Датчики безопасности (световые барьеры и контроллеры безопасности)

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Overview

Selection table based on model line

Figure	Model line	Device design		Principle of operation				Limit detection range
		Series	Category	Safety throug-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
		SLA20	4	●				10 m
		SLA28	4	●				65 m
		SL29	2	●				65 m
		SLA29	4	●				30 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				●	
		SLVA-4K plus	4				●	
		SLVA-8K	4				●	
		SC4-8	4				●	

Date of edition 8/13/04

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	Terminal compartment/clamps	Fixed cable	Plastic	Metal	Pre-fault indication	Startup/restart interlock	Relay monitor	Muting	Emergency case muting	Double muting	
●					●			●		●	●		●						25
●					●			●		●	●	●	●						
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●					●				●			●	●						75
●					●				●			●	●						
●					●				●			●	●						
●		●				●	●	●	●			●	●	●	●				93
●		●				●	●	●	●			●	●	●	●				
●		●				●	●	●	●			●	●	●	●				
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	●	●				●	●	●	●			●	●	●	●	● [1]	● [1]	● [1]	183
	●	●				●	●	●	●			●	●	●	●	● [1]	● [1]	● [1]	
	●	●				●	●	●	●			●	●	●	●	● [1]	● [1]	● [1]	
	●	●				●	●	●	●			●	●	●	●	● [1]	● [1]	● [1]	
		●				●			●		●			●	●				233
		●				●			●		●			●	●				
		●	●	●		●			●		●		●	●	●				
		●	●	●		●			●		●		●	●	●	●	●	●	
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[1] with SC4-8 control unit

Date of edition 8/13/04

The way to the correct electrosensitive protection equipment

General

Wherever a hazardous situation might arise for people or equipment from a machine in normal operation or when one fault or a combination of faults occurs, the legislature has provided as follows.

These measures are based both on European legislation (Directive 89/392/EC) as well as in machine regulations.

A certain amount of consideration is therefore necessary to determine the "correct" protective equipment.

1. Risk analysis

1.1 Risk analysis in accordance with EN 1050

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

The risk evaluation evaluates the complete or partial loss of the safety function that occurs when faults occur.This risk evaluation is based on EN 1050.

Typical hazards might include:

- Mechanical hazards
  - Body parts caught in machinery
  - Cutting
  - Shearing
  - Catching
  - Grabbing
  - Jamming
- Electrical hazards
- Hazards caused by substances and materials
  - Contact
  - Burning

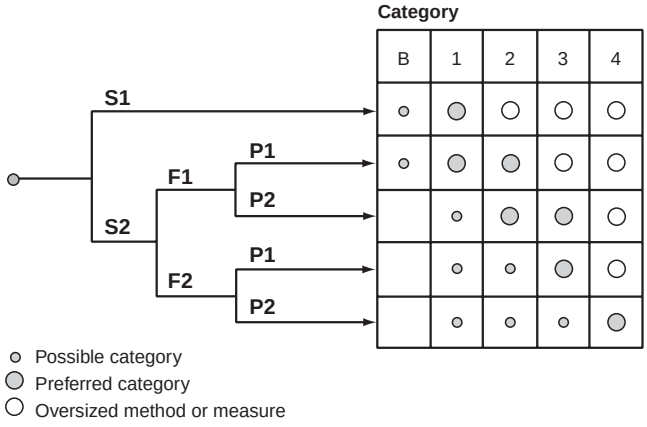
Risk analysis is based on the following model:

Depending on the results of this analysis, the system or the machine is categorized into a certain category. The advantage of this is that the requirements for safety and associated costs can be adapted to the actual risk at hand.

The evaluation of a category also depends on the range of application.

Different classifications apply to the process industry, for example, than do to mechanical engineering. The reason for this is that the results of an accident in a chemical facility may have entirely different effects than an accident at a press, for example.

Estimation of risk



1.2 Risk evaluation in accordance with EN 954-1

Since risk evaluation is difficult and expensive in some cases, many of these analyses for typical machines have already been performed and published as standards. The standards in question are referred to as C standards. Examples of C standards are described at the end of the catalog under the heading "Additional information".

If the appropriate C standards are lacking, EN 954-1 should be used for machines. Five categories are defined in this standard.

Date of edition 8/13/04

As part of EN 954-1 the following requirements are in principle placed on safety-related parts of control systems and components:

Category B : Use of well-tried and tested components and principles.

Category 1 : Use of components and principles that are well tried and tested in terms of safety.

Category 2 : Use of testable components, cyclical testing.

Category 3 : Individual faults are detected or do not result in loss of the safety function.

Category 4 : Auto-monitoring. No loss of safety function with the occurrence of individual errors or an accumulation of multiple errors.

1.3 Electrosensitive protection equipment (ESPE, German BWS)

The protective equipment that works with no-contact considered here involves photoelectronic protective equipment such as safety optical barriers, safety light grids, safety light curtains, and the corresponding analyser units.

Typically, electrosensitive protection equipment is divided into two categories:

Electrosensitive protection equipment Type 2, in accordance with IEC/EN 61496-1
Verification of safety function by regular testing, control category 2 of machine safety (EN 954-1).

Electrosensitive protection equipment Type 4, in accordance with IEC/EN 61496-1
auto-monitoring, control category 4 of machine safety (EN 954-1).

Depending on the category, these include one or two OSSD (output signal switching devices).

In addition, there are special requirements on the optical properties of the sensor.

Type 2 angle of divergence 10 °
Type 4 angle of divergence 5 °

The electrosensitive protection equipment required in this category corresponds to Type 4, thus satisfying the strictest safety requirements.

2. Determining the detection properties

Photoelectric protective equipment is used if large paths or surfaces must be monitored with no contact. Essentially the following distinctions may be made:

- Access protection (protection of persons)
- Protection of the device against intusion(hand protection, finger protection)

The optical properties (chiefly detection range and resolution) depend on this range of application.

2.1 Access protection

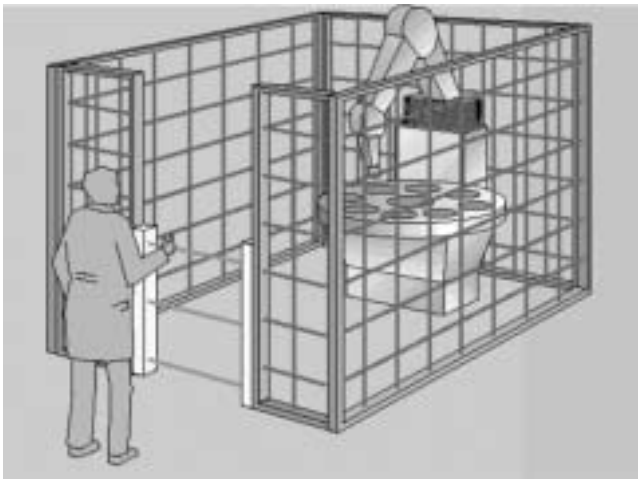
Optical barriers or light grids are used predominantly for protection of persons.

Depending on the hazardous location to be monitored, specific installation topologies may be recommended or required.

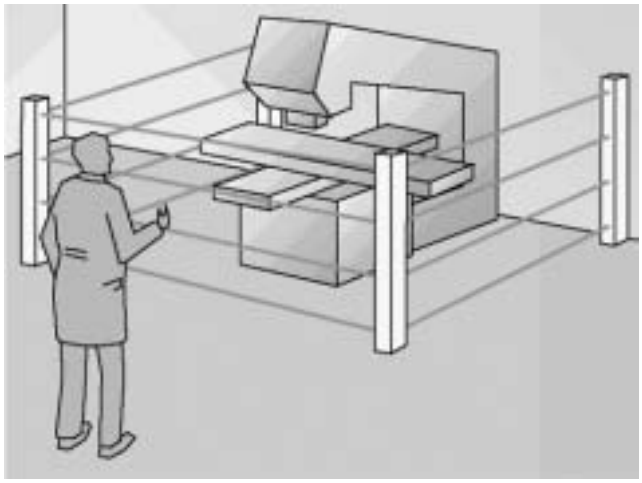
- In EN 294 Safety distances to prevent persons from reaching hazardous locations with the upper limbs.
- In EN 811 The definition of safety distances in terms of user body parts penetrating into hazardous areas.
- In EN 999 Specification of a sufficient safety distance.
- C standards see the section "Additional Information".

The way to the correct electrosensitive protection equipment

Combinations of mechanical and photoelectronic safety equipment are often used for protection of persons. Adjustable mirrors also make it possible to ensure safety on multiple sides.

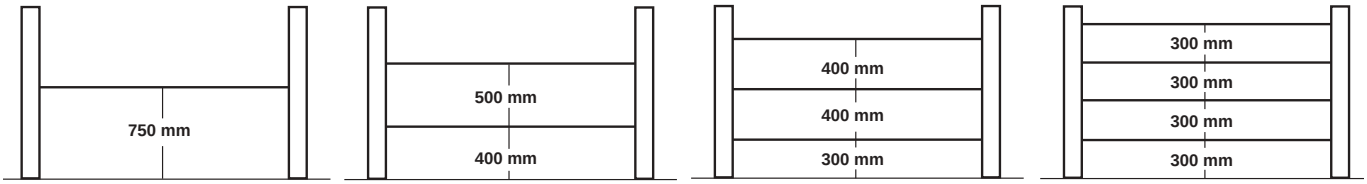


3-beam safety with light grid



multi-side safety with deflection mirrors

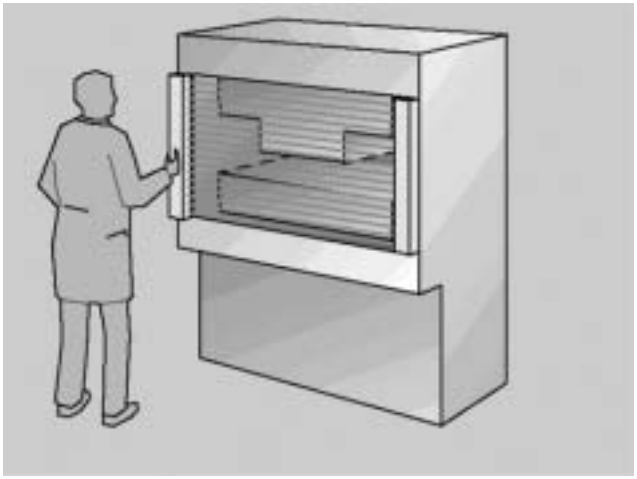
Examples of beam spacings based on:



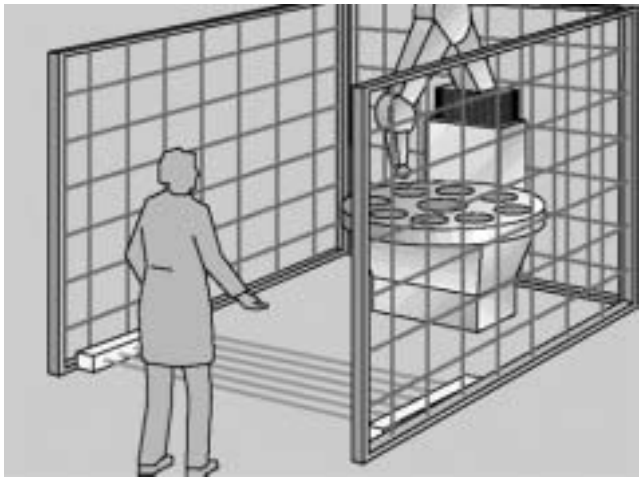
1 beam | 2 beams | 3 beams | 4 beams

2.2 Protection against intrusion

Light curtains are used predominantly in the area of protecting against intrusion.
In this case, a large resolution is required, typically 14 mm (finger protection), 30 mm (hand protection), 60 mm and 90 mm (protection against access from the rear).



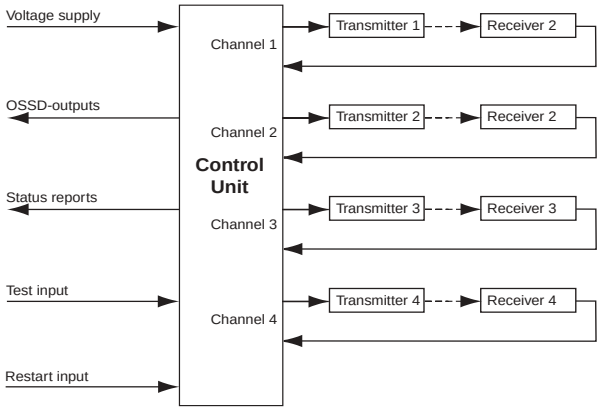
Protection against intrusion by means of a light curtain



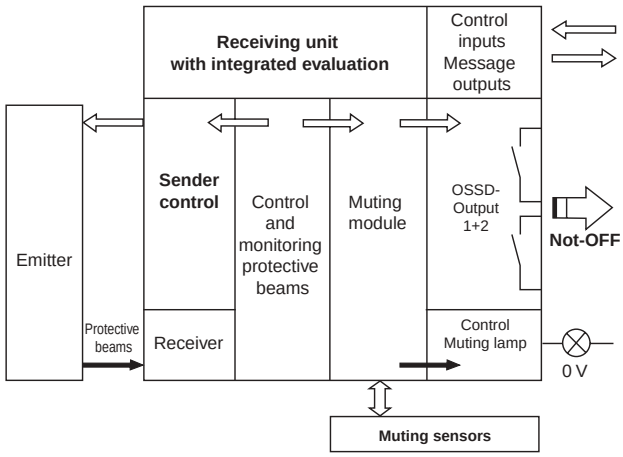
Light curtain for protection against access from the rear

2.3 Signal evaluation

As a rule, signal evaluation of individual optical barriers is housed in a separate analyser unit.
Designs are available for light grids with both installed evaluation and with external signal processing. The analyser unit is typically integrated for light curtains.



Individual optical barriers with separate evaluation



light grid/light curtain with integrated evaluation

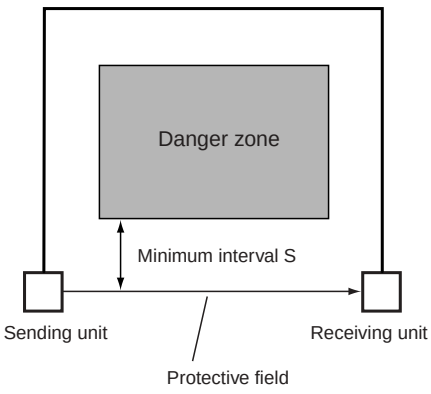
3. Installation of photoelectronic protective equipment

3.1 Determining the safety distance

When photoelectronic protective equipment is mounted at a hazardous location, a minimum distance must be maintained between the protective field and the hazardous location. This distance is intended to ensure that the movement that is the cause of the hazard has been brought to a complete stop before any possible contact with a person.

The distance is calculated based on the time the machine runs after being turned off, the response time of the safety system and the speed at which the person who has penetrated the hazardous zone is moving (EN 999, EN 294).

In accordance with EN 999, the minimum distance may be calculated with the formula:



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

Accordingly,

S: is the minimum safety distance in mm, i.e. the separation from the hazardous area to the protective field.

K: the constant in mm/s for the velocity of approach.

T: Total response time in s.

$$T = t_1 + t_2$$

t_1: Response time of the protection device

for example: 20 ms (semiconductor OSSD) or
40 ms (relay OSSD)

t_2: Excess run time of the machine

C: Additional distance based on the table.

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

Date of edition 8/13/04

3.1.1 Safety distances for light curtains (EN 999)

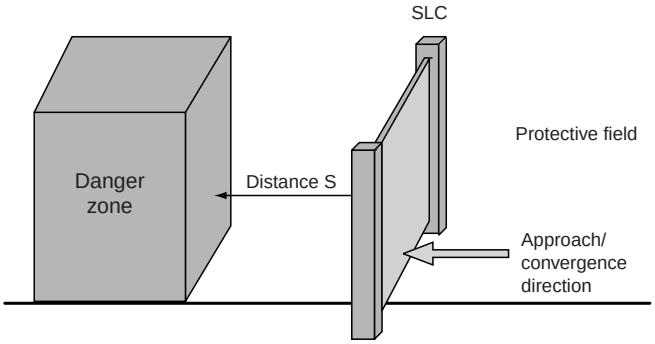
Perpendicular approach

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 a distance S of from 105 mm up to and including 500 mm:

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



Note:

If S is greater than 500 mm, the calculation must take into account the constant K = 1600 mm/s.

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

In this case, S must be at least 500 mm. Lower-value results must be corrected up to a minimum distance of 500 mm.

Example: Vertical layout

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

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

$$S = 700mm + 128mm$$

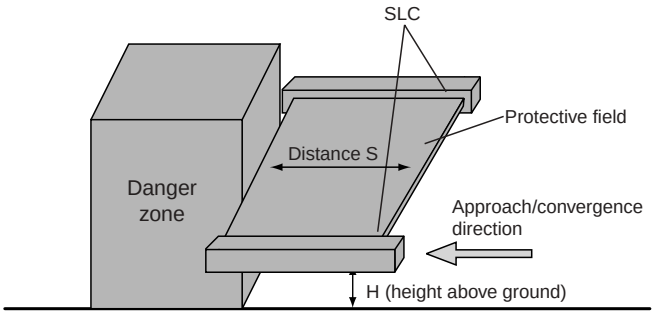
$$S = 828mm$$

The minimum distance of the protective field for a hazardous location should be 828 mm.

Parallel approach

In the case of a horizontal layout of the safety light curtain, the safety distance S also depends on the height of the light curtain above the ground. The maximum height H must not exceed 1000 mm. If the height exceeds 300 mm, there is a danger of gaining access underneath the safety light curtain. This must be taken into consideration in the risk analysis, or additional locks are required. The safety distance may be calculated as follows:

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



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

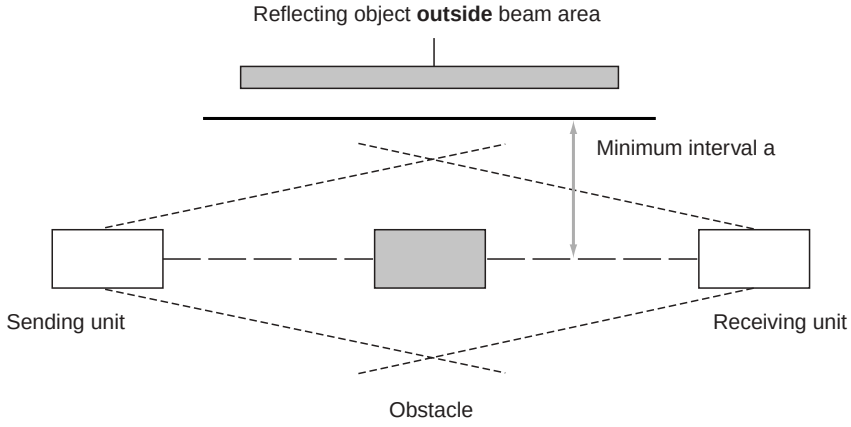
3.1.2 Protective beam spacings for securing access

In accordance with EN 999, the following heights are recommended for single beams parallel to the ground:

Number of beams	Height above the plane of reference 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	

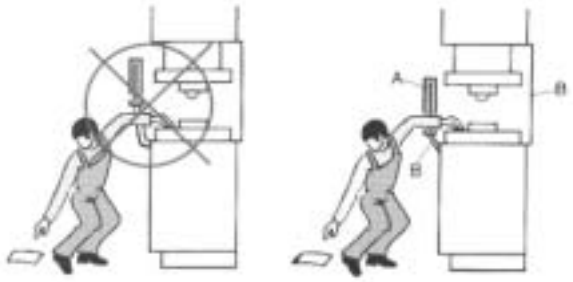
3.1.3 Mirroring

Care should be taken that no reflecting objects that may result in mirroring an obstruction are located within the transmitter or receiver lobe (EN 61496-2).

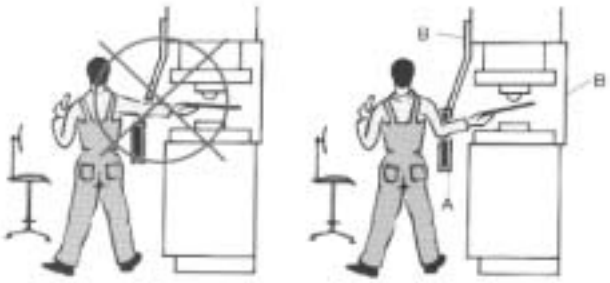


3.2 Notes for setting up

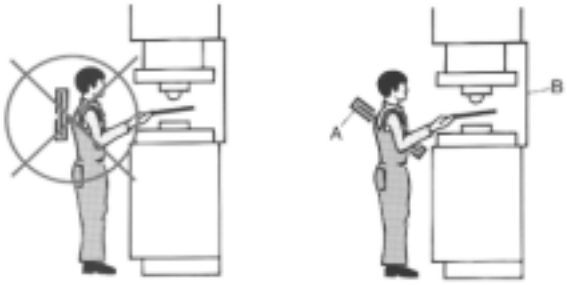
The safety light curtain should be arranged so that it is completely impossible to reach over, under or behind the protective field. If the distance of the safety light curtain is too great, additional protective equipment must be put in place (see sample illustrations).



There must not be any gaps underneath the protective field that would make it possible to reach into the hazardous area (A: protective field, B: mechanical protection).



It should be completely impossible for the operator to reach above the protective field into the hazardous area (A: protective field, B: mechanical protection).



The machine operator must not move into the area between the light curtain and the hazardous location (A: protective field, B: mechanical protection).

Date of edition 8/13/04

4. Output wiring

Pepperl+Fuchs/Visolux protective equipment is of type S, electrosensitive protection equipment, auto-monitoring and thus meets the requirements of control category 4 (machine safety).

It includes two OSSD (output signal switching devices).

The signal outputs are available in a semiconductor design with potential separation or optionally with a monitored, force-guided normally open contact.

5. Additional functions

5.1 Startup interlock/restart interlock

The startup/restart interlock prevents the device from being turned on again automatically after the protective field has been crossed.

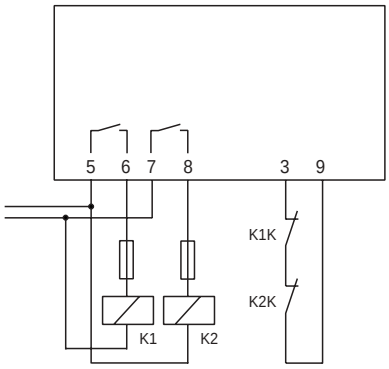
The push button switch for the startup/interlock/restart enable should be arranged so that the hazardous area can be seen clearly and it is not possible to activate the button from inside the hazardous area.

Startup enable message:

All electrosensitive protection equipment has an output that is activated when the protective field is free. This is used to indicate that all protective beams are free after the operating power is turned on. This function is only activated during operation with startup/restart interlock to indicate to the user that the startup enable must be activated.

5.2 Relay monitor

The relay motor is used to monitor externally connected relays. The wiring of the relay monitor should be set up in the manner illustrated here. Any number of normally closed contacts from any number of relays may be switched in series, but there must be at least 2 relays.



In the illustration, K1 and K2 are force-guided relays. The normally closed contacts K1K and K2K (control contacts must ensure a secure contact at 24 V/5 mA. Typically, restarting auxiliary contacts or contacts of auxiliary relays satisfy this requirement. A resistance to surge voltage of 6 kV must be guaranteed by the relay manufacturer between the control contacts and other contacts located on the 230 V alternating voltage. The work circuit of the relays must be protected with a fuse that has a rated value of no more than 60 % the load capacity of the relay contacts. The relays are monitored with a delay of 200 ms following the switching process. If the new switching state has not been achieved after 200 ms, the electrosensitive protection equipment goes into lock status and shows an error on the diagnostic display.

5.3 Muting

In the muting mode of operation, the protective function of electrosensitive protection equipment is bypassed in accordance with requirements. This function is required to be able to bring in or take out material in a hazardous area with an automatic transport system. A prerequisite for this bypass is at least 2 activated muting sensors and one muting lamp.

The selection and layout of the muting sensors must be such that a distinction is made between people and transport material. While the muting function is active, access to the hazardous area must be disabled, in some cases even for the transport material.

Various modes of operation can be set on Pepperl+Fuchs/Visolux safety systems with muting capability . These can be used to implement different applications. Depending on the application case, different modes of operation can be set for muting on the SLVA-8K analyser unit or SLPCM light grid. Sequential and parallel muting are possible.

When double muting is used, two hazardous locations can be monitored simultaneously.

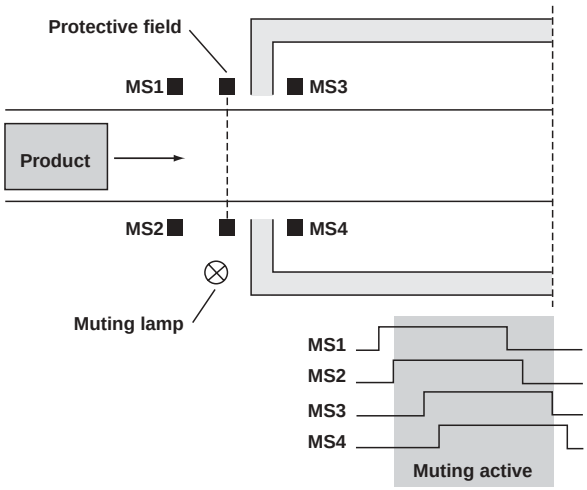
5.3.1 Working principle

Evaluation of the muting sensors

Depending on the layout, muting sensors can be activated within a brief time interval or one after the other.The activation sequence can be monitored by selecting between parallel and sequential muting.

Parallel muting

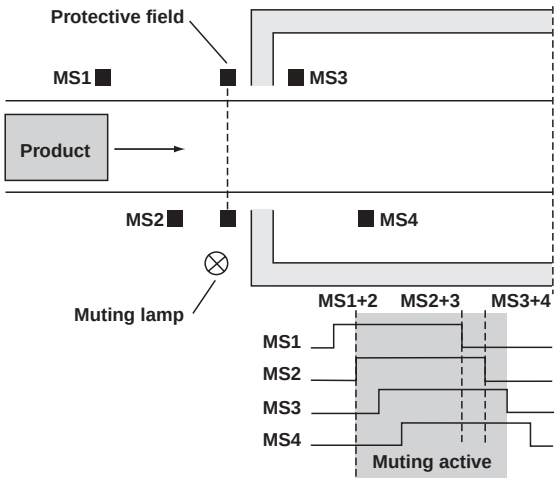
In the parallel muting mode of operation, muting sensors arranged in pairs must be activated within 2 sec. (MS1 and MS2 or MS3 and MS4). If only one of the muting sensors has been activated at this time, it is disabled. Activation of the muting is blocked because of this disabling. This disabling is not discontinued until the sensor is no longer active.



Sequential muting

In contrast to parallel muting, for which the activated sensors MS1 and MS2 or MS3 and MS4 fulfill the muting conditions, it is also possible with sequential muting to maintain the muting requirement by means of sensors MS2 and MS3.

The muting sensors are activated one after the other. The layout of sensors should be selected so that a cannot unintentionally activate 2 sensors.

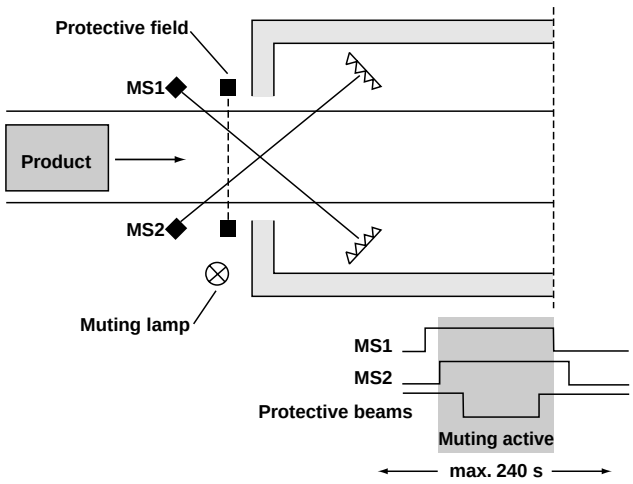


Muting monitoring

To prevent any dangerous long-term muting from occurring upon failure of muting sensors, the muting can be operated with either a time window limit or a protective beam limit. Time window limited muting should be used if the objects that are intended to pass by the protective beams unimpeded have traversed the protective beams within about 240 s. If the muting process will not be completed within this time, protective beam limited muting can be used. Care should be taken to ensure that muting has been completed about 115 ms after all protective beams are free.

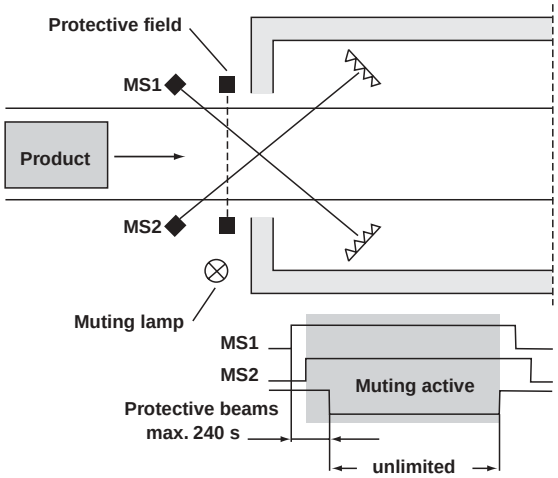
Time window limit

If the system is set for time window limited muting, each muting sensor must be monitored for time. The maximum time for which each sensor may be activated is 240 s, which means that the muting object must have passed the sensor within this time. If the time is exceeded, the analyser unit disables the sensor. Disabling the sensor results in the muting no longer being activated. Deactivating the sensor ensures that it will be enabled again.



Protective beam limit

If protective beam limited muting is used, the muting sensors are evaluated for time after their activation. Two activated muting sensors will cause the muting process to be introduced. At least one protective beam must be interrupted no more than 240 s after activation (applies to each muting sensor separately).In contrast to time window limited muting, this stops the time measurement so that muting is possible with no time limit. The muting process is complete about 115 ms after leaving the protective field, (all protective beams are free) when the way through is thus free again.



5.3.2 Muting sensors

Muting sensors are designed to detect muting objects. If an object is detected, the output of the muting sensor switches its power supply voltage through. Sensors with relay or pnp output are suitable for this purpose. When there is no voltage, the output of the muting sensor must not be active. The sensor output should be capable of switching an operating current of 8 mA reliably at 20 V.

The following are examples of sensors that can be used as muting sensors:

- Retro-reflective photoelectric sensors (light on) with reflector on the object,
- Retro-reflective photoelectric sensors (dark on) with fixed reflector,
- Through-beam sensors (dark on),
- Photoelectric sensor,
- Inductive sensor,
- Mechanical switches.

Muting lamp

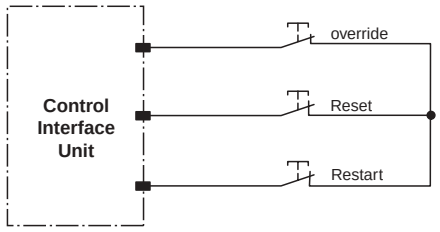
If you are using muting, you should use an indicator lamp with a minimum lighting area of 1 cm^2 and a minimum light intensity of 200 cd/m^2 to indicate the muting status.Monitoring of the connected lamp ensures that the indicator lamp alarm is performing its warning function correctly. If the muting lamp indicator lamp is defective, the electro-sensitive protection equipment assumes lock status and shows a fault on the display. The muting lamp is when it is switched on, while executing the reset command and during the time when muting is active.

To increase the availability of the system, two muting indicator lamps can be connected in parallel. A prerequisite for this is that both indicator lamps must be visible simultaneously and close to each other while the access point is being approached.

If no muting is used, no muting indicator lights are required.

5.3.3 Emergency case muting (Override)

If the system must be approached again to remove an object that has been blocking it from the area of the protective field and the muting sensors, the emergency function is available for this purpose. In the case of emergency muting, the blocked muting sensors are evaluated again for a period of 3-4 sec. As a result of this, the OSSDs are turned back on again for 3 ... 4 seconds. Emergency muting can be initiated with the override button. This initiating can be set for post-triggering, i.e. by pressing the button again within 3 sec, it is possible to continuously extend the duration of the On status of the OSSDs until the object has left the range of the muting sensors.



Description

In combination with the control units **SLVA** or **SC4-8**, through beam sensors of type SLA form a photoelectronic protection device of Category 4 (EN 954-1) or Type 4 (based on IEC/EN 61496). The system is thus self-monitoring.

The protection equipment can be single-beam or multi-beam.

A light barrier consists of a transmitter and a receiver.

The SLA through beam sensors, the SLVA control unit, muting sensors and additional safety equipment that can be selected by the user (for example emergency off) combine to form a modular protection system.

From 1 to 8 optical sensors can be connected to an control unit.

Optical sensors can be mixed in any combination, although any given optical through beam sensor must consist of a transmitter and receiver of the same type.

The power supply voltage required for the optical sensors is provided by the control unit. Control of the transmitter and evaluation of the signal transferred by the receiver (for example to interrupt a light beam) is also performed by the control unit.

The SLA series is available in various versions with different detection ranges. Depending on the type of optical sensors, the detection range may then be up to 65 m.

Multi-sided protection can be implemented with adjustable mirrors.

Applications

Protecting access and securing hazardous areas for pallet loading systems, robots, woodworking machines, packaging machines, high shelf units and machine systems.

Principle	Type code	Category	Detection range	Page
	**SLA5** **SLA5/92**	**4**	**0 m ... 5 m**	**26**
	SLA5S **SLA5S/92**	**4**	**0 m ... 5 m**	**30**
	SL12	**2**	**0 m ... 10 m**	**34**
	SLA12	**4**	**0 m ... 10 m**	**38**
	SLA20 **SLA20/92**	**4**	**0 m ... 10 m**	**42**
	SLA28/105	**4**	**0 m ... 65 m**	**46**
	SLA28/116	**4**	**0 m ... 65 m**	**50**
	SL29	**2**	**0 m ... 65 m**	**54**
	SL29/116	**2**	**0 m ... 65 m**	**58**
	SLA29	**4**	**0 m ... 30 m**	**62**
	SLA29/116	**4**	**0 m ... 65 m**	**66**
	SLA40 **SLA40/92**	**4**	**0 m ... 4 m**	**70**

Safety through beam sensor

SLA5

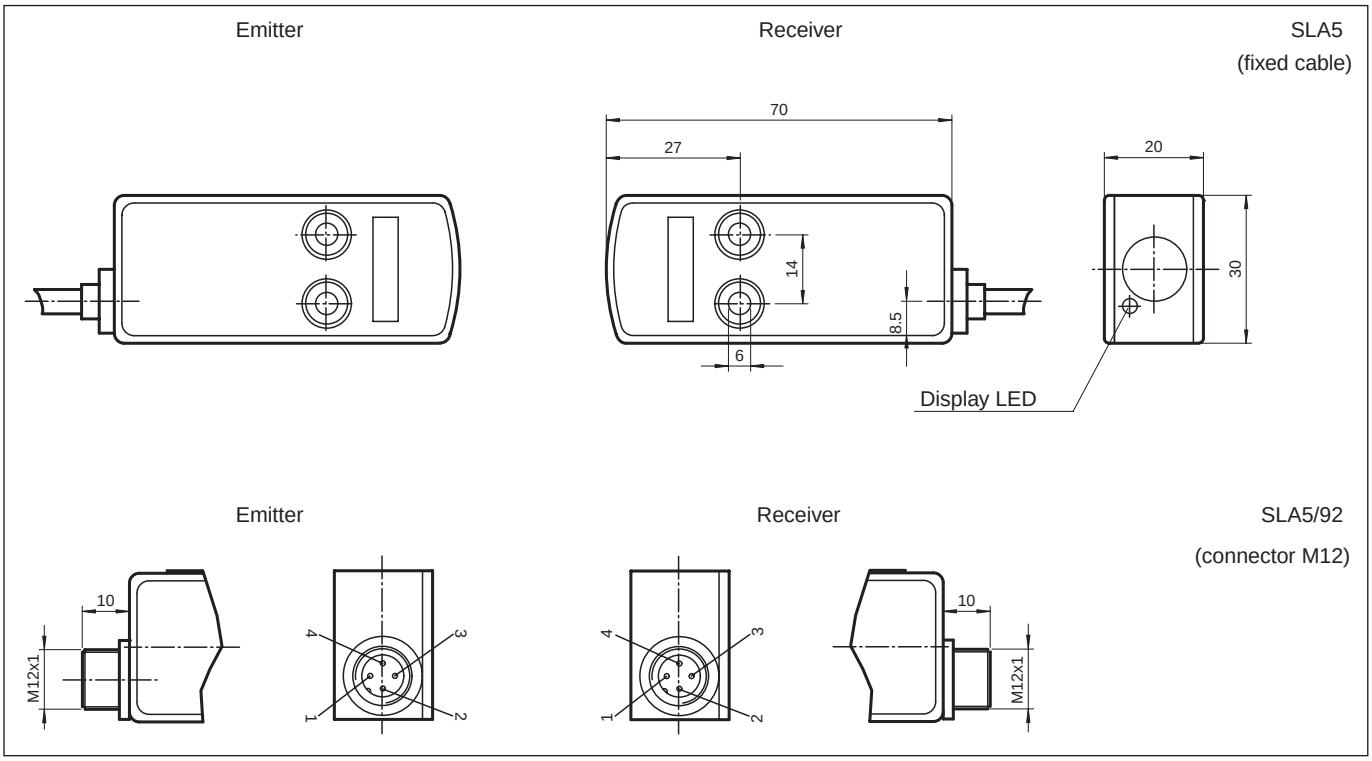
CE

- Detection range up to 5 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
- Sturdy housing
- Operation on control units of series SLVA and SC4-8

	Ordering code:	SLA5	SLA5/33 K=5m	SLA5/33 K=10m	SLA5/92
Effective detection range	0 ... 5 m	◆	◆	◆	◆
Number of protective field beams	1	◆	◆	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
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 units of the SLVA and SC4-8 series	◆	◆	◆	◆
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				◆

SLA5

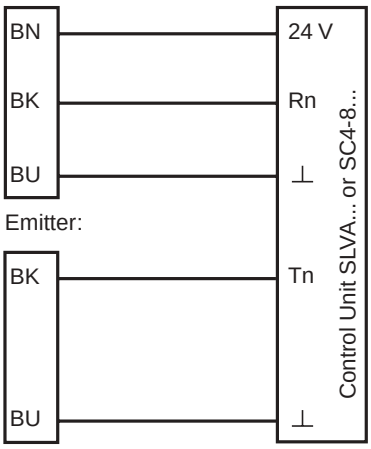
Dimensions



Electrical connection

Design with fixed cable

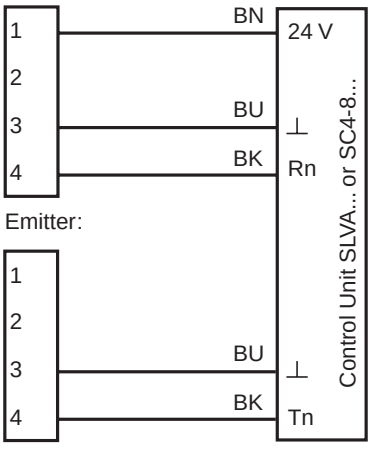
Receiver:



Emitter:

Design with connector plug

Receiver:

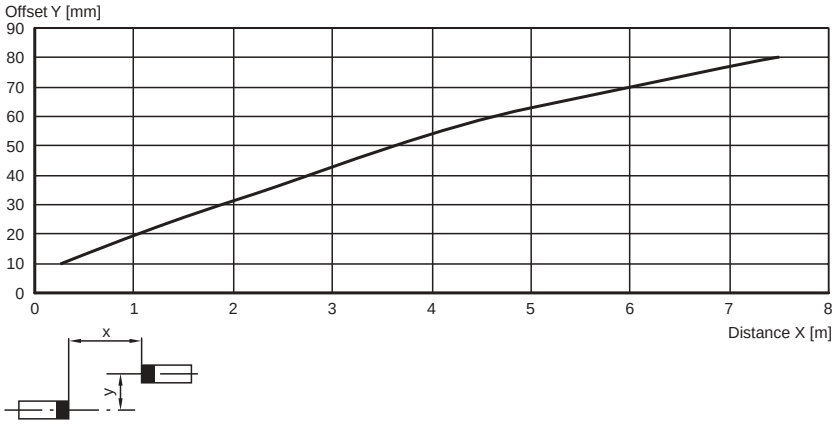


Emitter:

Diagrams

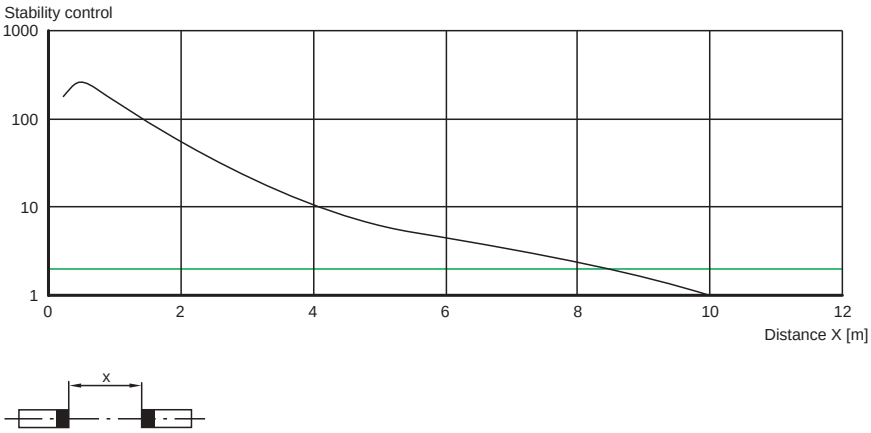
Characteristic response curve

SLA5 / SLA5S



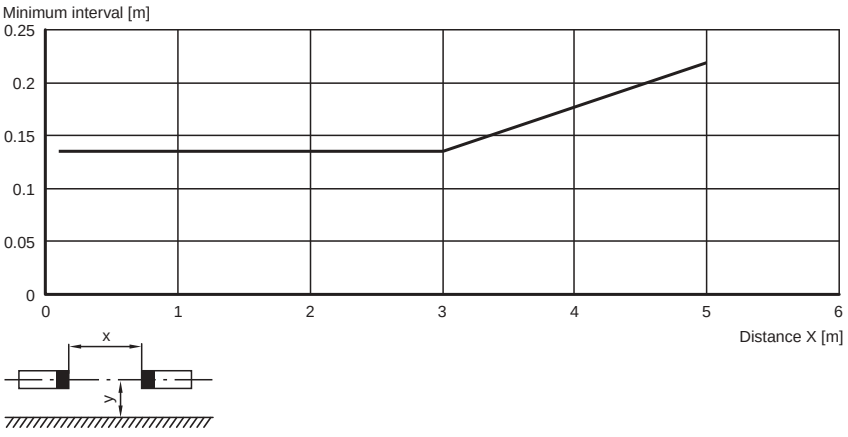
Relative received light strength

SLA5 / SLA5S



Lateral interval to mirroring surfaces

SLA5 / SLA5S



System accessories

Control units

SLVA4-K plus
SLVA8-K
SC4-8

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

Safety through beam sensor

SLA5S

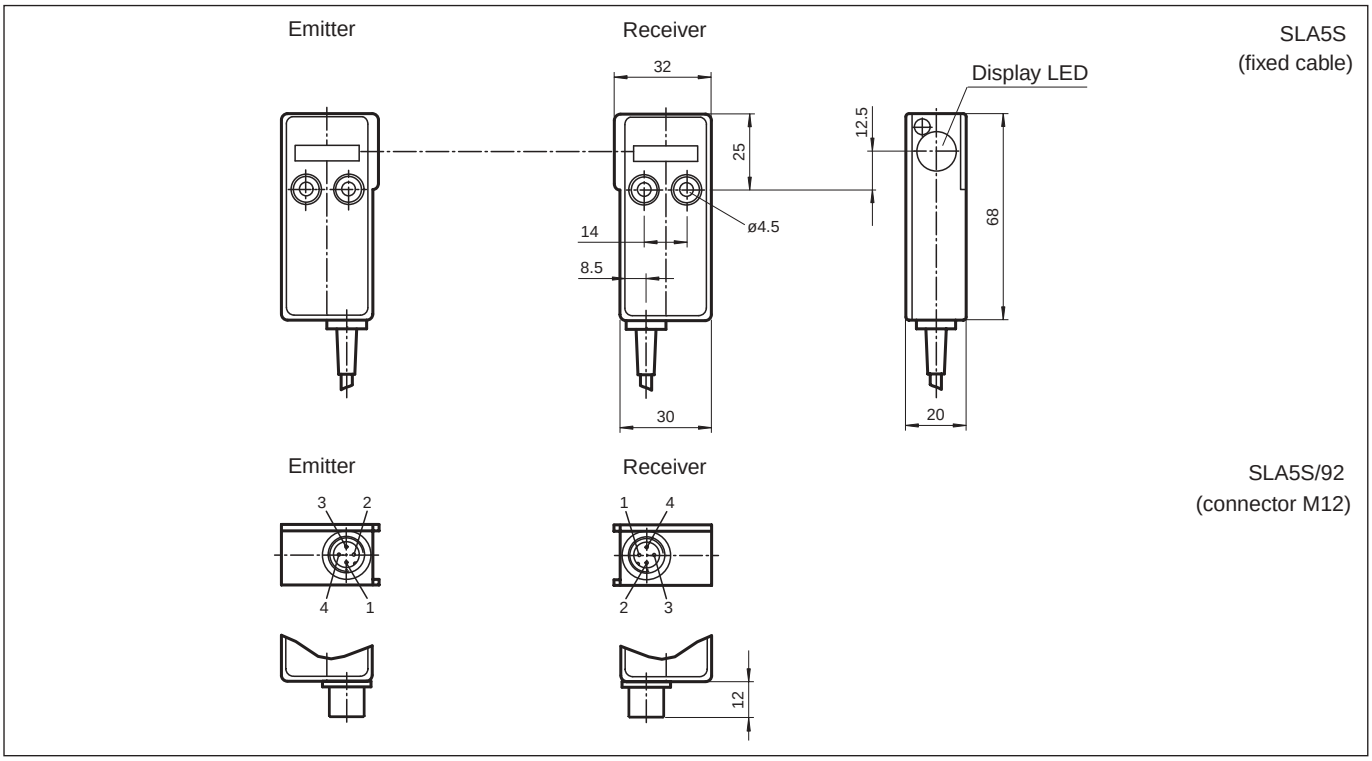
CE

- Detection range up to 5 m
- 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 series SLVA and SC4-8

	Ordering code:	SLA5S	SLA5S/33 K=5m	SLA5S/92
Effective detection range	0 ... 5 m	◆	◆	◆
Number of protective field beams	1	◆	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆
Light source	LED	◆	◆	◆
Light type	red, alternating light	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆
Approvals	TÜV	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆
Marking	CE	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆
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 units of the SLVA and SC4-8 series	◆	◆	◆
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 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	SLA5S-T	◆		
	SLA5S-T/33 K=5m		◆	
	SLA5S-T/92			◆
Receiver	SLA5S-R	◆		
	SLA5S-R/33 K=5m		◆	
	SLA5S-R/92			◆

SLA5S

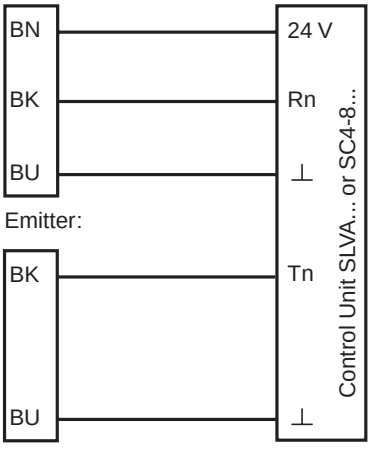
Dimensions



Electrical connection

Design with fixed cable

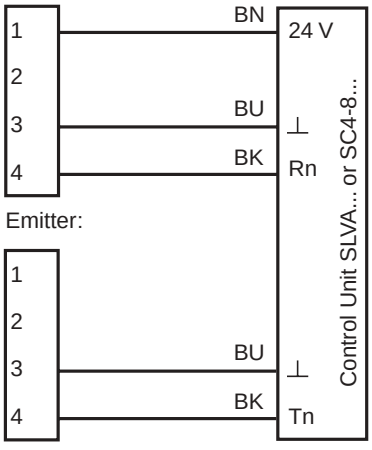
Receiver:



Emitter:

Design with connector plug

Receiver:

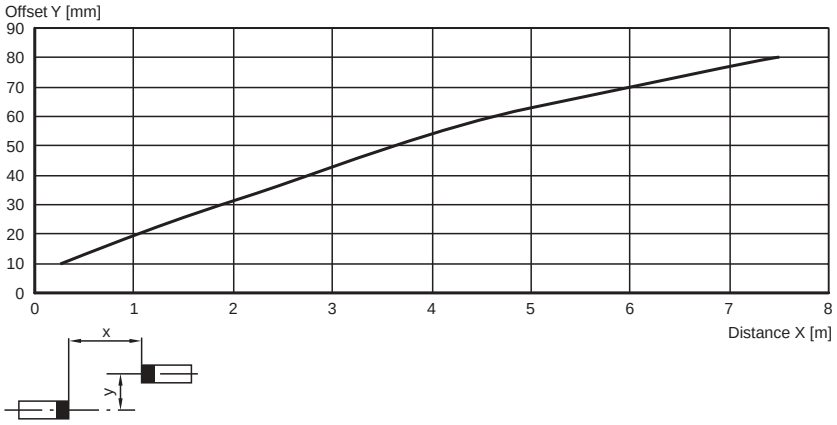


Emitter:

Diagrams

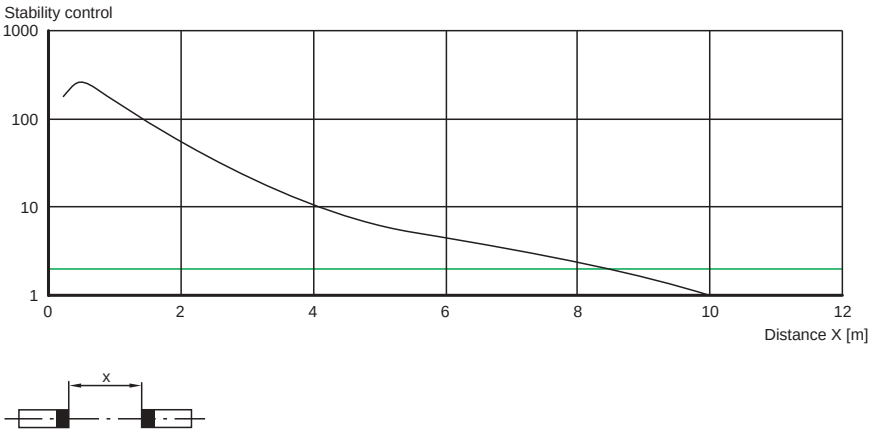
Characteristic response curve

SLA5 / SLA5S



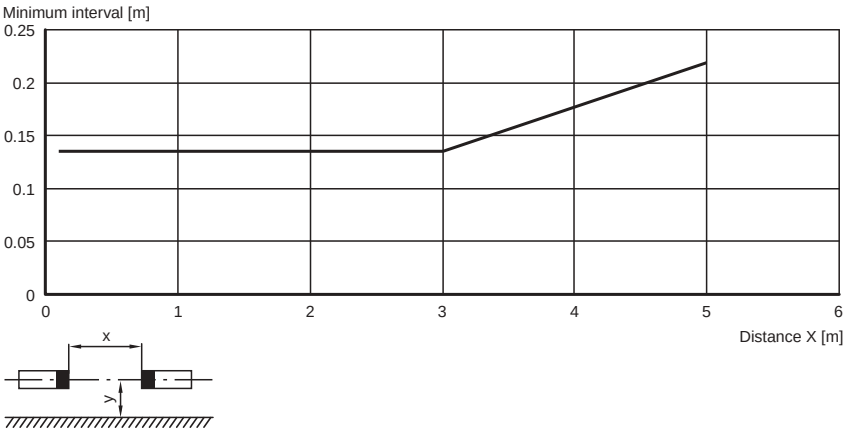
Relative received light strength

SLA5 / SLA5S



Lateral interval to mirroring surfaces

SLA5 / SLA5S



System accessories

Control units

SLVA4-K plus
SLVA8-K
SC4-8

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

Safety through beam sensor

SL12/...

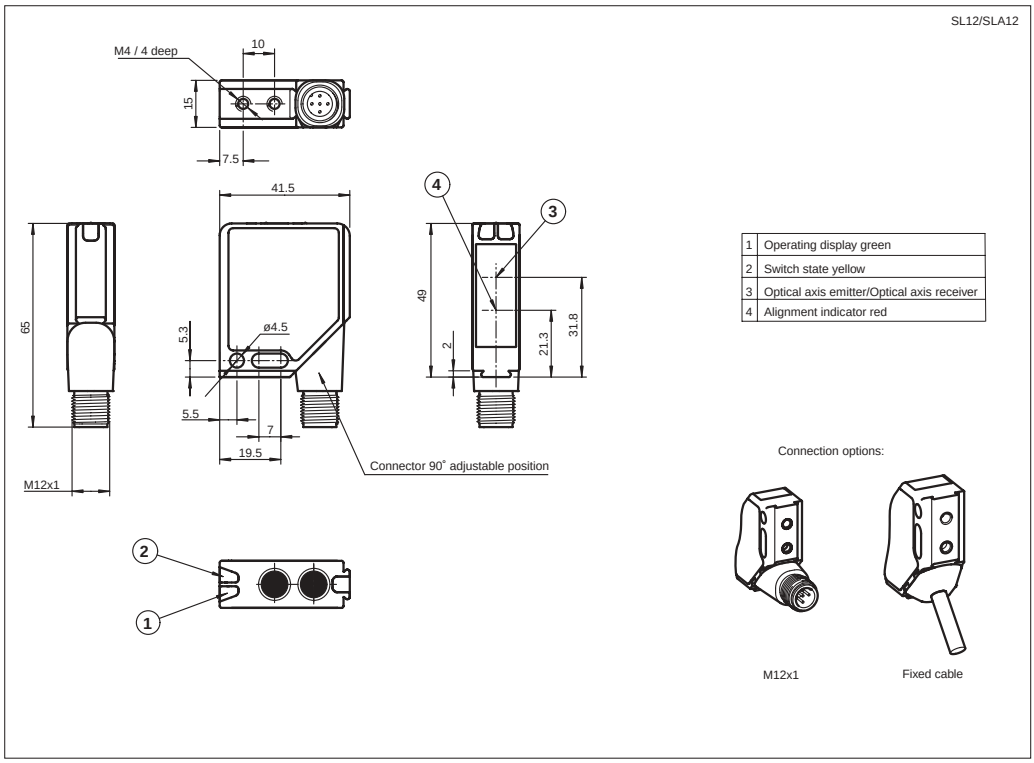
CE

- 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

	Ordering code:	SL12/124	SL12/115
Effective detection range	0.2 ... 10 m	◆	◆
Threshold detection range	16 m	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Light source	LED, 660 nm	◆	◆
Light type	red, alternating light	◆	◆
Angle of divergence	< 10 °	◆	◆
Alignment aid	LED red	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Safety category according to IEC/EN 61496	2	◆	◆
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 display	LED green	◆	◆
Operating voltage	Power supply via control units of the SC series 2	◆	◆
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 lens	◆	◆
Mass	per device 60 g	◆	◆
System components			
Emitter	SL12-T/115		◆
	SL12-T/124	◆	
Receiver	SL12-R/115		◆
	SL12-R/124	◆	

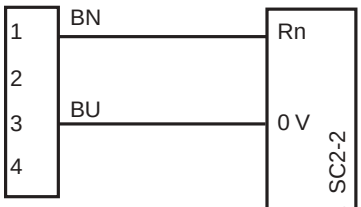
SL12/...

Dimensions

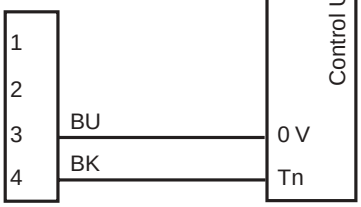


Electrical connection

Receiver:



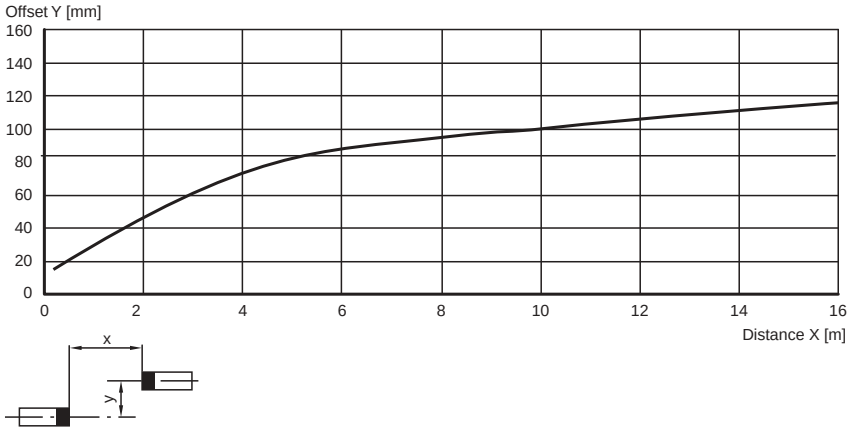
Emitter:



Diagrams

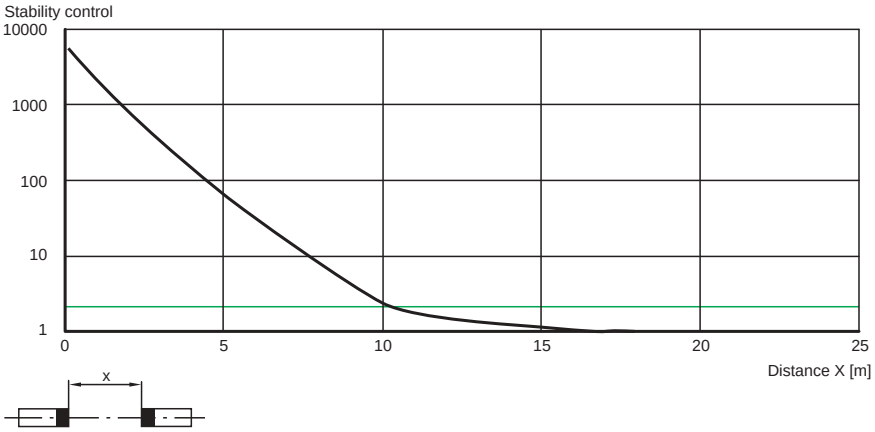
Characteristic response curve

SL12..., SLA12...



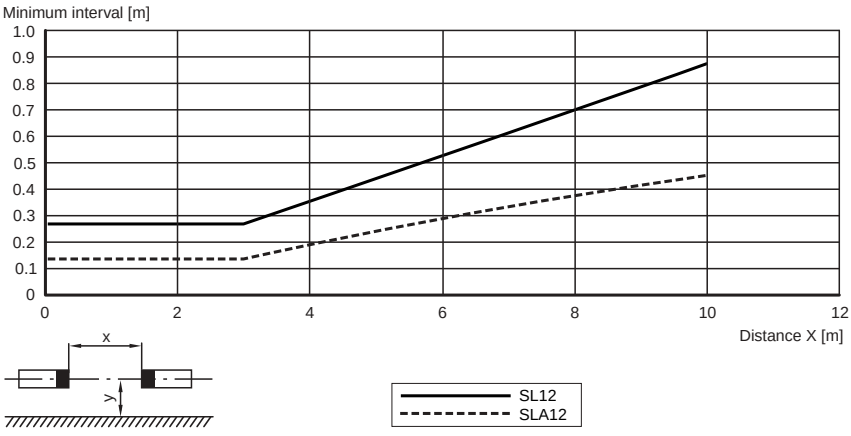
Relative received light strength

SL12..., SLA12...



Lateral interval to mirroring surfaces

SL12..., SLA12...



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

Safety through beam sensor

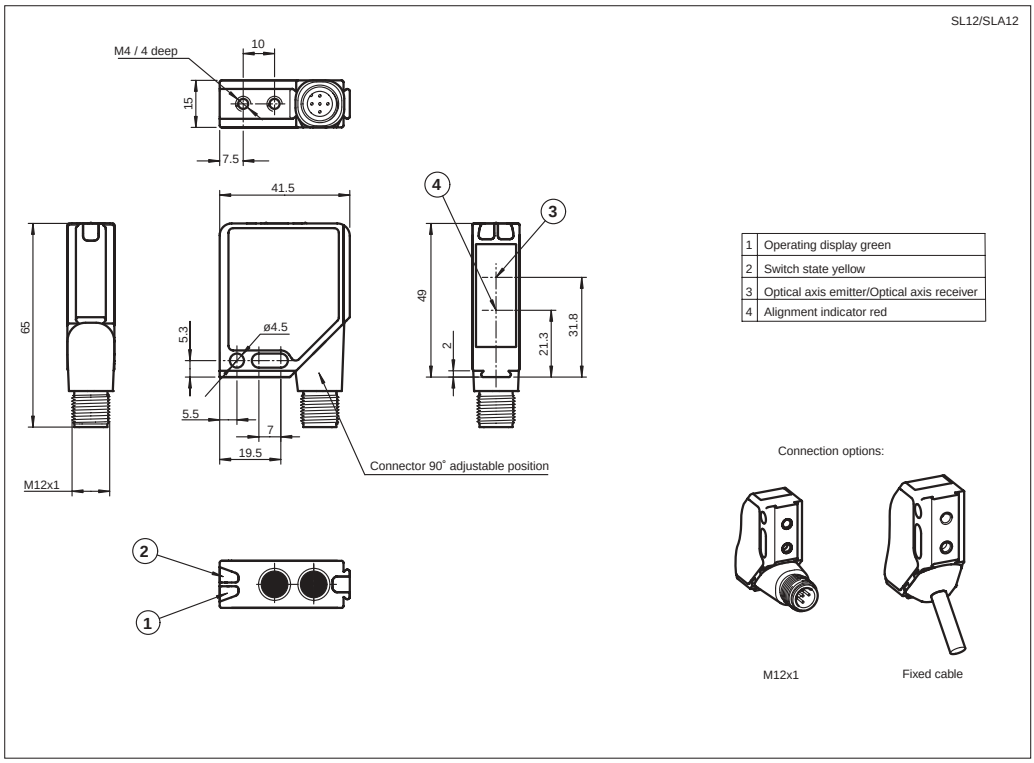
SLA12/...

- 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 SC4-2

	Ordering code:	SLA12/124	SLA12/115
Effective detection range	0.2... 10 m	◆	◆
Threshold detection range	16 m	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Light source	LED, 660 nm	◆	◆
Light type	red, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Alignment aid	LED red	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
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 display	LED green	◆	◆
Operating voltage	Power supply via control units of the SC series 4 - 2	◆	◆
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 lens	◆	◆
Mass	per device 60 g	◆	◆
System components			
Emitter	SLA12-T/115		◆
	SLA12-T/124	◆	
Receiver	SLA12-R/115		◆
	SLA12-R/124	◆	

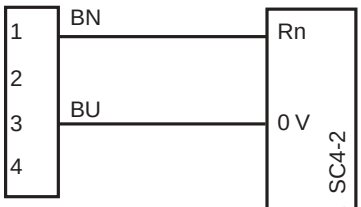
SLA12/...

Dimensions

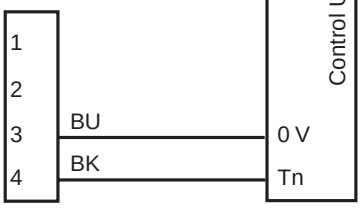


Electrical connection

Receiver:



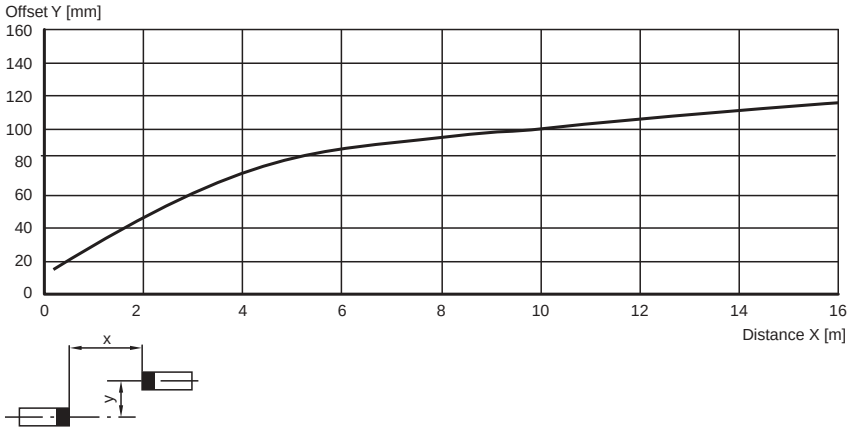
Emitter:



Diagrams

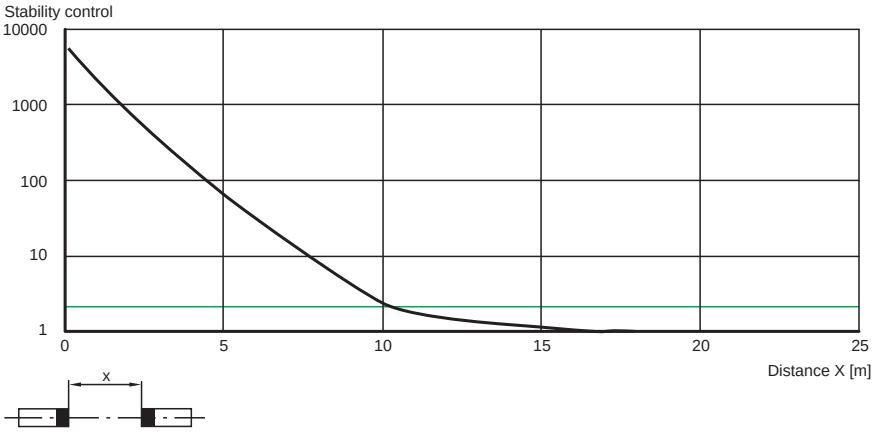
Characteristic response curve

SL12..., SLA12...



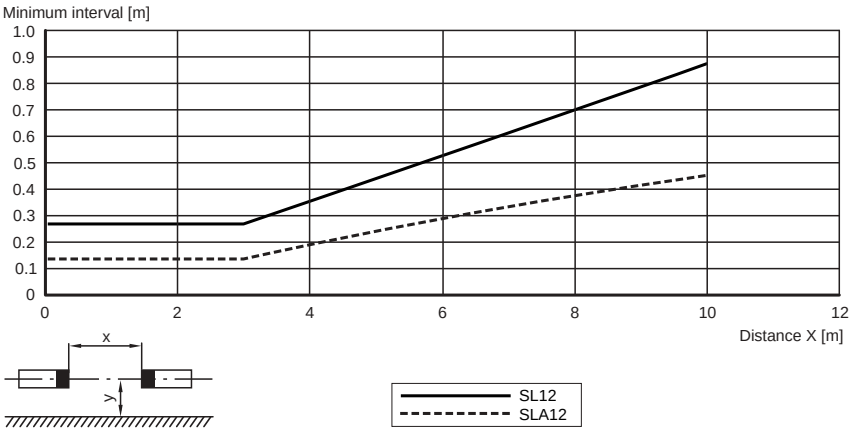
Relative received light strength

SL12..., SLA12...



Lateral interval to mirroring surfaces

SL12..., SLA12...



System accessories

Control units

SC4-2

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

Safety through beam sensor

SLA20

CE

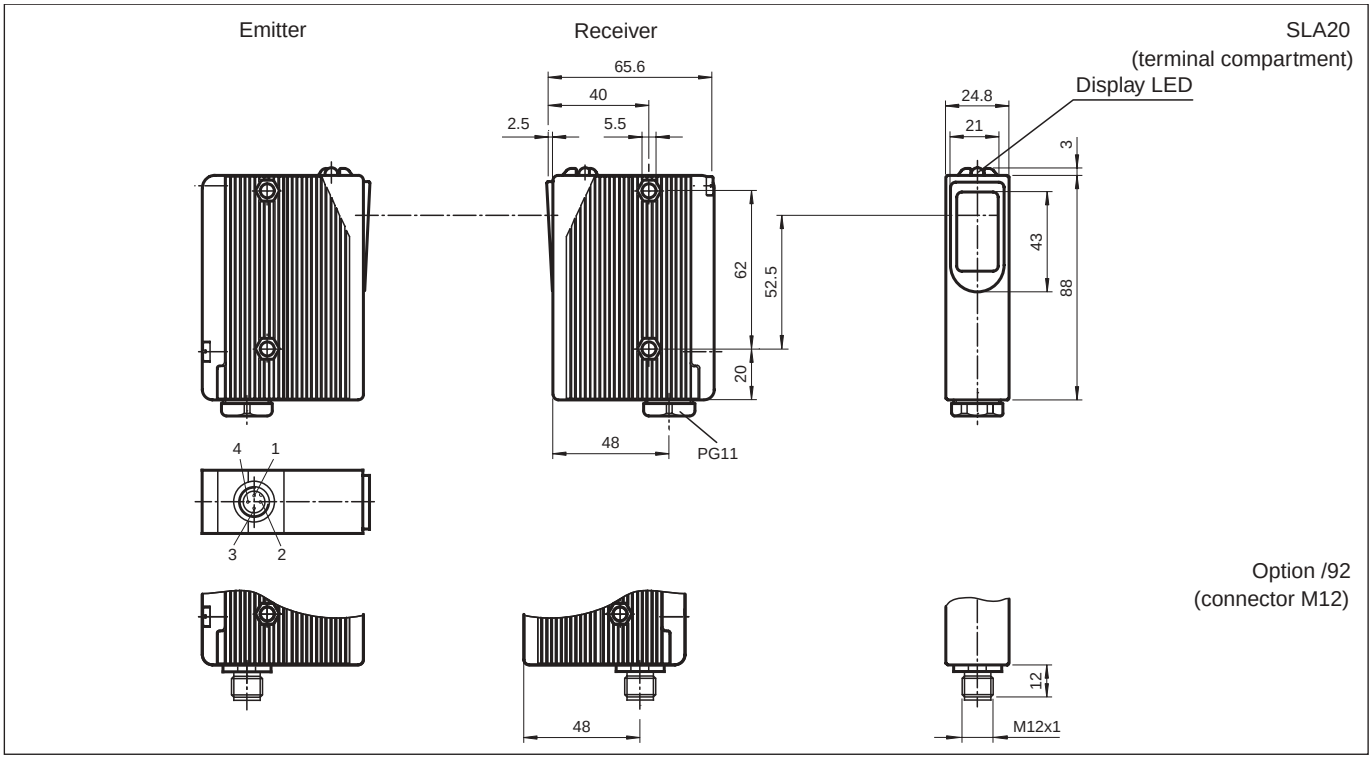
- Detection range up to 10 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Clearly visible LED functional display- and pre-fault indicator on the receiver
- Sturdy housing
- Operation on control units of series SLVA and SC4-8

Technical data SLA20

	Ordering code:	SLA20	SLA20/92
Effective detection range	0 ... 10 m	◆	◆
Number of protective field beams	1	◆	◆
Obstacle size	static: 15 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Light source	LED, 665 nm	◆	◆
Light type	red, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
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 units of the SLVA and SC4-8 series	◆	◆
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	M12 connector, 4-pin		◆
	terminal compartment, lead cross-section 0.5 ... 1.5 mm^2	◆	
Housing	Plastic terluran, RAL 1021 (yellow) (plastic, fibre reinforced)	◆	◆
Optical face	glass	◆	◆
Mass	Per 120 g	◆	◆
System components			
Emitter	SLA20-T	◆	
	SLA20-T/92		◆
Receiver	SLA20-R	◆	
	SLA20-R/92		◆

SLA20

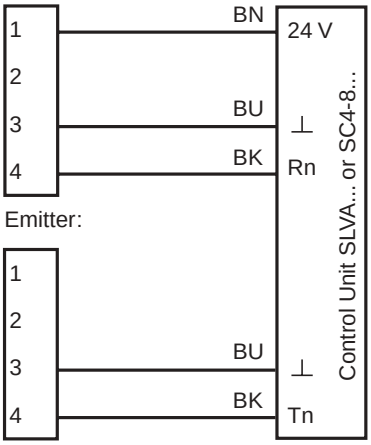
Dimensions



Electrical connection

Design with connector plug

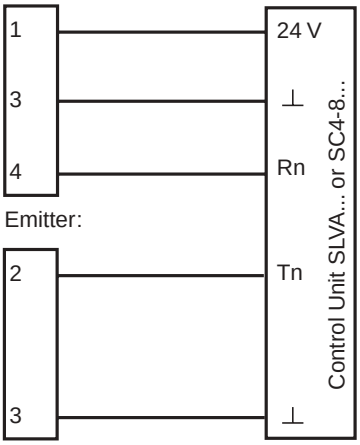
Receiver:



Emitter:

Design with terminal room

Receiver:

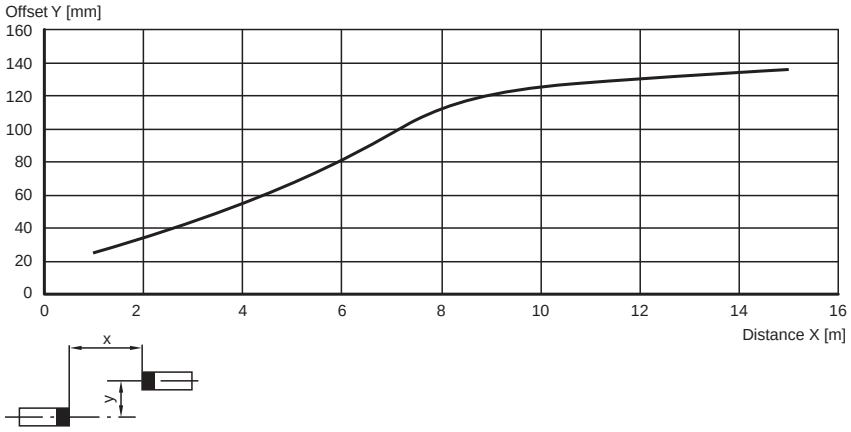


Emitter:

Diagrams

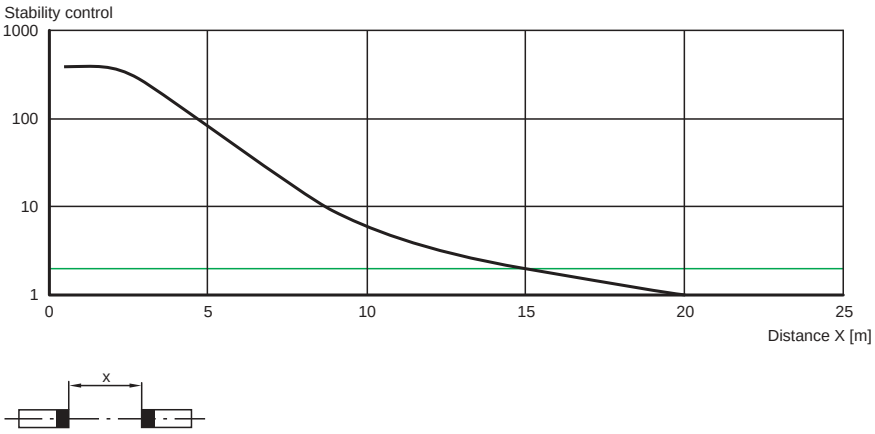
Characteristic response curve

SLA20



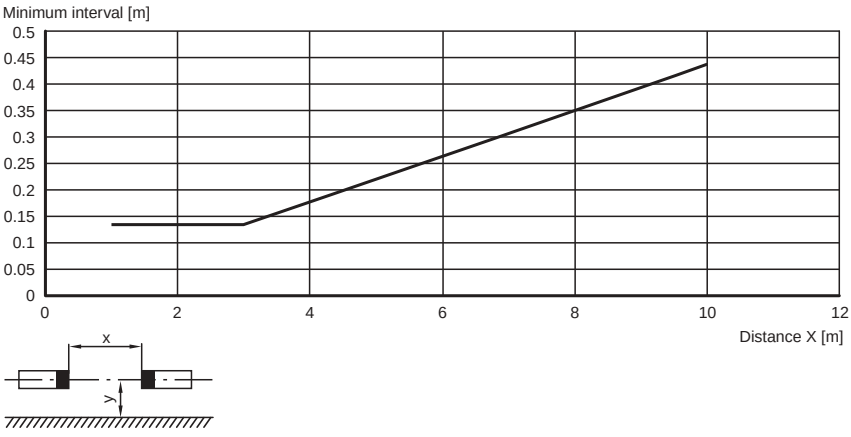
Relative received light strength

SLA20



Lateral interval to mirroring surfaces

SLA20



System accessories

Control units

SLVA4-K plus
SLVA8-K
SC4-8

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

Mounting aids

OMH-21
OMH-22

Further accessories

Redirection mirror
SLA-1-M

Safety through beam sensor

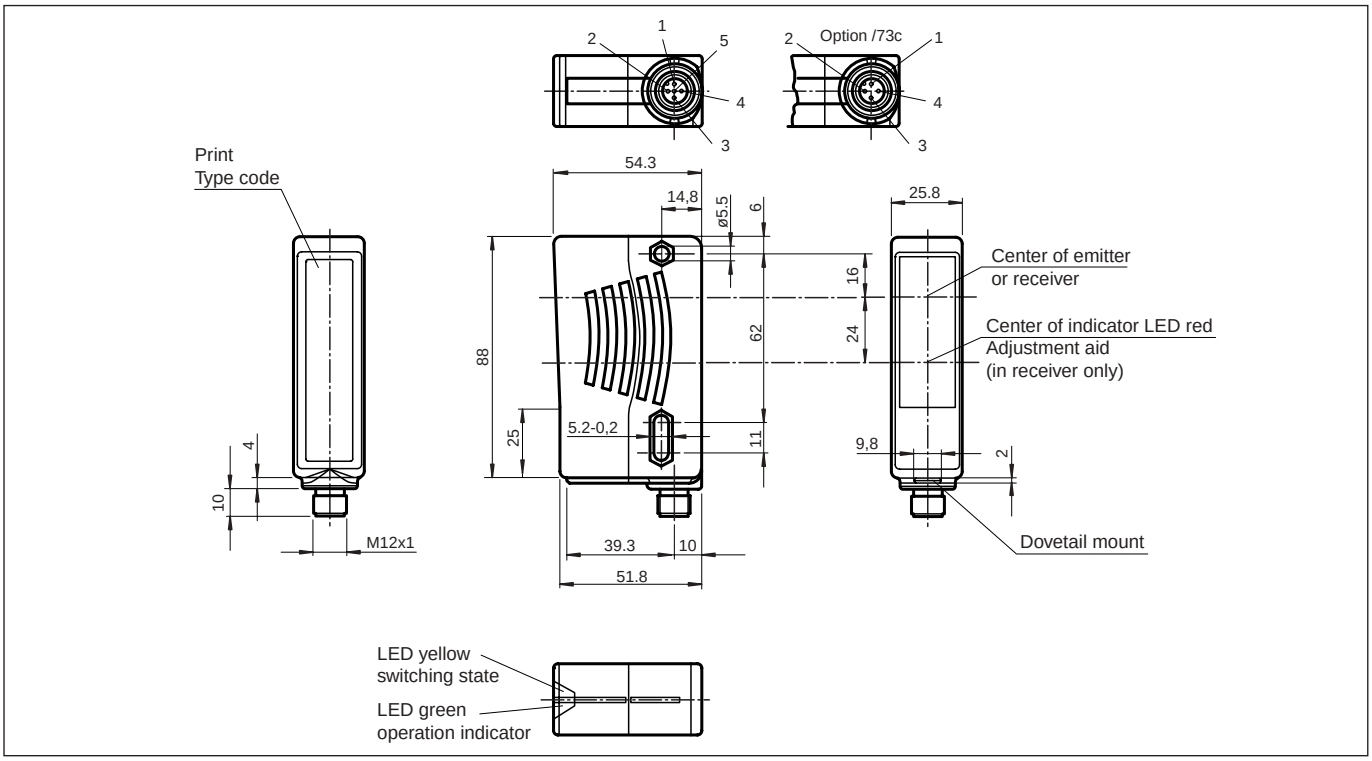
SLA28/../105/...

- Detection range up to 65 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 SLVA and SC4-8
- Extended temperature range up to -35 °C with heated front panel
  SLA28/105/106
  SLA28/35/105/106 R=65m

	Ordering code:	SLA28/105	SLA28/35/105 R=65m	SLA28/105/106	SLA28/35/105/106 R=65m
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Number of protective field beams	1	◆	◆	◆	◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Alignment aid	LED red in receiver	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
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 units of the SLVA and SC4-8 series	◆	◆	◆	◆
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	◆	◆	◆	◆
Connection	M12 connector, 5 pin	◆	◆	◆	◆
Housing	ABS plastic, RLA 1021 (yellow) painted	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 70 g	◆	◆	◆	◆
System components					
Emitter	SLA28-T/105	◆			
	SLA28-T/105/106			◆	
	SLA28-T/35/105 R=65m		◆		
	SLA28-T/35/105/106 R=65m				◆
Receiver	SLA28-R/105	◆			
	SLA28-R/105/106			◆	
	SLA28-R/35/105 R=65m		◆		
	SLA28-R/35/105/106 R=65m				◆

SLA28/../105/...

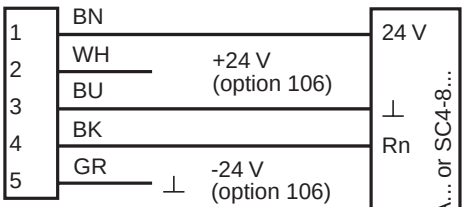
Dimensions



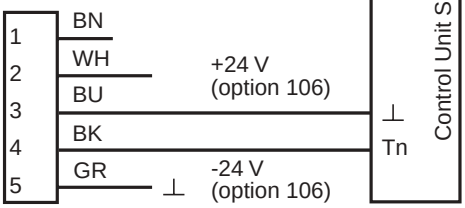
Electrical connection

Design with connector plug

Receiver:



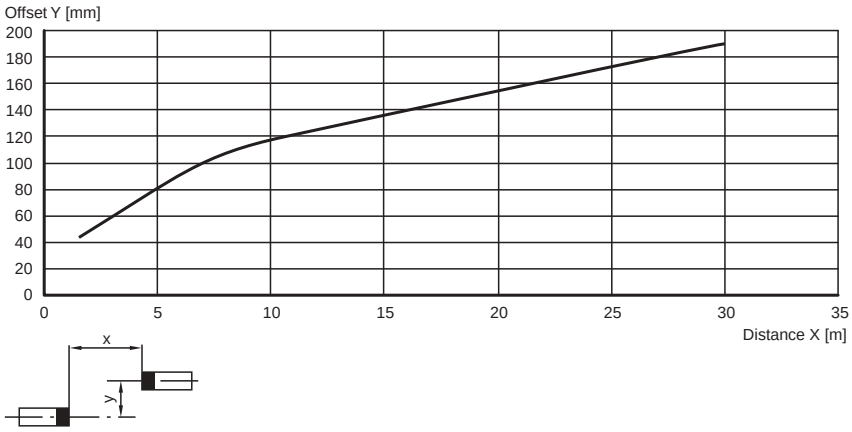
Emitter:



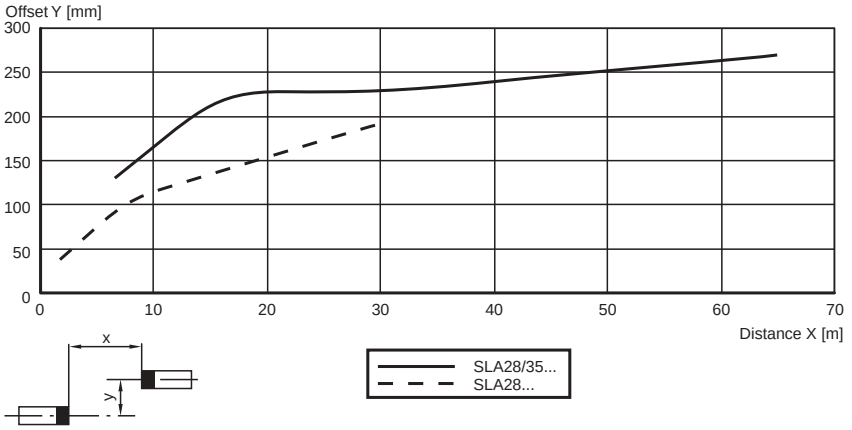
Diagrams

Characteristic response curve

SLA28

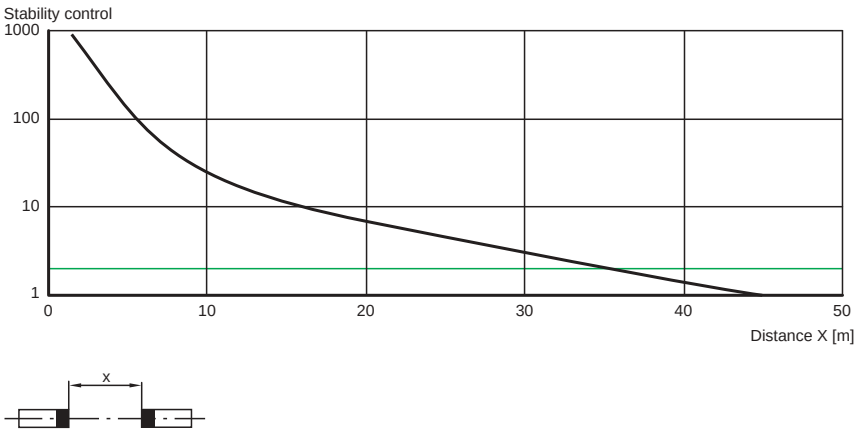


Characteristic response curve



Relative received light strength

SLA28



System accessories

Control units

SLVA4-K plus
SLVA8-K
SC4-8

Cable sockets

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

Safety through beam sensor

SLA28/../116...

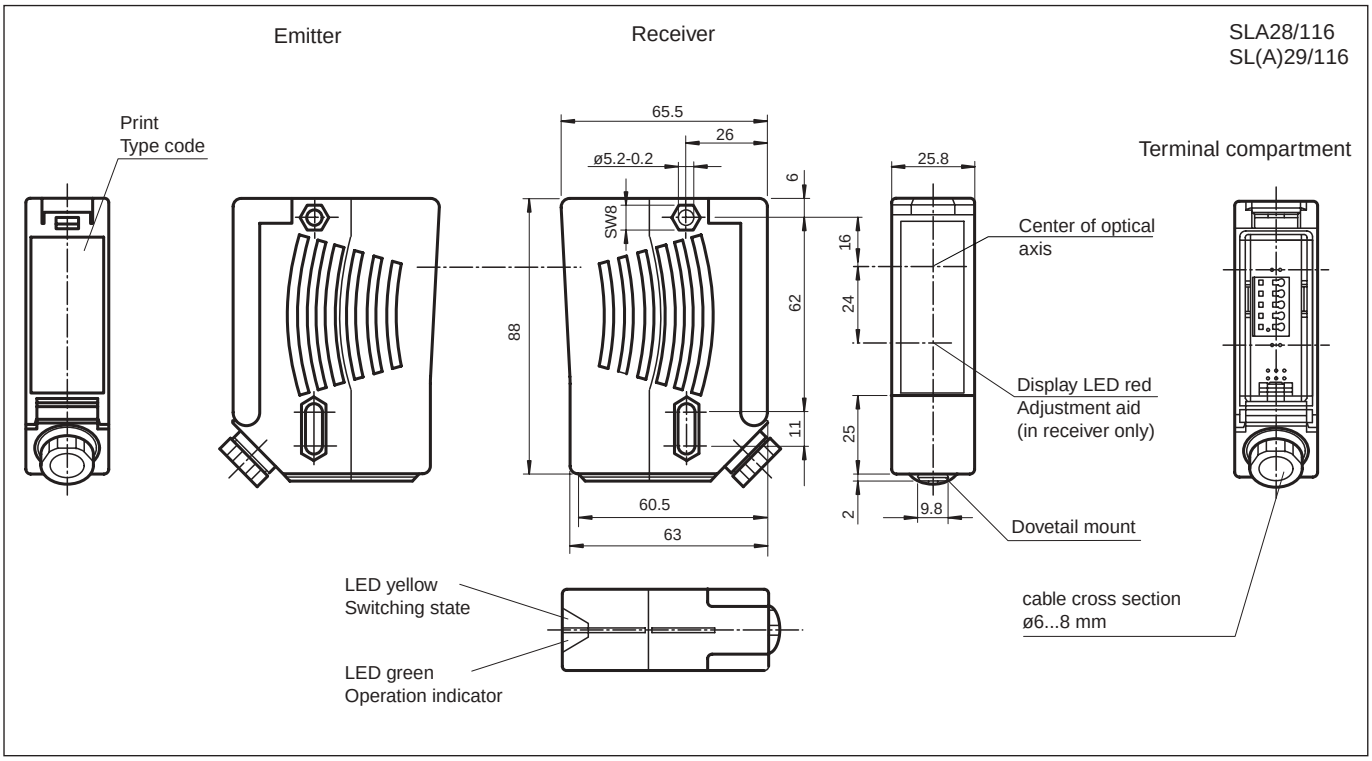
CE

- Detection range up to 65 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 SLVA and SC4-8
- Extended temperature range up to -35 °C with heated front panel
  SLA28/106/116
  SLA28/35/106/116 R=65m

	Ordering code:	SLA28/116	SLA28/35/116 R=65m	SLA28/106/116	SLA28/35/106/116 R=65m
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Number of protective field beams	1	◆	◆	◆	◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Alignment aid	LED red in receiver	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
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 units of the SLVA and SC4-8 series	◆	◆	◆	◆
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	◆	◆	◆	◆
Connection	Cable screwed connection M16, terminal compartment, lead cross-section 1.5 mm^2	◆	◆	◆	◆
Housing	ABS plastic, RLA 1021 (yellow) painted	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 70 g	◆	◆	◆	◆
System components					
Emitter	SLA28-T/106/116			◆	
	SLA28-T/116	◆			
	SLA28-T/35/106/116 R=65m				◆
	SLA28-T/35/116 R=65m		◆		
Receiver	SLA28-R/106/116			◆	
	SLA28-R/116	◆			
	SLA28-R/35/106/116 R=65m				◆
	SLA28-R/35/116 R=65m		◆		

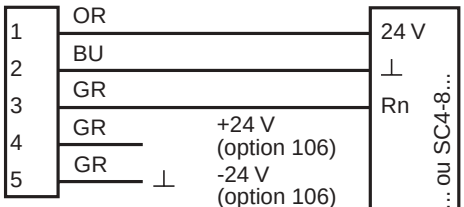
SLA28/../116...

Dimensions

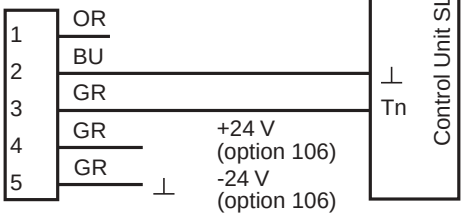


Electrical connection

Design with terminal room
Receiver:

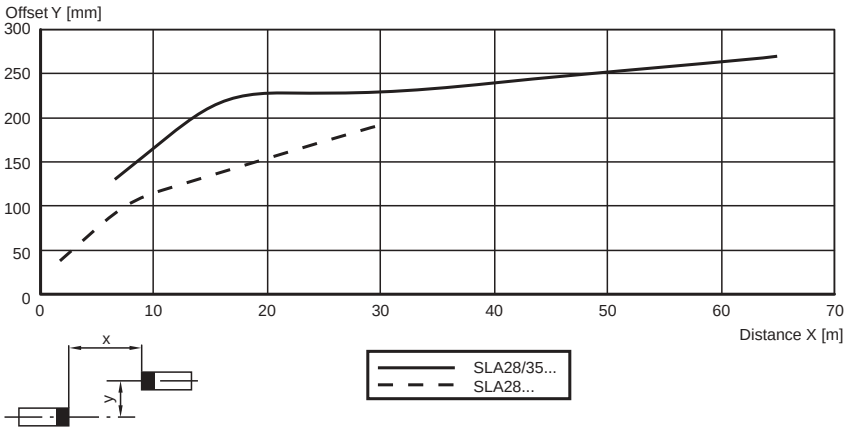


Emitter:

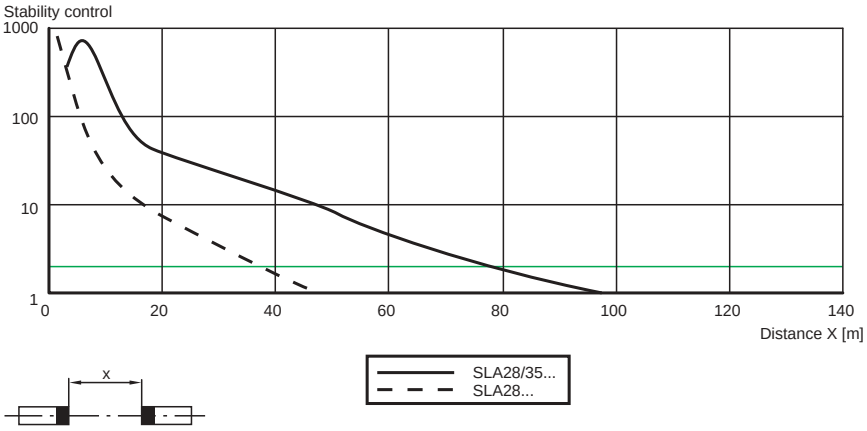


Diagrams

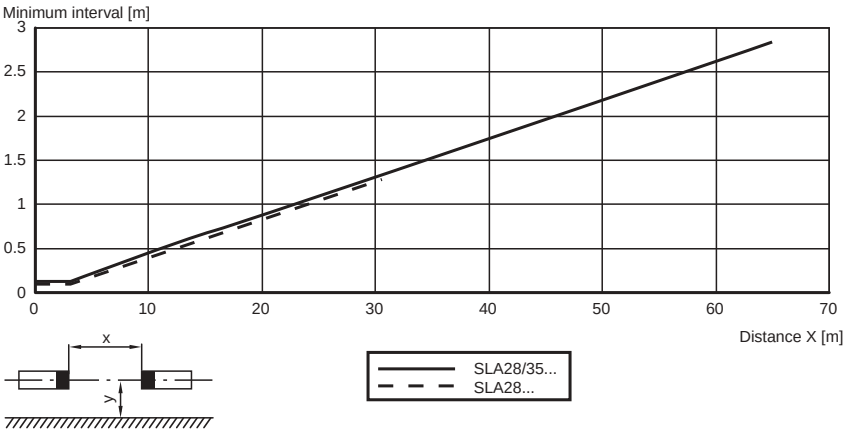
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



System accessories

Control units

SLVA4-K plus
SLVA8-K
SC4-8

Cable sockets

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

Safety through beam sensor

SL29/...

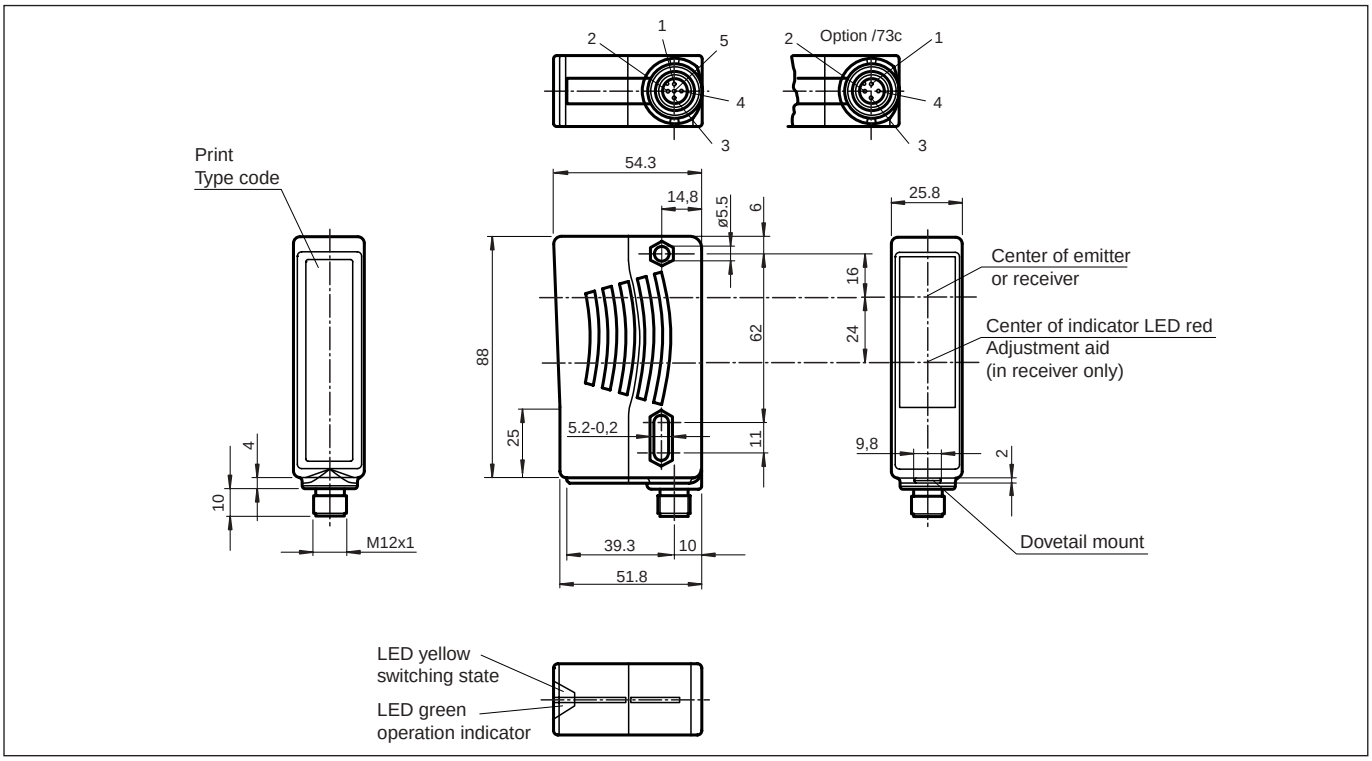
CE

- 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 SC4-2
- Detection range up to 65 m
  SL29/35/105/106 R=65M
  SL29/35/73c R=65M
- Detection range up to 30 m
  SL29/105/106
  SL29/73c
- Extended temperature range up to -35 °C with heated front panel
  SL29/105/106
  SL29/35/105/106 R=65M

	Ordering code:	SL29/105/106	SL29/35/105/106 R=65M	SL29/73c	SL29/35/73c R=65M
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Threshold detection range	40 m	◆		◆	
	85 m		◆		◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 10 °	◆	◆	◆	◆
Alignment aid	LED red	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	2	◆	◆	◆	◆
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 display	LED green	◆	◆	◆	◆
Operating voltage	Power supply via control units of the SC series 2	◆	◆	◆	◆
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 lens	◆	◆	◆	◆
Mass	per device 70 g	◆	◆	◆	◆
System components					
Emitter	SL29-T/105/106	◆			
	SL29-T/35/105/106 R=65m		◆		
	SL29-T/35/73c R=65 m				◆
	SL29-T/73c			◆	
Receiver	SL29-R/105/106	◆			
	SL29-R/35/105/106 R=65m		◆		
	SL29-R/35/73c R=65m				◆
	SL29-R/73c			◆	

SL29/...

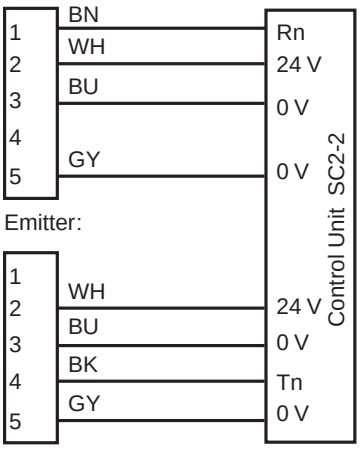
Dimensions



Electrical connection

Design with connector (Option /106)

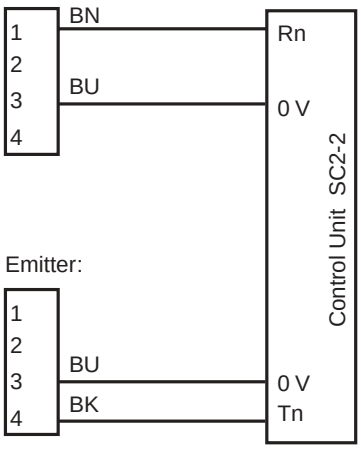
Receiver:



Emitter:

Design with connector

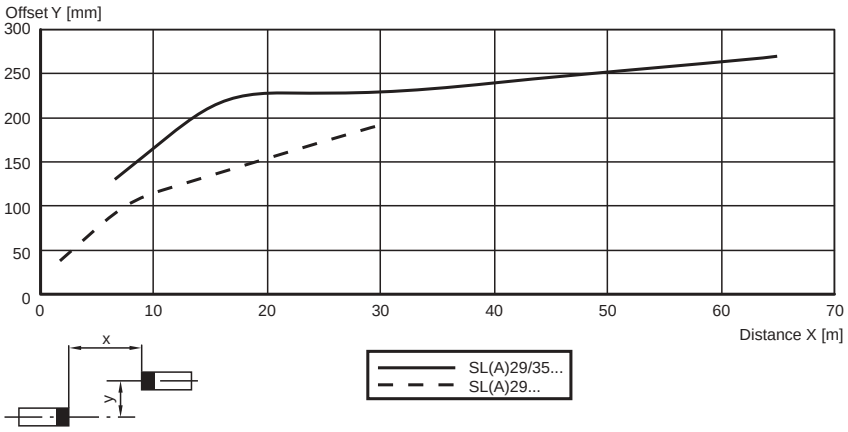
Receiver:



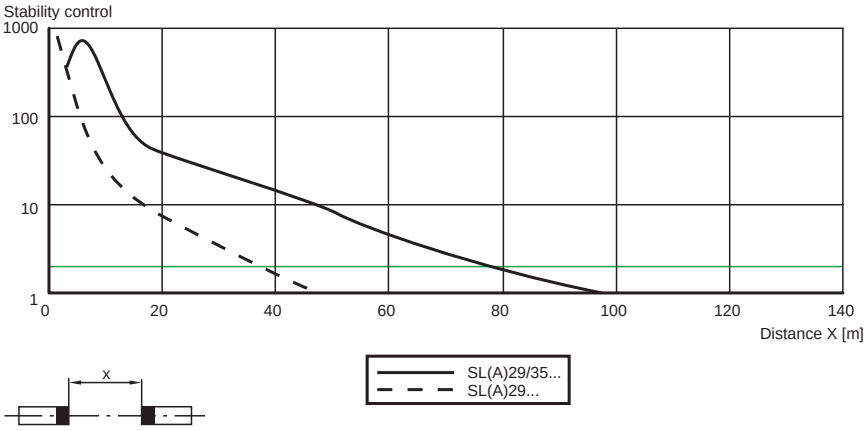
Emitter:

Diagrams

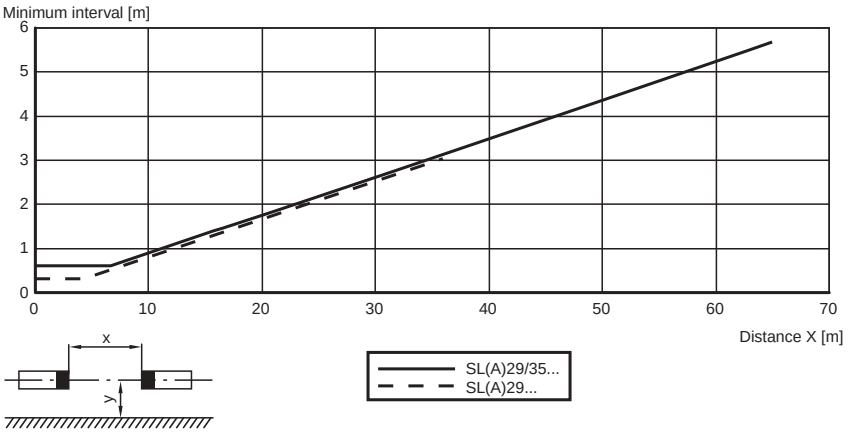
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



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

Safety through beam sensor

SL29/.../116 ...

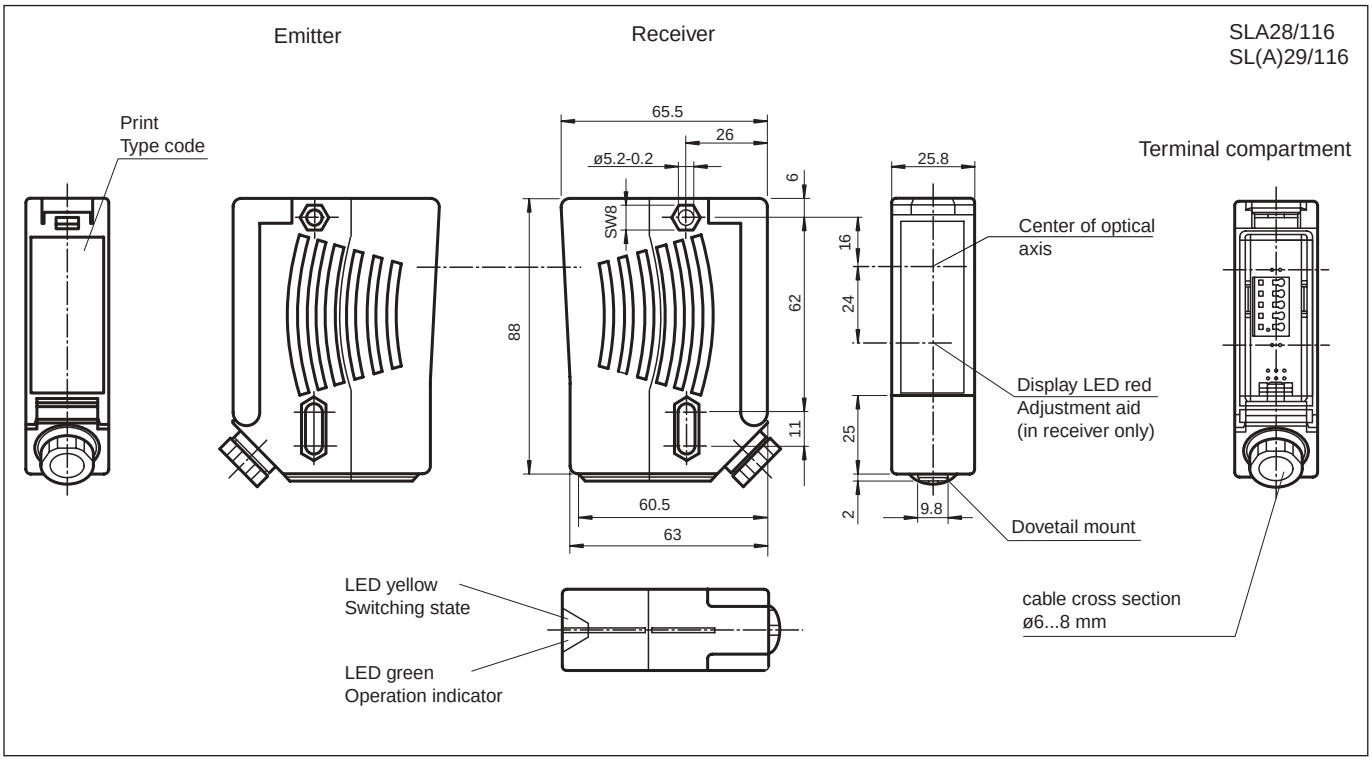
CE

- 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 SC4-2
- Detection range up to 65 m
  SL29/35/116 R=65m
  SL29/35/106/116 R=65m
- Detection range up to 30 m
  SL29/116
  SL29/106/116
- Extended temperature range up to -35 °C with heated front panel
  SL29/106/116
  SL29/35/106/116 R=65m

	Ordering code:	SL29/116	SL29/35/116 R=65m	SL29/106/116	SL29/35/106/116 R=65m
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Threshold detection range	40 m	◆		◆	
	85 m		◆		◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 10 °	◆	◆	◆	◆
Alignment aid	LED red	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	2	◆	◆	◆	◆
Function display	LED yellow: 1. LED lits constantly: signal > 2x 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 display	LED green	◆	◆	◆	◆
Operating voltage	Power supply via control units of the SC series 2	◆	◆	◆	◆
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 lens	◆	◆	◆	◆
Mass	per device 70 g	◆	◆	◆	◆
System components					
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		◆		

SL29/.../116 ...

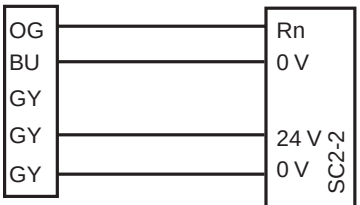
Dimensions



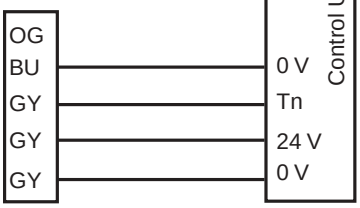
Electrical connection

Design with terminal compartment (Option /106)

Receiver:

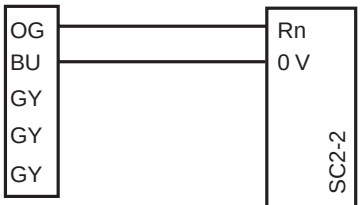


Emitter:

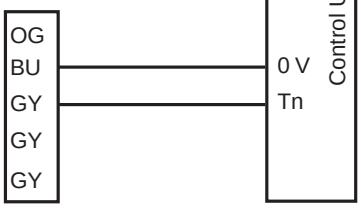


Design with terminal compartment

Receiver:

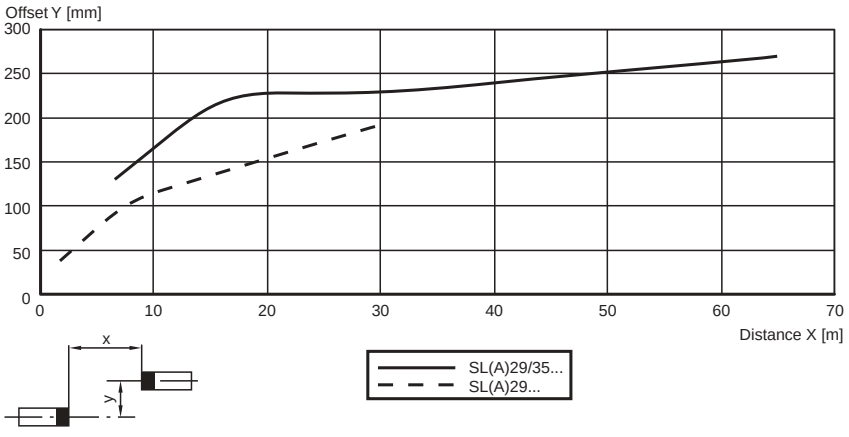


Emitter:

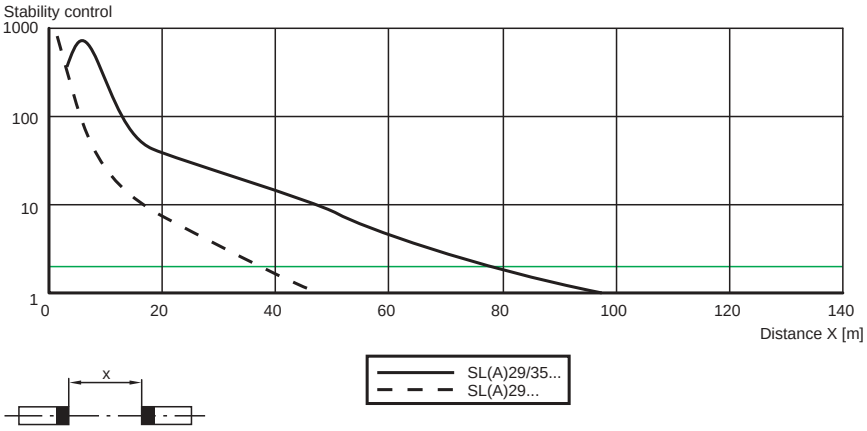


Diagrams

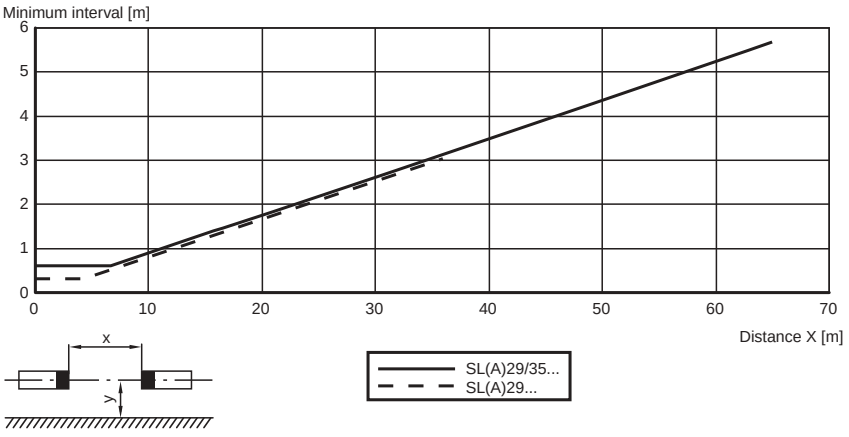
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



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

Safety through beam sensor

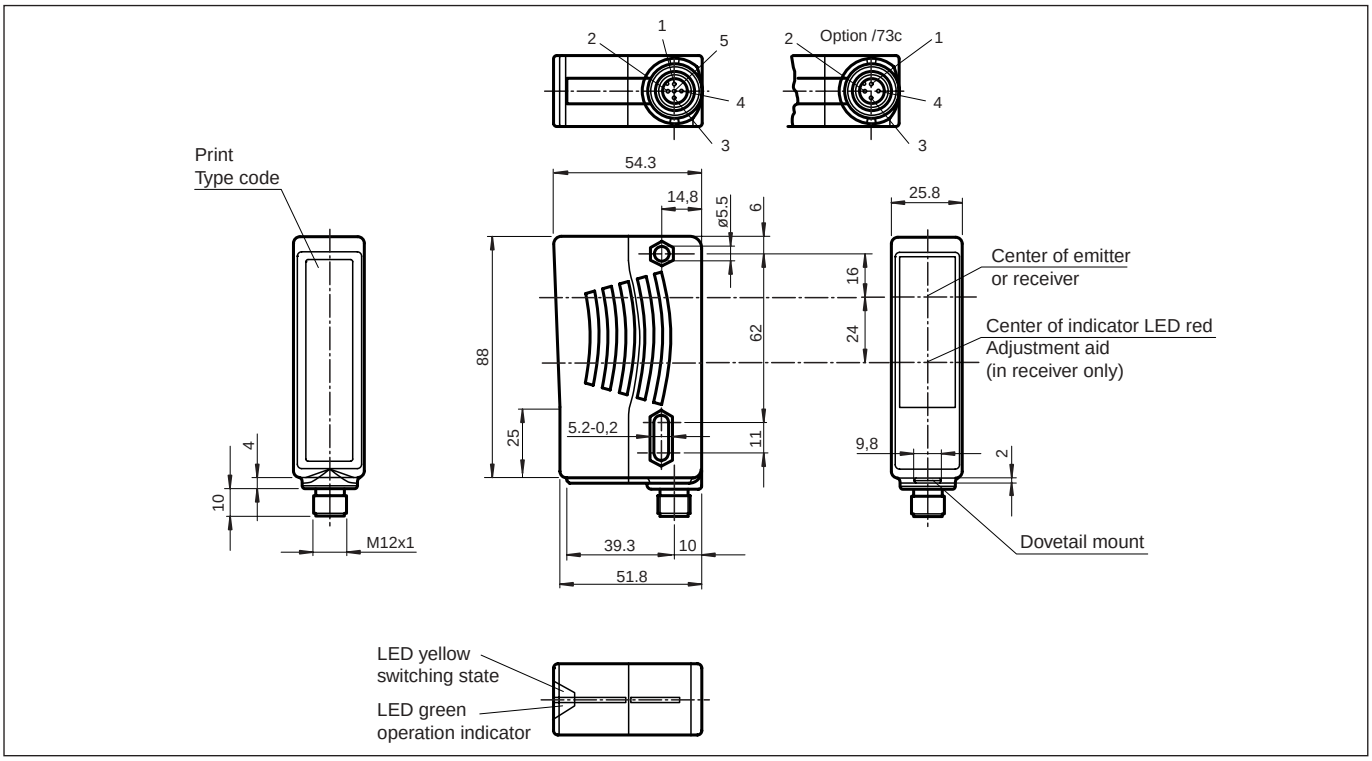
SLA29/...

- 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 SC2-2
- Detection range up to 30 m
  SLA29/105/106
  SLA29/73c
- Detection range up to 65 m
  SLA29/35/105/106 R=65m
  SLA29/35/73c R=65m
- Extended temperature range up to -35 °C with heated front panel
  SLA29/105/106
  SLA29/35/105/106 R=65m

	Ordering code:	SLA29/105/106	SLA29/35/105/106 R=65m	SLA29/73c	SLA29/35/73c R=65m
Effective detection range	0.2 ... 30 m	◆		◆	
	6 ... 65 m		◆		◆
Threshold detection range	40 m	◆		◆	
	85 m		◆		◆
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Alignment aid	LED red in receiver	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
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 display	LED green	◆	◆	◆	◆
Operating voltage	Power supply via control units of the SC series 4 - 2	◆	◆	◆	◆
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 lens	◆	◆	◆	◆
Mass	per device 70 g	◆	◆	◆	◆
System components					
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			◆	

SLA29/...

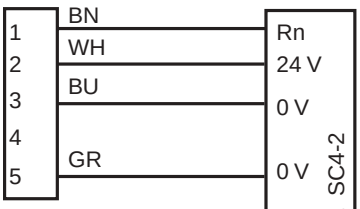
Dimensions



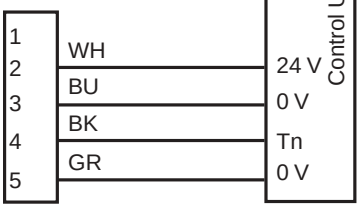
Electrical connection

Design with connector (Option /106)

Receiver:

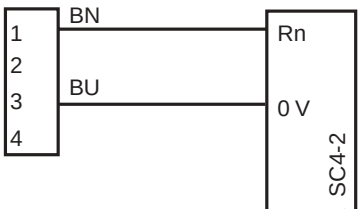


Emitter:

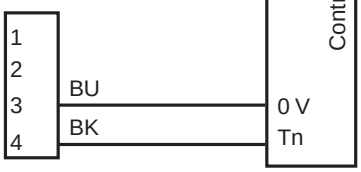


Design with connector

Receiver:

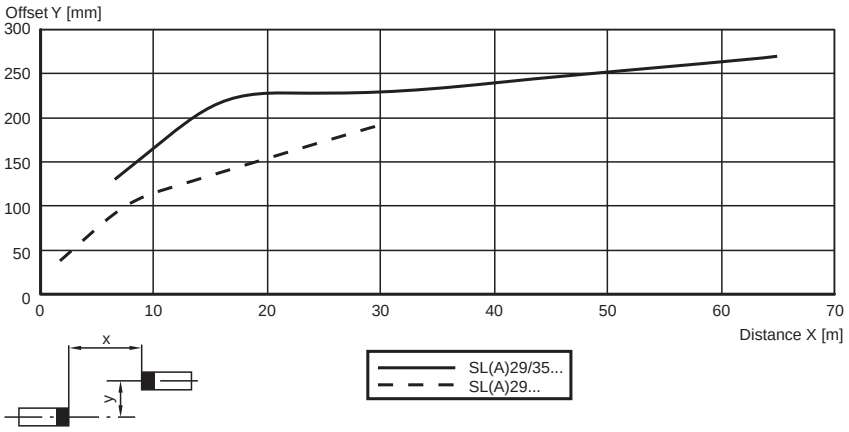


Emitter:

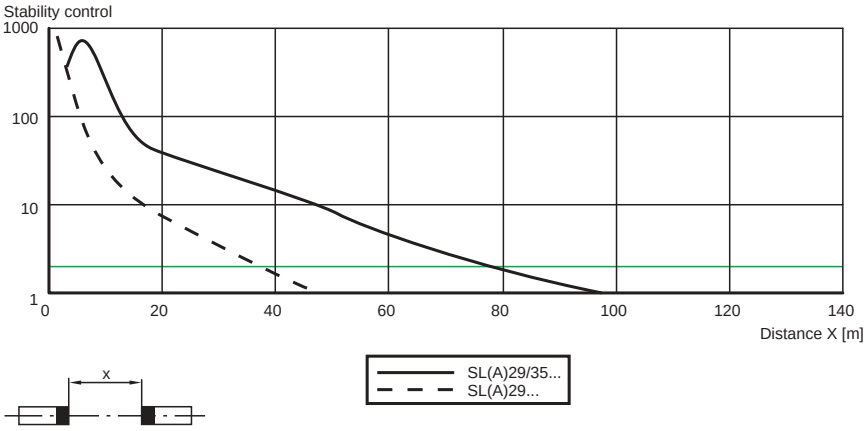


Diagrams

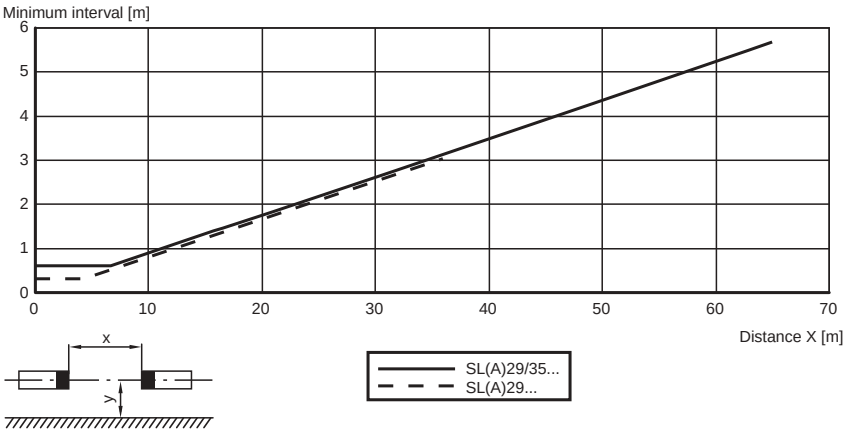
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



System accessories

Control units

SC4-2

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

Muting Set
MS SLP/SLA28

Redirection mirror
SLA-1-M

Safety through beam sensor

SLA29/.../116 ...

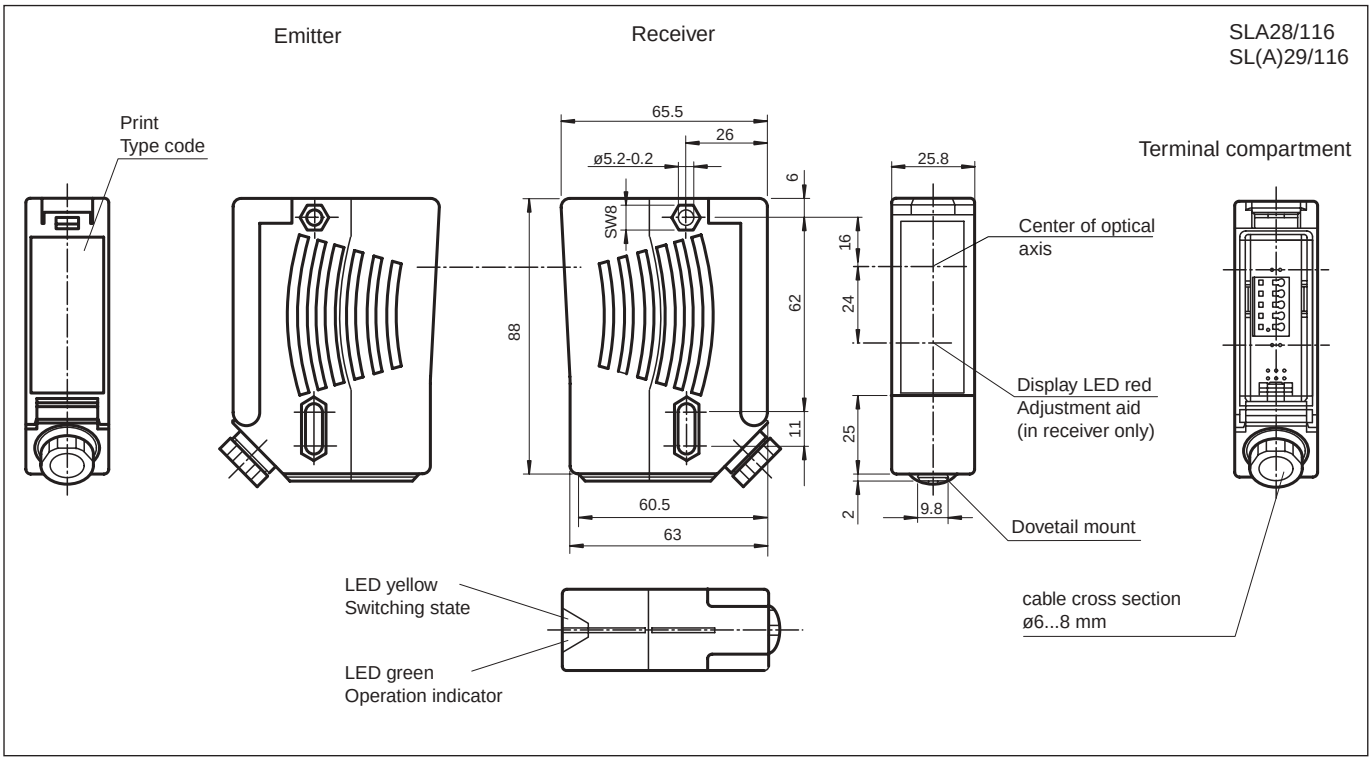
CE

- 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 SC2-2
- Detection range up to 30 m
  SLA29/116
  SLA29/106/116
- Detection range up to 65 m
  SLA29/35/116 R=65m
- Extended temperature range up to -35 °C with heated front panel
  SLA29/106/116

	Ordering code:	SLA29/116	SLA29/35/116 R=65m	SLA29/106/116
Effective detection range	0.2 ... 30 m	◆		◆
	6 ... 65 m		◆	
Threshold detection range	40 m	◆		◆
	85 m		◆	
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆
Light source	LED	◆	◆	◆
Light type	red, alternating light	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆
Alignment aid	LED red in receiver	◆	◆	◆
Approvals	TÜV	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆
Marking	CE	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆
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 display	LED green	◆	◆	◆
Operating voltage	Power supply via control units of the SC series 4 - 2	◆	◆	◆
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 lens	◆	◆	◆
Mass	per device 70 g	◆	◆	◆
System components				
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		◆	

SLA29/.../116 ...

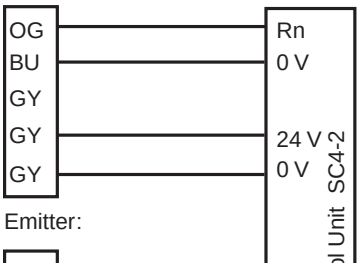
Dimensions



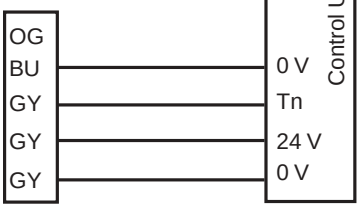
Electrical connection

Design with terminal compartment (Option /106)

Receiver:

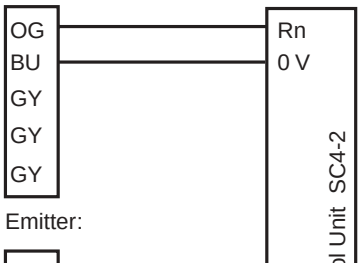


Emitter:

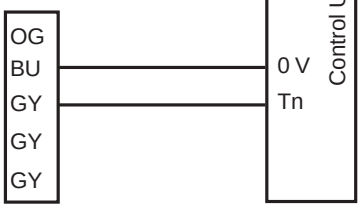


Design with terminal compartment

Receiver:

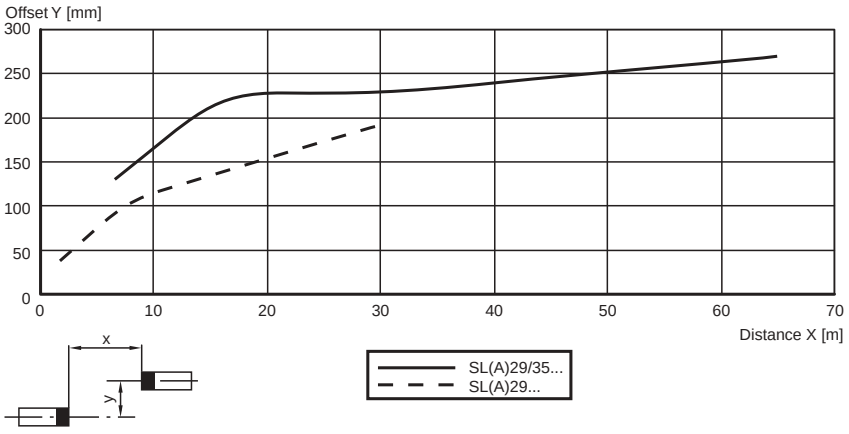


Emitter:

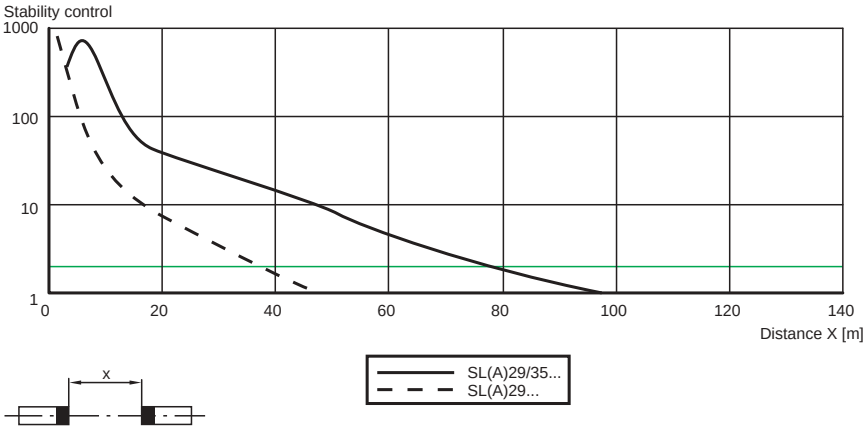


Diagrams

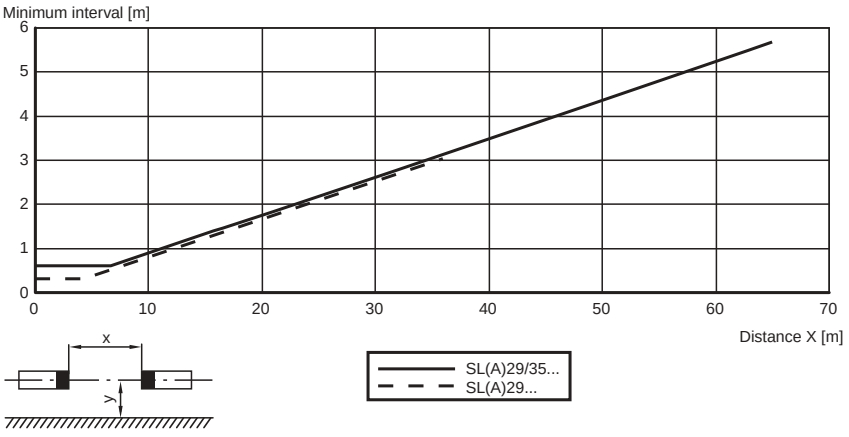
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



System accessories

Control units

SC4-2

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

Muting Set
MS SLP/SLA28

Redirection mirror
SLA-1-M

Safety through beam sensor

SLA40-...

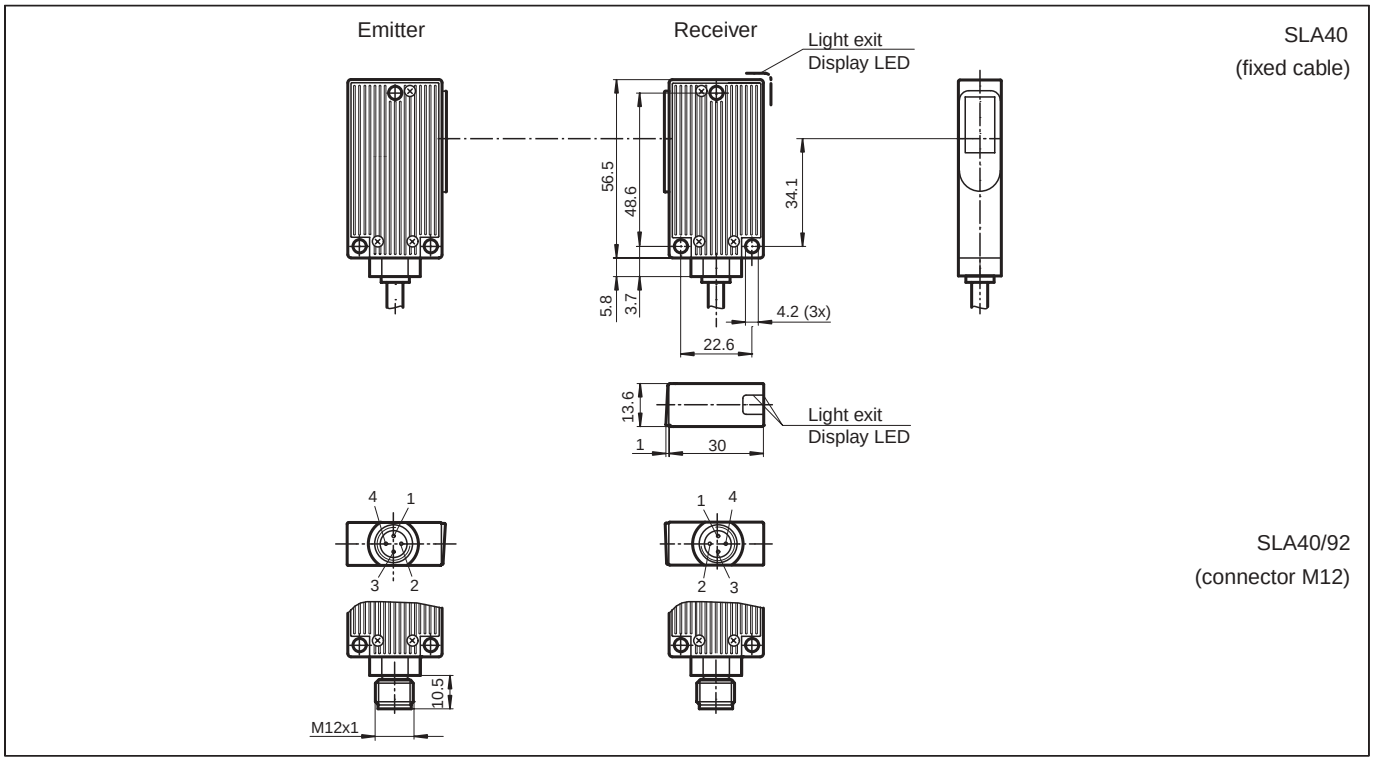
CE

- 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 series SLVA and SC4-8
- Protection type IP67 optional

	Ordering code:	SLA40	SLA40-2442/33 K=2m	SLA40/33 K=5m	SLA40/33 K=10m	SLA40-2442	SLA40/92
Effective detection range	0 ... 4 m	◆	◆	◆	◆	◆	◆
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆
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 units of the SLVA and SC4-8 series	◆	◆	◆	◆	◆	◆
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 mm^2				◆		
	Fixed cable 2 m; 0.25 mm^2	◆	◆				
	Fixed cable, 5 m; 0.25 mm^2			◆			
	M12 connector, 4-pin					◆	◆
Housing	aluminium pressure moulding, RLA 1021 (yellow) painted	◆	◆	◆	◆	◆	◆
Optical face	Glass	◆	◆	◆	◆	◆	◆
Mass	Per 100 g	◆	◆	◆	◆	◆	◆
System components							
Emitter	SLA40-T	◆					
	SLA40-T/33 K=10m				◆		
	SLA40-T/33 K=5m		◆	◆			
	SLA40-T/92					◆	◆
Receiver	SLA40-R	◆					
	SLA40-R/33 K=10m				◆		
	SLA40-R/33 K=5m		◆	◆			
	SLA40-R/92					◆	◆

SLA40-...

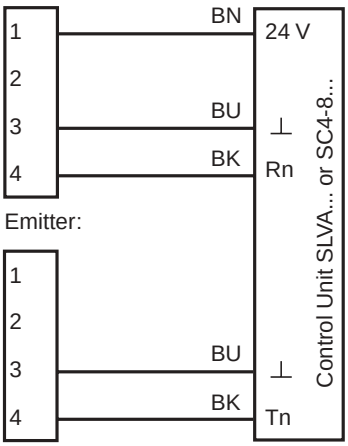
Dimensions



Electrical connection

Design with connector plug

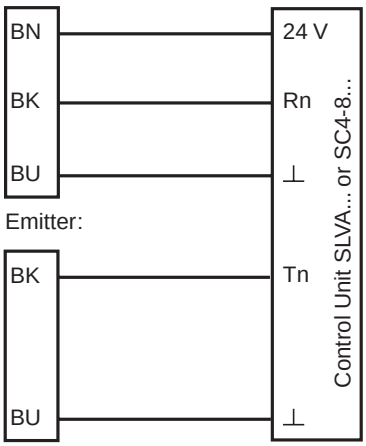
Receiver:



Emitter:

Design with fixed cable

Receiver:

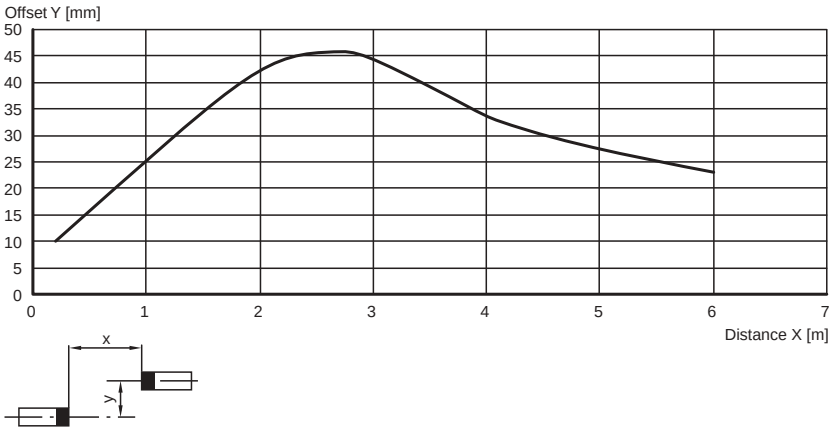


Emitter:

Diagrams

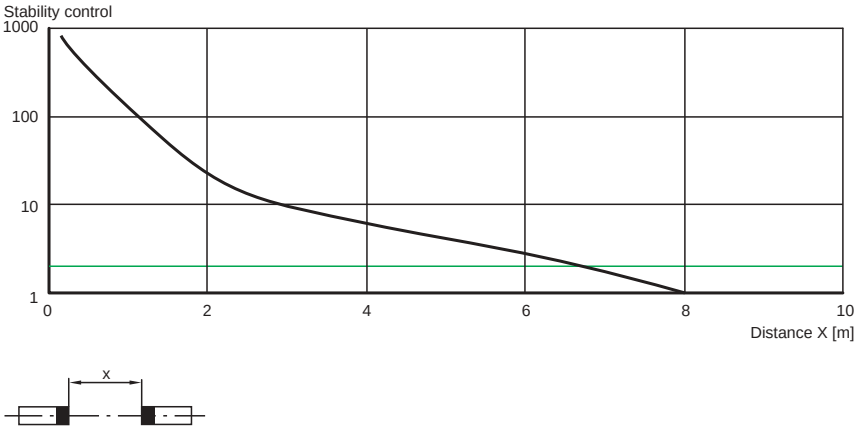
Characteristic response curve

SLA40



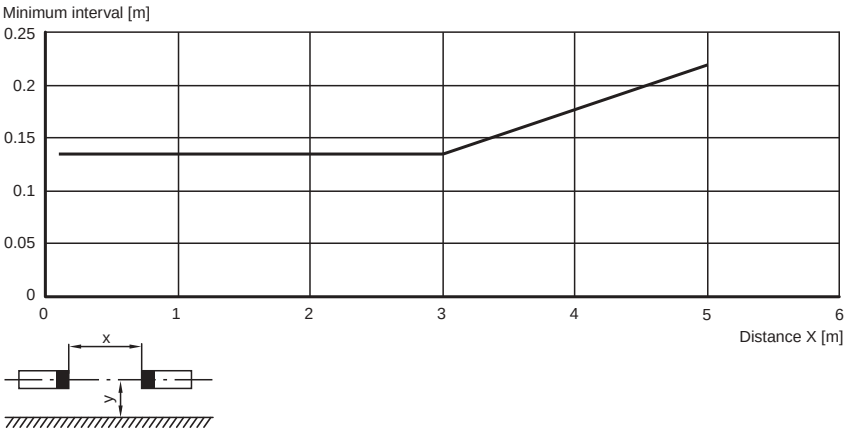
Relative received light strength

SLA40



Lateral interval to mirroring surfaces

SLA40



System accessories

Control units

SLVA4_K plus
SLVA8-K
SC4-8

Cable sockets (only option /92)

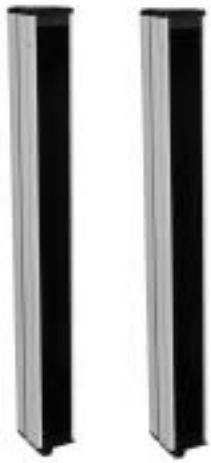
straight:	V1-G-2M-PVC
	V1-G-5M-PVC
	V1-G-10M-PVC
angled:	V1-W-2M-PVC
	V1-W-5M-PVC
	V1-W-10M-PVC

Mounting aids

OMH-40

Further accessories

Redirection mirror
SLA-1-M



Description SLP

Together with control units of series **SLVA** or **SC4-8**, safety light grids of Type SLP form a multibeam photoelectronic protection device of Category 4 (EN 954-1) or Type 4 (in accordance with EN EN 61496). The system is thus self-monitoring.

A safety light grid consists of an SLP transmitter and an SLP receiver.

The SLP safety light curtain, the control unit, muting sensors and additional safety equipment that can be selected by the user (for example emergency off) combine to form a modular protection system.

Multiple safety light grids can be connected to a single control unit. They can be mixed in any combination, although any given safety light grid must consist of a transmitter and receiver of the same type. Depending on the type of the control unit, as many as 8 protective beams can be controlled and monitored in this manner.

The power supply voltage required for the safety light grid is provided by the control unit. Control of the transmitters and evaluation of the signals transferred by the receivers (for example to interrupt a light beam) is also performed by the control unit. The SLP series is available in various versions with different detection ranges. Depending on the type of light grid, the detection range may then be up to 65 m.

Multi-sided protection can be implemented with adjustable mirrors of series Serie **SLP-X-M**.

Model line SLP8-2 implements 2-beam protection consisting of a transceiver (transmitter and receiver in a single profile) and a mirror column. With this layout, the electrical connection only needs to be fed in on one side.

Applications

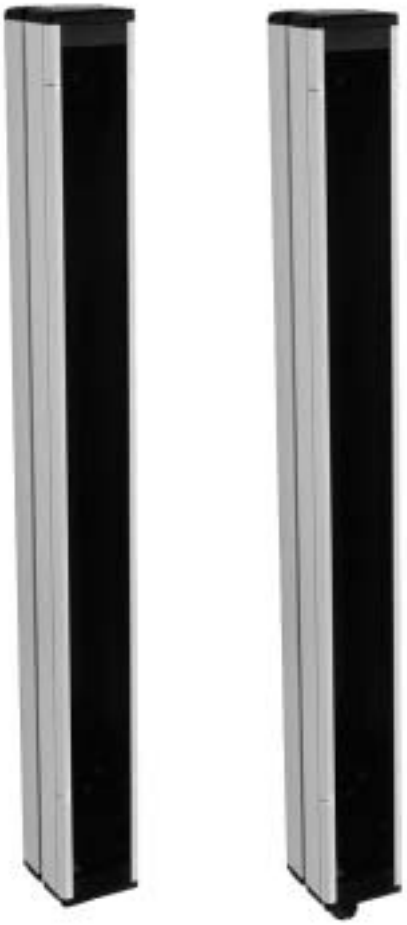
Protecting access and securing hazardous areas for pallet loading systems, robots, woodworking machines, packaging machines, high shelf units and machine systems.

Principle	Type code	Number of beams	Detection range	Page
	**SLP8-2**	**2**	**0 m ... 8 m**	**76**
	SLP...-2	**2**	**0 m ... 65 m**	**80**
	SLP...-3	**3**	**0 m ... 65 m**	**84**
	SLP...-4	**4**	**0 m ... 65 m**	**88**

Safety light grid

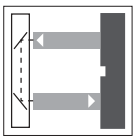
SLP8-2-.

CE



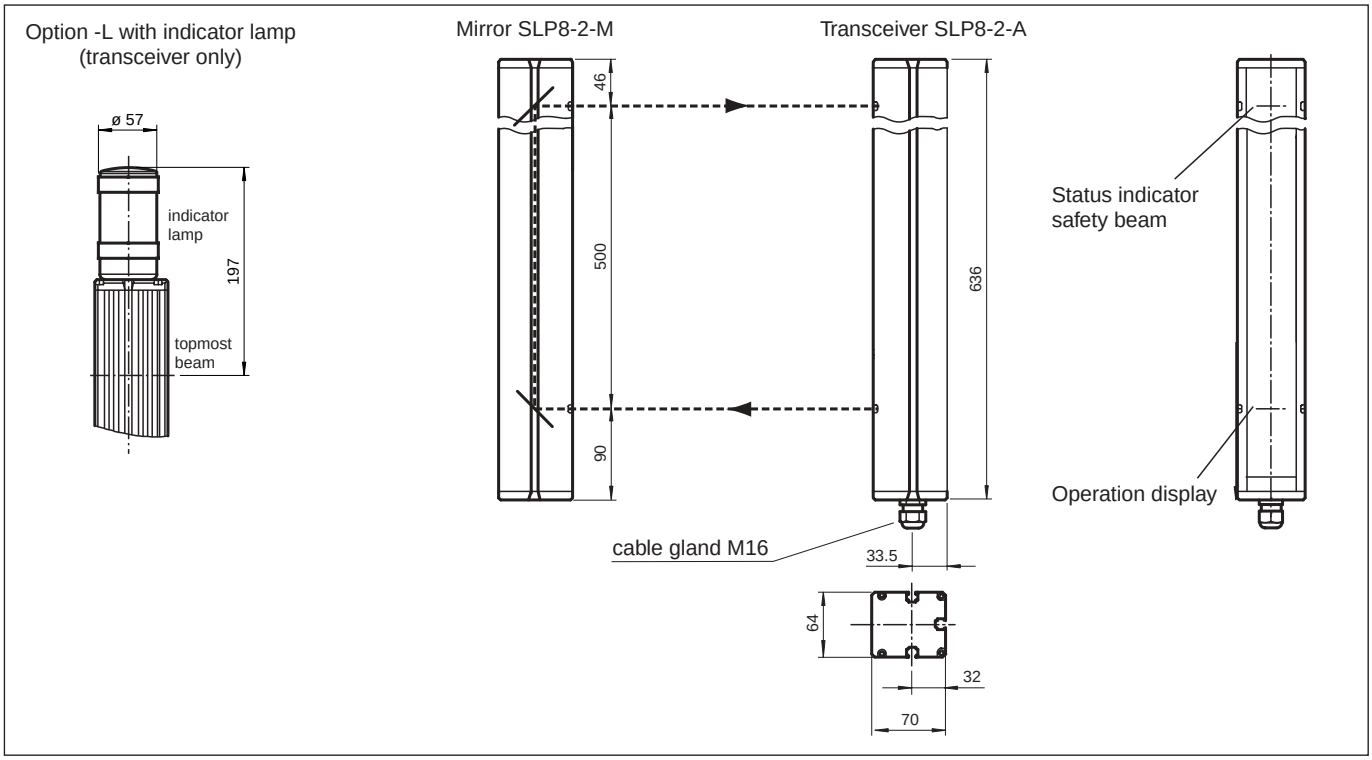
- Detection range 8 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 2-Radial design
- Beam spacing 500 mm
- Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

	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, alternating 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 units of the SLVA and SC4-8 series	◆	◆
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 lens	◆	◆
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	◆	◆

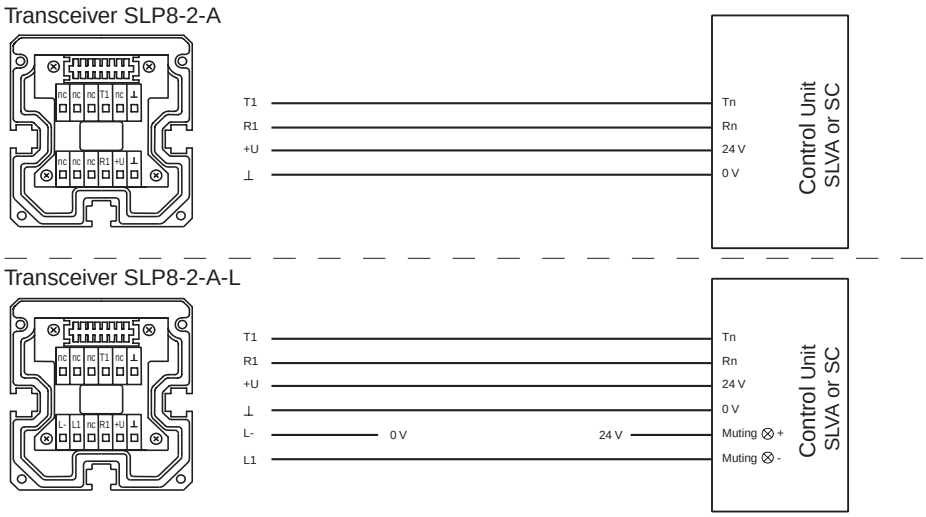


SLP8-2-.

Dimensions



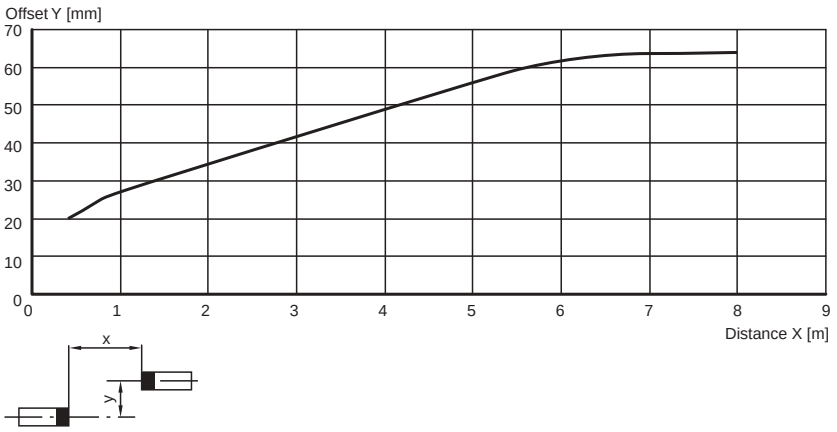
Electrical connection



Diagramme

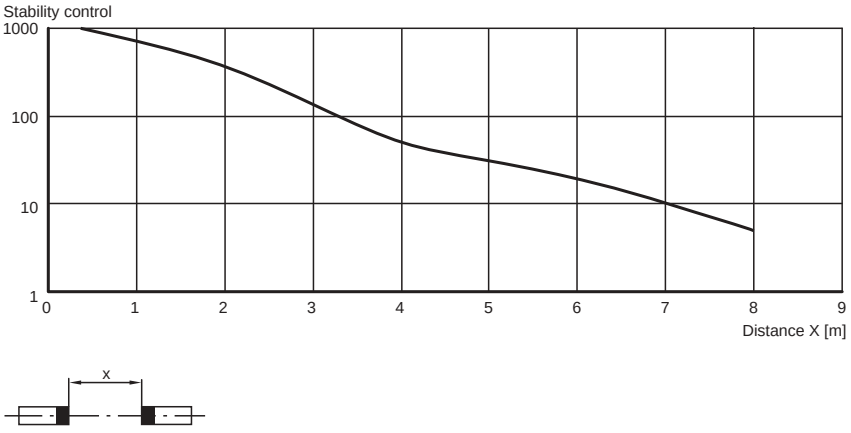
Characteristic response curve

SLP8



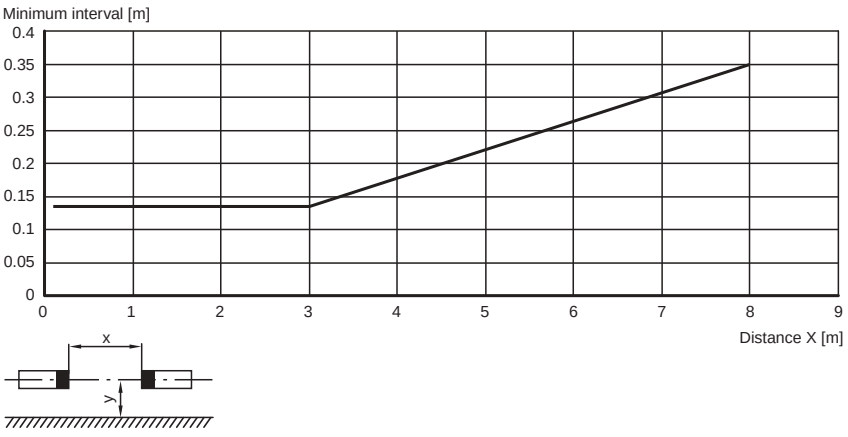
Relative received light strength

SLP8



Lateral interval to mirroring surfaces

SLP8



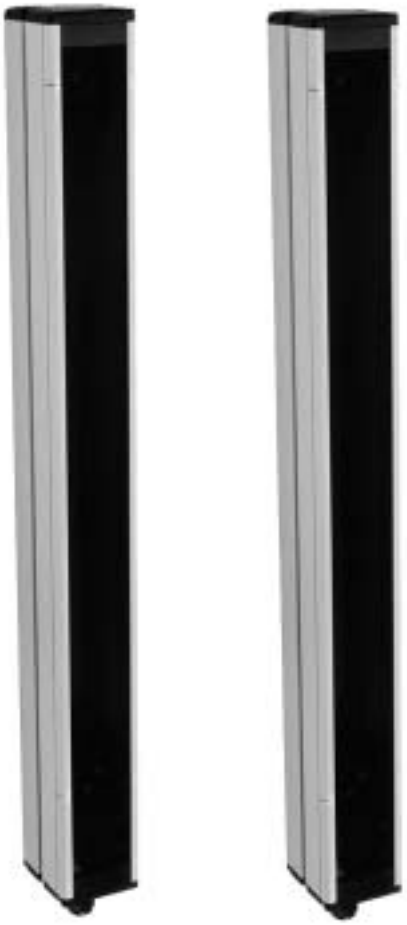
System accessories

- Mounting set 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

Safety light grid

SLP..-2

CE

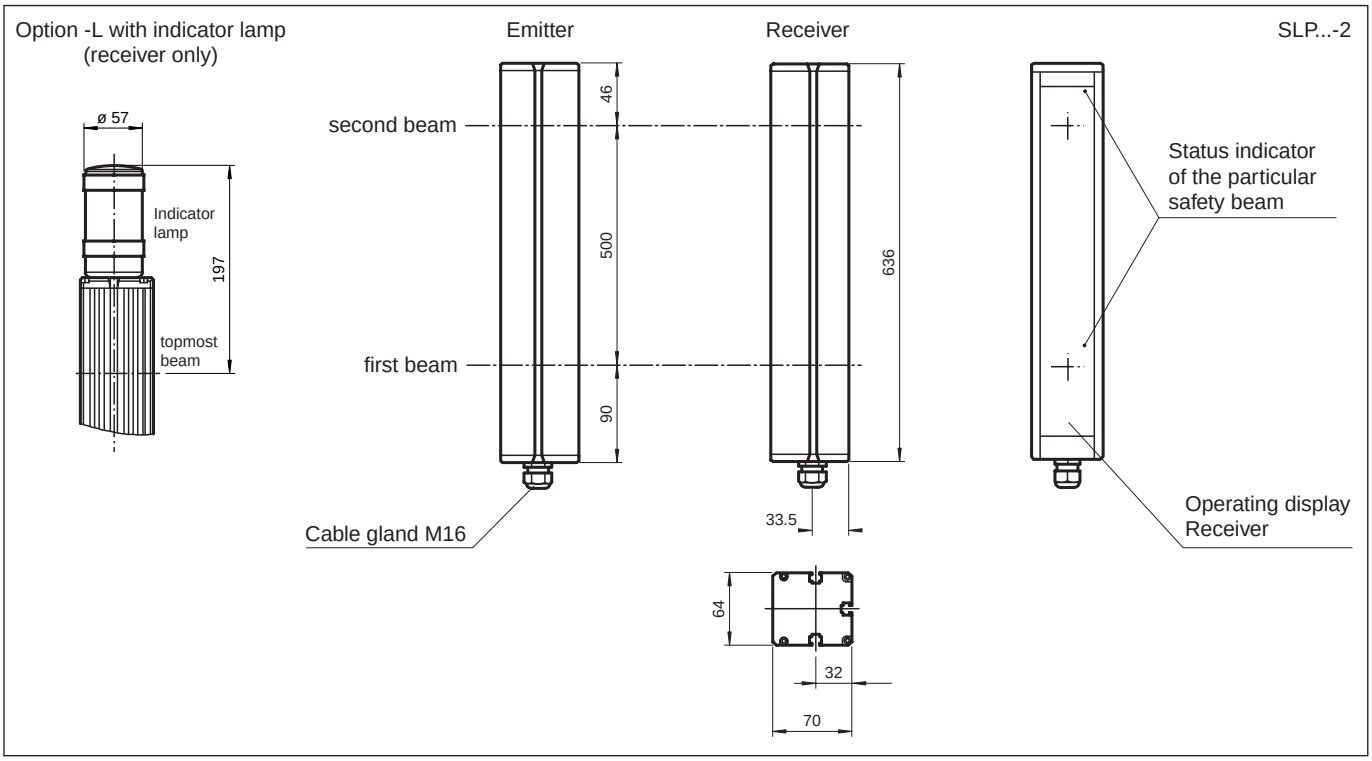


- Detection range up to 65 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 2-Radial design
- Beam spacing 500 mm
- Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

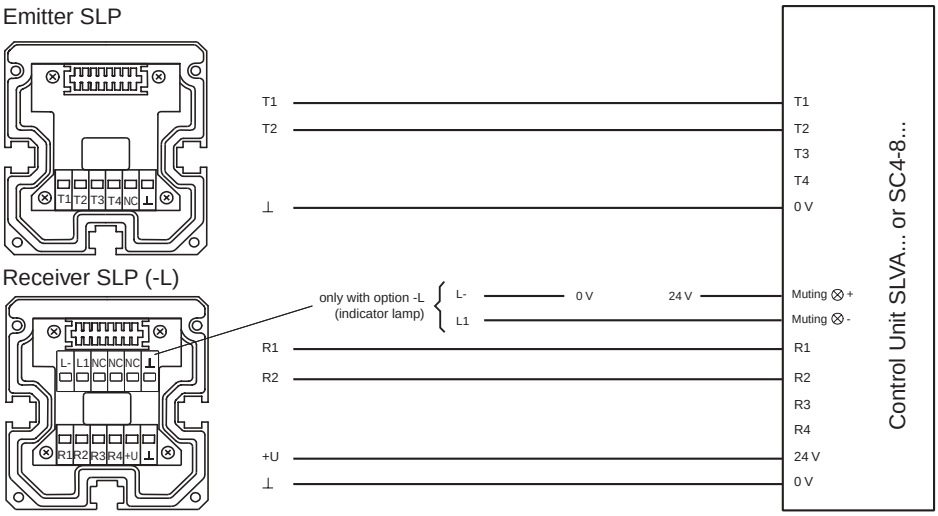
	Ordering code:	SLP10-2	SLP10-2-L	SLP30-2	SLP65-2
Effective detection range	0.2 ... 10 m	◆	◆		
	12 ... 65 m				◆
	6 ... 30 m			◆	
Number of beams	2	◆	◆	◆	◆
Beam spacing	500 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating 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 units of the SLVA and SC4-8 series	◆	◆	◆	◆
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 lens	◆	◆	◆	◆
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				◆

SLP..-2

Dimensions

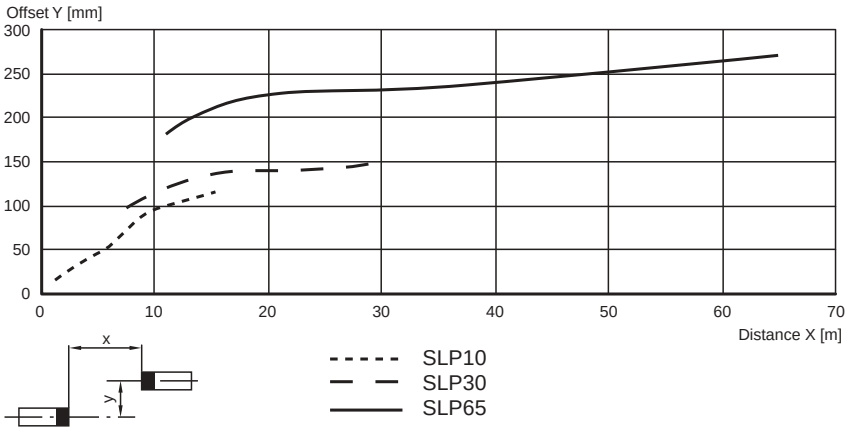


Electrical connection

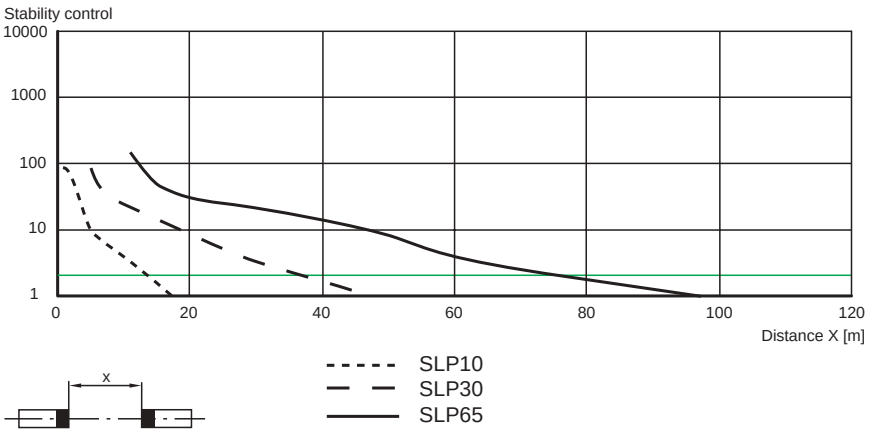


Diagramme

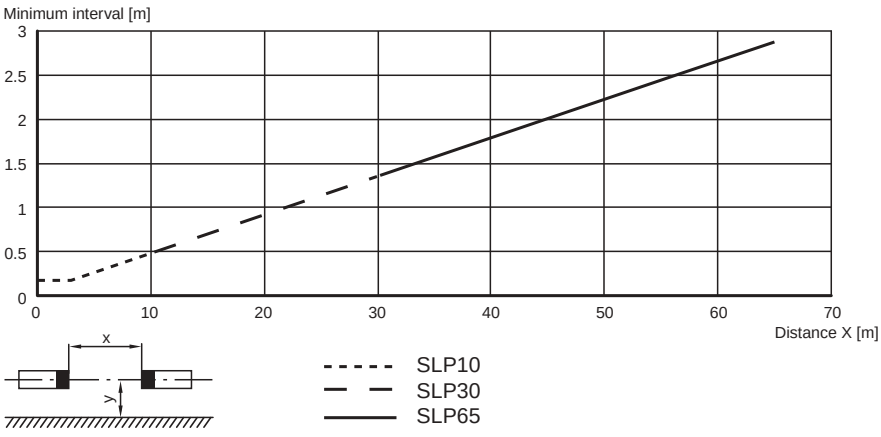
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



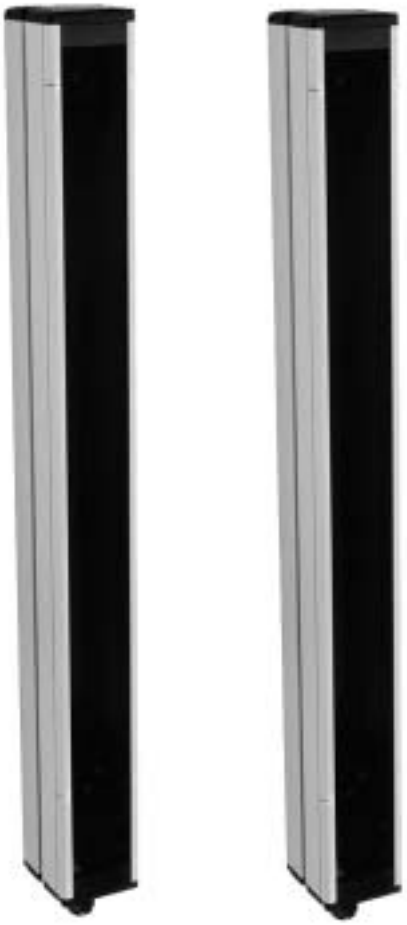
System accessories

- Mounting set 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

Safety light grid

SLP..-3

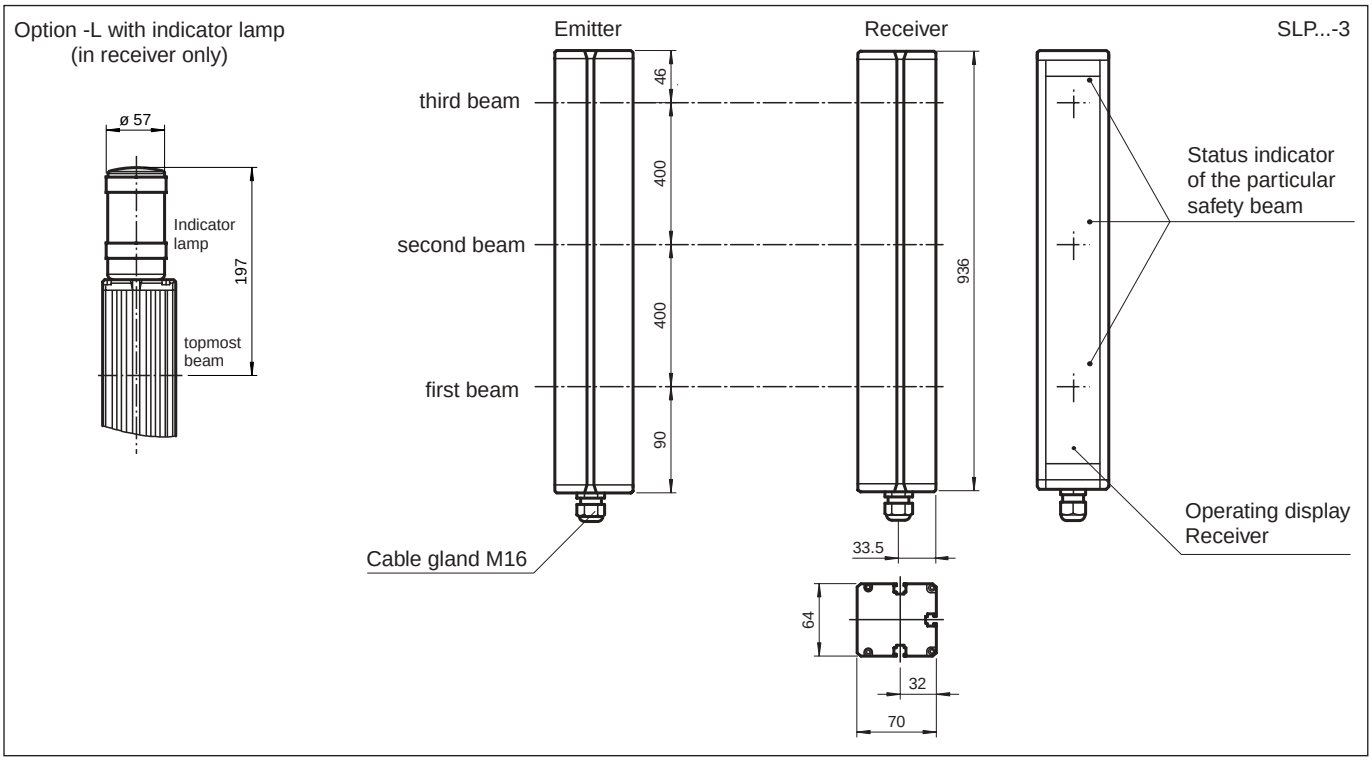
CE



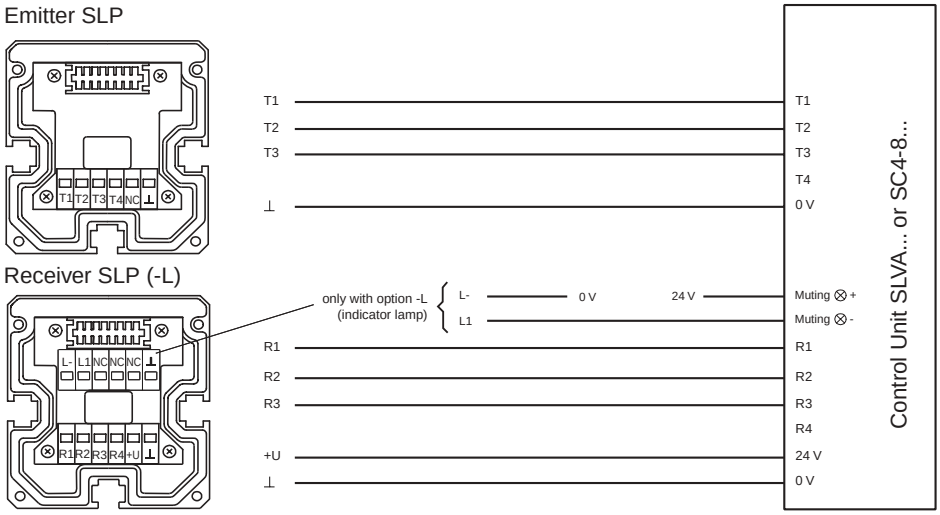
- Detection range up to 65 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 3-Radial design
- Beam spacing 400 mm
- Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

	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, alternating 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 units of the SLVA and SC4-8 series	◆	◆	◆	◆
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 lens	◆	◆	◆	◆
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				◆

Dimensions

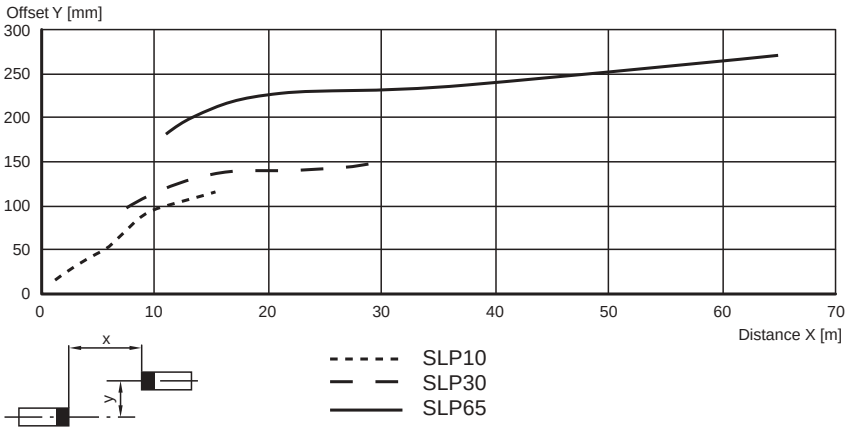


Electrical connection

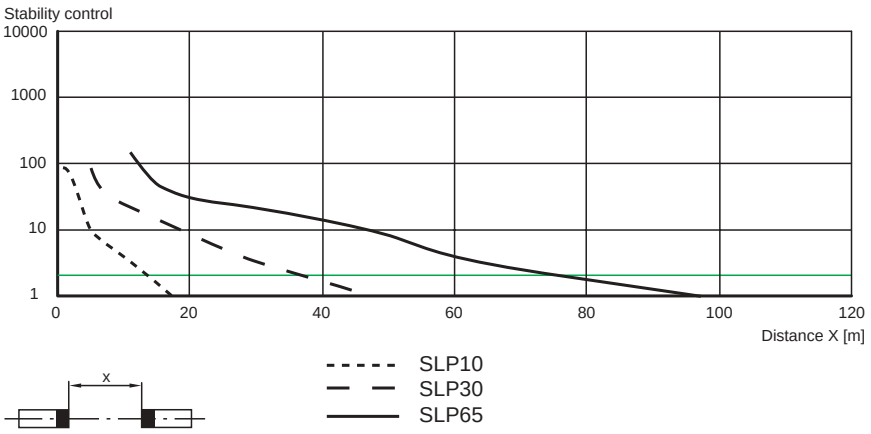


Diagramme

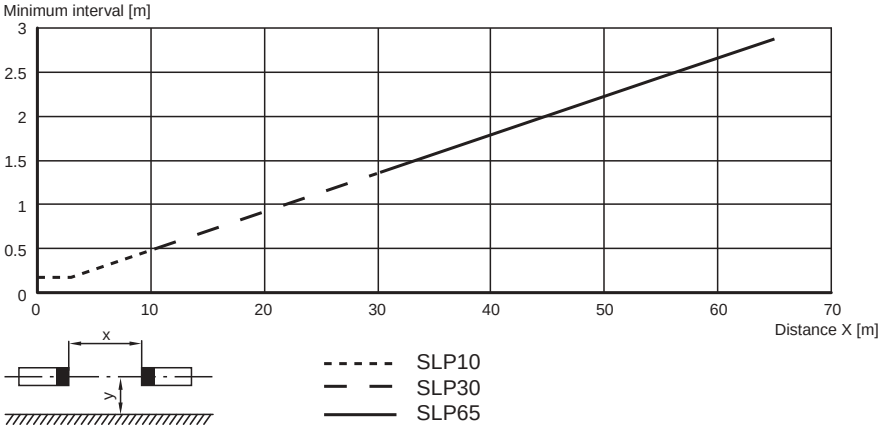
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



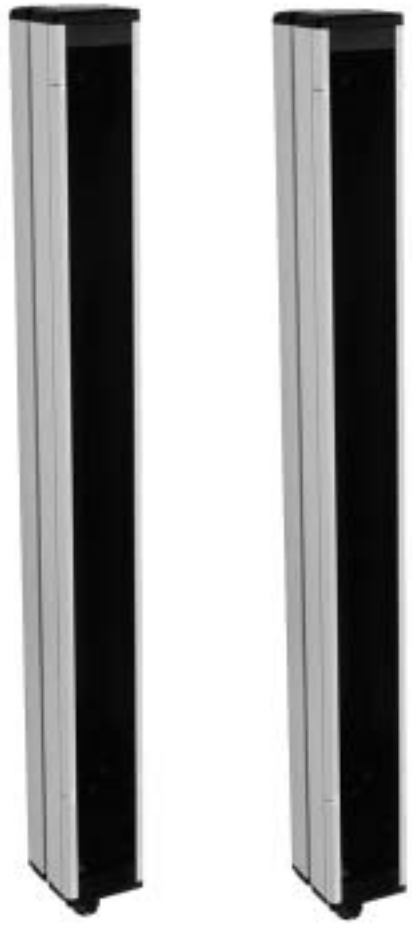
System accessories

- Mounting set 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

Safety light grid

SLP..-4

CE

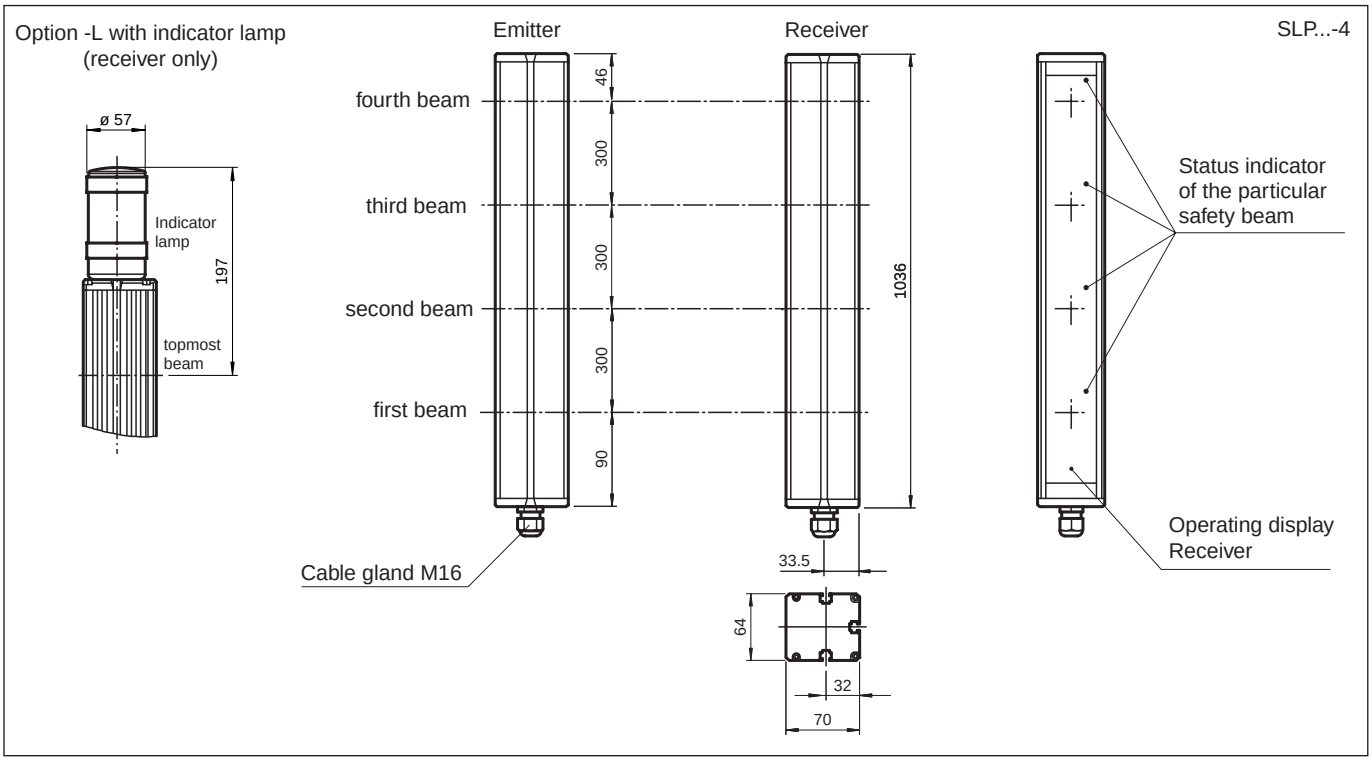


- Detection range up to 65 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 4-Radial design
- Beam spacing 300 mm
- Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

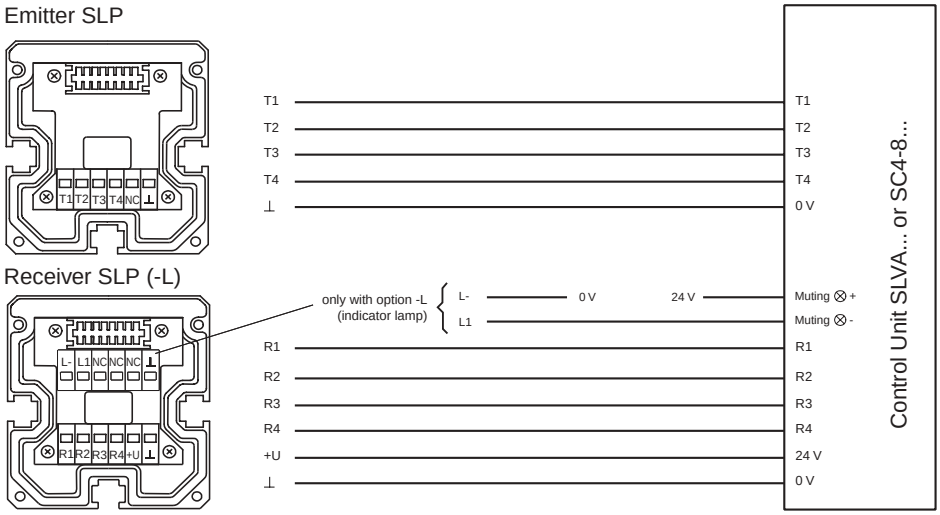
	Ordering code:	SLP10-4	SLP10-4-L	SLP30-4	SLP65-4
Effective detection range	0.2 ... 10 m	◆	◆		
	12 ... 65 m				◆
	6 ... 30 m			◆	
Number of beams	4	◆	◆	◆	◆
Beam spacing	300 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating 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 units of the SLVA and SC4-8 series	◆	◆	◆	◆
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 lens	◆	◆	◆	◆
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				◆

SLP..-4

Dimensions

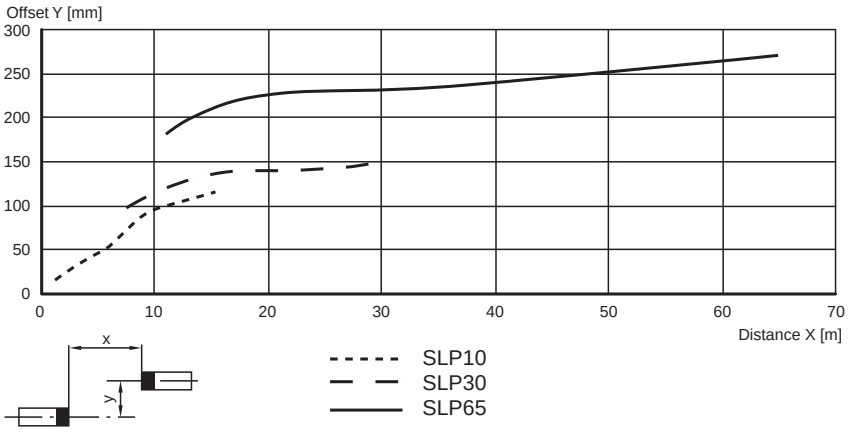


Electrical connection

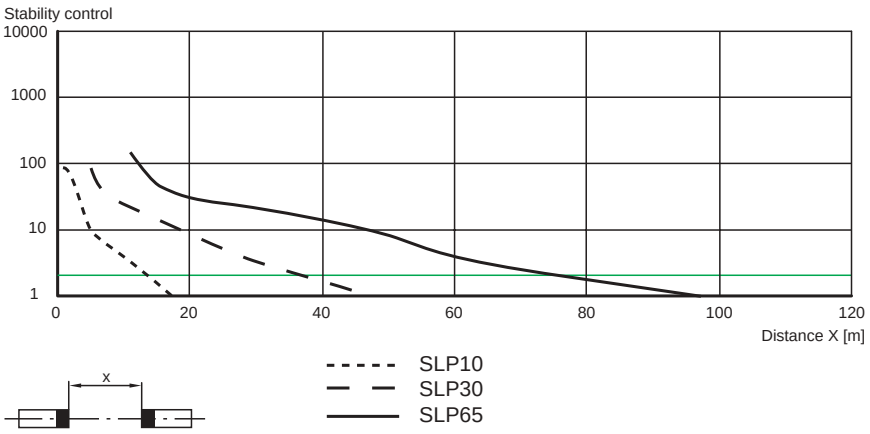


Diagramme

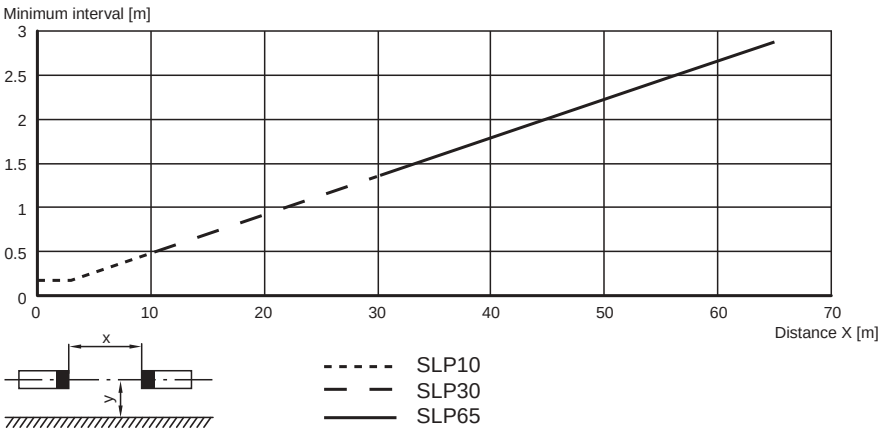
Characteristic response curve



Relative received light strength



Lateral interval to mirroring surfaces



System accessories

- Mounting set 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

SLPC/SLP, SLPCM/SLP and SLC safety light grids are electrosensitive protection equipment of Category 4 (EN 954-1) or Type 4 (based on IEC/EN 61496). The systems are thus self-monitoring.

Description SLPC

Safety light grids of series SLPC consist of an SLP transmitter and a matching receiver from the SLPC series. No external control unit is required. All evaluation functions (for example startup/restart interlock, relay monitor) are integrated into the receiver of the SLPC. The system is self-monitoring. The safety outputs (OSSD) are designed either as potential-separated semiconductor outputs or with monitored force-directed normally open contacts.

Description of SLPCM

Safety light grids of series SLPCM consist of an SLP transmitter and a suitable receiver from the SLPCM series. No external control unit is required. All evaluation functions including the muting and emergency muting modes of operation are integrated into the receiver of the SLPCM. The system is self-monitoring. The safety outputs (OSSD) are designed either as potential-separated semiconductor outputs or with monitored force-directed normally open contacts.

Description of the SLC light grid

Safety light grids of series SLC consist of an SLC-x transmitter and a suitable receiver from the SLC series. No external control unit is required.
All evaluation functions (for example startup/restart interlock, relay monitor) are integrated into the receiver of the SLC. The safety outputs (OSSD) are designed either as potential-separated semiconductor outputs or with monitored force-directed normally open contacts.

No cable connection is necessary between the transmitter and receiver. Multi-sided protection is possible with deflection mirrors of series SLC-x-M. Muting applications can be implemented in combination with the SC4-8... control unit. Protection class IP67 ensures reliable protection against adverse effects of weather.

Installation in hazardous areas

Hence these devices can also be installed in hazardous areas, zone 2 and zone 22 (option/133).

This way the regulation is taken into account, to use only approved devices and protective systems in hazardous areas in accordance with directive 94/9/EG (ATEX).

Applications

Protecting access and securing hazardous areas for pallet loading systems, robots, woodworking machines, packaging machines, high shelf units and machine systems.

Principle	Type code	Number of beams	Feature	Effective operating distance	from page
	SLPC 8-2	2	integrated control unit	0.2 m - 8 m	94
	SLPC...2	2	integrated control unit	0.2 m - 65 m	98
	SLPC...3	3			110
	SLPC...4	4			122
	SLPCM 8-2	2	integrated control unit, with muting	0.2 m - 8 m	134
	SLPCM...2	2	integrated control unit, with muting	0.2 m - 65 m	138
	SLPCM...3	3			150
	SLPCM...4	4			162
	SLC-2	2	integrated control unit	0.2 m - 20 m	174
	SLC-3	3			
	SLC-4	4			
	SLC-2/133	2	integrated control unit, for hazardous area, zone 2 and zone 22	0.2 m - 20 m	178
	SLC-3/133	3			
	SLC-4/133	4			

Date of edition 8/13/04

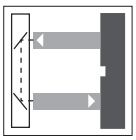
Safety light grid with integrated control unit

SLPC8-2/..

CE

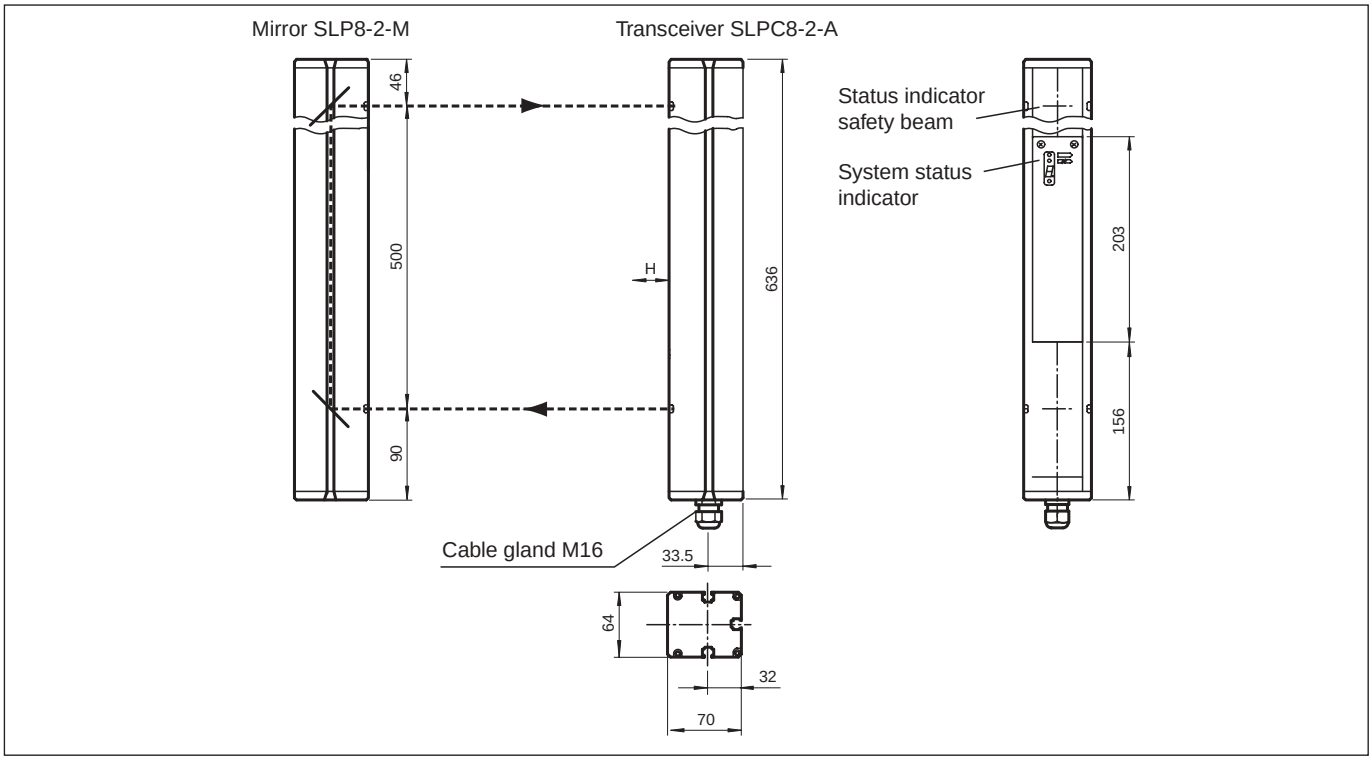
- Detection range up to 8 m
- 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Minimum wiring expense due to trans-ceiver with passive mirror column
- Red transmission light
- Usable with or without start/restart disable
- Integrierted relay monitor
- 7-segment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

	Ordering code:	SLPC8-2	SLPC8-2/31
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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in transceiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 2300 g	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
System components			
Transceiver	SLPC8-2-A	◆	
	SLPC8-2-A/31		◆
Mirror pillar	SLP8-2-M	◆	◆



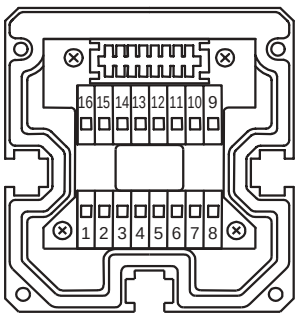
SLPC8-2/..

Dimensions



Electrical connection

Transceiver SLPC8-2-A

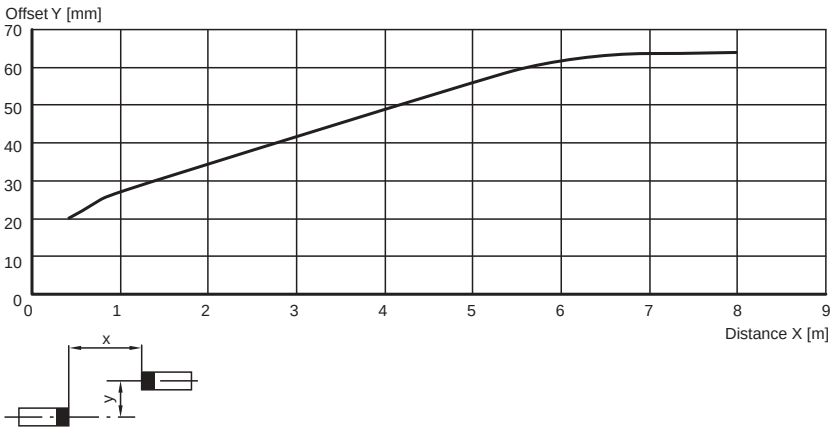


Transceiver SLPC... (semiconductor output)	Transceiver SLPC.../31 (relay output)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output,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

Diagrams

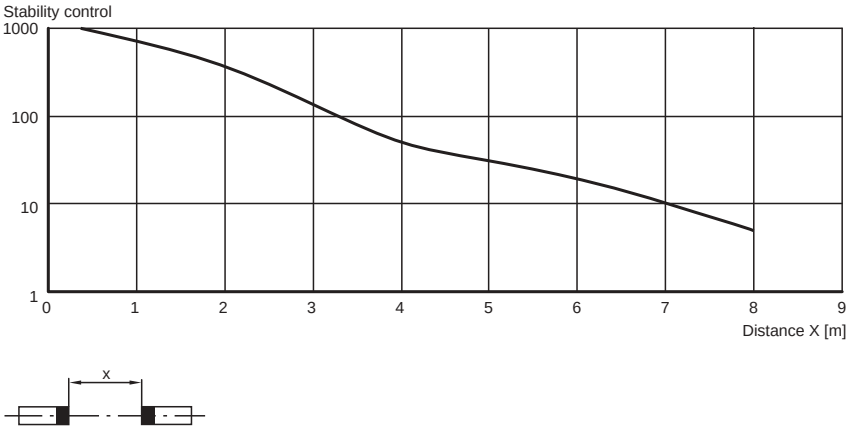
Characteristic response curve

SLP8



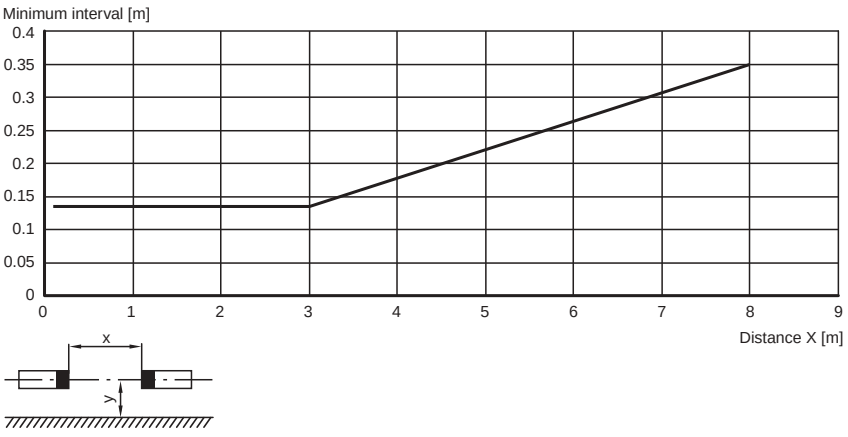
Relative received light strength

SLP8



Lateral interval to mirroring surfaces

SLP8



Safety light grid with integrated control unit

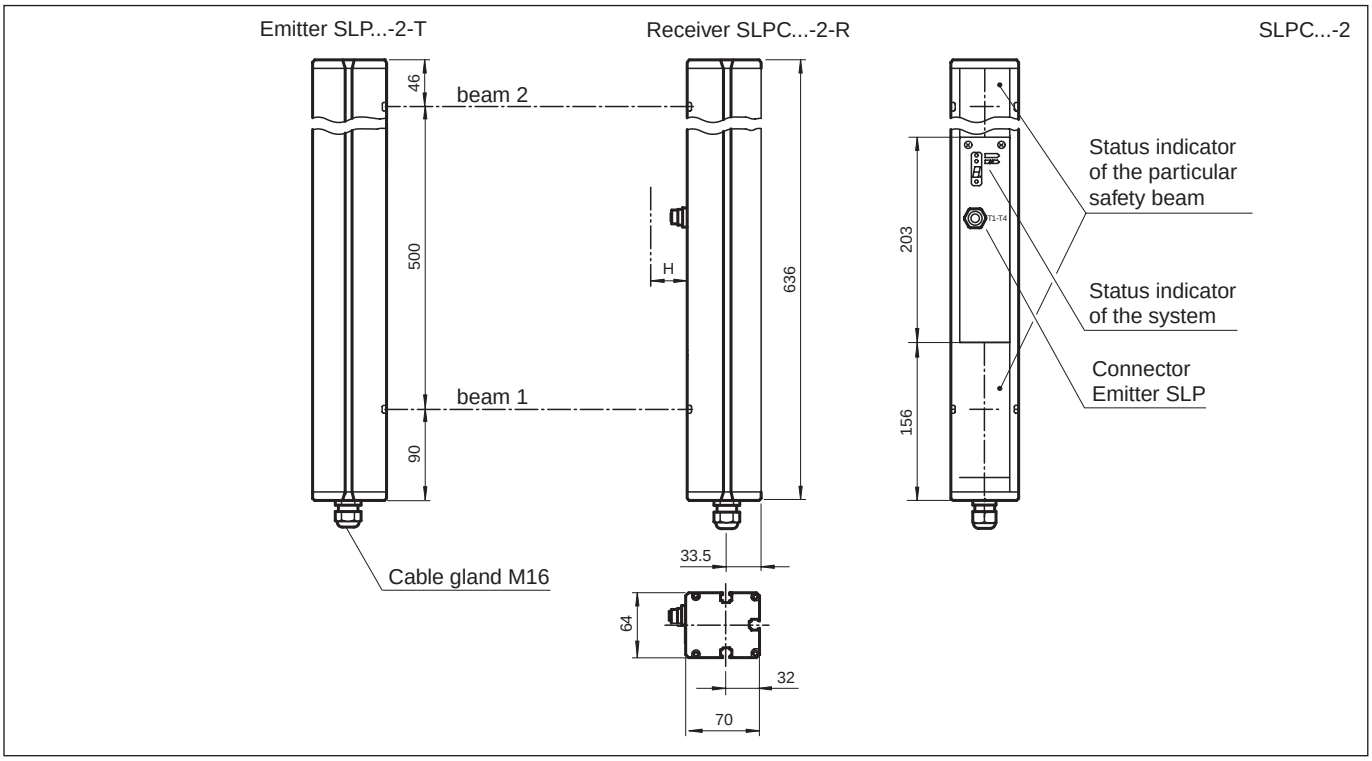
SLPC10-2/..

CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

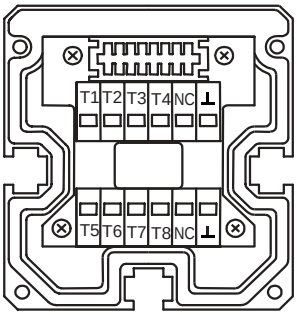
	Ordering code:	SLPC10-2	SLPC10-2/31
Effective detection range	0.2 ... 10 m	◆	◆
Number of beams	2	◆	◆
Beam spacing	500 mm	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Light source	LED	◆	◆
Light type	red, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 2300 g	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
System components			
Emitter	SLP10-2-T	◆	◆
Receiver	SLPC10-2-R	◆	
	SLPC10-2-R/31		◆

Dimensions



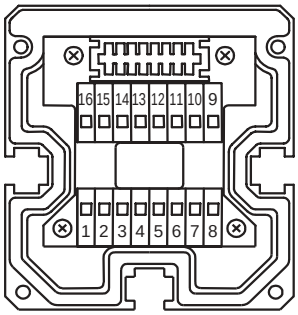
Electrical connection

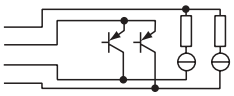
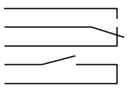
Emitter SLP



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

Receiver SLPC

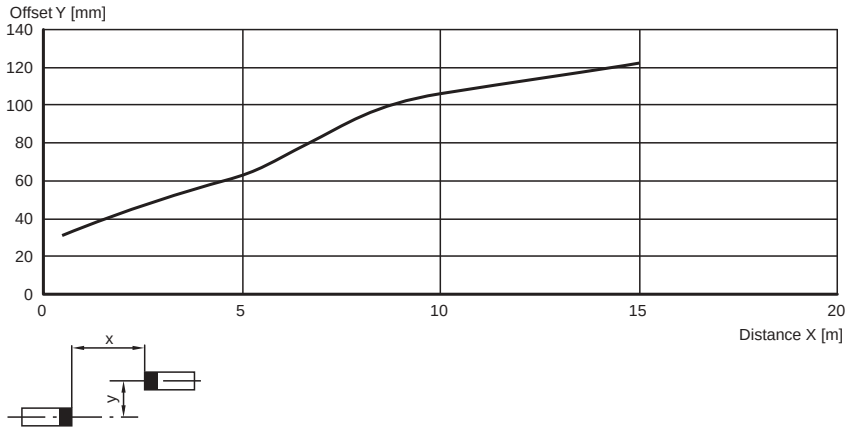


Receiver SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup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

Diagrams

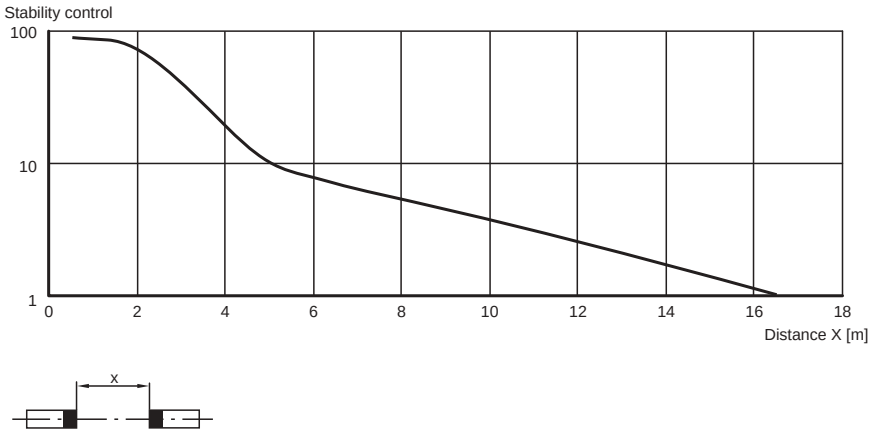
Characteristic response curve

SLP10-x / SLPC10-x / SLPCM10-x



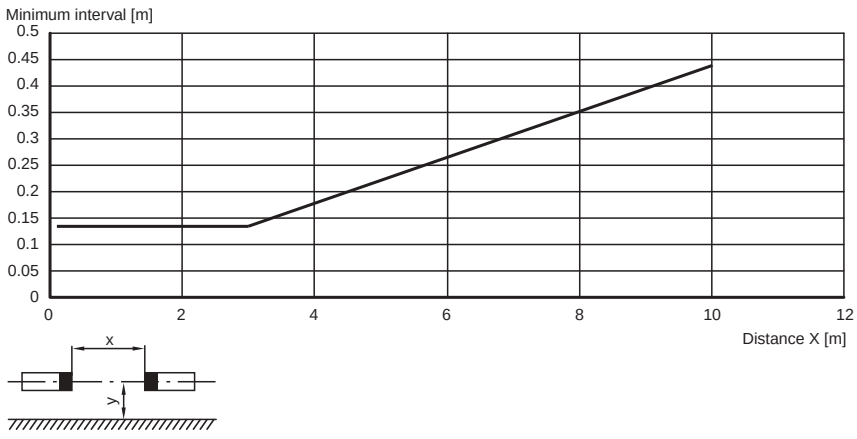
Relative received light strength

SLP10-x / SLPC10-x / SLPCM10-x



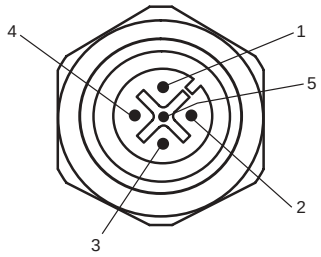
Lateral interval to mirroring surfaces

SLP10-x / SLPC10-x / SLPCM10-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPC30-2/..

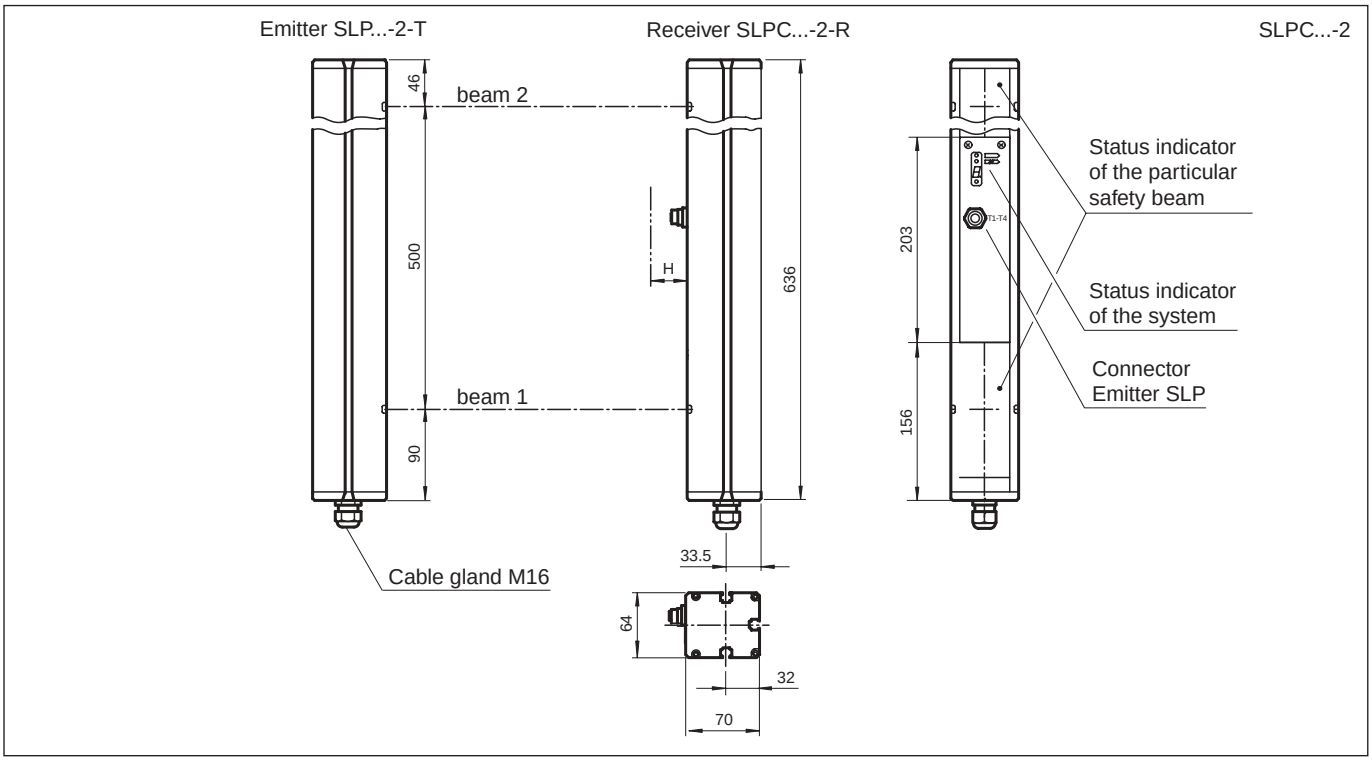
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPC30-2	SLPC30-2/31
Effective detection range	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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 2300 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	SLP30-2-T	◆	◆
Receiver	SLPC30-2-R	◆	
	SLPC30-2-R/31		◆

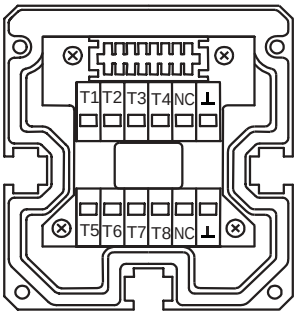
SLPC30-2/..

Dimensions



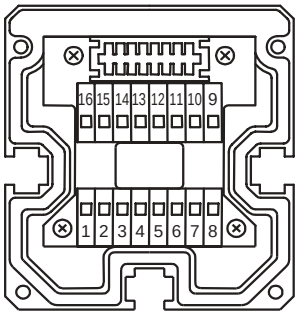
Electrical connection

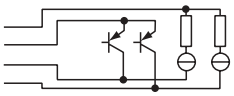
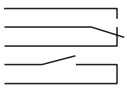
Emitter SLP



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

Receiver SLPC

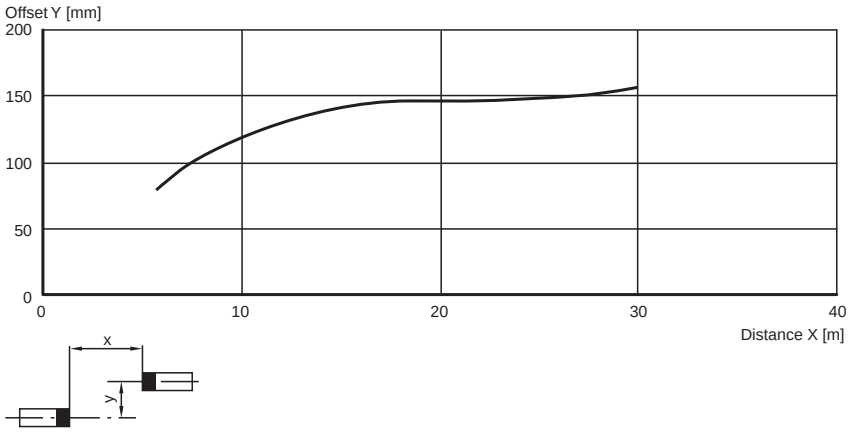


Receiver SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup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

Diagrams

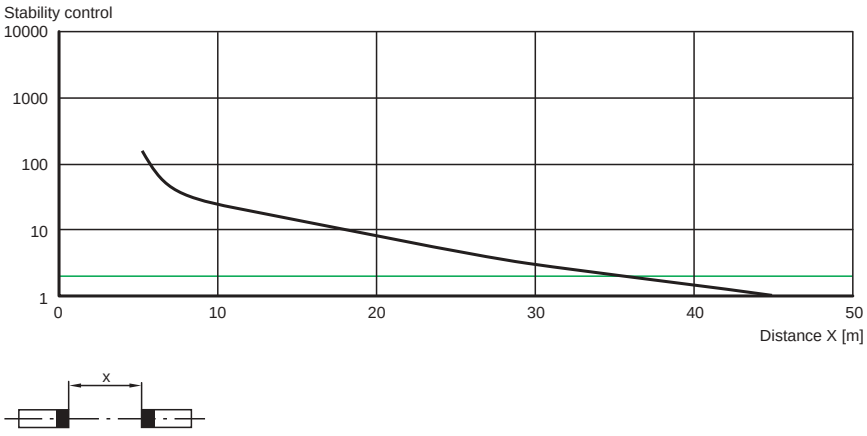
Characteristic response curve

SLP30-x / SLPC30-x / SLPCM30-x



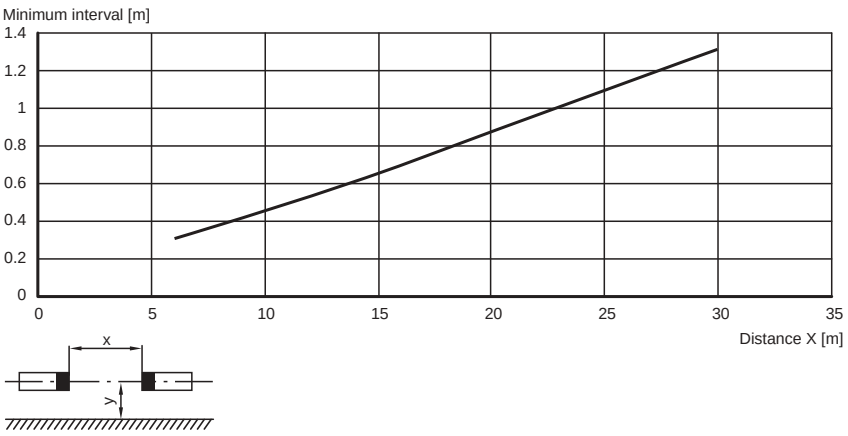
Relative received light strength

SLP30-x / SLPC30-x / SLPCM30-x



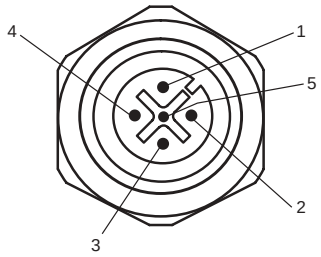
Lateral interval to mirroring surfaces

SLP30-x / SLPC30-x / SLPCM30-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

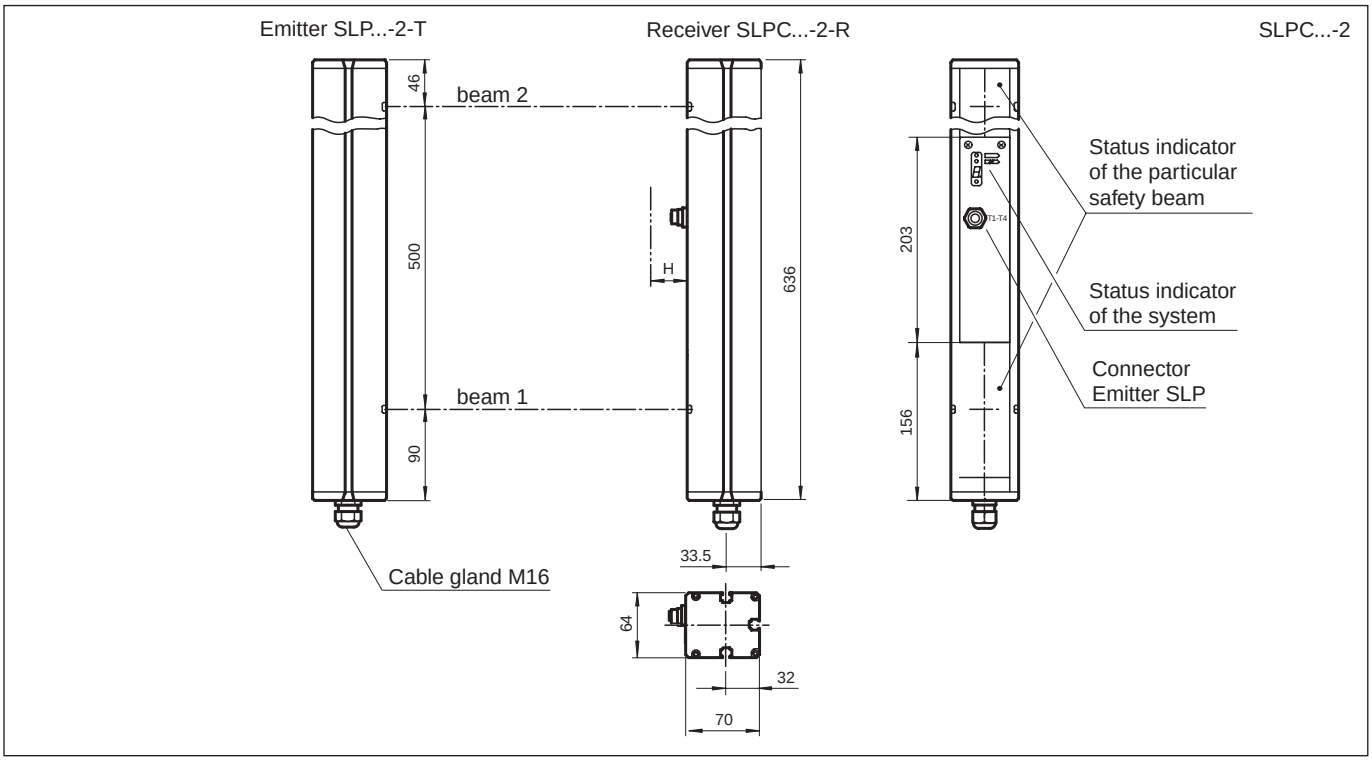
SLPC65-2/..

CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

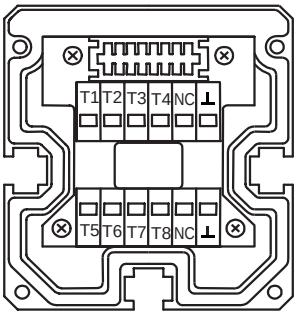
	Ordering code:	SLPC65-2	SLPC65-2/31
Effective detection range	12 ... 65 m	◆	◆
Number of beams	2	◆	◆
Beam spacing	500 mm	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆
Light source	LED	◆	◆
Light type	red, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 2300 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	SLP65-2-T	◆	◆
Receiver	SLPC65-2-R	◆	
	SLPC65-2-R/31		◆

Dimensions



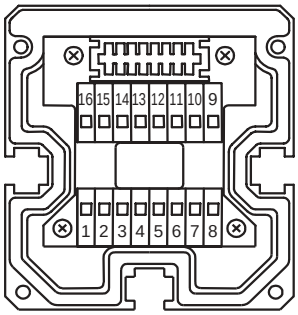
Electrical connection

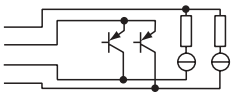
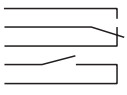
Emitter SLP



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

Receiver SLPC

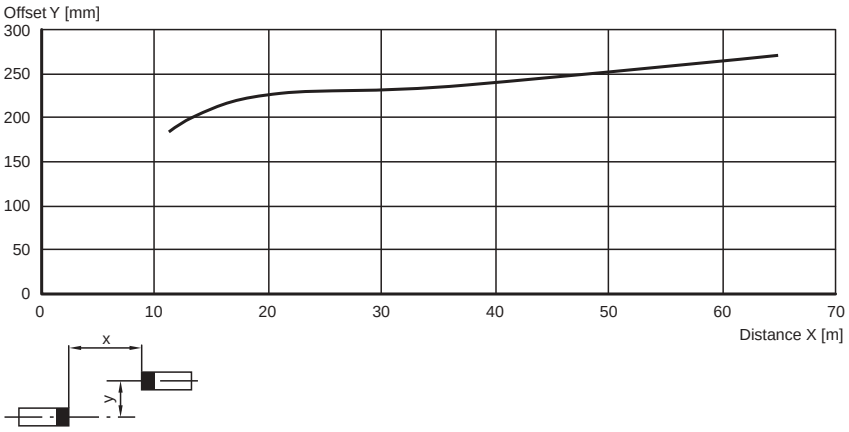


Receiver SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup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

Diagrams

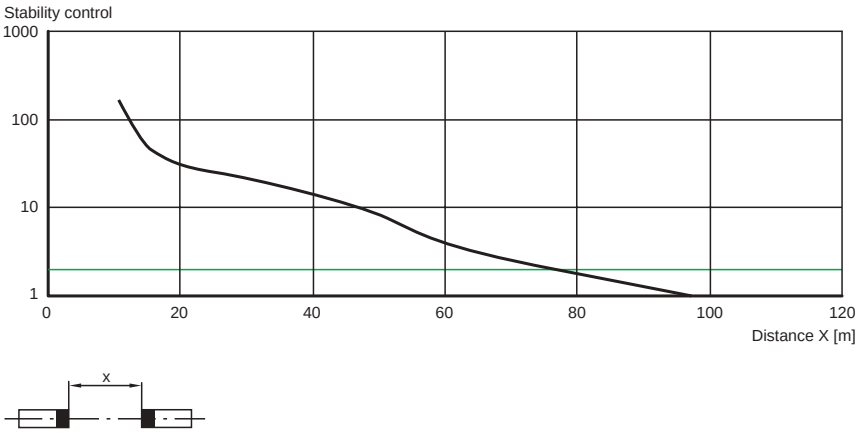
Characteristic response curve

SLP65-x / SLPC65-x / SLPCM65-x



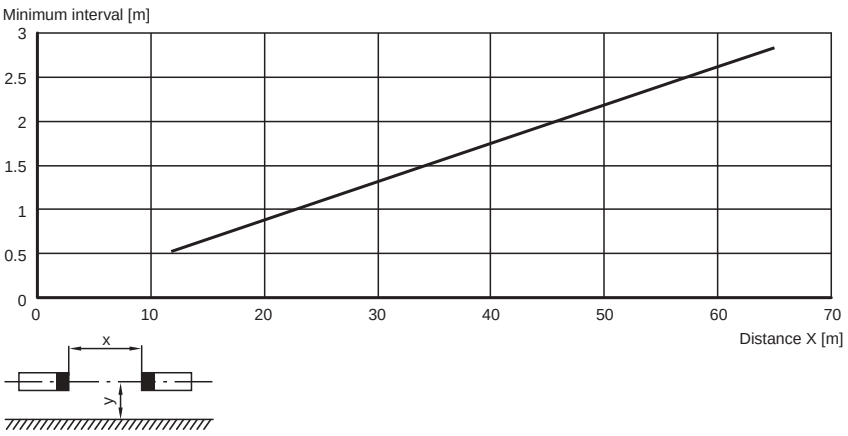
Relative received light strength

SLP65-x / SLPC65-x / SLPCM65-x



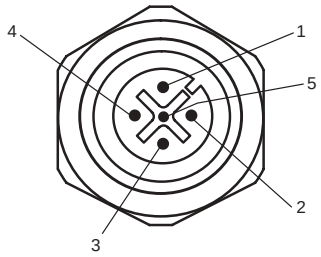
Lateral interval to mirroring surfaces

SLP65-x / SLPC65-x / SLPCM65-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPC10-3/..

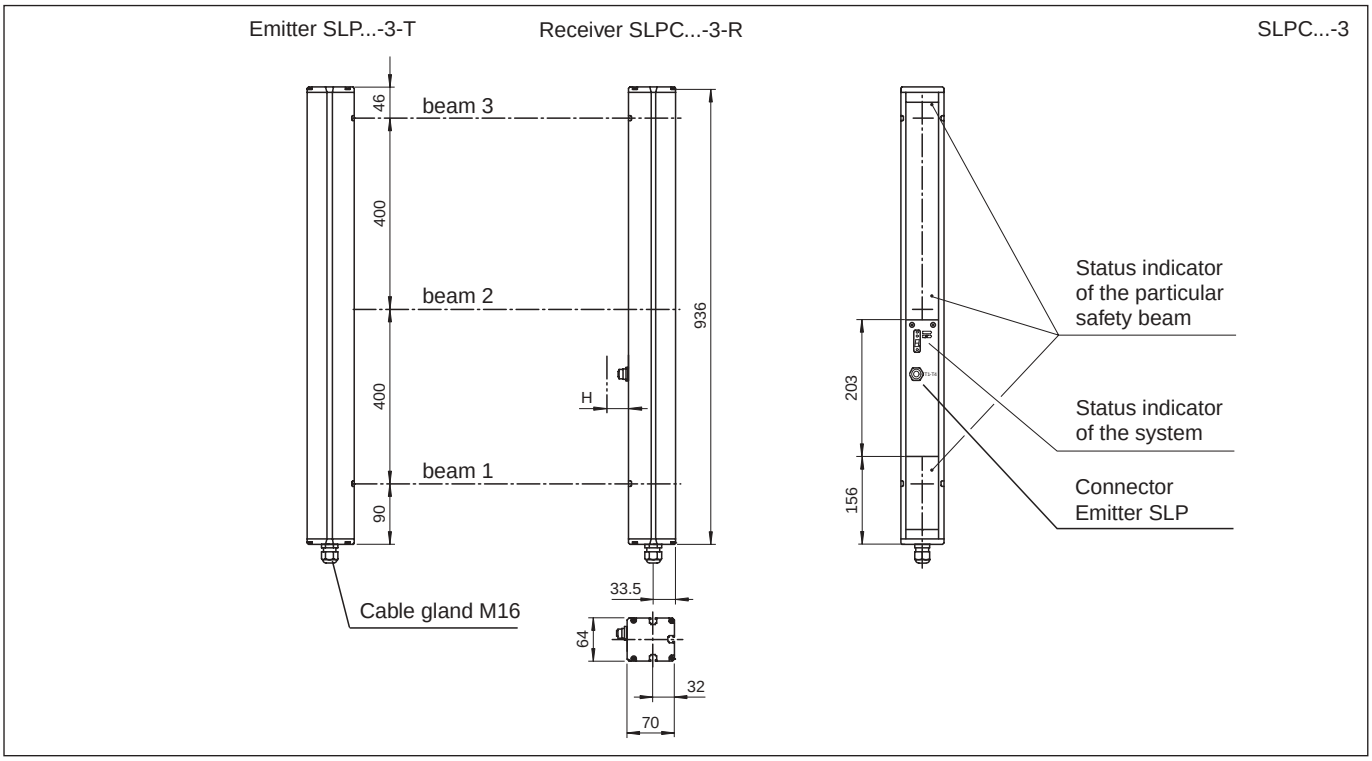
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPC10-3	SLPC10-3/31
Effective detection range	0.2 ... 10 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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 3400 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	◆	◆
Receiver	SLPC10-3-R	◆	
	SLPC10-3-R/31		◆

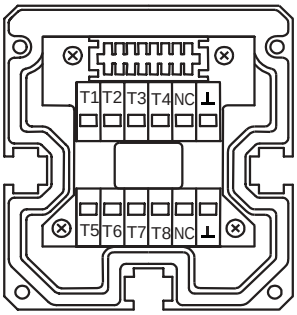
SLPC10-3/..

Dimensions



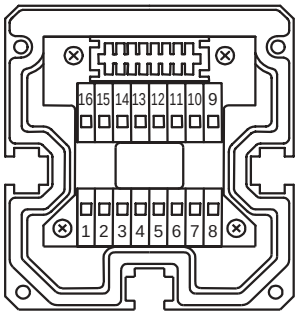
Electrical connection

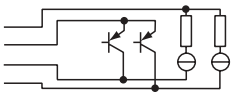
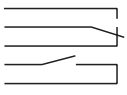
Emitter SLP



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

Receiver SLPC

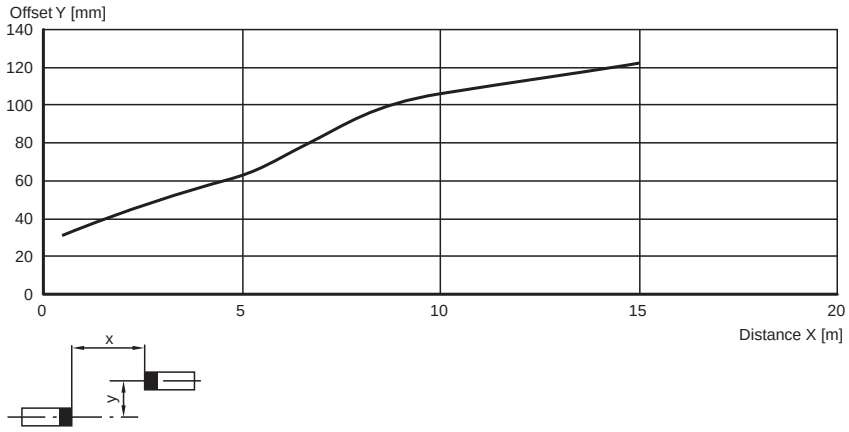


Receicer SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - input, Relay monitor 10 - input, Start release 11 - input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup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

Diagrams

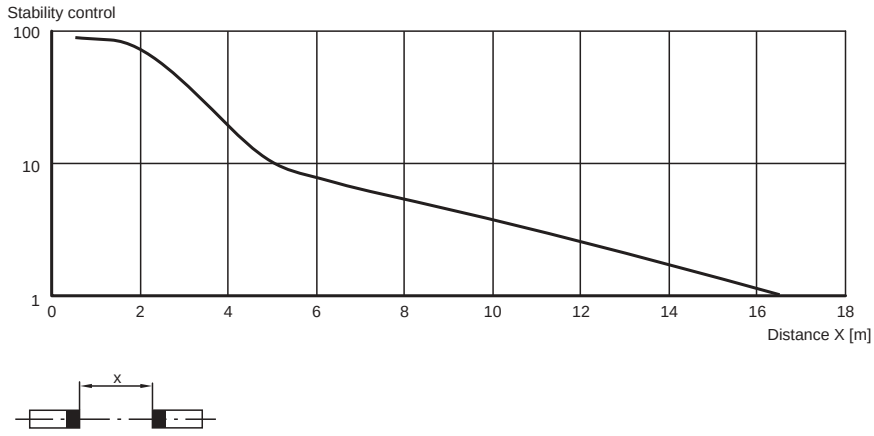
Characteristic response curve

SLP10-x / SLPC10-x / SLPCM10-x



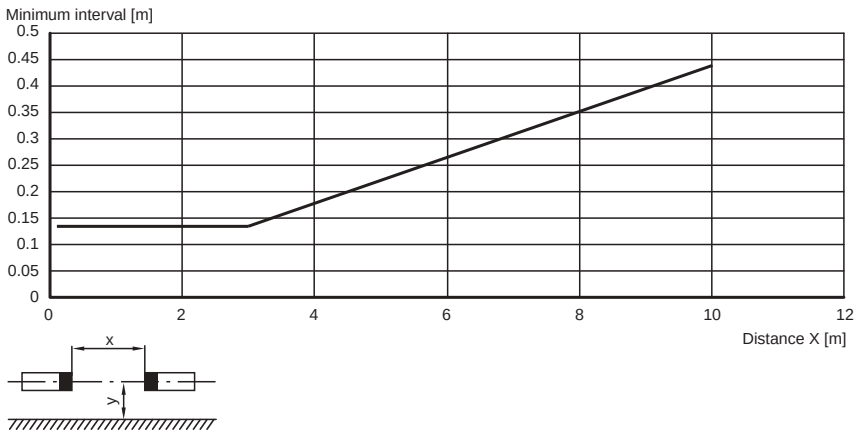
Relative received light strength

SLP10-x / SLPC10-x / SLPCM10-x



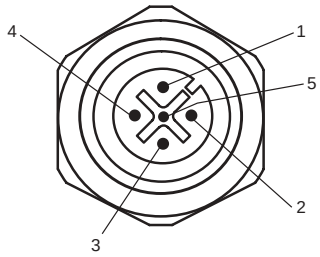
Lateral interval to mirroring surfaces

SLP10-x / SLPC10-x / SLPCM10-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPC30-3/..

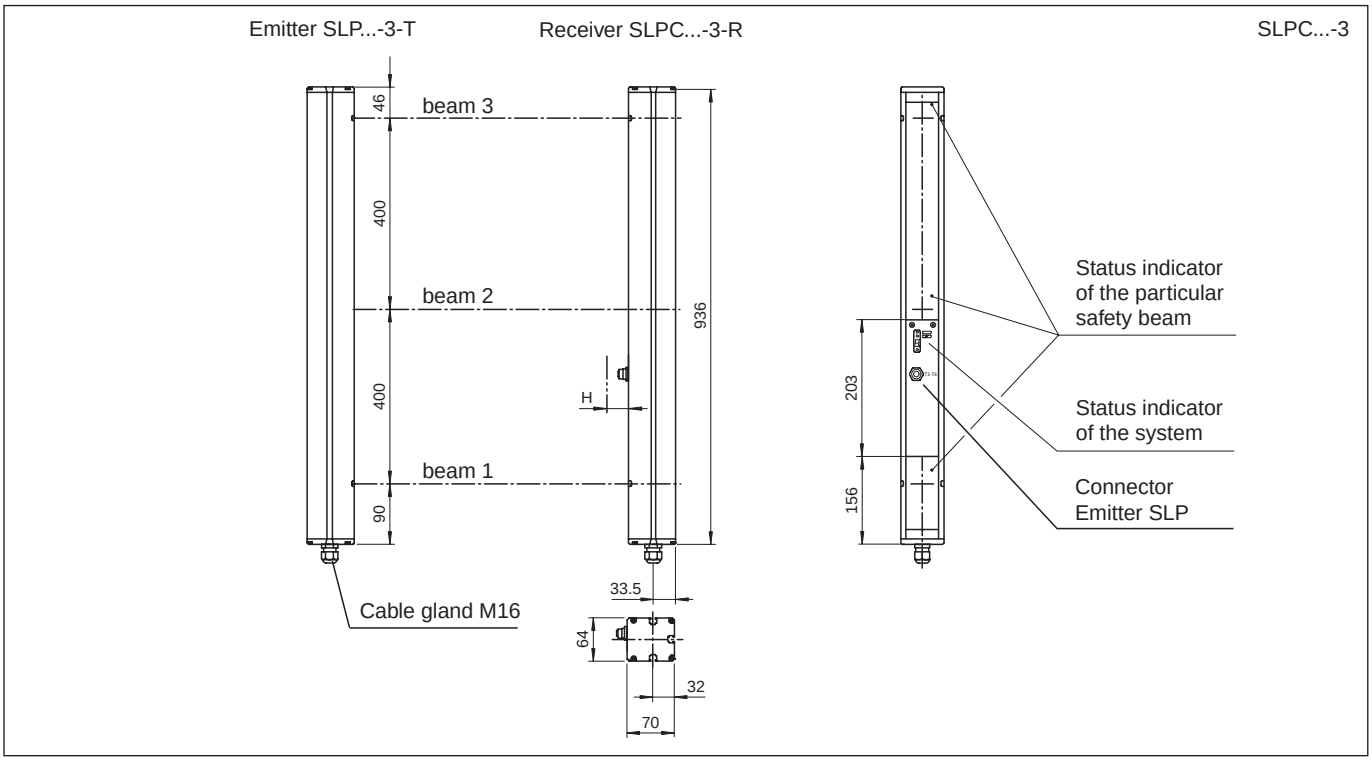
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPC30-3	SLPC30-3/31
Effective detection range	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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 3400 g	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
System components			
Emitter	SLP30-3-T	◆	◆
Receiver	SLPC30-3-R	◆	
	SLPC30-3-R/31		◆

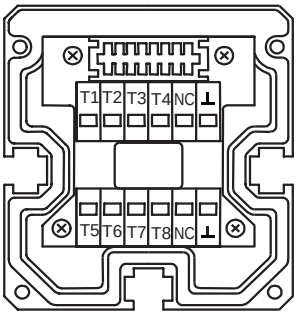
SLPC30-3/..

Dimensions



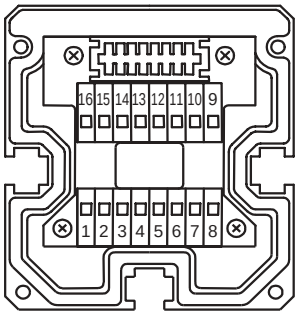
Electrical connection

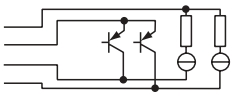
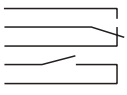
Emitter SLP



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

Receiver SLPC

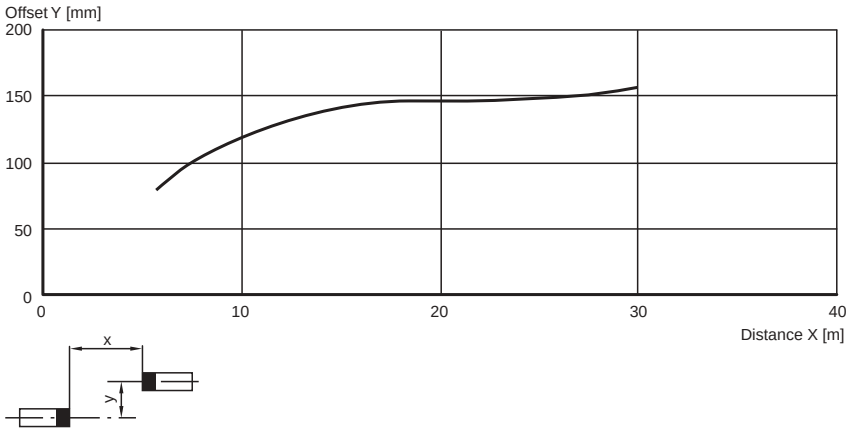


Receicer SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - input, Relay monitor 10 - input, Start release 11 - input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup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

Diagrams

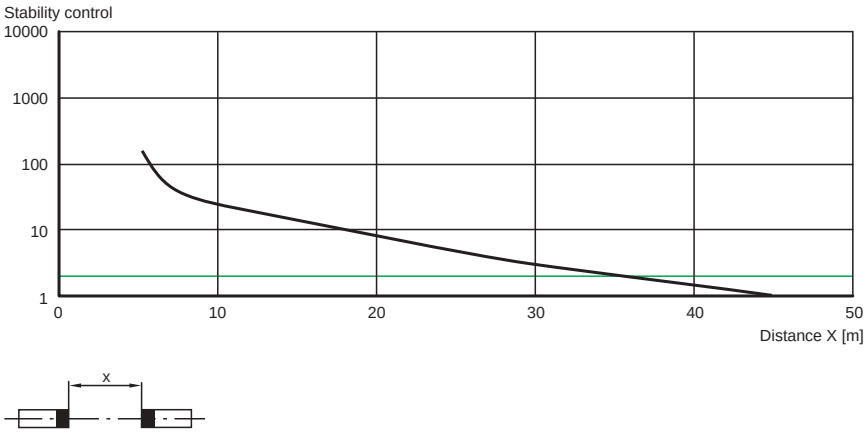
Characteristic response curve

SLP30-x / SLPC30-x / SLPCM30-x



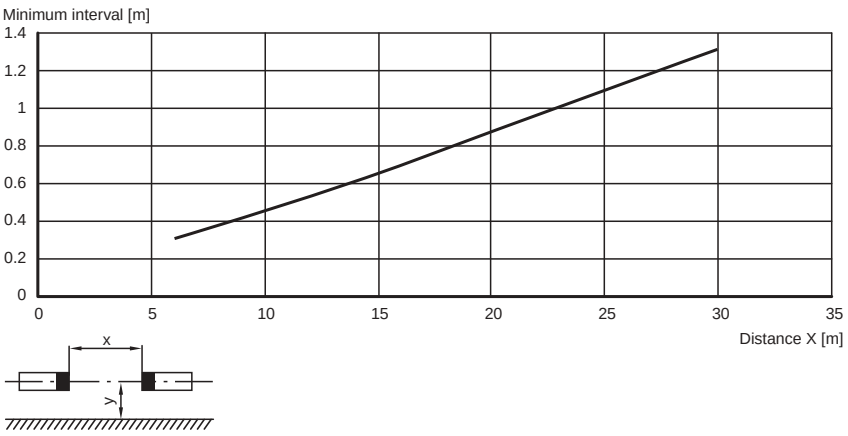
Relative received light strength

SLP30-x / SLPC30-x / SLPCM30-x



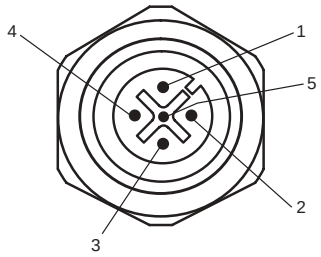
Lateral interval to mirroring surfaces

SLP30-x / SLPC30-x / SLPCM30-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPC65-3/..

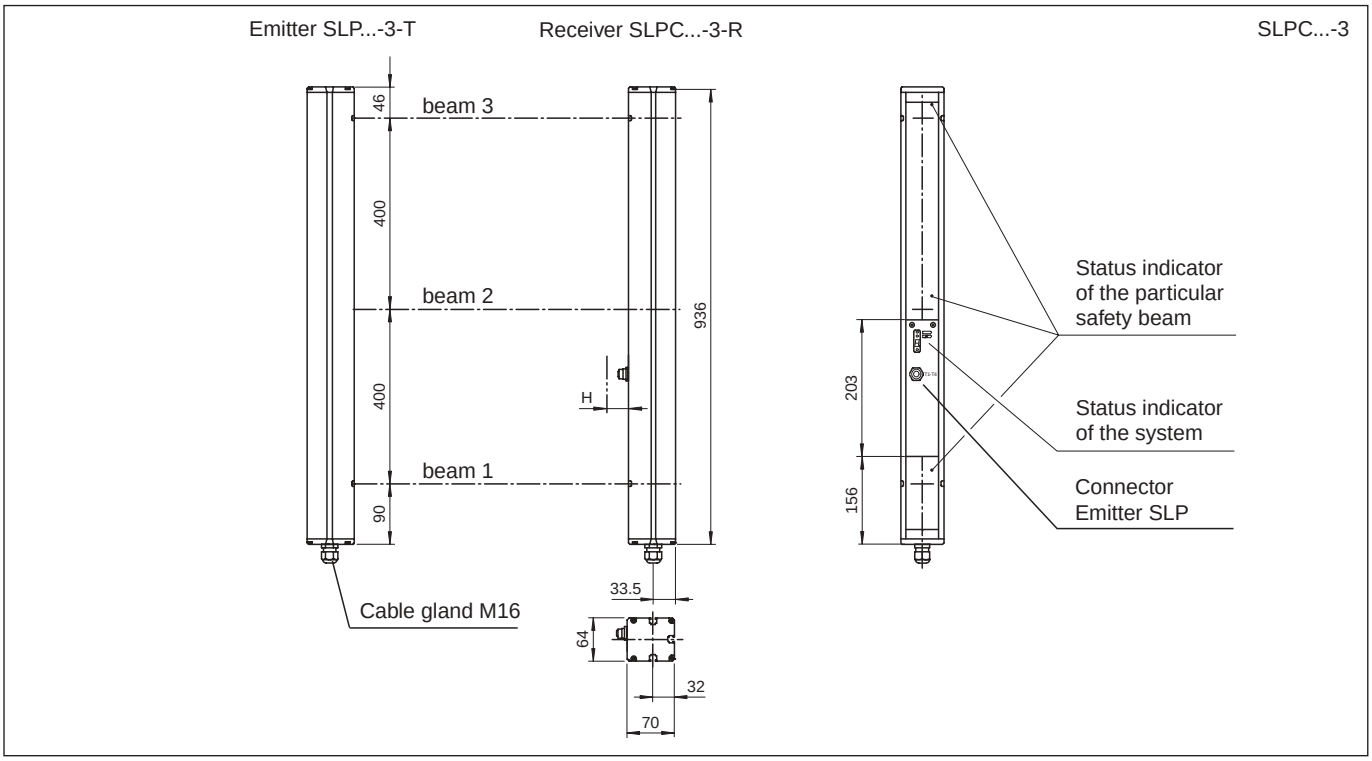
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPC65-3	SLPC65-3/31
Effective detection range	12 ... 65 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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % /+25 % , electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 3400 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	SLP65-3-T	◆	◆
Receiver	SLPC65-3-R	◆	
	SLPC65-3-R/31		◆

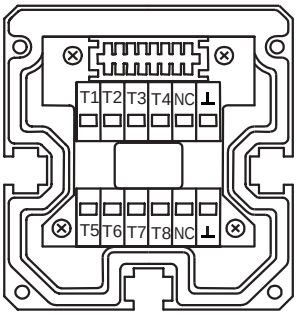
SLPC65-3/..

Dimensions



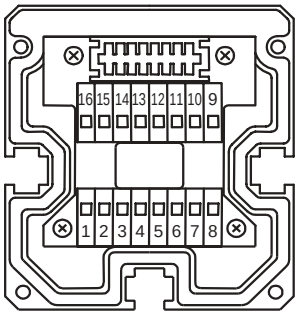
Electrical connection

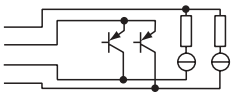
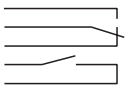
Emitter SLP



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

Receiver SLPC

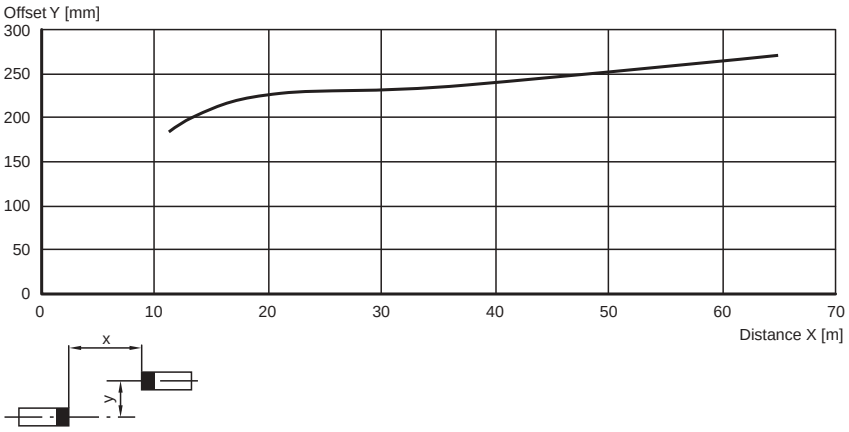


Receicer SLPC (semiconductor outputs)	Receiver SLPC/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - input, Relay monitor 10 - input, Start release 11 - input, Reset 12 - PNP-output, Soiled optics 13 - n.c. 14 - PNP-output, Startup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

Diagrams

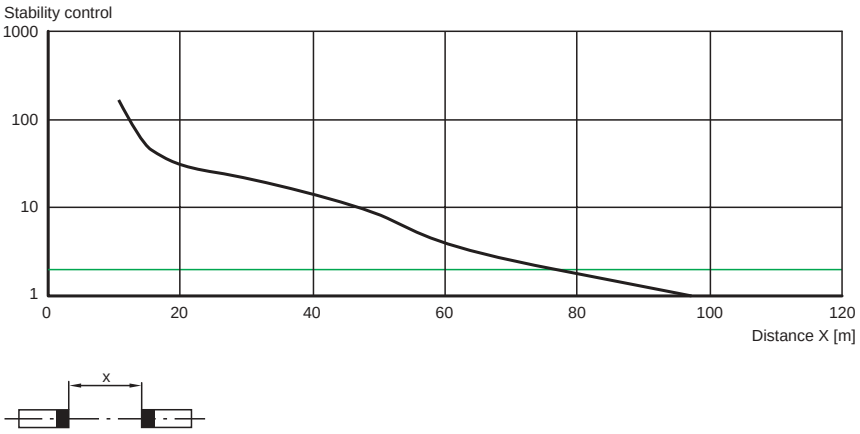
Characteristic response curve

SLP65-x / SLPC65-x / SLPCM65-x



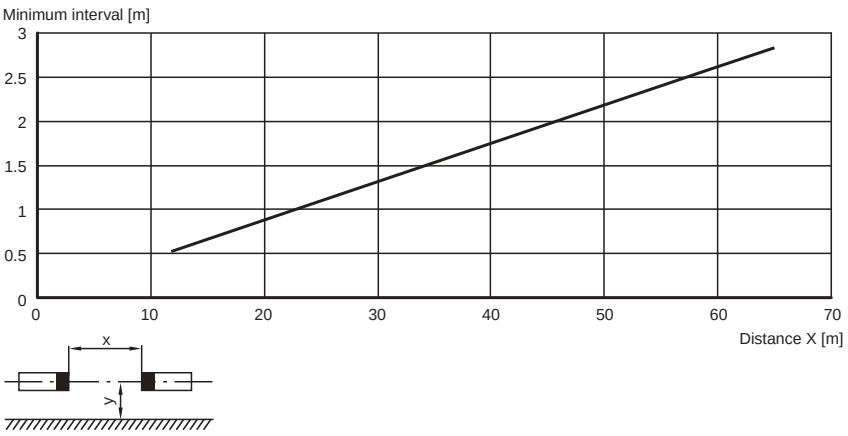
Relative received light strength

SLP65-x / SLPC65-x / SLPCM65-x



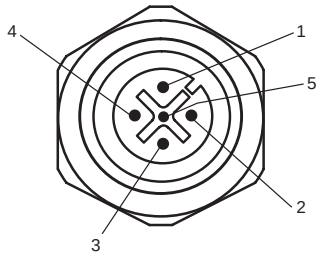
Lateral interval to mirroring surfaces

SLP65-x / SLPC65-x / SLPCM65-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPC10-4/..

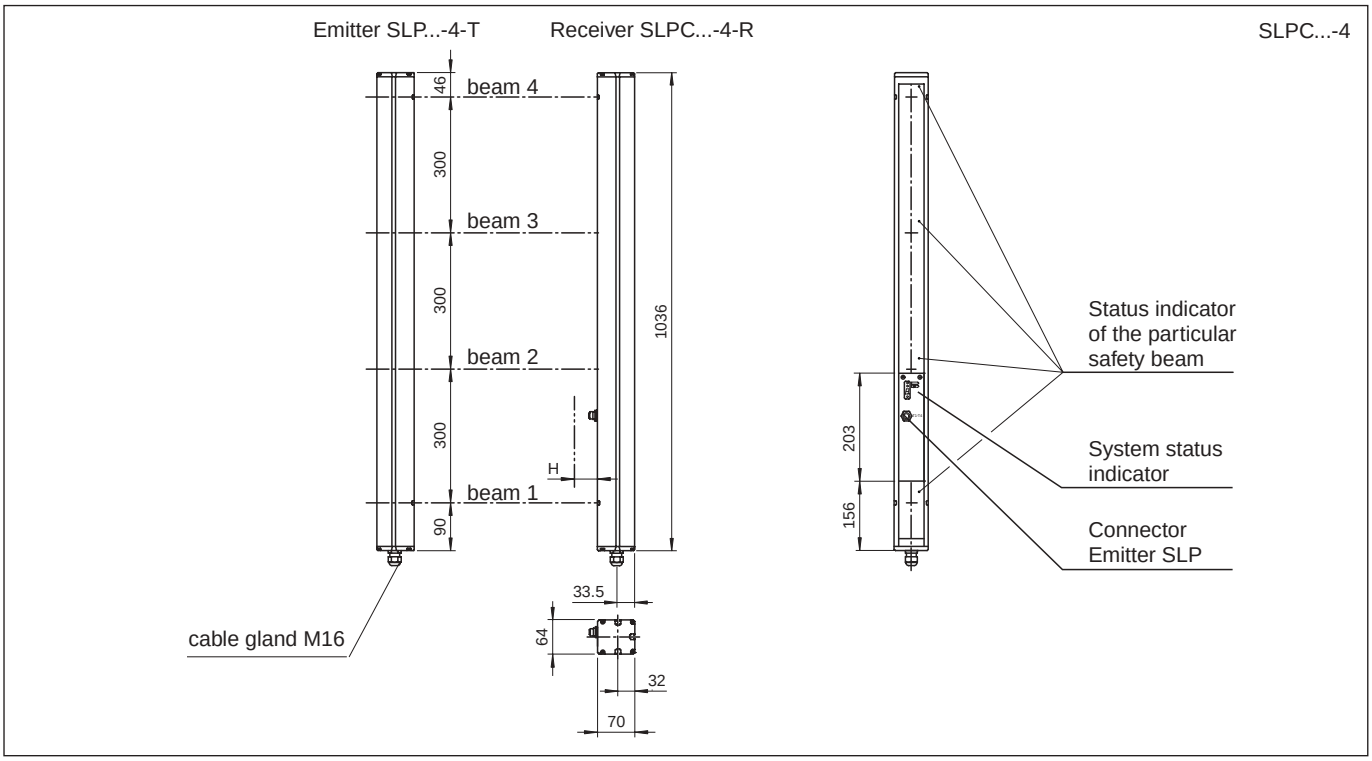
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPC10-4	SLPC10-4/31
Effective detection range	0.2 ... 10 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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 3700 g	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
System components			
Emitter	SLP10-4-T	◆	◆
Receiver	SLPC10-4-R	◆	
	SLPC10-4-R/31		◆

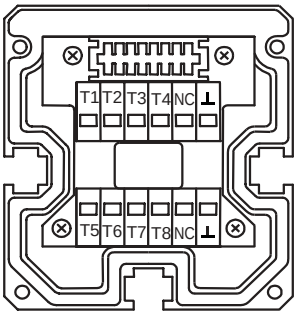
SLPC10-4/..

Dimensions



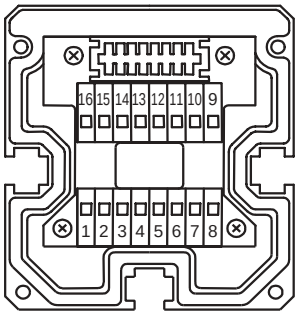
Electrical connection

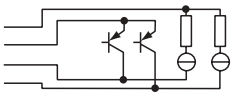
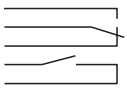
Emitter SLP



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

Receiver SLPC

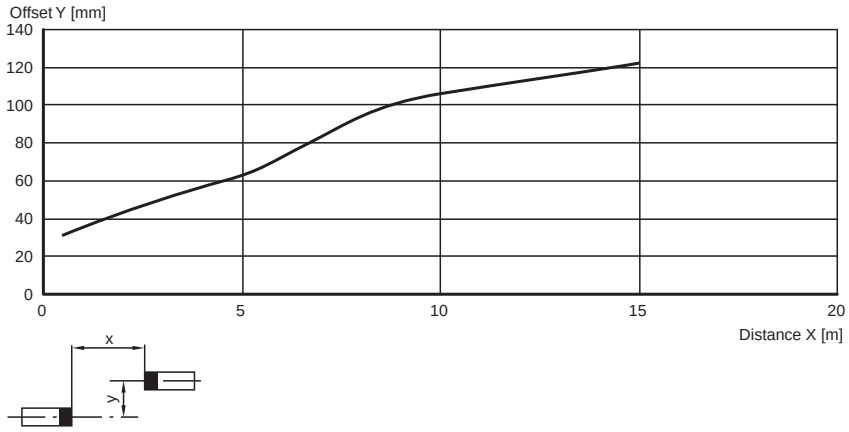


Receiver SLPC (semi-conductor outputs)	Receiver SLPC/31 (relay output)
1 - Fuctional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-Output, Soiled optics 13 - n.c. 14 - PNP-Output, Startup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

Diagrams

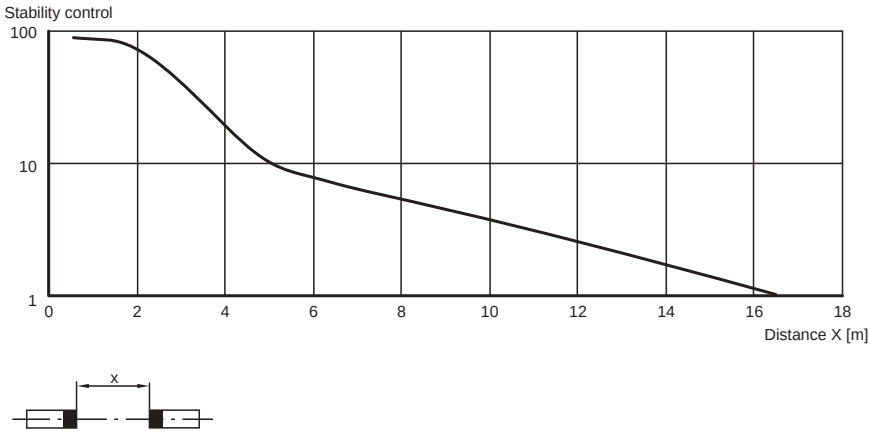
Characteristic response curve

SLP10-x / SLPC10-x / SLPCM10-x



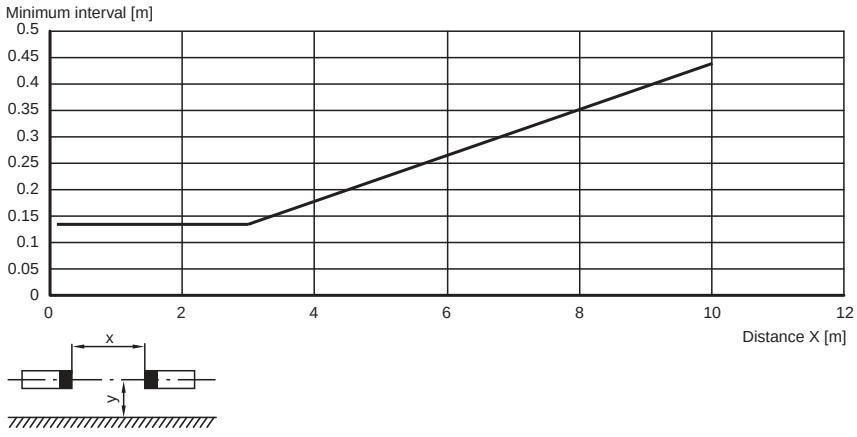
Relative received light strength

SLP10-x / SLPC10-x / SLPCM10-x



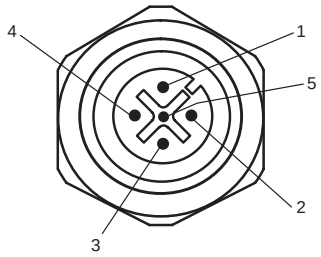
Lateral interval to mirroring surfaces

SLP10-x / SLPC10-x / SLPCM10-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPC30-4/..

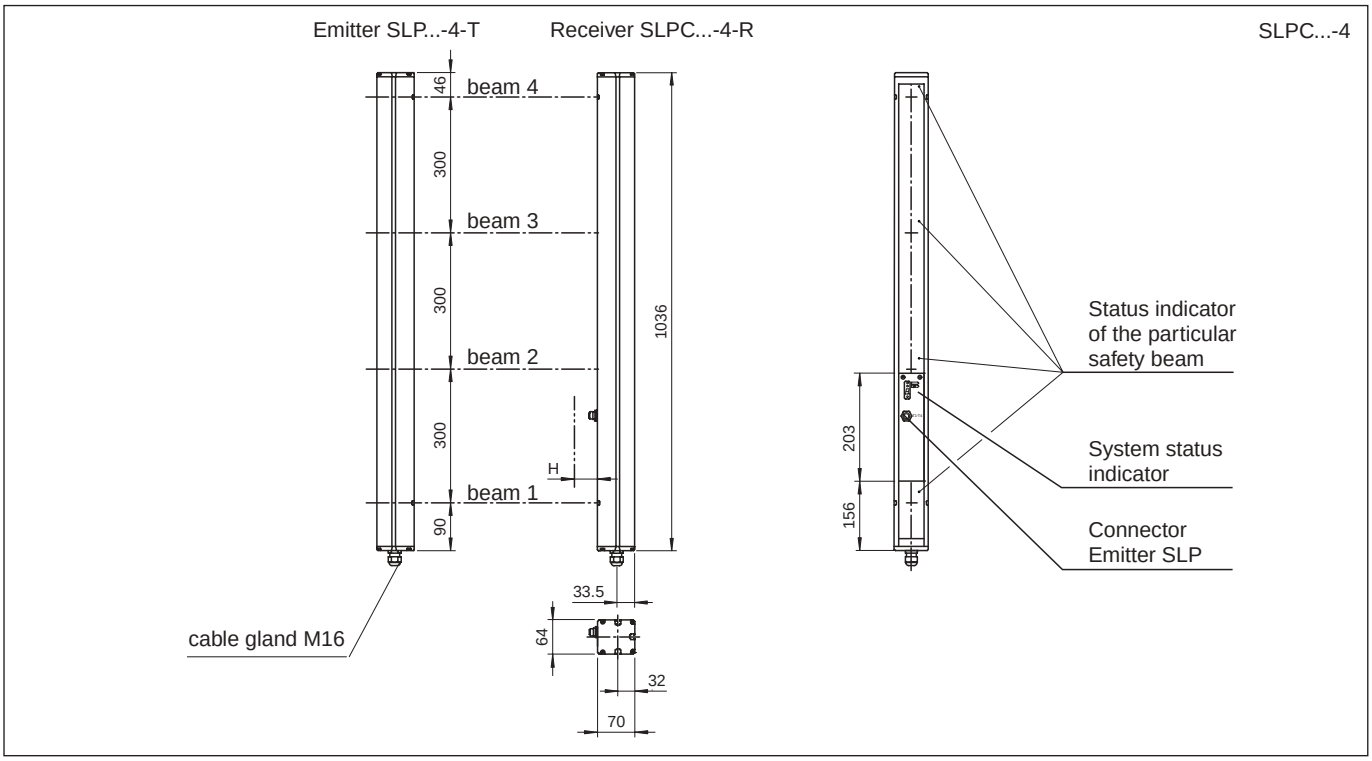
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPC30-4	SLPC30-4/31
Effective detection range	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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	◆	◆
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 3700 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	SLP30-4-T	◆	◆
Receiver	SLPC30-4-R	◆	
	SLPC30-4-R/31		◆

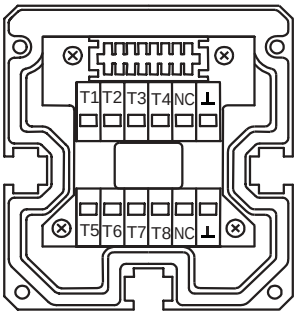
SLPC30-4/..

Dimensions



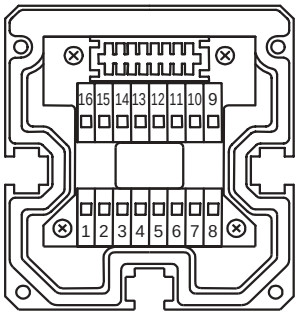
Electrical connection

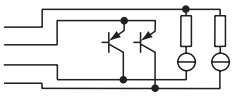
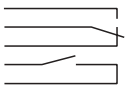
Emitter SLP



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

Receiver SLPC



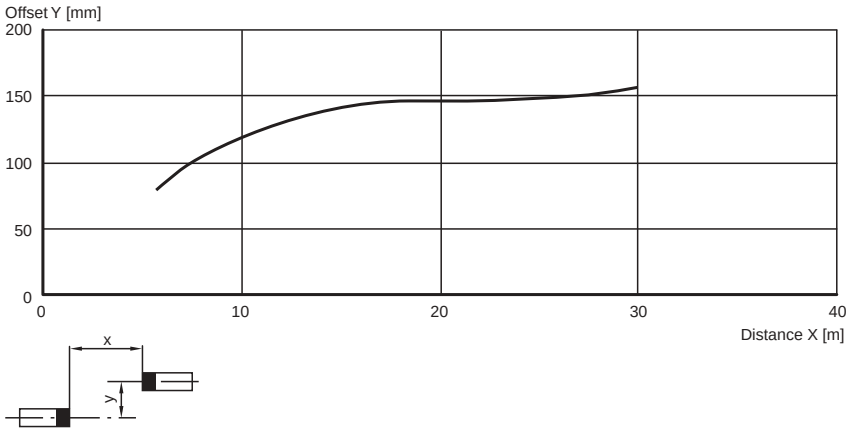
Receiver SLPC (semi-conductor outputs)	Receiver SLPC/31 (relay output)
1 - Fuctional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-Output, Soiled optics 13 - n.c. 14 - PNP-Output, Startup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

Date of edition: 7/29/04

Diagrams

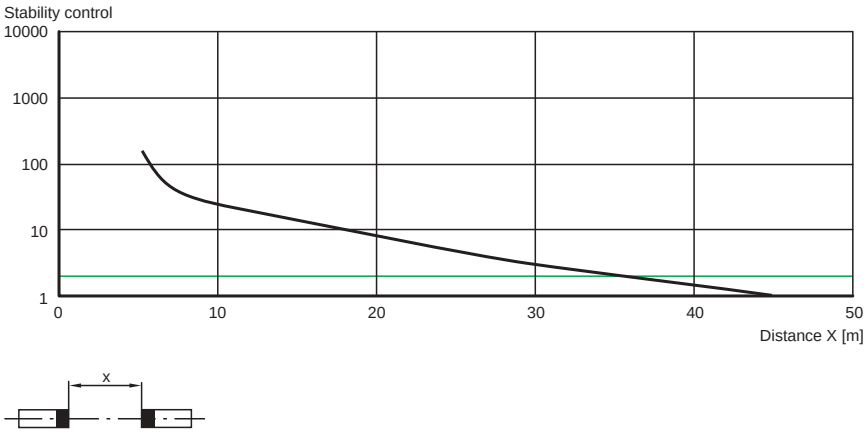
Characteristic response curve

SLP30-x / SLPC30-x / SLPCM30-x



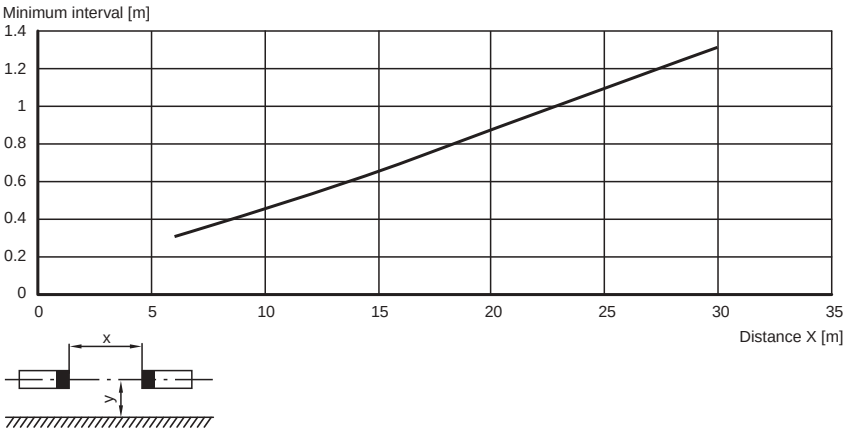
Relative received light strength

SLP30-x / SLPC30-x / SLPCM30-x



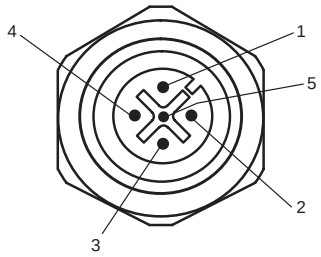
Lateral interval to mirroring surfaces

SLP30-x / SLPC30-x / SLPCM30-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPC65-4/..

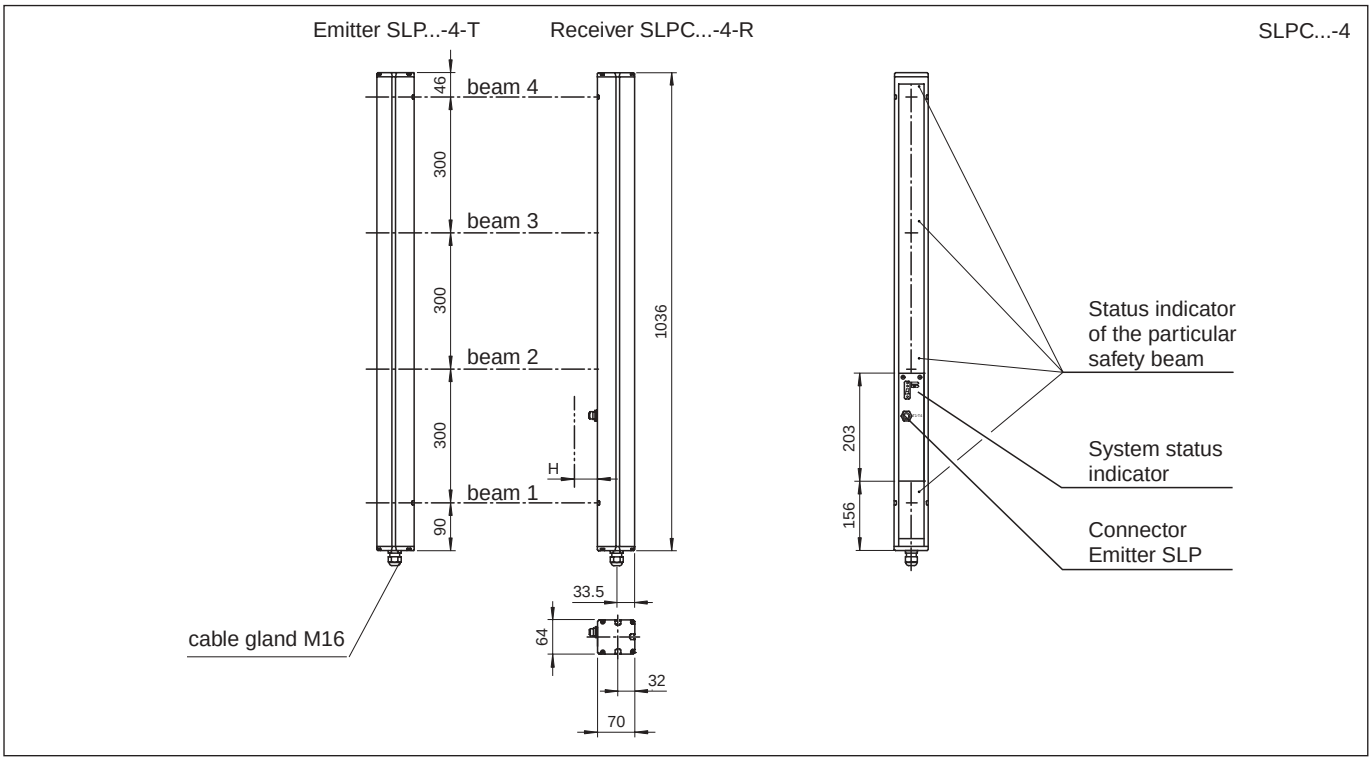
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPC65-4	SLPC65-4/31
Effective detection range	12 ... 65 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, alternating light	◆	◆
Angle of divergence	< 5 °	◆	◆
Operating mode	Start/restart disable, relay monitor,	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆
Approvals	TÜV	◆	◆
Tests	IEC/EN 61496	◆	◆
Marking	CE	◆	◆
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	◆	◆
Diagnosis display	7-segment display	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆
No-load supply current	max. 250 mA	◆	◆
Protection class	III	◆	◆
Function input	Relay monitor, start release	◆	◆
Test input	Reset-input for system test	◆	◆
Activation current	approx. 10 mA	◆	◆
Activation time	0.03 ... 1 s	◆	◆
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	◆	
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		◆
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	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆
Optical face	Plastic lens	◆	◆
Mass	Per 3700 g	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆
System components			
Emitter	SLP65-4-T	◆	◆
Receiver	SLPC65-4-R	◆	
	SLPC65-4-R/31		◆

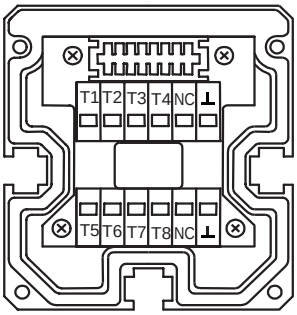
SLPC65-4/..

Dimensions



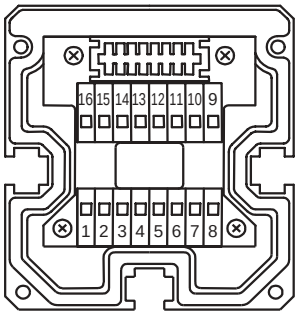
Electrical connection

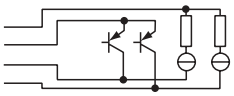
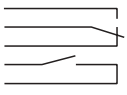
Emitter SLP



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

Receiver SLPC

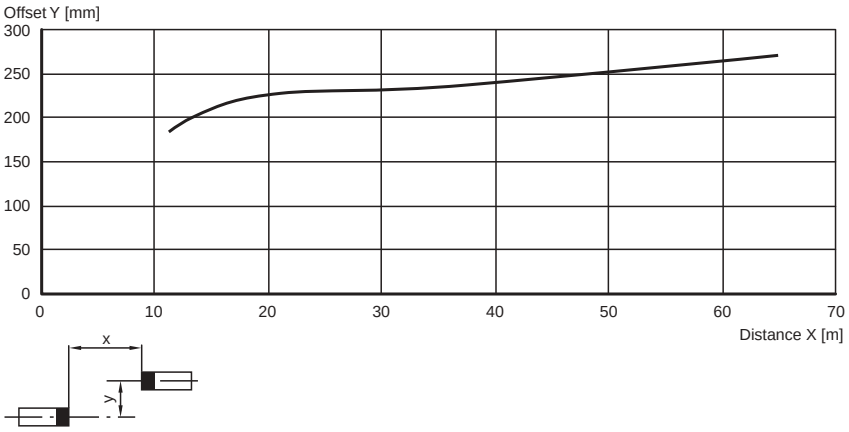


Receiver SLPC (semi-conductor outputs)	Receiver SLPC/31 (relay output)
1 - Fuctional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-Output, Soiled optics 13 - n.c. 14 - PNP-Output, Startup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

Diagrams

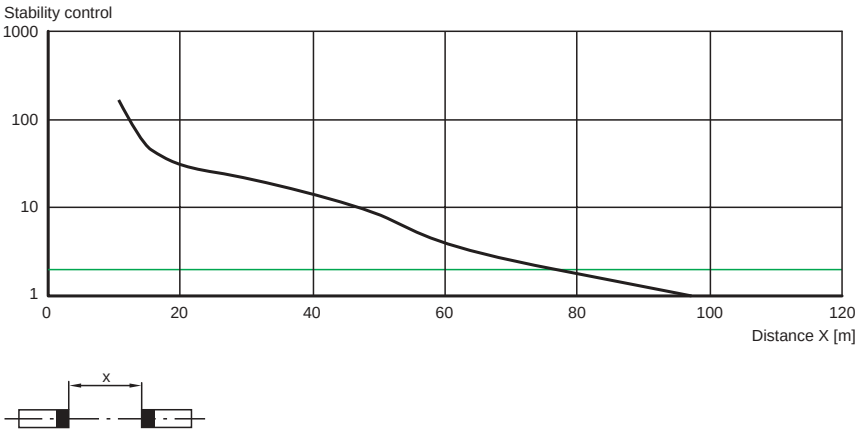
Characteristic response curve

SLP65-x / SLPC65-x / SLPCM65-x



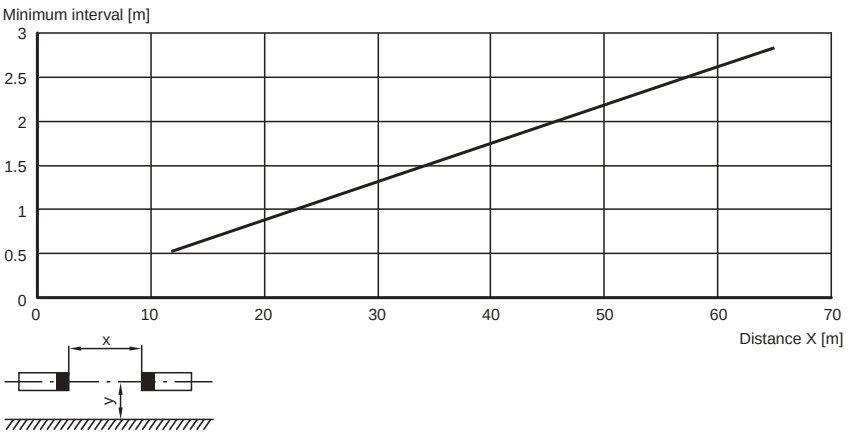
Relative received light strength

SLP65-x / SLPC65-x / SLPCM65-x



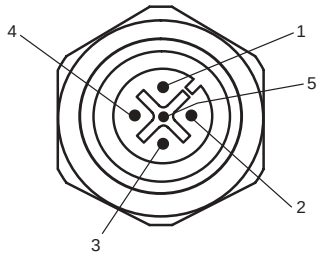
Lateral interval to mirroring surfaces

SLP65-x / SLPC65-x / SLPCM65-x



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 SLP
- Protective glass pieces for SLP (to protect the optically functional surface)
- Profile alignment aid
- Laser alignment aid 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

Safety light grid with integrated control unit

SLPCM8-2-...

CE

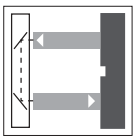
- Detection range up to 8 m
- 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Minimum wiring expense due to trans-ceiver with passive mirror column
- Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in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

7/29/04

Technical data SLPCM8-2-...

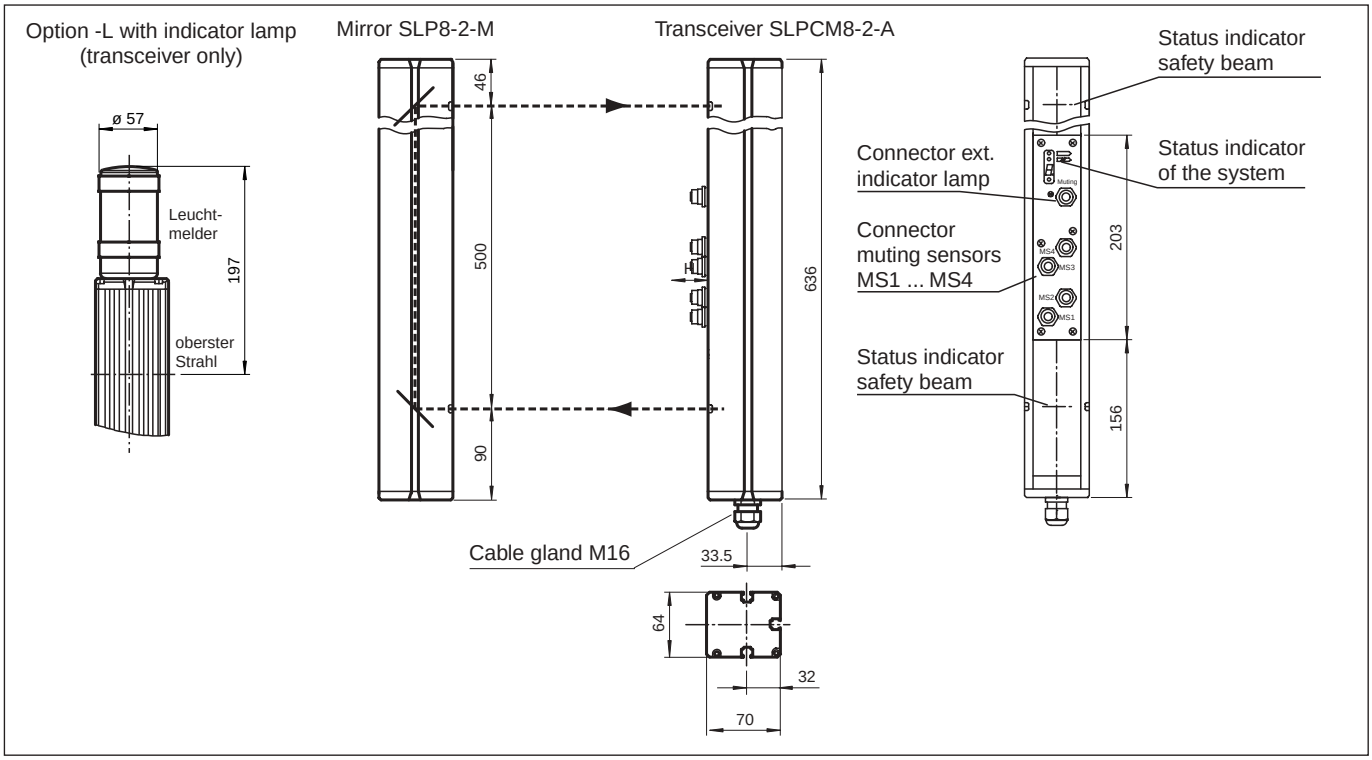
	Ordering code:	SLPCM8-2	SLPCM8-2/31	SLPCM8-2-L	SLPCM8-2-L/31
Effective detection range	0.2 ... 8 m	◆	◆	◆	◆
Number of beams	2	◆	◆	◆	◆
Beam spacing	500 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in transceiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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	◆	◆		
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 2300 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	SLPCM8-2-A	◆			
	SLPCM8-2-A-L			◆	
	SLPCM8-2-A-L/31				◆
	SLPCM8-2-A/31		◆		
Mirror pillar	SLP8-2-M	◆	◆	◆	◆

Date of edition: 7/29/04



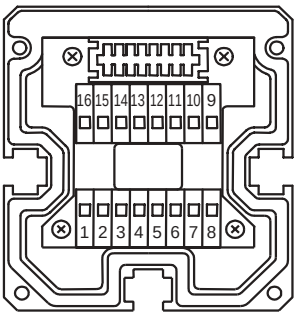
SLPCM8-2-...

Dimensions



Electrical connection

Transceiver SLPCM8-2-A

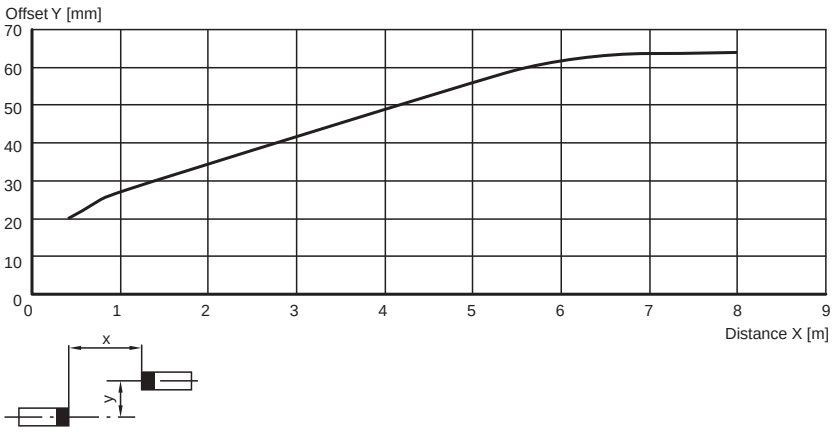


Transceiver SLPCM... (semiconductor output)	Transceiver SLPCM.../31 (Relay output)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2	4 5 6 7 8
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting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

Diagrams

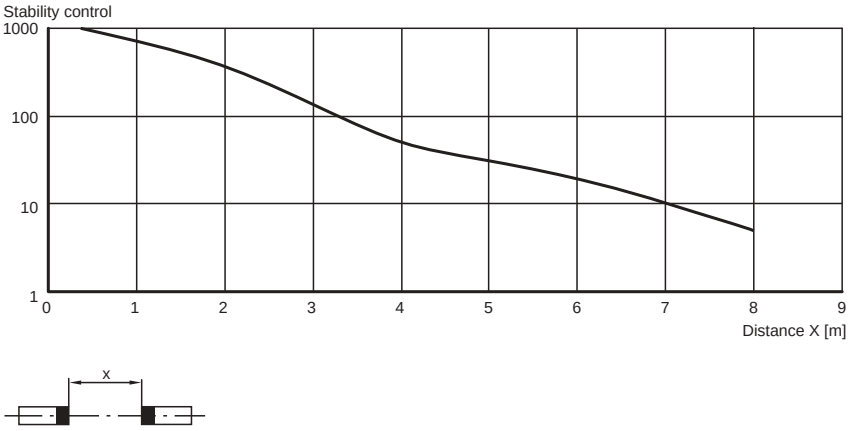
Characteristic response curve

SLP8



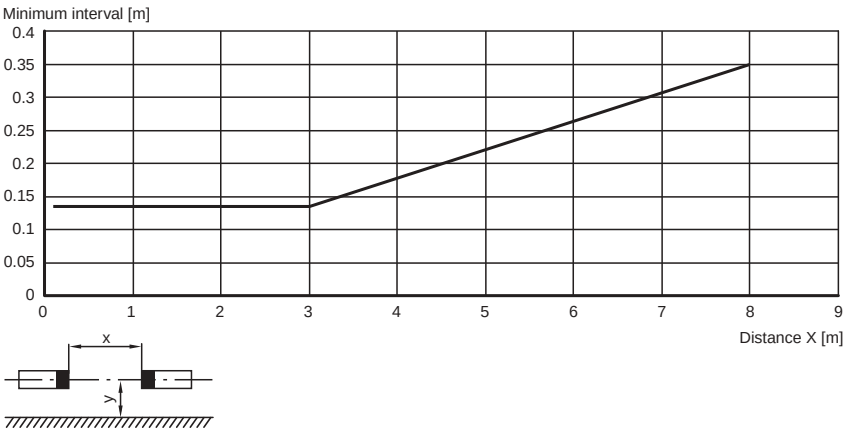
Relative received light strength

SLP8



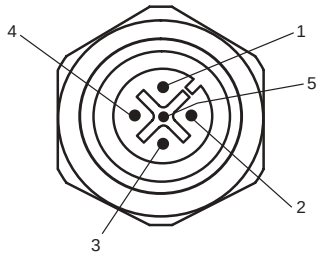
Lateral interval to mirroring surfaces

SLP8



Additional information

Socket assignment on the front side of the device



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 SLP
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-2-M

Safety light grid with integrated control unit

SLPCM10-2-...

CE

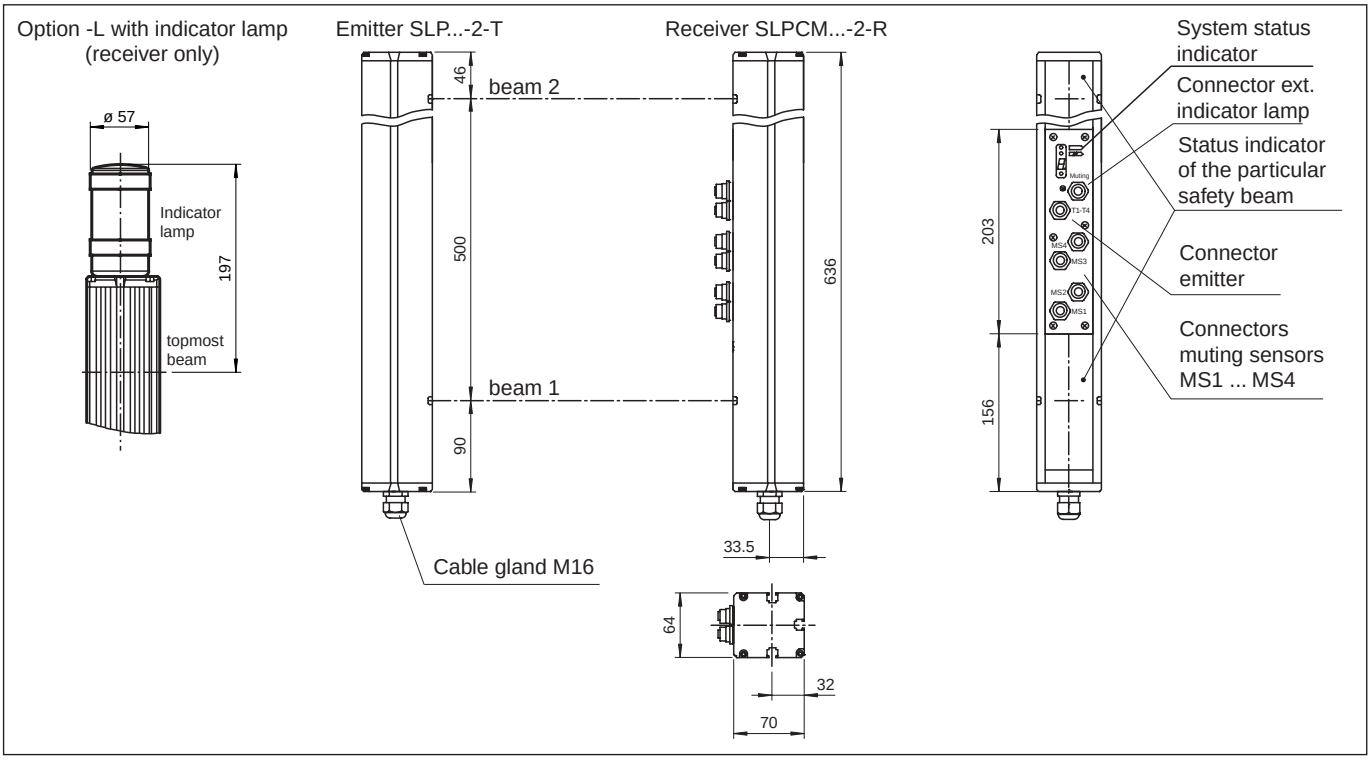
- Detection range up to 10 m
- 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of the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

	Ordering code:	SLPCM10-2	SLPCM10-2/31	SLPCM10-2-L	SLPCM10-2-L/31
Effective detection range	0.2 ... 10 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, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 2300 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP10-2-T	◆	◆	◆	◆
Receiver	SLPCM10-2-R	◆			
	SLPCM10-2-R-L			◆	
	SLPCM10-2-R-L/31				◆
	SLPCM10-2-R/31		◆		

Date of edition: 7/29/04

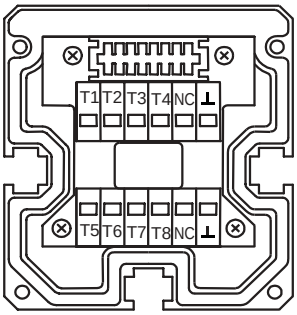
SLPCM10-2-...

Dimensions



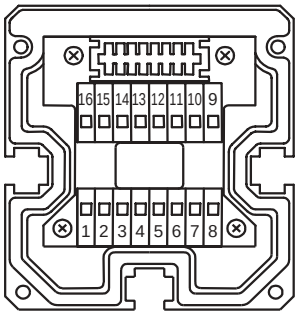
Electrical connection

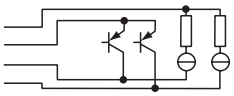
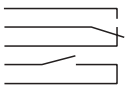
Emitter SLP



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

Receiver SLPCM

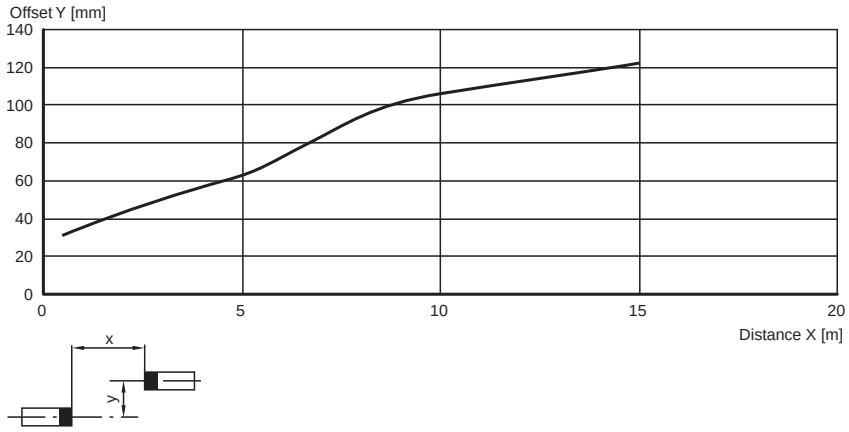


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

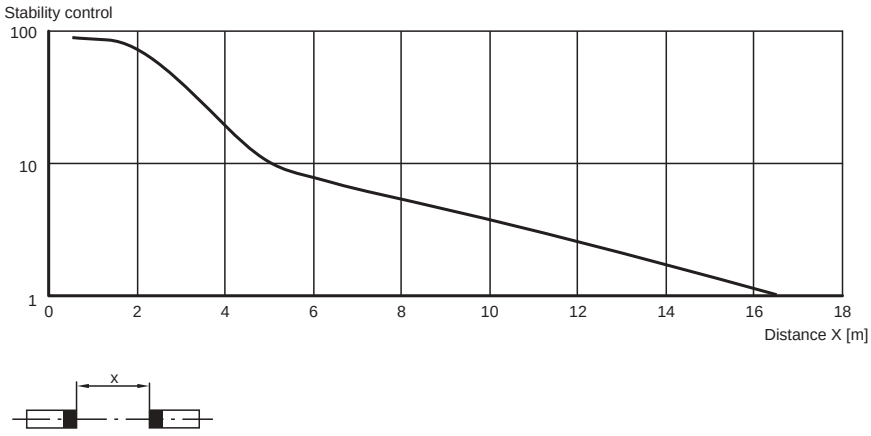
Characteristic response curve

SLP10-x / SLPC10-x / SLPCM10-x



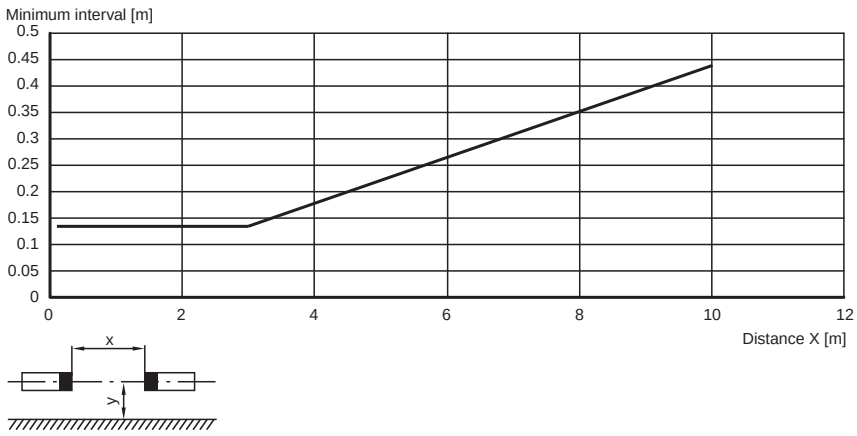
Relative received light strength

SLP10-x / SLPC10-x / SLPCM10-x



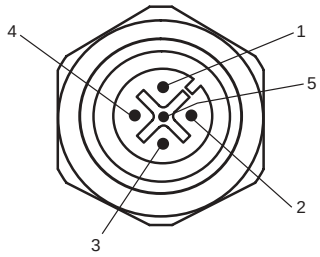
Lateral interval to mirroring surfaces

SLP10-x / SLPC10-x / SLPCM10-x



Additional information

Socket assignment on the front side of the device



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 SLP
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-2-M

Safety light grid with integrated control unit

SLPCM30-2-...

CE

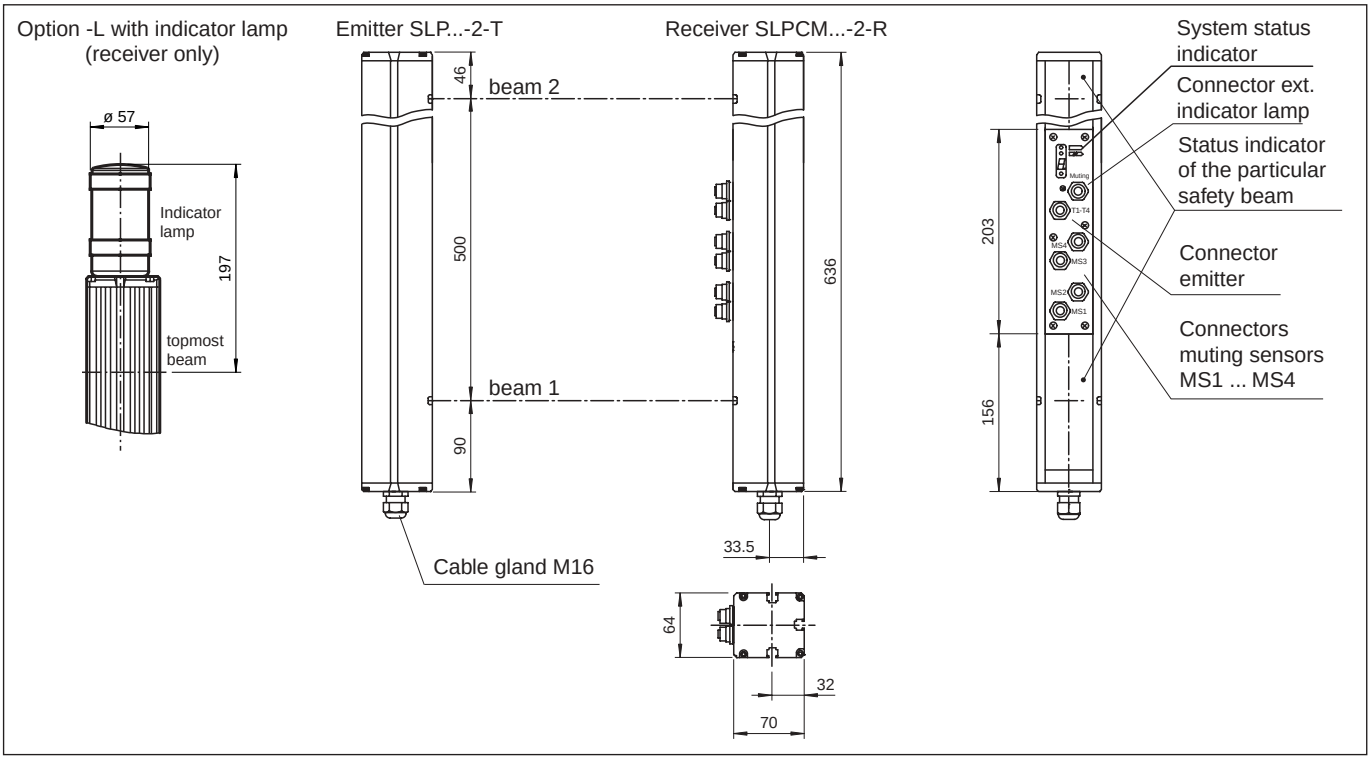
- Detection range up to 30 m
- 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of the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

Technical data SLPCM30-2-...

	Ordering code:	SLPCM30-2	SLPCM30-2/31	SLPCM30-2-L	SLPCM30-2-L/31
Effective detection range	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, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 2300 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	SLP30-2-T	◆	◆	◆	◆
Receiver	SLPCM30-2-R	◆			
	SLPCM30-2-R-L			◆	
	SLPCM30-2-R-L/31				◆
	SLPCM30-2-R/31		◆		

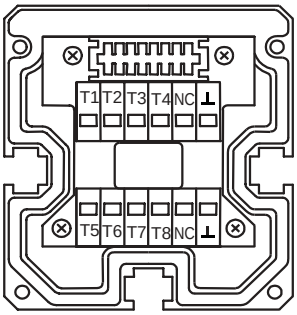
SLPCM30-2-...

Dimensions



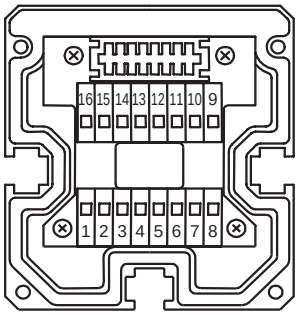
Electrical connection

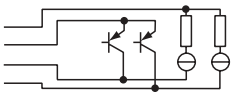
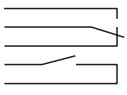
Emitter SLP



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

Receiver SLPCM

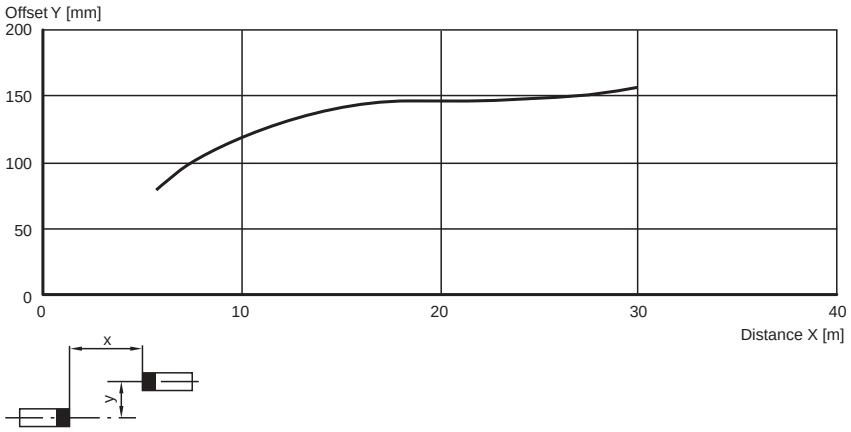


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

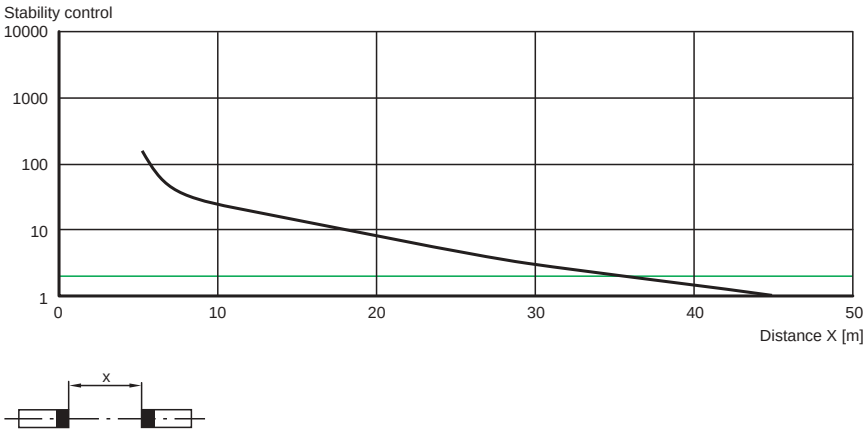
Characteristic response curve

SLP30-x / SLPC30-x / SLPCM30-x



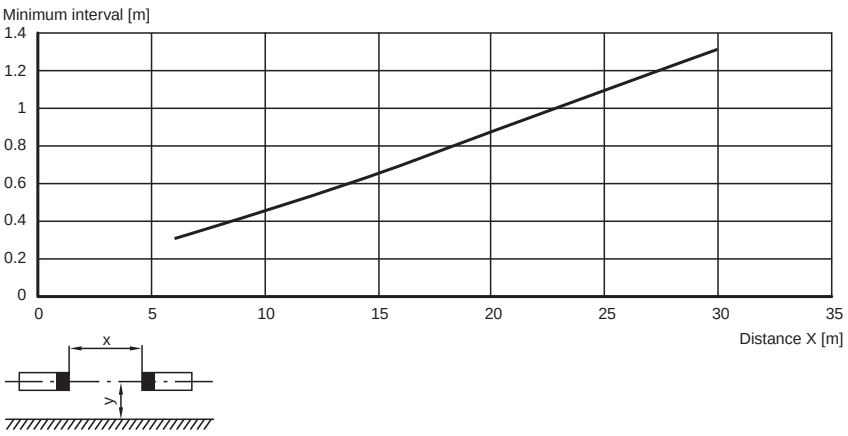
Relative received light strength

SLP30-x / SLPC30-x / SLPCM30-x



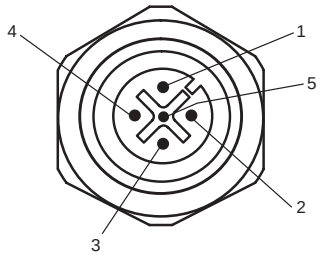
Lateral interval to mirroring surfaces

SLP30-x / SLPC30-x / SLPCM30-x



Additional information

Socket assignment on the front side of the device



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 SLP
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-2-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLPCM65-2-...

CE

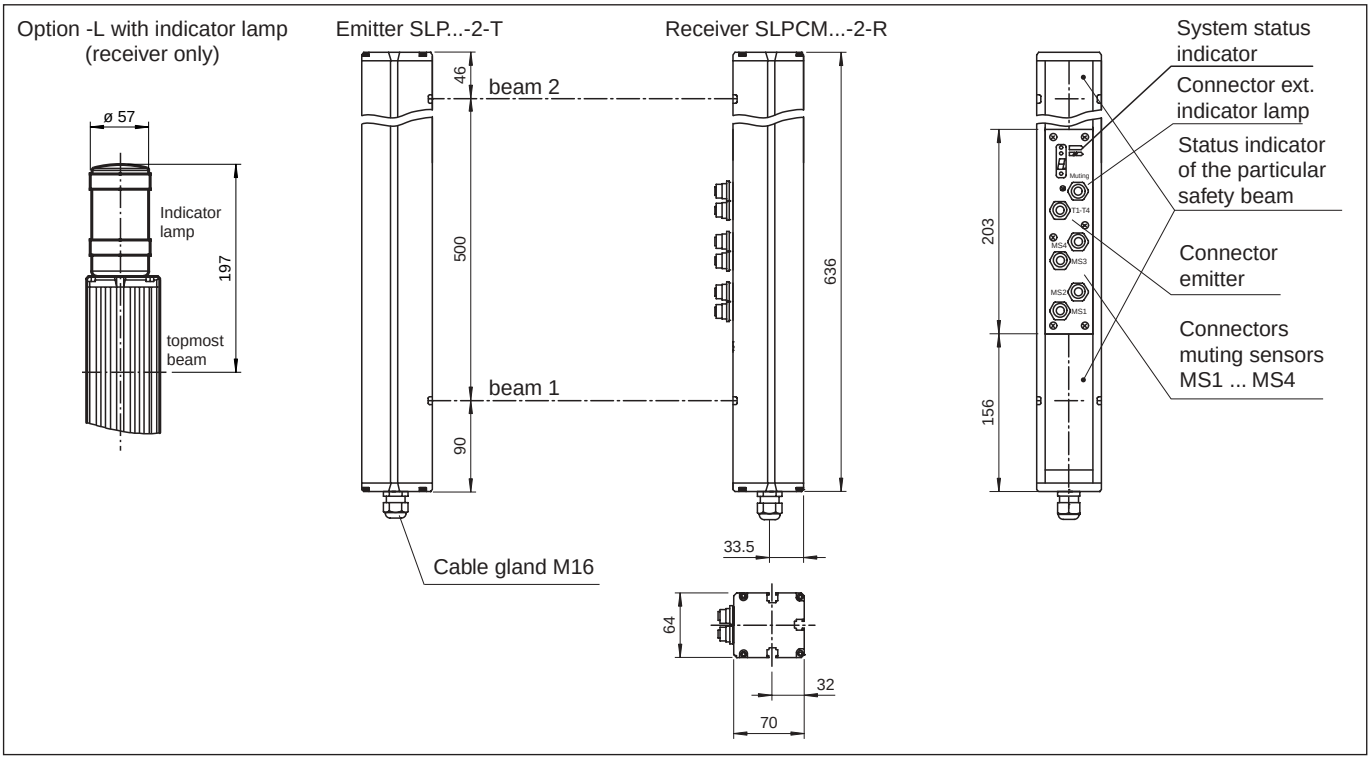
- Detection range up to 65 m
- 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of the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

7/29/04

	Ordering code:	SLPCM65-2	SLPCM65-2/31	SLPCM65-2-L	SLPCM65-2-L/31
Effective detection range	12 ... 65 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, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 2300 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP65-2-T	◆	◆	◆	◆
Receiver	SLPCM65-2-R	◆			
	SLPCM65-2-R-L			◆	
	SLPCM65-2-R-L/31				◆
	SLPCM65-2-R/31		◆		

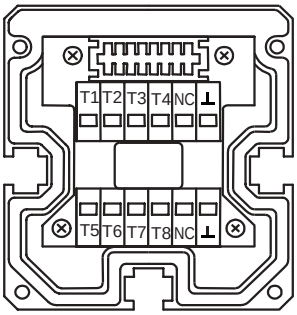
Date of edition: 7/29/04

Dimensions



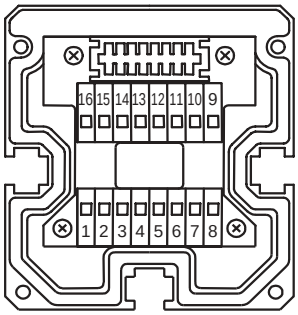
Electrical connection

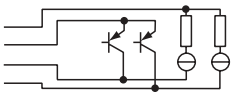
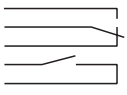
Emitter SLP



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

Receiver SLPCM

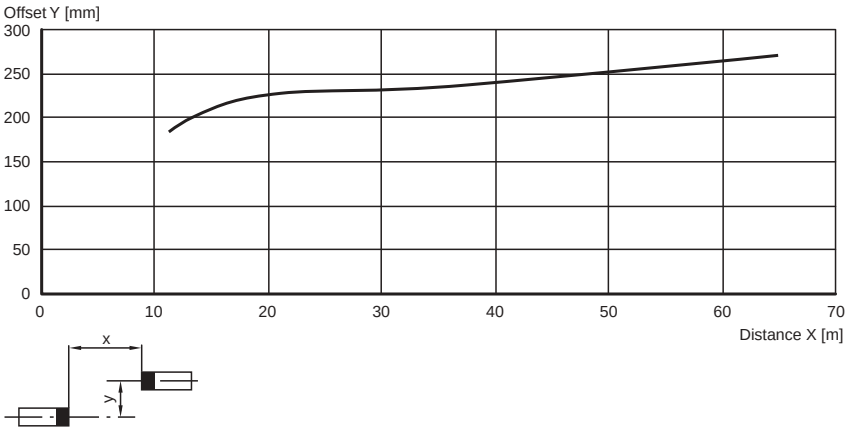


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

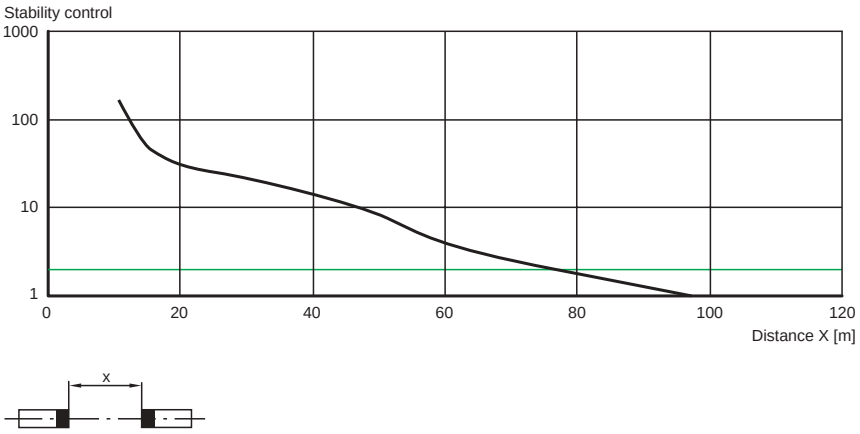
Characteristic response curve

SLP65-x / SLPC65-x / SLPCM65-x



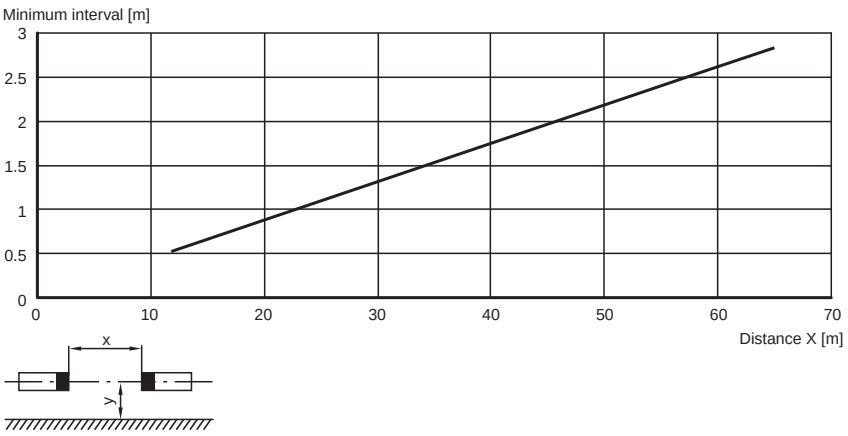
Relative received light strength

SLP65-x / SLPC65-x / SLPCM65-x



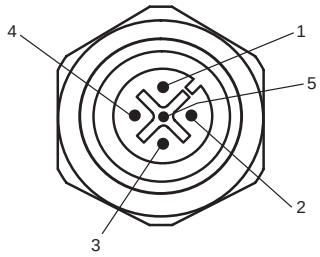
Lateral interval to mirroring surfaces

SLP65-x / SLPC65-x / SLPCM65-x



Additional information

Socket assignment on the front side of the device



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 SLP
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-2-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLPCM10-3-...

CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

Technical data SLPCM10-3-...

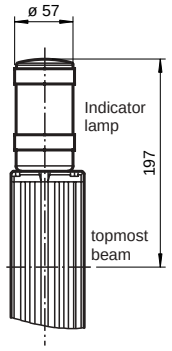
	Ordering code:	SLPCM10-3	SLPCM10-3/31	SLPCM10-3-L	SLPCM10-3-L/31
Effective detection range	0.2 ... 10 m	◆	◆	◆	◆
Number of beams	3	◆	◆	◆	◆
Beam spacing	400 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 3400 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	◆	◆	◆	◆
Receiver	SLPCM10-3-R	◆			
	SLPCM10-3-R-L			◆	
	SLPCM10-3-R-L/31				◆
	SLPCM10-3-R/31		◆		

Date of edition: 7/29/04

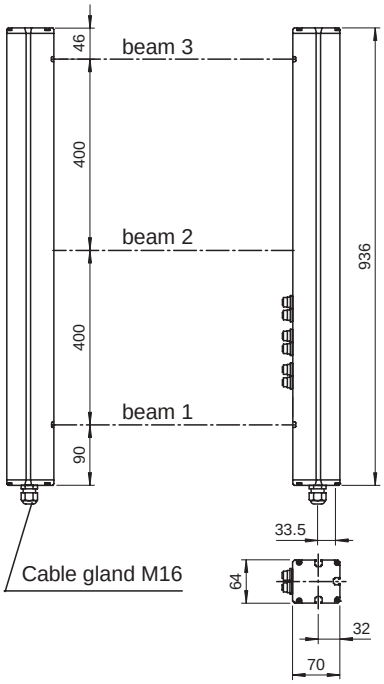
SLPCM10-3-...

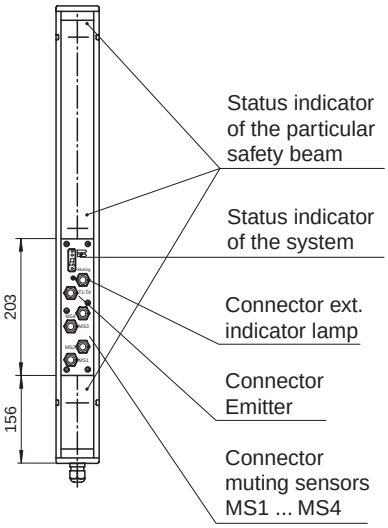
Dimensions

Option -L with indicator lamp (receiver only)



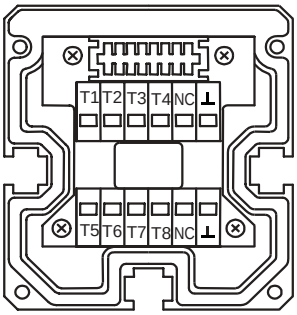
Emitter SLP...-3-T Receiver SLPCM...-3-R SLPCM...-3





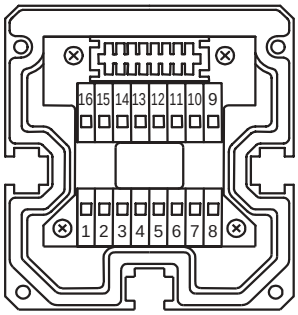
Electrical connection

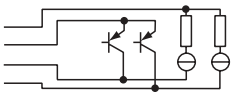
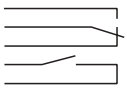
Emitter SLP



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

Receiver SLPCM



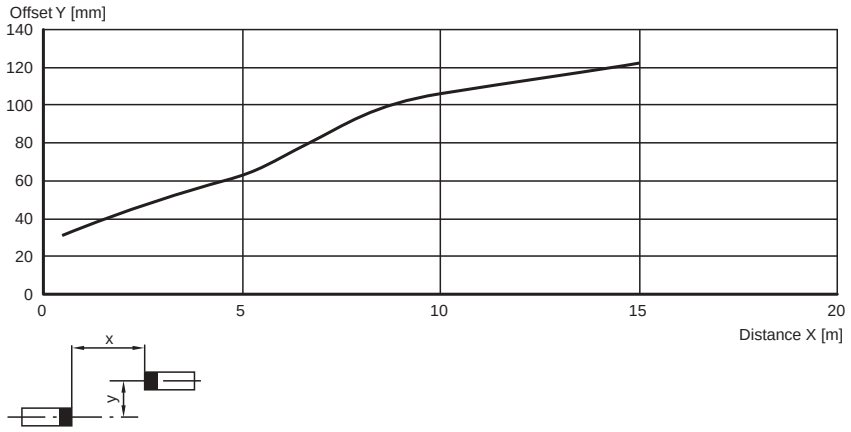
Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

7/29/04

Diagrams

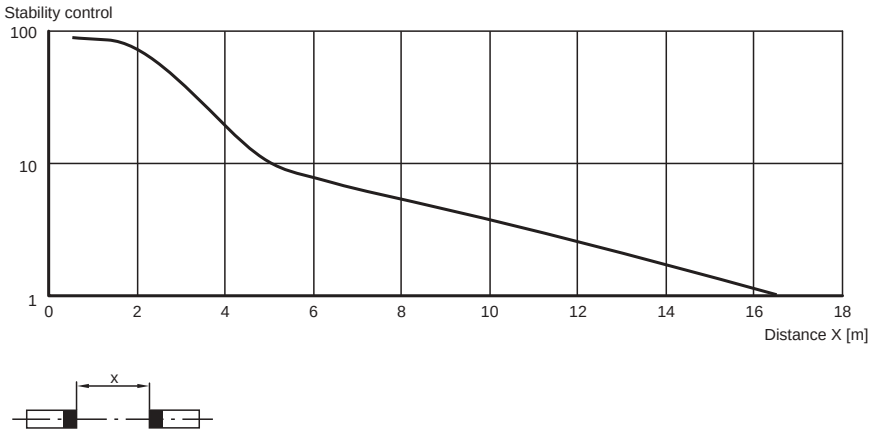
Characteristic response curve

SLP10-x / SLPC10-x / SLPCM10-x



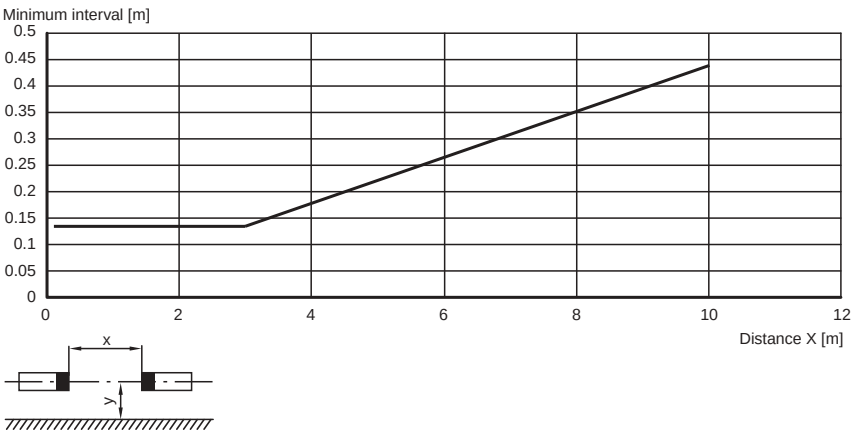
Relative received light strength

SLP10-x / SLPC10-x / SLPCM10-x



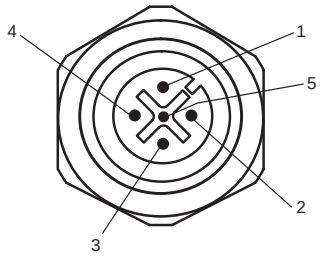
Lateral interval to mirroring surfaces

SLP10-x / SLPC10-x / SLPCM10-x



Additional information

Socket assignment on the front side of the device



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 SLP
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-3-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLPCM30-3-...

CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

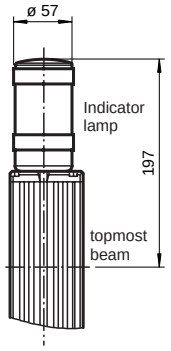
	Ordering code:	SLPCM30-3	SLPCM30-3/31	SLPCM30-3-L	SLPCM30-3-L/31
Effective detection range	6 ... 30 m	◆	◆	◆	◆
Number of beams	3	◆	◆	◆	◆
Beam spacing	400 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % /+25 % , electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 3400 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	SLP30-3-T	◆	◆	◆	◆
Receiver	SLPCM30-3-R	◆			
	SLPCM30-3-R-L			◆	
	SLPCM30-3-R-L/31				◆
	SLPCM30-3-R/31		◆		

Date of edition: 7/29/04

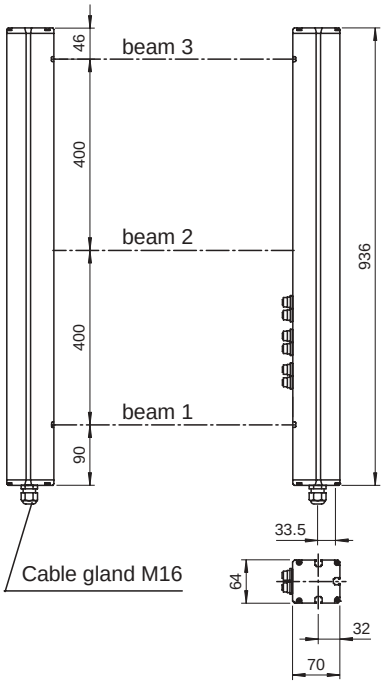
SLPCM30-3-...

Dimensions

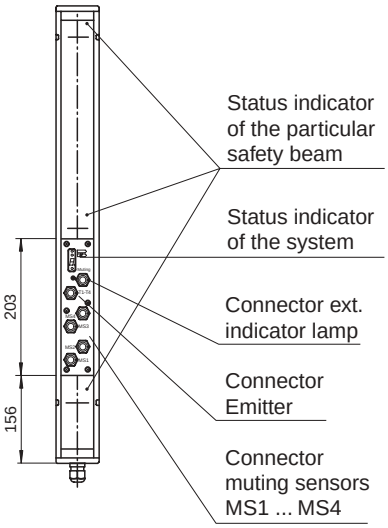
Option -L with indicator lamp (receiver only)



Emitter SLP...-3-T Receiver SLPCM...-3-R

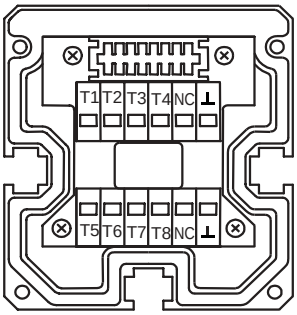


SLPCM...-3



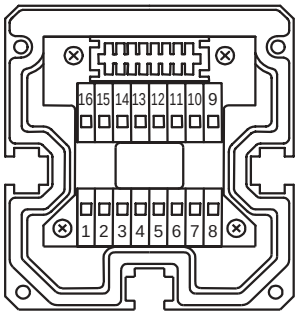
Electrical connection

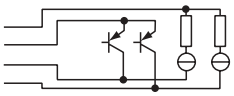
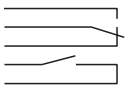
Emitter SLP



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

Receiver SLPCM

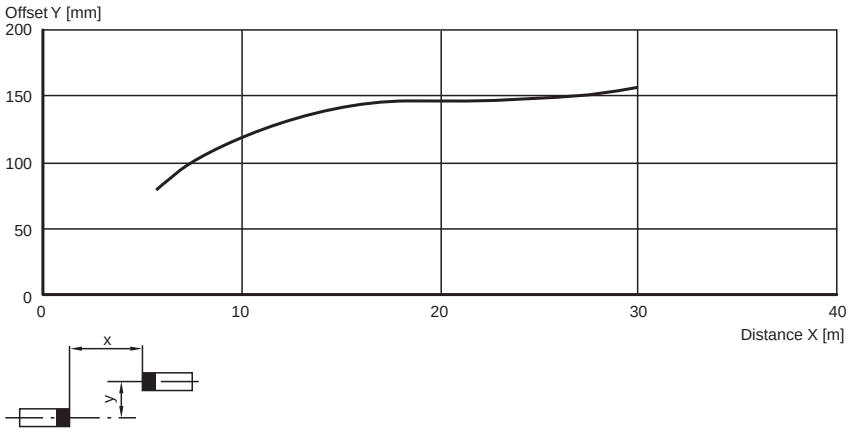


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - —— - 6 - —— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

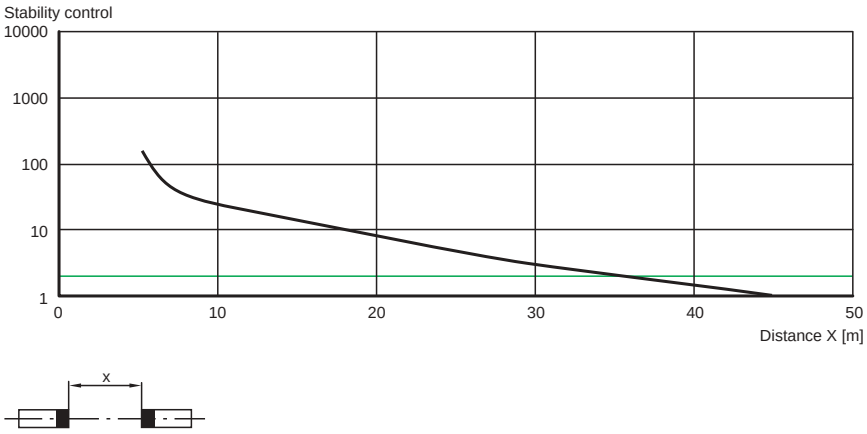
Characteristic response curve

SLP30-x / SLPC30-x / SLPCM30-x



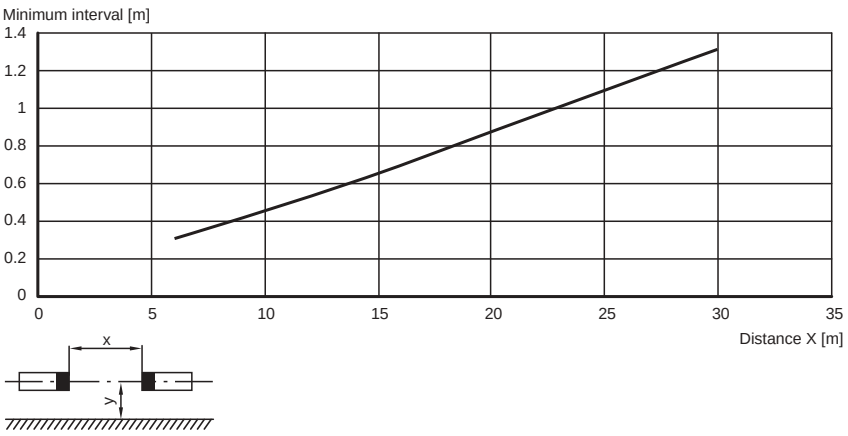
Relative received light strength

SLP30-x / SLPC30-x / SLPCM30-x



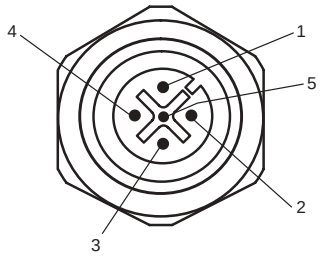
Lateral interval to mirroring surfaces

SLP30-x / SLPC30-x / SLPCM30-x



Additional information

Socket assignment on the front side of the device



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 SLP
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-3-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLPCM65-3-...

CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

7/29/04

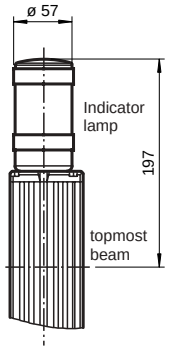
	Ordering code:	SLPCM65-3	SLPCM65-3/31	SLPCM65-3-L	SLPCM65-3-L/31
Effective detection range	12 ... 65 m	◆	◆	◆	◆
Number of beams	3	◆	◆	◆	◆
Beam spacing	400 mm	◆	◆	◆	◆
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	◆	◆	◆	◆
Light source	LED	◆	◆	◆	◆
Light type	red, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 3400 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	SLP65-3-T	◆	◆	◆	◆
Receiver	SLPCM65-3-R	◆			
	SLPCM65-3-R-L			◆	
	SLPCM65-3-R-L/31				◆
	SLPCM65-3-R/31		◆		

Date of edition: 7/29/04

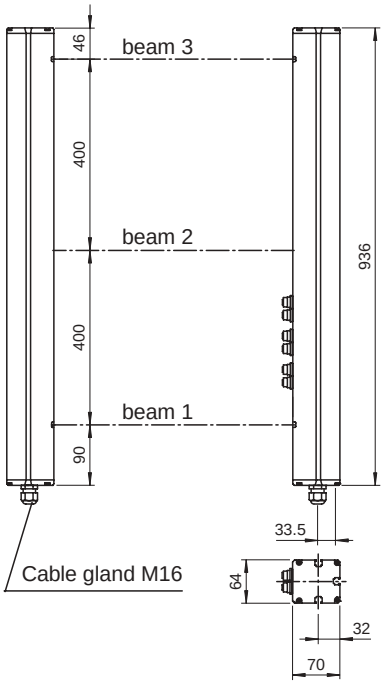
SLPCM65-3-...

Dimensions

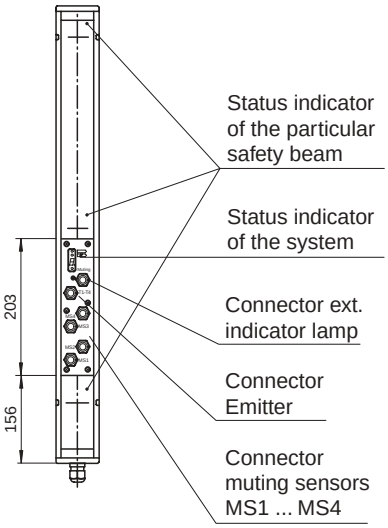
Option -L with indicator lamp (receiver only)



Emitter SLP...-3-T Receiver SLPCM...-3-R

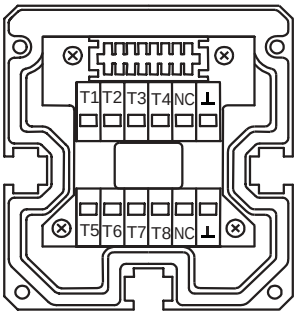


SLPCM...-3



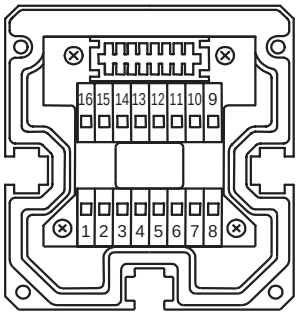
Electrical connection

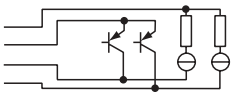
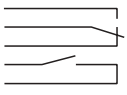
Emitter SLP



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

Receiver SLPCM

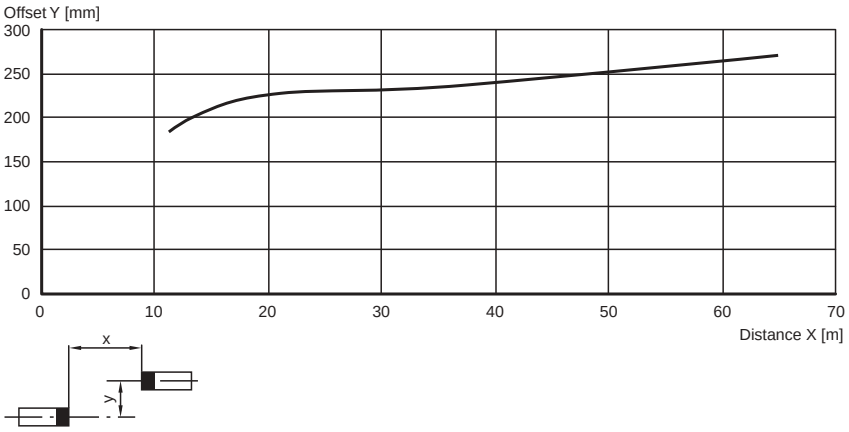


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

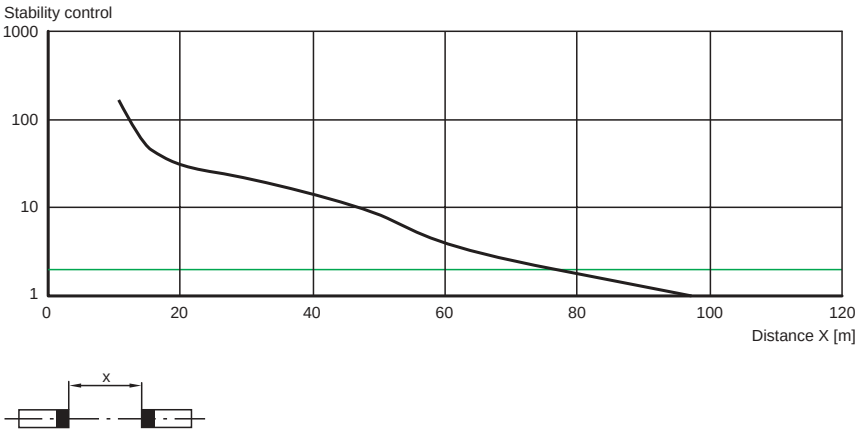
Characteristic response curve

SLP65-x / SLPC65-x / SLPCM65-x



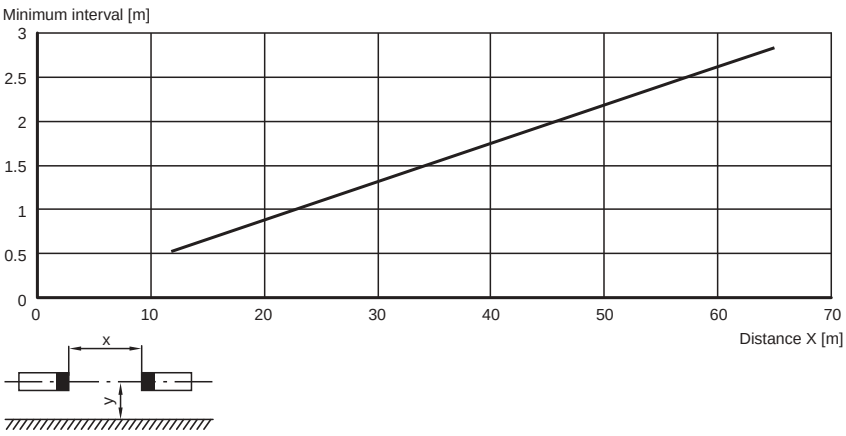
Relative received light strength

SLP65-x / SLPC65-x / SLPCM65-x



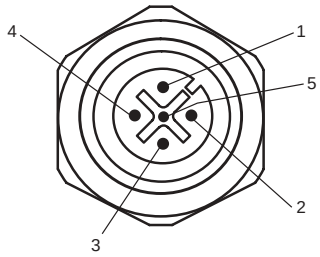
Lateral interval to mirroring surfaces

SLP65-x / SLPC65-x / SLPCM65-x



Additional information

Socket assignment on the front side of the device



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 SLP
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-3-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLPCM10-4-...

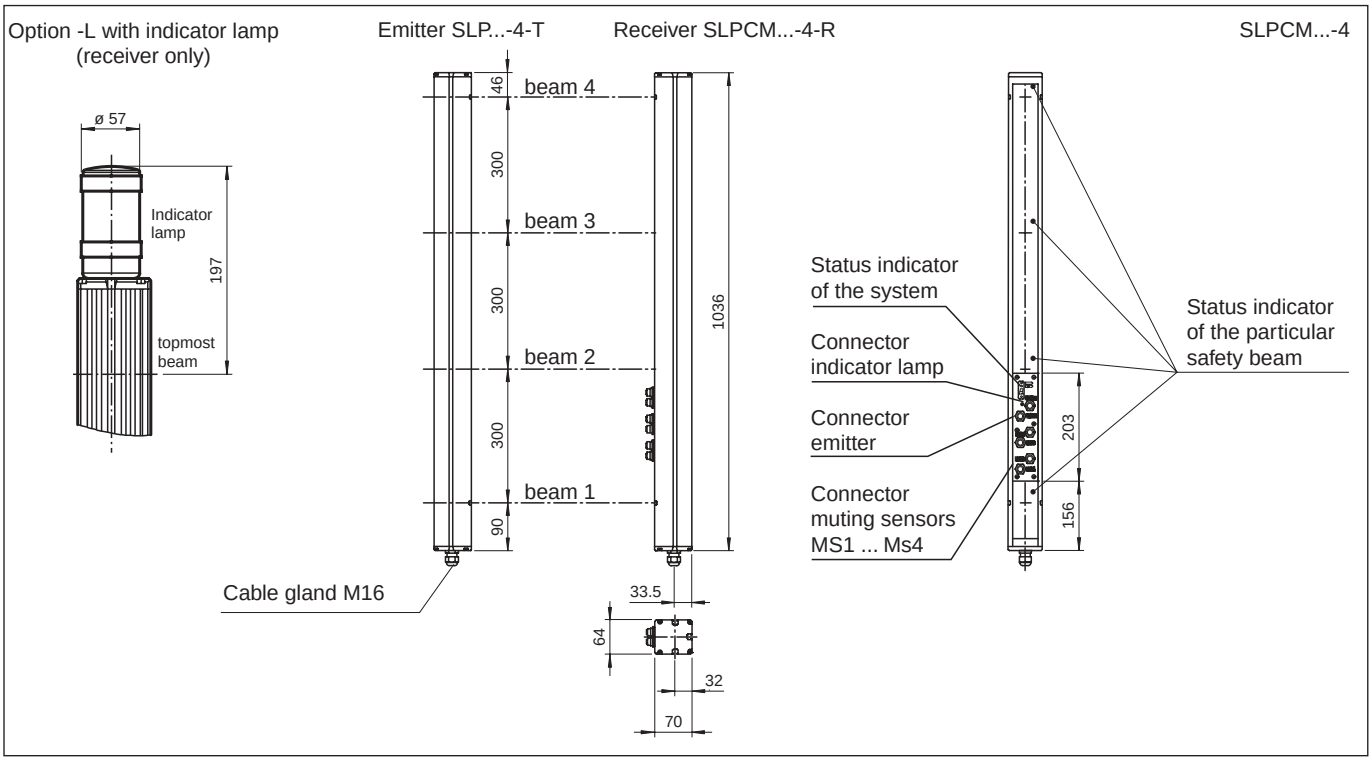
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPCM10-4	SLPCM10-4/31	SLPCM10-4-L	SLPCM10-4-L/31
Effective detection range	0.2 ... 10 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, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 3700 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP10-4-T	◆	◆	◆	◆
Receiver	SLPCM10-4-R	◆			
	SLPCM10-4-R-L			◆	
	SLPCM10-4-R-L/31				◆
	SLPCM10-4-R/31		◆		

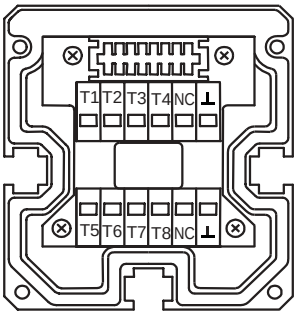
SLPCM10-4-...

Dimensions



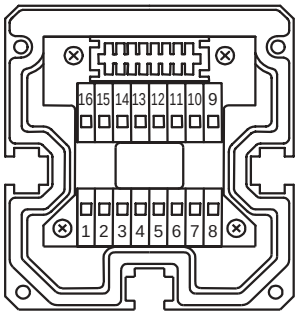
Electrical connection

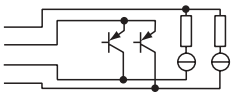
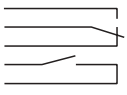
Emitter SLP



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

Receiver SLPCM

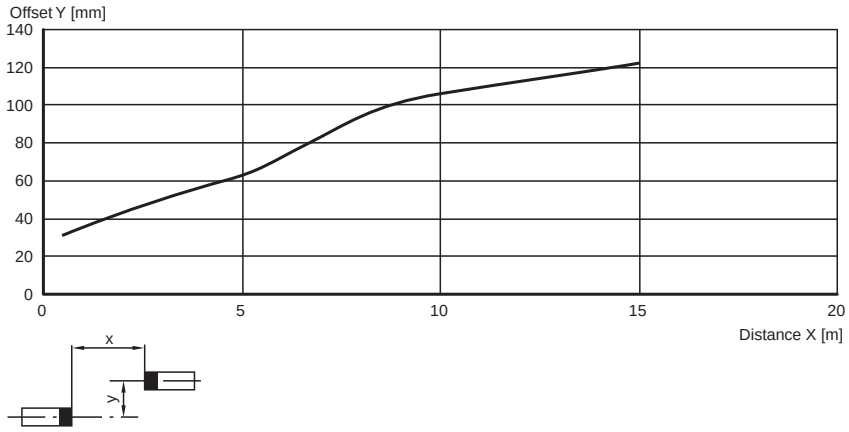


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

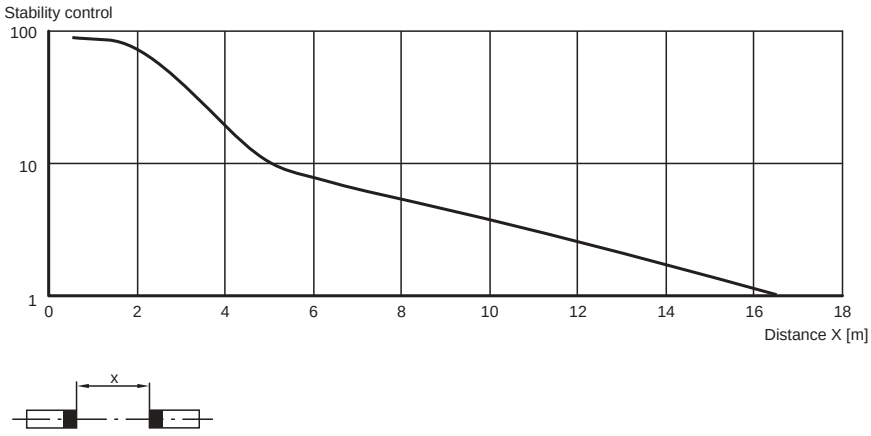
Characteristic response curve

SLP10-x / SLPC10-x / SLPCM10-x



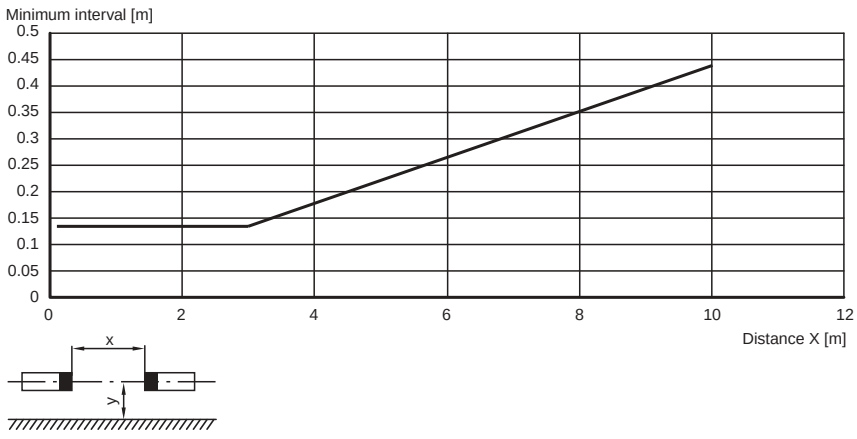
Relative received light strength

SLP10-x / SLPC10-x / SLPCM10-x



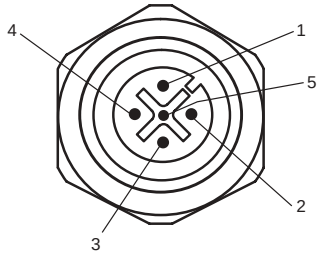
Lateral interval to mirroring surfaces

SLP10-x / SLPC10-x / SLPCM10-x



Additional information

Socket assignment on the front side of the device



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 SLC
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-4-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLPCM30-4-...

CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

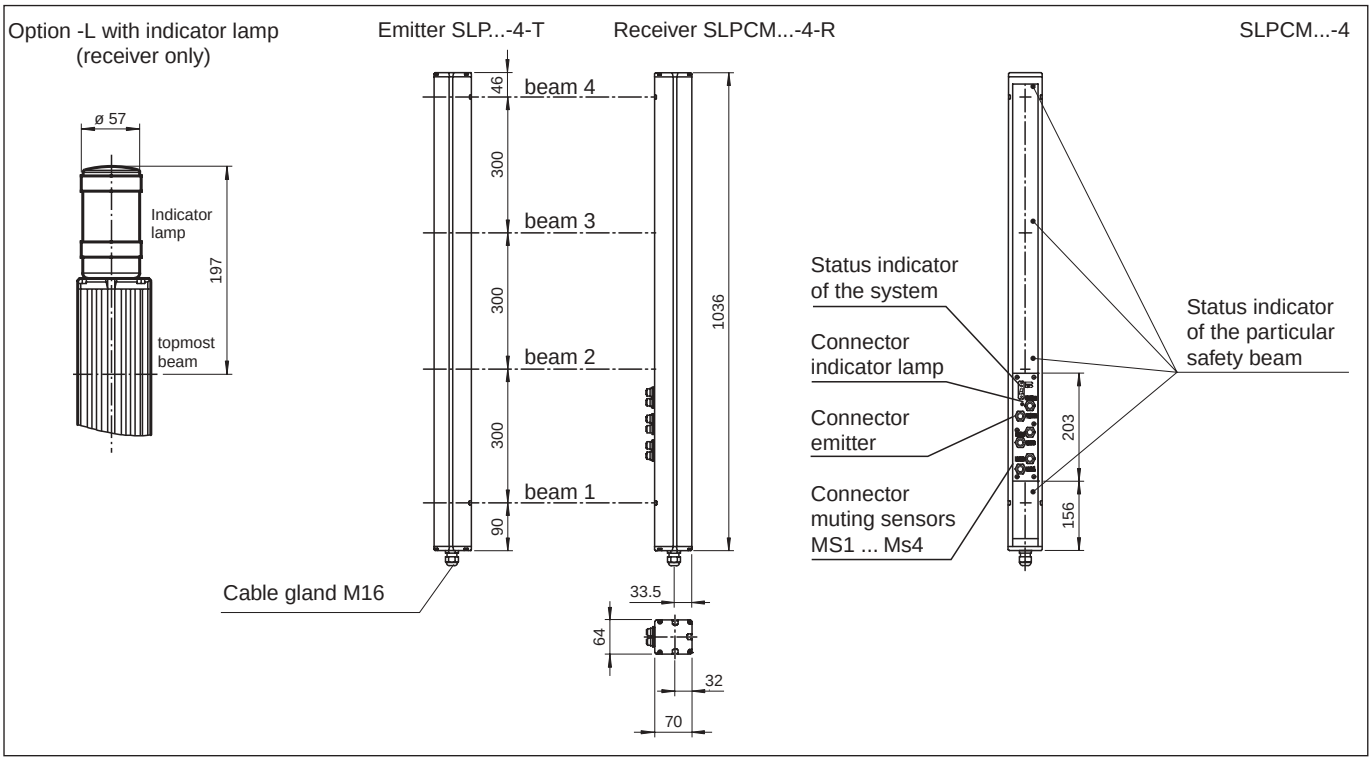
7/29/04

	Ordering code:	SLPCM30-4	SLPCM30-4/31	SLPCM30-4-L	SLPCM30-4-L/31
Effective detection range	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, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 3700 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP30-4-T	◆	◆	◆	◆
Receiver	SLPCM30-4-R	◆			
	SLPCM30-4-R-L			◆	
	SLPCM30-4-R-L/31				◆
	SLPCM30-4-R/31		◆		

Date of edition: 7/29/04

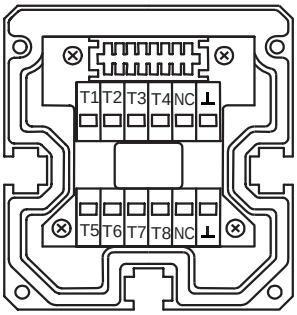
SLPCM30-4-...

Dimensions



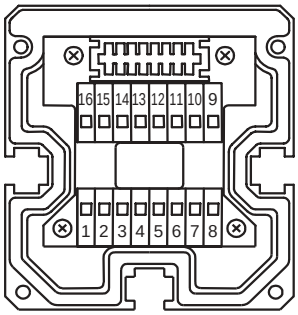
Electrical connection

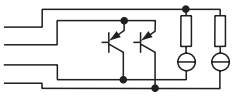
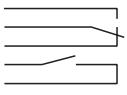
Emitter SLP



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

Receiver SLPCM

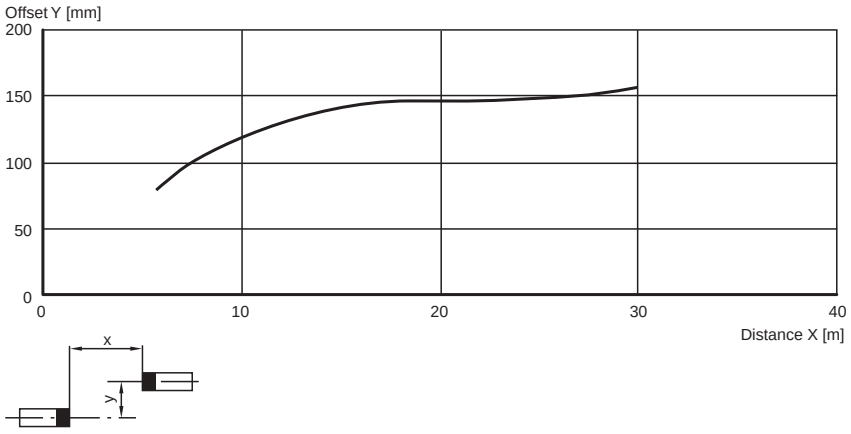


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

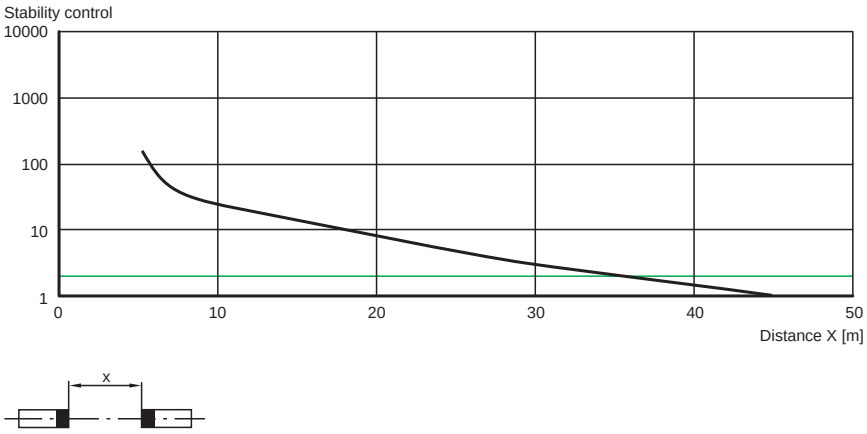
Characteristic response curve

SLP30-x / SLPC30-x / SLPCM30-x



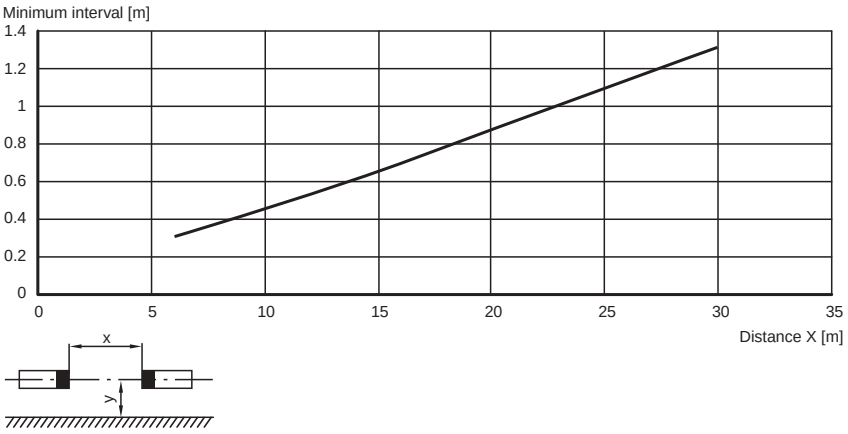
Relative received light strength

SLP30-x / SLPC30-x / SLPCM30-x



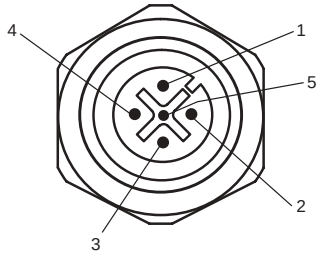
Lateral interval to mirroring surfaces

SLP30-x / SLPC30-x / SLPCM30-x



Additional information

Socket assignment on the front side of the device



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 SLC
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-4-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLPCM65-4-...

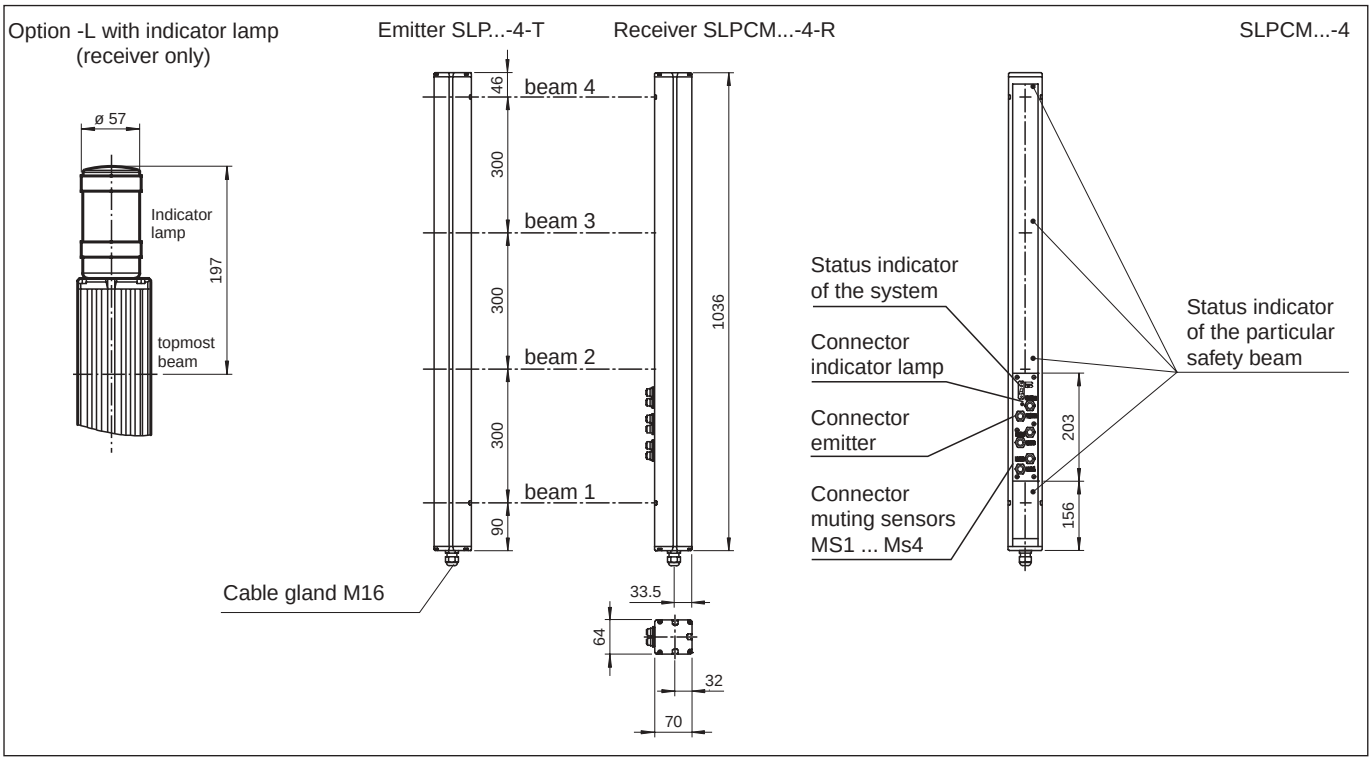
CE

- 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
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication
- OSSD outputs as semiconductor or relay outputs

	Ordering code:	SLPCM65-4	SLPCM65-4/31	SLPCM65-4-L	SLPCM65-4-L/31
Effective detection range	12 ... 65 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, alternating light	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
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	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating elements	10 DIP switch in receiver terminal compartment	◆	◆	◆	◆
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	◆	◆	◆	◆
No-load supply current	max. 250 mA	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆
Function input	Relay monitor, start release, muting sensors (max. 4)	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆
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			◆	◆
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		◆		◆
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.			◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆
Mass	Per 3700 g	◆	◆	◆	◆
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	◆	◆	◆	◆
System components					
Emitter	SLP65-4-T	◆	◆	◆	◆
Receiver	SLPCM65-4-R	◆			
	SLPCM65-4-R-L			◆	
	SLPCM65-4-R-L/31				◆
	SLPCM65-4-R/31		◆		

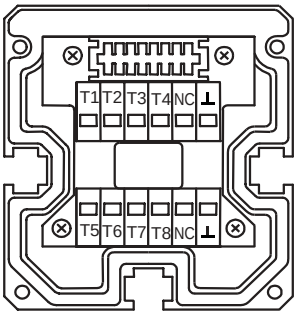
SLPCM65-4-...

Dimensions



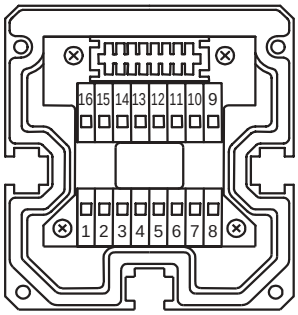
Electrical connection

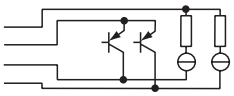
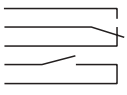
Emitter SLP



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

Receiver SLPCM

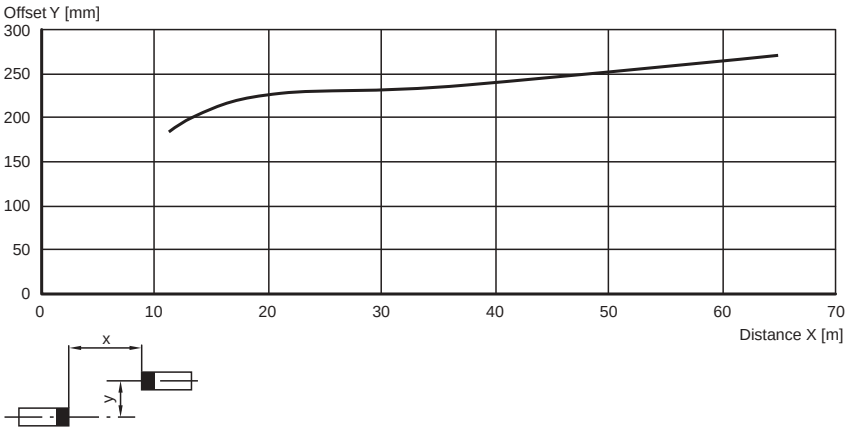


Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - Functional earth 2 - 0 V 3 - 24 V	
4 - n.c. 5 - ——— - 6 - ——— + 7 - OSSD 1 8 - OSSD 2 	4 5 6 7 8 
9 - Input, Relay monitor 10 - Input, Start release 11 - Input, Reset 12 - PNP-output, Soiled optics 13 - PNP-output, Muting lamp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

Diagrams

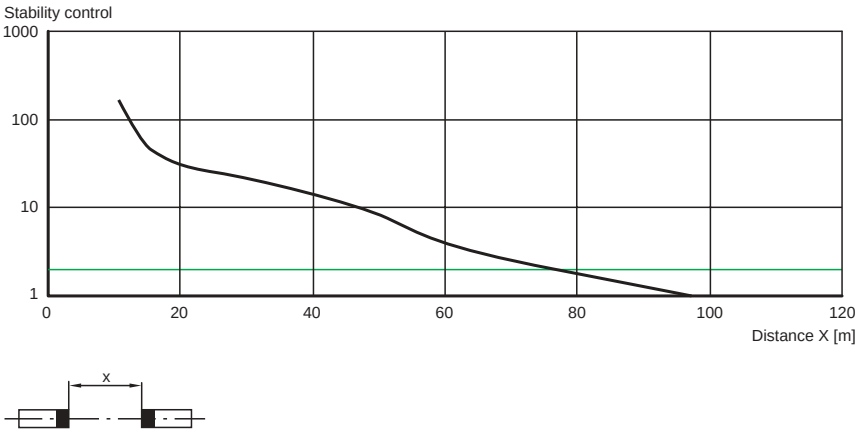
Characteristic response curve

SLP65-x / SLPC65-x / SLPCM65-x



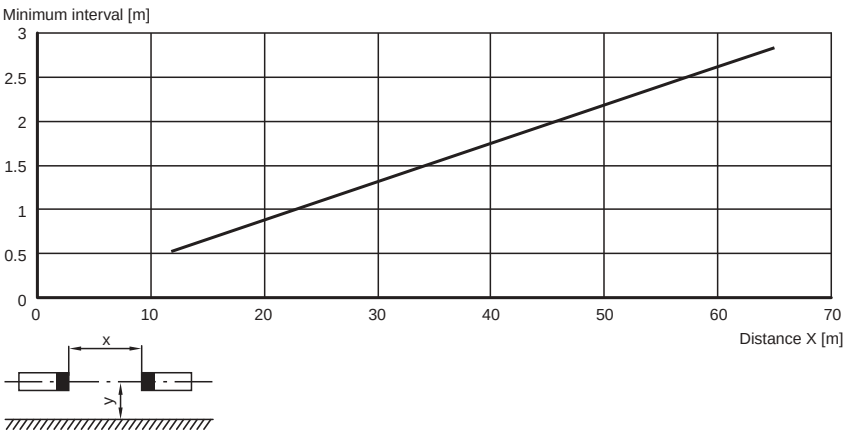
Relative received light strength

SLP65-x / SLPC65-x / SLPCM65-x



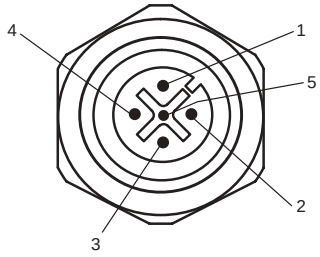
Lateral interval to mirroring surfaces

SLP65-x / SLPC65-x / SLPCM65-x



Additional information

Socket assignment on the front side of the device



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

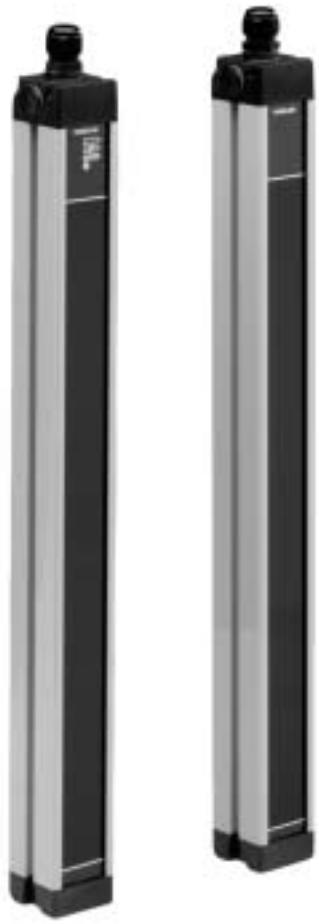
System accessories

- Mounting set SLC
- Protective glass pieces for SLP
- Profile alignment aid
- Laser alignment aid SLP
- Cable fasteners SLPC/M
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-4-M

Date of edition: 7/29/04

Safety light grid with integrated control unit

SLC-...



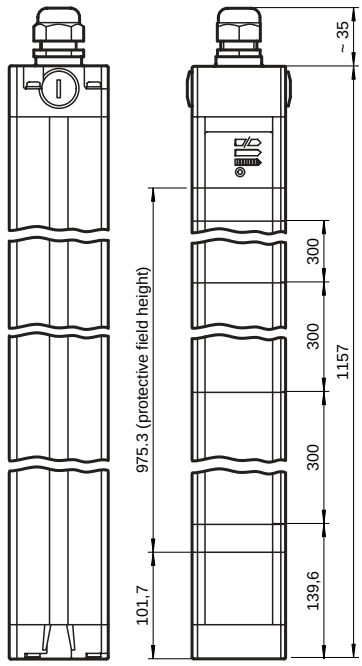
- Detection range up to 20 m
- 2, 3, and 4-beam design
- Beam distance 300, 400 and 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Start/Restart disable
- Protection degree IP67
- 7-segment diagnostic display
- Pre-fault indication
- Safety outputs OSSD in potential-separated semiconductor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

Technical data SLC-...

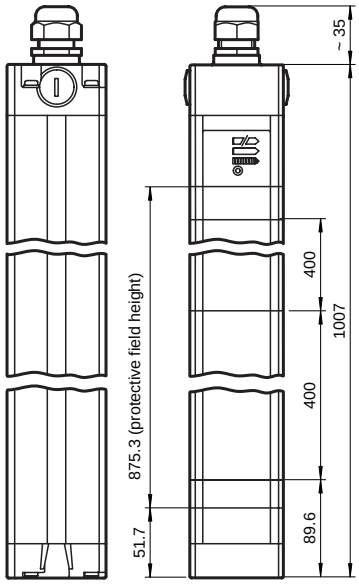
	Ordering code:	SLC-2	SLC-3	SLC-4	SLC-2/31	SLC-3/31	SLC-4/31
Effective detection range	0.2 ... 20 m	◆	◆	◆	◆	◆	◆
Number of beams	2	◆			◆		
	3		◆			◆	
	4			◆			◆
Beam spacing	300 mm			◆			◆
	400 mm		◆			◆	
	500 mm	◆			◆		
Obstacle size	50 mm	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆			
	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)				◆	◆	◆
No-load supply current	emitter: 100 mA, receiver 150 mA	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆			
	2 relay outputs, compelled connection NO-contact				◆	◆	◆
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	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆	◆	◆
Mass	Per 2100 g	◆			◆		
	Per 3000 g		◆			◆	
	Per 3450 g			◆			◆
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	◆	◆	◆	◆	◆	◆
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						◆

Date of edition: 7/29/04

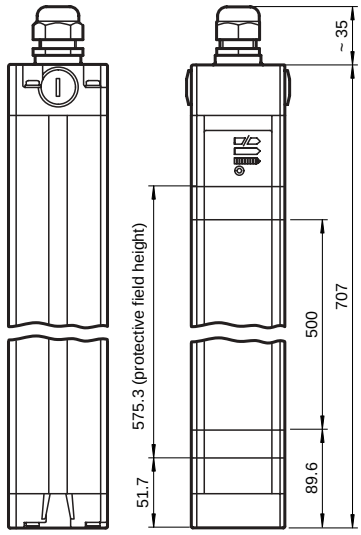
Dimensions



SLC-4



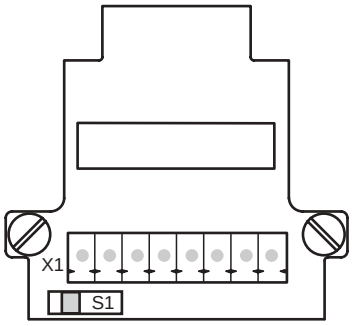
SLC-3



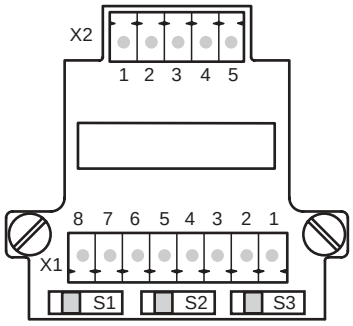
SLC-2

Electrical connection

Emitter:



Receiver:



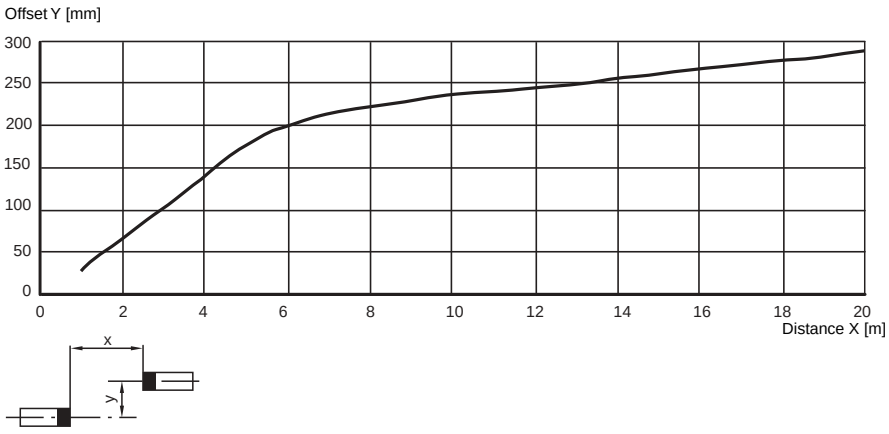
terminal	emitter	receiver (relay output)	receiver (semiconductor output)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Test (input)
X1:3		OSSD2.2 (output)	0 V OSSD
X1:4		OSSD1.2 (output)	24 V OSSD
X1:5		OSSD2.1 (output)	OSSD2 (output)
X1:6		OSSD1.1 (output)	OSSD1 (output)
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)

7/29/04

Diagrams

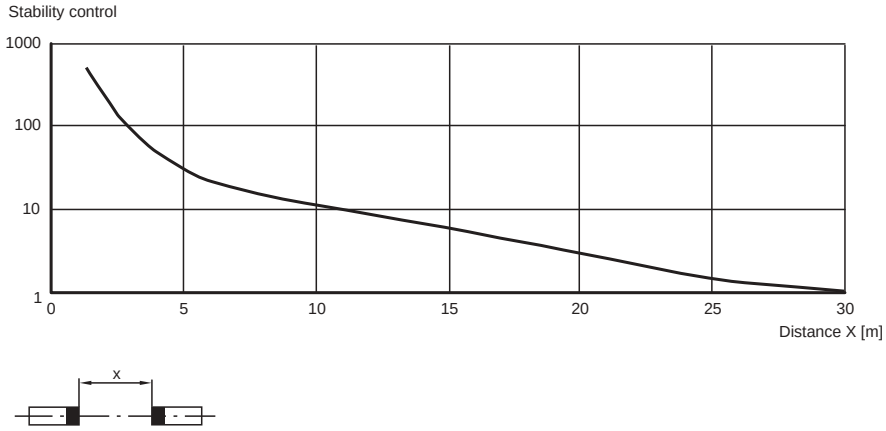
Characteristic response curve

SLC-2 / SLC-3 / SLC-4



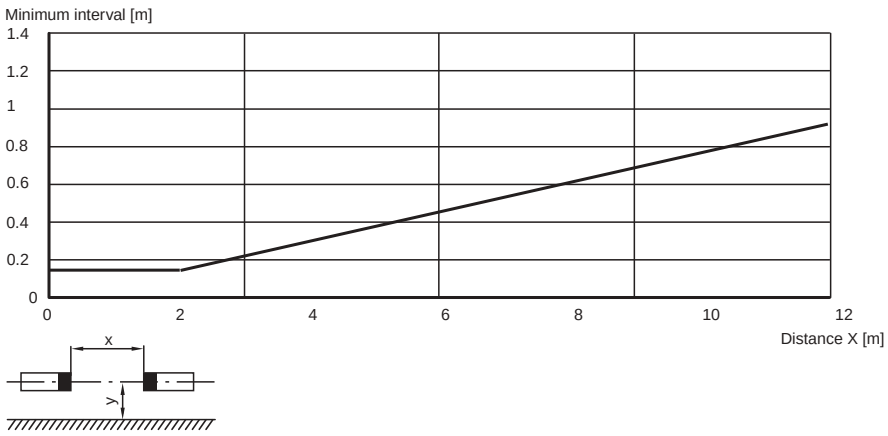
Relative received light strength

SLC-2 / SLC-3 / SLC-4



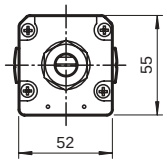
Lateral interval to mirroring surfaces

SLC-2 / SLC-3 / SLC-4



Additional information

Profile dimensions, front view

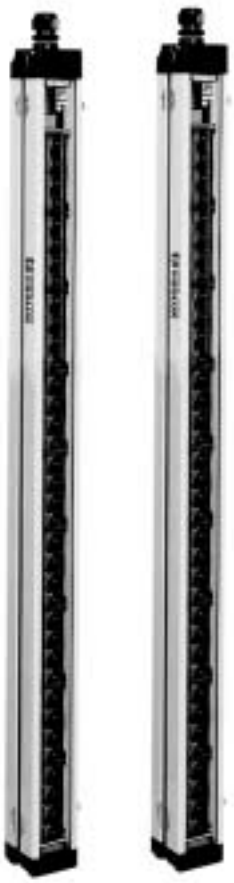


System accessories

- 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 SLP/C/M (for multi-side securing of hazardous areas)
- Laser alignment aid SLC
- Profile alignment aid
- Ground pillar UC SLP/SLC
- Housing for ground pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC

Safety light grid with integrated control unit

SLC-./133



- Detection range up to 20 m
- 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

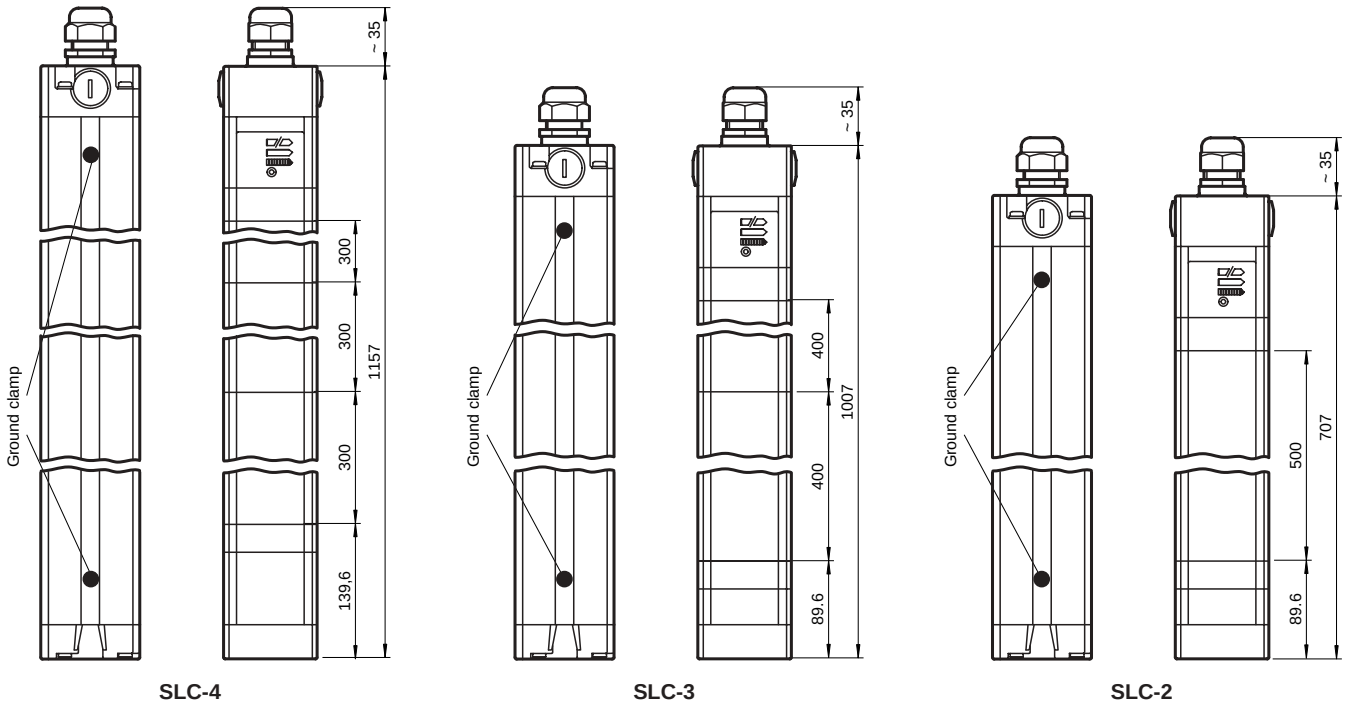
- Beam spacing 300 mm
  SLC-4/133
- Beam spacing 400 mm
  SLC-3/133
- Beam spacing 500 mm
  SLC-2/133

7/29/04

	Ordering code:	SLC-2/133	SLC-3/133	SLC-4/133
Effective detection range	0.2 ... 20 m	◆	◆	◆
Number of beams	2	◆		
	3		◆	
	4			◆
Beam spacing	300 mm			◆
	400 mm		◆	
	500 mm	◆		
Obstacle size	50 mm	◆	◆	◆
Light source	IRED	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆
Marking	zone 2: Ⓔx II 3 G EEx nA II T4; Zone 22: Ⓔx II 3 D IP66 T 90°C	◆	◆	◆
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	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆
No-load supply current	emitter: 100 mA , receiver 150 mA	◆	◆	◆
Protection class	III	◆	◆	◆
Function input	Start release	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆
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	◆	◆	◆
Protection degree	IP66	◆	◆	◆
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 lens	◆	◆	◆
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			◆
Receiver	SLC-2-R/133	◆		
	SLC-3-R/133		◆	
	SLC-4-R/133			◆

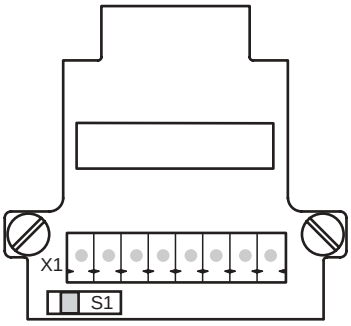
SLC-./133

Dimensions

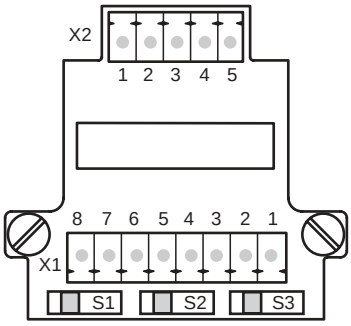


Electrical connection

Emitter:



Receiver:

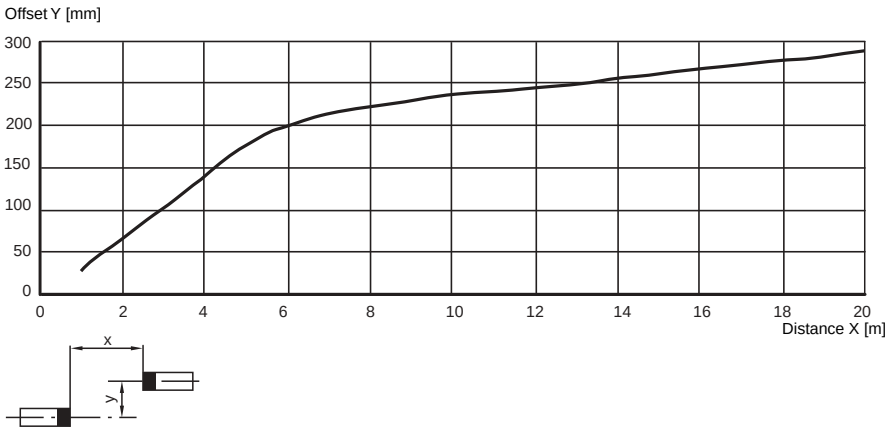


terminal	emitter	receiver (relay output)	receiver (semiconductor output)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Test (input)
X1:3		OSSD2.2 (output)	0 V OSSD
X1:4		OSSD1.2 (output)	24 V OSSD
X1:5		OSSD2.1 (output)	OSSD2 (output)
X1:6		OSSD1.1 (output)	OSSD1 (output)
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

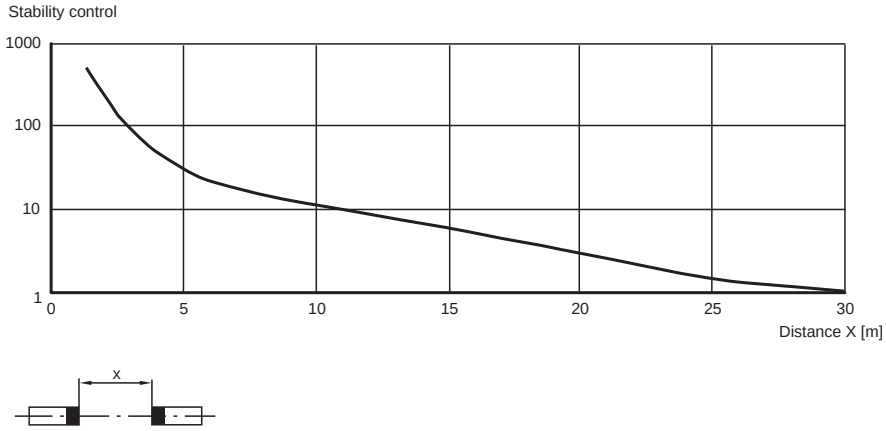
Characteristic response curve

SLC-2 / SLC-3 / SLC-4



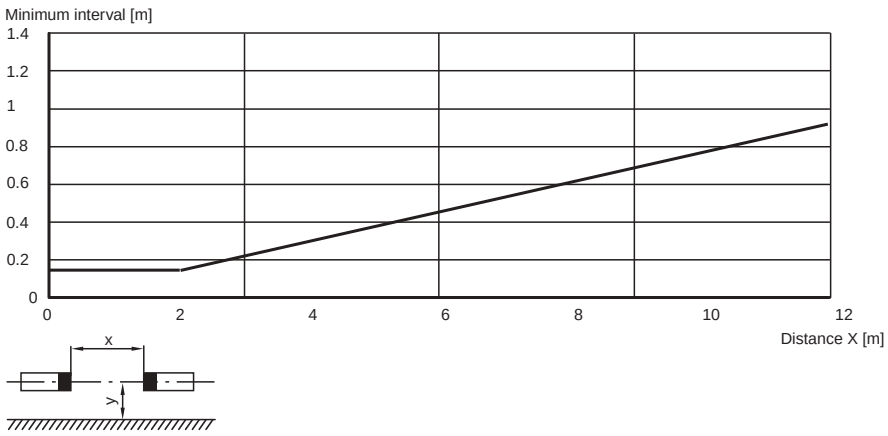
Relative received light strength

SLC-2 / SLC-3 / SLC-4



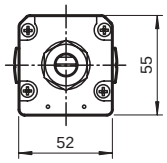
Lateral interval to mirroring surfaces

SLC-2 / SLC-3 / SLC-4



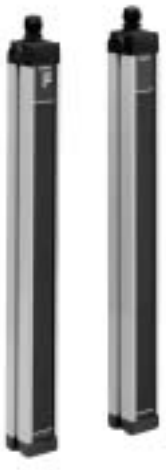
Additional information

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 SLP/C/M (for multi-side securing of hazardous areas)
- Laser alignment aid SLC
- Profile alignment aid
- Ground pillar UC SLP/SLC
- Housing for ground pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC



Description of SLC light curtain

The safety light curtain SLC consists of a transmitter and receiver unit which form the photo-electric protection equipment of Category 4 (EN 954-1) or Type 4 (based on IEC/EN 61496). The system is thus self-monitoring.

The protective field is formed by infrared light beams. The distance between the individual light beams determines the minimum resolution of an object that can be reliably detected within the entire protective field area. Resolutions of 14 mm, 30 mm, 60 mm and 90 mm are available. This makes it possible to adjust the detection capacity to a wide range of applications. Depending on the resolution, detection ranges of up to 15 m and protective field heights of up to 1800 mm can be implemented. Higher protective fields are available on request.

All evaluation functions (for example startup/restart interlock) are integrated into the receiver of the SLC. No electrical connection is necessary between the transmitter and receiver. The safety outputs (OSSD) in the receiver are designed either as potential-separated semiconductor outputs or with monitored force-directed normally open contacts.

In addition to the typical transmitter-receiver configuration, it is also possible to install master-slave combinations. This means you can assign one or two transmitter slaves to each transmitter master and one or two receiver slaves to each receiver master. This makes it possible to implement horizontal/vertical layouts operated in parallel. The resolution can also be different between master and slaves. The total number of protective beams of master and slaves must not exceed the maximum number of 96.

Multi-sided protection is possible with mirrors of model line **SLC-XXX-M**.
Muting applications can be implemented in combination with the **SC4-8...** control unit.
Protection class IP67 ensures reliable protection against adverse effects of weather.

Installation in hazardous areas

Hence these devices can also be installed in hazardous areas, zone 2 and zone 22 (option/133).

This way the regulation is taken into account, to use only approved devices and protective systems in hazardous areas in accordance with directive 94/9/EG (ATEX).

Applications

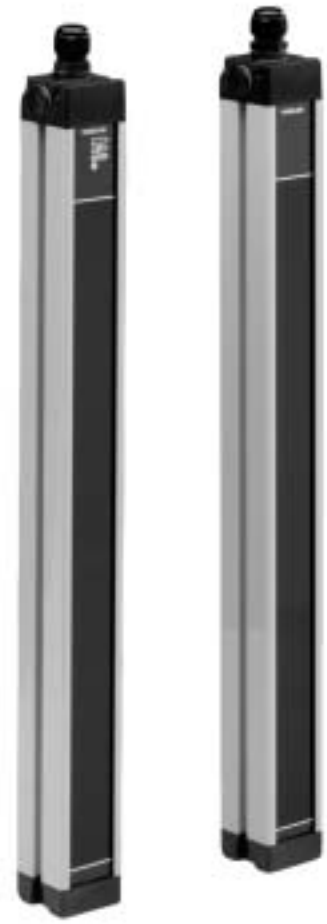
The SLC safety light curtain can be used to protect against intrusion into hazardous areas, for example automatic handling equipment, robots and welding and assembly lines. Vertical/horizontal protection of a hazardous area, for example results in combined protection against intrusion and access from the rear.

Principle	Type	Function	Resolution	Height of the protected area	Effective operating distance	Page
	SLC14-...	with semiconductor output	14 mm Finger protection	up to 1800 mm	0.2 m - 5 m	184
	SLC14-.../31	with relay output				188
	SLC14-...-S	Slave-device		up to 750 mm		192
 (Option /133)	SLC30-...	with semiconductor output	30 mm Hand protection	up to 1800 mm	0.2 m - 15 m	196
	SLC30-.../31	with relay output				200
	SLC30-...-S	Slave-device		up to 1650 mm		204
	SLC60-...	with semiconductor output	60 mm protection against access from the rear	up to 1800 mm	0.2 m - 15 m	208
	SLC60-.../31	with relay output				212
	SLC60-...-S	Slave-device				216
	SLC90-...	with semiconductor output	90 mm protection against access from the rear	up to 1800 mm	0.2 m - 15 m	220
	SLC90-.../31	with relay output				224
	SLC90-...-S	Slave-device				228

Date of edition 8/13/04

Safety light curtain

SLC14-...



- 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)
- Optional with ATEX certificates for zone 2 and 22 and protection degree IP66 (Option 133)
- Very short response time
  SLC14-1050/130
  SLC14-1200/130
  SLC14-1350/130
  SLC14-1500/130
  SLC14-1650/130
  SLC14-1800/130

Date of edition: 7/29/04

Technical data

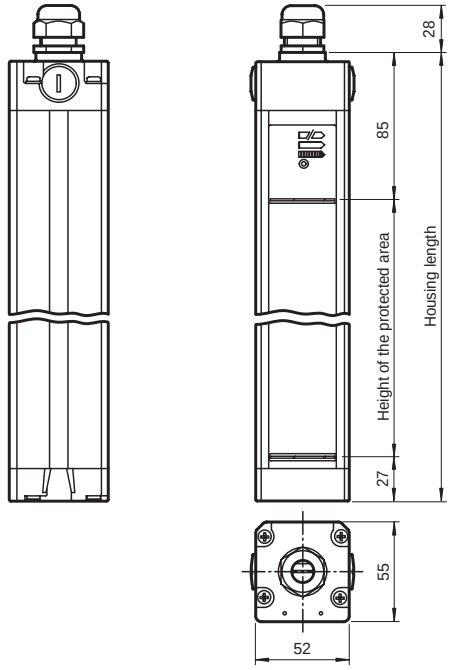
SLC14-...

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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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
Optical resolution	14 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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 M26x1 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1160	1310	1460	1610	1760	1910
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						◆						

Date of edition: 7/29/04

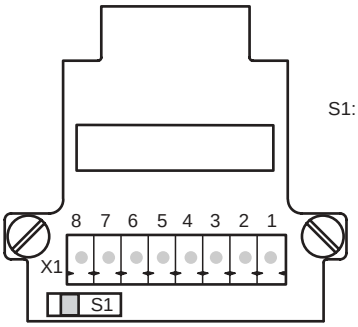
SLC14-...

Dimensions



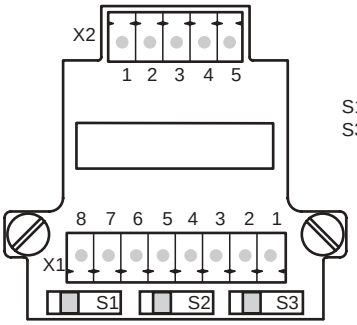
Electrical connection

Emitter:



S1: Beam coding

Receiver:



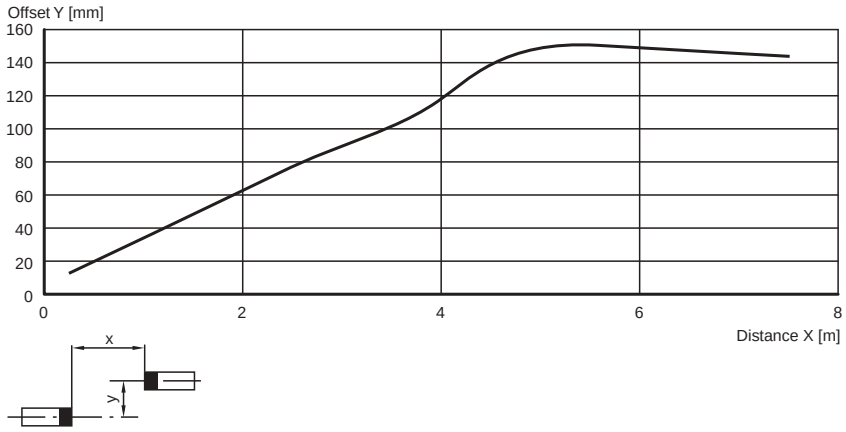
S1/S2: Startup/restart interlock
S3: Beam coding

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

Diagrams

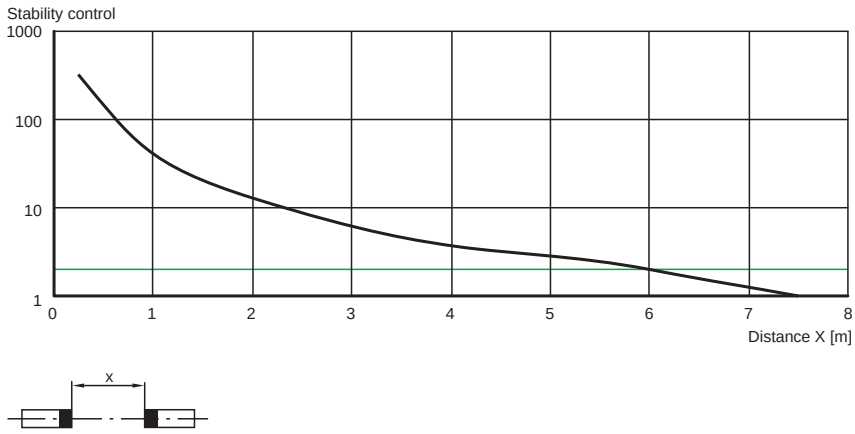
Characteristic response curve

SLC14



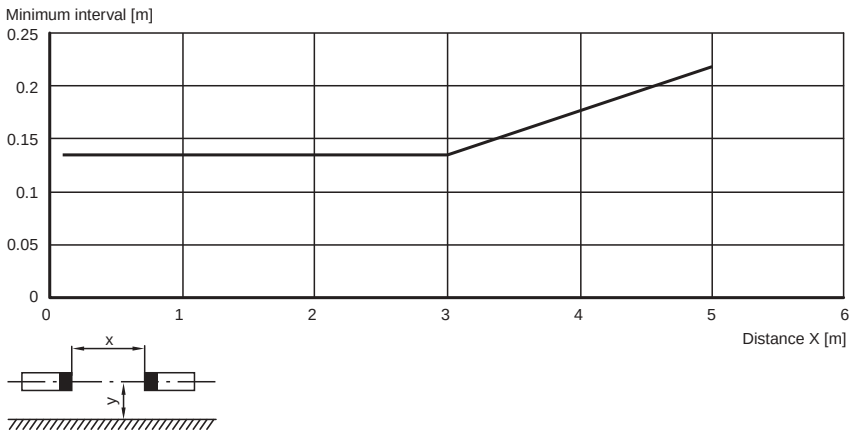
Relative received light strength

SLC14



Lateral interval to mirroring surfaces

SLC14



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

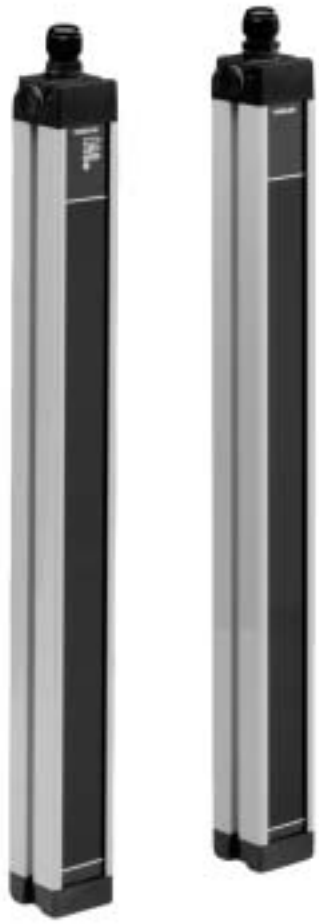
System accessories

- 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

Date of edition: 7/29/04

Safety light curtain

SLC14-.../31/...



- 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
  SLC14-1050/31/130
  SLC14-1200/31/130
  SLC14-1350/31/130
  SLC14-1500/31/130
  SLC14-1650/31/130
  SLC14-1800/31/130

7/29/04

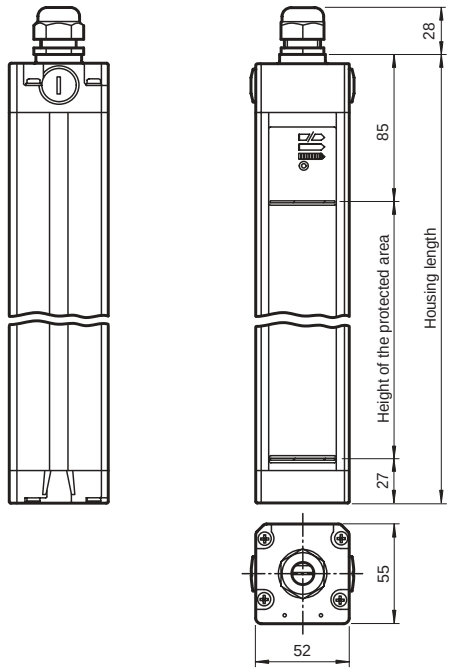
Technical data

SLC14-.../31/...

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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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
Optical resolution	14 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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 M26x1 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1160	1310	1460	1610	1760	1910
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				◆								
	SLC14-750-R/31					◆							
	SLC14-900-R/31						◆						

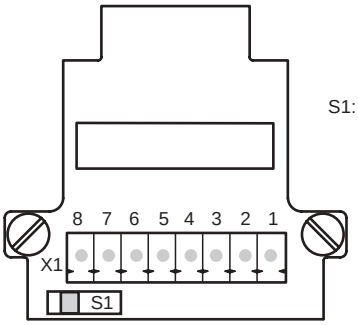
Date of edition: 7/29/04

Dimensions



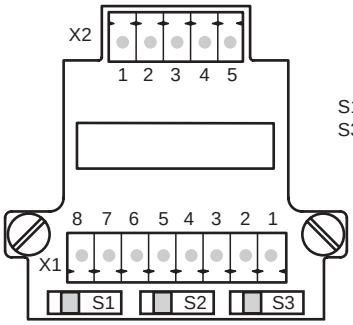
Electrical connection

Emitter:



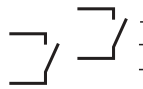
S1: Beam coding

Receiver:



S1/S2: Startup/restar interlock
S3: Beam coding

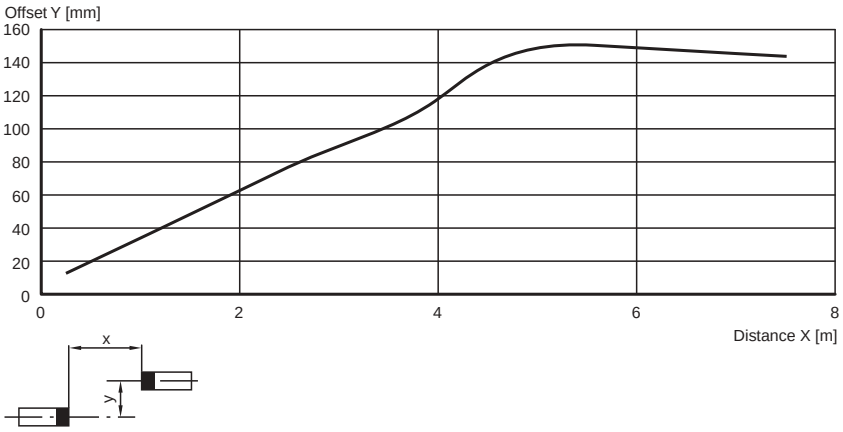
terminal	emitter	receiver relay output
X1:1	Functional earth	Functional earth
X1:2		test (input)
X1:3		OSSD2.2 (output)
X1:4		OSSD1.2 (output)
X1:5		OSSD2.1 (output)
X1:6		OSSD1.1 (output)
X1:7	0 V AC/DC	0 V AC/DC
X1:8	24 V AC/DC	24 V AC/DC
X2:1	Not placed on board	Start release (output)
X2:2		Status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



Diagrams

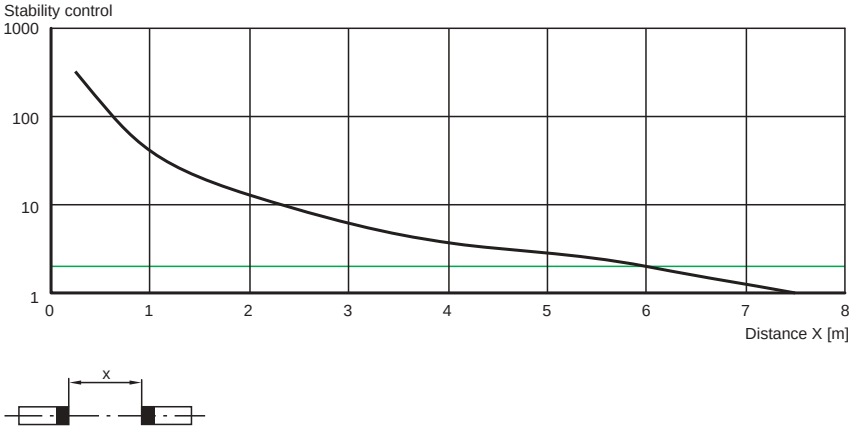
Characteristic response curve

SLC14



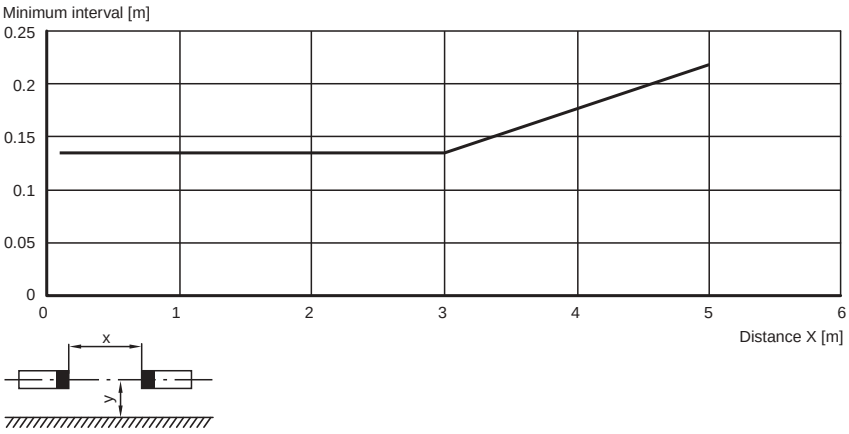
Relative received light strength

SLC14



Lateral interval to mirroring surfaces

SLC14



Notes

Master slave mode

Master:	SLC..-... (semiconductor) or SLC..-.../31 (relay)
Slave:	SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

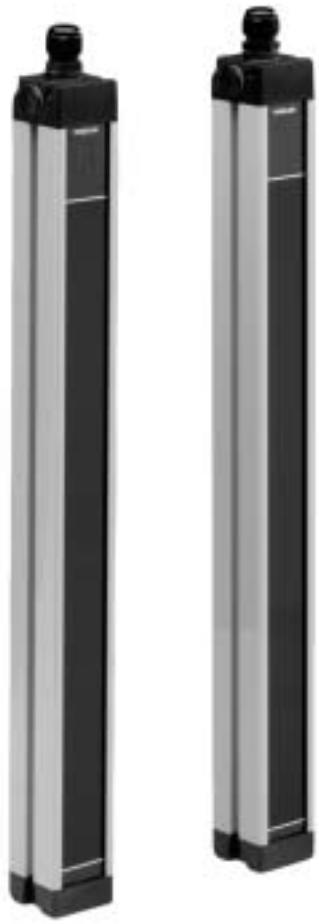
System accessories

- 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

Date of edition: 7/29/04

Safety light curtain

SLC14-...-S



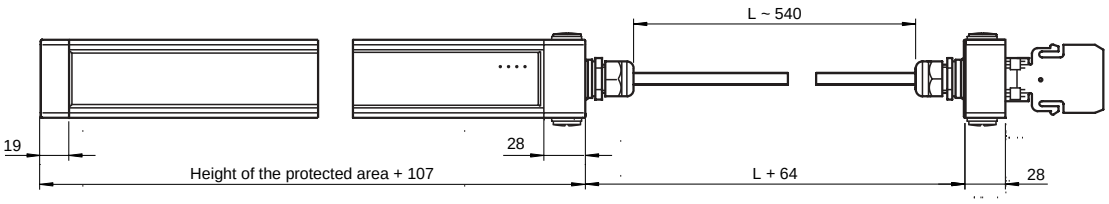
- Detection range up to 5 m
- Resolution 14 mm (finger protection)
- Protection field height up to 750 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication
- 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)

Technical data SLC14-...-S

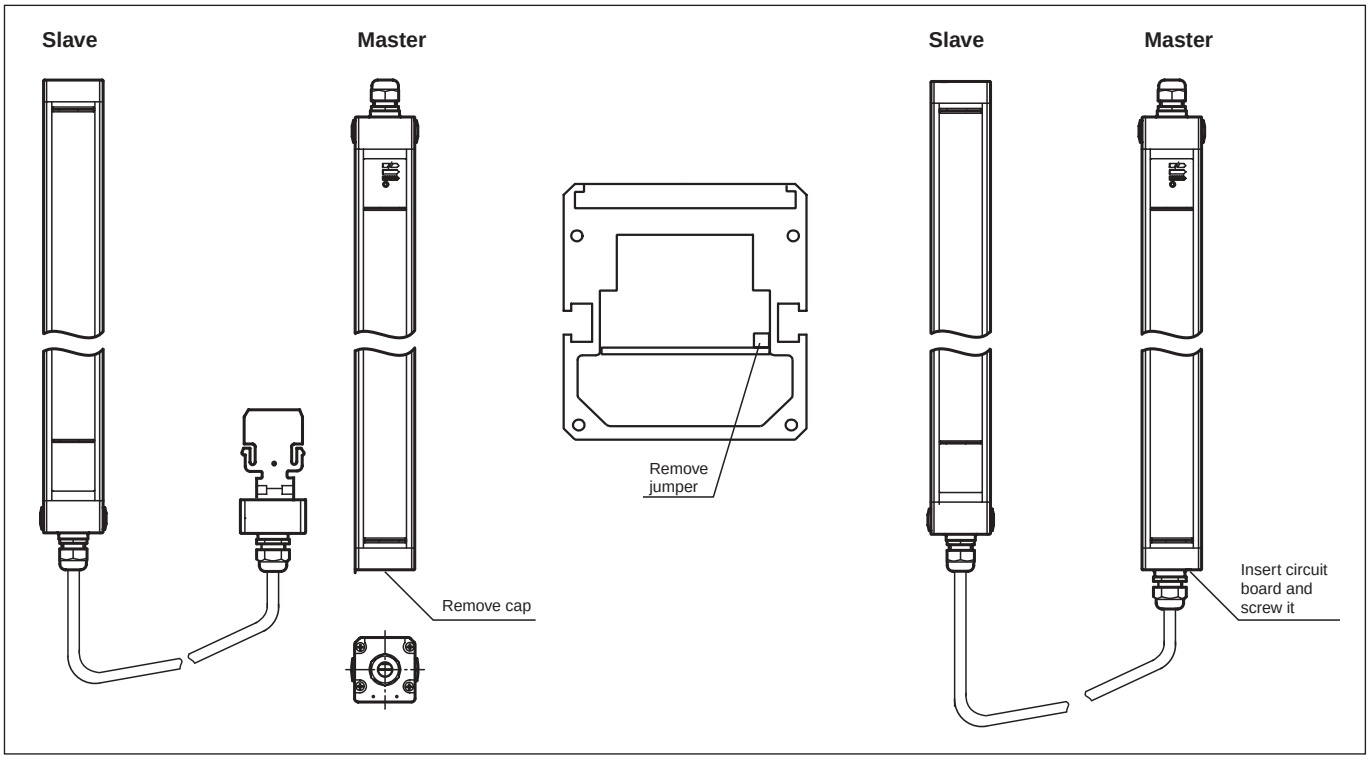
Ordering code:		SLC14-150-S	SLC14-300-S	SLC14-450-S	SLC14-600-S	SLC14-750-S
Effective detection range	0.2 ... 5 m	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 5 m	◆	◆	◆	◆	◆
Height of the protected area		150 mm	300 mm	450 mm	600 mm	750 mm
Number of beams		16	32	48	64	80
Optical resolution	14 mm	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆
Operating mode	in the master device	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆
Operating display	in the master device	◆	◆	◆	◆	◆
Function display	in the master device	◆	◆	◆	◆	◆
Pre-fault indication	in the master device	◆	◆	◆	◆	◆
Diagnosis display	in the master device	◆	◆	◆	◆	◆
Operating elements	in the master device	◆	◆	◆	◆	◆
Operating voltage	from master	◆	◆	◆	◆	◆
No-load supply current	from master	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆
Function input	in the master device	◆	◆	◆	◆	◆
Test input	in the master device	◆	◆	◆	◆	◆
Signal output	in the master device	◆	◆	◆	◆	◆
Safety 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	◆	◆	◆	◆	◆
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 lens	◆	◆	◆	◆	◆
Length of housing L		260 mm	410 mm	560 mm	710 mm	860 mm
Mass	Per	750 g	1200 g	1650 g	2100 g	2550 g
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					◆

SLC14-...-S

Dimensions



Electrical connection

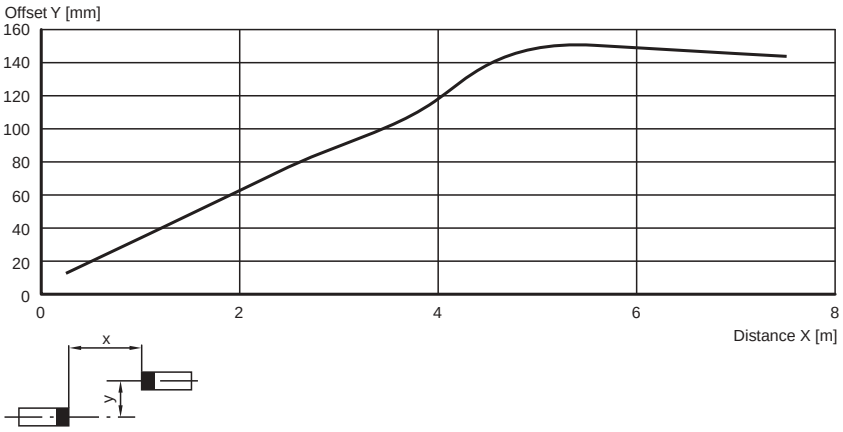


7/29/04

Diagrams

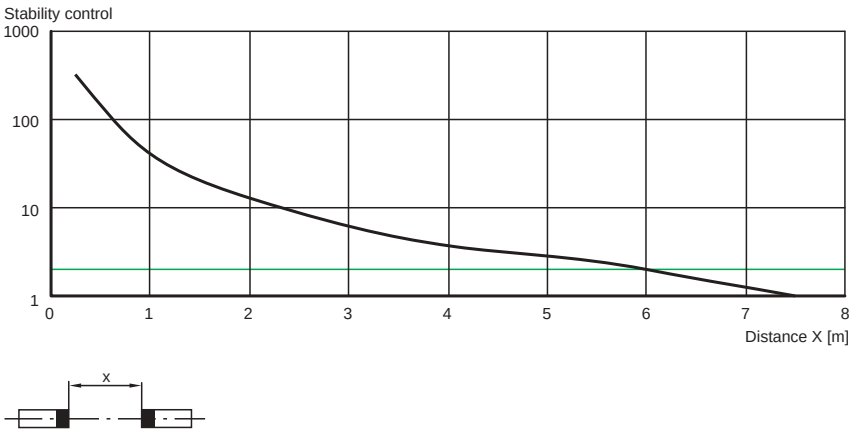
Characteristic response curve

SLC14



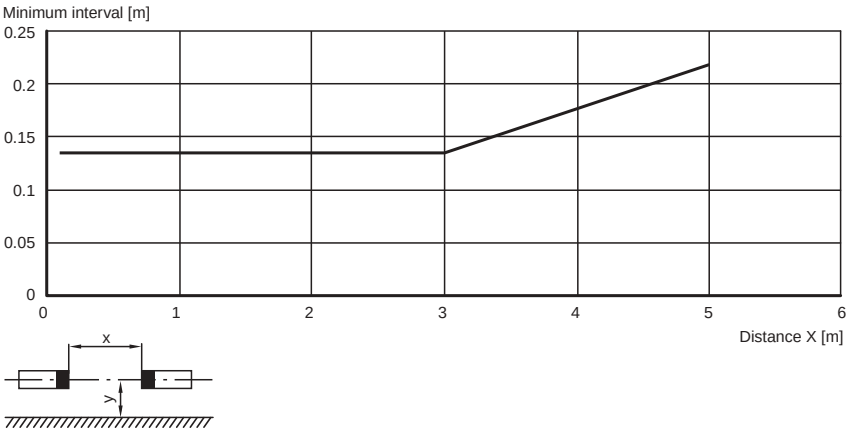
Relative received light strength

SLC14



Lateral interval to mirroring surfaces

SLC14



Notes

Master slave mode

Master:	SLC..-... (semiconductor) or SLC..-.../31 (relay)
Slave:	SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

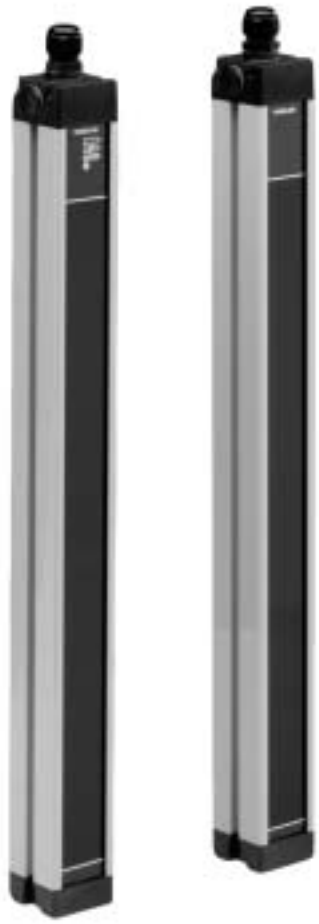
System accessories

- 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

Date of edition: 7/29/04

Safety light curtain

SLC30-...



- 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)

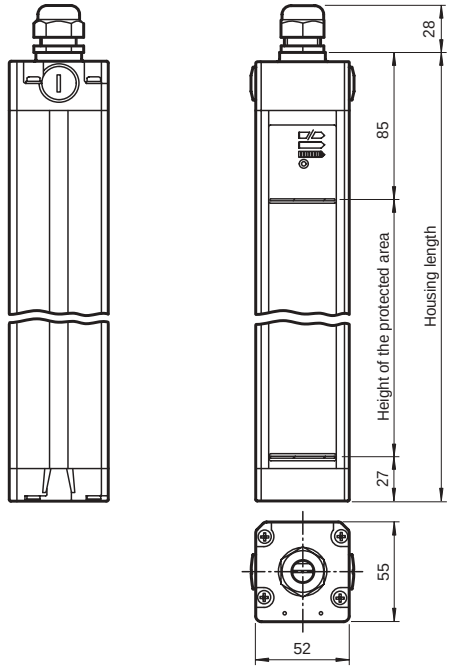
Technical data

SLC30-...

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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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
Optical resolution	30 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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 M26x1.1 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1310	1460	1610	1760	1910
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						◆					

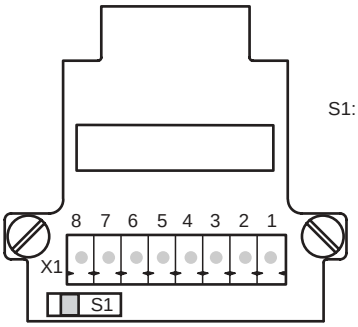
Date of edition: 7/29/04

Dimensions



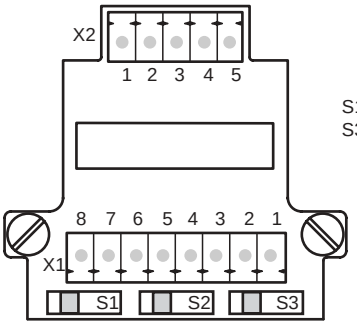
Electrical connection

Emitter:



S1: Beam coding

Receiver:



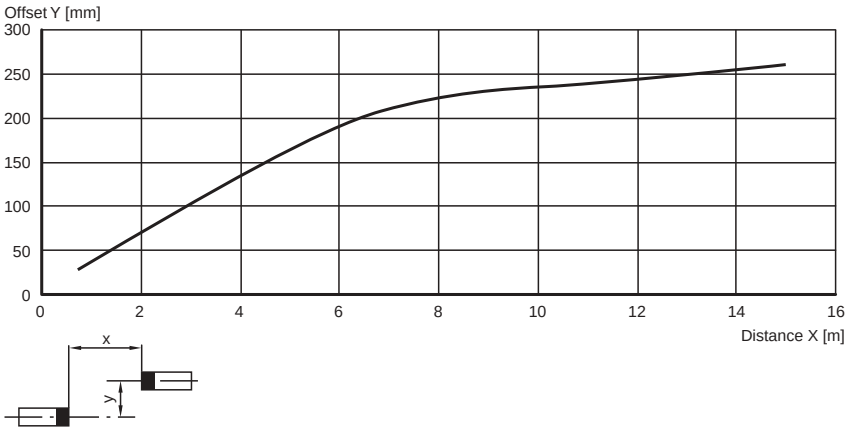
S1/S2: Startup/restart interlock
S3: Beam coding

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

Diagrams

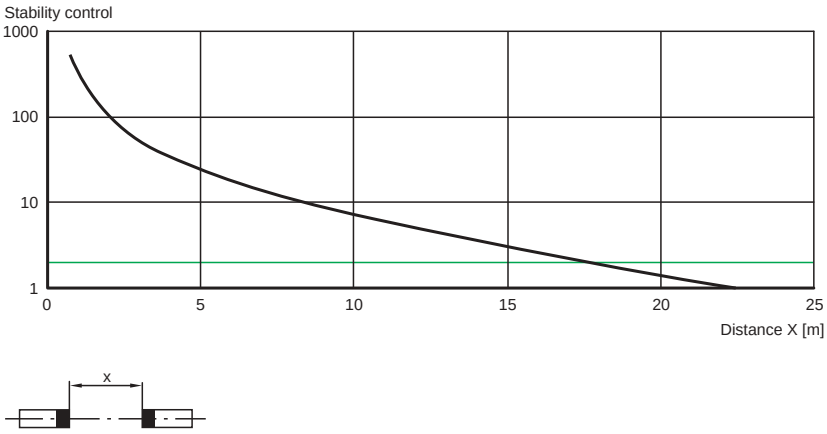
Characteristic response curve

SLC30 / SLC60 / SLC90



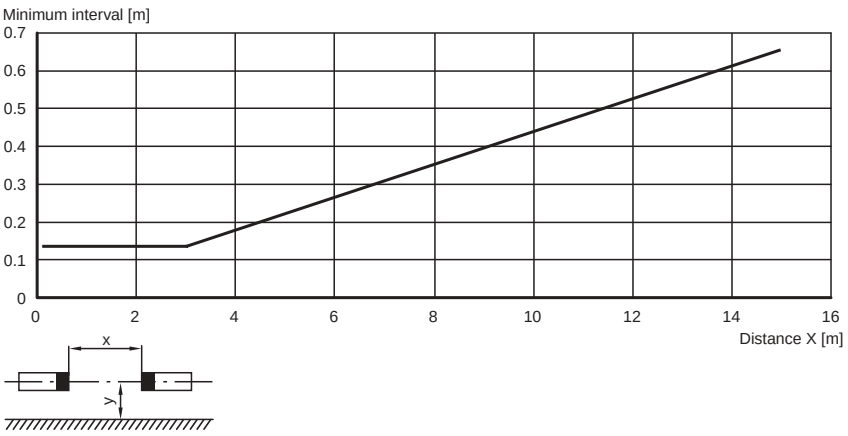
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

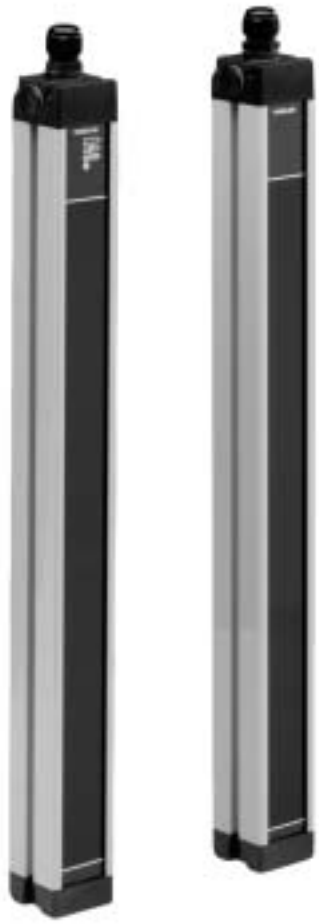
System accessories

- 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

Date of edition: 7/29/04

Safety light curtain

SLC30-.../31



- 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)

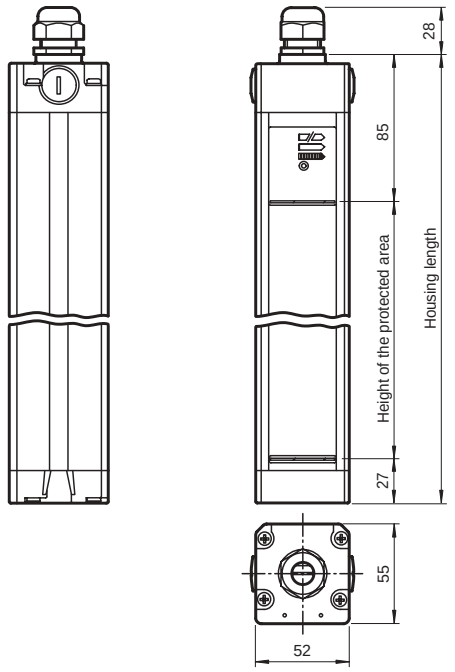
Technical data

SLC30-.../31

		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		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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
Optical resolution	30 mm		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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 M26x1.1 Hirschmann, 11-pin+PE		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Optical face	Plastic lens		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]		260	410	560	710	860	1010	1160	1310	1460	1610	1760	1910
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							◆						

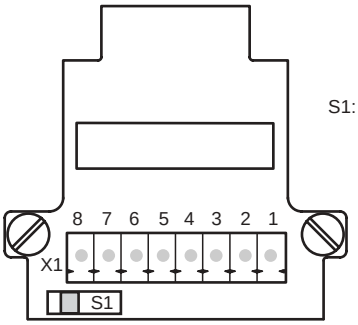
Date of edition: 7/29/04

Dimensions



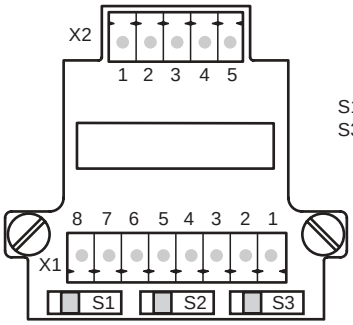
Electrical connection

Emitter:



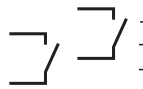
S1: Beam coding

Receiver:



S1/S2: Startup/restar interlock
S3: Beam coding

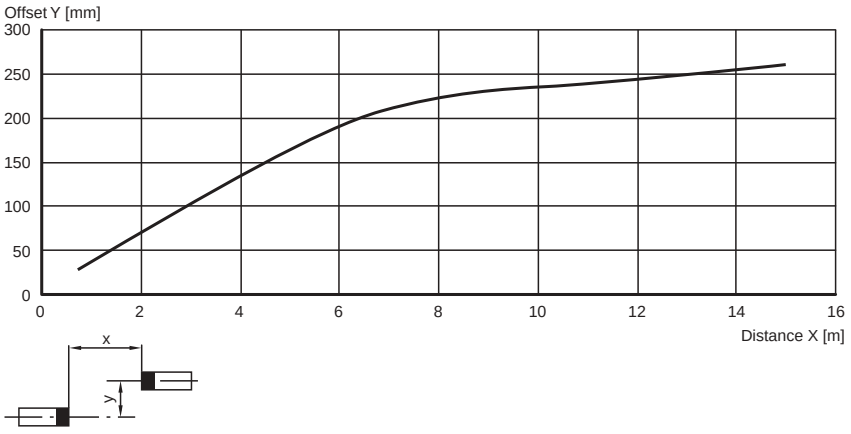
terminal	emitter	receiver relay output
X1:1	Functional earth	Functional earth
X1:2		test (input)
X1:3		OSSD2.2 (output)
X1:4		OSSD1.2 (output)
X1:5		OSSD2.1 (output)
X1:6		OSSD1.1 (output)
X1:7	0 V AC/DC	0 V AC/DC
X1:8	24 V AC/DC	24 V AC/DC
X2:1	Not placed on board	Start release (output)
X2:2		Status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



Diagrams

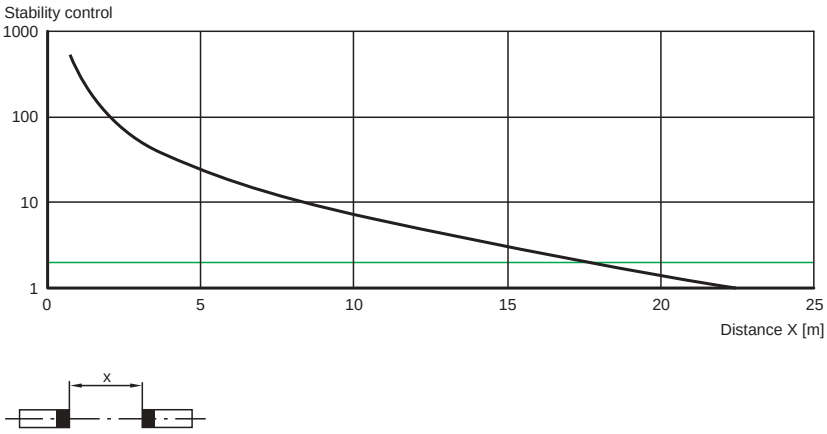
Characteristic response curve

SLC30 / SLC60 / SLC90



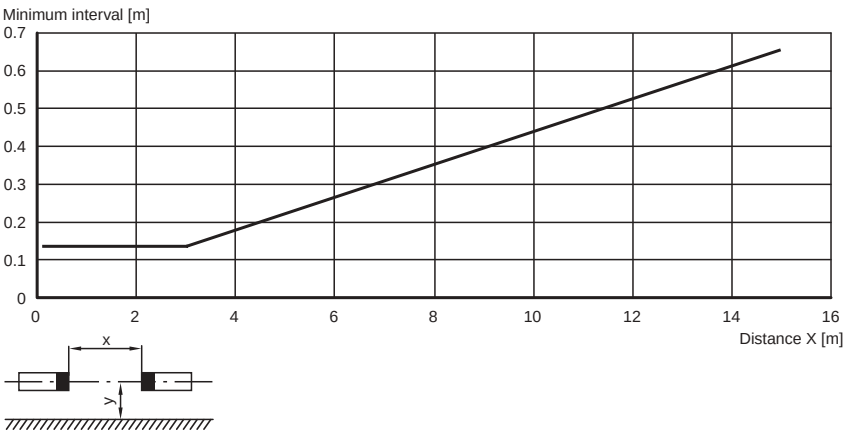
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

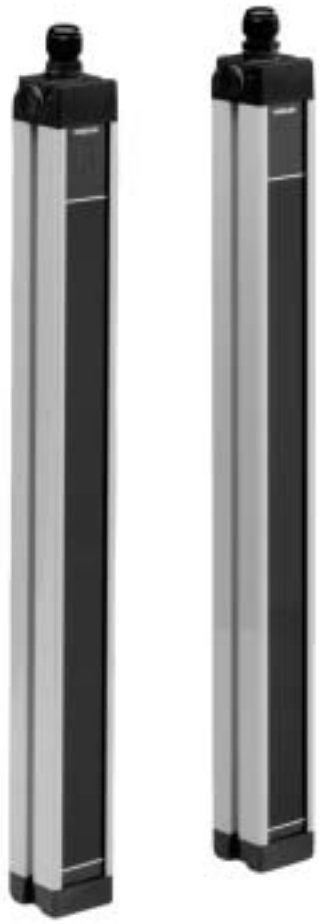
System accessories

- 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

Date of edition: 7/29/04

Safety light curtain

SLC30-...-S



- 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)

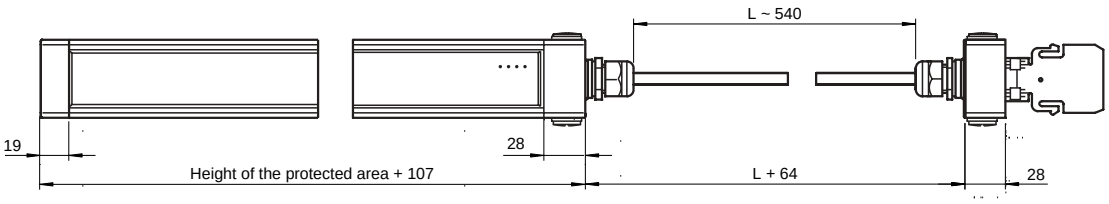
Technical data

SLC30-...-S

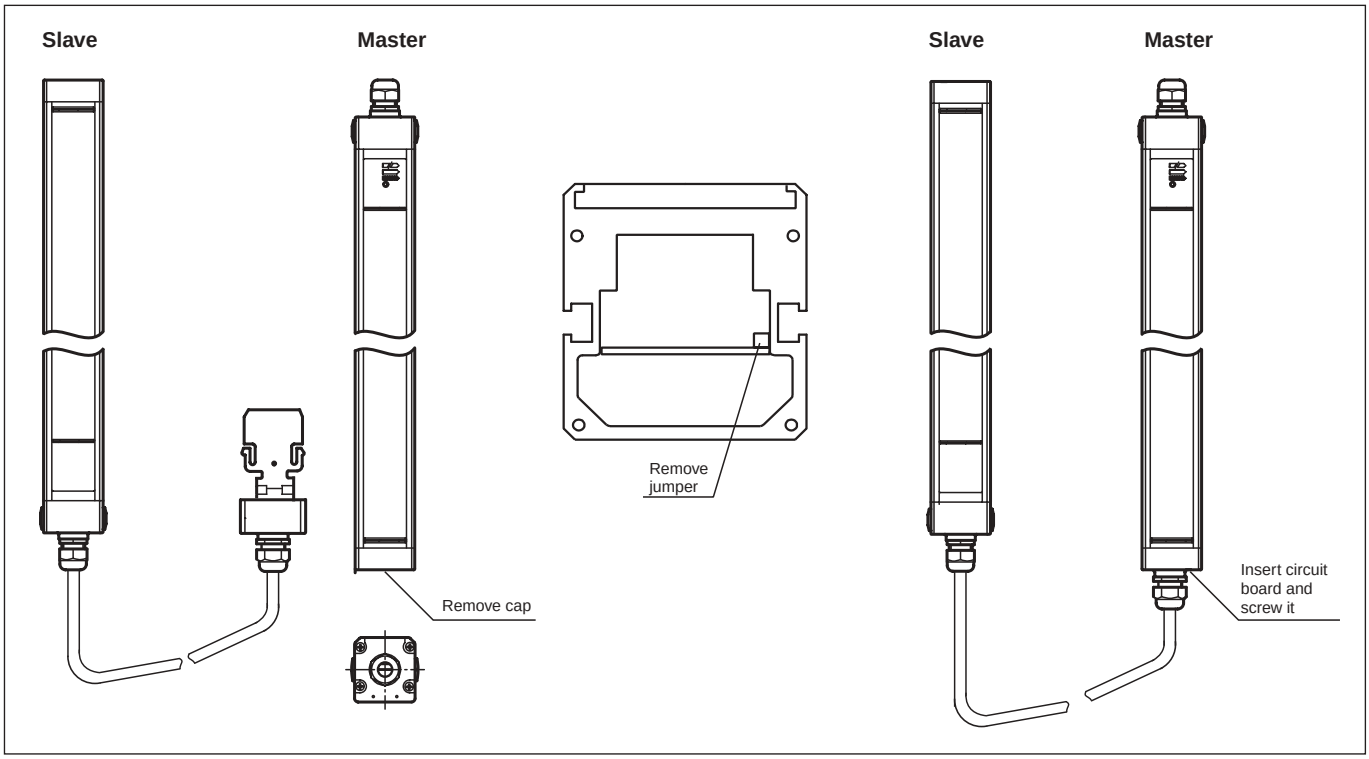
Ordering code:		SLC30-150-S	SLC30-300-S	SLC30-450-S	SLC30-600-S	SLC30-750-S	SLC30-900-S	SLC30-1050-S	SLC30-1200-S	SLC30-1350-S	SLC30-1500-S	SLC30-1650-S
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Height of the protected area	[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
Optical resolution	30 mm	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating mode	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating display	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function display	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Pre-fault indication	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	from master	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
No-load supply current	from master	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	in the master device	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety 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	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection degree	IP67	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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 lens	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Length of housing L	[mm]	260	410	560	710	860	1010	1160	1310	1460	1610	1760
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						◆					

SLC30-...-S

Dimensions



Electrical connection

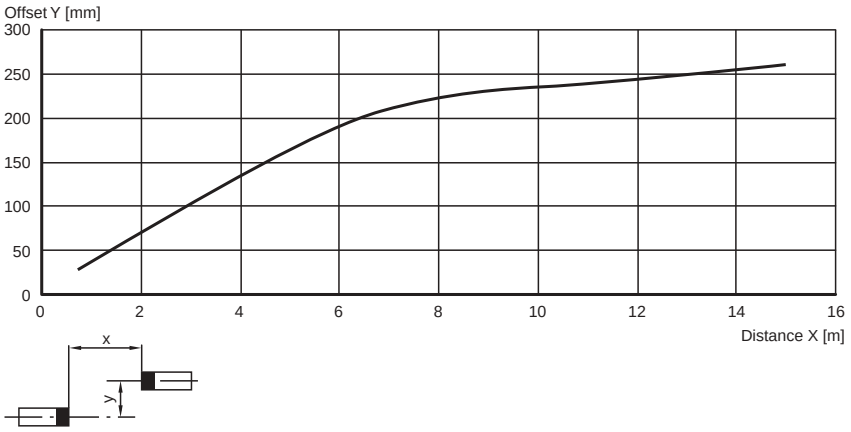


7/29/04

Diagrams

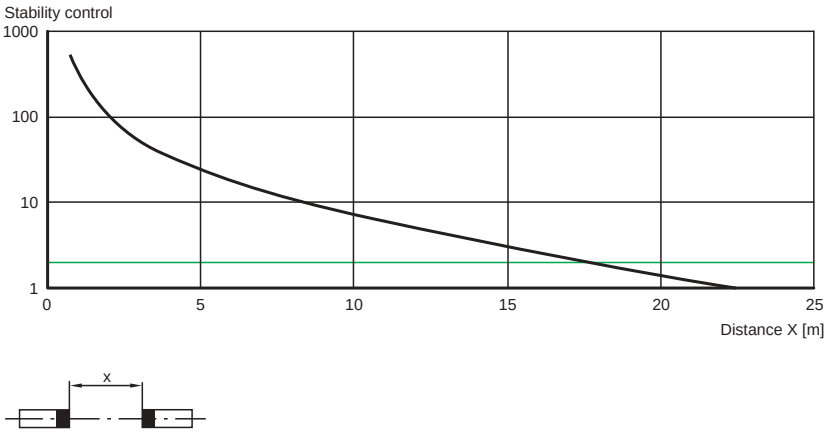
Characteristic response curve

SLC30 / SLC60 / SLC90



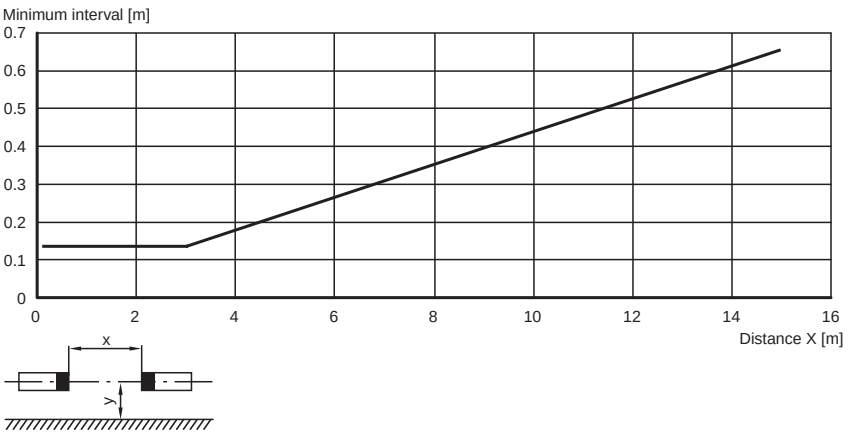
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

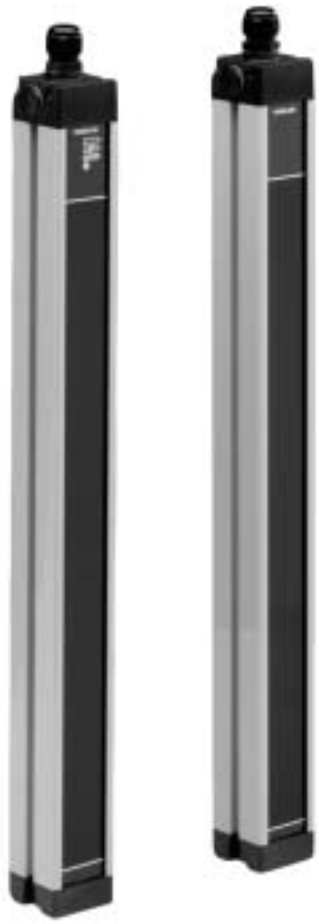
1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

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

Safety light curtain

SLC60-...

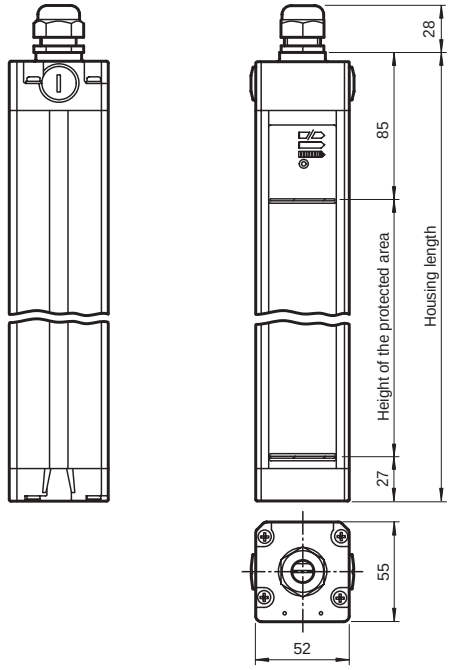


- Detection range up to 15 m
- Resolution 60 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- 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 (Option 133)

Technical data SLC60-...

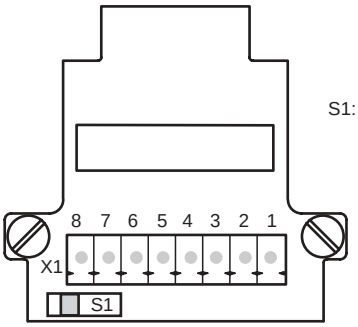
Ordering code:		SLC60-300	SLC60-600	SLC60-900	SLC60-1200	SLC60-1500	SLC60-1800
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆	◆
Height of the protected area		300 mm	600 mm	900 mm	1200 mm	1500 mm	1800 mm
Number of beams		8	16	24	32	40	48
Optical resolution	60 mm	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆	◆	◆	◆
Switching voltage	Operating voltage -2 V	◆	◆	◆	◆	◆	◆
Switching current	max. 0.5 A	◆	◆	◆	◆	◆	◆
Response time		10 ms	10 ms	12 ms	14 ms	16 ms	18 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 M26x1 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆	◆	◆
Length of housing L		410 mm	710 mm	1010 mm	1310 mm	1610 mm	1910 mm
Mass	Per	1200 g	2100 g	3000 g	3900 g	4800 g	5700 g
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			◆			

Dimensions



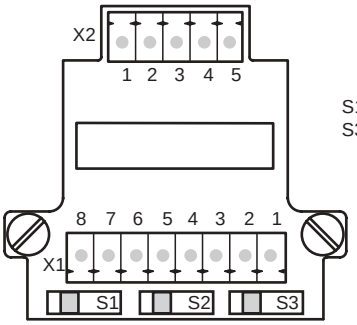
Electrical connection

Emitter:



S1: Beam coding

Receiver:



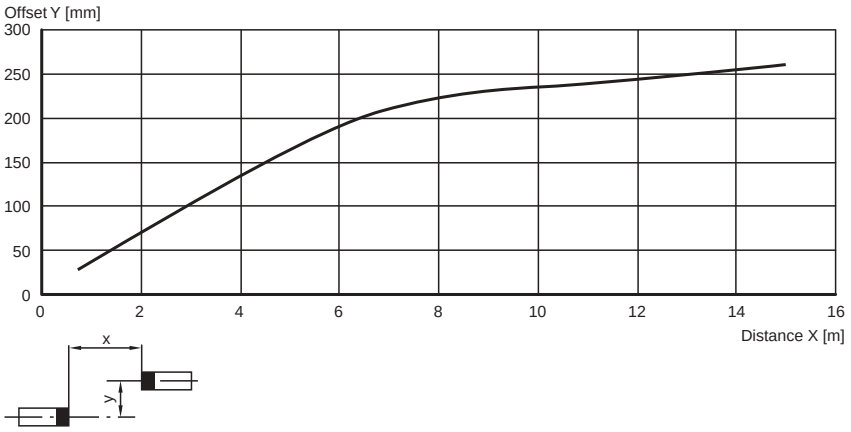
S1/S2: Startup/restart interlock
S3: Beam coding

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

Diagrams

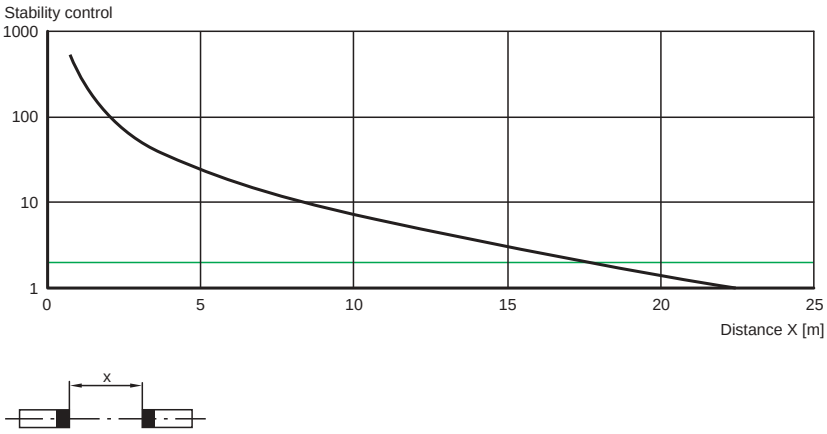
Characteristic response curve

SLC30 / SLC60 / SLC90



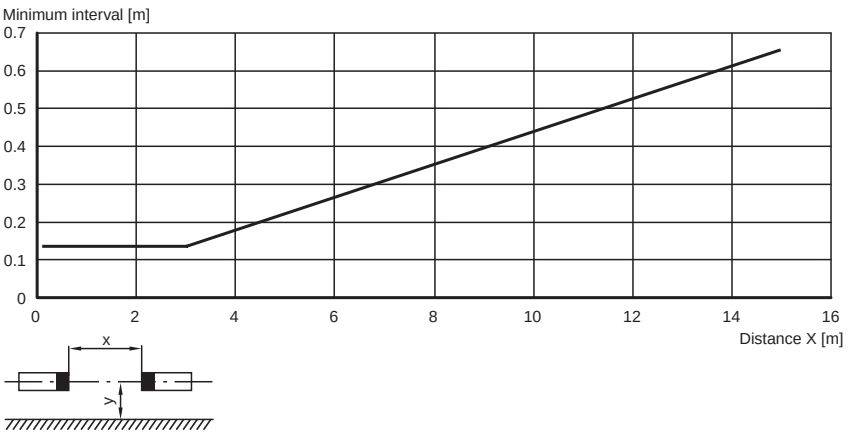
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

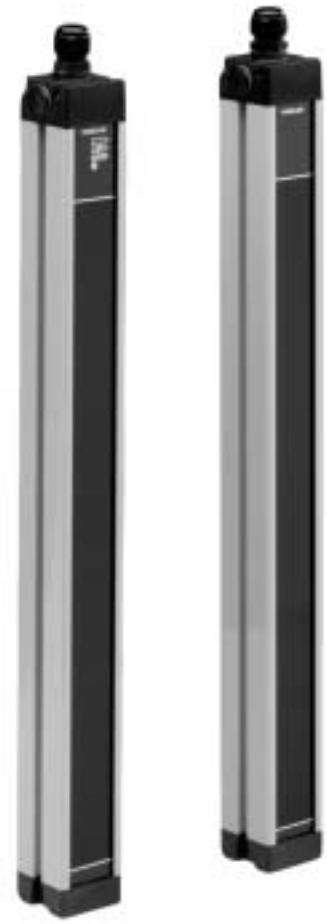
1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

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

Safety light curtain

SLC60-.../31

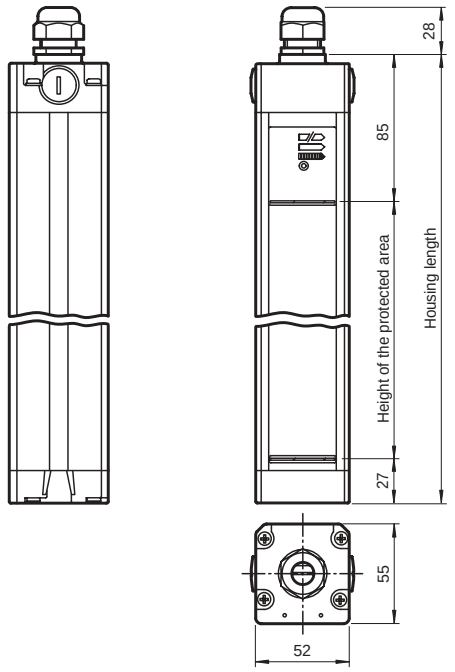


- Detection range up to 15 m
- Resolution 60 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display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

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	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆	◆
Height of the protected area		300 mm	600 mm	900 mm	1200 mm	1500 mm	1800 mm
Number of beams		8	16	24	32	40	48
Optical resolution	60 mm	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)	◆	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact	◆	◆	◆	◆	◆	◆
Switching voltage	50 V	◆	◆	◆	◆	◆	◆
Switching current	max. 2 A	◆	◆	◆	◆	◆	◆
Switch power	100 VA	◆	◆	◆	◆	◆	◆
Response time		30 ms	30 ms	32 ms	34 ms	36 ms	38 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 M26x1 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆	◆	◆
Length of housing L		410 mm	710 mm	1010 mm	1310 mm	1610 mm	1910 mm
Mass	Per	1200 g	2100 g	3000 g	3900 g	4800 g	5700 g
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			◆			

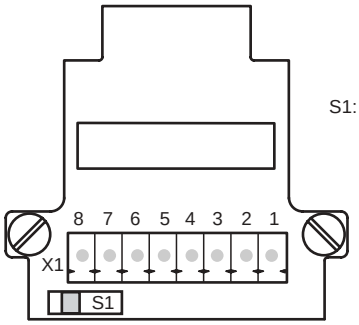
SLC60-.../31

Dimensions



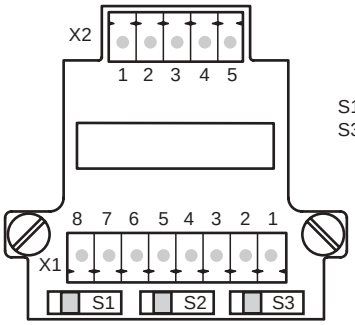
Electrical connection

Emitter:



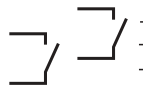
S1: Beam coding

Receiver:



S1/S2: Startup/restar interlock
S3: Beam coding

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

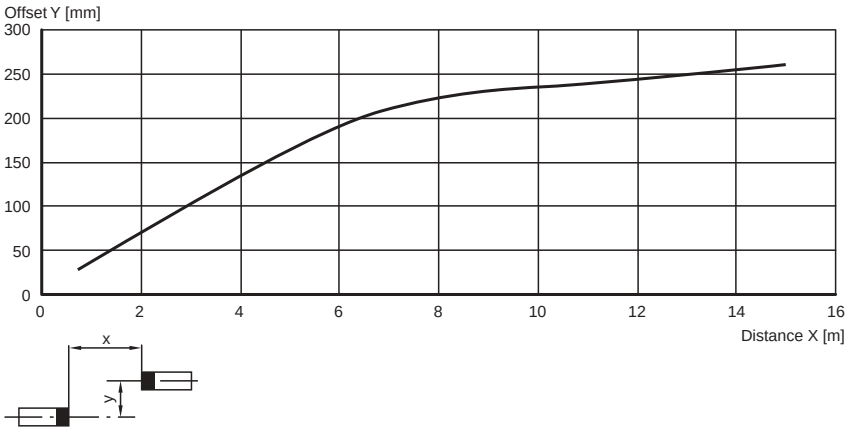


7/29/04

Diagrams

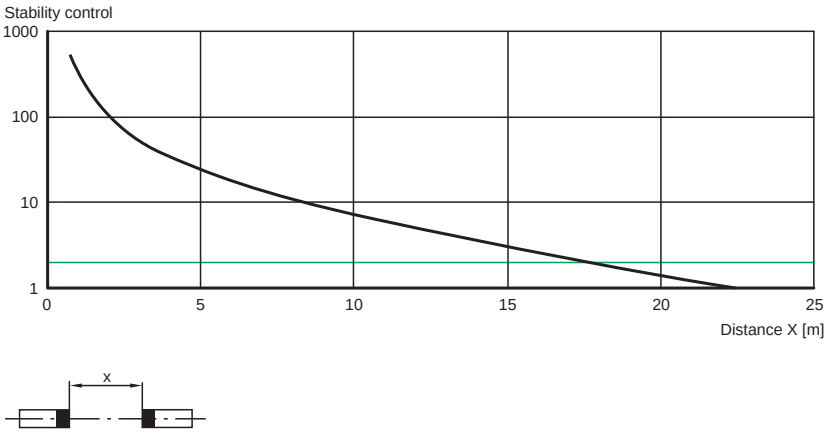
Characteristic response curve

SLC30 / SLC60 / SLC90



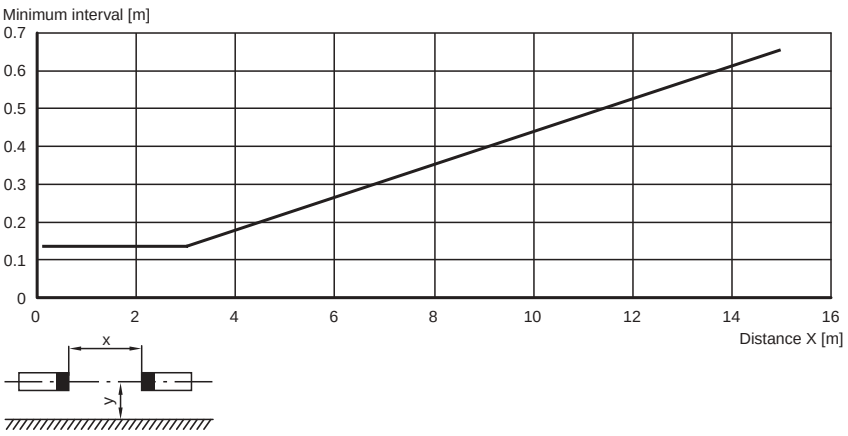
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

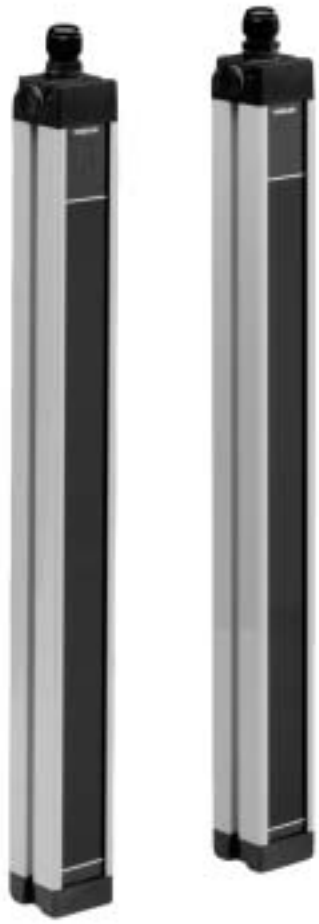
1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

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

Safety light curtain

SLC60-...-S



- 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)

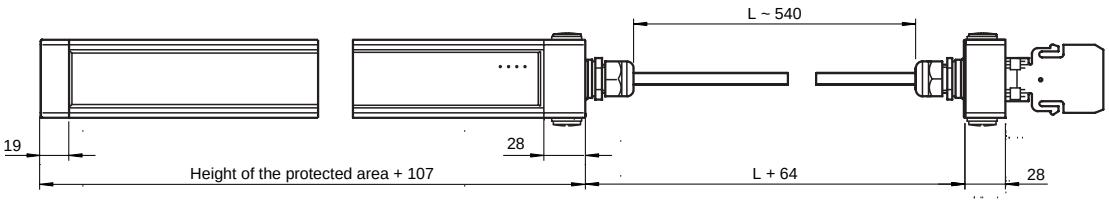
7/29/04

Technical data SLC60-...-S

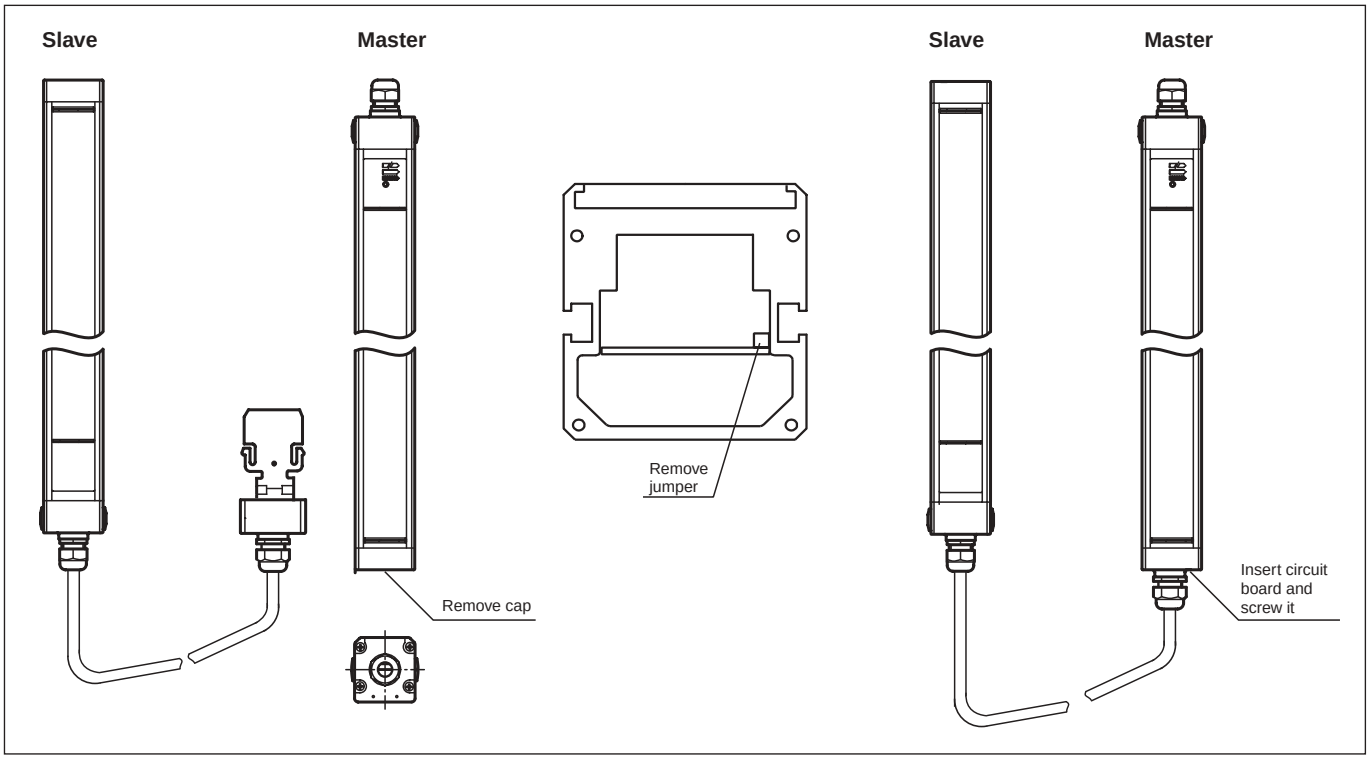
Ordering code:		SLC60-300-S	SLC60-600-S	SLC60-900-S	SLC60-1200-S	SLC60-1500-S	SLC60-1800-S
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆	◆
Height of the protected area		300 mm	600 mm	900 mm	1200 mm	1500 mm	1800 mm
Number of beams		8	16	24	32	40	48
Optical resolution	60 mm	◆	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆	◆
Operating mode	in the master device	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆
Operating display	in the master device	◆	◆	◆	◆	◆	◆
Function display	in the master device	◆	◆	◆	◆	◆	◆
Pre-fault indication	in the master device	◆	◆	◆	◆	◆	◆
Diagnosis display	in the master device	◆	◆	◆	◆	◆	◆
Operating elements	in the master device	◆	◆	◆	◆	◆	◆
Operating voltage	from master	◆	◆	◆	◆	◆	◆
No-load supply current	from master	◆	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆	◆
Function input	in the master device	◆	◆	◆	◆	◆	◆
Test input	in the master device	◆	◆	◆	◆	◆	◆
Signal output	in the master device	◆	◆	◆	◆	◆	◆
Safety 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	◆	◆	◆	◆	◆	◆
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 lens	◆	◆	◆	◆	◆	◆
Length of housing L		410 mm	710 mm	1010 mm	1310 mm	1610 mm	1910 mm
Mass	Per	1200 g	2100 g	3000 g	3900 g	4800 g	5700 g
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			◆			

SLC60-...-S

Dimensions



Electrical connection

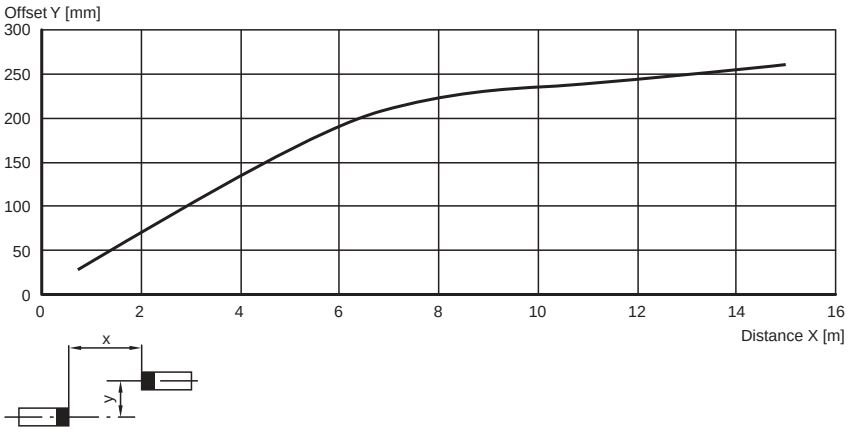


7/29/04

Diagrams

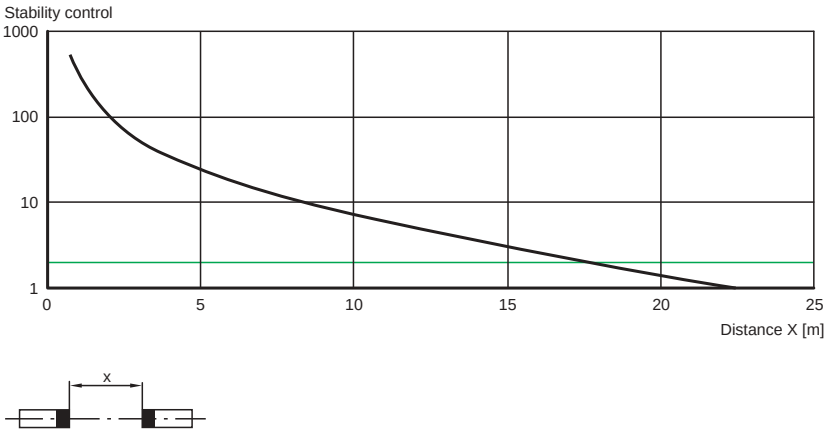
Characteristic response curve

SLC30 / SLC60 / SLC90



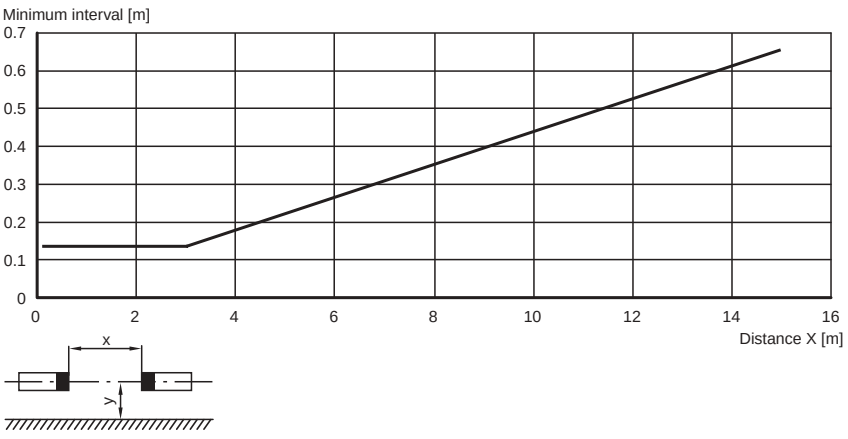
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

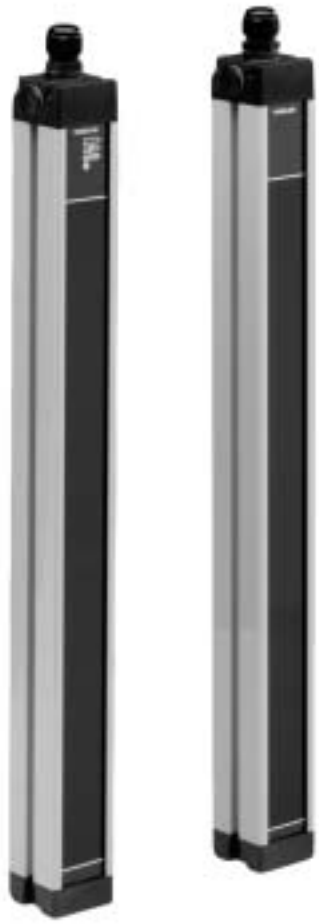
System accessories

- 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

Date of edition: 7/29/04

Safety light curtain

SLC90-...



- 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)

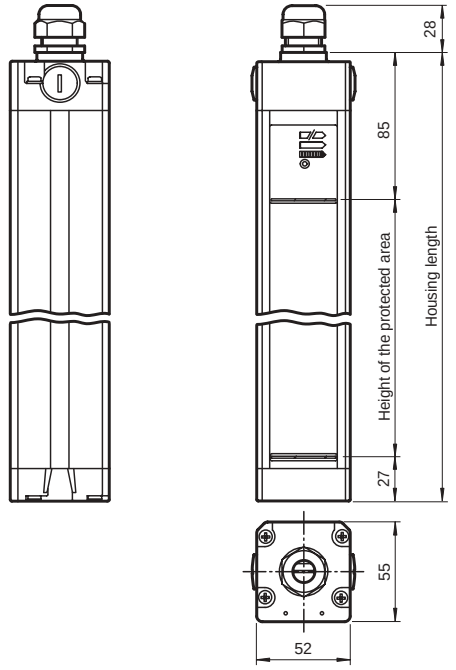
7/29/04

Technical data SLC90-...

	Ordering code:	SLC90-600	SLC90-900	SLC90-1200	SLC90-1500	SLC90-1800
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆
Height of the protected area		600 mm	900 mm	1200 mm	1500 mm	1800 mm
Number of beams		8	12	16	20	24
Optical resolution	90 mm	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %)	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆
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 lens	◆	◆	◆	◆	◆
Length of housing L		710 mm	1010 mm	1310 mm	1610 mm	1910 mm
Mass	Per	2100 g	3000 g	3900 g	4800 g	5700 g
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		◆			

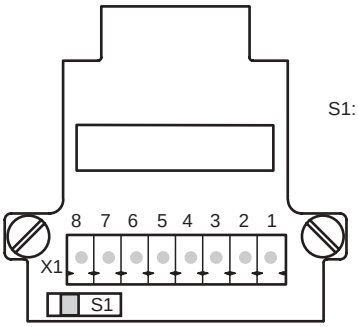
SLC90-...

Dimensions



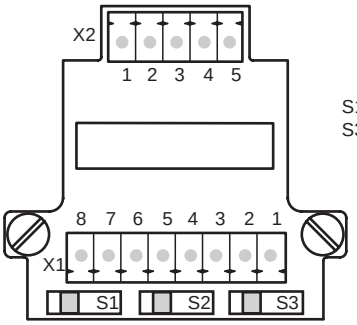
Electrical connection

Emitter:



S1: Beam coding

Receiver:



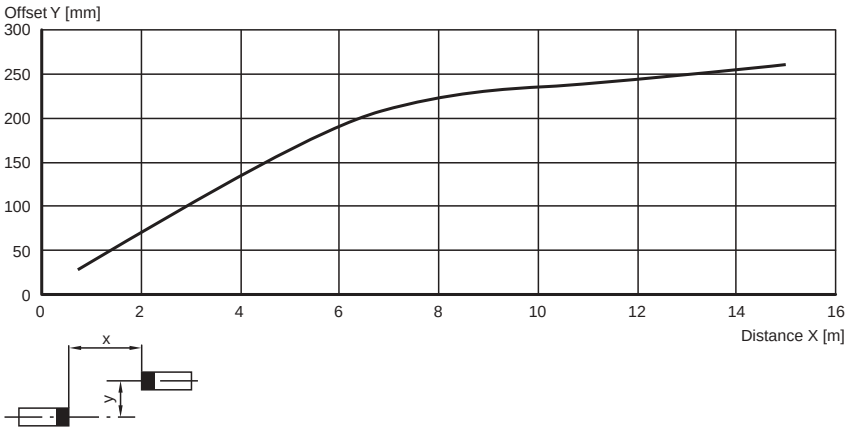
S1/S2: Startup/restart interlock
S3: Beam coding

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

Diagrams

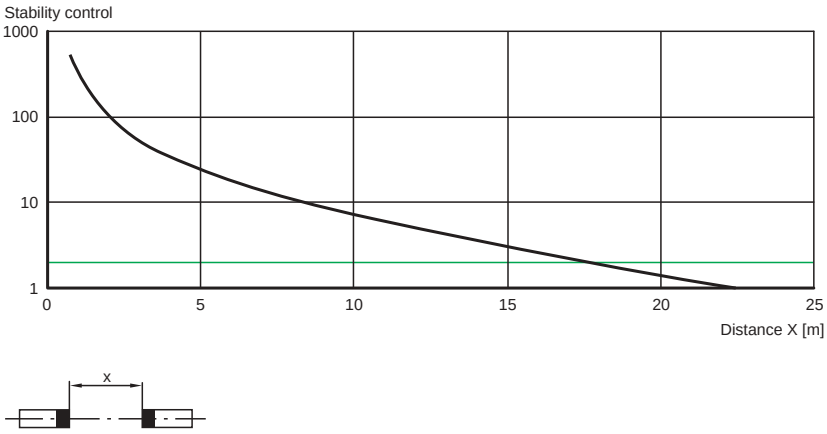
Characteristic response curve

SLC30 / SLC60 / SLC90



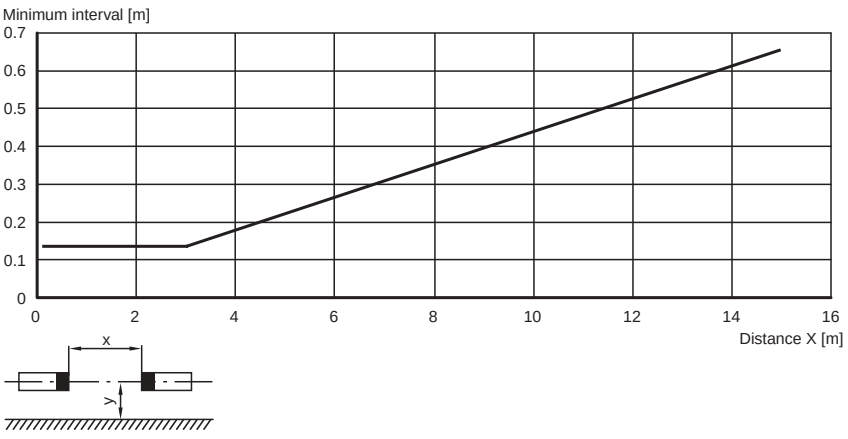
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

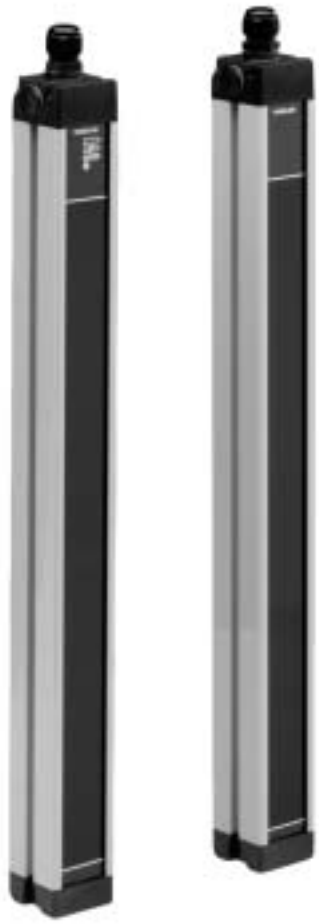
1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

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

Safety light curtain

SLC90-.../31

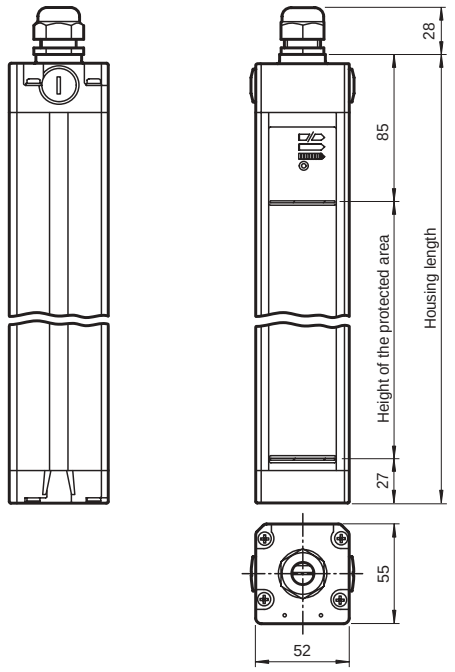


- Detection range up to 15 m
- Resolution 90 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display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

Technical data

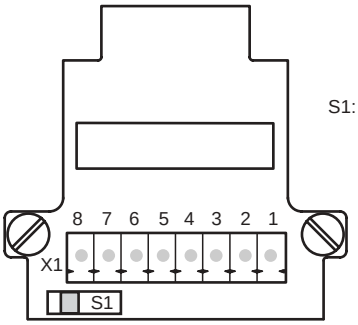
Ordering code:		SLC90-600/31	SLC90-900/31	SLC90-1200/31	SLC90-1500/31	SLC90-1800/31
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆
Height of the protected area		600 mm	900 mm	1200 mm	1500 mm	1800 mm
Number of beams		8	12	16	20	24
Optical resolution	90 mm	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆
Operating mode	can be selected with or without start/restart disable	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆
Operating display	7-segment display in emitter	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆
Diagnosis display	7-segment display in receiver	◆	◆	◆	◆	◆
Operating elements	switch for start/restart disable, transmission coding	◆	◆	◆	◆	◆
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)	◆	◆	◆	◆	◆
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆
Function input	Start release	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆	◆	◆
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	◆	◆	◆	◆	◆
Safety output	2 relay outputs, compelled connection NO-contact	◆	◆	◆	◆	◆
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	◆	◆	◆	◆	◆
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 M26x1 Hirschmann, 11-pin+PE	◆	◆	◆	◆	◆
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	◆	◆	◆	◆	◆
Optical face	Plastic lens	◆	◆	◆	◆	◆
Length of housing L		710 mm	1010 mm	1310 mm	1610 mm	1910 mm
Mass	Per	2100 g	3000 g	3900 g	4800 g	5700 g
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		◆			

Dimensions



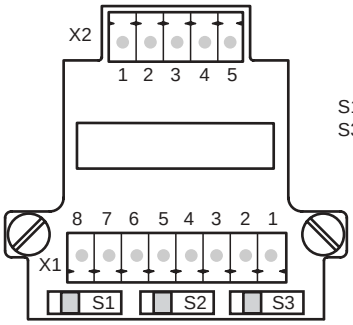
Electrical connection

Emitter:



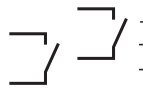
S1: Beam coding

Receiver:



S1/S2: Startup/restar interlock
S3: Beam coding

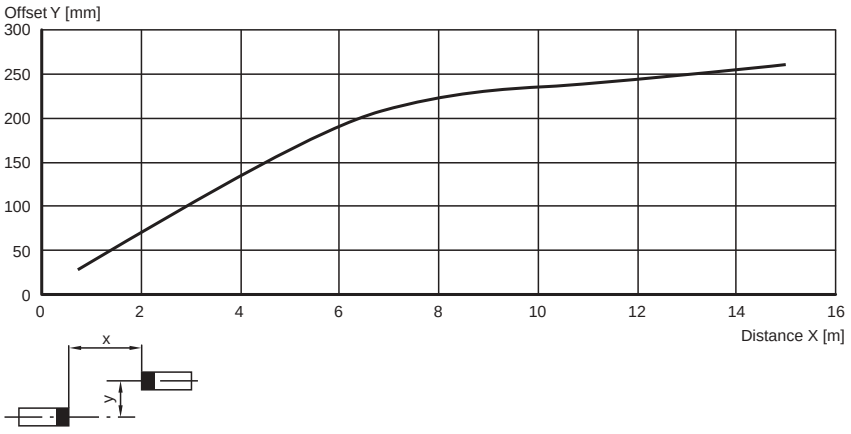
terminal	emitter	receiver relay output
X1:1	Functional earth	Functional earth
X1:2		test (input)
X1:3		OSSD2.2 (output)
X1:4		OSSD1.2 (output)
X1:5		OSSD2.1 (output)
X1:6		OSSD1.1 (output)
X1:7	0 V AC/DC	0 V AC/DC
X1:8	24 V AC/DC	24 V AC/DC
X2:1	Not placed on board	Start release (output)
X2:2		Status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



Diagrams

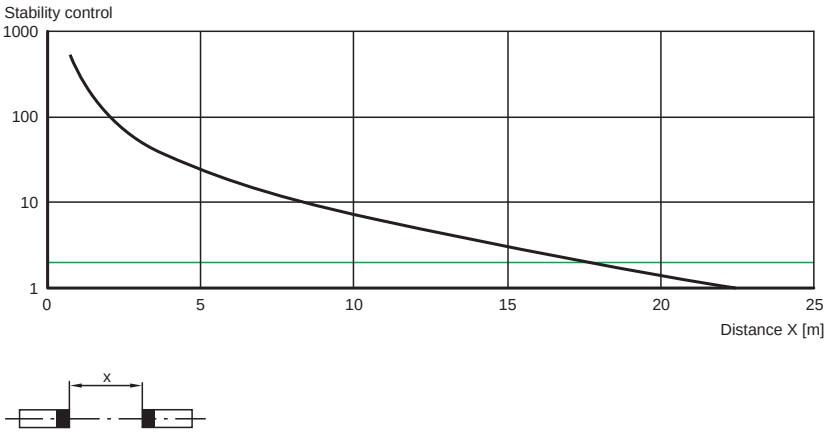
Characteristic response curve

SLC30 / SLC60 / SLC90



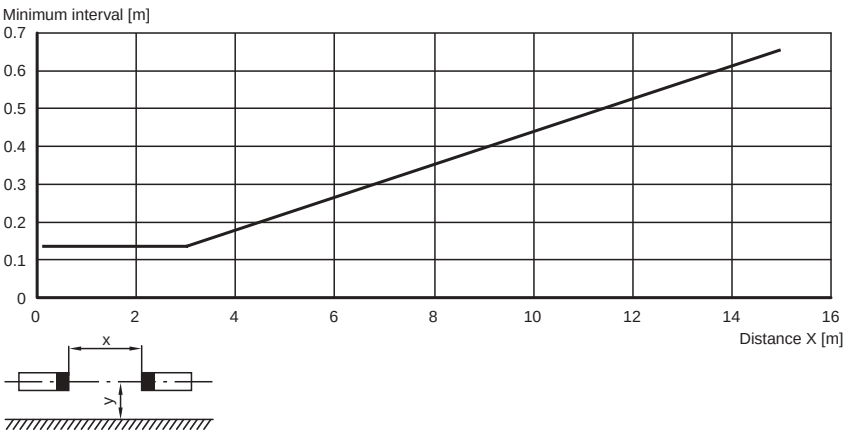
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

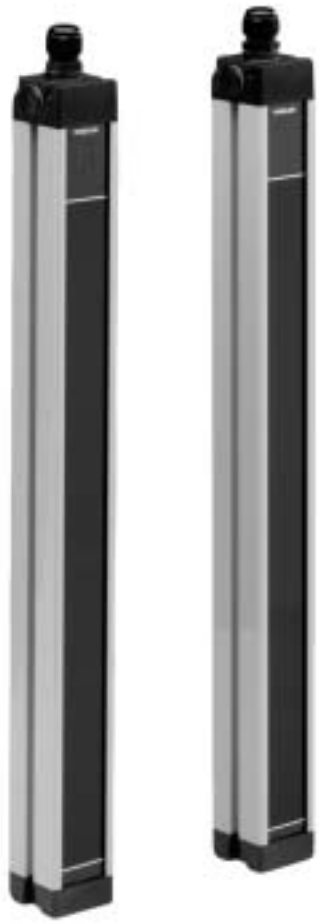
System accessories

- 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

Date of edition: 7/29/04

Safety light curtain

SLC90-...-S



- 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)

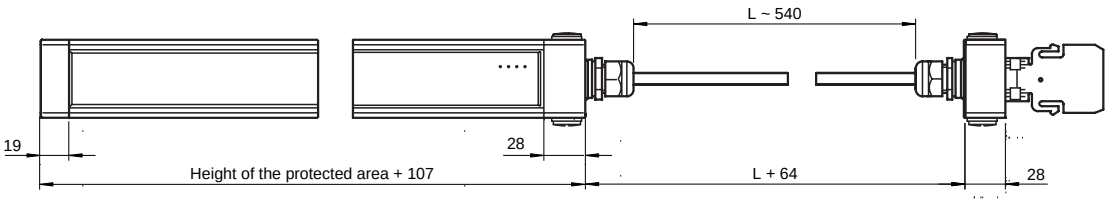
Technical data

SLC90-...-S

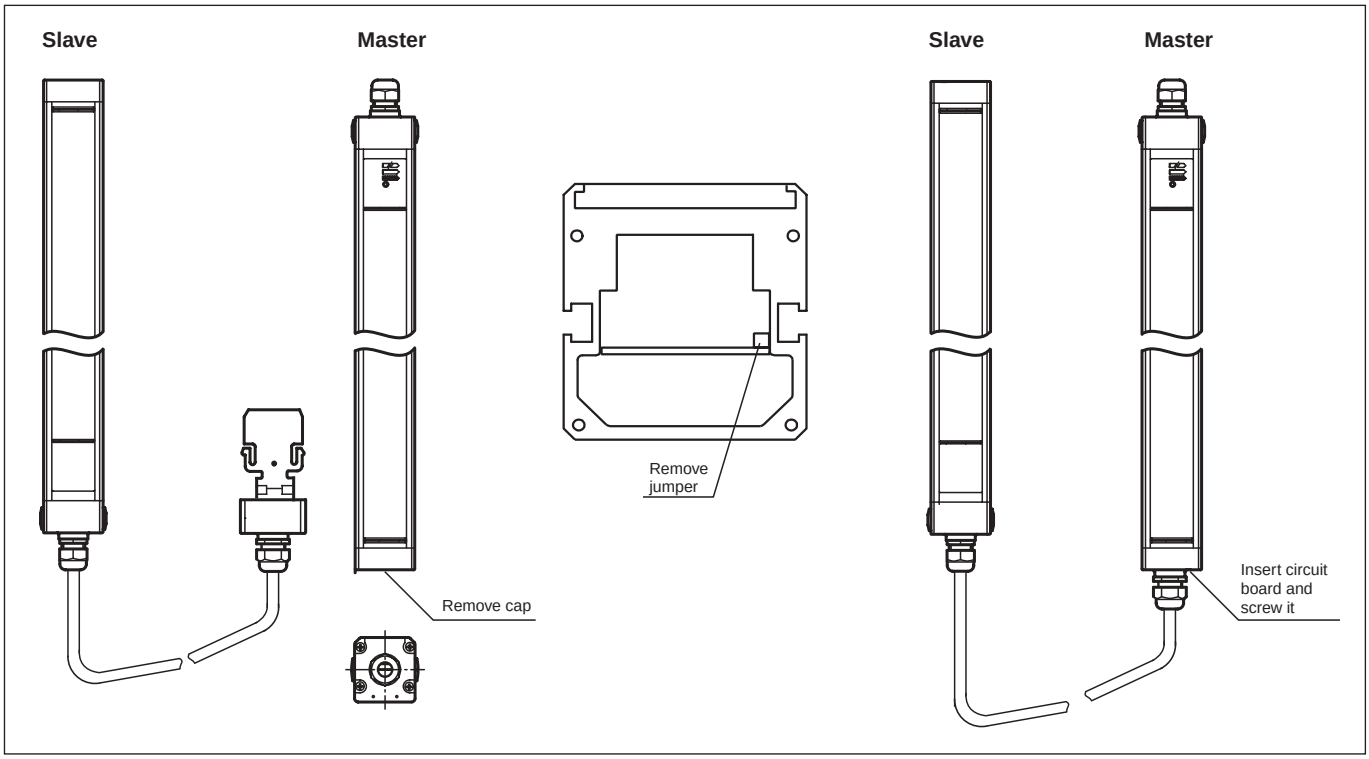
Ordering code:		SLC90-600-S	SLC90-900-S	SLC90-1200-S	SLC90-1500-S	SLC90-1800-S
Effective detection range	0.2 ... 15 m	◆	◆	◆	◆	◆
Width of protected area	0.2 ... 15 m	◆	◆	◆	◆	◆
Height of the protected area		600 mm	900 mm	1200 mm	1500 mm	1800 mm
Number of beams		8	12	16	20	24
Optical resolution	90 mm	◆	◆	◆	◆	◆
Light source	IRED	◆	◆	◆	◆	◆
Light type	infrared, alternating light	◆	◆	◆	◆	◆
Angle of divergence	< 5 °	◆	◆	◆	◆	◆
Operating mode	in the master device	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆
Approvals	TÜV, UL	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆
Operating display	in the master device	◆	◆	◆	◆	◆
Function display	in the master device	◆	◆	◆	◆	◆
Pre-fault indication	in the master device	◆	◆	◆	◆	◆
Diagnosis display	in the master device	◆	◆	◆	◆	◆
Operating elements	in the master device	◆	◆	◆	◆	◆
Operating voltage	from master	◆	◆	◆	◆	◆
No-load supply current	from master	◆	◆	◆	◆	◆
Protection class	III	◆	◆	◆	◆	◆
Function input	in the master device	◆	◆	◆	◆	◆
Test input	in the master device	◆	◆	◆	◆	◆
Signal output	in the master device	◆	◆	◆	◆	◆
Safety 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	◆	◆	◆	◆	◆
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 lens	◆	◆	◆	◆	◆
Length of housing L		710 mm	1010 mm	1310 mm	1610 mm	1910 mm
Mass	Per	2100 g	3000 g	3900 g	4800 g	5700 g
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		◆			

SLC90-...-S

Dimensions



Electrical connection

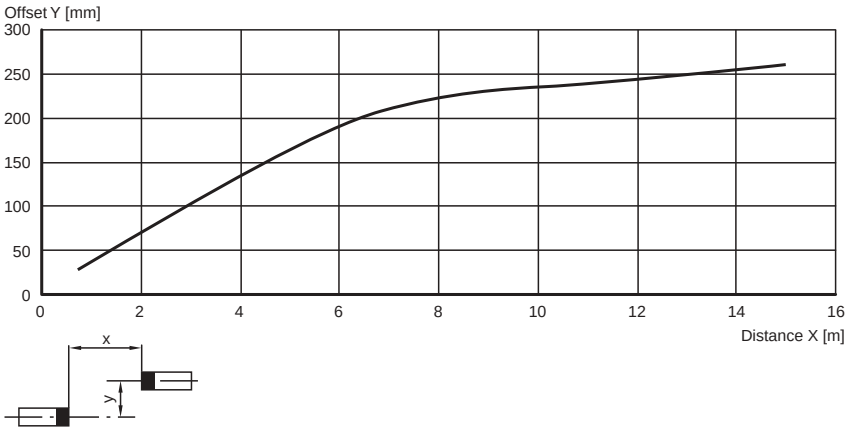


7/29/04

Diagrams

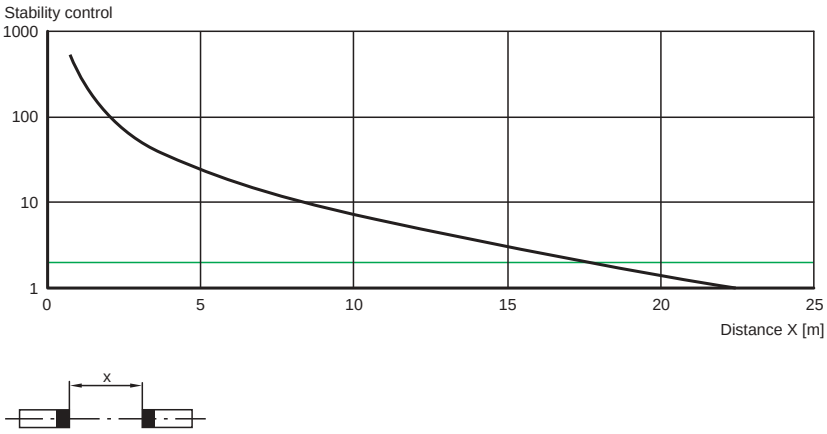
Characteristic response curve

SLC30 / SLC60 / SLC90



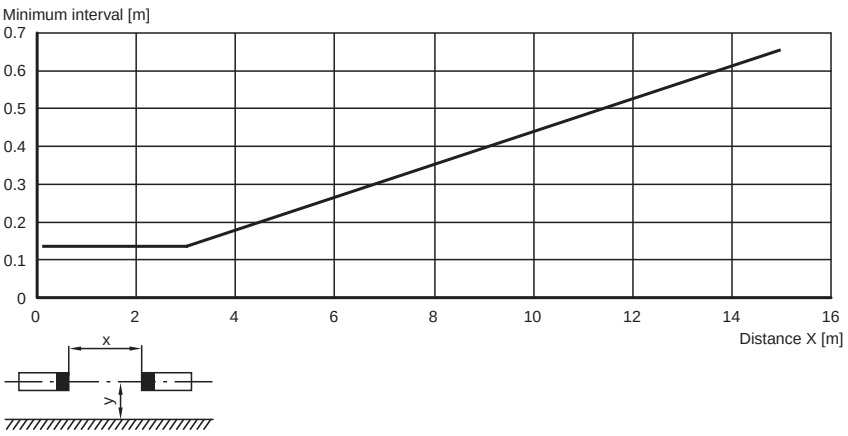
Relative received light strength

SLC30 / SLC60 / SLC90



Lateral interval to mirroring surfaces

SLC30 / SLC60 / SLC90



Notes

Master slave mode

Master: SLC..-... (semiconductor)
or
SLC..-.../31 (relay)
Slave: SLC..-...-S

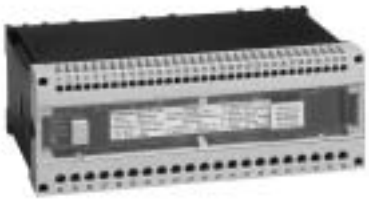
Using slaves makes it possible to lengthen protective fields or to form protective fields that lie in more than just one level. When you select slaves that can be connected, you should take into consideration that the maximum number of 96 light rays must not be exceeded.
There are slaves for transmitters and receivers. These may simply be connected to the master light curtain. As many as 2 slaves may be connected respectively to the transmitter and receiver unit.

Installation:

1 The end cap should be screwed off for the light curtain (without cable gland).
2 The plug-in jumper on the connectors of the printed circuit board, which is now visible, should be removed.
3 The slave is designed so that the cap located on the cable connector can be plugged directly onto the open end of the light curtain with the printed circuit board.
4 After you have screwed on the connection cap, the system is complete.

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



Description

The SC2/SC4 system

The SC2/SC4 is a control unit for a safety optical barrier system for connecting from 1 to 2 through-beam sensors (consisting of a transmitter and receiver) of Category 2 or 4 (EN 954-1) or Type 2 or 4 (IEC 61496).

The control unit and the series SL(A)12/SL(A)29 through-beam sensors form a modular protection system.

The SC2/SC4 generates the necessary power supply voltages, controls the light transmitter and evaluates signals transferred from the receivers. A safety-related control signal (two force-directed relays) is then available on the output. Depending on the type of SLA through beam sensors, the detection range may then be up to 65 m.

Operating types such as relay monitor, startup/restart interlock, muting, double-muting and emergency muting ensure that the necessary tasks can be performed. Operating modes can be adjusted and modified by the user according to the application.

The SLVA system

The **SLVA** is a control unit for a safety optical barrier system for connecting from 1 to 8 through-beam sensors (consisting of a transmitter and receiver) of Category 4 (EN 954-1) or Type 4 (IEC 61496). It is thus a self-monitoring system.

The analyser unit, the through-beam sensors of the **SLA** series or light grids of type **SLP**, muting sensors and additional safety equipment that can be selected by the user combine to form a modular protection system. This also makes it possible to connect emergency off switches and other 2-channel safety equipment.

The SLVA generates the necessary power supply voltages, controls the light transmitter and evaluates signals transferred from the receivers. A safety-related control signal (two force-directed relays) is then available on the output. Depending on the type of SLA through beam sensors or SLP light grids, the detection range may then be up to 65 m.

Operating types such as relay monitor, startup/restart interlock, muting, double-muting and emergency muting ensure that the necessary tasks can be performed. Operating modes can be adjusted and modified by the user according to the application.

Control units are available for various operating voltages.

The SC4-8 system

The **SC4-8** is provided with a customer-specific configuration component. This means that the adjusting of operating modes described above can be preset to a fixed value if the customer so desires, after which it cannot be changed. This eliminates the need for individual configuration and errors made in settings are avoided. In addition, special requirement such as special sensor assignment, evaluating emergency off switches and special time requirements are eliminated.

The SC4-8 also makes it possible to implement muting functions for light curtains of the **SLC** series.

Applications

Basic application where there is an increased risk of injury. For example, protecting access to pallet loading systems, robots, woodworking machines, packaging machines, high shelf units and machine systems.

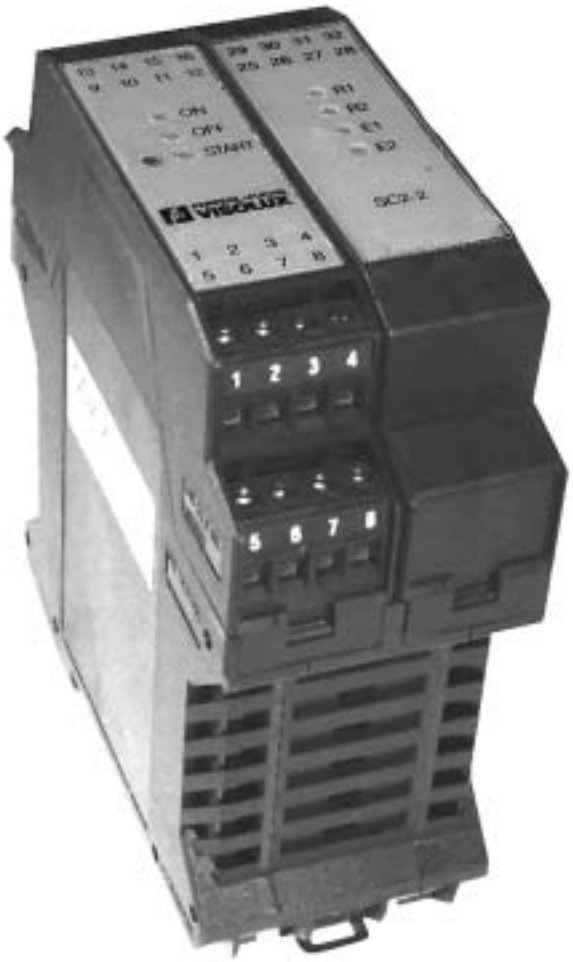
Type code	Number of channels	Kategory according EN 954-1	Operating voltage	Page
SC2-2	**2**	**2**	**24 V DC**	**234**
SC4-2	**2**	**4**	**24 V DC**	**238**
SC4-8	**8**	**4**	**24 V AC/DC 115 V AC 230 V AC**	**242**
SLVA-4Kplus	**4**	**4**	**24 V AC/DC 115 V AC 230 V AC**	**246**
SLVA-8K	**8**	**4**	**24 V AC/DC 115 V AC 230 V AC**	**250**

Date of edition 8/13/04

Evaluation unit

SC2-2 24VDC

CE



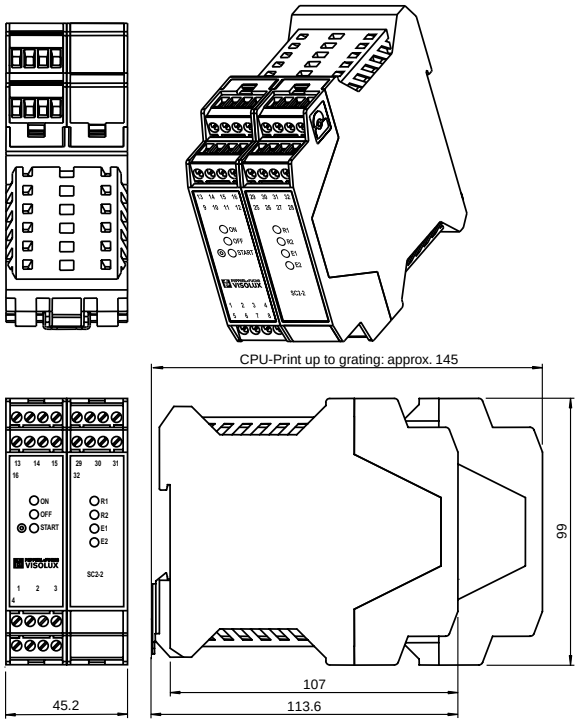
- Evaluation device for safety through-beam sensors SL12 and SL29
- Test input (Type 2 according to IEC/EN 61496-1)
- Operating mode can be selected by means of DIP switches
- Start/Restart disable
- Relay monitor
- Pre-fault indication
- Safety outputs OSSD, external status displays OSSD

Technical data SC2-2 24VDC

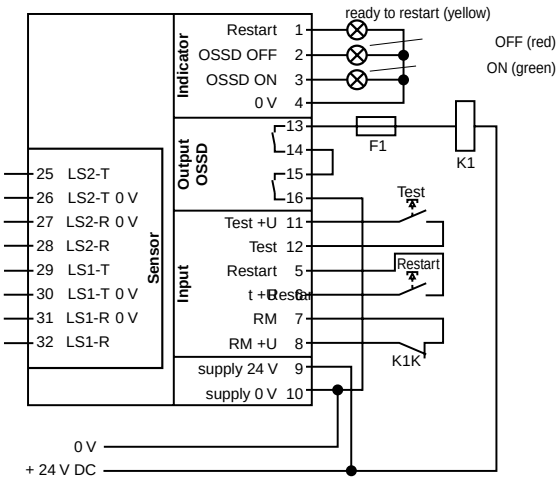
Operating mode	Start/restart disable, relay monitor,
Approvals	TÜV
Tests	IEC/EN 61496
Marking	CE
Safety category according to IEC/EN 61496	2
Function display	LED red: OSSD OFF LED green: OSSD ON LED yellow : Start readiness LED yellow (2x): indicator lamp channel 1 ... 2
Pre-fault indication	LED yellow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

SC2-2 24VDC

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	

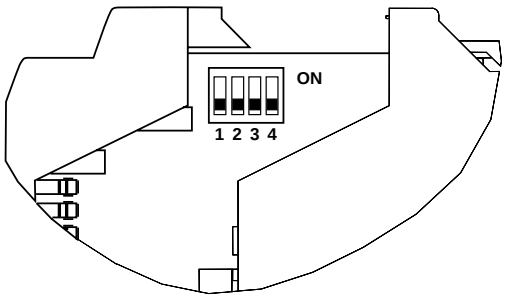
Connections for light barrier module

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	

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.

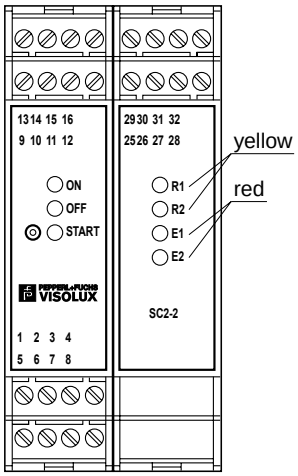
When the control unit is delivered, the relay monitor (RM) is turned off and start / restart interlock (RI) is turned on.



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

Indicator lamps

Displays for the switching state of the OSSD and status displays for indicating the operating status are located on the front plate of the two modules of the SC2-2.



Status displays

Display	LED	Meaning
OFF	Red	OSSD output turned off
ON	Green	OSSD output turned on
Start	Yellow	Continuous light: Protective field free, OSSD off, readiness for startup, activate restart button Flashing: System error (see Status E1, E2)
R1	Yellow	Status of light barrier 1 Off: Interrupted On: Light beam free Flashing: Light beam free, level below function reserve.
R2	Yellow	Status of light barrier 2 Off: Interrupted On: Light beam free Flashing: Light beam free, level below function reserve.

System error displays

If an error is present, the yellow LED flashes, indicating readiness for startup. The red LEDs E1 and E2 display the error that has been determined.

E1	E2	Meaning
off	off	Internal error
on	off	DIP switch setting incorrect
off	on	Fault in ext. contactors (relay monitor)
on	on	Transmitter connection short circuit

Evaluation unit

SC4-2 24VDC

CE

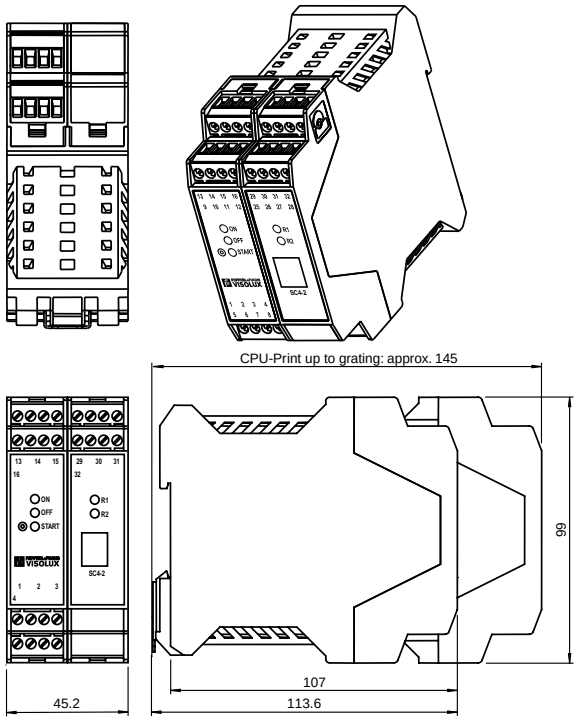
- Evaluation device for safety through-beam sensors SLA12 and SLA29
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Operating mode can be selected by means of DIP switches
- Start/Restart disable
- Relay monitor
- Pre-fault indication
- Clearly visible LED functional display
- 7-segment diagnostic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

Technical data SC4-2 24VDC

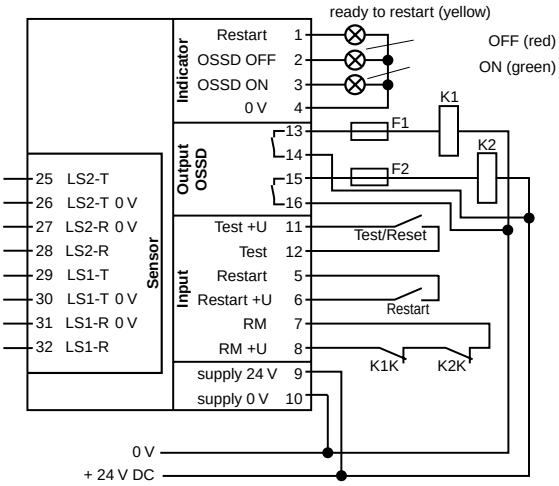
Operating mode	Start/restart disable, relay monitor,
Approvals	TÜV
Tests	IEC/EN 61496
Marking	CE
Safety category according to IEC/EN 61496	4
Function display	LED red: OSSD OFF LED green: OSSD ON LED yellow: Start readiness LED yellow (2x): indicator lamp channel 1 ... 2
Pre-fault indication	LED yellow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

SC4-2 24VDC

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	

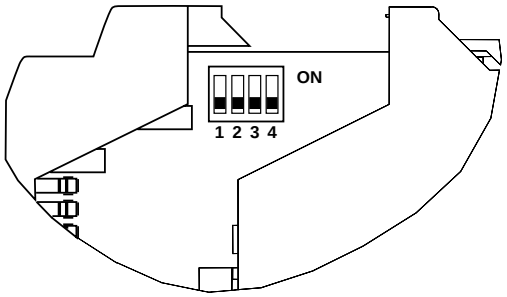
Connections for light barrier module

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	

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.

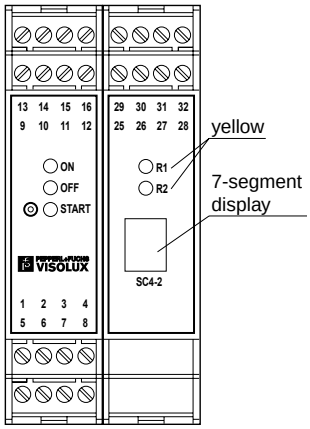
When the control unit is delivered, the relay monitor (RM) is turned off and start / restart interlock (RI) is turned on.



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

Indicator lamps

Displays for the switching state of the OSSD and status displays for indicating the operating status are located on the front plate of the two modules of the SC4-2.



Status displays

Display	LED	Meaning
OFF	Red	OSSD output turned off
ON	Green	OSSD output turned on
Start	Yellow	Continuous light: Protective field free, OSSD off, readiness for startup, activate restart button Flashing: System error (see 7-segment diaplay)
R1	Yellow	Status of light barrier 1 Off: Interrupted On: Light beam free Flashing: Light beam free, level below function reserve.
R2	Yellow	Status of light barrier 2 Off: Interrupted On: Light beam free Flashing: Light beam free, level below function reserve.

System error displays

If an error is present, the yellow LED flashes, indicating readiness for startup. The 7-segment display shows the error that has been detected.

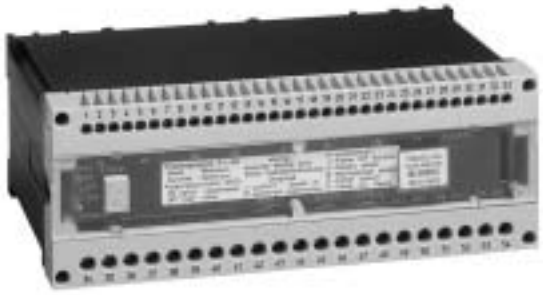
Display	Meaning	Display	Meaning
1	Protective beams free, OSSD ON (running light)	4	Error on one of the transmitters
2	One or both protective beams interrupted	5	Extraneous light detected
3	Protective beams free, OSSD off, readiness for startup	6	Sensor error in Channel 1
4	System start	7	Sensor error in Channel 2
5	DIP switch position incorrect	8	System errors
6	Both light barrier channels jumpered	9	Error in an external relay

Date of edition: 7/29/04

Evaluation unit

SC4-8-...

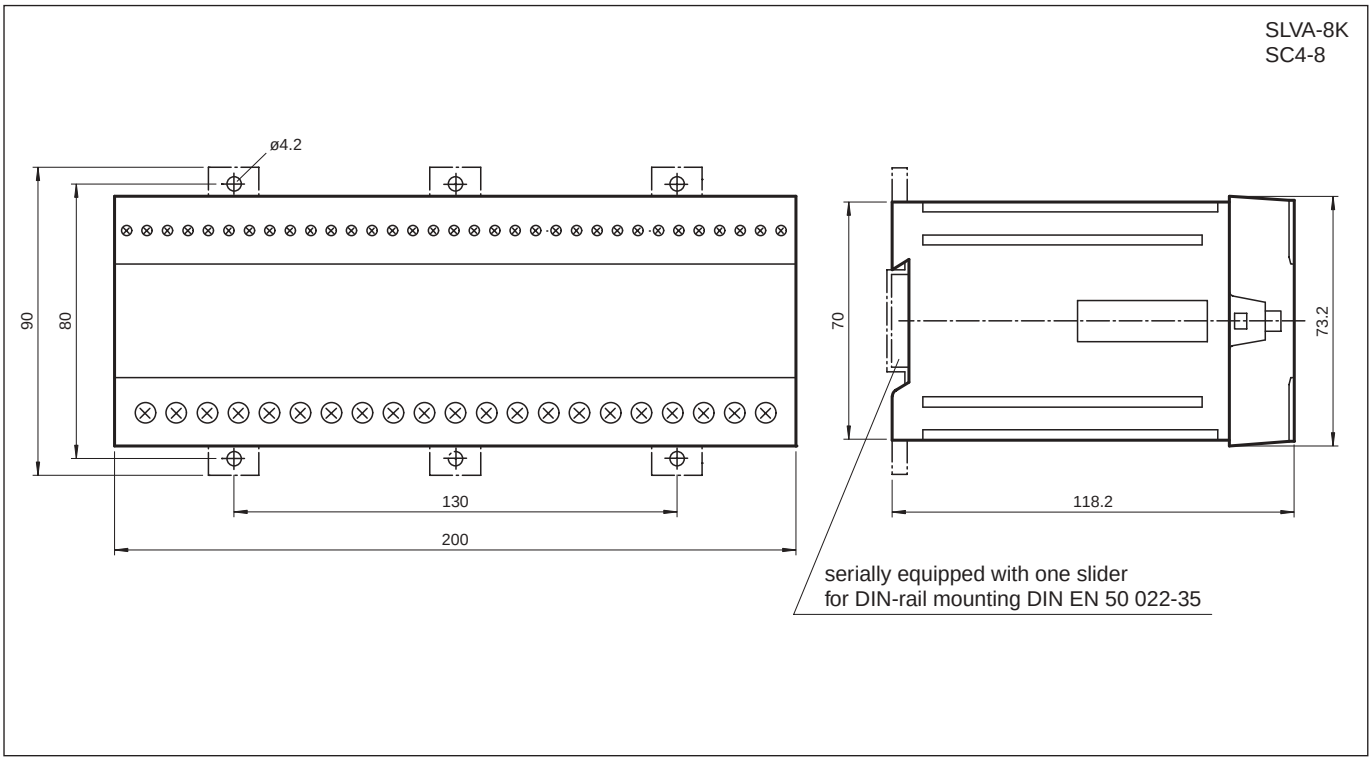
CE



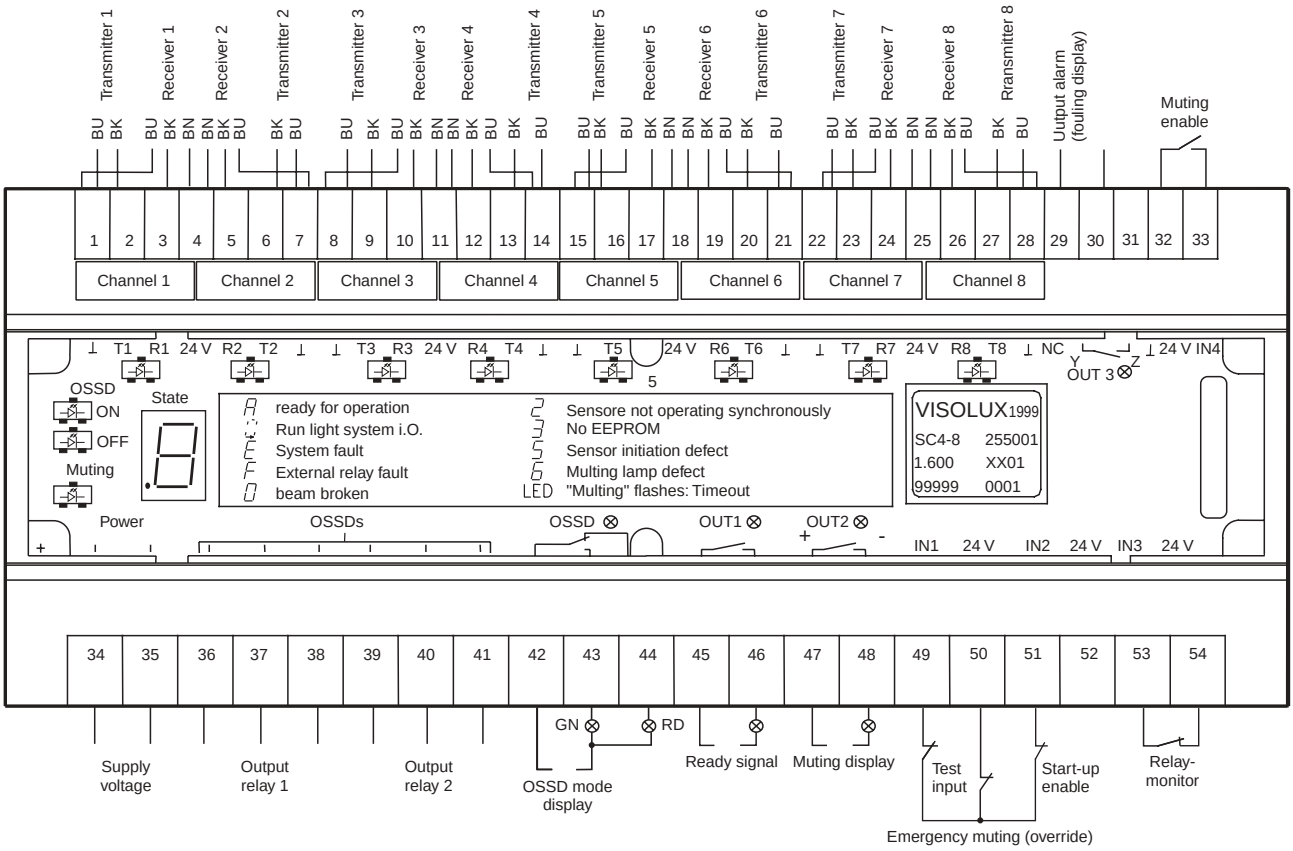
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Evaluation device for safety through-beam sensors SLA,
- Muting module for safety light curtain SLC
- Consideration of special customer requirements
- Function defined on programmable memory module, in the factory
- Start/Restart disable
- Relay monitor
- Sequential and parallel muting in various operating modes
- Double muting
- Emergency muting for the correction of the material jam
- 7-segment diagnostic display
- Safety outputs OSSD, external status displays OSSD

Ordering code:		SC4-8 24VAC/DC	SC4-8 115VAC	SC4-8 230VAC	SC4-8-2479 24VDC
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆	◆
Approvals	TÜV	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆
Function display	LED red: OSSD off LED green: OSSD on LED yellow 8x: indicator lamp channel 1 .. 8 LED yellow: Muting status	◆	◆	◆	◆
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 8	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆
Operating voltage	230 V AC ; ± 10 %			◆	
	230 V AC, ± 10 %		◆		
	24 V AC; ± 10 % ; 24 V DC, ± 15 %	◆			
	24 V DC; ± 15 %				◆
No-load supply current	400 mA	◆			◆
	50 mA		◆	◆	
Power consumption	7 VA		◆	◆	
Function input	Relay monitor, startup enable, emergency muting, max. 4 muting sensors, input for 2-channel protective device	◆	◆	◆	◆
Activation current	approx. 8 mA	◆	◆	◆	◆
Activation time	0.05 ... 1 s	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆
Signal output	Relay contacts for the switching state message of the OSSDs, start readiness, muting	◆	◆	◆	◆
Output of the pre-fault indication	1 NC-contact alarm output: max. 48 V AC/DC, 500 mA	◆	◆	◆	◆
Safety output	2 separated fail safe semiconductor outputs				◆
	2 relay outputs, compelled connection alternator contact	◆	◆	◆	
Switching voltage	12 .. 30 V DC				◆
	20 .. 230 V AC/DC	◆	◆	◆	
Switching current	AC: 0.01 ... 2 A DC see diagram of limit load curve	◆	◆	◆	
	max. 0.5 A				◆
Switch power	min. 0.06 VA / max. 460 VA	◆	◆	◆	◆
Response time	20 ms	◆	◆	◆	
	40 ms				◆
Ambient temperature	0 ... 50 °C (273 .. 323 K)	◆	◆	◆	◆
Storage temperature	-20 .. 75 °C (253 ... 348 K)	◆	◆	◆	◆
Protection degree	IP20	◆	◆	◆	◆
Connection	Connection terminals, max. conductor cross-sectional area 1.5 mm^2	◆	◆	◆	◆
Housing	Polycarbonate/V-0	◆	◆	◆	◆
Mass	1300 g		◆	◆	
	750 g	◆			◆

Dimensions



Electrical connection



Date of edition: 7/29/04

Modes of operating

The mode of operation of the SC4-8 analyser unit is stored in the memory card. This memory card is located behind the transparent covering on the upper side of the analyser unit.
The desired mode of operation can be programmed by the manufacturer in consultation with the user. This eliminates the possibility of changing the mode of operation unintentionally.
If the memory card is missing, the analyser unit assumes the secure state and the OSSD outputs are turned off.

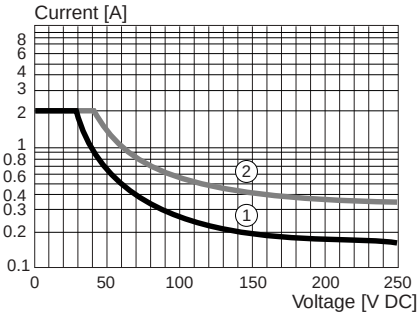
Indicator lamps and diagnostic display

The positions of the indicator lamps of the analyser unit are illustrated schematically in the electrical connections diagram. The 7-segment display indicates operating and error states. In the error state, the decimal point in the display flashes in addition and the status of the startup readiness output changes at a frequency of 1 Hz (once per second).

LED	Red	OSSD outputs turned off
	Green	OSSD outputs turned on
	Yellow	off: System works without muting on: System with muting flashing: Muting time error
	Yellow	Indicator lamps for channels (1-8) On = light beam free or muting sensor active Flashing = light beam free, minimum function reserve not met Off = light beam interrupted
7-segment display	1	Protective field free, OSSD on (running light)
	0	Protective field interrupted
	0	Protective field free, OSSD off, ready for startup
	E	System error
	E	Simultaneity condition violation
	E	Memory block is missing or defective
	E	Short circuit in transmitter connection
	E	Muting lamp defective
	E	Error in an external magnetic switch (relay monitor)

Diagrams

Load limit curve of relay OSSD for DC-current

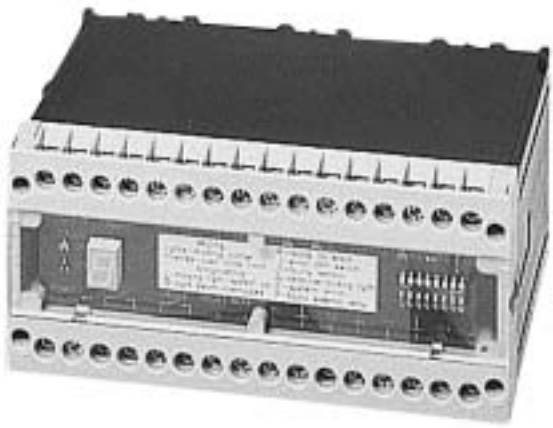


1) inductive load, L/R = 40 ms
2) ohmic load

Evaluation unit

SLVA-4Kplus ...

CE



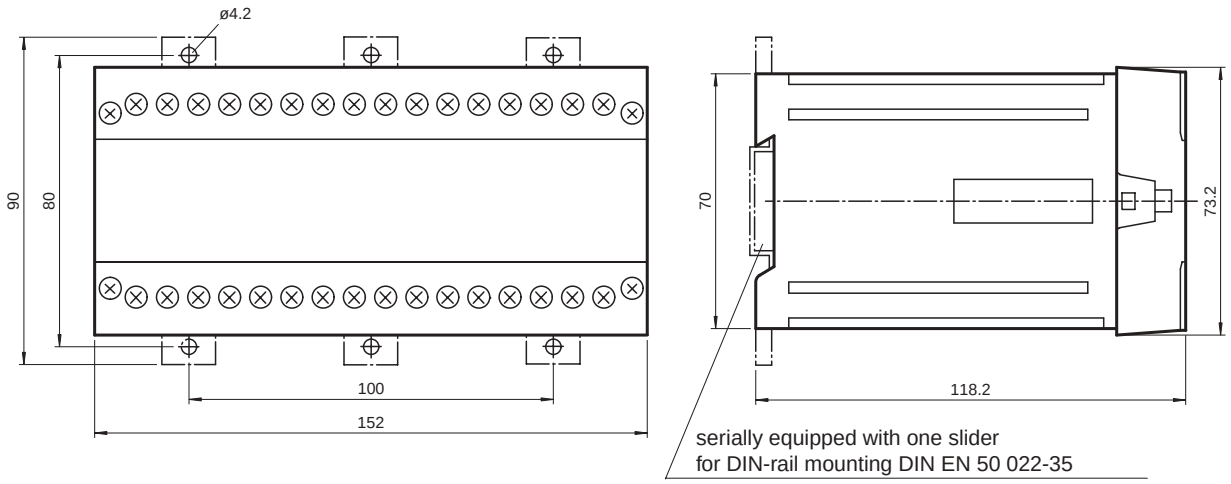
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Evaluation device for safety through-beam sensors SLA,
- Operating mode can be selected by means of DIP switches
- Start/Restart disable
- Relay monitor
- Pre-fault indication
- Clearly visible LED functional display
- 7-segment diagnostic display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

	Ordering code:	SLVA-4Kplus 24VAC/DC	SLVA-4Kplus 24VAC/DC-RI	SLVA-4Kplus 24VAC/DC-RM	SLVA-4Kplus 24VAC/DC-RI,RM	SLVA-4Kplus-2528 24VAC/DC	SLVA-4Kplus 230VAC	SLVA-4Kplus 230VAC-RI	SLVA-4Kplus 230VAC-RM	SLVA-4Kplus 230VAC-RI,RM	SLVA-4Kplus-2528 230VAC	SLVA-4Kplus 115VAC	SLVA-4Kplus 115VAC-RI	SLVA-4Kplus 115VAC-RM	SLVA-4Kplus 115VAC-RI, RM	SLVA-4Kplus-2528 115VAC
Operating mode	Startup/restart disable, emergency off		◆					◆					◆			
	Startup/restart disable, relay motor, emergency off				◆					◆					◆	
	Emergency off	◆				◆	◆				◆	◆				◆
	Relay monitor, emergency off			◆					◆					◆		
Approvals	TÜV	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Marking	CE	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function display	LED red: OSSD off LED green: OSSD on LED yellow 4x: Indicator lamp channel 1 ..4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating elements	8 DIP-switches for selection of operating modes	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Operating voltage	115 V AC +10/-15 %											◆	◆	◆	◆	◆
	230 V AC +10/-15 %						◆	◆	◆	◆	◆					
	24 V AC/DC, ± 10 %	◆	◆	◆	◆	◆										
No-load supply current	220 mA	◆	◆	◆	◆	◆										
	50 mA						◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Power consumption	12 VA						◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Function input	Start release		◆					◆					◆			
	Relay monitor			◆					◆					◆		
	Relay monitor, startup enable, input for 2-channel protective device				◆					◆					◆	
Activation current	approx. 1 mA	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Activation time	0.03 .. 1 s	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Signal output	Direct output for LEDs for displaying the switching state of the OSSDs	◆	◆	◆	◆		◆	◆	◆	◆		◆	◆	◆	◆	
	Relay contacts for the switching state message of the OSSDs					◆					◆					◆
Safety output	2 relay outputs, compelled connection NO-contact	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching voltage	20 .. 230 V AC/DC	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Switching current	AC: 0.01 ... 2 A DC see diagram of limit load curve	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Response time	40 ms	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Ambient temperature	0 ... 50 °C (273 ... 323 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Storage temperature	-20 .. 75 °C (253 ... 348 K)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Protection degree	IP20	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Connection	Connection terminals, max. conductor cross-sectional area 1.5 mm^2	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Housing	Polycarbonate/V-0	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Mass	900 g	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

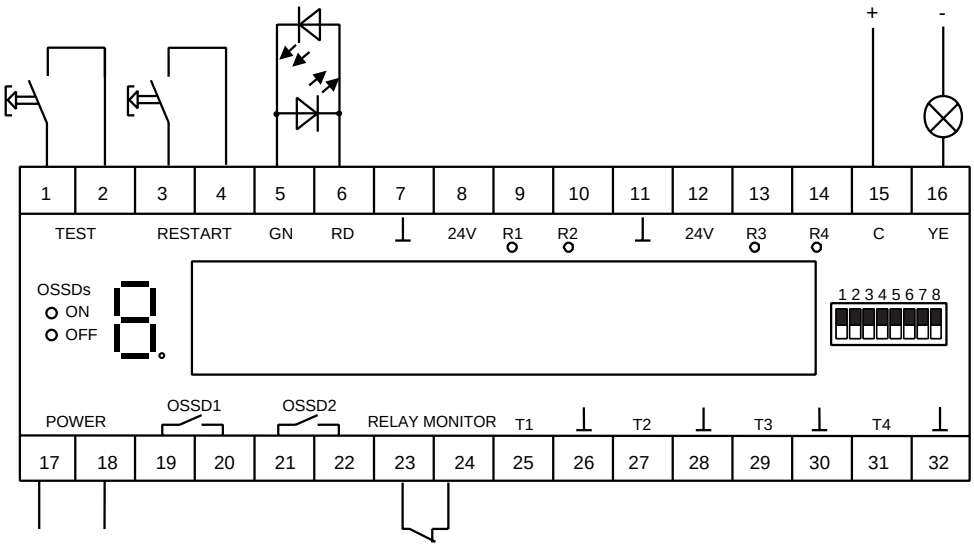
SLVA-4Kplus ...

Dimensions

SLVA-4Kplus



Electrical connection



20-30V DC, 24 V AC
115 V AC
230 V AC

Operating modes

The mode of operation is adjusted according to the description of the item when the unit leaves the factory. The user can change the mode of operation. After changing the mode of operation, before the system is enabled, a test of the effectiveness of the selected setting must always take place.
You can adjust the modes of operation of the SLVA-4Kplus with the DIP switches. The DIP switches are accessible by removing the transparent covering on the upper side of the analyser unit.
Two switches should each be moved into the same position.

Switch	Position	Mode of operation
1 + 5	OFF	Without startup/restart disable (restart)
	ON	With startup/restart disable (restart)
2 + 6	OFF	Without relay monitor (EDM)
	ON	With relay monitor (EDM)
3 + 7	OFF	Optical barriers on channels 3 and 4
	ON	Emergency off on channels 3 and 4
4 + 8	OFF	Emergency off static
	ON	Emergency off pulsed

If the DIP switches are turned on during operation, the analyser unit switches into secure state (outputs turned off) and the 7-segment displays shows a P. In addition, output 15/16 flashes (ready for startup).

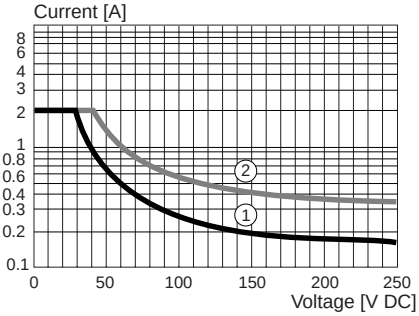
Indicator lamps and 7-segment diagnostic display

The positions of the indicator lamps of the analyser units are illustrated schematically below. The numeric display indicates the operating and error states of the BWS. In the error state, the decimal point of the 7-segment display flashes. The R1-R4 indicator lamps (yellow) display the receiver status of the light barriers or emergency off circuit that are connected. The OSSDs indicator lamp (ON = green, OFF = red) displays the status of the safety outputs.

LED	Red	OSSD outputs turned off
	Green	OSSD outputs turned on
	Yellow	Indicator lamps for channels (1-4) On = lightbeam free or emergency off circuit on Flashing = light beam free, minimum function reserve not met Off = light beam interrupted or emergency off circuit turned off
7-segment display	1	Protective field free, OSSD on (running light)
	0	Protective field interrupted
	H	Protective field free, OSSD off, ready for startup
	E	System error
	C	DIP switch setting incorrect
	S	Short circuit in transmitter connection
	E	Error in simultaneity condition for emergency off channel
	F	Error in an external relay
	P	DIP switches are turned on

Diagrams

Load limit curve of relay OSSD for DC-current

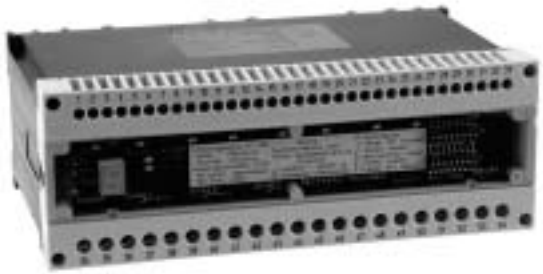


1) inductive load, L/R = 40 ms
2) ohmic load

Evaluation unit

SLVA-8K ...

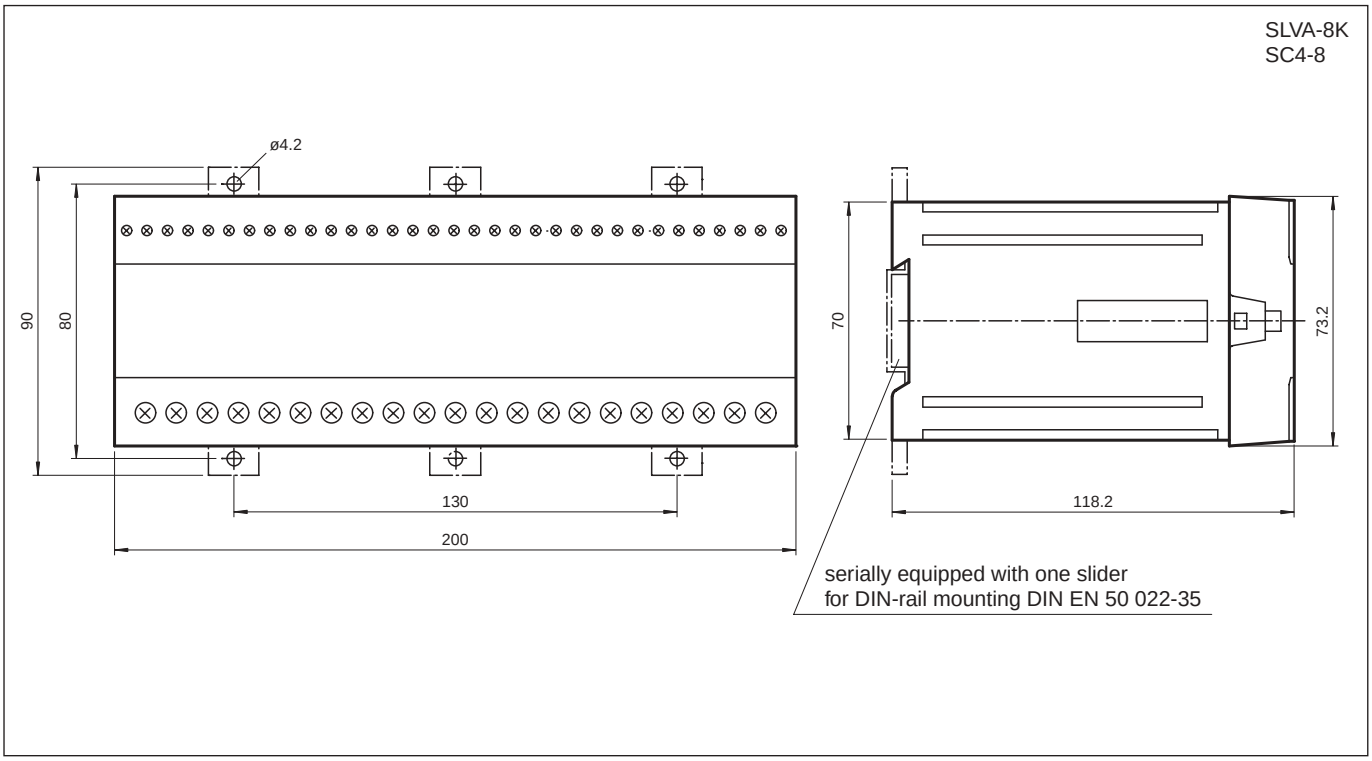
CE



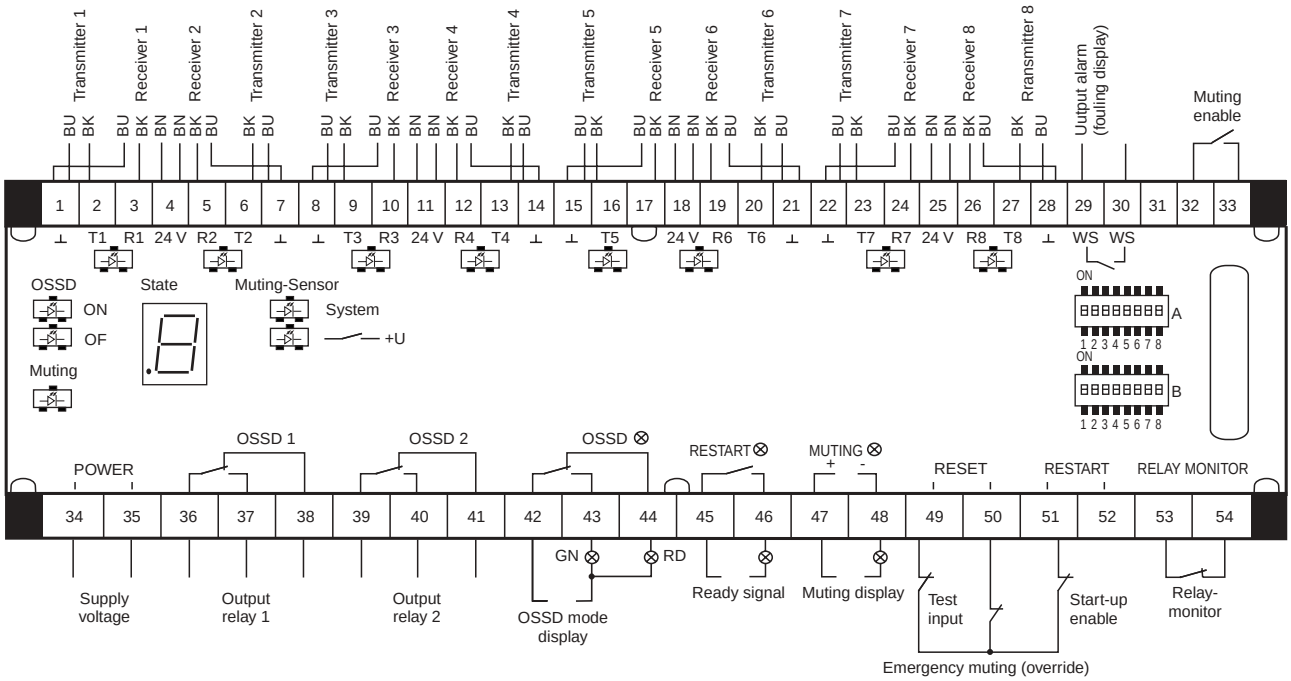
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Evaluation device for safety through-beam sensors SLA and for safety light grids SLP
- Operating mode can be selected by means of DIP switches
- Start/Restart disable
- Relay monitor
- Sequential and parallel muting in various operating modes
- Double muting
- Emergency muting (override) for the correction of the material jam
- Pre-fault indication
- Clearly visible LED functional display
- 7-segment diagnostic display
- Safety outputs OSSD, external status displays OSSD

	Ordering code:	SLVA-8K 24VAC/DC	SLVA-8K 115VAC	SLVA-8K 230VAC
Operating mode	Start/restart disable, relay monitor, muting operating modes	◆	◆	◆
Approvals	TÜV	◆	◆	◆
Tests	IEC/EN 61496	◆	◆	◆
Marking	CE	◆	◆	◆
Safety category according to IEC/EN 61496	4	◆	◆	◆
Function display	LED red: OSSD off LED green: OSSD on LED yellow 8x: indicator lamp channel 1 .. 8 LED yellow 2x: Type of muting sensor LED yellow: Muting operation	◆	◆	◆
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 .. 8	◆	◆	◆
Diagnosis display	7-segment display	◆	◆	◆
Operating elements	two 8-pin DIP-switches for selection of operating modes	◆	◆	◆
Operating voltage	115 V\AC ± 10 %		◆	
	230 V AC ±10 %			◆
	24 V AC; ± 10 % ; 24 V DC; ± 15 %	◆		
No-load supply current	100 mA			◆
	200 mA		◆	
	400 mA	◆		
Power consumption	12 VA		◆	◆
Function input	Relay monitor, start release, muting enable, emergency muting, max. 4 muting sensors	◆	◆	◆
Activation current	approx. 10 mA	◆	◆	◆
Activation time	0.03 ... 1 s	◆	◆	◆
Test input	Reset-input for system test	◆	◆	◆
Signal output	Relay contacts for the switching state message of the OSSDs	◆	◆	◆
Output of the pre-fault indication	1 NC-contact alarm output: 2 ... 48 V AC/DC, 1 ... 500 mA	◆	◆	◆
Safety output	2 relay outputs, compelled connection alternator contact	◆	◆	◆
Switching voltage	20 .. 230 V AC/DC	◆	◆	◆
Switching current	AC: 0.01 .. 2 A DC see diagram of limit load curve	◆	◆	◆
Switch power	min. 0.06 VA / max. 460 VA	◆	◆	◆
Response time	40 ms	◆	◆	◆
Ambient temperature	0 ... 50 °C (273 .. 323 K)	◆	◆	◆
Storage temperature	-20 ... 75 °C (253 ... 348 K)	◆	◆	◆
Protection degree	IP20	◆	◆	◆
Connection	Connection terminals, max. conductor cross-sectional area 1.5 mm^2	◆	◆	◆
Housing	Polycarbonate/V-0	◆	◆	◆
Mass	900 g	◆	◆	◆

Dimensions



Electrical connection



Operating modes

The startup/restart disable mode of operations set in the factory. The user can change the mode of operation to adapt the evaluation unit to the application. After changing the mode of operation, a test of the effectiveness of the selected setting must always take place.
You can adjust the modes of operation of the SLVA-8K with the 16 DIP switches The DIP switches are accessible by removing the transparent covering on the upper side of the analyser unit.
2 switches in both rows A and B must be moved to the same position. It should be noted that the switch only takes effect if Switch 3 is set to the ON position.

Switch	Position	Mode of operation
1	OFF/ON	Without/with startup/restart disable (restart)
2	OFF/ON	Without/with relay monitor
3	OFF/ON	Muting off/on
4	OFF/ON	Muting sensors channel 7 and 8/5 to 8
5	OFF/ON	Single muting/double muting
6	OFF/ON	Sequential/parallel muting
7	OFF/ON	Time window-limited/protective beam limited muting
8	OFF/ON	system-external/system-internal muting sensor

If the dip switches are turned on during operation, the analyser unit switches into secure state (outputs turned off) and the 7-segment displays shows a P. In addition, output 45/46 flashes (ready for startup).

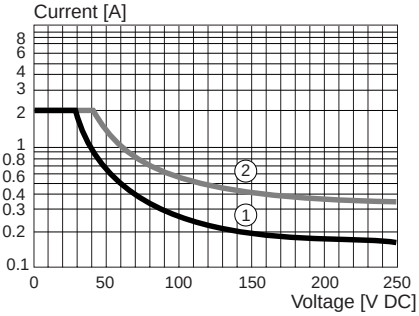
Indicator lamps and 7-segment diagnostic display

The positions of the indicator lamps of the analyser unit are illustrated schematically in the electrical connection diagram. The 7-segment display indicates the operating and error states In the error state, the decimal point in the display flashes in addition and the status of the startup readiness output changes at a frequency of 1 Hz (once per second).

LED	Red	OSSD outputs turned off
	Green	OSSD outputs turned on
	Yellow	Muting mode selected, flashing: Muting time error
	Yellow	Indicator lamps for channels (1-8) On = light beam free or muting sensor active Flashing = light beam free, minimum function reserve not met Off = light beam interrupted
7-segment display	1	Protective field free, OSSD on (running light)
	0	Protective field interrupted
	0	Protective field free, OSSD off, ready for startup
	0	System error
	1	DIP switch setting incorrect semiconductor OSSD: Power supply voltage is missing
	1	Receiver defective
	0	Short circuit in transmitter connection
	0	Muting lamp defective
	1	Error in an external contactor (relay monitor)
	0	Selection of mode of operation via DIP switch

Diagrams

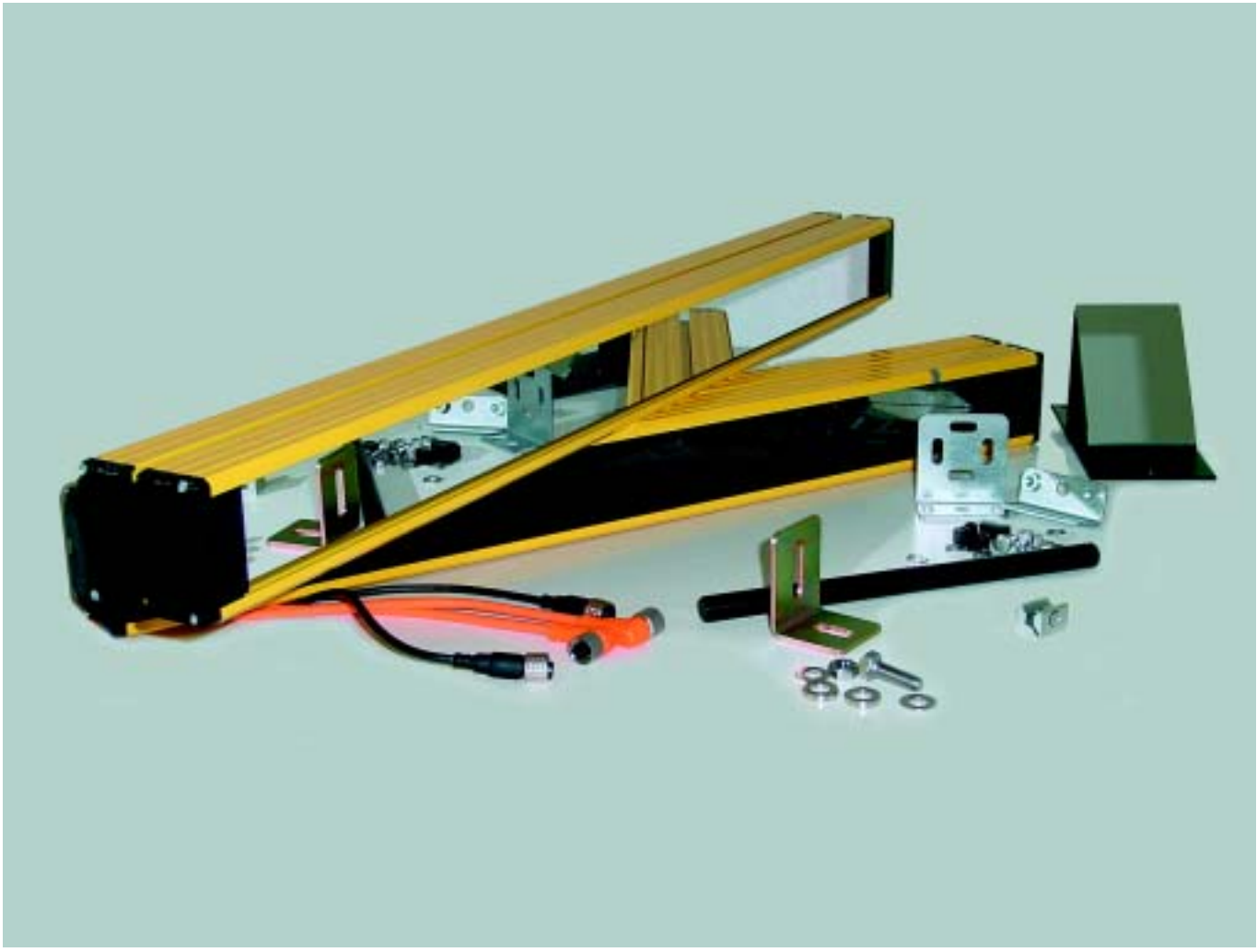
Load limit curve of relay OSSD for DC-current



1) inductive load, L/R = 40 ms
2) ohmic load

Date of edition: 7/29/04

Accessories



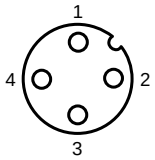
Screw terminal-pin M12 connection fastener for safety optical barriers

Design	Order code	Design	Connection method	Number of pins	Wire cross section (mm^2)	Fig.
M12	**V1-G**	Socket, straight	Screwed terminal method, PG7 screwed connection	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	Penetration terminal system	4-pin	0.34 ... 0.75	-
	V1S-G-Q2	Connector, straight	Penetration terminal system	4-pin	0.34 ... 0.75	-
	V15-W-PG9	Socket, straight	Screw terminal system	5-pin	Max. 0.75	-

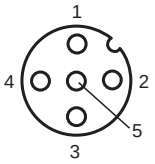
Fig. 1

Fig. 2

Plug connector -V1
(Circular connection M12)



Plug connector -V15
(Circular connection M12)



Special accessories for safety light grid SLPC/SLPCM

Design	Order code	Design	Connection method	Number of pins	Cross-section of wire (mm^2)
M12	**V1S-WM-VIS**	Connector, angled	Line connector without cable	4-pin	Max. 2.5
	V15S-WM-VIS	Connector, angled	Line connector without cable	5-pin	Max. 2.5
	V1S-WM-2M-PUR-VIS	Connector, angled	Angled connector with cable	4-pin	Max. 2.5
	V15S-WM-2M-PUR-VIS	Connector, angled	Angled connector with cable	5-pin	0.34 ... 0.75

Technical data for connectors with injected cable

Connectors and sockets

Number of pins	4- or 5-pin
Locking	Screw locking
Self-locking	with O ring in the cap nut
Color of the body of the handle	Green
Material of the body of the handle	PUR
Material of the contacts	CuSn/Au
Material of the contact surface	Au
Material of the cap nut	CuSn/Ni
Material of the sealing ring	NBR
Protection class in accordance with DIN 40050	IP68 when screwed in
Max. operating voltage	60 V DC or 250 V AC (for V13-...-types)
Max. operating current	4 A
Pass-through resistance	< 5 mΩ
Insulation resistance	In accordance with VDE 0295
Test voltage	1500 $V_{eff.}$ AC, 50 Hz

Lead

Structure of lead	fine-wired, flexible
Cross-section of wire	Leads for M12 connections: 0.34 mm^2
Color of covering	Black
Temperature range for PVC leads	movable: -5 °C to +70 °C immovable: -30 °C to +80 °C
Temperature range for PUR lines [1)]	movable: -5 °C to +70 °C immovable: -30 °C to +100 °C
Minimum permissible bending radius	> 10 x diameter of line
Diameter of covering	∅4.8 mm with 4-pin design ∅5.2 mm with 5-pin design
Material of the wire insulation	PVC
Wire colors in accordance with VDE 293	4-pin: BN, BU, BK, WH 5-pin: BN, BU, BK, WH, GR

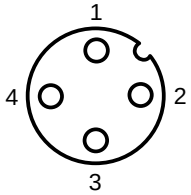
[1)] Reduced mechanical values must be observed for PUR cables for temperatures over +80 °C.

Core colours and connector assignment (EN 60947-5-2)

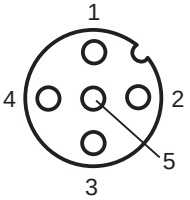
Color assignment for pre-configured cable sockets V1 and V15:

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

Plug connector -V1
(Circular connection M12)



Plug connector -V15
(Circular connection M12)



Cable connector in M12 design for DC sensors

Suitable for DC sensors in 2-, 3- and 4-wire design						
Cable covering	**Length**	**Number of wires**	**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 assignment see page 257

M12 connection cable in PUR 4 x 0.34 mm^2, color of covering black

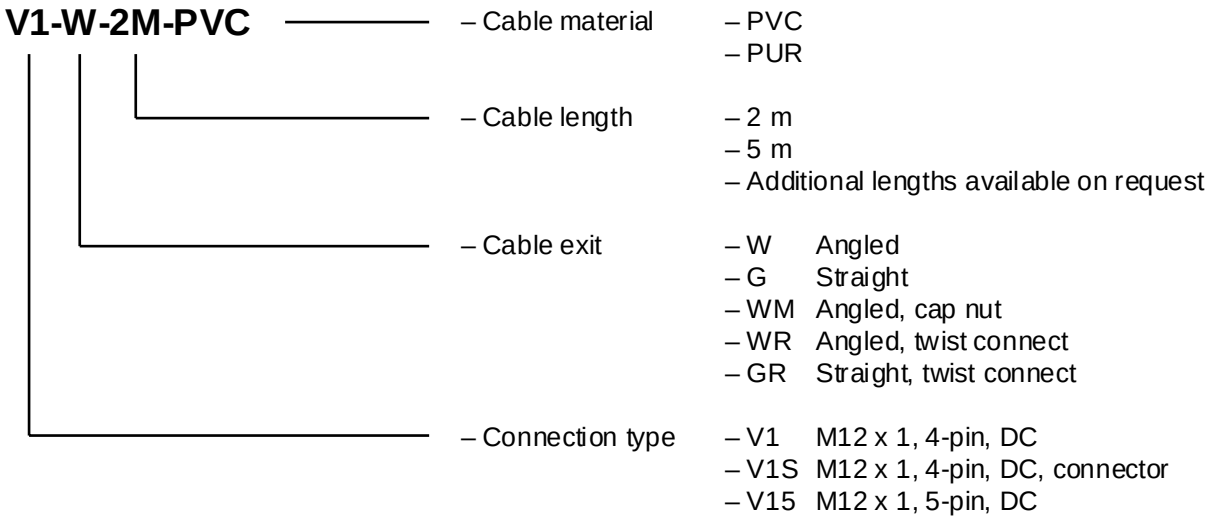
Suitable for all DC sensors in 2-, 3- and 4-wire design				
		**Length**	**Socket, straight**	**Socket, angled**
	Connector, straight	1 m	**V1-G-1M-PUR-V1-G**	**V1-W-1M-PUR-V1-G**
		2 m	**V1-G-2M-PUR-V1-G**	**V1-W-2M-PUR-V1-G**
		5 m	**V1-G-5M-PUR-V1-G**	**V1-W-5M-PUR-V1-G**

For pin assignment see page 257

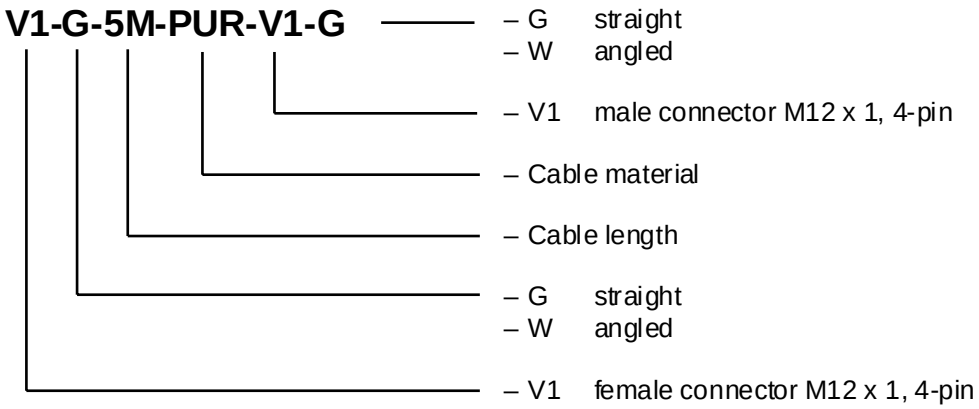
These connection cables can be used together with DC proximity switches in 2-, 3- and 4-wire design.

Date of edition 8/13/04

Type code for cable sockets



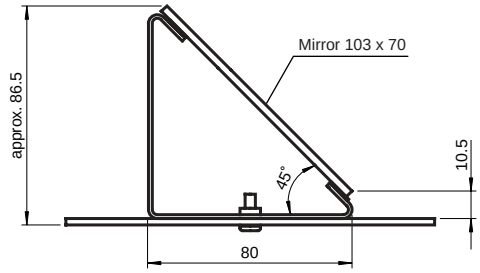
Type code for connection cables

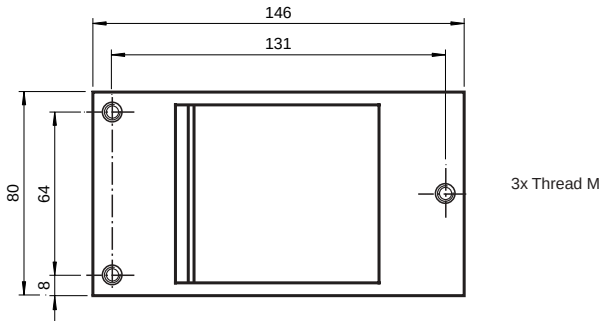


Mirror, 1-beam for SLA

Redirection mirror for single-beam deflection of protective beam of SLA through beam sensors.

Order code: SLA-1-M

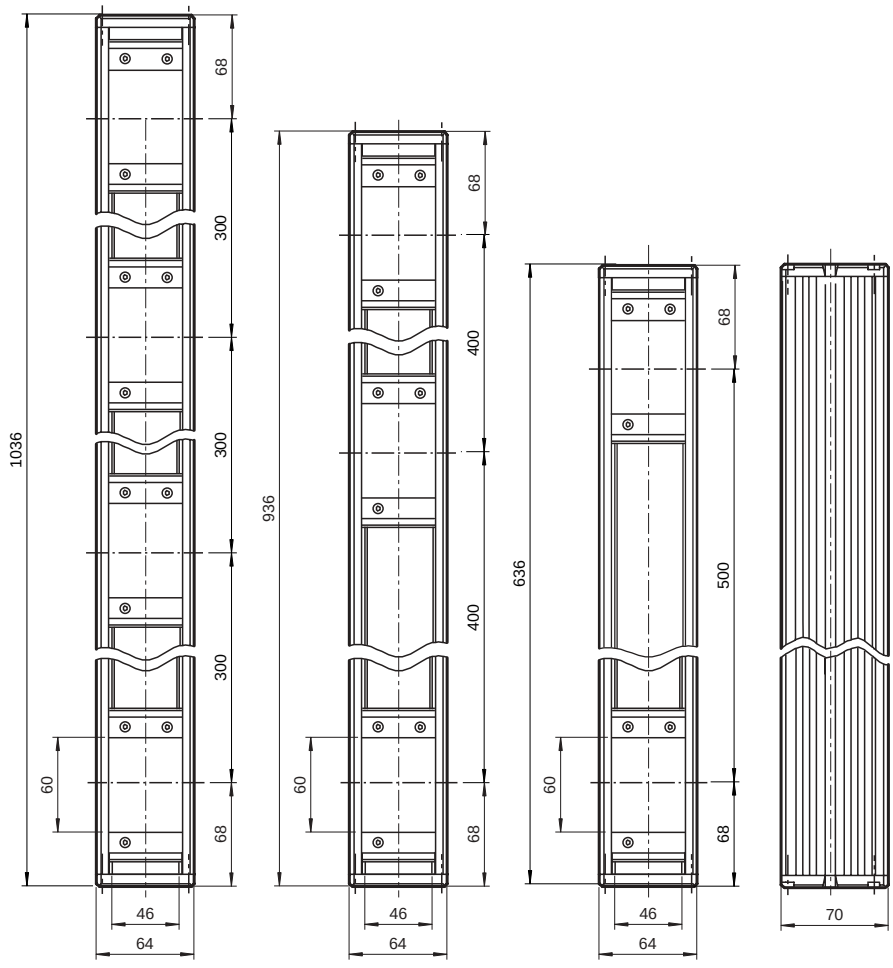


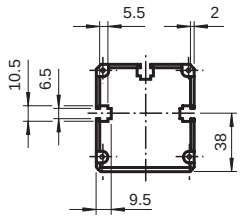


Mirror for SLP/SLC-2, -3, -4

Redirection mirror for multi-side protection of hazardous areas using our SLP, SLPC and SLPCM safety light grids and SLC-2, SLC-3 and SLC-4.

Order code	Number of beams
SLP-2-M	2
SLP-3-M	3
SLP-4-M	4



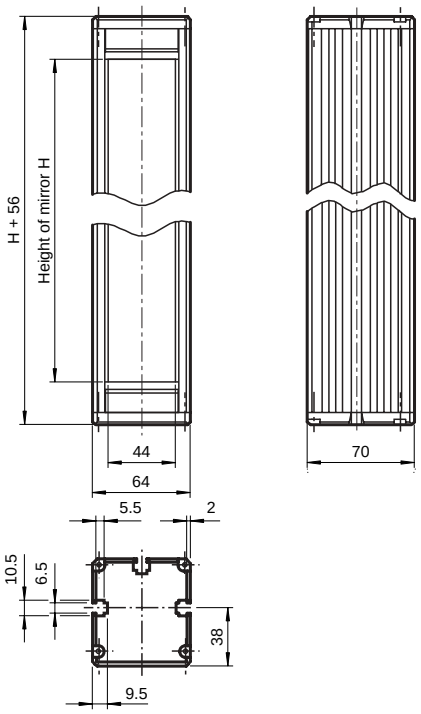


Date of edition 8/13/04

Mirror for SLC

Redirection mirror for multi-side protection of hazardous areas using our SLC safety light curtains SLC.

Order code	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

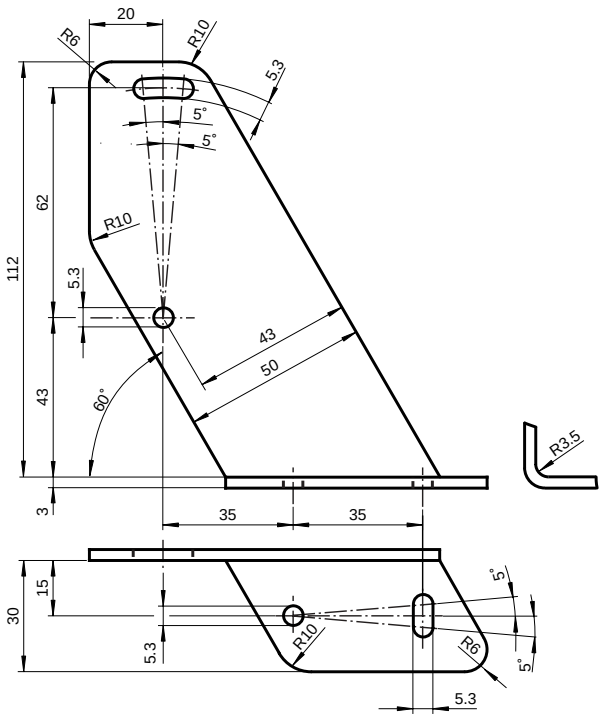


Mounting aid OMH-21

Suitable for safety through beam sensors

- SLA20
- SLA25
- SLA28

Material: Sheet steel



Mounting aid OMH-22

Support bracket for safety through beam sensors of series:

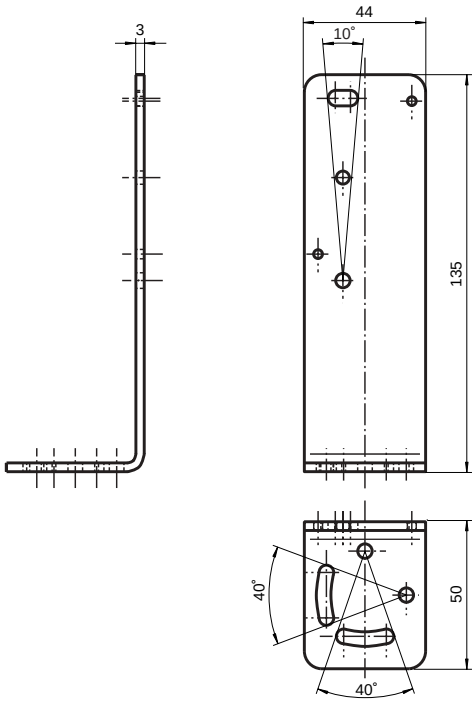
- SLA20
- SLA28
- SL29, SLA29

and for reflectors

- C110-2
- H60

predominantly for mounting on aluminum profile (see Muting Set MS SLPCM at PageXXX).

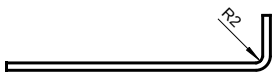
Material: Sheet steel

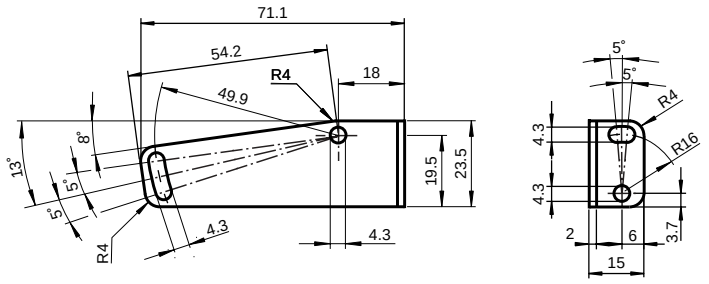


Mounting aid OMH-40

Support bracket for safety through beam sensors of series SLA40.

Material: Sheet steel





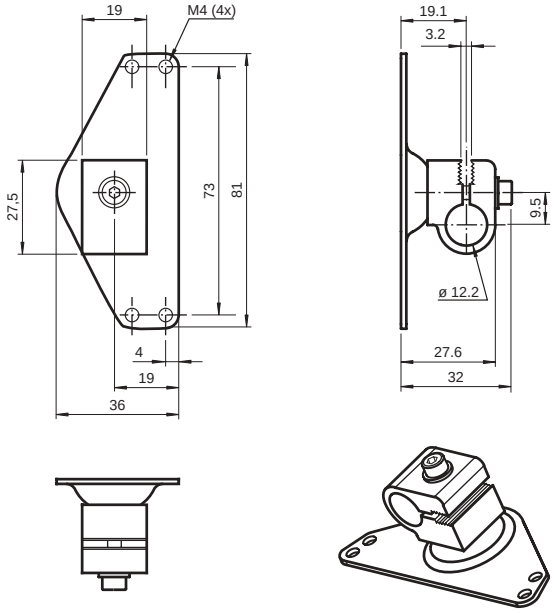
Date of edition 8/13/04

Mounting aid OMH-05

Support bracket for safety through beam sensors of series:

- SLA28
- SL29
- SLA29

Material:
mounting plate: Sheet steel
clamping block: Aluminum

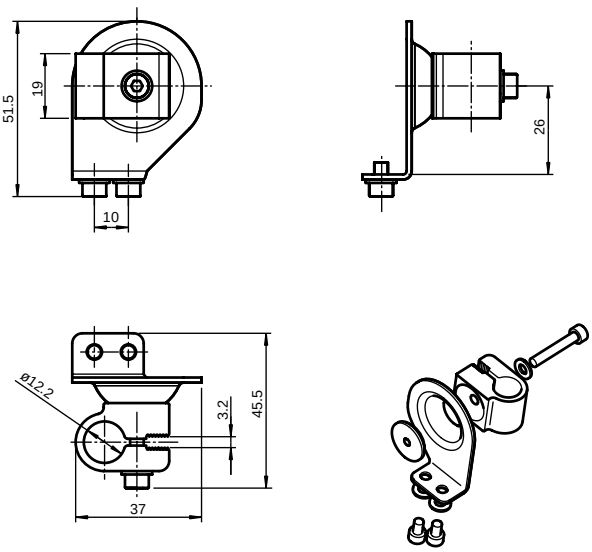


Mounting aid OMH-06

Support bracket for safety through beam sensors of series:

- SLA12
- SL12

Material:
mounting plate: Sheet steel
clamping block: Aluminum

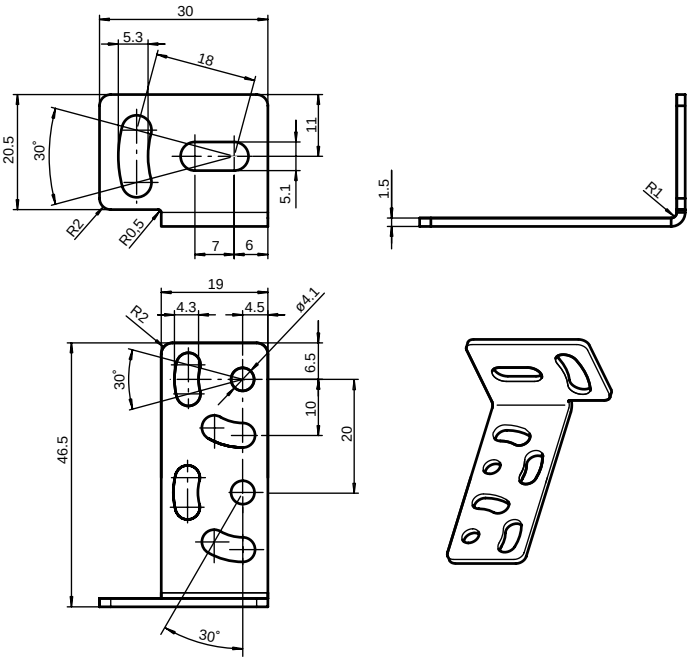


Mounting aid OMH-MLV12-HWG

Support bracket for safety through beam sensors of series:

- SLA12
- SL12

Material: Sheet steel

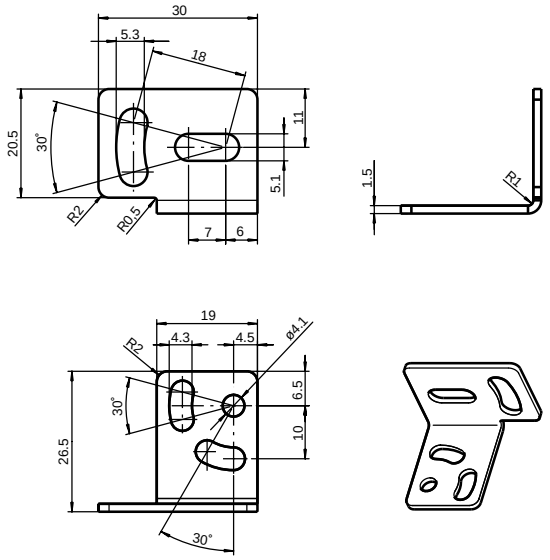


Mounting aid OMH-MLV12-HWK

Support bracket for safety through beam sensors of series:

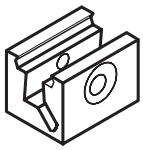
- SLA12
- SL12

Material: Sheet steel

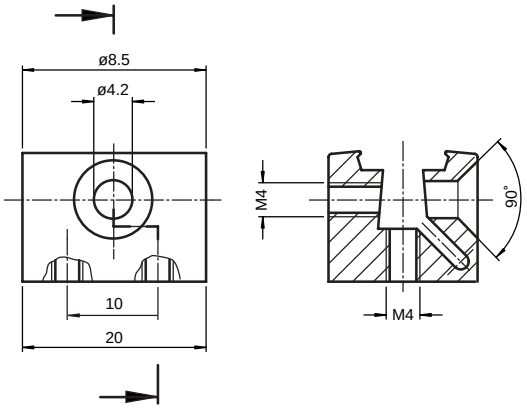


Mounting aid OMH-MLV11-K

Clamp body for safety through beam sensors of series SLA28, SL29 and SLA29.



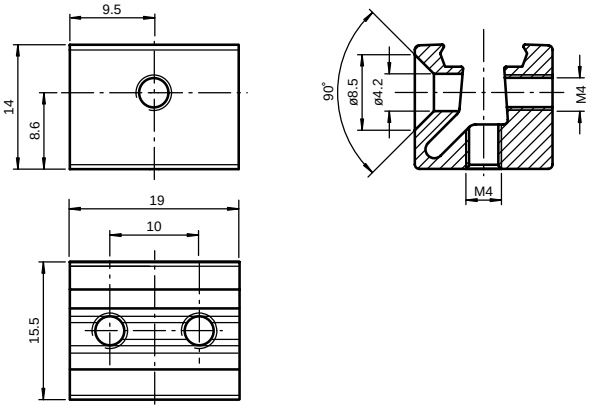
Material: Aluminum



Mounting aid OMH-K01

Clamp body for safety through beam sensors of series SL12 and SLA12.

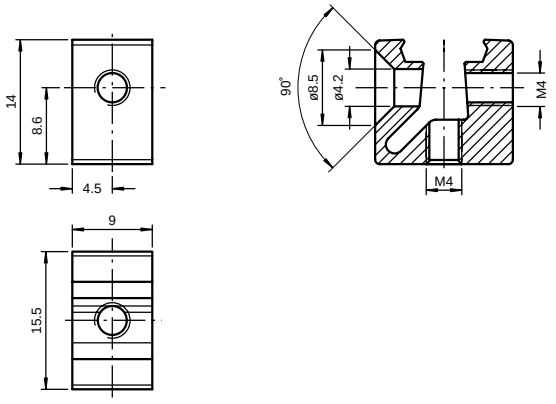
Material: Aluminum



Mounting aid OMH-K02

Clamp body for safety through beam sensors of series SL12 and SLA12.

Material: Aluminum



Date of edition 8/13/04

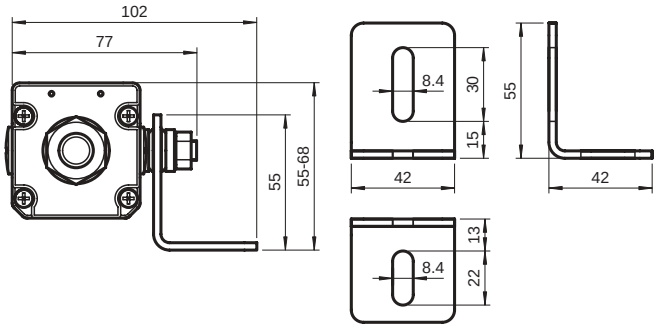
Mounting set SLC

Fastening bracket for SLC safety light curtains and SLC safety light grids.

Material: Sheet steel

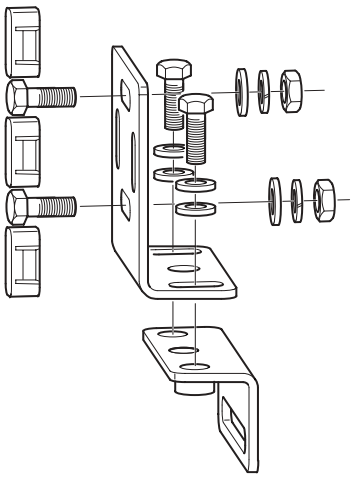
Order code: MS SLC

Packaging unit: 1 piece



SLP Mounting set

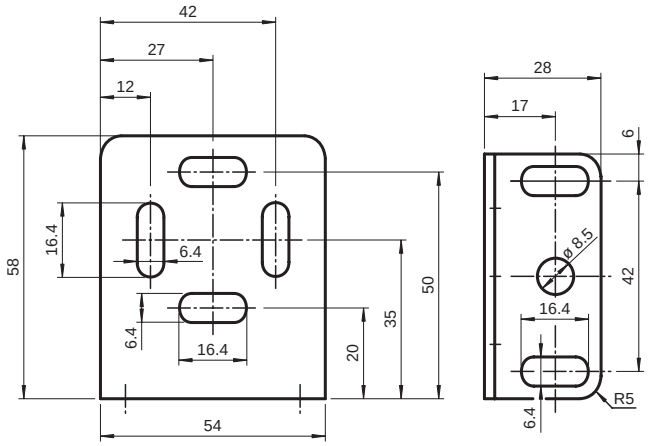
Mounting kit for safety light grids SLP, SLPC and SLPCM plus mirror for SLP and mirror for SLC.

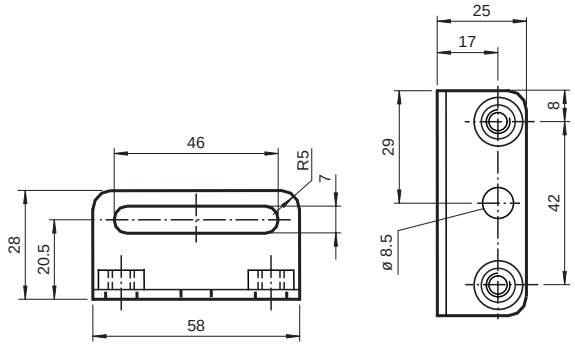


Material: Sheet steel

Order code: MS SLP

Packaging unit: 1 piece





Protective glass panes for SLC

Mineral glass windows for protection of light exit surface of safety light curtains (example: Use of welding robots for protection from sparks).
One packaging unit contains 2 glass panes (one each for transmitter and receiver).
Protective glass panes 1050 mm or larger are separated.

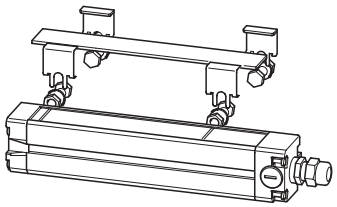
SLC protective glass holders are required to mount protective glass panes.

Safety light curtain	Order code for matching protective glass pane	Recommended number of SLC protective glass holders (complete transmitter 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*

* Packaging units

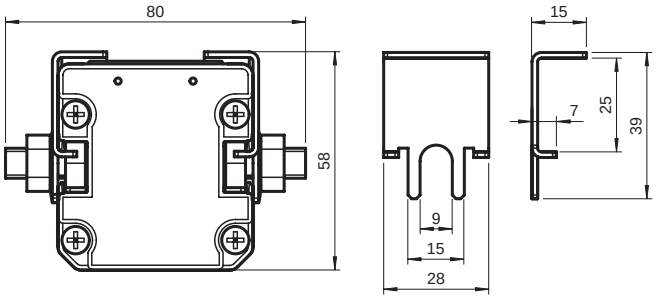
Holders for SLC protective glass panes

Mounting bracket for mounting protective glass panes onto our SLC safety light curtains.



A packaging unit contains 4 holders including nuts and bolts for fastening.
For the required number of packaging units, please refer to the table above.
Material: Sheet steel

Order code: SLC PG Holder



Thickness of material

Protective glass panes for SLP

Mineral glass windows for protection of light exit surface of safety light grids SLP, SLPC und SLCPM
(example: Use on welding robots for protection from sparks).
One packaging unit contains 2 glass panes (one each for transmitter and receiver).
Protective SLP glass holders are required for fastening protective glass panes.
(without illustration)

Safety light grid	Order code for suitable protective glass pane
SLPxx-2... SLPCxx-2... SLPCMxx-2...	PG SLP-2
SLPxx-3... SLPCxx-3... SLPCMxx-3...	PG SLP-3
SLPxx-4... SLPCxx-4... SLPCMxx-4...	PG-SLP-4

Holders for SLP protective glass panes

Support bracket for mounting protective glass panes on our safety light grids SLP, SLPC and SLPCM.
One packaging unit contains 4 supports including nuts and bolts for fastening.
Material: Sheet steel

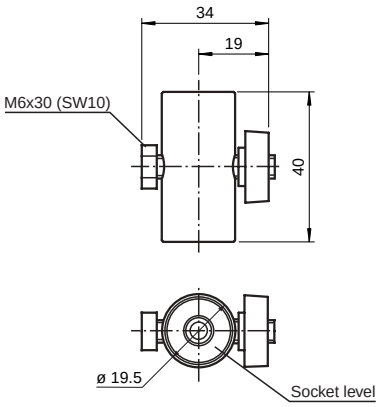
Order code: PG Holder SLP

Date of edition 8/13/04

Profile alignment aid

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

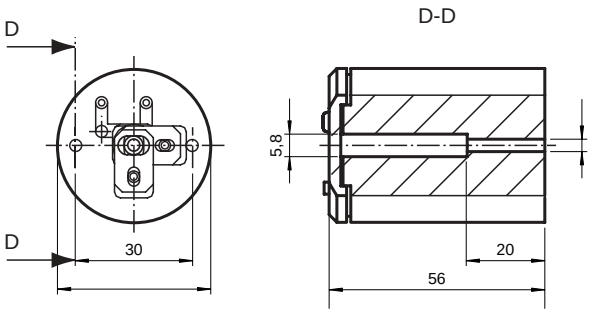
Order code: PA SLP/SLC



Laser alignment aids

Laser alignment aid for product groups SLA, SLP and SLC simplify the alignment of transmitter and receiver especially with high effective operating distances and multi-sided protection.

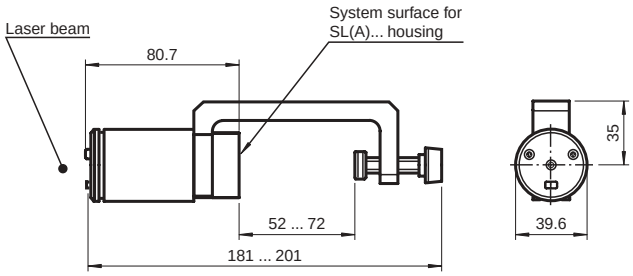
Basic device



Laser alignment aid SLA 28/SL(A)29

Laser alignment aid for safety through beam sensors of series SLA28, SL29 and SLA29.
The basic device and a suitable adapter are included with delivery.

Order code: BA SLA28

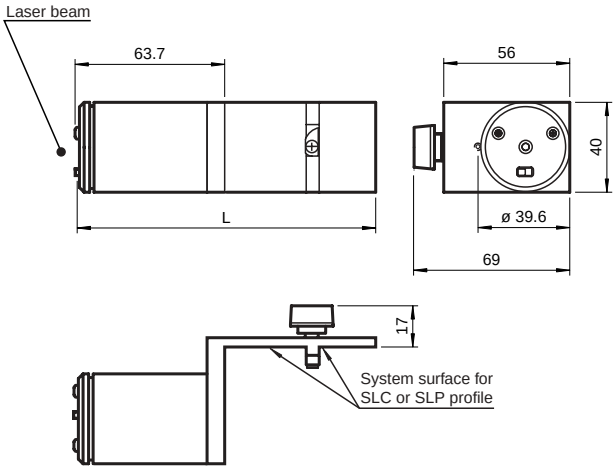


SLP laser alignment aid SLC laser alignment aid

Laser alignment aid for safety light grid and safety light curtains in SLP and SLC profiles.
The basic device and a suitable adapter are included with delivery.

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

Order codes:
SLP laser alignment aid: BA SLP
SLC laser alignment aid: BA SLC



Date of edition 8/13/04

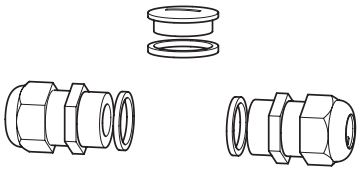
Test rods for SLC

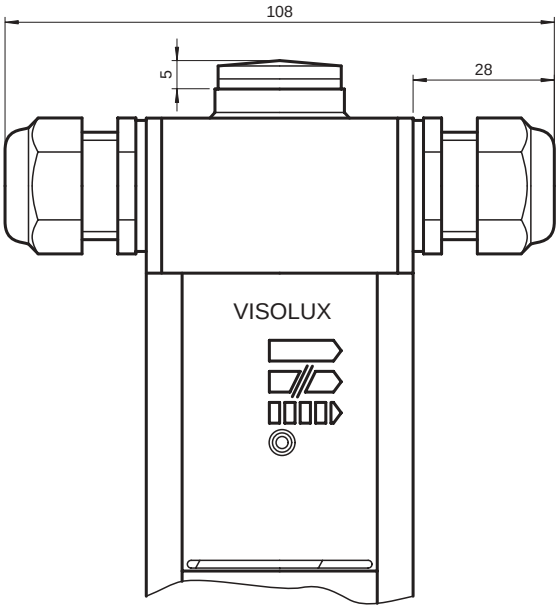
Test rods for testing resolution of our safety light curtains.

Safety light curtain	Order code for required test rod
SLC14-...	TR SLC14
SLC30-...	TR SLC30
SLC60-...	TR SLC60

SLC lateral screwed connection

M16 screwed connection for lateral cable gland into SLC safety light curtains.



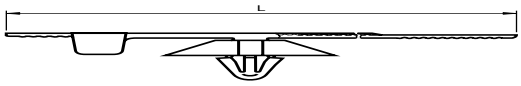


2 screwed connections and 1 blind plug are included with delivery.

Order code: TC SLC(M16)

SLPC/M cable fastener

Cable fastener for fastening and secure laying of connection leads, especially the connected muting sensors



Length L: 180 mm
Width B: 4.6 mm
Bundle-∅ max: 45 mm
Plate ∅: 24.4 mm
Holding force: ≥ 356 N

Order code: Fastener SLPC/M

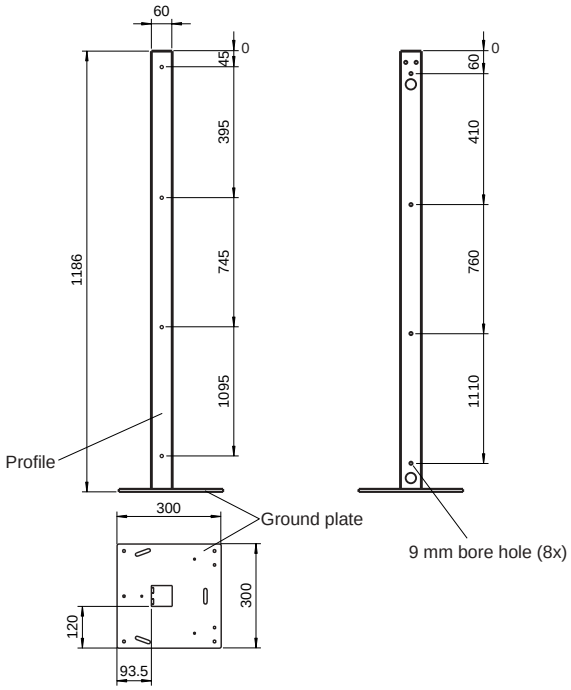
Floor stand UC SLP/SLC

Floor stand for all series SLP/SLC devices.

Height: 1186 mm
Order code: UC SLP/SLC

Height: 1530 mm
(without drawing)
Order code: UC SLP/SLC 1530

The fixation set is included with delivery.

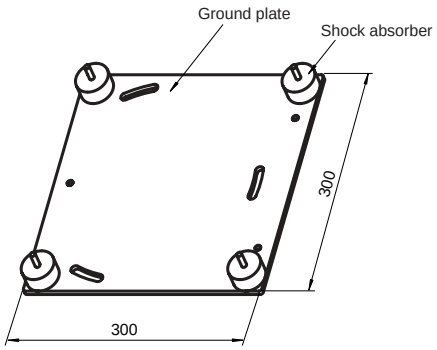


Ramming protector

Shock absorber as ramming protector for floor stand UC SLP/SLC for all series SLP/SLC devices.

The fixation set is included with delivery.

Order code: Damping UC SLP/SLC

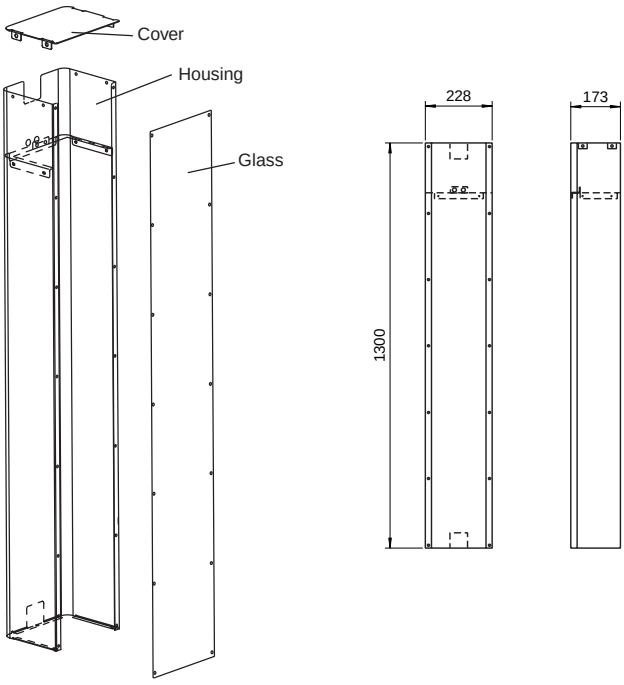


Housing

Housing for floor stand UC SLP/SLC. Suitable for all series SLP/SLC devices with maximum protection area height of 1050 mm.

The fixation set is included with delivery.

Order code: Enclosure UC SLP/SLC

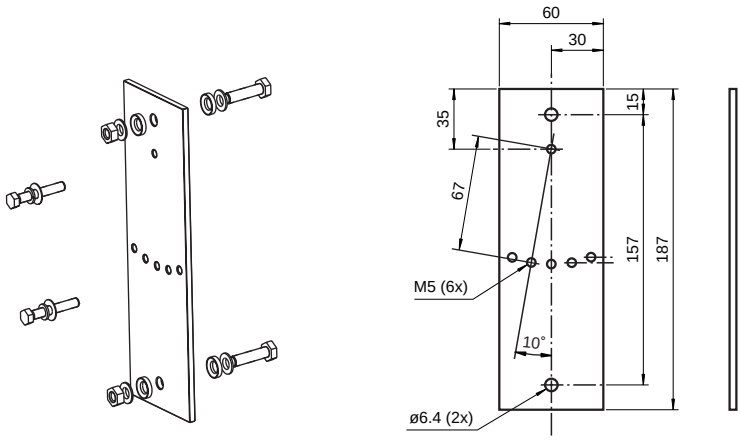


Muting set MS SLP/SLA28

Sheet metal for fixation of safety light barriers series SLA28 at the housing profile of safety light grids SLP for muting operation mode.

Material: sheet steel
Surface: powder coated yellow RAL 1021

The fixation material is included with delivery.



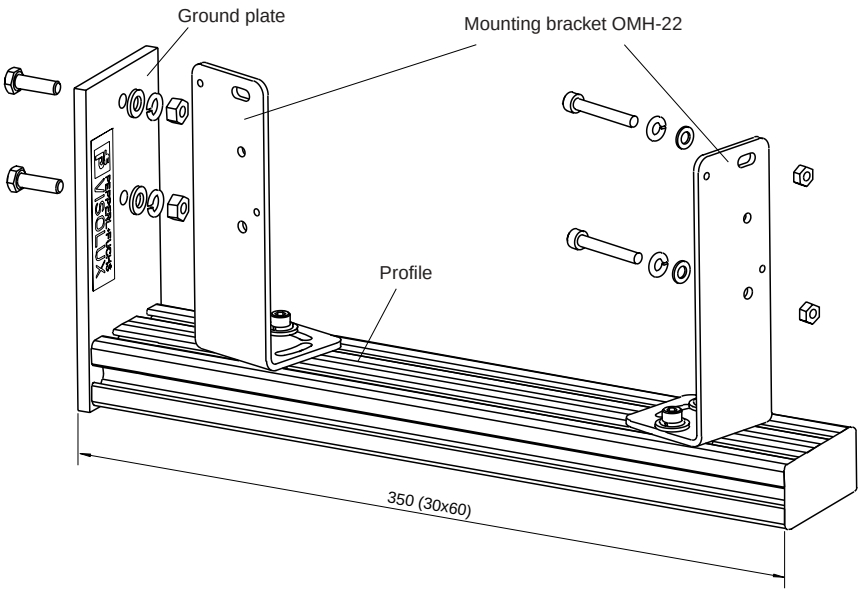
Muting set MS SLPCM

Mounting bracket for muting applications with safety light grids SLPCM.

The muting set consists of:

- Base for mounting at the housing profile of series SLPCM-safety light grids
- Mounting aid OMH22 (2x)
- Fixation material

Order code: MS SLPCM



Directives and standardization

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 (harmonized).
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 harmonized 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).

Standardization

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

Date of edition 8/13/04

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

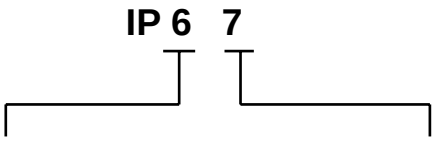
Additional information

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

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).

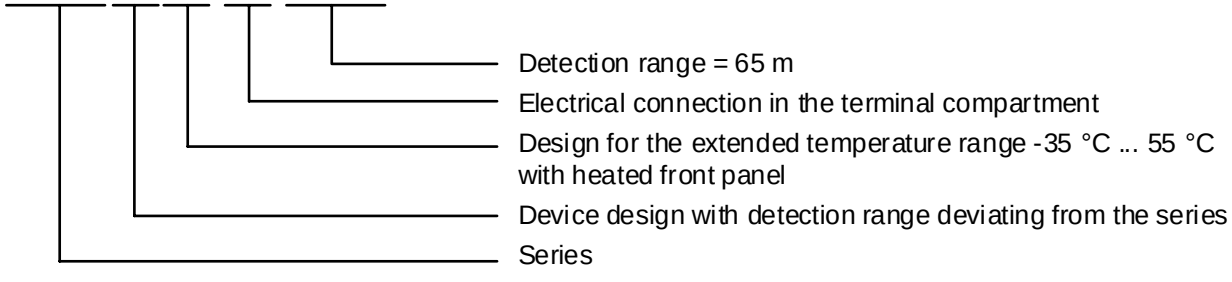
Device options

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:

SLA28/35/106/116 R=65m



Date of edition 8/13/04

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)

Date of edition 8/13/04

Additional Information

Type code

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

S L V A - 8 K 1 1 5 V A C - R I

- **Design**
  SLVA: Safety optical barrier amplifier, control unit type 4
  SC: Safety control unit, type 4
- **Maximum number of channels**
- **Connection voltage**
- **Mode of operation**
  RI = startup/restart interlock (restart disable)
  RM = Relay monitor (relay monitor)

По вопросам продаж и поддержки обращайтесь:

Алматы (727)345-47-04
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
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Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
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Саранск (8342)22-96-24
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
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