSD module	144
SB4 Module 4CP	4	4	Sensor module	146
SB4 Module 4XP	4	4	Sensor module	148
SB4 Module 4CG	4	4	Sensor module	150
SB4 Module 4XG	4	4	Sensor module	152
SB4 Module 4C	4	4	Sensor module	154
SB4 Module 4X	4	4	Sensor module	156
SB4 Module 6C	6	4	Sensor module	158
SB4 Module 4M	4 Muting	4	Muting module	160
SB4 Module 4MD	4 Muting	4	Muting module	162
SB4 Module 2E	2 2 relays OSSD	4	E-Stop module	164
SB4 Cape			Blind cap for unused slots	166
SB4 Housing			Housing for SafeBox modules	167

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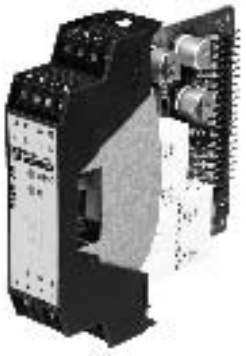

Features

- **OSSD-R/Supply-module**
- **Safety outputs OSSD, external status displays OSSD**
- **Start/Restart disable**
- **Operating mode can be selected by means of DIP switches**
- **Relay monitor**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Diagnosis display	7-segment display
Function display	LED red: OSSD OFF LED green: OSSD ON Yellow LED: start readiness
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	24 V DC ± 20 % , via SB4 Housing
Input	
Activation current	approx. 7 mA
Activation time	0.4 ... 1.2 s
Test input	Reset-input for system test
Output	
Safety output	2 relay outputs, compelled connection NO-contact
Signal output	Output for displaying the switching state of the OSSDs
Switching voltage	10 V ... 250 V AC/DC
Switching current	min. 10 mA , max. 6 A AC/DC
Switch power	max. DC 24 VA , AC 230 VA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

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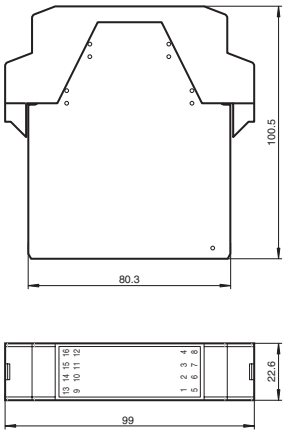
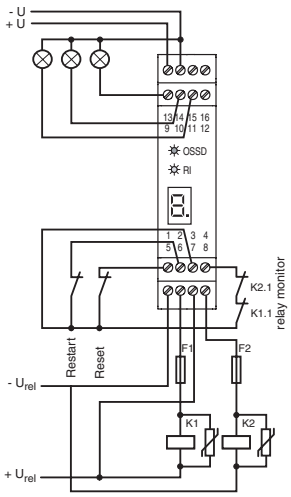
Dimensions



Electrical connection

Terminal	Function
1	Reset input; normally closed contact
2	Restart input (RI); normally closed contact
3	24 V DC connection for reset, restart and RM
4	Relay monitor (RM)
5 - 6	OSSD1; potential free relay contact; normally open contact
7 - 8	OSSD2; potential free relay contact; normally open contact
9	Signal output OSSD OFF
10	Signal output OSSD ON
11	Signal output restart
12	Leave free (n.c.)
13	+24 V DC supply voltage
14	0 V DC supply voltage
15	Earth
16	Leave free (n.c.)

Connection example



Notes

This module can only be operated within an evaluation device of the SafeBox SB4 type.

The SafeBox instruction manual should be observed.

Function

The OSSD-R/supply module contains the power supply of the SafeBox, 2 OSSDs, the relay monitor and the restart connection. This module is located in slot 1 of the SafeBox and only exists once.

The OSSDs are designed as potential free connection NO contacts. The module can be operated with or without restart interlock. Also, monitoring of the externally connected switching elements can be activated (relay monitor). The OSSD On or Off statuses are indicated via a short-circuit-proof pnp signal output. The restart output is used for indication of the start readiness status. In the case of an error, this output oscillates with 1 Hz.

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Features

- **Sensor module**
- **4 sensor channels**
- **Single module for safety through-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)**
- **Micro-Controller controls**
- **Operating mode can be selected by means of DIP switches**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp channel 1 ... 4
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
Activation current	approx. 7 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

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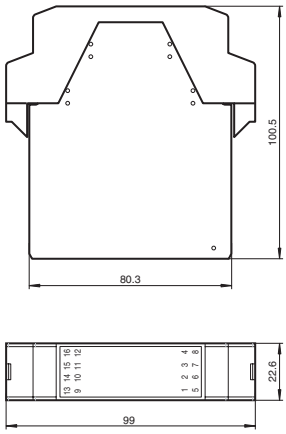
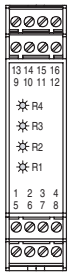
Dimensions

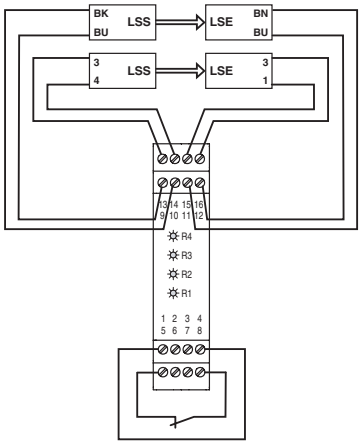


Electrical connection



Terminal	Function	Channel assignment
1	Receiver 2 input	Input
2	Receiver 2 +U	Channel 2
3	Transmitter 2 +U	
4	Transmitter 2 output	Output
5	Receiver 1 input	Input
6	Receiver 1 +U	Channel 1
7	Transmitter 1 +U	
8	Transmitter 1 output	Output
9	Transmitter 3 output	Output
10	Transmitter 3 +U	Channel 3
11	Receiver 3 +U	
12	Receiver 3 input	Input
13	Transmitter 4 output	Output
14	Transmitter 4 +U	Channel 4
15	Receiver 4 +U	
16	Receiver 4 input	Input

Connection example



Connection example
(LSS = transmitter of light barrier;
LSE = receiver of light barrier)

Notes

The operation of this module is possible only within a control unit of the type SafeBox SB4.

Is the operating instruction of the SafeBox pay attention.

Function

The 4-channel sensor card module SB4-4CP makes it possible to connect light barriers or light grids or contact safety sensors in a one or two-channel version. In addition it contains the Micro-Controller controls of the SafeBox.

This version only exists once in a system and is always located in slot 2 of the SafeBox. The module is supplied with plug-in jumper. If additional modules are used, this plug-in jumper must be moved.

There is a plug-in jumper on the module. If the system contains further units, this plug-in jumper onto the last slot must be moved.

When the system is switched on, the software determines whether a light barrier or a contact safety sensor is switched on at a channel and monitors its presence during operation. Safety sensors with switching contacts, which are connected to the SafeBox, must operate in the switching mode "normally closed". An open contact means "safe status".

The channels 1 and 2 as well as 3 and 4 (and 5 and 6) can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

Antivalence monitoring expects the normally closed contact at channel 1 or 3 (or 5) and the normally open contact at channel 2 or 4 (or 6). If antivalence monitoring is performed without simultaneousness monitoring, an incorrect contact position causes a switch-off and the error message 7 after approx. 60 s .

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Features

- **Sensor module**
- **4 sensor channels**
- **Single module for safety through-beam sensors SLA5(S) and SLA40; for SLP safety light barriers; for SLC safety light curtains; for switch mats and Emergency-Stop switches in categories 2 and 4.**
- **Micro-Controller controls**
- **Operating mode can be selected by means of DIP switches**

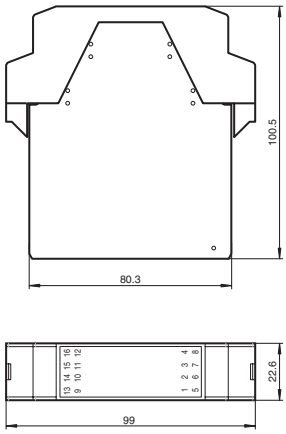
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

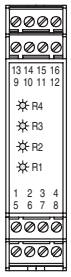
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp channel 1 ... 4
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
actuating voltage	approx. 10 V
Activation current	approx. 4 ... 20 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions

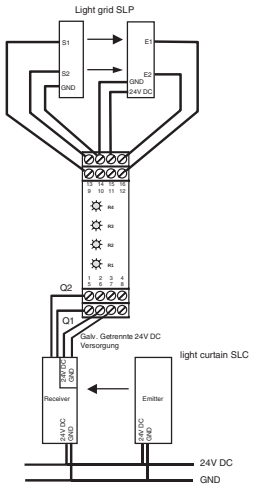


Electrical connection



terminal	Function	Connecting circuit light beam switch/Light grid	Connecting circuit light curtain	Connecting circuit switching pad
1	Receiver input 2	Receiver output 2	OSSD-Output 1.2	
2	+ 24 V DC	24 V Receiver 2	24 V SLC1-Power supply OSSD	
3	0 V DC	0 V Emitter 2 and Receiver 2	0 V SLC1-Power supply OSSD	
4	Emitter output 2	Emitter input 2		switching pad 1.3
5	Receiver input 1	Receiver output 1	OSSD-Output 1.1	switching pad 1.2
6	+ 24 V DC	24 V Receiver 1	24 V SLC1-Power supply OSSD	
7	0 V DC	0 V Emitter 1 and Receiver 1	0 V SLC1-Power supply OSSD	
8	Emitter output 1	Emitter input 1		switching pad 1.1
9	Emitter output 3	Emitter input 3		switching pad 2.1
10	0 V DC	0 V Emitter 3 and Receiver 3	0 V SLC2-Power supply OSSD	
11	+ 24 V DC	24 V Receiver 3	24 V SLC2-Power supply OSSD	
12	Receiver input 3	Receiver output 3	OSSD-Output 2.1	switching pad 2.2
13	Emitter output 4	Emitter input 4		switching pad 2.3
14	0 V DC	0 V Emitter 4 and Receiver 4	0 V SLC2-Power supply OSSD	
15	+ 24 V DC	24 V Receiver 4	24 V SLC2-Power supply OSSD	
16	Receiver input 4	Receiver output 4	OSSD-Output 2.2	switching pad 2.4

Connection example



Notes

The operation of this module is only possible within an interface device Type SB4 SafeBox.

The operating instruction for the SafeBox must be followed.

Function

The 4-channel sensor card module SB4-4XP facilitates the connection of "3-wire" light barriers and light grids in the SLA and SLP families, light curtains with semiconductor switch outputs (SLC family), switch mats based on the 4-conductor principle and safety sensors with contacts in a single or two-channel version.

In addition, it contains the SafeBox microcontroller control system. A SafeBox contains only one of these modules and it must be plugged-in at position 2.

There is a plug-in jumper on the module. If the system contains additional assemblies, then the plug-in jumper must be plugged into the last plug-in position.

"3-wire" light barriers and light grids in the SLA and SLP families can be connected on channels 1 to 4. If the requirement is to connect single-channel safety sensors with contacts, then a "3-wire" light barrier must be connected on the neighbouring channel. The neighbouring channels are channels 1 and 2 or 3 and 4.

On switching on the system the software determines whether a light barrier or a safety sensor with contacts is connected on a channel and then monitors its presence during operation.

Safety sensors with contacts, which are connected to the SafeBox, must operate in accordance with the normally-closed principle. An open contact signifies a "Safe condition".

Light curtains with semiconductor switch outputs and safety sensors with contacts in a two-channel version are monitored for concurrence. The connection takes place on channels 1 and 2 or 3 and 4.

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Features

- **Sensor module**
- **4 sensor channels**
- **Single module for safety through-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)**
- **Micro-Controller controls**
- **Operating mode can be selected by means of DIP switches**
- **Connection of a number of separate trip circuits**

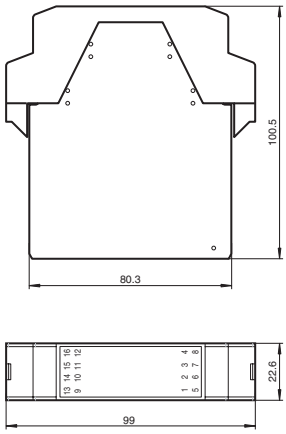
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

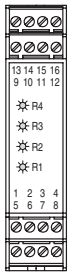
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp channel 1 ... 4
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
Activation current	approx. 7 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions

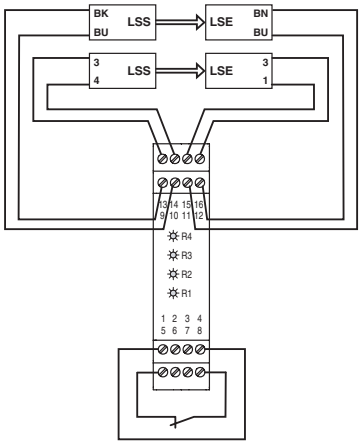


Electrical connection



Terminal	Function	Channel assignment
1	Receiver 2 input	Input
2	Receiver 2 +U	Channel 2
3	Transmitter 2 +U	
4	Transmitter 2 output	Output
5	Receiver 1 input	Input
6	Receiver 1 +U	Channel 1
7	Transmitter 1 +U	
8	Transmitter 1 output	Output
9	Transmitter 3 output	Output
10	Transmitter 3 +U	Channel 3
11	Receiver 3 +U	
12	Receiver 3 input	Input
13	Transmitter 4 output	Output
14	Transmitter 4 +U	Channel 4
15	Receiver 4 +U	
16	Receiver 4 input	Input

Connection example



Connection example
(LSS = transmitter of light barrier;
LSE = receiver of light barrier)

Notes

The operation of this module is only possible within an interface device Type SB4 SafeBox.

The operating instruction for the SafeBox must be followed.

Function

The 4-channel sensor card module SB4-4CG facilitates the connection of light barriers or light grids and safety sensors with contacts in a single or two-channel version. It also contains the microcontroller control system for the SafeBox. Only one of these modules is contained in a SafeBox SB4 and it must be plugged-in at position 2.

There is a plug-in jumper on the module.If the system contains additional assemblies, then this plug-in jumper must be plugged-in to the last plug-in position.

This module enables a number of separate trip circuits to be installed in one SafeBox.

On switching on the system the software determines whether a light barrier or a safety sensor with contacts is connected on a channel and then monitors its presence during operation.

Safety sensors with contacts, which are connected to the SafeBox, must operate in accordance with the normally-closed principle. An open contact signifies a "Safe condition".

Channels 1 and 2 and 3 and 4 can be monitored for concurrence and antivalence. During activated concurrence monitoring 2-channel safety devices are monitored for simultaneous opening and changeover of the signals. The monitoring is carried out over a period of 2 s.

Antivalence monitoring awaits the normally-closed contact on channel 1 or channel 3 and the normally-open contact on channel 2 or 4. If the antivalence monitoring is operated without concurrence monitoring, then an incorrect contact setting leads to switch off and error signal 7 after approx. 60 s.

Date of edition 05/17/2006

Features

- **Sensor module**
- **4 sensor channels**
- **Single module for safety through-beam sensors SLA5(S) and SLA40; for SLP safety light barriers; for SLC safety light curtains; for switch mats and Emergency-Stop switches in categories 2 and 4.**
- **Micro-Controller controls**
- **Operating mode can be selected by means of DIP switches**
- **Connection of a number of separate trip circuits**

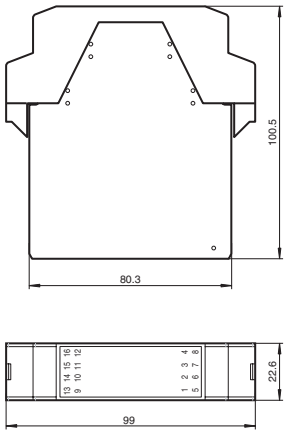
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

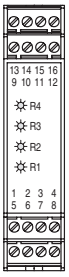
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp channel 1 ... 4
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
actuating voltage	approx. 10 V
Activation current	approx. 4 ... 20 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions

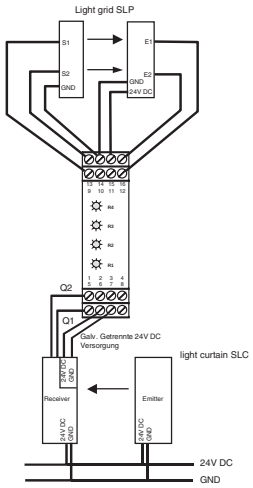


Electrical connection



terminal	Function	Connecting circuit light beam switch/Light grid	Connecting circuit light curtain	Connecting circuit switching pad
1	Receiver input 2	Receiver output 2	OSSD-Output 1.2	
2	+ 24 V DC	24 V Receiver 2	24 V SLC1-Power supply OSSD	
3	0 V DC	0 V Emitter 2 and Receiver 2	0 V SLC1-Power supply OSSD	
4	Emitter output 2	Emitter input 2		switching pad 1.3
5	Receiver input 1	Receiver output 1	OSSD-Output 1.1	switching pad 1.2
6	+ 24 V DC	24 V Receiver 1	24 V SLC1-Power supply OSSD	
7	0 V DC	0 V Emitter 1 and Receiver 1	0 V SLC1-Power supply OSSD	
8	Emitter output 1	Emitter input 1		switching pad 1.1
9	Emitter output 3	Emitter input 3		switching pad 2.1
10	0 V DC	0 V Emitter 3 and Receiver 3	0 V SLC2-Power supply OSSD	
11	+ 24 V DC	24 V Receiver 3	24 V SLC2-Power supply OSSD	
12	Receiver input 3	Receiver output 3	OSSD-Output 2.1	switching pad 2.2
13	Emitter output 4	Emitter input 4		switching pad 2.3
14	0 V DC	0 V Emitter 4 and Receiver 4	0 V SLC2-Power supply OSSD	
15	+ 24 V DC	24 V Receiver 4	24 V SLC2-Power supply OSSD	
16	Receiver input 4	Receiver output 4	OSSD-Output 2.2	switching pad 2.4

Connection example



Notes

The operation of this module is only possible within an interface device Type SB4 SafeBox.

The operating instruction for the SafeBox must be followed.

Function

The 4-channel sensor card module SB4-4XG facilitates the connection of "3-wire" light barriers and light grids in the SLA and SLP families, light curtains with semiconductor switch outputs (SLC family), switch mats based on the 4-conductor principle and safety sensors with contacts in a single or two-channel version.

In addition it contains the microcontroller control system for the SafeBox. A SafeBox contains only one of these modules and it must be plugged-in at position 2.

There is a plug-in jumper on the module. If the system contains additional assemblies, then the plug-in jumper must be plugged into the last plug-in position

This module enables a number of separate trip circuits to be contained in one SafeBox.

3-wire" light barriers and grids in the SLA and SLP families can be connected on channels 1 to 4. If the requirement is to connect single-channel safety sensors with contacts, then a "3-wire" light barrier must be connected on the neighbouring channel. The neighbouring channels are channels 1 and 2 and 3 and 4.

On switching on the system the software determines whether a light barrier or a safety sensor with contacts is connected on a channel and then monitors its presence during operation.

Safety sensors with contacts, which are connected to the SafeBox, must operate in accordance with the normally-closed principle. An open contact signifies a "Safe condition".

Light curtains with semiconductor switch outputs and safety sensors with contacts in a two-channel version are monitored for concurrence. Connection takes place on channels 1 and 2 and 3 and 4.

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Features

- **Sensor module**
- **4 sensor channels**
- **Single module for safety through-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)**
- **Operating mode can be selected by means of DIP switches**

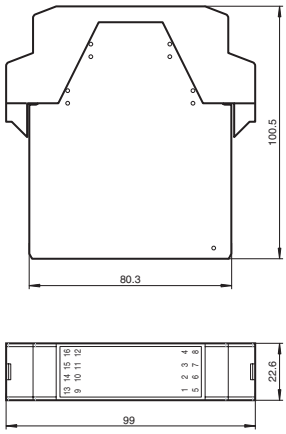
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

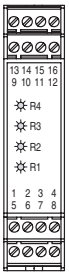
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp channel 1 ... 4
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
Activation current	approx. 7 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions

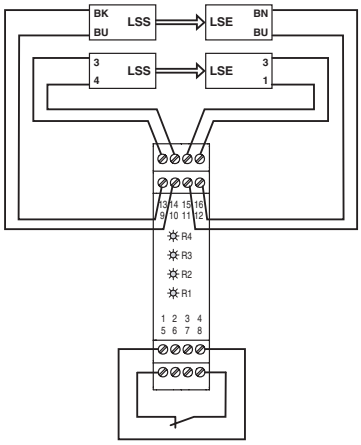


Electrical connection



Terminal	Function	Channel assignment
1	Receiver 2 input	Input
2	Receiver 2 +U	Channel 2
3	Transmitter 2 +U	
4	Transmitter 2 output	Output
5	Receiver 1 input	Input
6	Receiver 1 +U	Channel 1
7	Transmitter 1 +U	
8	Transmitter 1 output	Output
9	Transmitter 3 output	Output
10	Transmitter 3 +U	Channel 3
11	Receiver 3 +U	
12	Receiver 3 input	Input
13	Transmitter 4 output	Output
14	Transmitter 4 +U	Channel 4
15	Receiver 4 +U	
16	Receiver 4 input	Input

Connection example



Connection example
(LSS = transmitter of light barrier;
LSE = receiver of light barrier)

Notes

The operation of this module is possible only within a control unit of the type SafeBox SB4.

The operating instruction of the SafeBox has to be observed.

Function

The 4-channel sensor card module SB4-4C makes it possible to connect light barriers or light grids or contact safety sensors in a one or two-channel version.

When the system is switched on, the software determines whether a light barrier or a contact safety sensor is switched on at a channel and monitors its presence during operation. Safety sensors with switching contacts, which are connected to the Safe-Box, must operate in the switching mode "normally closed". An open contact means "safe status".

The channels 1 and 2 as well as 3 and 4 can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

Antivalence monitoring expects the normally closed contact at channel 1 or 3 and the normally open contact at channel 2 or 4. If antivalence monitoring is performed without simultaneousness monitoring, an incorrect contact position causes a switch-off and the error message 7 after approx. 60 s .

Date of edition 05/17/2006

Features

- **Sensor module**
- **4 sensor channels**
- **Single module for safety through-beam sensors SLA5(S) and SLA40; for SLP safety light barriers; for SLC safety light curtains; for switch mats and Emergency-Stop switches in categories 2 and 4.**
- **Operating mode can be selected by means of DIP switches**

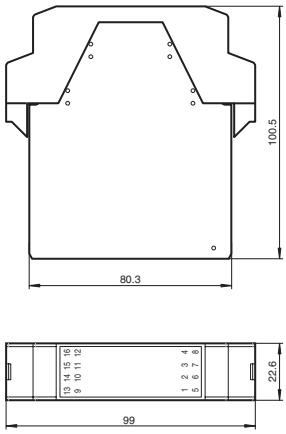
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

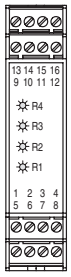
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp channel 1 ... 4
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
actuating voltage	approx. 10 V
Activation current	approx. 4 ... 20 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions

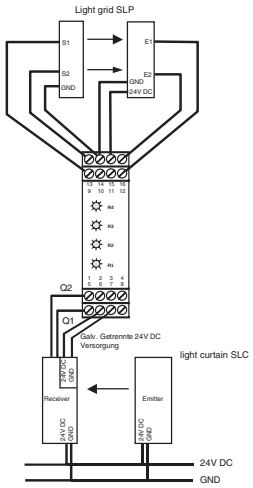


Electrical connection



terminal	Function	Connecting circuit light beam switch/Light grid	Connecting circuit light curtain	Connecting circuit switching pad
1	Receiver input 2	Receiver output 2	OSSD-Output 1.2	
2	+ 24 V DC	24 V Receiver 2	24 V SLC1-Power supply OSSD	
3	0 V DC	0 V Emitter 2 and Receiver 2	0 V SLC1-Power supply OSSD	
4	Emitter output 2	Emitter input 2		switching pad 1.3
5	Receiver input 1	Receiver output 1	OSSD-Output 1.1	switching pad 1.2
6	+ 24 V DC	24 V Receiver 1	24 V SLC1-Power supply OSSD	
7	0 V DC	0 V Emitter 1 and Receiver 1	0 V SLC1-Power supply OSSD	
8	Emitter output 1	Emitter input 1		switching pad 1.1
9	Emitter output 3	Emitter input 3		switching pad 2.1
10	0 V DC	0 V Emitter 3 and Receiver 3	0 V SLC2-Power supply OSSD	
11	+ 24 V DC	24 V Receiver 3	24 V SLC2-Power supply OSSD	
12	Receiver input 3	Receiver output 3	OSSD-Output 2.1	switching pad 2.2
13	Emitter output 4	Emitter input 4		switching pad 2.3
14	0 V DC	0 V Emitter 4 and Receiver 4	0 V SLC2-Power supply OSSD	
15	+ 24 V DC	24 V Receiver 4	24 V SLC2-Power supply OSSD	
16	Receiver input 4	Receiver output 4	OSSD-Output 2.2	switching pad 2.4

Connection example



Notes

The operation of this module is only possible within an interface device Type SB4 SafeBox.

The operating instruction for the SafeBox must be followed.

Function

The 4-channel sensor card module SB4-4X facilitates the connection of "3-wire" light barriers and light grids in the SLA and SLP families, light curtains with semiconductor switch outputs (SLC family), switch mats based on the 4-conductor principle and safety sensors with contacts in a single or two-channel version.

"3-wire" light barriers and grids in the SLA and SLP families can be connected on channels 1 to 4. If the requirement is to connect single-channel safety sensors with contacts, then a "3-wire" light barrier must be connected on the neighbouring channel. The neighbouring channels are channels 1 and 2 or 3 and 4.

On switching on the system the software determines whether a light barrier or a safety sensor with contacts is connected on a channel and then monitors its presence during operation.

Safety sensors with contacts, which are connected to the SafeBox, must operate in accordance with the normally-closed principle. An open contact signifies a "Safe condition".

Light curtains with semiconductor switch outputs and safety sensors with contacts in a two-channel version are monitored for concurrence. Connection takes place on channels 1 and 2 or 3 and 4.

Switch mats based on the 4-conductor principle are connected on channels 1 and 2 or 3 and 4. The connection position of the switch mats is configured by means of the DIP switches.

Date of edition 05/17/2006

Features

- **Sensor module**
- **6 sensor channels**
- **Single module for safety through-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)**
- **Operating mode can be selected by means of DIP switches**

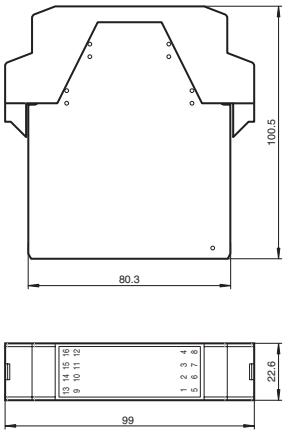
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

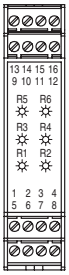
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (6x): indicator lamp channel 1 ... 6
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 6
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
Activation current	approx. 7 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions



Electrical connection



Terminal	Function
1	Transmitter 1 output
2	Transmitter 2 output
3	Transmitter 3 output
4	Transmitter 1...3 +U
5	Transmitter 4 output
6	Transmitter 5 output
7	Transmitter 6 output
8	Transmitter 4...6 +U
9	Receiver 1 input
10	Receiver 2 input
11	Receiver 3 input
12	Receiver 1...3 +U
13	Receiver 4 input
14	Receiver 5 input
15	Receiver 6 input
16	Receiver 4...6 +U

Notes

The operation of this module is possible only within a control unit of the type SafeBox SB4.

The operating instruction of the SafeBox has to be observed.

Function

The 6-channel sensor card module SB4-6C makes it possible to connect light barriers or light grids or contact safety sensors in a one or two-channel version.

When the system is switched on, the software determines whether a light barrier or a contact safety sensor is switched on at a channel and monitors its presence during operation. Safety sensors with switching contacts, which are connected to the SafeBox, must operate in the switching mode "normally closed". An open contact means "safe status".

The channels 1 and 2, 3 and 4 as well as 5 and 6 can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

Antivalence monitoring expects the normally closed contact at channel 1, 3 or 5 and the normally open contact at channel 2, 4 or 6. If antivalence monitoring is performed without simultaneousness monitoring, an incorrect contact position causes a switch-off and the error message 7 after approx. 60 s .

Date of edition 05/17/2006

Features

- **Muting module**
- **4 sensor channels**
- **Double muting**
- **Emergency muting for the correction of the material jam**
- **Operating mode can be selected by means of DIP switches**

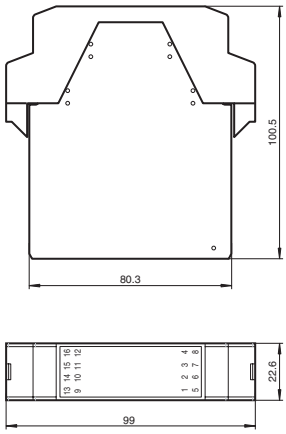
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

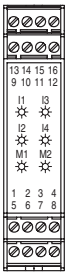
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp muting sensor 1 ... 4 LED white (2x): status muting lamp
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4 separate power supply for muting lamp
Input	
Activation current	approx. 10 mA
Activation time	Override-Input 0.4 ... 1.2 s
Output	
Switching voltage	24 V
Switching current	7.5 mA ... 500 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions

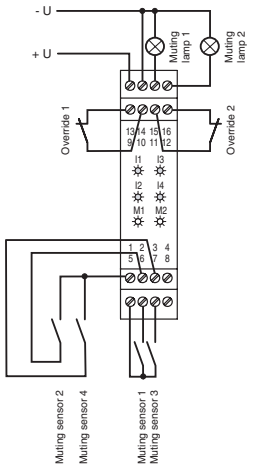


Electrical connection



Terminal	Function
1	24 V sensor supply
2	Sensor 2 IN
3	Sensor 4 IN
4	0 V sensor supply
5	24 V sensor supply
6	Sensor 1 IN
7	Sensor 3 IN
8	0 V sensor supply
9	Input override 1
10	24 V override 1
11	24 V override 2
12	Input override 2
13	+24 V DC supply voltage for muting lamps
14	0 V DC supply voltage for muting lamps
15	Output muting lamp 1
16	Output muting lamp 2

Connection example



Notes

This module can only be operated within an evaluation device of the SafeBox SB4 type.

The SafeBox instruction manual should be observed.

Function

The muting module realises the muting function for the sensor channels of the four to six channel sensor card module immediately to the right of the module.

The user must make sure to only connect sensors that can be muted to the sensor card that is assigned to the muting module. These are, for example, light barriers or light grids.

Muting sensors

Muting sensors are supposed to detect the muting objects. If an object is detected, the output of the muting sensor switches through its supply voltage. For this purpose, sensors with relay or pnp output are suitable. In a de-energised state, the output of the muting sensor must not be active. The sensor output should be capable of reliably switching a load current of 8 mA at 20 V. Muting sensors with a current consumption of a maximum of 30 mA can be supplied directly from the muting module. Sensors with a higher current consumption require an external power supply. Muting sensors must be selected such that they also work at a supply voltage of at least 12 V.

The cables to the muting sensors must be laid in such a way that no short circuits are possible between the muting sensors.

As muting sensors, the following sensors can be used, for example:

· Retro-reflective sensors dark on or light on (in this case reflector at the object),
· Photoelectric sensors (light on),
· Inductive sensors, mechanical switches.

Date of edition 05/17/2006

Features

- **Muting module**
- **4 sensor channels**
- **Double muting**
- **Continuous muting with no time limit**
- **Emergency muting for the correction of the material jam**
- **Operating mode can be selected by means of DIP switches**

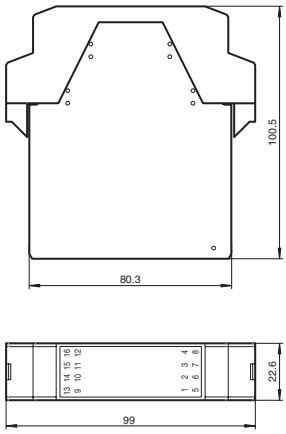
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

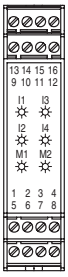
General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED yellow (4x): indicator lamp muting sensor 1 ... 4 LED white (2x): status muting lamp
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4 separate power supply for muting lamp
Input	
Activation current	approx. 10 mA
Activation time	Override-Input 0.4 ... 1.2 s
Output	
Switching voltage	24 V
Switching current	7.5 mA ... 500 mA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

Date of edition 05/17/2006

Dimensions

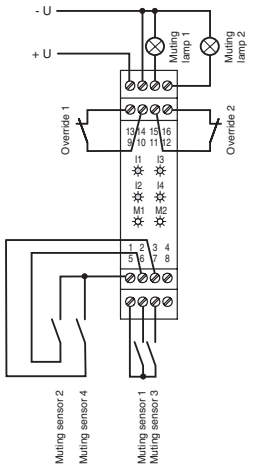


Electrical connection



Terminal	Function
1	24 V sensor supply
2	Sensor 2 IN
3	Sensor 4 IN
4	0 V sensor supply
5	24 V sensor supply
6	Sensor 1 IN
7	Sensor 3 IN
8	0 V sensor supply
9	Input override 1
10	24 V override 1
11	24 V override 2
12	Input override 2
13	+24 V DC supply voltage for muting lamps
14	0 V DC supply voltage for muting lamps
15	Output muting lamp 1
16	Output muting lamp 2

Connection example



Notes

This module can only be operated within an evaluation device of the SafeBox SB4 type.

The SafeBox instruction manual should be observed.

Function

The muting module realises the muting function for the sensor channels of the four to six channel sensor card module immediately to the right of the module.

The user must make sure to only connect sensors that can be muted to the sensor card that is assigned to the muting module. These are, for example, light barriers or light grids.

This muting module does not monitor the activation time of the muting sensors.

The following must be observed for the application:

The basis of the assessment of the safety category is that every muting sensor is activated at least once per day (the activation is triggered when the muting procedure is not interrupted).

A detailed description of the muting operating modes can be found in the instruction manual.

Muting sensors

Muting sensors are supposed to detect the muting objects. If an object is detected, the output of the muting sensor switches through its supply voltage. For this purpose, sensors with relay or pnp output are suitable. In a de-energised state, the output of the muting sensor must not be active. The sensor output should be capable of reliably switching a load current of 8 mA at 20 V. Muting sensors with a current consumption of a maximum of 30 mA can be supplied directly from the muting module. Sensors with a higher current consumption require an external power supply. Muting sensors must be selected such that they also work at a supply voltage of at least 12 V.

Date of edition 05/17/2006

Features

- **OSSD-R/E-stop-module**
- **Safety outputs OSSD, external status displays OSSD**
- **2 sensor channels**
- **Operating mode can be selected by means of DIP switches**
- **Start/Restart disable**
- **Relay monitor**
- **Stop function Cat.0 or Cat.2**
- **Time function**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

General specifications	
Approvals	TÜV
Tests	IEC/EN 61496 IEC 61508
Marking	CE
Safety category according to IEC/EN 61496	4
Indicators/operating means	
Function display	LED red: OSSD OFF LED green: OSSD ON Yellow LED: start readiness LED yellow (2x): indicator lamp channel 1 ... 2
Operating elements	DIP-switch
Electrical specifications	
Operating voltage	Power supply via control unit SB4
Input	
Activation current	approx. 7 mA
Test input	Reset-input for system test
Output	
Safety output	2 relay outputs, compelled connection NO-contact
Signal output	Output for displaying the switching state of the OSSDs
Switching voltage	10 V ... 250 V AC/DC
Switching current	min. 10 mA , max. 6 A AC/DC
Switch power	max. DC 24 VA , AC 230 VA
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

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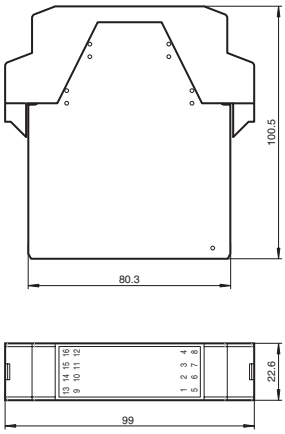
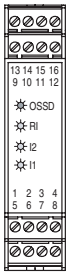
Dimensions

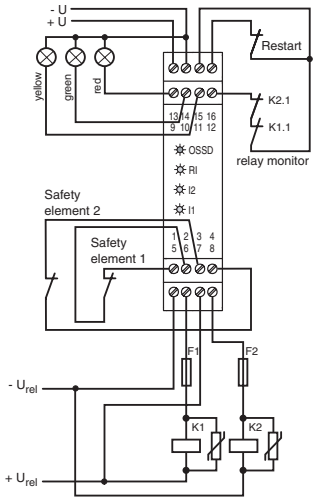


Electrical connection



Terminal	Function
1	Sensor 1 Out
2	Sensor 1 In
3	Sensor 2 Out
4	Sensor 2 In
5 - 6	OSSD1; potential free relay contact; normally open contact
7 - 8	OSSD2; potential free relay contact; normally open contact
9	Signal output OSSD off
10	Signal output OSSD on
11	Signal output restart
12	Relay monitor (RM)
13	+24 V DC supply voltage
14	0 V DC supply voltage
15	24 V DC connection restart and RM
16	Restart input (RI); normally closed contact

Connection example



Notes

This module can only be operated within an evaluation device of the SafeBox SB4 type.

The SafeBox instruction manual should be observed.

Function

The OSSD-R/E stop module contains 2 OSSDs, the relay monitor, the restart connection and 2 connections for contact safety signals, (e.g. emergency off button). From position 3 on, this module may exist several times in the SafeBox and may perform different functions depending on the switch position.

The OSSDs are designed as potential free connection NO contacts. The module can be operated with or without restart interlock. Also, monitoring of the externally connected switching elements can be activated (relay monitor). The OSSD On or Off statuses are indicated via a short-circuit-proof pnp signal output. The restart output is used for indication of the start readiness status. In the case of an error, this output oscillates with 1 Hz.

The module can work in stop function cat. 0 or cat.1.

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SafeBox

Features

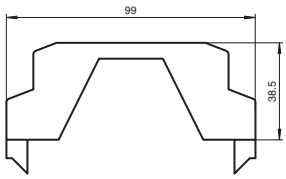
- **Cover for unused plug-in stations of the Safebox**

For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Mechanical specifications	
Material	Polyamide (PA)
Dimensions	99 mm x 38,5 mm x 22,6 mm

Dimensions



Notes

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SafeBox

Features

- **Housing of the SafeBox with backplane for completion**

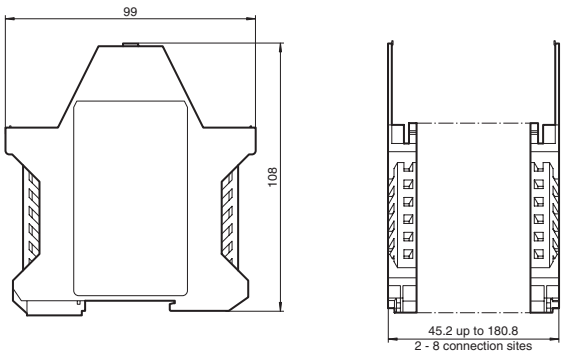
For suitable cable sockets, mounting aids, redirection mirrors and more refer to chapter „Accessories.

Technical data

Mechanical specifications

Material	Polyamide (PA)

Dimensions



Notes

Model number

Number of plug-in stations	Description	Housing width (mm)
2	SB4 Housing 2	45.2
3	SB4 Housing 3	67.8
4	SB4 Housing 4	90.4
5	SB4 Housing 5	113.0
6	SB4 Housing 6	135.6
7	SB4 Housing 7	158.2
8	SB4 Housing 8	180.8

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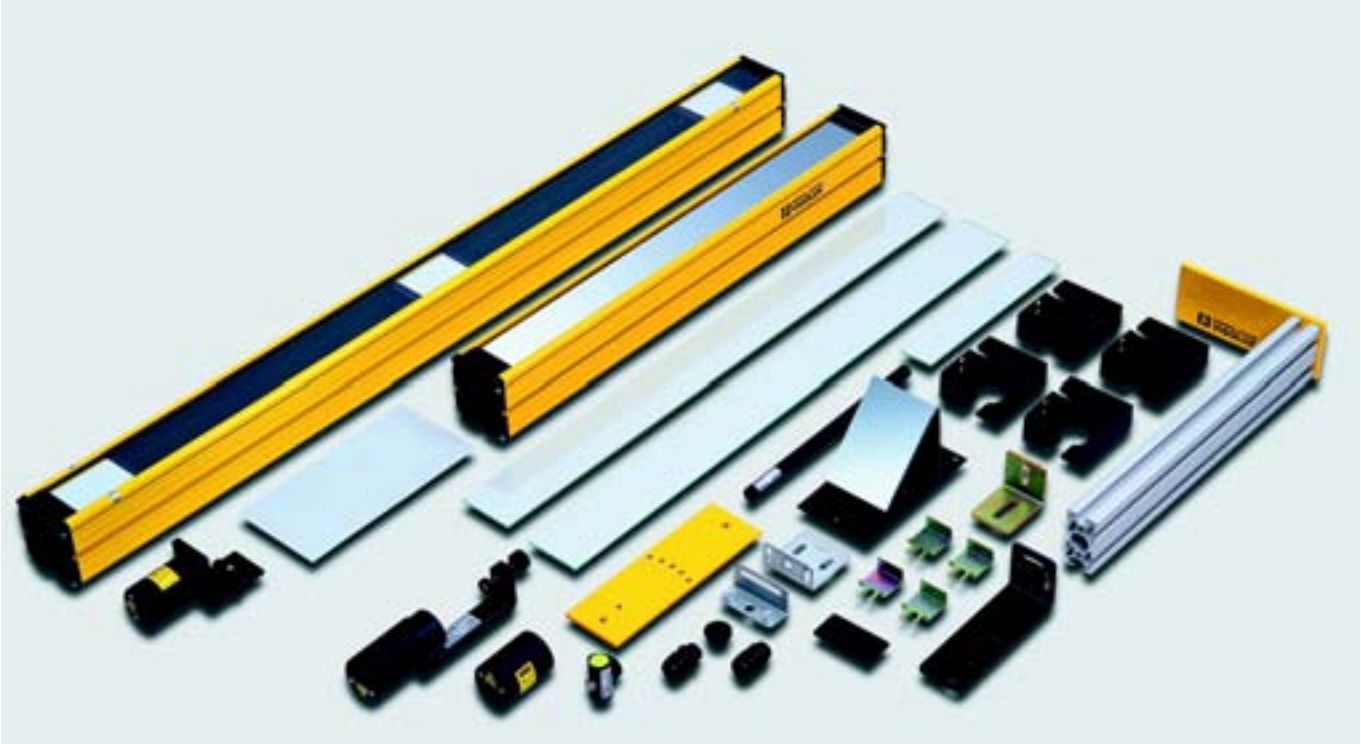

Content Page

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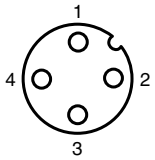
Pre-manufactured connector M12 for safety light barriers

Design	Model number	Design	Connector type	Number of pins	Strand size (mm^2)	Fig.
M12	V1-G	Socket, straight	Screw terminal, PG7 screw	4-pin	max. 2.5	1
	V1-W	Socket, angled		4-pin	max. 2.5	2
	V1S-G	Connector, straight		4-pin	max. 2.5	-
	V1S-W	Connector, angled		4-pin	max. 2.5	-
	V1-G-Q2	Socket, straight	Insulation piercing	4-pin	0.34 ... 0.75	-
	V1S-G-Q2	Connector, straight	Insulation piercing	4-pin	0.34 ... 0.75	-
	V15-W-PG9	Socket, straight	Screw terminal	5-pin	max. 0.75	-

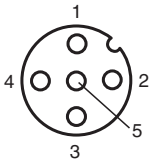
Fig. 1

Fig. 2

Plug connector -V1
(Circular connection M12)



Plug connector -V15
(Circular connection M12)



Special accessories for safety light grid SLPC/SLPCM

Design	Model number	Design	Connector type	Number of pins	Strand size (mm^2)
M12	V1S-WM-VIS	Connector, angled	Mains plug without cablel	4-pin	max. 2.5
	V15S-WM-VIS	Connector, angled	Mains plug without cablel	5-pin	max. 2.5
	V1S-WM-2M-PUR-VIS	Connector, angled	Right angle plug with cable	4-pin	max. 2.5
	V15S-WM-2M-PUR-VIS	Connector, angled	Right angled plug with cable	5-pin	0.34 ... 0.75

Special accessories for safety light curtain SLC/SLP

Design	Model number	Design	Connector type	Number of pins	Strand size (mm^2)
M12	V17.....	Connector, straight	Insulation piercing	8-pin	max. 2.5
M18	V16	Socket, straight	Insulation piercing	6-pin	max. 2.5

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Technical data for connectors with sprayed cables

Male and female connectors

Number of pins	4 or 5 pins
Locking	Screw lock
Self-locking	via O-ring in cap nut
Grip color	green
Grip material	PUR
Contact material	CuSn/Au
Contact surface material	Au
Cap nut material	CuSn/Ni
Gasket material	NBR
DIN 40050 protection class	IP68 when screwed down
Max. operating voltage	60 V DC or 250 V AC (for V13-... types)
Max. operating current	4A
Volume resistance	< 5 mΩ
Insulation resistance	as specified in VDE 0295
Test voltage	1500 $V_{eff.}$ AC, 50 Hz

Cable

Cable structure	fine wire, flexible
Wire size	Cables for M12 connection: 0.34 mm2
Sleeve colour	black
Temperature range for PVC cables	moving: -5 °C to +70 °C non-moving: -30 °C to +80 °C
Temperature range for PUR cables [1)]	moving: -5 °C to +70 °C non-moving: -30 °C to +100 °C
Minimum permissible bending radius	> 10 x cable diameter
Sheath diameter	∅4.8 mm for 4 pin design ∅5.2 mm for 5 pin design
Strand insulation material	PVC
Wire colours as specified in VDE 293	4-pin BN, BU, BK, WH 5-pin BN, BU, BK, WH, GR

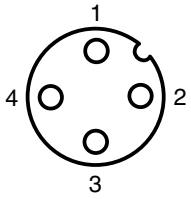
[1)] Please note reduced mechanical values for PUR cables at temperatures over +80 °C.

Strand colours and plug layout (EN 60947-5-2)

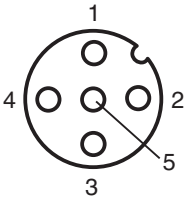
Colour allocation of pre-manifactured cable sockets V1, V15:

Pin	Colour	Abbreviation
1	Brown	BN
2	White	WH
3	Blue	BU
4	Black	BK
5	Grey	GR

Plug connector -V1
(Circular connection M12)



Plug connector -V15
(Circular connection M12)



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Plugs in M12 style for DC sensors

Suitable for 2-, 3-, and 4-wire DC sensors						
Cable sheath	**Length**	**Number of strands**	**Ø (mm^2)**	**Design straight**	**Design angled**	**Design angled with 2 LEDs**
PVC, black	2 m	4	0.34	**V1-G-2M-PVC**	**V1-W-2M-PVC**	
	5 m	4	0.34	**V1-G-5M-PVC**	**V1-W-5M-PVC**	
	10 m	4	0.34	**V1-G-10M-PVC**	**V1-W-10M-PVC**	
PUR, black	2 m	4	0.34	**V1-G-2M-PUR**	**V1-W-2M-PUR**	**V1-W-A2-2M-PUR**
	5 m	4	0.34	**V1-G-5M-PUR**	**V1-W-5M-PUR**	**V1-W-A2-5M-PUR** **V1-A0-5M-PUR** **V1-W-E2/E3-5M-PUR**
	10 m	4	0.34	**V1-G-10M-PUR**	**V1-W-10M-PUR**	**V1-W-A2-10M-PUR**
PUR, black	2 m	3	0.34			**V1-W-E2-2M-PUR**
	5 m	3	0.34			**V1-W-E2-5M-PUR** **V1-W-E-5M-PUR**
	10 m	3	0.34			**V1-W-E2-10M-PUR**
PVC, black	2 m	5	0.34	**V15-G-2M-PVC**	**V15-W-2M-PVC**	
	5 m	5	0.34	**V15-G-5M-PVC**	**V15-W-5M-PVC**	
	10 m	5	0.34	**V15-G-10M-PVC**	**V15-W-10M-PVC**	
PUR, black	2 m	5	0.25		**V15-W-2M-PUR**	
	5 m	5	0.25		**V15-W-5M-PUR**	

For pin layout see page Seite 171

M12 connection cable in PUR 4 x 0.34 mm², sleeve colour black

Suitable for all 2-, 3-, and 4-wire DC sensors				
		Length	**Socket, straight**	**Socket, angled**
	Connector, straight	1 m	**V1-G-1M-PUR-V1-G**	**V1-W-1M-PUR-V1-G**
		2 m	**V1-G-2M-PUR-V1-G**	**V1-W-2M-PUR-V1-G**
		5 m	**V1-G-5M-PUR-V1-G**	**V1-W-5M-PUR-V1-G**
	Connector, angled	1 m	-	**V1-W-1M-PUR-V1-W**

For pin layout see page 171

These connector cables can be used together with 2-, 3-, and 4-wire DC proximity switches.

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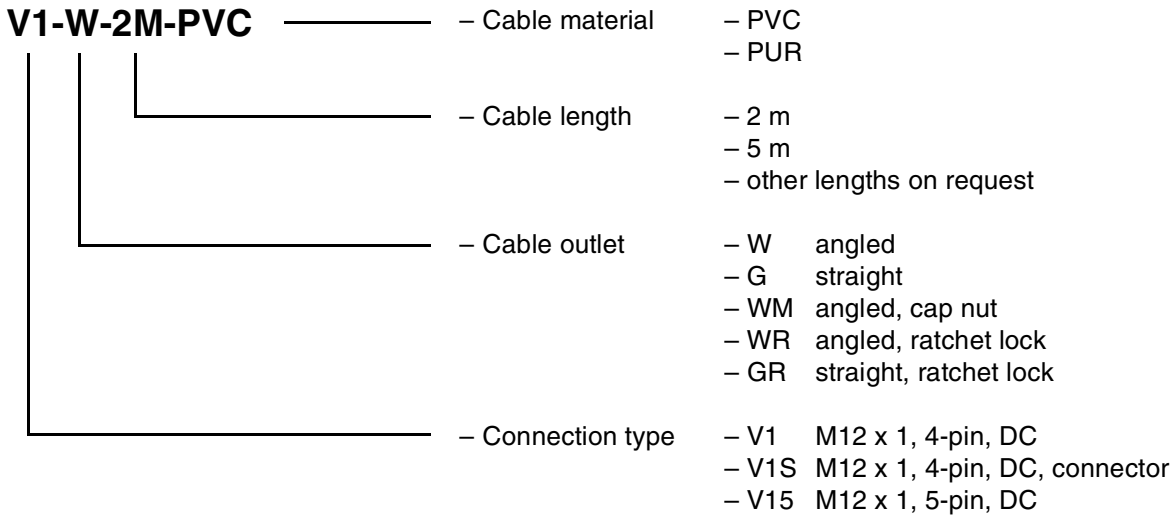
Model key for cable sockets



Connection cable type key

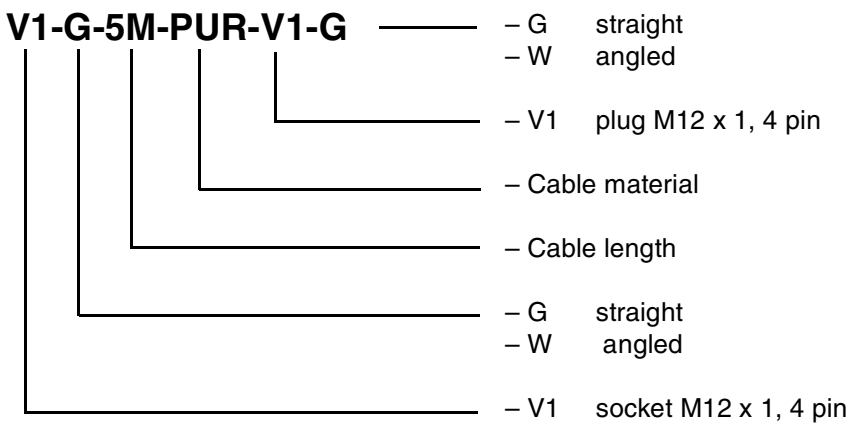


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Illustration	Description	Order number:	Series									
			SL	SLA	SL12 SLA12	SL29 SLA29	SLA40	SLP	SLPC	SLPCM	SLC	SLC-2 SLC-3 SLC-4
	Mirror 1 beam	SLA-1-M	●	●	●	●	●					
	Mirror multiple beam	SLP-2-M SLP-3-M SLP-4-M						●	●	●		
	Mirror multiple beam	SLC-350-M SLC-500-M SLC-800-M SLC-1000-M SLC-1300-M SLC-1600-M									●	●
	Assembly aid	OMH-21				●						
	Assembly aid	OMH-22				●						
	Assembly aid	OMH-40					●					
	Assembly aid	OMH-05				●						
	Assembly aid	OMH-06			●							
	Assembly aid	OMH-07				●						
	Assembly aid	OMH-MLV12-HWG			●							
	Assembly aid	OMH-MLV12-HWK			●							
	Assembly aid	OMH-MLV11-K				●						
	Assembly aid	OMH-K01			●							
	Assembly aid	OMH-K02			●							
	Mounting set	MS SLC									●	●
	Mounting set	MS SLP						●	●	●		

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Illustration	Description	Order number:	Series									
			SL	SLA	SL12 SLA12	SL29 SLA29	SLA40	SLP	SLPC	SLPCM	SLC	SLC-2 SLC-3 SLC-4
	Protective glass panes SLC	PG SLC-150 PG SLC-300 . . . . . PG SLC-1650 PG SLC-1800									●	●
	Holder for protective glass panes	PG Holder SLC									●	●
	Protective glass panes SLP	PG SLP-2 PG SLP-3 PG SLP-4						●				
	Holder for protective glass panes	PG Holder SLP						●				
	Profile alignment aid	PA SLP/SLC						●	●	●	●	●
	Laser alignment aid	BA SLA28				●						
	Laser alignment aid	BA SLP						●	●	●		
	Laser alignment aid	BA SLC									●	●
	Test rods	TR SLC14 TR SLC30 TR SLC60									●	
	Screw connection	TC SLC(M16)									●	●
	Cable ties	Binder SLPC/M						●	●	●	●	●
	Floor stand	UC SLP/SLC UC SLP/SLC 1530 mm						●	●	●	●	●
	Start-up protection	Damping UC SLP/SLC						●	●	●	●	●
	Housing	Enclosure UC SLP/SLC						●	●	●	●	●
	Muting mounting set	MS SLP/SLA28						●				
	Muting mounting set	MS SLPCM				●				●		

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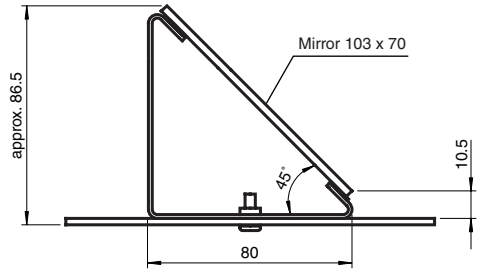
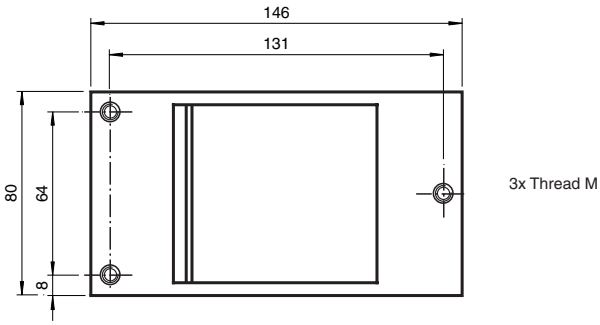
Mirror 1 beam for SLA SLA-1-M

Redirection mirror for one beam redirection of the protection beam of safety light barriers SL and SLA.

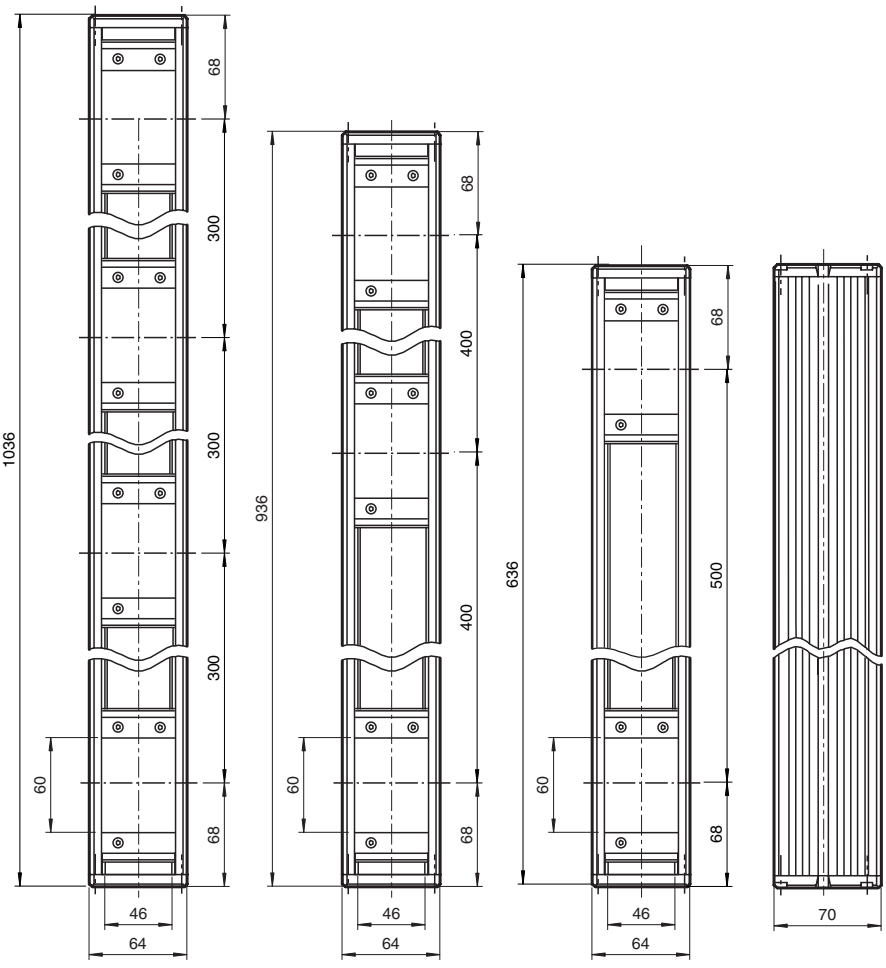


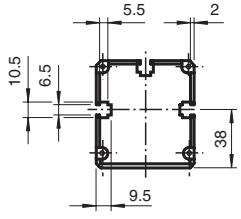


Mirror for SLP/SLC

Redirection mirror for multi-directional protection of danger areas using our safety light grids SLP, SLPC and SLPCM

Model number	Number of beams
SLP-2-M	2
SLP-3-M	3
SLP-4-M	4





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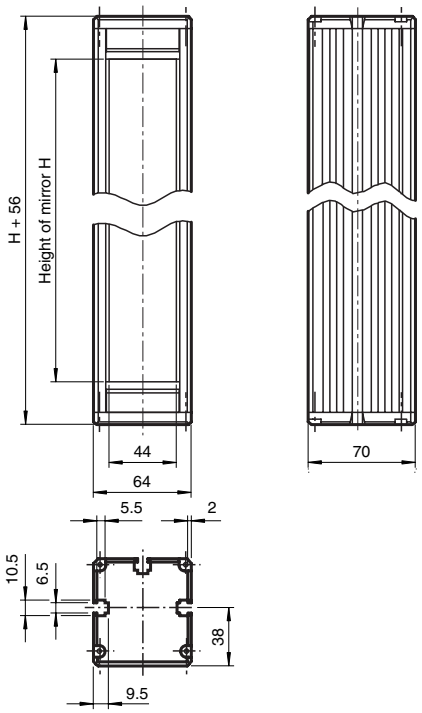
Mirror for SLC / SLP

Redirection mirror for multi-directional protection of danger areas using our safety light curtains SLC and safety light grids SLP-2, SLP-3 and SLP-4.



Order number	Mirror height H	Housing length L
SLC-350-M	350 mm	406 mm
SLC-500-M	500 mm	556 mm
SLC-800-M	800 mm	856 mm
SLC-1000-M	1000 mm	1056 mm
SLC-1300-M	1300 mm	1356 mm
SLC-1600-M	1600 mm	1656 mm

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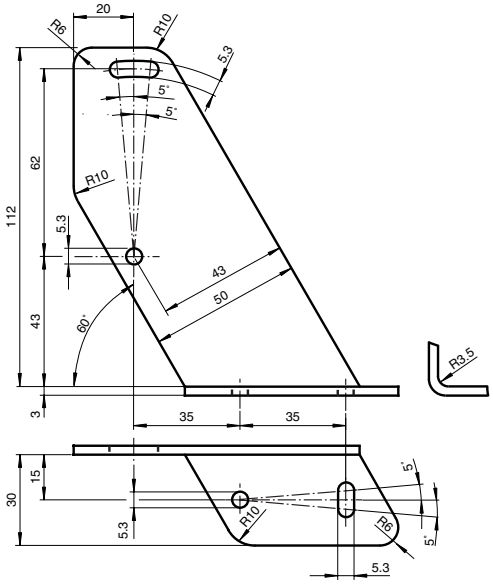
Installation aid OMH-21

Suitable for safety light barriers

- SLA28
- SL29, SLA29

Material: Anodised aluminium

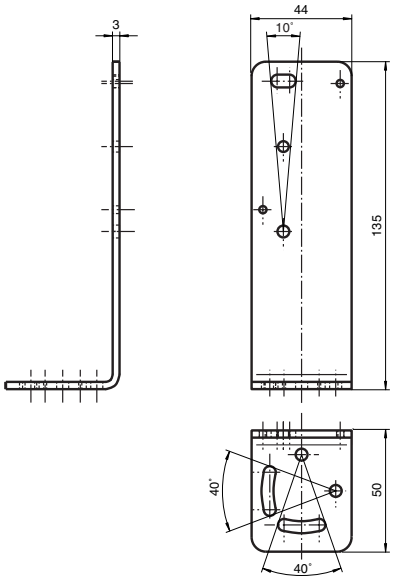


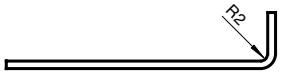
Installation aid OMH-22

Mounting angle for safety light barriers of series SLA28 / SL29 / SLA29

mainly for installation on aluminium profile (see muting set MS SLPCM on page 186).

Material: Aluminium, black anodised

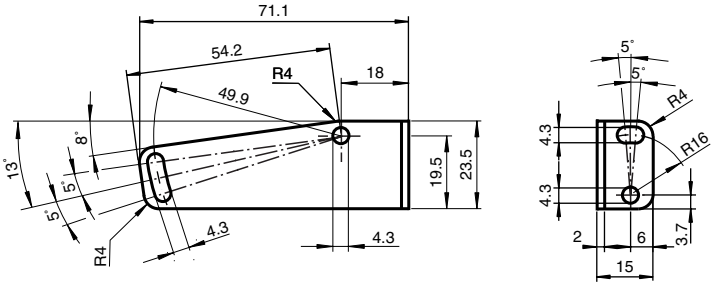




Installation aid OMH-40

Mounting angle for safety light barriers of series SLA40.

Material: Nickel-plated sheet metal



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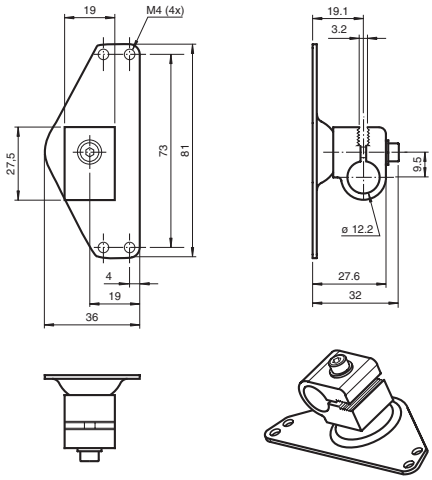
Installation aid OMH-05

Assembly aid for safety light barriers of series SLA28, SL29 and SLA29

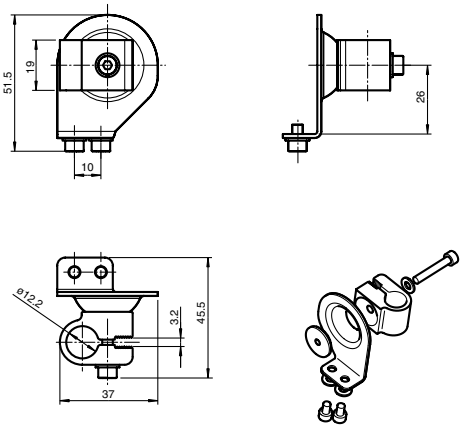
Material:
Top: Sheet metal
Clamping block: Aluminium



Installation aid OMH-06

Assembly aid for safety light barriers of series SLA12 and SL12

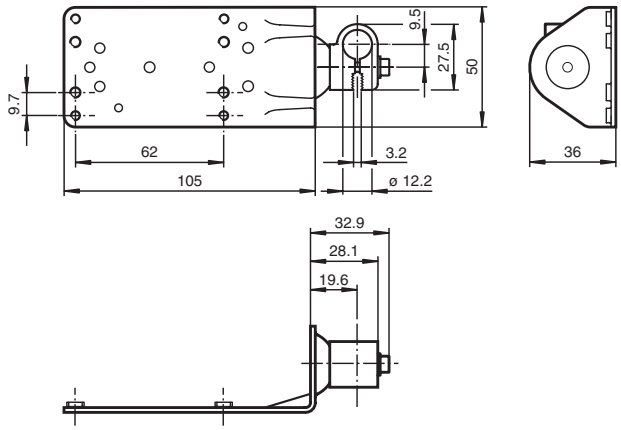
Material:
Top: Sheet metal
Clamping block: Aluminium



Installation aid OMH-07

Assembly aid for safety light barriers

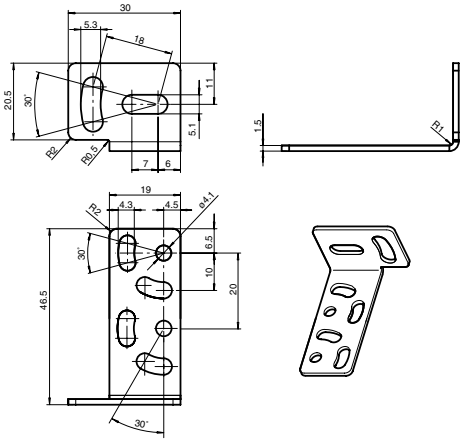
Material:
Top: Sheet metal
Clamping block: Aluminium



Assembly aid OMH-MLV12-HWG

Mounting angle, large, for safety light barriers of series SL12 and SLA12

Material: Nickel-plated sheet metal



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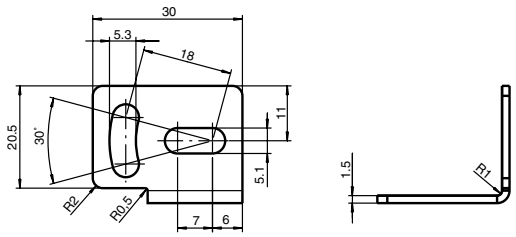
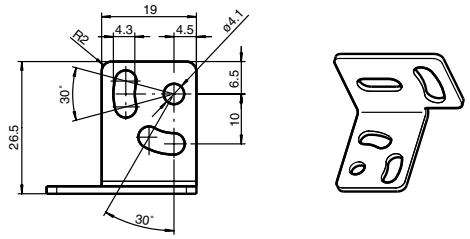
Assembly aid OMH-MLV12-HWK

Mounting angle, small, for safety light barriers of series SL12 and SLA12

Material: Nickel-plated sheet metal

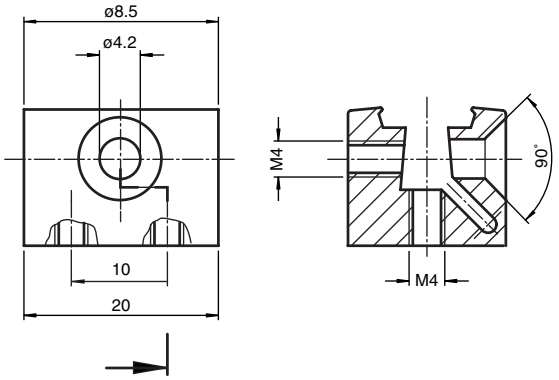




OMH-MLV11-K

Clamping body for safety light barriers of series SLA28, SL29 and SLA29

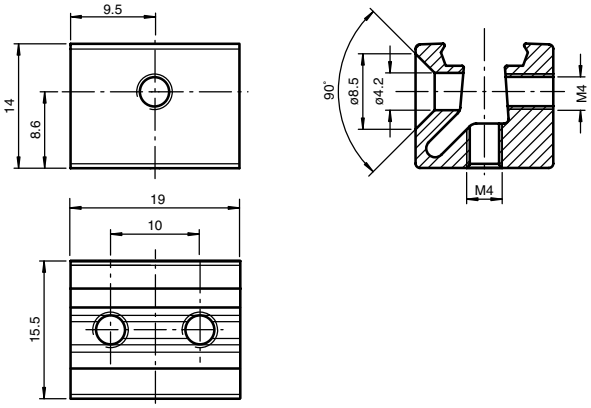
Material: Aluminium



Installation aid OMH-K01

Clamping body for safety light barriers of series SL12 and SLA12

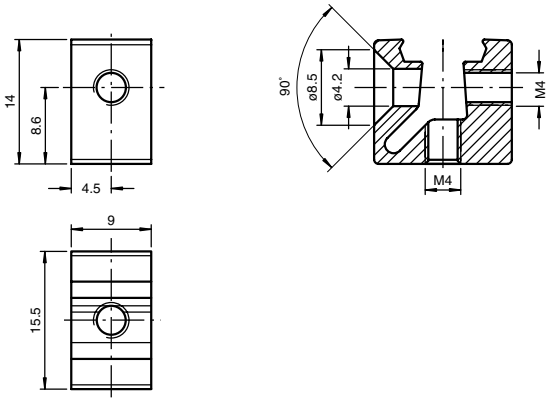
Material: Anodised aluminium



Installation aid OMH-K02

Clamping body for safety light barriers of series SL12 and SLA12

Material: Anodised aluminium



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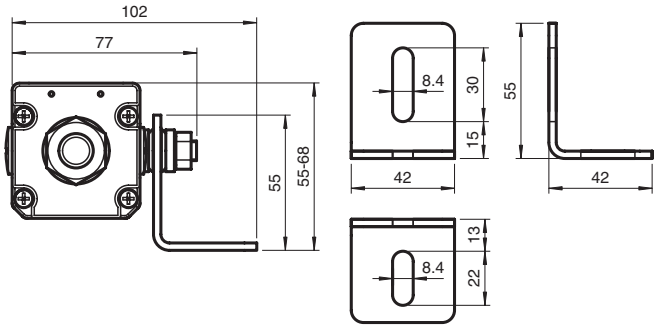
Mounting set MS SLC

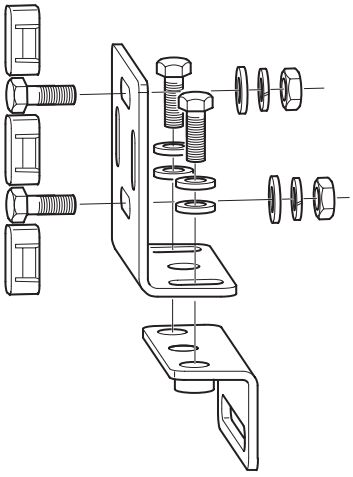
Mounting angle for safety light curtains SLC and safety light grids SLC.

Material: Nickel-plated sheet metal

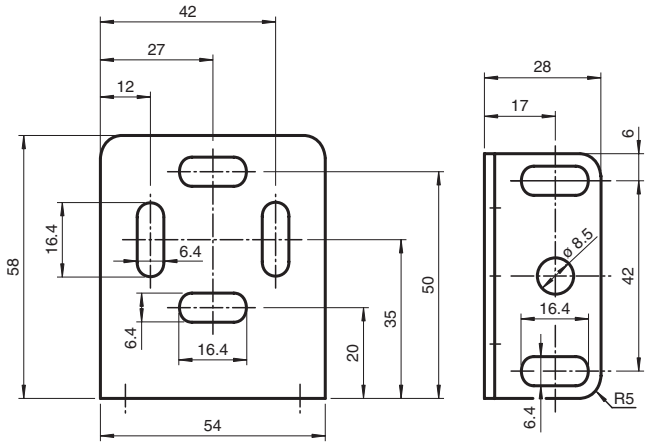


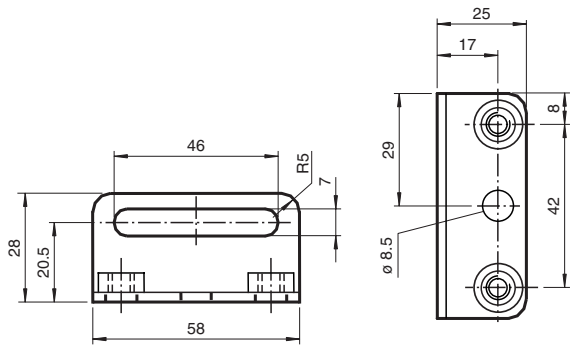
Mounting set MS SLP

Mounting kit for safety light grids SLP, SLPC and SLPCM and mirrors for SLP and mirrors for SLC.



Material: Nickel-plated sheet metal





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Protective glass panes for SLC

Mineral glass panes for the protection of the light emission area of safety light curtains (Example: Use near welding robots to protect against sparks).

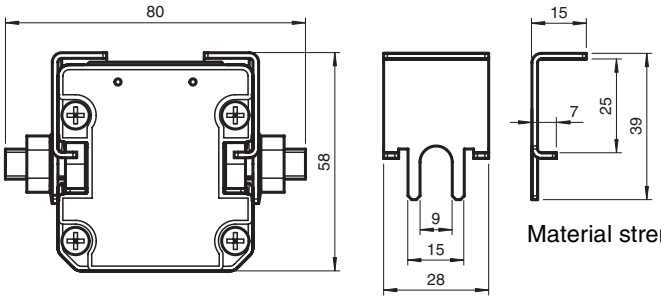
One packing unit contains 2 glass panes (one each for sender and receiver). Above 1050 mm protection field height the protective glass panes are divided.

For the attachment of the protective glass panes protective glass holder SLC is required.

Safety light curtain	Order number of corresponding protective glass pane	Recommended number of protective glass holders SLC (both sender and receiver)
SLCxx-150...	PG SLC-150	2*
SLCxx-300...	PG SLC-300	2*
SLCxx-450...	PG SLC-450	2*
SLCxx-600...	PG SLC-600	3*
SLCxx-750...	PG SLC-750	3*
SLCxx-900...	PG SLC-900	3*
SLCxx-1050...	PG SLC-1050	5*
SLCxx-1200...	PG SLC-1200	5*
SLCxx-1350...	PG SLC-1350	5*
SLCxx-1500...	PG SLC-1500	5*
SLCxx-1650...	PG SLC-1650	6*
SLCxx-1800...	PG SLC-1800	6*

Holder for protective glass panes PG Holder SLC

Support angle for installing the protective glass panes at our safety light curtains SLC.



Material strength 1.5

The required number of packing units can be found in the table above.
Material: Nickel-plated sheet metal

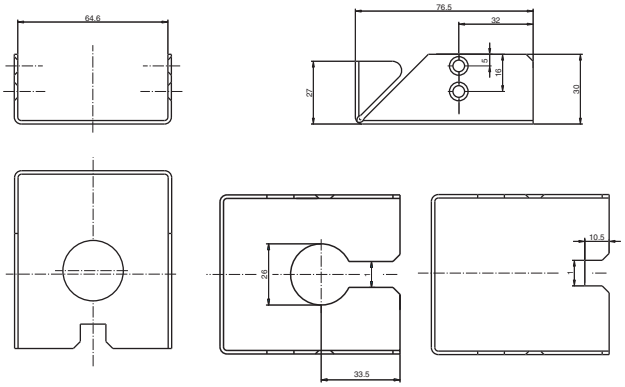
Protective glass panes for SLP

Mineral glass panes for the protection of the light emission area of safety light grids SLP
(Example: Use near welding robots to protect against sparks).
One packing unit contains 2 glass panes (one each for sender and receiver).
For the attachment of the protective glass panes protective glass holder SLP is required.

Safety light grids	Order number of corresponding protective glass
SLPxx-2	PG SLP-2
SLPxx-3...	PG SLP-3
SLPxx-4...	PG-SLP-4

Holder for protective glass panes PG Holder SLP

Support angle for installing the protective glass panes at our safety light grids SLP.



Material: Nickel-plated sheet metal

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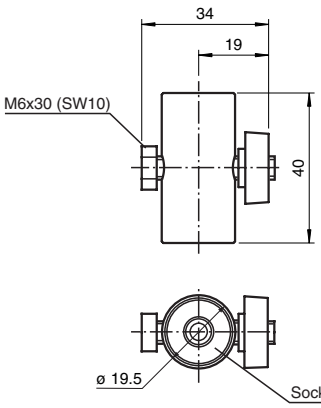
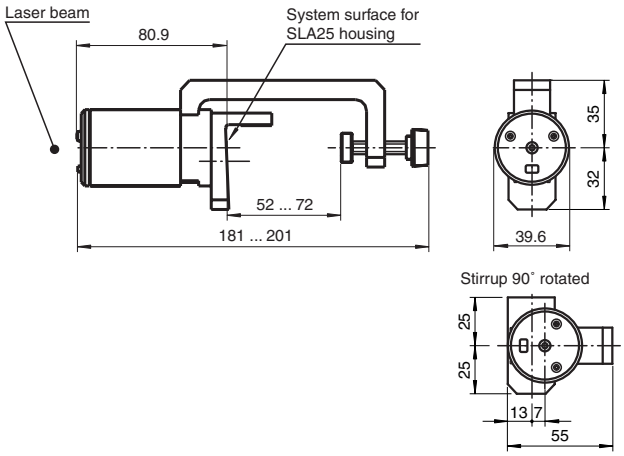
Profile alignment aid PA SLP/SLC

This small spirit level is ideal for aligning the profiles of product groups SLP and SLC vertically and horizontally.



Laser alignment aid BA SLA28

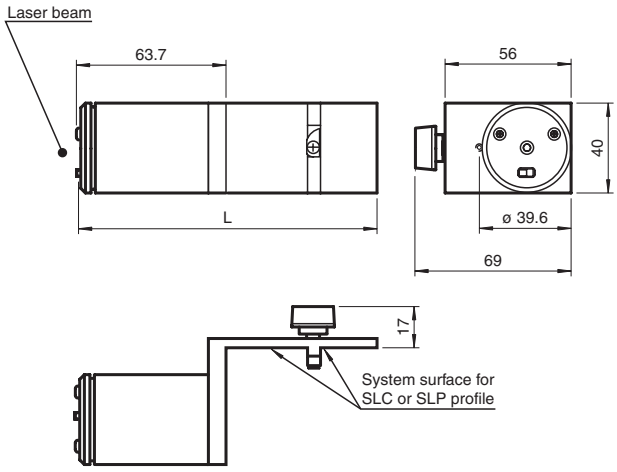
Laser alignment aid for safety light barriers of series SLA28, SL29 and SLA29
Included in the scope of delivery are the base unit, the corresponding adapter and the foil reflector.



Laser alignment aid BA SLP BA SLC

Laser alignment aid for safety light grids and safety light curtains in the profiles SLP and SLC.
Included in the scope of delivery are the base unit and the corresponding adapter.

Dimensions:
Laser alignment aid SLP: L = 131 mm
Laser alignment aid SLC: L = 117 mm



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Test rods for SLC

Test rods for checking the resolution of our safety light curtains.

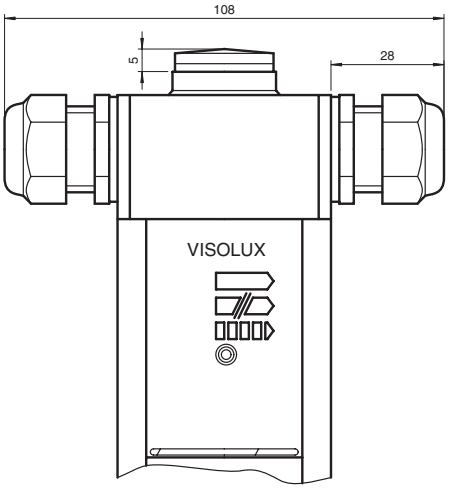
Material: plastic

Safety light curtain	Order number of the required test rod
SLC14-...	TR SLC14
SLC30-...	TR SLC30
SLC60-...	TR SLC60

Lateral screw connection TC SLC(M16)

M16 screw connection for the lateral cable feed to safety light curtains SLC.

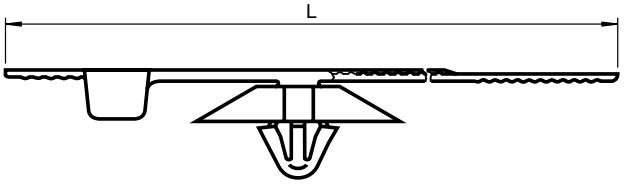
Included in the scope of delivery are 2 screw connections and 1 blind cap.



Cable ties Binder SLPC/M

Cable ties for the fastening and safe laying of connection cables, especially the connected muting sensors

Length L: 180 mm
Packing unit: 10 pieces



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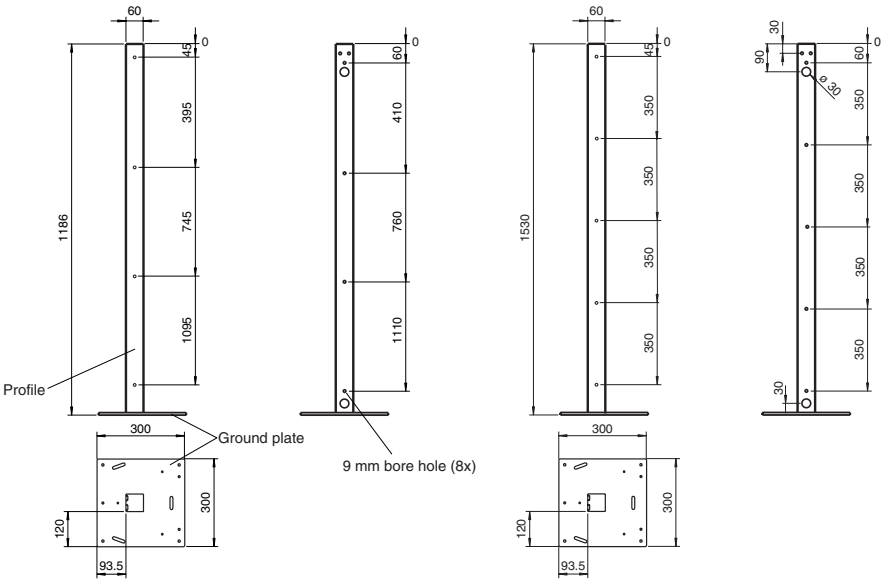
Floor stand
UC SLP/SLC
UC SLP/SLC 1530 mm

Floor stand for all SLP/SLC variants.
Height: 1186 mm
Order number: UC SLP/SLC

Height: 1530 mm
Order number: <NewLine/>UC SLP/SLC 1530 mm

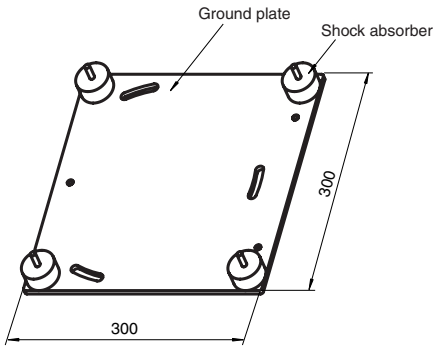
The mounting set is included in the scope of delivery.



Start-up protection
Damping UC SLP/SLC

Oscillation damper as start-up protection for floor stand UC SLP/SLC for all SLP/SLC variants.

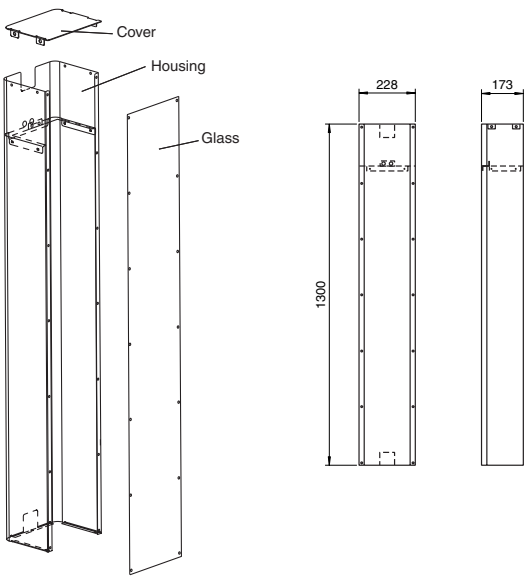
The mounting set is included in the scope of delivery.



Housing
Enclosure UC SLP/SLC

Housing for floor stand.
Suited for all SLP/SLC variants with a maximum protection field height of 1050 mm.

Illustration with light grid and stand



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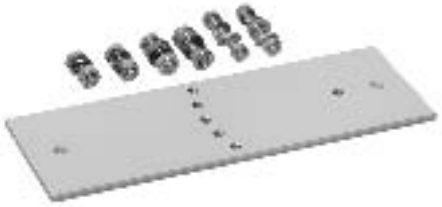
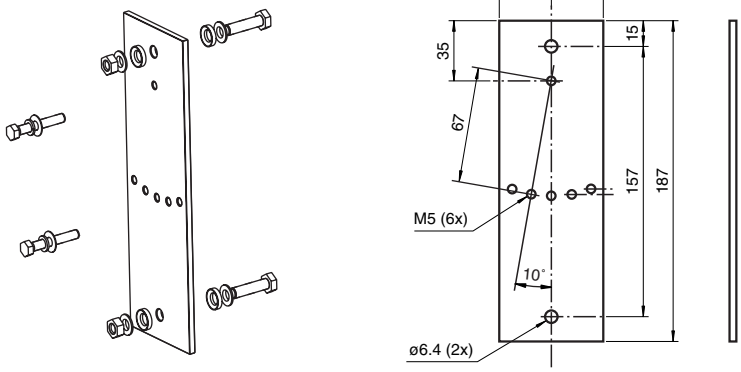
Muting Set MS SLP/SLA28

Sheet metal for Mounting the safety light barriers SLA28 to the profiles of the safety light grids SLP for the operating mode muting.

Material: Sheet metal
Surface: Powder coating, yellow RAL 1021



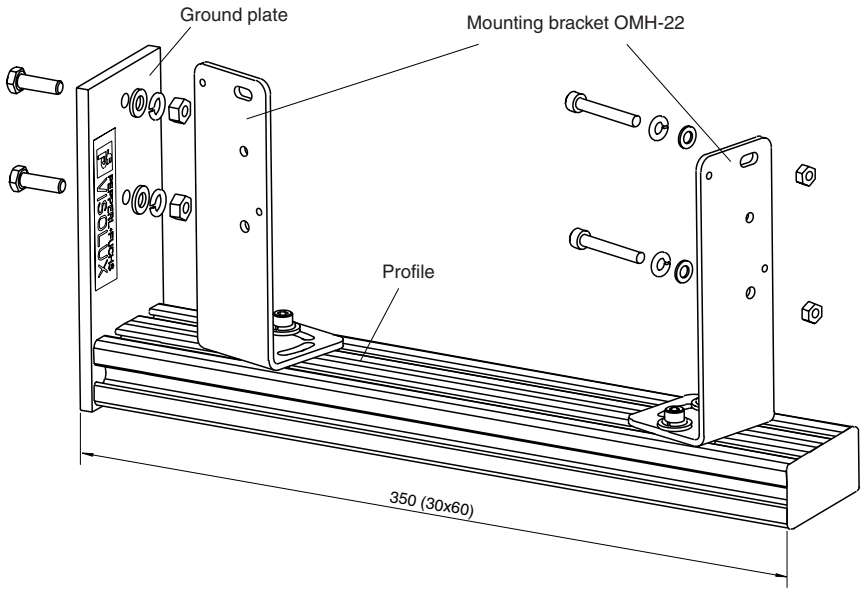
Supplied with fixings



Muting Set MS SLPCM

Mounting angle for muting applications with light grids SLPCM for the operating mode muting.

Only a single assembly aid OMH-22 is included in the scope of delivery.



Order number	Description	Scope of delivery
MS Muting Set A	Muting Set for SLPCM, completely pre-assembled for fitting to SLPCM	4x MS SLPCM 2x reflective light barrier RL28-55 2x connector V1 2x reflector C110
MS Muting Set B	Muting Set for SLPCM, completely pre-assembled for fitting to SLPCM	4x MS SLPCM 4x reflective light barrier RL28-55 4x connector V1 4x reflector C110 4x mounting angle OMH-22
MS Muting Set C	Muting Set for SLPCM, completely preassembled for SLPCM for parallel pro tection beam limited cross muting	4x MS SLPCM 2x reflective light barrier RL28-55 2x connector V1 2x reflector C110
MS Muting Set D	Muting Set for SLPCM, completely pre-assembled for SLPCM for parallel protection beam limited cross muting	4x MS SLPCM 4x reflective light barrier RL28-55 4x connector V1 4x reflector C110 4x mounting angle OMH-22

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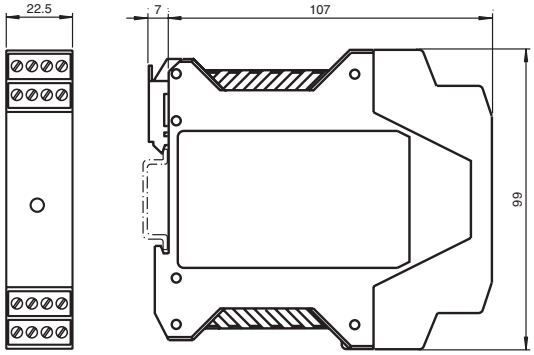
Power unit
SC PS 120-240VAC

Power unit for control units with alternating voltage provision.



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Directives and standardisation

Machine directive

One of the basic requirements of the European Community, which is firmly established in the Roman contracts, is to ensure the free flow of goods within Europe. This means that a machine that complies with national specifications and standards may be marketed without restrictions within Europe.
In order for this requirement to be met, all national standards everywhere in Europe must be the same (harmonised).
The European community has passed directives that should be seen as "supreme laws" for national legislation. These "supreme laws" must be adopted into national law and country-specific safety requirements and approval requirements must be revised accordingly.
Directive 89/392/EEC "Basic health and safety requirements for the construction and manufacture of machines and safety components“ applies to machines. This directive became part of the Device Safety Law in Germany with the 9th decree.

CE marking

Every manufacturer should be concerned with all details related to the Machine Directive. Manufacturers should be familiar with and use the appropriate harmonised standards for their machines. In addition, it is possible that other guidelines may apply to a manufacturer's products (for example the low-voltage directive), which must also be taken into consideration.
After implementing the required measures, the manufacturer issues an EU declaration of conformity for each machine and affixes the CE symbol. This symbol indicates that the machine so designated is in conformity with requirements that apply to it. Since this declaration is issued on the manufacturer's own responsibility, the manufacturer bears the entire responsibility for the safety of the machine and, in the case of a safety defect, is also liable (product liability).

Standardisation

So as not to impede further technical development, guidelines contain only general or basic requirements. Detailed requirements may be found in standards. European standards are adopted by each member as part of the national structure of standards. Observance of the applicable standards is sufficient grounds to assume that the machine satisfies the requirements of the corresponding guidelines. Use of standards is not compulsory. What is important is simply that the required safety goal be achieved. Only in the case where no standards are used must the manufacturer perform a complete risk analysis and identify and implement the necessary measures. These are tasks that may be highly complex.
If no EN standards are available, national standards may be used.

Safety standards are classified as follows:

Type A:
Basic requirements, valid for all machines; example: General design aspects

Type B:
Group standards to be used for different machine groups; examples: Risk evaluation, constructional aspects, distances and speeds, surface temperatures ...

Type C:
Product standards, applicable to defined types of machines. Safety-related equipment is defined in standards of this type. It can thus be directly tested; example: hydraulic presses, packaging machines, pallet loaders etc.

Overview of standards (not complete)

Type A standards

- DIN EN 292 Safety of machines, basic concepts, leading design principles
  Part 1: Basic terminology
  Part 2: Main technical principles and specifications

Type B standards
B standards are subdivided into B1 (higher-order safety aspects) and B2 (description of general safety equipment).

B1 standards

- DIN EN 294 Safety distances to prevent persons from reaching hazardous locations with the upper limbs.
- DIN EN 547 Human body dimensions
  Part 1: Basic principles for determining dimensions of entire-body access
  Part 2: Basic principles for measuring access openings
- EN 999 Layout of safety equipment in respect to approach speeds of body parts
- DIN EN 349 Minimum distances for preventing body parts from being jammed
- DIN EN 811 Safety distances to prevent persons from reaching hazardous locations with the lower limbs.
- DIN EN 626 Reducing the health hazard from hazardous substances that emerge from the machine
  Part 1: Basic principles and determinations for machine manufacturers
  Part 2: Methodology for setting up verification procedures
- DIN EN 954 Safety-related parts of machines
  Part 1: General principles of design
- DIN EN 60 204 Electrical equipment for machines
  Part 1: General design principles

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B2 standards

- DIN EN 1088 Locking equipment used in combination with protective devices – Main principles for design and selection
- DIN EN 953 General requirements for design and construction of movable protective equipment (fixed and movable)
- DIN EN 61496 No-contact safety equipment
- DIN EN 418 EMERGENCY OFF equipment, functional aspects, main design principles
- DIN EN 574 Two-handed switching, functional aspects, main design principles
- DIN EN 1037 Avoiding unexpected startup

Type C standards
Because of the great volume of "Type C“ standards, only a few excerpts of the types of machines that are covered are listed.

- Elevators/hoisting devices
- Construction and construction equipment machines
- Printing and paper machines
- Flat conveyor vehicles
- Tanning machines
- Foundry machines
- Rubber and plastic machines
- Woodworking
- Industrial robots
- Industrial centrifuges
- Compressors
- Cranes
- Agricultural and forestry machines
- Lasers and laser systems
- Food products machines
- Sewing machines
- Surface processing equipment
- Shelf loading and unloading equipment
- Footwear and leatherwear machines
- Continuous conveyors
- Textile machines
- Thermoprocess systems
- Packaging machines
- Heat pumps, refrigeration systems
- Tool machines

Additional information

You can find additional information on the Internet under the following addresses:

Source	Internet address
Beuth Verlag	beuth.de
DIN	din.de
DKE	dke.de
CENELEC	cenelec.org
IEC	iec.ch
Accident prevention requirements	bc-verlag.de/uvven
European directives	europa.eu.int/eur-lex/de/oj
List of standards under the respective European directives:	europa.eu.int/comm/enterprise/newapproach/index.htm

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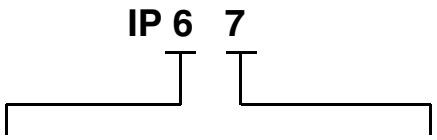
Protection types provided by housing

(DIN VDE 0470 Part 1, EN 60529)



Degree of protection against contact and foreign bodies		Degree of protection against water	
0	- Not protected	0	- Not protected
1	- Protected against contact with hazardous components with the backs of the hand - Protected against solid foreign bodies with a size and diameter 50 mm and above	1	- Protected against dripping water
2	- Protected against contact with hazardous components with fingers - Protected against solid foreign bodies with a size and diameter of 12.5 mm or above	2	- Protected against dripping water when housing is tilted up to 15°
3	- Protected against contact with hazardous components with a tool - Protected against solid foreign bodies with a size and diameter of 2.5 mm or above	3	- Protected against sprayed water
4	- Protected against contact with hazardous components with a wire - Protected against solid foreign bodies with a size and diameter of 1.0 mm or above	4	- Protected against splash water
5	- Protected against contact with hazardous parts with a wire - Protection from dust	5	- Protected against water jets
6	- Protected against contact with hazardous components with a wire - Protected against dust	6	- Protected against strong water jets
		7	- Protected against temporary submersion in water
		8	- Protected against continuous submersion in water
		9	- protected from water at high pressure/steam jet cleaning

Notes:

- If an identifying number is not required, please use the letter "X" in its place.
- Devices identified with a second digit 7 or 8 do not have to fulfil the requirements of the second digits 5 or 6 unless they have a double identification (e.g. IPX6/IPX7).

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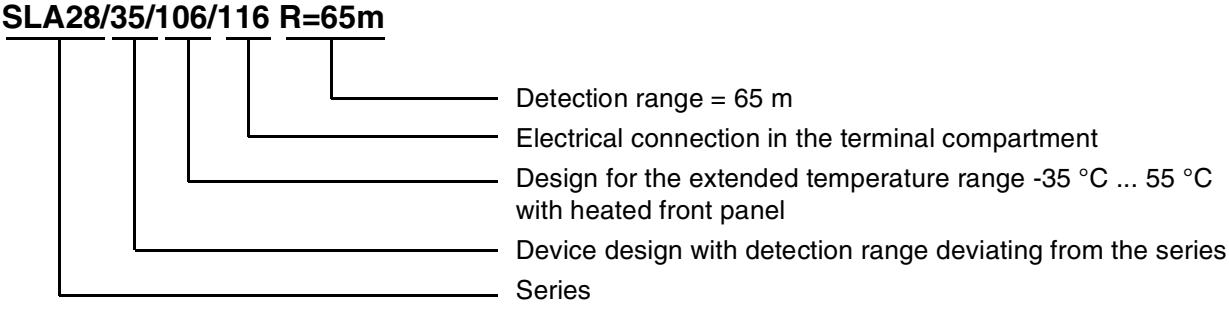
Device options

To ensure the best possible adaptation to your application, specific products are available, in addition to there series designs, also in various electrical designs with different types of connectors or additional useful options.
In the following table, you will find a list of options offered for special products. These device options are appended to the description of the device as numeric codes in ascending order separated by a frontslash (/) (example: SLA28/106/116).

Option	Description
/31	Relay output instead of transistor output.
/33	Length of the cable connector deviating from the series design. Preferred lengths: 5 m and 10 m. The length of the cable is specified at the end of the type code in plain text. Example: K=5m.
/35	Detection or sensing range that deviates from the series. The detection range is specified at the end of the type code in plain text. Example: R=65m.
/60	Connection option plastic connector, 6-pin + earth ground wire. Unassembled angled mating connector included with delivery.
/73c	Connection option plastic connector, 4-pin with M12 threading. Assignment in accordance with European standard. Cable connector not included with delivery.
/92	Connection option metal connector, 4-pin with M12 threading. Assignment in accordance with European standard.
/105	Connection option plastic connector, 5-pin with M12 threading. Assignment in accordance with European standard. Cable connector not included with delivery.
/106	Extended temperature range -35 °C ... 55 °C with heated front panel. The electrical connections of the front panel heater are separate. Operation is based on a fixed voltage of 24 V DC ±20 %.
/116	Connection option - terminal compartment.
/129	With contactor monitor/relay monitor
/130	With reduced response time
/133	For use in hazardous area, zone 2
/151	Connection option metal connector, 8-pin with M12 threading.
/152	Muting lamp LED, 24 V DC ... 28 V DC

Example for device options:



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Safety through beam sensors

S L A 5 S - R / 9 2 K = 5 m

- **Specified in plain text**
  For option 33: K = cable length
  For option 35: R = detection range
- **device option**
  / = Options follow after the front slash (see device options)
- **T** = Transmitter
  R = Receiver
- **Special design - lateral light exit**
- **Series**
- **Design**

Design SLA:

Safety through beam sensors for operation on control units SLVA and SC4-8

Special designs:

-2442: Seal test for protection class IP67, cast.

Safety light grid

S L P C 1 0 - 3 - T - L / 3 1

- / = Options follow after the front slash (see device options)
- **L** = Lamp
- **T** = Transmitter
  R = Receiver
- Number of beams
- **Detection range in m**
- **Design**

Designs	
SLP	Safety light grid for external control units
SLPC	Safety light grid with internal control unit
SLPCM	Safety light grid with internal control unit, with muting
SLC	Safety light grid with internal control unit in the SLC profile

Designs	
-T	Transmitter
-R	Receiver
-A	Active transmitter and receiver (transceiver)
-M	Mirror pillar (mirror)

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Safety light curtain

S L C 1 4 - 6 0 0 - T - S / 3 1

- **Design o SLC safety light curtain**
- **Size of obstruction in mm**
- **Protective field height in mm**
- **T** = Transmitter
  R = Receiver
  M = Mirror (mirror pillar)
- **S** = Slave
- / = Options follow after the front slash
  (See device options)

Control units SafeBox

S B 4 - O R - 4 C P - x x

- **SB4 -SAFEBOX category 4**
  SB4 Housing Backplane provides 2 ... 8 slots for plug-in cards
  Supplies the individual modules with voltage
  Connects the modules mechanically and electrically
- **Assembly slot 1, OSSD-R/supply-module**
  Minimum configuration: 2 relay OSSDs with operating mode adjustment (restart, monitor) and 7 segment LED display, LEDs red/green, yellow
- **Assembly slot 2, sensor card module 4 channels (with CPU)**
  Minimum configuration: 4 sensor channels with LED status display
- **Assembly slot 3 to 8 (variable)**
  Variable configuration of the module types

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Glossary

Activation current

The current that must be flowing to change the signal input to activated status.

Activation time

The time or period of time within which an input must be activated to initiate the desired function.

Alignment aid

Combination of all measures that support the optical alignment of a sensor. Laser alignment aid, alignment aids for profiles here.

Ambient temperature (operating)

⇒ Operating temperature

Ambient temperature (storage)

⇒ Storage temperature

Angle of divergence

The maximum angular divergence from the optical axis of the light emitted from the transmitter and the light received by the receiver in which the optical sensor works during normal operation.

Approvals

Permission to operate the sensor under defined ambient conditions. Different approval conditions must be fulfilled for different countries.

Beam distance

Indicates the distance between two transmitter beams with light grids.

Connection

Type of connection of the sensor to the consumer and power supply.

Connector, cable, terminals.

Diagnostic display

Display of status, operating hours, functions and error states.

EDM

External Device Monitoring, normally closed contact of safety components downstream in the circuit that indicates when switching has been performed for a hazardous action; also relay monitor.

Effective operating distance

Detection range with sufficient stability control.

Function display

A display of the switching state of an optical sensor by an integrated LED.

Height of the protected area

The vertical range in which a protective field is set up with the aid of a photoelectronic protective device between the transmitter and the receiver.

Laser class

Categorisation of a sensor depending on the output intensity of the emitted laser light. For example, laser class I designates sensors with the lowest level of emission. These sensors are therefore referred to as safe for the eye.

Light transmitter

Describes the light-emitting component (for example a laser diode, IRED).

Light type

The type of emitted light, for example red or infrared.

Muting

Bypass of the protective function of no-contact safety equipment, in accordance with requirements.

No load current

Current consumption of a device to which no additional devices drawing power are connected.

Electrosensitive protection equipment

German: BWS

Normal muting

Muting initiated by pressing a button to eliminate a backup of material, also includes override.

Number of beams

Indicates the number of transmitter beams of a sensor. The number of beams is especially relevant for light grids and curtains.

Operating components

Adjustment components (for example push buttons) for adjusting the detection range or time range.

Components for changing parameters of the device (for example mode of operation, time range, detection range, etc.).

Operating display

The component (LED, 7-segment display) that indicates whether the operating voltage is present.

Operating temperature

Indicates the temperature range in which the sensor may be operated while maintaining the rest of the technical data.

Operating voltage

The voltage for which the sensor is designed (without residual ripple).

Optical outlet material

Identifies the material of which the sensors light exit surface is made (for example glass or plastic).

Optical surface

The surface through which the emitted light leaves the housing or through which the received light enters the housing of the sensor.

OSSD

Output switching components of the safety circuit of the electrosensitive protection equipment, output signal switching device in accordance with EN 61496-1.

Output of the pre-fault indication

The output switches before failure of the sensor because of insufficient signal reserve due to dirt or improper adjustment.

Parallel muting

Simultaneously activated muting sensors jointly trigger muting.

Pre-fault indicator

Indicates insufficient signal reserve because of dirt or improper adjustment before the failure of the sensor. It can therefore be used as an aid in adjustment as well.

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Protection class

EN40050 classifies protection of electrical equipment against contact, ingress of objects or water through the housing, coverings, etc.

The IP abbreviation consists of the letters IP (International Protection) and two numbers:

1. Number: Level of protection against contact and foreign bodies

2. Number: Level of protection against ingress of water.

Protection class

Housing and insulation class is subdivided into different classes.

Protection class 0:
No longer permitted in Germany for about 30 years. Still permitted in some countries of the EC in some cases. Protection against electrical shock is based on basic insulation; a protective conductor cannot be connected. Protection against failure of the basic insulation must be ensured by the environment.

Protection class I:
Protection is based not only on basic insulation, but also on the fact that all parts (bodies) capable of conducting a current must be connected with the protective conductor of the fixed installation. Protection is based on the use of low protective voltage.

Protection class II:
Protection is based not only on basic insulation, but also on the fact double or reinforced insulation is arranged so as to satisfy the condition for protective insulation.

Protection class III:
Protection is based on the use of protective low voltage. The nominal voltage must not exceed 50 V~ or 120 V-.

Protective beam limited muting

If all protective beams are free, muting is terminated.

Protective field width

The horizontal range in which a protective field is set up with the aid of a photoelectronic protective device between the transmitter and the receiver.

Reset

Reset of the electrosensitive protection equipment to the starting status.

Resolution

Minimum required size of an object to be reliably detected in the entire protective field range.

Response time:

Time between the interruption of the light beam and the signal change at the output (OSSD).

Restart

Enabling the startup of the no-contact safety equipment from the startup/restart interlock status.

Safety output

Switch output on which a monitored switch signal may be provided (OSSD, output signal switching device). A special test is conducted to determine whether the output is capable of interrupting the circuit. For example, two force directed relay contacts relay contacts or monitored semiconductor outputs can be safety outputs.

Sequential muting

Muting sensors activated one after the other jointly trigger muting.

Signal outputs

Switch output of a device.

Size of the obstruction

The minimum required size of an object in order to interrupt a single beam.

Stability control

The distance of the receiver signal from the optical barrier before the lower limit of the switching point of the optical barrier.

Startup/restart interlock

Device that prevents OSSDs from turning on after the protective field has become free.

Storage temperature

Indicates the temperature range in which the sensor may be stored.

Switching current

The maximum current that can be switched through the signal output.

Switching power

The maximum power that can be switched through the signal output.

Switching voltage

The maximum voltage that can be switched through the signal output.

Test input

Depending on the design, the sensor function can be verified externally via the test input with either UB+ or 0V. If the test is successful, a signal change will occur at the time of the test.

Time-window limited muting

If a muting sensor is activated for longer than a specified time span, the OSSDs are turned off.

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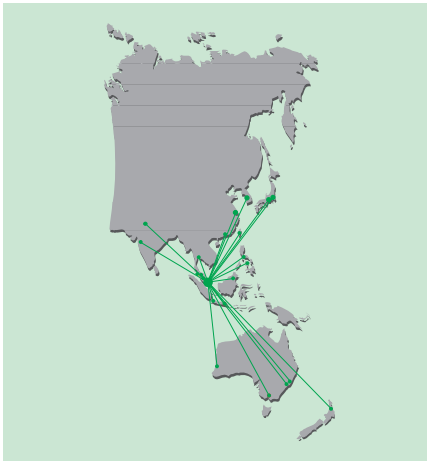

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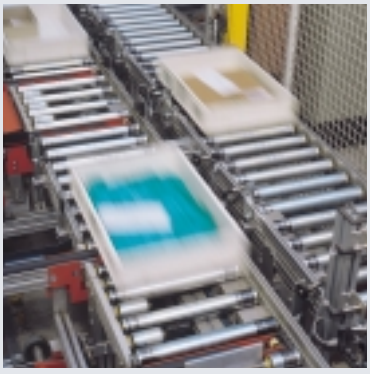

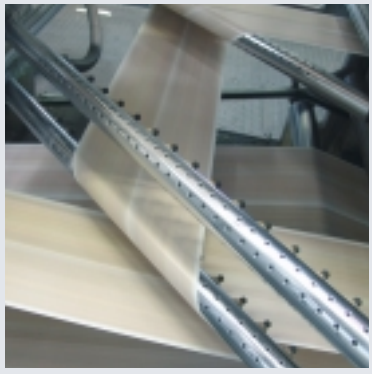

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