## Датчики безопасности (световые барьеры и контроллеры безопасности)

Технические характеристики

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## Overview

## Selection table based on model line

Figure	Model line	Device desi	gn	F	Principle o	foperation	n	Limit detection range
		Series	C ategory	Safety throug-beam sensors	Safety light grids	Safety light curtains	Safety control units	lange
	Safety through-beam sen- sors for control units	SLA5	4	•				5 m
	sors for control units	SL12	2	•				10 m
	SLA12	4	•				10 m	
		SLA20	4	•				10 m
		SLA28	4	•				65 m
		SL29	2	•				65 m
		SLA29	4	•				30 m
			4	•				4 m
11	Safety light grids for control units	SLP2	4		•			65 m
	SLP3	4		•			65 m	
		SLP4	4		•			65 m
	Safety light grids with integrated control unit	SLPC2	4		•			65 m
	integrated control unit	SLPC3	4		•			65 m
r		SLPC4	4		•			65 m
		SLPCM2	4		•			65 m
1.0		SLPCM3	4		•			65 m
		SLPCM4	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
ii ii		SLC90	4			•		15 m
	Control units	SC 2-2	2				•	
E E		SC 4-2	4				•	depends on the
Ser.		SLVA-4K plus	4				•	optical barriers used
		SLVA-8K	4				•	usea
		SC4-8	4				•	

## Overview

	From page			tions	Func			sing eria l	H ou m at	on	on ne cti	C	tp ut	Ou		ating age	Oper volt		ty pe	Light
Safety through beam sensors		Double muting	Emergency case muting	Muting	Relay monitor	Start up/restart in terlock	Pre-fault in dication	Metal	Plastic	Fixe d ca ble	Terminal compartment/clamps	Connector	Semi conductor	Relay	Power supply via control unit	230 V	115 V	24 V	Infrared	Red light
ty th	25						•		•	•		•			•					•
Safe							•	•	•	•		•			•					•
							•	•	•	•		•			•					•
							•		•		•	•			•					•
l o							•		•		•	•			•					•
grid							•		•		•	•			•					•
light							•		•		•	•			•					•
Safety light grick							•	•		•		•			•					•
Sa	75						•	•			•				•					•
							•	•			•				•					•
Safety light grids with internal control unit							•	•			•				•					•
grids	93				•	•	•	•			•	•	•	•				•		•
ght g					•	•	•	•			•	•	•	•				•		•
ety li					•	•	•	•			•	•	•	•				•		•
Saf			•	•	•	•	•	•			•	•		•				•		•
					•		•	•				•		•						•
				•	•		•	•			•	•		•				•		•
lins		• <sup>1)</sup>	• <sup>1)</sup>	• <sup>1)</sup>	•	•	•	•			•	•		•				•	•	
curta		● <sup>1)</sup>	• <sup>1)</sup>	• <sup>1)</sup>	•		•				•	•		•						
ight		● <sup>1)</sup>	• <sup>1)</sup>	• <sup>1)</sup>	•	•	•	•			•	•		•				•		
Safety light curtains	183	● <sup>1)</sup>	• <sup>1)</sup>	● <sup>1)</sup>	•	•	●	•			•	•	•	•				•	•	
, w		● <sup>1)</sup>	• <sup>1)</sup>	● <sup>1)</sup>	•	$\bullet$	•	•			•	•	•	•				•	•	
		● <sup>1)</sup>	• <sup>1)</sup>	● <sup>1)</sup>	•	•	•	•			•	•	•	•				•	•	
		• <sup>1)</sup>	• <sup>1)</sup>	• <sup>1)</sup>	•	•	•	•			•	•	•	•				•	•	
unit	233				•	•			•		•			•				•		
Control units					•	•			•		•			•				•		
ů l					•	•	•		•		•			•		•		•		
		•	•	•	•	•	•		•		•			•		•	•	•		
		•	•	•	•	•	•		•		•			•		•	•	•		

<sup>1)</sup> with SC4-8 control unit

## 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

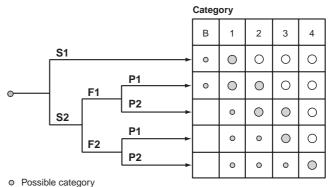
Risk analysis is based on the following model:

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



Preferred category

O Oversized method or measure

#### 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.

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 2angle of divergence 10°Type 4angle 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.

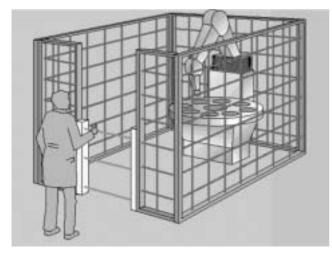
#### 2.1 Access protection

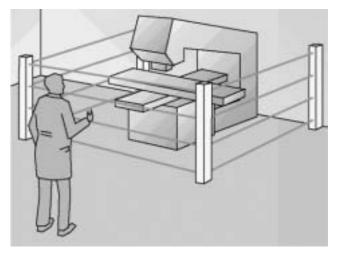
Optical barriers or light grids are used predominantly for protection of persons.

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".

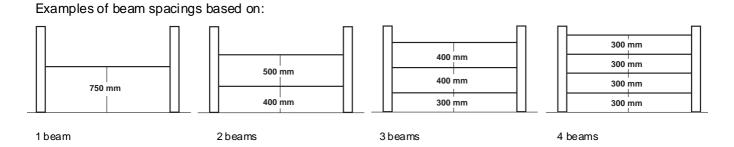
Combinations of mechanical and photoelectronic safety equipment are often used for protection of persons. Adjustable mirrors also make it possible to ensure safety on multiple sides.





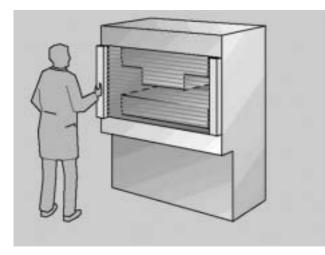
3-beam safety with light grid

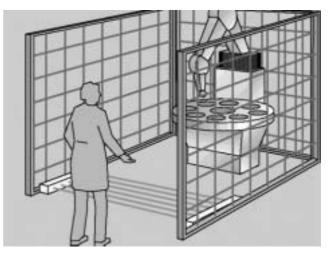
multi-side safety with deflection mirrors



#### 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).



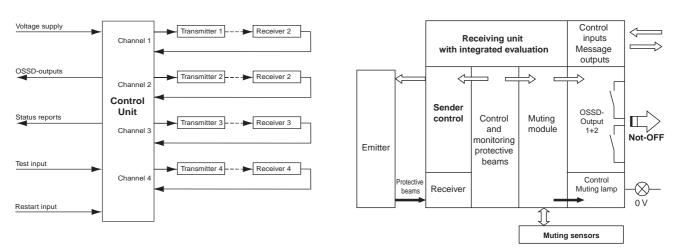


Protection against intrusion by means of a light curtain

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,

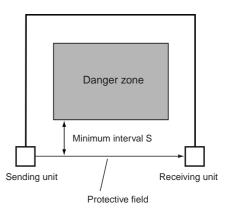
- S: is the minimum safety distance in mm, i.e. the separation from the hazardous area to the protective field.
- K: the constant in mm/s for the velocity of approach.
- T: Total response time in s.

 $T = t_1 + t_2$ 

- $t_1$ : Response time of the protection device
- for example: 20 ms (semiconductor OSSD) or 40 ms (relay OSSD)
- t2: Excess run time of the machine

C: Additional distance based on the table.

Number of beams/resolution	14 mm	30 m m	60 mm	90 mm	2, 3, 4-beam	1-beam <sup>*)</sup>
С	0 mm	128 m m	850 mm	850 mm	850 m m	1 200 mm



#### 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

 $t_1 = 50 \text{ ms}, t_2 = 300 \text{ ms}$ hand protection C = 128 mm

$$S = 2000 \frac{mm}{s} \bullet 350 \bullet 10^{-3} s + 128mm$$
$$S = 700mm + 128mm$$
$$S = 828mm$$

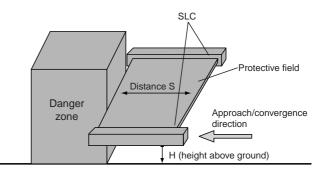
The minimum distance of the protective field for a hazardous location should be 828 mm.

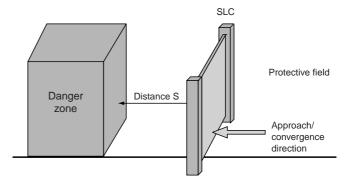
#### Parallel approach

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  $(1200 \text{ mm} - 0.4 \text{ H}) \ge 850 \text{ mm}$  (EN 999).





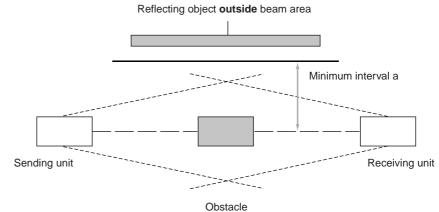
#### 3.1.2 Protective beam spacings for securing access

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 $\leq$ 300
7	Highest be am $\ge 900$
8	

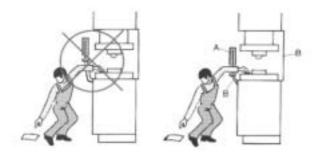
#### 3.1.3 Mirroring

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).

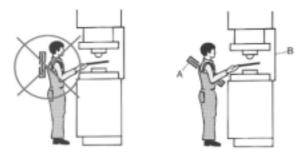


#### 3.2 Notes for setting up

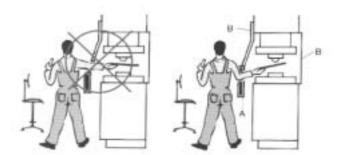
The safety light curtain should be arranged so that it is completely impossible to reach over, under or behind the protective field. If the distance of the safety light curtain is too great, additional protective equipment must be put in place (see sample illustrations).



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).



The machine operator must not move into the area between the light curtain and the hazardous location (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).

### 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.

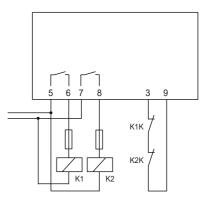
#### Startup enable message:

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 PepperI+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.

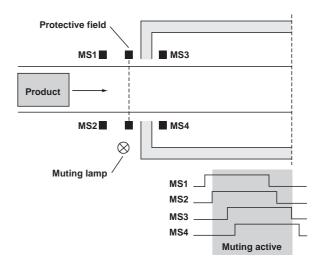
#### 5.3.1 Working principle

#### 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

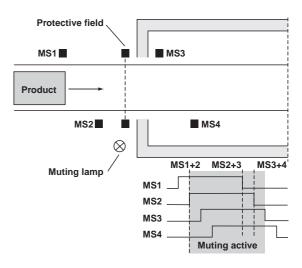
In the parallel muting mode of operation, muting sensors arranged in pairs must be activated within 2 sec. (MS1 and MS2 or MS3 and MS4). If only one of the muting sensors has been activated at this time, it is disabled. Activation of the muting is blocked because of this disabling. This disabling is 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.

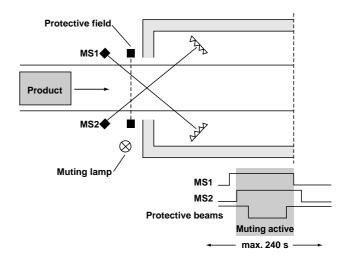


#### **Muting monitoring**

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.

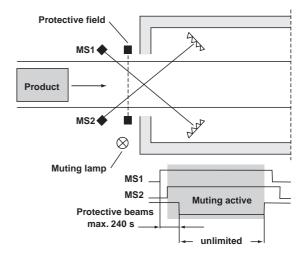
#### Time window limit

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**

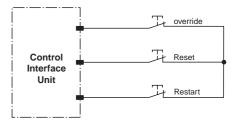
If you are using muting, you should use an indicator lamp with a minimum lighting area of  $1 \text{ cm}^2$  and a minimum light intensity of  $200 \text{ cd/m}^2$  to indicate the muting status. Monitoring of the connected lamp ensures that the indicator lamp alarm is performing its warning function correctly. If the muting lamp indicator lamp is defective, the electrosensitive 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

SLA5

Safety through beam sensor



CE



- Detection range up to 5 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- 🔶 Sturdy housing
- Operation on control units of series SLVA and SC4-8

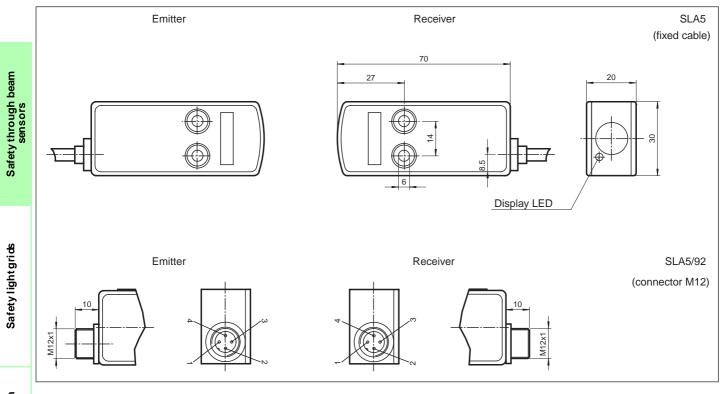
Technical data				SLA5	
					_
	Ordering code:	SLA5	SLA5/33 K=5m	SLA5/33 K=10m SLA5/92	
Effective detection range	0 5 m	•	•	<ul> <li>♦</li> <li>♦</li> </ul>	
Number of protective field be ams	1	•	•	• •	
Obstacle size	static: 10 mm dynamic: 30 mm (at v = 1.6 m/s of the obstacle)	•	•	• •	
Light source	LED	•	•	• •	Ξ
Light type	red, a lte rnating light	•		• •	ea
Angle of divergen œ	< 5 °	•	★	• •	9
Approvals	TÜV	•		• •	1 <sup>g</sup>
Tests	IEC/EN 61496	•	•	<b>A A</b>	õ
Marking	CE	•	•		ţ
Safety category a ccording to IEC/EN 61496	4	•	•	• •	Ę.
Function display	LED yello w/green in recei ver: off. Interruption	•	Ŧ	• •	Safety through beam
	oli. Intertopion yellow: transmission green : reception with sufficient stability control	•	•	• •	
Pre-fault indication	LED functional display yellow	•	٠	• •	1
Operating voltage	Power supply via control units of the SL VA and SC4-8 series	•	•	• •	
Ambi ent tempera ture	-20 60 °C (2 53 33 3 K)	•	•	• •	11
Storage temperature	-20 70 °C (2 53 34 3 K)	•	•	• •	ور ا
Relative humi dity	max. 95 %, n ot con densing	•	•	• •	1[ 끈
Protection de gree	IP65	•	•	<ul> <li>↓</li> <li>↓</li> </ul>	Safety light grids
Connection	Fixed cable, 10 m; 0.25 mm <sup>2</sup>	•	v	•	4 등
Connection				•	ll ≘
	Fixed cable 2 m; 0.25 mm <sup>2</sup>	•			- I - E
	Fixed cable, 5 m; 0.25 mm <sup>2</sup>		•		at
	M12 connector, 4-pin			•	S
Housing	ABS plastic, RLA 1021 (yel low) painted	•	•	• •	11
Optical face	Plastic lens	•	•	• •	
Mass	Per 95g	•	•	• •	1⊨
System components			·		
Emitter	SLA5-T	•			11 -
	SLA5-T/33 K=1 0m	•			÷ ا
	SLA5-T/33 K=5m		•	•	Safety light grids with
	SLA5-7/92		•		ğ
Receiver	SLA5-R			¥	5
Receiver		•			Ī
	SLA5-R/33 K=10m			•	<u>.</u>
	SLA5-R/33 K=5m		•		_   ≥
	SLA5-R/92			•	e e

Safety light curtains

**Control units** 



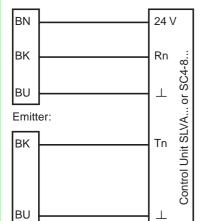
## Dimensions



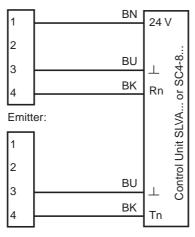
## **Electrical connection**

Design with fixed cable

Receiver:



Design with connector plug Receiver:



Safety light curtains

## Diagrams

SLA5 / SLA5S Characteristic response curve Offset Y [mm] 90 80 70 60 50 40 30 20 10 0 3 4 5 6 0 2 7 8 Distance X [m] F **Relative received light strength** SLA5 / SLA5S Stability control 100 10 1 4 6 8 10 2 12 0 Distance X [m] SLA5 / SLA5S Lateral interval to mirroring surfaces Minimum interval [m] 0.2 0.15 0.1 0.05 0 2 3 4 5 0 1 6 Distance X [m] —— · -> \_\_\_\_\_

## 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 displayand pre-fault indicator on the receiver
- Sturdy housing
- Operation on control units of series SLVA and SC4-8

Technical data				SLA5S	
			– Ĕ		]
	Ordering code:	SLA5S	SLA5S/33 K=5m	SLA55/92	
Effective detection range	0 5 m	•	•	• !	1_
Number of protective field be ams	1	•	•	• I	
Obstacle size	static: 10 mm dyna mic: 30 mm (at v = 1.6 m/s of the obstacle)	•	•	♦	
Light source	LED	•	•	•	μ
Light type	red, alternating light	•	•		Per Per
Ang le of divergen æ	< 5 °	•	•	•	۽ ا
Approvals	ΤÜV	•	•		
Tests	IEC/EN 61496	•	٠	•	5
Marking	CE	•	•	• · · ·	ŧ
Safety category a ccording to IEC/EN 61496	4	•	•	•	ŧ
Function di splay	LED yello w/green in receiver: off. Interrup tio n yell ow: transmissio n green : reception w ith su fficient stability control	•	•	•	Safetv through beam
Pre-fault indication	LED functional display yellow	•	•	♦	11
Operating voltage	Power supply via control units of the SLVA and SC4-8 series	•	•	♦	4
Ambi ent tempera ture	-20 60 °C (253 333 K)	•	•	♦	11
Storage tempera ture	-20 70 °C (253 343 K)	•	•	•	1 3
Relative humi dity	max. 95 %, not con densi ng	•	•	<ul> <li>Image: A set of the set of the</li></ul>	Safety Licht dri de
Protection de gree	IP65	•	•	◆ 1	13
Connection	Fixed cable 2 m; 0.25 mm <sup>2</sup>	<b>♦</b>		ļ	
	Fixed cable, 5 m; 0.25 mm <sup>2</sup>		•	· · · · · · · · · · · · · · · · · · ·	1 3
	M12 connector, 4-pin			•	14
Housing	ABS plastic, RLA 1021 (yellow) painted	•	•	•	Ù
Optical face	Plastic lens	•	•	•	
Mass	Per 95 g	•	•	•	1
System components			•	· )	1L
Emitter	SLA5S-T	•			1
	SLA5S-T/33 K=5 m	•	•	,	11,
	SLASS-T/92		•	• · · ·	1
Receiver	SLA5S-R	•		•	Cofoty licht aride with
	SLA5S-R/33 K=5m	<b>•</b>	•	,	1 3
	SLASS-R/92		•	•	11
					11.

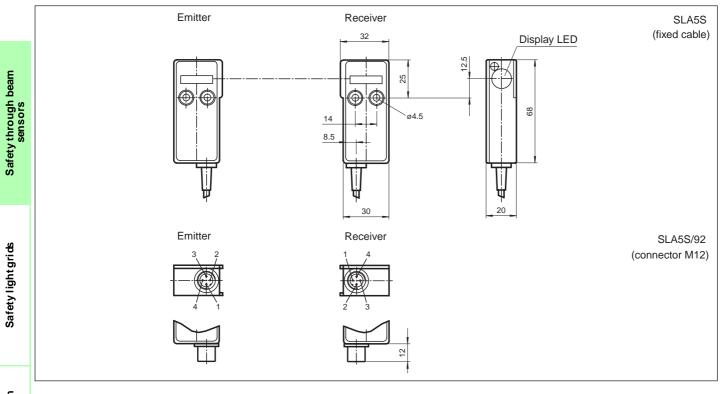
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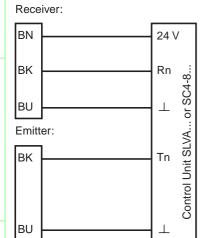


## Dimensions

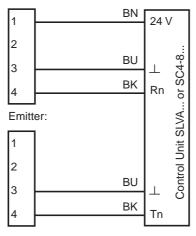


## **Electrical connection**

Design with fixed cable



Design with connector plug Receiver:



Safety light curtains



Offset Y [mm] 90

80

70 60

50

40

30

20

10

0

0

Characteristic response curve

3

2

4

5

6

7

System accessories



SLA5 / SLA5S

8

Distance X [m]

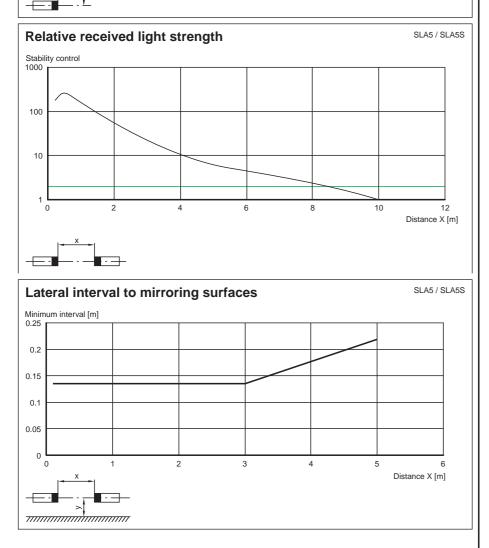
SLVA4-K plus SLVA8-K SC4-8

#### 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



SL12/...

## Safety through beam sensor

SL12/...

CE



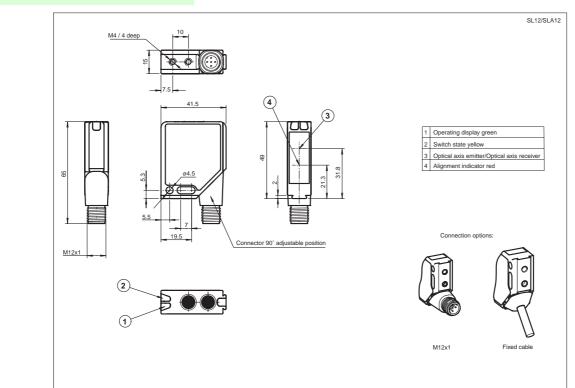
- Detection range up to 10 m
- Test input (Type 2 according to IEC/EN 61496-1)
- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- Sturdy housing
- Waterproof, protection class IP67
- Operation on control units of series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

Technical data			SL12/	
	Ordering code:	SL12/124	SL12/15	
Effective detection range	0.2 10 m	•	•	
Threshold detection range	16 m	•	•	
Obstacle size	static: 10 mm dyn amic: 30 mm (at v = 1.6 m/s of the o bstad e)	•	•	
Light source	LED, 660 nm	•	•	
Light type	red, alternating light	•	•	
Ang le of divergen œ	< 10 °	•	•	5
Alignment aid	LED red	•	•	ear
Approvals	TÜV	•	•	ã
Tests	IEC /EN 61496	◆	•	Ъ
Marking	CE	•	•	no
Safety category a ccording to IEC/EN 61496	2	◆	•	Ļ
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flashes: sign al between 1 x switching point and 2 x switching point 3. LED off: signal < switching point	*	•	Safety through beam
Operatin g d ispla y	LED gree n	•	•	
Operatin g vo lta ge	Powersupplyvia control units of the SC series 2	•	•	
Ambi ent tempera ture	-20 60 °C (253 3 33 K)	•	•	
Storage temperature	-20 70 °C (253 343 K)	•	•	
Relative humidity	max. 95 %, not condensing	◆	•	6
Protection de gree	IP67 according to EN 60529	◆	◆	iq
Connection	2.5 m fixed cable, 5-core, Eurono rm		•	fg
	connector, 5-pin with metal thread M12 x 1, may be rotated 90°	•		gh
Ho using	Frame: die-cast zinc, nickel-plated Laterals: pla stic PC, glass-fiber reinforced	•	•	Safety light grids
Optical face	Plastic lens	•	•	afe
Mass	per device 60 g	<b>♦</b>	•	S
System components				
Emitter	SL12-T/115		•	
	SL12-T/124	•		
Receiver	SL12-R/I 15		•	
	SL12 R/1 24	•		£.

Safety light grids with internal control unit



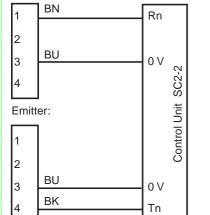
## Dimensions



## Electrical connection

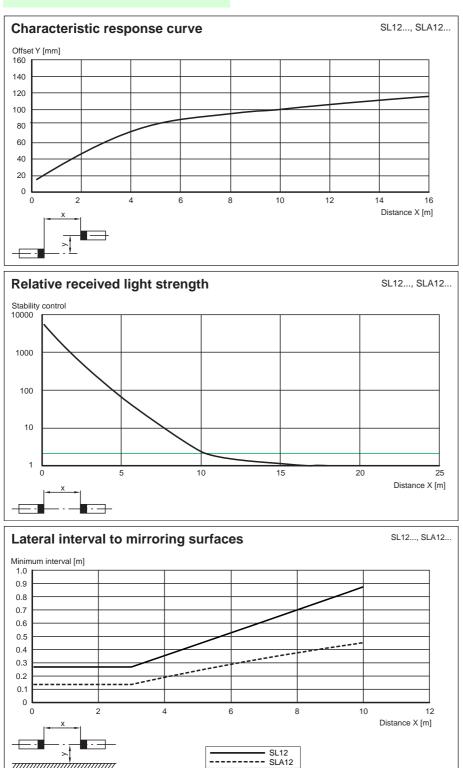
Safety light grids with internal control unit

Receiver:



Safety light grids

## Diagrams



## System accessories

#### **Control units**

SC2-2

#### Cable sockets (not for option /115)

V15-G-2M-PVC straight: 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



CE

## Safety through beam sensor

SLA12/...

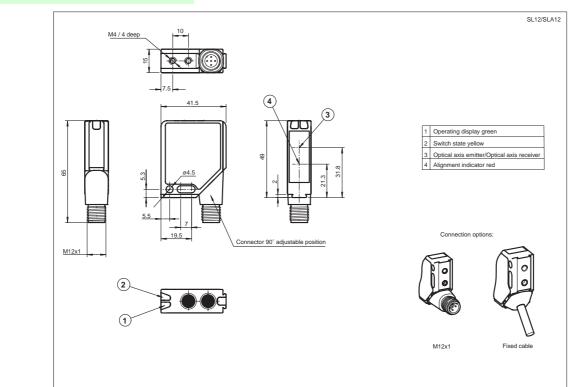


- Detection range up to 10 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- Sturdy housing
- Waterproof, protection class IP67
- Operation on control units of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

Technical data			SLA12/	
	Ordering code:	SLA12/124	SLA12/115	
Effective detection range	0.210 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, a lte rnating light	•	•	_
Ang le of divergenæ	< 5 °	•	•	am
Alignment aid	LED red	♦	◆	þe
Approvals	TÜV	•	◆	۲ د
Tests	IEC/EN 61496	◆	◆	ğ
Marking	CE	•	•	L L
Safety category a coording 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	•	•	Safety through beam
Operatin g d ispla y	LED green	•	•	
Operating voltage	Power supply via control units of the SC series 4 - 2	•	•	
Ambi ent tempera ture	-20 60 °C (2 53 33 3 K)	•	•	
Storage temperature	-20 70 °C (2 53 34 3 K)	•	•	
Relative humi dity	max. 95 %, n ot con densin g	♦	◆	용
Protection de gree	IP67 a ccording to EN 60529	•	•	ir
Connection	2.5 m fixed cable, 5-core, Euronorm		•	Ĭ
	connector, 5-pin with metal thread M12 x 1, may be rotated $90^\circ$	•		ig
Housing	Frame : die ca st zinc, nickel-plated Laterals: plastic PC, glass-fiber ne inforced RAL 1021 (ye llow)	•	•	Safety light grids
Optical face	Plastic lens	•	•	Sa
Mass	per device 60 g	•	•	
System components				
Emitter	SLA12-T/1 15		•	
	SLA12-T/1 24	•	•	
Receiver	SLA12-R/115	•	•	
	SLA12-R/124		•	ls with
		▼		3

Safety light grids with internal control unit

## Dimensions



## **Electrical connection**

Safety light grids with internal control unit

Receiver: ΒN

Safety through beam sensors

Safety light grids

4

1 Rn 2 ΒU 3 0 V Control Unit SC4-2 4 Emitter: 1 2 ΒU 3 0 V ΒK

Tn



Minimum interval [m]

2

 $\rightarrow$ 

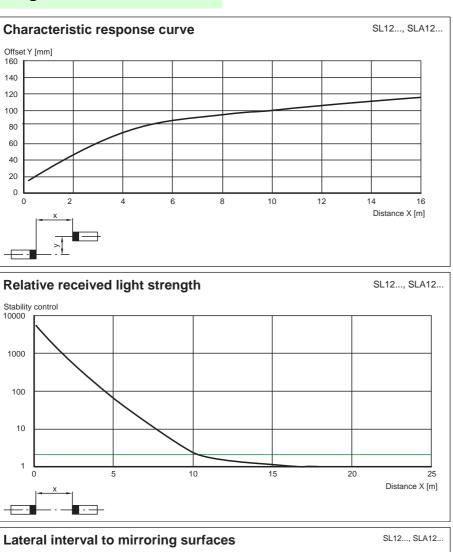
4

1.0 0.9 0.8

0.7 0.6 0.5 0.4 0.3 0.2 0.1

0

--



6

SL12

8

10

12 Distance X [m]

## 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

#### V1 Mounting aids

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

#### Further accessories

Redirection mirror SLA-1-M



CE

## Safety through beam sensor

SLA20

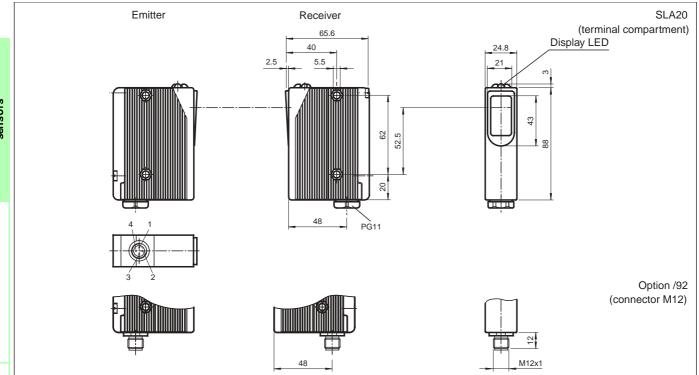
- Detection range up to 10 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- 🔶 Sturdy housing
- Operation on control units of series SLVA and SC4-8

Technical data			SLA20	
	Ordering code:	SLA20	SLA20/92	
Effective detection range	0 10 m	◆	•	1
Number of protective field be ams	1	•	•	1
Obstacle size	static: 15mm d ynamic: 30mm (at v = 1.6m/s of the obstacle)	•	•	1
Light source	LED, 665 nm	•	•	1
Light type	red, alternating light	•	♦	3
Angle of divergenœ	< 5 °	•	•	ea
Approvals	TÜV	<b>♦</b>	•	q c
Tests	IEC/EN 6 1496	•	•	lgt
Marking	CE	•	•	loc
Safety category a ccording to IEC/EN 61496	4	◆	•	thi
Function display	LED ye llow/green in receiver: off: Interruption ye llow : transmission g reen: reception with sufficient stability control	•	•	Safety through beam sensors
Pre-fault indication	LED functional display yellow	•	•	1
Operating voltage	Power supply via control units of the SLVA and SC4-8 series	<b>♦</b>	•	1
Ambient temperature	-20 60 °C (253 333 K)	•	•	1
Storage temperature	-2070 °C (253343 K)	•	•	1
Relative humi dity	max. 95 %, not condensing	•	•	ما
Protection de gree	IP65	•	•	rid.
Connection	M12 connector, 4-p in		•	Safety light grids
	termin al compartment, lea d cross-se dio n 0.5 1.5 mm <sup>2</sup>	<b>♦</b>		- Hg
Housing	Plastic terluran, RAL 1021 (yel low) (plastic, fibre reinforced)	•	•	
Optical face	glass	•	•	et
Mass	Per 120g	•	•	Saf
System comp onents				1
Emitter	SLA20-T	•		1
	SL A2 0-T/92		•	1
Receiver	SLA20-R	•		1
	SL A2 0-R/92		▲	

Safety light grids with internal control unit

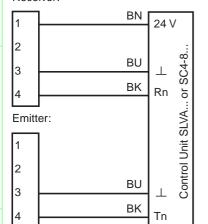


## Dimensions

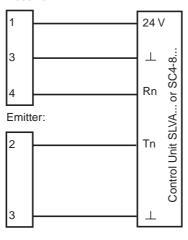


## **Electrical connection**

Design with connector plug Receiver:



Design with terminal room Receiver:



Safety light curtains



Offset Y [mm]

160

140

120

100

80

60

40 20

0 L

2

4

6

8

10

12

14

Characteristic response curve





SLA20

16

Distance X [m]

SLVA4-K plus SLVA8-K SC4-8

Cable sockets (only for option /92)

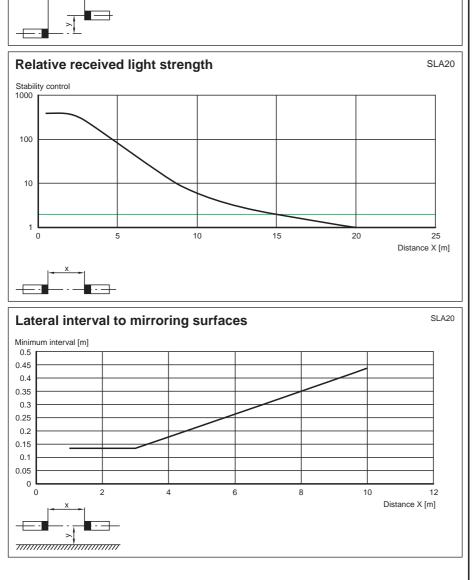
straight:	V1-G-2M-PVC			
	V1-G-5M-PVC			
	V1-G-10M-PVC			
angled:	V1-W-2M-PVC			
	V1-W-5M-PVC			
	V1-W-10M-PVC			

#### Mounting aids

OMH-21 OMH-22

Further accessories

Redirection mirror SLA-1-M



Safety light curtains



CE

Safety through beam sensor

# SLA28/../105/...

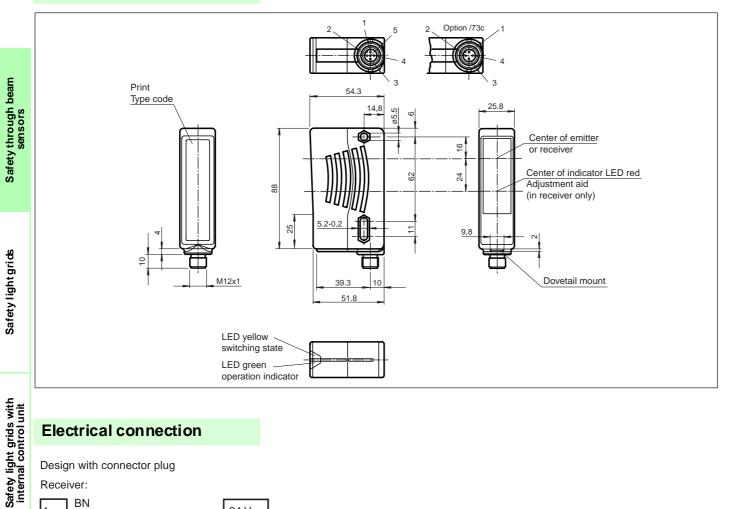
Detection range up to 65 m

- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand 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

Technical data		SLA28//105/				
	Ordering code:	SLA28/105	SLA28/35/105 R=65m	SL A28/105/106	SLA28/35/105/106 R=65m	
		SL 4	SLA28/3		SLA28/35/1	ε
Effective detection range	0.2 30 m	•		•	,	ea
Number of protective field be ams	6 65 m 1	•	* *	•	* *	Safety through beam
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstade)	٠	٠	٠	•	Irou
Light source	LED	▲	•	•	•	÷
Light type	red, alternating light	•	•	÷	•	et
Angle of divergenæ	< 5 °	•	•	•	•	Saf
Alignment aid	LED red in receiver	•	•	•	•	0,
Approvals	TÜV	•	•	•	•	
Tests	IEC/EN 61 496	•	٠	•	•	
Marking	CE	•	•	•	•	11
Safety category a ccording to IEC/EN 61496	4	٠	٠	٠	•	
Function display	LED yel low/green in neceiver: off: Internuption yel low: transmission green: reception with sufficient stability control	•	•	•	•	Safety light gri ds
Pre-fault indication	LED function al display ye llow	٠	٠	٠	•	ij
Operatin g vo lta ge	Power supply via control units of the SLVA and SC4-8 series	•	•		•	1 ≥
Ambient temperature	-20 60 °C (253 333 K)	•	•	÷	• ,	fe
· · · · · · · · · · · · · · · · · · ·	-35 55 °C (238 328 K) with heated optical face, fixed voltage 24 V D C ± 20 %/50 mA	•	•	٠	•	S
Storage temperature	-20 70 °C (253 343 K)	•	•	•	•	
Relative humidity	max. 95 %, not conden sing	•	•	•	•	
Protection de gree	IP67	•	•	•	•	
Connection	M12 con nector, 5 pin	•	•	•	•	11
Housing	ABS plastic, RLA 1021 (yellow) plainted	•	•	•	•	11 _
Optical face	Plastic lens	•	•	•	•	一支
Mass	Per 70 g	•	٠	٠	•	S S
System components					/	Safety light grids with
Emitter	SLA28-T/105	•			1	10
	SLA28-T/105/106			•	/	l t
	SLA28-T/35/105 R=65m		٠		,	<i>ĕ</i>
	SLA28-T/35/105/106 R=65 m		Ť		•	l Ş
Receiver	SLA28-R/1 05	٠			· ,	je l
	SLA28-R/1 05/106	•			/	l o
				*	,	
	SLA28-R/35/105 R=65m					

Safety light curtains

**Control units** 



### **Electrical connection**

+24 V

+24 V

-24 V

(option 106)

-24 V (option 106)

(option 106)

(option 106)

24 V

Rn

Tn

Control Unit SLVA... or SC4-8.

Design with connector plug

ΒN

WH

ΒU

ΒK

GR

ΒN

WΗ

ΒU

ΒK

GR

Receiver:

1

2

3

4

5

1

2

3

4

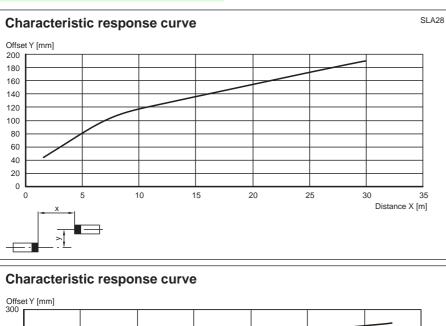
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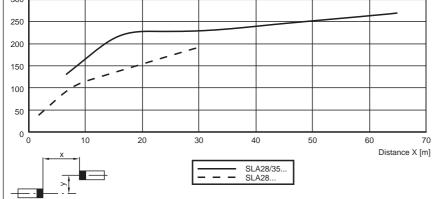
Emitter:

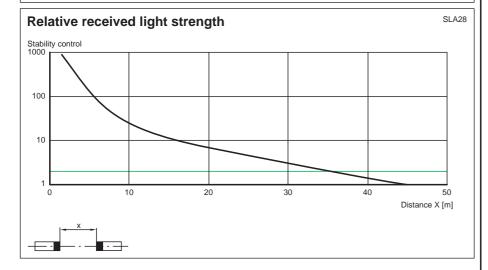


### SLA28/../105/...









### 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...

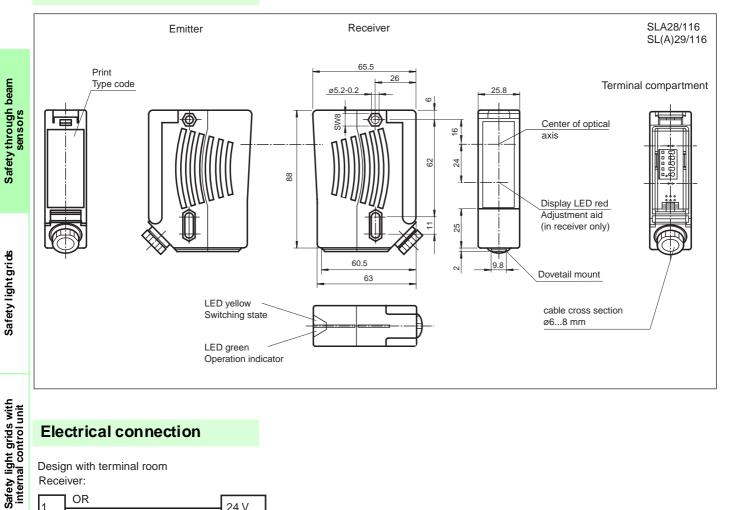


- Detection range up to 65 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- Sturdy housing
- Waterproof, protection class IP67
- Operation on control units of 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

3=65m			
SLA28/35/116 R=65m	SL A28/106/116	SLA28/35/106/116 R=65m	]
SLJ		SLA2	
	•	•	Safety through beam
•		•	q
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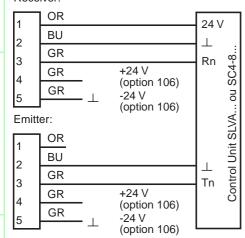
**Control units** 





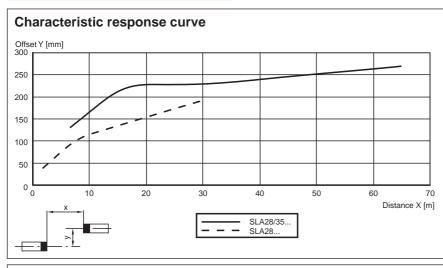
### **Electrical connection**

Design with terminal room Receiver:

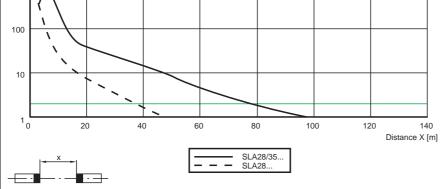


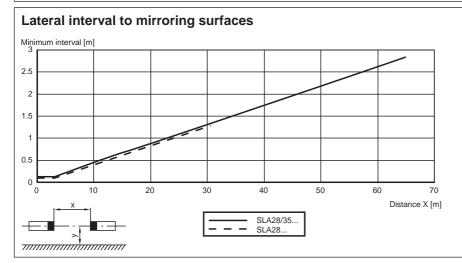
### SLA28/../116...

### Diagrams



## Relative received light strength





### 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

SL29/...

### Safety through beam sensor

SL29/...

CE



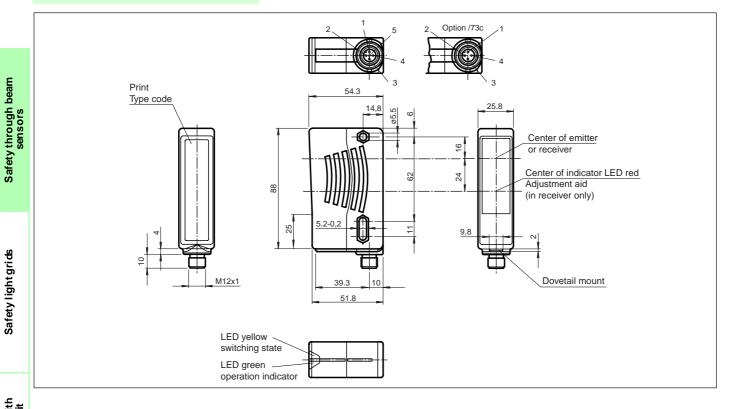
- Test input (Type 2 according to IEC/EN 61496-1)
- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- 🔶 Sturdy housing
- Protection degree IP67
- Operation on control units of series SC4-2
- Detection range up to 65 m SL29/35/105/106 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

Technical data				SL2	29/	
						ı
	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	•	ŝ	•		F
	6 65 m	¥	٠	•	•	Safety through beam
Threshold detection range	6 65 III 40 m	٠	•	•	•	ğ
nreshold delection lange	85 m	•		•		Jbr
Obstacle size	static 30 mm		•		•	õ
Justacie size	dynamic 40 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	ţ
ight source	LED	•	٠	٠	•	Ľ,
ight type	red, alternating light	•	•	•	•	afe
Ang le of divergen œ	< 10 °	•	٠	•	•	S
lignment aid	LED red	•	•	•	•	
pprovals	ΤÜV	٠	٠	•	•	
ests	IEC/EN 61496	•	•	•	•	
/larkin g	CE	•	•	٠	•	11
afety category a cording to IEC/EN 61496	2	•	•	•	•	Ι.,
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flash es: sign al between 1 x switching point a nd 2 x switching point 3. LED off: sign al < switching point	•	•	•	•	Safety light grids
Operating displa y	LED green	•	•	•	•	15
Operating voltage	Power supply via control units of the SC series 2	•	٠	•	•	e
Ambient temperature	-20 6 0 °C (2 53 3 33 K)			•	•	Sat
	-35 55 °C (238 3 28 K) with heated optical face, fixed voltage 2 4 V DC ± 20 %/50 mA	•	٠			1
Storage temperature	-20 7 0 ° C (2 53 3 43 K)	•	•	•	•	
Relative humi dity	max. 95 %, not condensing	٠	٠	•	•	$\Pi_{-}$
Protection de gree	IP67according to EN60529	•	•	•	•	
Connection	M12 connector, 4-pin			•	•	
	M12 connector, 5 p in	•	•			l ਵਿ
Housing	Plastic ABS, front part b lack, back part yellow (R AL1021)	•	•	٠	•	≥
Optical face	Plastic lens	•	•	•	•	1 S
Mass	per device 70g	•	٠	•	•	Safetv light grids with
System comp onents		·	·			ΙĮΞ
Emitter	SL29-T/105/106	•				io I
	SL29-T/35/105/106 R=65m		•			⊋
	SL29-T/35/73c R=65 m		•		•	afe
	SL29-T/73c			•	· · ·	Ü
Receiver	SL29-R/105/106	•				1
	SL29-R/35/10 5/106 R=65m	Ť	▲			11
	SL29-R/35/73 c R=65m		•		•	1
	SL29-R/73c			•	•	1
				•		j a

Safety light curtains

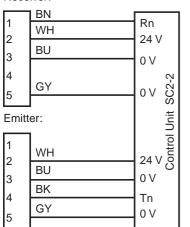
**Control units** 



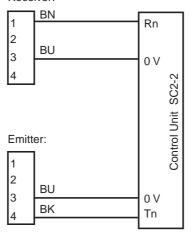


### **Electrical connection**

Design with connector (Option /106) Receiver:

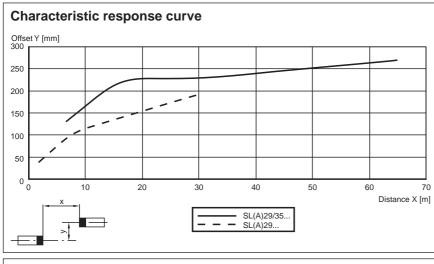


Design with connector Receiver:

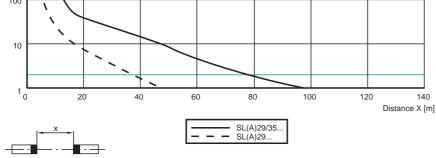


**Control units** 

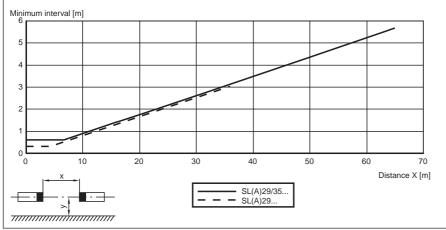
### Diagrams



# 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 V1-W-2M-PVC angled: V1-W-5M-PVC V1-W-10M-PVC Option /105: straight: V15-G-2M-PVC V15-G-5M-PVC V15-G-10M-PVC V15-W-2M-PVC angled: 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 ...



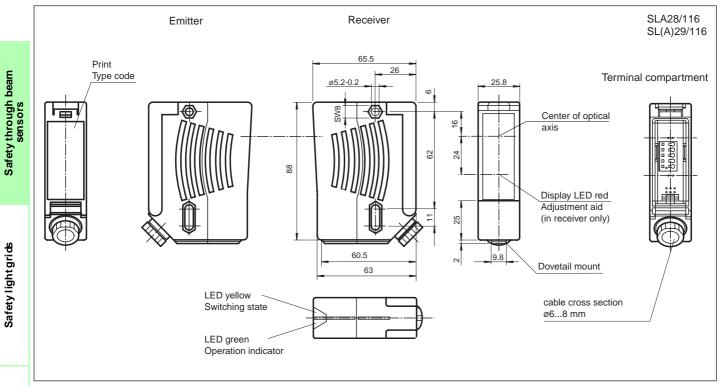
- Test input (Type 2 according to IEC/EN 61496-1)
- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- 🔶 Sturdy housing
- Protection degree IP67
- Operation on control units of series SC4-2
- Detection range up to 65 m SL29/35/116 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

Technical data		;	SL29/	//11	16	
						_
	Ordering code:	SI-29/116	SL29/35/116 R=65m	SL 29/106/116	SL29/35/106/116 R=65m	
			0)		SL	
Effective detection range	0.2 30m	•		•	,	am
	6 65 m		٠		•	be
Threshold detection range	40 m	•		•	,	L L L
	85 m		•		•	5 O S
Obstacle size	static: 30 mm dwaria: 40 mm (at w = 1.6 m/a of the albert da)	•	•	•	•	Safety through beam sensors
Light so urce	dyn amic: 40 mm (at v = 1.6 m/s of the obstad e) LED					L
Light source	LED red, alterna ting light	•	•	•	•	afet
	<pre>red, alterna ing ignt &lt; 10 °</pre>	•	•	•	•	Sa
Ang le of divergen œ Alignment aid	< 10 ° LED red		•	-	•	
Alignment aid App rovals	LED rea TÜV	•	•	•	•	
Tests	IEC/EN 61 496	-	-	-	<ul><li>◆</li><li>◆</li></ul>	
Marking	CE	•	*	*		41
Safety category according to IEC/EN 61496	2	-	•	-	•	41
Function display	LED yellow:	•	•	*	•	स्र
	<ol> <li>LED lits constantly: signal &gt; 2x switching point (function reserve)</li> <li>LED flashes: signal be twe en 1 x switching point and 2 x switching point</li> <li>LED off: signal &lt; switching point</li> </ol>	•	•	•	•	Safety light gri ds
Operatin g d ispla y	LED green	•	•	•	•	
Operating voltage	Power supply via control units of the SC series 2	•	•	•	•	fet
Ambient temperature	-20 60 °C (253 333 K)	•	•			Sa'
	-35 55 °C (238 328 K) with heated optical face, fixed vo lage 24 V D C ± 20 %/50 mA			•	•	1
Storage tempera ture	-20 70 °C (253 343 K)	•	•	▲ ×	•	4
Relative humidity	max. 95 %, not conden sing	•	•	•	•	1
Protection de gree	IP67 according to EN 60529	•	•	•	•	
Connection	terminal compartment	•	•	•	•	1
Housing	Plastic ABS, front part black, back part yel low (RAL1021)	•	•	•	•	<u>۽ ٿا</u> ا
Optical face	Plastic lens	•	•	•	•	<b>≥</b>
Mass	per de vice 70 g	•	•	•	•	l sp c
System components					. ,	i i i j
Emitter	SL29-T/106/116			•	· · · ·	Safety light grids with
	SL29-T/116	•			,	l in c
	SL29-T/35/106/116 R=65 m				•	<u>ا ج</u> ا
	SL29-T/35/116 R =65m		•			afe
Receiver	SL29-R/106/116			•	/	۵. ۵
	SL29-R/116	•			,	1
	SL29-R/35/106/116 R=65m	Ť			•	4⊨
	SL29-R/35/116 R=65m		•		• •	1

Safety light curtains

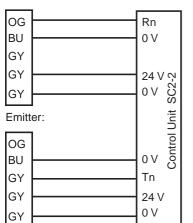
**Control units** 



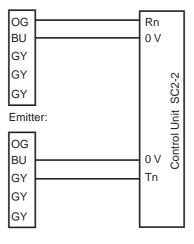


### **Electrical connection**

Design with terminal compartment (Option /106) Receiver:



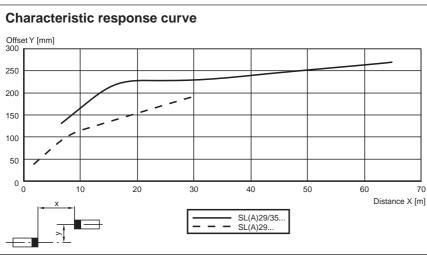
Design with terminal compartment Receiver:



**Control units** 

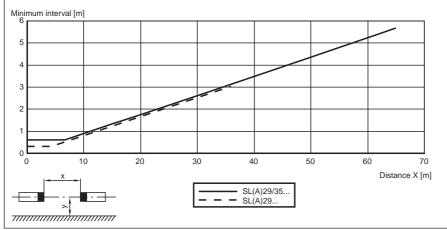
SL29/.../116 ...





#### **Relative received light strength** Stability control 100 ١ 10 <sup>1</sup>0 40 60 100 20 80 120 140 Distance X [m] SL(A)29/35.. SL(A)29... \_ \_ \_

### Lateral interval to mirroring surfaces



#### SC2-2 **Cable sockets** Option /73c: straight: V1-G-2M-PVC V1-G-5M-PVC V1-G-10M-PVC V1-W-2M-PVC angled: V1-W-5M-PVC V1-W-10M-PVC Option /105: straight: V15-G-2M-PVC V15-G-5M-PVC V15-G-10M-PVC V15-W-2M-PVC angled: V15-W-5M-PVC V15-W-10M-PVC Option /116: no

System accessories

**Control units** 

### 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/...

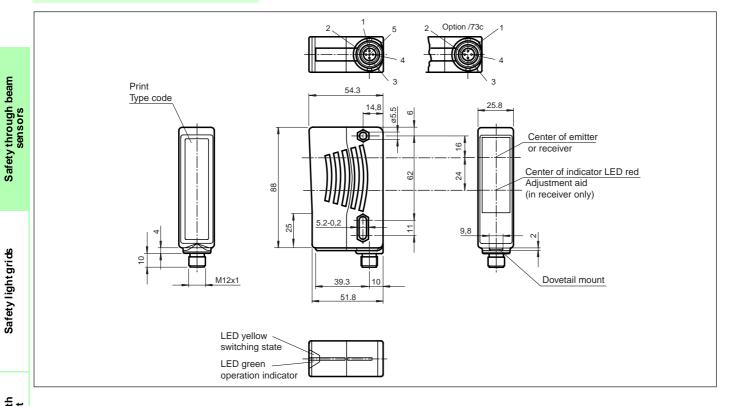
 Self-monitoring (type 4 according to IEC/EN 61496-1)

- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand 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



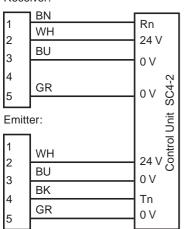
Technical data			;	SLA29	)/	
						ו
	Ordering code:	SL A29/105/106	SLA29/35/105/106 R=65m	SLA29/73c	SLA29/35/73c R=65m	
			SLA2		SLA	L C
Effective detection range	0.2 30 m	•		•		ean
	6 65 m		•		•	ă,
Threshold detection range	40 m	•		•		ligh
	85 m		•		•	Lo Lo
Obstacle size	static: 30 mm dynamic: 40 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	Safety through beam
Light so urce	LED	•	•	•	•	afe
Light type	red, alternating light	•	•	•	•	ŝ
Angle of divergen œ	< 5 °	•	•	•	•	
Alignment aid	LED red in receiver TÜ V	•	•	•	•	1
App rovals Fests	IU V IEC/EN 61496	•	•	* *	•	1
Marking	CE CE	•	•	•	•	1
Marking Safety category a ccording to IEC/EN 61496	4	*	•	•	<ul><li>◆</li><li>◆</li></ul>	1
Function display	LED yellow: 1. LED lits constantly: signal > 2 x switching point (function reserve) 2. LED flash es: sign al between 1 x switching point and 2 x switching point 3. LED off: sign al < switching point	•	•	*	•	Safety light grids
Operating d ispla y	LED green	•	•	•	•	l ≩
Operating volta ge	Power supply via control units of the SC series 4 - 2	•	•	•	•	afe
Ambient temperature	-20 60 °C (253 333 K)			•	•	Ö
	-35 5 5 $^{\circ}$ C (238 3 28 K) with heated optical face, fixed voltage 2 4 V DC $\pm$ 20 %/50 mA	•	٠			1
Storage temperature	-20 7 0 °C (2 53 3 43 K)	•	•	•	•	1
Relative humi dity	max. 95 %, not con densing	•	٠	•	•	1
Protection de gree	IP67 a coording to EN 6 0529	•	•	•	•	1
Connection	M12 connector, 4-pin			•	•	Ę
	M12 connector, 5 pin	•	•			Ϊž
Housing	ABS plastic, RLA 1021 (yellow) painted	•	•	•	•	ds l
Optical face	Plastic lens	•	•	•	•	Safety light grids with
Mass System components	per device 70g	•	•	•	•	۲
E mitt er	SLA29-T/1 05/106	•			ļ	ii:
1 mitter	SLA29-17105/106 SLA29-17/35/105/106 R=65m	•				Į ≱
	SLA29-T/3 5/1 05/106 H=65m SLA29-T/3 5/7 3c R=65m		•			af e
	SLA29-T/7 3c				•	0
Receiver	SLA29-R/105/106			•		1
	SLA29-R/35/105/106 R=65m	•			/	
	SLA29-R/35/73 c R=65m		•			
	SLA29-R/73 c			•	• •	ains



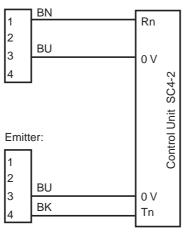


### **Electrical connection**

Design with connector (Option /106) Receiver:



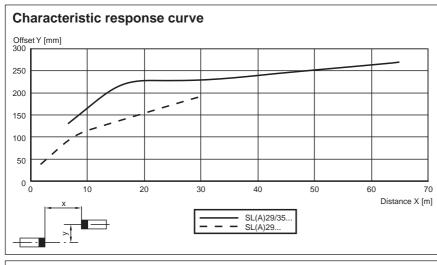
Design with connector Receiver:



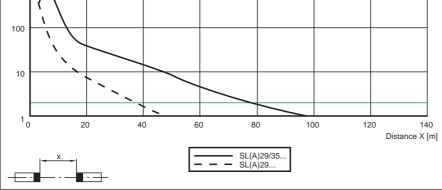
**Control units** 

SLA29/...

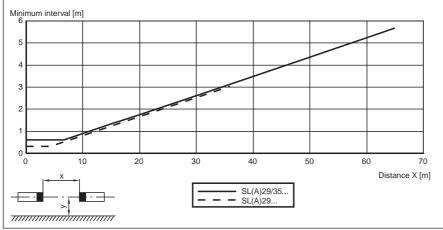
### Diagrams



## Relative received light strength Stability control



### 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

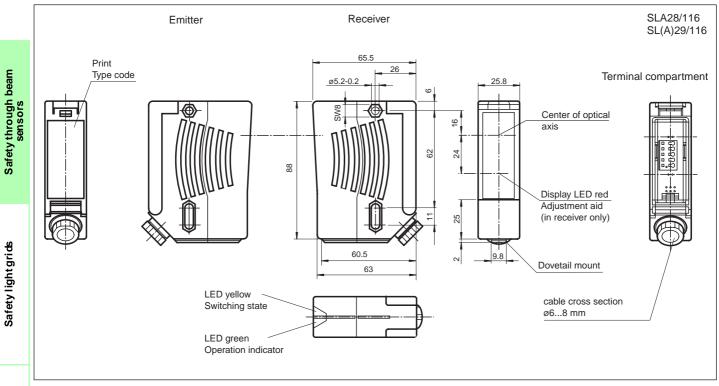
## SLA29/.../116 ...



- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Integrated alignment aid
- Clearly visible LED functional displayand 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

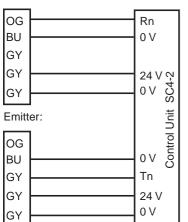
Technical data		SLA	<b>\29//1</b>	16	
					-
	Ordering code:	SLA29/116	SLA29/35/116 R=65m	SL A29106/116	
Effective detection range	0.2 30 m	•		•	
-	6 65 m		•		E
Threshold detection range	40 m	•	Ť	•	bea
	85 m		•		E.
Obstacle size	statiα 30 mm dynamiα 40 mm (at v = 1.6 m/s of the obstacle)	•	•	•	Safety through beam
Light source	LED	•	•	•	ŧ
Light type	red, alternating light	•	•	•	et
Ang le of divergen œ	< 5 °	•	•	•	ðaf
Alignment aid	LED red in receive r	•	•	•	0,
Approvals	ΤÜV	٠	•	•	
Tests	IEC/EN 61496	•	•	•	
Marking	CE	•	•	•	
Safety category a ccording to IEC/EN 61496	4	•	•	•	
Function display	LED yellow: 1. LED Tits constantly: signal > 2 x switching point (function reserve) 2. LED flash es: sign al between 1 x switching point a nd 2 x switching point 3. LED off: sign al < switching point	*	•	•	Safety light grids
Operating display	LED green	•	•	•	ig
Operating voltage	Power supply via control units of the SC series 4 - 2	•	•	•	
Ambient temperature	-20 60 °C (2:53 3:33 K)	•	•		fe
	-35 55 °C (238 328 K) with heated optical face, fixed voltage 24 V DC $\pm$ 20 %/50 mA			•	Sa
Storage temperature	-20 70 °C (253 343 K)	•	•	•	
Relative humidity	max. 95 %, not con densing	•	•	•	
Protection de gree	IP67 a ccording to EN 60529	•	•	•	
Connection	terminal compartment	•	•	•	
Housing	ABS plastic, RLA 1021 (yellow) painted	•	•	•	
Optical face	Plastic lens	•	•	•	Safety light grids with
Mass	per device 70g	•	•	•	3
System components					ig.
Emitter	SLA29-T/1 06/116			•	9
	SLA29-T/1 16	•			<u></u>
	SLA29-T/3 5/1 16 R=6 5m		•		ig
Receiver	SLA29-R/10 6/1 16			•	<u>≥</u>
	SLA29-R/116	•		•	afe
	SLA29-B/35/11 6 B =65 m	•	٠		ŝ



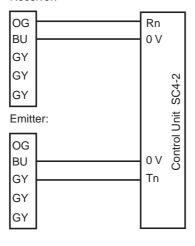


### **Electrical connection**

Design with terminal compartment (Option /106) Receiver:

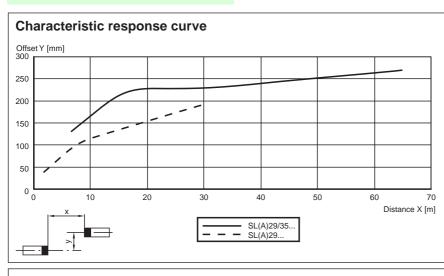


Design with terminal compartment Receiver:



**Control units** 

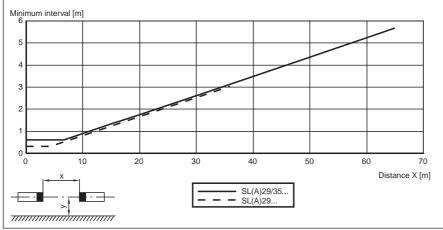




### **Relative received light strength** Stability control 100 ١ 10



### Lateral interval to mirroring surfaces



### System accessories **Control units**

### SC4-2

### **Cable sockets**

Option /73c:

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

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

### Option /105:

angled:

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



CE



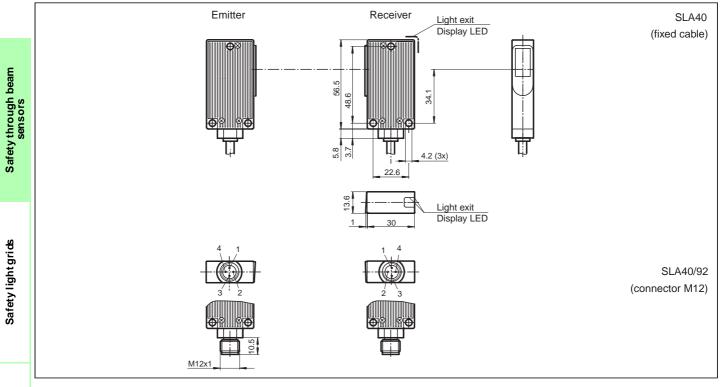
- Detection range up to 4 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Clearly visible LED functional displayand pre-fault indicator on the receiver
- 🔶 Metal housing
- Connection via M12 connector or fixed cable
- Operation on control units of series SLVA and SC4-8
- 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	•	•	٠	•	٠	٠	
Obstacle size	static: 10 mm dyn amic: 30 mm (at v = 1.6 m/s of the obstade)	•			•		•	ε
Light source	LED		•	•	•	•	•	Safety through beam
_ight_type	red, alternatinglight	•	•	•	•	•	•	q
Angle of divergenœ	< 5 °				•	•	•	-je
Approvals	TŪV				•	•	•	10
ests	IEC/EN 61496					•	•	Ę.
Markin g	CE						•	Ξ
Safety category a ccording to IEC/EN 61496	4							lfe
Function di splay	LED yellow/green in receiver: off: Interruption yellow: transmission	•	•	•	•	•	•	Sa
	gree n: reception with sufficient stability control							
Pre-fault indication	LED functional d ispla y yel low	•	•	•	•	•	•	
Operating voltage	Power supply via control units of the SLVA and SC4-8 series	•	•	•	•	•	•	1
Ambient temperature	-20 60 °C (253 3 33 K)	•	•	•	•	•	• •	
Storage temperature	-20 70 °C (253 343 K)	•	•	•	•	•	•	1.5
Relative humidity	max. 95 %, not condensing	•	•	•	•	•	•	Ъ Б
•	IP65	•	•	•	•	•	•	Ĕ
Protection degree		•		•	•		•	Safety light grids
	IP67		•			•		<b>≩</b>
Connection	Fixed cable, 10 m; 0.25 mm <sup>2</sup>				•			afe
	Fixed cable 2 m; 0.25 mm <sup>2</sup>	•	•					v
	Fixed cable, 5 m; 0.25 mm <sup>2</sup>			٠				
	M12 connector, 4-pin			•				
Housing	alu miniu m pressu re mou lding, RLA 1021 (yellow) p ainted	•	•	•	•	•	•	
Optical face	Glass	•	•	•	-	•	-	
Mass	Per 100 g	•		-			-	
System components	1 01 100 g	•	•	•	•	•	•	l ≞
Emitter	SLA40-T							≥
Emiller		•						sp
	SLA40-T/33 K=10m SLA40-T/33 K=5m				•			l is
			•	•				Safety light grids with
	SLA40-T/92					•	•	ig I
Receiver	SLA40-R	•						ه ا
	SLA40-R/33 K=10m				•			fe
	SLA40-R/33 K=5m		•	•				Sa
	SLA40-R/92							

Safety light curtains

### Technical data

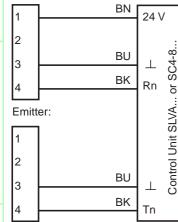




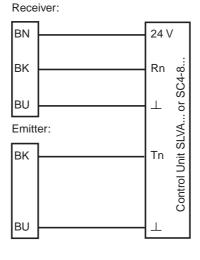
### **Electrical connection**

Design with connector plug





Design with fixed cable



### SLA40-...



Offset Y [mm]

45

40 35

30

25

20

15

Characteristic response curve

System accessories



SLA40

SLVA4\_K plus SLVA8-K SC4-8

### Cable sockets (only option /92)

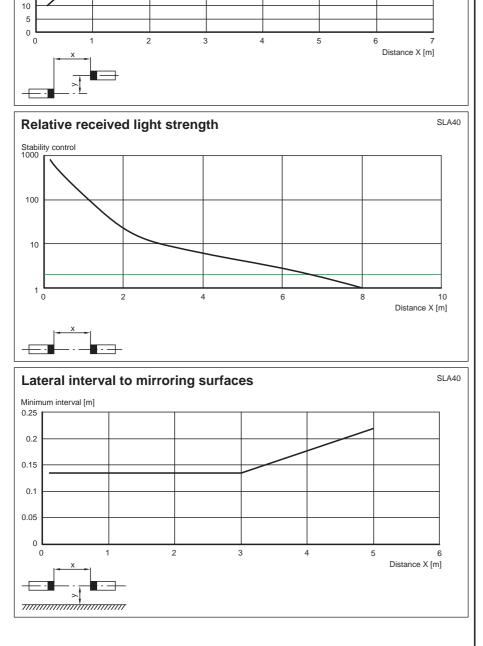
straight:	V1-G-2M-PVC
	V1-G-5M-PVC
	V1-G-10M-PVC
angled:	V1-W-2M-PVC
	V1-W-5M-PVC
	V1-W-10M-PVC

### Mounting aids

OMH-40

### Further accessories

Redirection mirror SLA-1-M



Safety through beam sensors

Safety light grids

### Safety light grids



### 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.

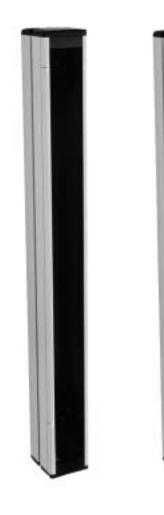
Principle	Type code	Number of beams	Detection range	Page
	SLP8-2	2	0 m 8 m	76
	SLP2	2	0 m 65 m	80
	SLP3	3	0 m 65 m	84
	SLP4	4	0 m 65 m	88



Safety light grid

SLP8-2-.

**Control units** 

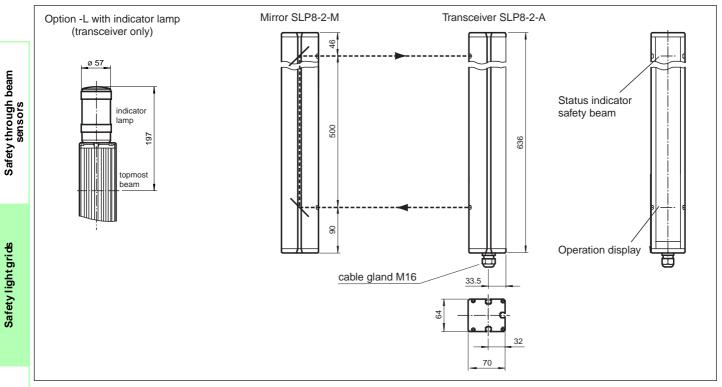


- Detection range 8 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 2-Radial design
- Beam spacing 500 mm
- 🔶 Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

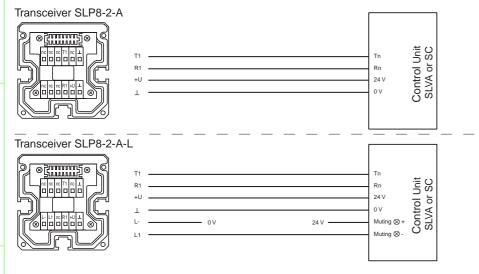
Technical data			SLP8-2	
	Ordering code:	SLP8-2	SLP8.2.1	
Effective detection range	0.2 8 m	•	•	1
Number of be ams	2	•	•	1
Bea m spacing	500 mm	•	•	1
Obstacle size	static: 32 mm dynamiα 50 mm (at v = 1.6 m/s of the obstacle )	•	•	1
Light source	LED	•	•	1 -
Light type	red, a Iternating light	•	•	an I
Angle of divergenœ	< 5 °	•	•	pa 1
Approvals	τÜV	•	•	ı ج
Tests	IEC/EN 61496	•	▲	١Ĭ
Marking	CE	•	•	i E
Safety category a ccording to IEC/EN 6 1496	4	•	•	Safety through beam
Function display	LED red: p er re ceiver chann el off: Interruption flashes: re ceiver continu ously on: re ception with sufficient stability control	٠	•	Saf
Muting display	In dicator lamp		◆	1
Pre-fault indication	Functional display flashing	•	•	1
Dperating d ispla y	LED red in transceiver	•	• · · ·	1
Operating voltage	Power supply via control units of the SLVA and SC4-8 series	•	•	8
Protection class		•	•	i i
Ambient temperature	-20 60 °C (253 333 K)	•		h l
Storage temperature	-20 7 0 °C (2 53 3 43 K)	•	· · · · · · · · · · · · · · · · · · ·	Safetv light grids
Relative humidity	max. 95 %, not con densing	•	•	1 2
Protection de gree	IP65	•	•	fe
Connection	Cable screwed connection M16, terminal compartment	•	•	Se
Ho using	alu minium extruded structural profile, RAL 1021 (yel low) coated	•	•	1
Optical face	Plastic lens	•	•	1
Mass	Per 2 100 g	•	•	1
Connection options	Furthe relectrical connection options on request: Plug connector DIN 43 651 Hirschman n, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	۽ ا
System components				í '≩
Transceiver	SLP8-2-A	•		Safety light grids with
	SLP8-2-A-L	•	•	I È
Mirro r pi llar	SLP8-2-M	▲		ίĘ

Safety light curtains Safety linterna





### **Electrical connection**



**Control units** 

### Diagramme

0.25 0.2 0.15 0.1 0.05 0

0

-<u>-</u> ·

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2

3

4

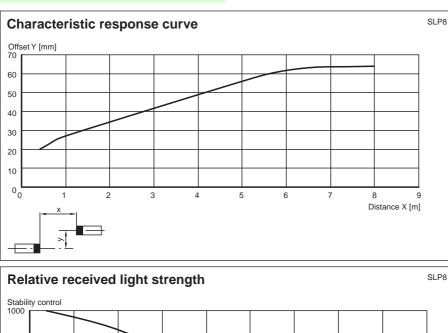
5

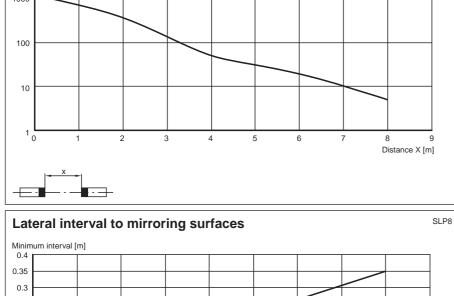
6

7

8

9 Distance X [m]





### 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 •



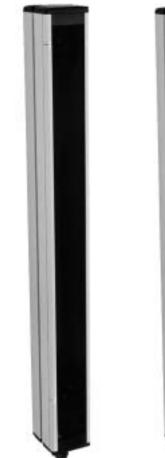
Safety through beam sensors

Safety light grids



Safety light grid

**SLP..-2** 



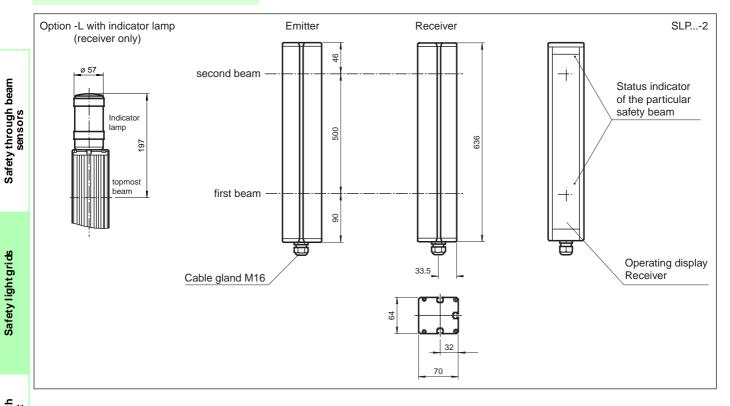
- Detection range up to 65 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 2-Radial design
- Beam spacing 500 mm
- 🔶 Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

Technical data				SLP2	
	Ordering code:	SLP10-2	SLP10-2-L	SLP30-2 SLP65-2	
Effective detection range	0.2 10 m	•	•		
	12 65m 6 30 m			•	
Number of beams	6 30 m 2			•	
	2 500 mm	•	* *	• •	_
Beam spacing Obstacle size	500 mm static: 32 mm	•	•	<b>* *</b>	E
	dynamic 50 mm (at v = 1.6 m/s of the obstacle)	•	•	<ul><li>◆</li></ul>	Safety through beam sensors
Light source	LED	•	•	<ul> <li>♦</li> <li>♦</li> </ul>	L L S
Light type	red, a Iternating light	•	•	<ul> <li>•</li> <li>•</li> </ul>	ng l
Ang le of divergen œ	< <u>5</u> °	<b>♦</b>	•	♦	l S S
Approvals	ΤÜV	•	•	<ul><li>♦</li><li>♦</li></ul>	s, t
Tests	IEC/EN 61496	•	•	<ul><li>★</li><li>★</li></ul>	et)
Marking	CE	•	•	♦	af
Safety category a ccording to IEC/EN 61496	4	•	•	• •	0
Function display	LED red: per receiver channel off: Interruption flashes: receiver continu ously on: reception with sufficient stability control	•	•	• •	
Muting display	In dicator lamp		•		4
Pre-fault indication	Functional display flashing	•	•	• •	Safety light gri ds
Operating d ispla y	LED red in receiver	•	•	• •	tg
Operating volta ge	Power supply via control units of the SLVA and SC4-8 series	•	•	• •	hgh
Protection class		•	•	• •	i.
Ambient temperature	-20 60°C (253 333 K)	•	•	• •	iet
Storage temperature	-20 7 0 °C (2 53 3 43 K)	•	•	• •	Saf
Relative humi dity	max. 95 %, not con densing	•	•	• •	0,
Protection de gree	IP65	•	•	• •	
Connection	Cable screwed connection M16, terminal compartment	•	•	<ul> <li>•</li> <li>•</li> </ul>	
Housing	alu minium extruded structural profile, RAL 1021 (yel low) coated	•	•	♦	
Optical face	Plastic lens	•	•	• •	ي ۽ ا
Mass	Per 2 100 g	•	•	• •	⊒ kit
Connection options	Furthe relectrical connection options on request. Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, neceiver: 11-pin+PE	•	•	* *	Safety light grids with internal control unit
System components					9 g
Emitter	SLP10-2-T	٠	٠		<u> </u>
	SLP30-2-T	· ·	•	•	n II
	SLP65-2-T			•	fet
Receiver	SLP10-2-R	•		·	i gt
	SLP10-2-R-L	•	•		4
	SLP 10-2-R-L SLP30-2-R		•	•	
	SLP65-2-R			•	4
·				<b>_</b>	7

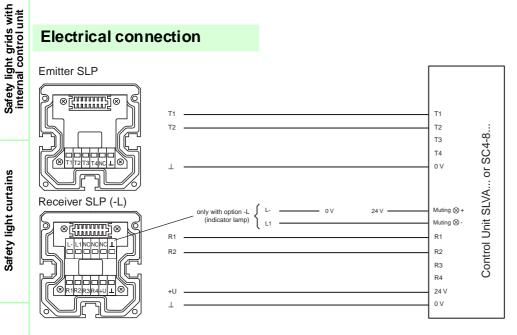
Safety light curtains

**Control units** 





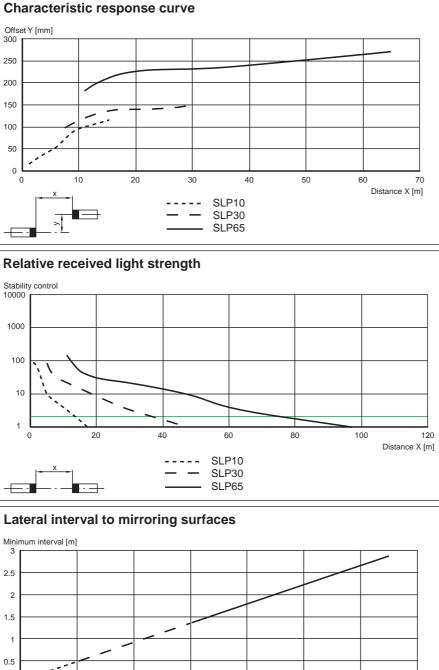
### **Electrical connection**



**Control units** 

### 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 •



40

SLP10

SLP30

SLP65

50

60

70 Distance X [m]

Diagramme

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## •

Safety through beam sensors

Safety light grids



Safety light grid

**SLP..-3** 





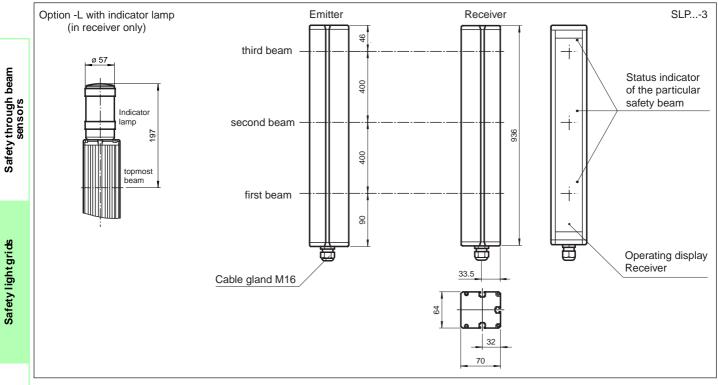
- Detection range up to 65 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 3-Radial design
- Beam spacing 400 mm
- 🔶 Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

Technical data				SLP3	
	Ordering ∞ de:	SLP10-3	SLP10-3-L	SLP30-3 SLP65-3	
Effective detection range	0.2 10 m	•	•		
	12 65m 6 30 m			•	
Number of beams	6 30 m 3	•	•	•	
Beam spacing	3 400 mm	•	•	• •	_
Obstacle size	static: 32 mm	•	•	* •	E
Obstable size	dynamic 50 mm (at $v = 1.6$ m/s of the obstacle)	•	•	<b>* *</b>	Safety through beam sensors
Light source	LED	•	•	♦	L S
Light type	red, a Iternating light	•	٠	<ul><li>♦</li></ul>	ទីច
Ang le of divergen œ	< 5 °	•	•	♦	l S S
Approvals	ΤÜV	•	•	<ul> <li>+</li> <li>+</li> </ul>	S t
Tests	IEC/EN 61496	•	•	♦	l Ś
Marking	CE	•	•	• •	af
Safety category a ccording to IEC/EN 61496	4	•	•	• •	S
Function display	LED red: per receiver chann el off: Interruption flashes: receiver continu ously on: reception with sufficient stability control	٠	•	• •	
Muting display	In dicator lamp		•		4
Pre-fault indication	Functional display flashing	•	•	• •	rid
Operating d ispla y	LED red in receiver	•	•	• •	tg
Operating voltage	Power supply via control units of the SLVA and SC4-8 series	•	•	• •	Safety light grids
Protection class		•	•	• •	Ē
Ambient temperature	-20 60°C (253 333 K)	•	•	* *	et)
Storage temperature	-20 70 °C (253 343 K)	•	•	• •	af
Relative humidity	max. 95 %, not con densing	•	•	* *	0
Protection de gree	IP65	•	<b>▼</b>	• •	
Connection	Cable sore wed connection M16,	•	•	• •	
	terminal compartment	<b>♦</b>	•	<ul><li>♦</li></ul>	
Housing	alu minium extruded structural profile, RAL 1021 (yellow) coated	•	•	<b>* *</b>	
Optical face	Plastic lens	•	•	• •	ي ج
Mass	Per 3 200 g	•	•	<ul> <li>•</li> <li>•</li> </ul>	nit l
Connection options	Further electrical connection options on request. Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	• •	Safety light grids with internal control unit
System components					b c
Emitter	SLP10-3-T	•	٠		두 S
	SLP30-3-T	•	*	•	n E
	SLP65-3-T			•	et
Receiver	SLP10-3-R	•		•	int
neceivei		•			S S
I	SLP10-3-R-L SLP30-3-R		•	•	
	SLP30-3-R SLP65-3-R			•	4
l	0LF00-0-N			•	

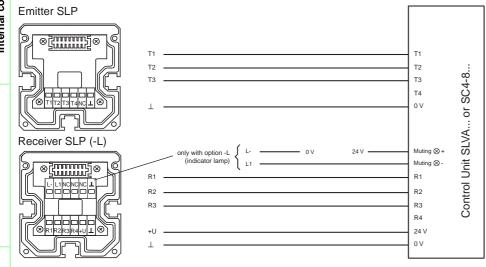
Safety light curtains

**Control units** 





### **Electrical connection**



**Control units** 

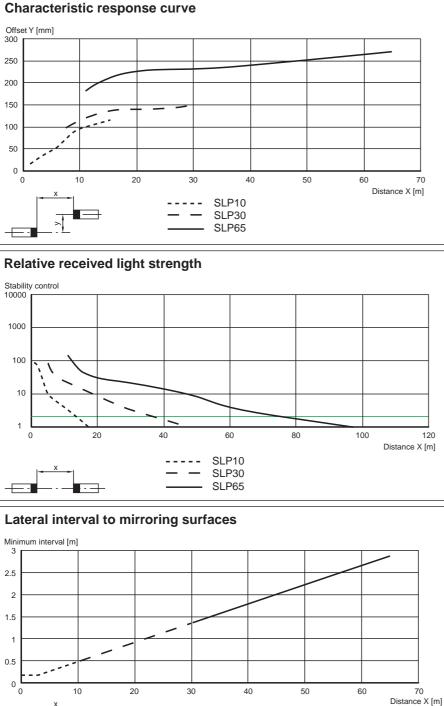
Safety light curtains

### 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



SLP10

SLP30

SLP65

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Diagramme

Safety through beam sensors



Safety light grid

**SLP..-4** 

Safety through beam sensors



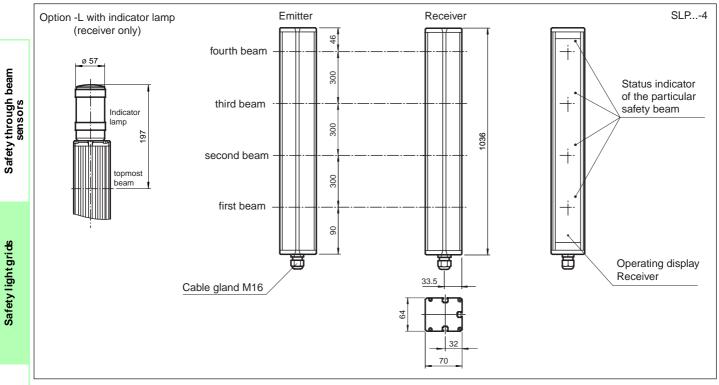
- Detection range up to 65 m
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 4-Radial design
- Beam spacing 300 mm
- 🔶 Red transmission light
- Integrated function display
- Pre-fault indication
- Operation on control units of series SLVA and SC4-8

Ordering code:         10 9 4 7 9	Technical data				SLP4	
Effective detection range       0.210 m       • • • • • • • • • • • • • • • • • • •						
1265m       1265m         Number of beams       4         Beam spacing       300 mm         Obstack size       site:: 32 mm         dynamic 50 mm (at v= 1.6 mis of the obstacle)       4         Light source       LED         Light yoe       red attemating light         Applied of wargenome       < 5         Applied of wargenome       < 5         Applied of wargenome       < 5         Safety catagory according to ECEN       4         Function display       ED ret per evolver channel distribution of the distribu		Ordering code:	SLP10-4	SLP10-4-L	SLP30-4 SLP65-4	
Base spacing     00 mm       Obstace     abst::::::::::::::::::::::::::::::::::::	Effective detection range		•	•		
Number of beams         4         ••••••••••••••••••••••••••••••••••••					•	
Beam spacing     300 mm     state:::::::::::::::::::::::::::::::::::						4
Obstacle size         she :: 20 mm dynamic S0 mm (at v = 1.6 ms of the obstacle) dynamic S0 mm (at v = 1.6 ms of the obstacle)         Image: S0						
Starty Category actioning to EUCLY       *			•	•	♦ ♦	
Starty Category actioning to EUCLY       *		dynamic 50 mm (at v = 1.6 m/s of the obstacle)	•	•	<ul><li>◆</li></ul>	bear
Starty Category actioning to EUCLY       *	•		•	•		L S
Starty Category actioning to EUCLY       *			•	•	<b>* *</b>	B D
Starty Category actioning to EUCLY       *			•	•		l S S
Starty Category actioning to EUCLY       *			•		<ul><li>♦</li><li>♦</li></ul>	τ×
Starty Carbon of a boot only to boot only a boot only of boot only aboot only of boot only of boot only of boot only only aboot only of boot only only aboot only only only only only only only only			•	•	♦ ♦	G I
Starty Carbon of a boot only to boot only a boot only of boot only aboot only of boot only of boot only of boot only only aboot only of boot only only aboot only only only only only only only only			•	•	♦	af
off. Herrupion       Iashes: re ceiver       Store       Store <td< td=""><td></td><td>4</td><td>•</td><td>•</td><td>• •</td><td>S S</td></td<>		4	•	•	• •	S S
Muting display       hdicator lamp       Image: Second Sec	Function display	off. Interruption flashes: receiver	٠	•	• •	
Pre-fault indication       Functional display flashing       Image: Constraint of the stress	Muting display			•		4
Relative humidity       max. 95 %, not condensing		Functional display flashing	•	•	<b>•</b> •	rio
Relative humidity       max. 95 %, not condensing						tg
Relative humidity       max. 95 %, not con densing			•			gh
Relative humidity       max. 95 %, not con densing				<b>▼</b>		ï
Relative humidity       max. 95 %, not con densing			•	•		et
Relative humidity       max. 95 %, not condensing	•					àaf
Protection de gree       IP65       IP65       IP65       IP66       I			•	•		0,
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, ie ceiver: 11-pin +PE System components Emitter SLP10-4-T SLP65-4-T Receiver SLP10-4-R SLP10-4-R SLP10-4-R			•	•		
Housing     aluminium extruded structural profile, RAL 1021 (yellow) coated <ul> <li>Image: Constructural profile, RAL 1021 (yellow) coated</li> <li>Image: Constructural profile, RAL 1</li></ul>	°		•	•		
Optical face     Plastic lens     Image: Construction options       Mass     Per 3500 g     Image: Construction options on request Plug connector 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       SLP10-4-R	Housing		•	4	<b></b>	
Mass     Per 3500 g       Connection options     Furthe relectrical connection options on request Plug conne dor DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE       System components       Emitter       SLP10-4-T       SLP30-4-T       SLP30-4-T       SLP65-4-T       SLP10-4-R       SLP10-4-R       SLP10-4-R       SLP10-4-R       SLP10-4-R       SLP10-4-R       SLP10-4-R			•			1 2
SLP10-4-R-L SLP30-4-R						bit.
SLP10-4-R-L SLP30-4-R		Furthe relectrical connection options on request:	•	•		ids v rolu
SLP10-4-R-L SLP30-4-R	System components					- dr
SLP10-4-R-L SLP30-4-R			•	•		ight al co
SLP10-4-R-L SLP30-4-R		SLP30-4-T			•	j z č
SLP10-4-R-L SLP30-4-R		SLP65-4-T			•	ter
SLP10-4-R-L SLP30-4-R	Receiver	SLP10-4-R	•			in Saf
SLP30-4-R		SI P10-4-R -L		4		1
				•	<b>A</b>	
		SLP65-4-R			•	41

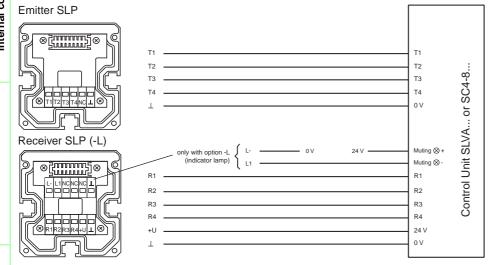
Safety light curtains

**Control units** 





### **Electrical connection**

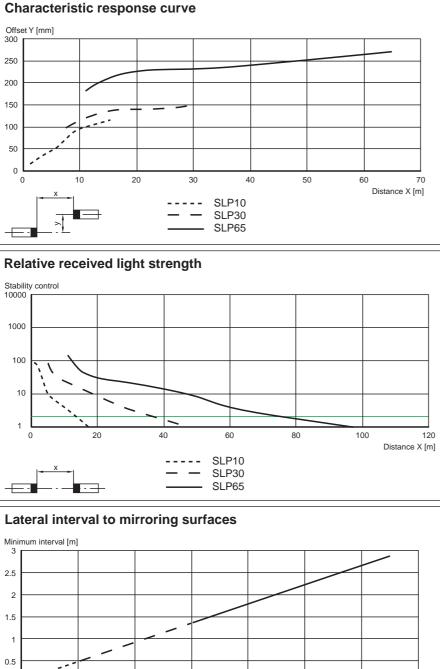


**Control units** 

Safety light curtains

### 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
  - Profile alignment aid
- •
- Redirection mirror for multi-side protection of hazardous areas SLP-...-M
- Muting Set MS SLP/SLA28 •



40

SLP10

SLP30

SLP65

50

60

70 Distance X [m]

Diagramme

0

0

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10

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\_\_\_\_\_

20

30

.....

•

- Damping UC SLP/SLC •
- Laser alignment aid SLP

Safety through beam sensors

Safety light grids

### Safety light grids with internal control unit



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	ins
	SLPC 8-2	2	integrated control unit	0.2 m - 8 m	94	curtains
	SLPC2	2	integrated control unit	0.2 m - 65 m	98	Safety light
	SLPC3	3	7		110	at v
	SLPC4	4	7		122	Safe
	SLPCM 8-2	2	integrated control unit, with muting	0.2 m - 8 m	134	
	SLPCM2	2	integrated control unit,	0.2 m - 65 m	138	
	SLPCM3	3	with muting		150	
	SLPCM4	4	1		162	nits
	SLC-2	2	integrated control unit	0.2 m - 20 m	174	Control units
	SLC-3	3	1			antr
	SLC-4	4	1			l o
	SLC-2/133	2	integrated control unit,	0.2 m - 20 m	178	
$\langle \mathbf{x} \mathbf{x} \rangle$	SLC-3/133	3	for hazardous area, zone 2 and zone 22			
	SLC-4/133	4				

CE

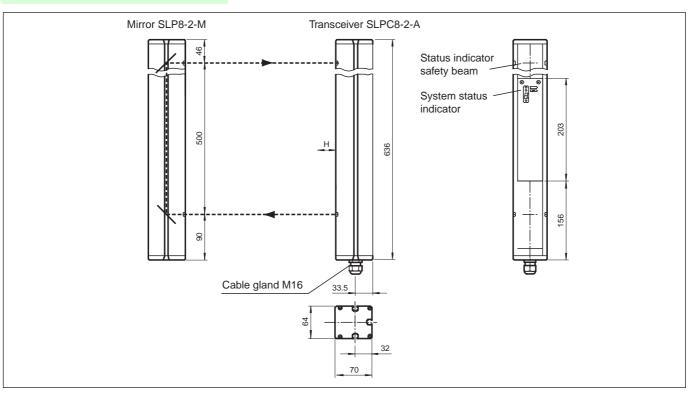
**SLPC8-2/..** 



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

Technical data			SLPC8-2/	
			,	1
	Ordering code:	SLPC8-2	SLPC8-2/31	
Effective detection range	0.2 8 m	•	•	i i
Number of beams	2	•	•	I
Beam spacing	_ 500 mm	•	•	1
Obstacle size	static: 32 mm dynamic: 50 mm (at $v = 1.6$ m/s of the obstacle)	•	•	_
Light source	LED	•	•	Safety through beam sensors
Light type	red, alternating light	•	•	Ā
Ang le of divergen œ	< 5 °	•	<b>♦</b>	- fe s
Operatin g mo de	Start/restart disable, relay monitor,	•	•	i o o
Safety category a ccording to IEC/EN 61496	4	•	•	i r ie
Approvals	TÜV	•	•	1 5 "
Tests	IEC/EN 61496	•	•	tet i
Marking	CE	•	•	Sai
Function display	LED red: per receiver channel off: interruption flæshes: receiver	•		
	continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off LED green: OSSD on	•	Ţ	
Pre-fault indication	LED red next to receiver flashes	•	•	8
Di agno sis d ispla y	7-segment display	•	•	Safety light gri ds
Operating e lements	10 DIP switch in transceiver terminal compartment	•	•	L L
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	•	•	ig
No-load sup ply current	max. 250 mA	•	•	
Protection class		•	•	fe
Function input	Relay monitor, start release	•	•	Sa
Test input	Reset input for system test	•	•	1
Activation current	approx. 10 mA	•	•	1
Activation time	0.03 1 s	•	•	1
Sig nal ou tou t	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	٠ •	•	i terre i
Output of the pre-fault indication	1 PNP, $+U_B - 2$ V, max. 300 mA	▲ ▲		1
	2 separated fail safe semiconductor outputs	•	•	t t
Safetyoutput	2 relay outputs, compelled connection NO-contact	•	•	Safety light grids with internal control unit
Switching voltage	Operating voltage -2 V 20 60 V DC , 12 25 V AC <sub>rms</sub>	•	•	t grid ontro
Switching current	max. 0.5 A	•		- Бо
-	0.01 2 A	·	•	na lic
Switch power	100 VA		•	ety
Be an end of the e	20 ms		•	int
He sponse time		•		S
	40 ms 0 50 ℃ (273 323 K)		•	1
Ambient temperature	0 50 ℃ (273 323 K) -20 _ 70 °C (253 _ 343 K)	•	•	1
Storage temperature	-20 70 °C (253 343 K) max. 95 %, not condensing	•	•	1
Relative humidity		•	•	1
Protection de gree	IP65	•	•	JS
Connection	Cable screwed connection M16, terminal compartment with cage-terminals	•	•	ai
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated			i h
	Plastic lens	•	•	Ū, I
Optical face		•	•	- Å
Mass Connection options	Per 2300 g Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	* *	• •	Safety light curtains
System components	1 kg comot			at
Transce ive r	SLPC8-2-A			1 00
I l'ân sce ive r	SLPC8-2-A SLPC8-2-A/31	•		1
		•	• I	1 L
Mirro r pi llar	SLP8-2-M	•	•	

**Control units** 



### **Electrical connection**

Transceiver SLPC8-2-A

Safety light grids with internal control unit

Safety through beam sensors

Safety light grids

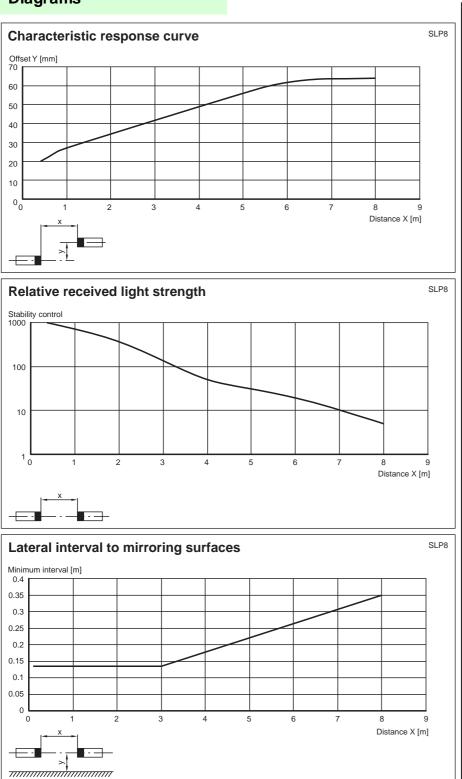
# ⊗çmmmz ⊗ 6 15 14 13 12 11 10 9

0

Transceiver SLPC (semiconductor output)	Transceiver SLPC/31 (relay output)
1 - Fu 2 - 0 3 - 24	
4 - n.c. 5	4 5 6 7 8
10 - In 11 - In 12 - Pi 13 - n. 14 - Pi 15 - Pi	put, Relay monitor put, Start release put, Reset PF-output, Soiled optics c. VP-output, Startup readiness VP-output, Indicator OSSD OFF VP-output, Indicator OSSD ON

Safety light curtains









Safety light grid with integrated control unit SLPC10-2/...

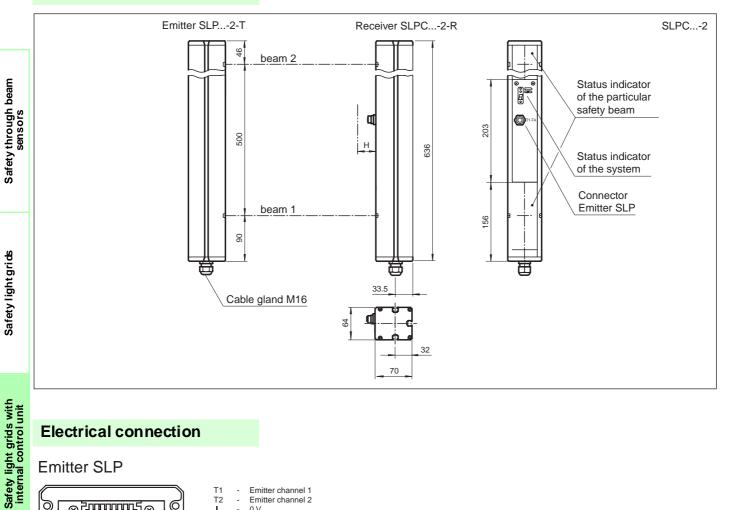
CE

- 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

Tor	hn	ical	data
160		icai	uata

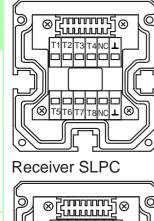
## SLPC10-2/..

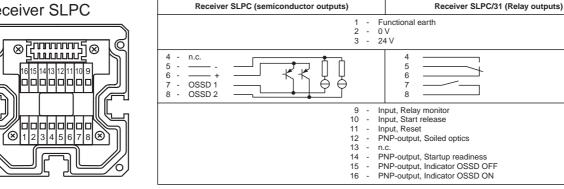
	Ordering code:	SLPC10-2	SL PC10-2/31	
		S	2	
Effective detection range	0.2 10 m	•	•	
Number of beams	2	•	•	
Bea m spacing	500 mm	•	•	
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	٦
Light source	LED	•	•	ear 1
Light type	red, alternating light	•	•	ے ا
Angle of divergence		•	•	Safety through beam sensors
		•	•	l no s
Operating mode	Start/restart disable, relay monitor, 4	•	•	j r
Safety category a coording to IEC/EN 61496	4 TÜV	•	•	s t
Approvals		•	•	fet
Tests	IEC/EN 61496	•	•	Sa
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	•	•	Safety light grids
Di agno sis d ispla y	7-segment display			g I
Operating e lements	10 DIP switch in receiver terminal compartment	•		Ĕ
Operating voltage	24 V D C -15 % / +25 %, electrically isolated	•	•	lig
No-load sup ply current	max. 250 mA	•	•	5
Protection class		•		l e
Function input	Relay monitor, start release	•	•	ŝ
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	•	•	
5 I		•	•	
Output of the pre-fault indication	1 PN P, +U <sub>B</sub> - 2 V, max. 300 mA	•	•	it H
Safetyoutput	2 separated fail safe semiconductor outputs	•		Safety light grids with internal control unit
	2 relay outputs, compelled connection NO-contact		•	s S S
Switching voltage	Operating voltage -2 V	•		t ji
	20 60 V DC, 12 25 V AC <sub>rms</sub>		•	o t
Switching current	max. 0.5 A	•		
	0.01 2 A	•	•	l i er
Switch power	100 VA		•	fet
Response time	20 ms	•	•	inSat
ne sporse time		•		
A	40 ms		•	
Ambient temperature	0 50 °C (273 323 K)	•	•	
Storage temperature	-20 70 °C (253 343 K)	•	•	
Relative humidity	max. 95 %, not condensing	•	•	6
Protection de gree	IP65	•	•	i,
Connection	Cable screwed connection M16 , terminals, M12-connector for emitter	•	•	Irta
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	<b>บ</b>
Optical face	Plastic lens	•	•	l 4
Mass	Per 2300 g	•	•	li∋
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	Safety light curtains
System components				S I
Emitter	SLP10-2-T	•	•	1
Receiver	SLPC10-2-R	•	•	11
	SLPC10-2-R/31	•	•	



### **Electrical connection**

### **Emitter SLP**



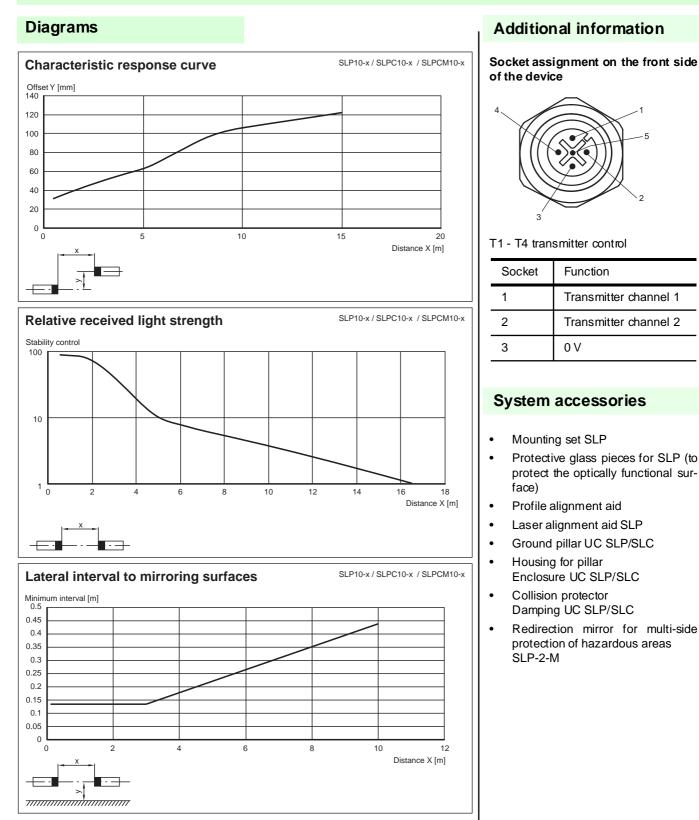


Emitter channel 1

Emitter channel 2 0 V

T1 -Т2 **上** -

### SLPC10-2/..



CE

## Safety light grid with integrated control unit

SLPC30-2/..

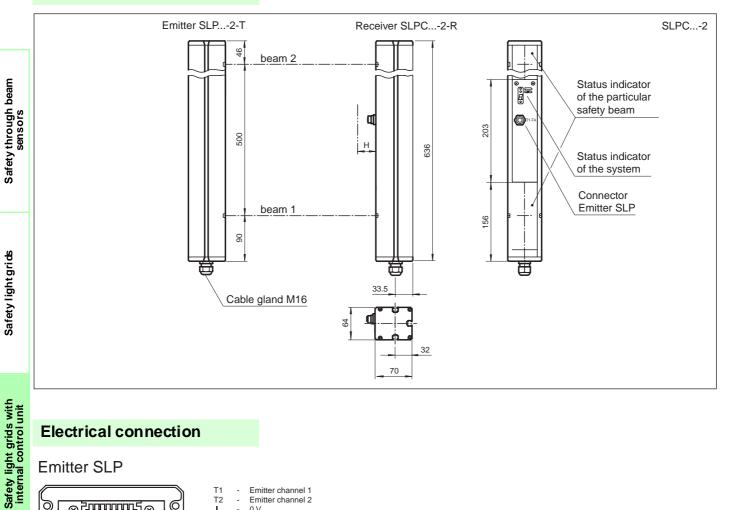


- Detection range up to 30 m
- 🔶 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault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

Technical data		SL	.PC30-2/	
	Ordering ∞de:	SLPC30-2	SL PC30-2/31	
Effective detection range	6 30 m	•	•	
Number of beams	2	•	•	I
Bea m spacing	500 mm	•	•	11
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	Ē
Light source	LED	•	•	) še
Light type	red, alternating light	•	•	s P
Angle of divergenæ	< 5 °	•	•	- Bio
Operatin g mo de	Start/restart disable, relay monitor,	•	•	l o su
Safety category a ccording to IEC/EN 61496	4	•	•	Safety through beam sensors
Approvals	ТÜV	•	•	چ ا
Tests	IEC/EN 61496	•	•	afe
Marking	CE	•		ů,
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	•	•	<del>ا</del> لا
Pre-fault indication	LED red next to receiver flashes	•	♦	Ë
Di agno sis d ispla y	7-segment display	•	•	Safety light gri ds
Operating e lements	10 D IP switch in receiver terminal compartment	•	•	l lg
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	•	•	≞
No-load sup ply current	max. 250 mA	•	•	l ŝ
Protection class		•	•	afe
Function input	Relay monitor, start release	<b>•</b>		Ň
Test input	Reset-input for system test			11
Activation current	approx. 10 mA	•		
Activation time	0.03 1 s	•		
	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off		•	
Signal output		•	• I	
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	♦	, 다
Safetyoutput	2 separated fail safe semiconductor outputs	•	1	N N
Switching voltage	2 relay outputs, compelled connection NO-contact Operating voltage -2 V	•	•	Safety light grids with internal control unit
	20 60 V DC, 12 25 V AC <sub>rms</sub>		♦	o t
Switching current	max. 0.5 A	•		l gh
	0.01 2 A	¥		in a
Switch power	100 VA			et
Response time	20 ms	•	•	Saf
	40 ms		◆	
Ambient temperature	0 50 °C (273 323 K)	•	♦	
Storage temperature	-20 70 ℃ (253 343 K)	•	<b>•</b>	
Relative humi dity	max. 95 %, not condensing	•	♦	11
Protection de gree	IP65	•	•	US I
Connection	Cable screwed connection M16,		•	ai
	terminal compartment with cage-terminals, M12-connector for emitter	•	•	L L
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	Ū
Optical face	Plastic lens	•	•	l È
Mass	Per 2300 g	•	•	l ĭ≝ĭ
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, reœiver: 11-pin+PE	•	•	Safety light curtains
System components				l N
Emitter	SLP30-2-T	•	•	11
Receiver	SLPC30-2-R	•		11
		-		

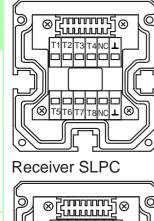
**Control units** 

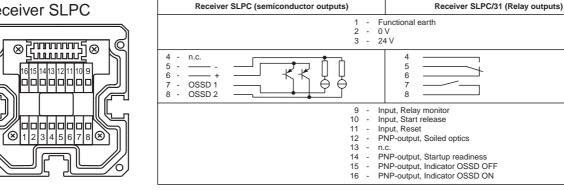




### **Electrical connection**

### **Emitter SLP**



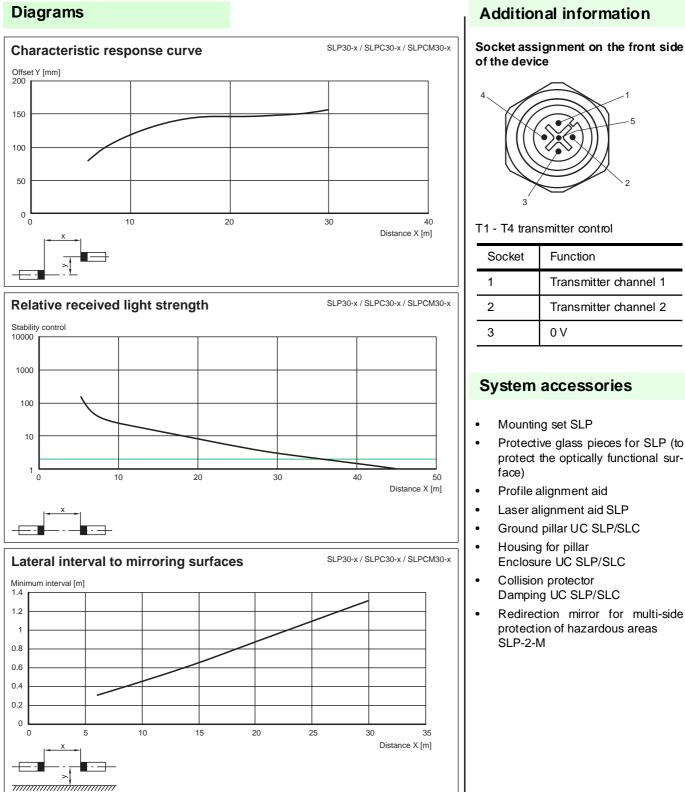


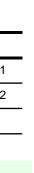
Emitter channel 1

Emitter channel 2 0 V

T1 -Т2 **上** -

### SLPC30-2/..





Safety through beam sensors



SLPC65-2/..

Safety light grid with integrated control unit

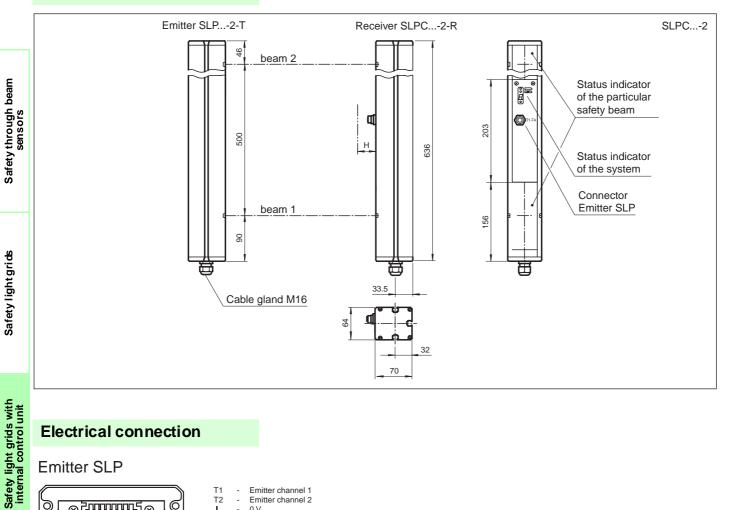
CE



- 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

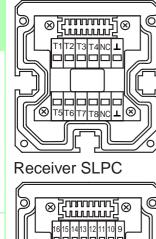
Technical data		SL	PC65-2/	
				1
	Ordering code:	SLPC65-2	SL PC65-2/31	
Effective detection range	12 65 m	•	•	
Number of beams	2	•	•	
Bea m spacing	500 mm	•	•	
Obstacle size	static: 32 mm	•	•	-
	dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	·	·	an
Light source	LED	•	•	Safety through beam sensors
Light type	red, alternating light	<b>•</b>	<b>♦</b>	Ч Ч С С
Ang le of divergen æ	< 5 °	<b>•</b>	•	J S G
Operatin g mo de	Start/restart disable, relay monitor,	<b>♦</b>	◆	
Safety category a cording to IEC/EN 61496	4	•	◆	÷ »
Approvals	ΤÜV	•	•	G
Tests	IEC/EN 61496	•	◆	af
Marking	CE	•	•	S
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			م
Pre-fault indication	LED red next to receiver flashes	•	•	iq i
Di agno sis d ispla y	7-segment display	•	•	Safety light gri ds
Operating e lements	10 DIP switch in receiver terminal compartment	•	•	Ę
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	•	•	ĭ≓
No-load supply current	max. 250 mA	•	•	چ ا
Protection class		•	•	afe
Function input	Relay monitor, start release	•	•	ů.
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 <sub>B</sub> -2 V, max. 300 mA	•	•	_
	5	•	•	it h
Safetyoutput	2 separated fail safe semiconductor outputs	•		≥ n
Switching voltage	2 relay outputs, compelled connection NO-contact Operating voltage -2 V	•	•	Safety light grids with internal control unit
	20 60 V DC, 12 25 V AC <sub>rms</sub>		•	<u>i</u> i i
Switching current	max. 0.5 A	•		l o
	0.01 2 A	•	•	il v
Switch power	100 VA		•	fet
Response time	20 ms	•	•	in Saf
	40 ms	•	•	
Ambient tempera ture	050 °C (273 323 K)	•	•	
Storage temperature	-20 70 °C (253 343 K)	•	•	
Relative humidity	max. 95 %, not condensing	•		
Protection de gree	IP65	•	•	Ś
Connection	Cable screwed connection M16,	•	•	i i i i i i i i i i i i i i i i i i i
	terminal compartment with cage-terminals, M12-connector for emitter	•	◆	ť
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	5
Optical face	Plastic lens	•	•	Ĕ
Mass	Per 2300 g	<b></b>	<b>▲</b>	lig
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, reœiver: 11-pin+PE	•	• •	Safety light curtains
System components				လိ
Emitter	SLP65-2-T	•	•	
Receiver	SLPC65-2-R	•	•	
	SLPC65-2-R/31	•	•	
	SLPC05-2-R/31		•	





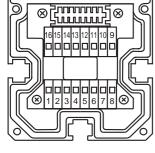
## **Electrical connection**

### **Emitter SLP**



### Emitter channel 1 T1 -Т2 **上**

### -Emitter channel 2 0 V



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

# 7/29/04

Safety light curtains



1 0.5 0

0

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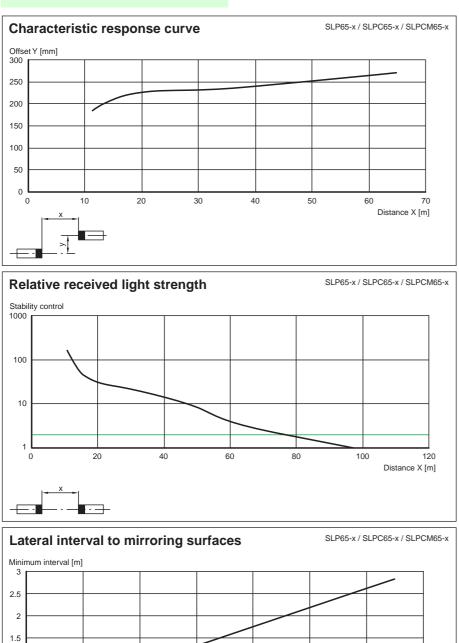
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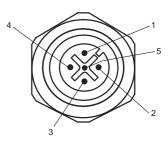
60

70 Distance X [m]



### 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 grids with internal control unit

Safety through beam sensors

Safety light grids

Safety light grid with integrated control unit

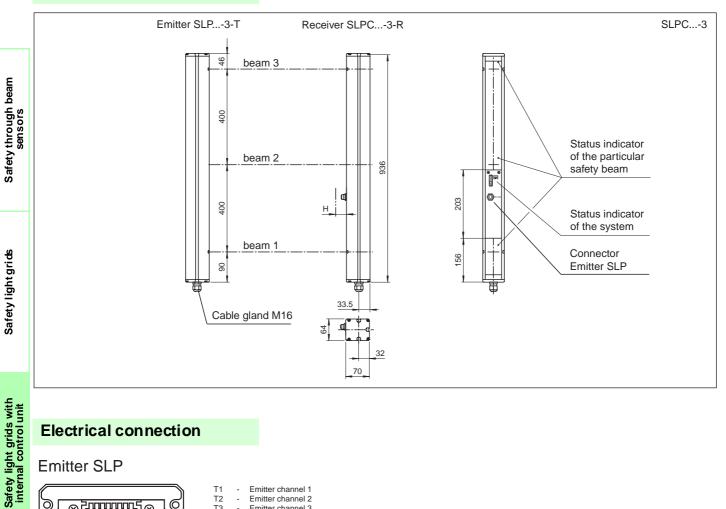
SLPC10-3/..





- 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

Technical data		SL	PC10-3/	
				'n
	Ordering ∞de:	SLPC10-3	SL PC10-3/31	
Effective detection range	02 10 m	•	•	
Number of beams	3	•	•	
Bea m spacing	400 mm	•	•	
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstade)	•	•	ε
Light source	LED	•	•	eal
Light type	red, alternating light	•		a a
Angle of divergenæ	<5 °	•	•	- and - Size
Operating mode	Start/restart disable, relay monitor,	•	•	Jor
Safety category a ccording to IEC/EN 61496	4	•	•	Safety through beam sensors
Approvals	TÜV	•	•	ੂੰ ਨੂੰ
Tests	IEC/EN 61496	•	•	afe
Marking	CE	•	•	ŝ
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	*	<b>•</b>	
Pre-fault indication	LED green OSSD un	•	•	8
Di agno sis d ispla y	7-segment display	•	•	Safety light gri ds
Operating e lements	10 DIP switch in receiver terminal compartment	•	•	þt
Operating volta ge	24 V DC -15 % / +25 %, electrically isolated	•	•	lig
No-load supply current	max. 250 mA		•	<b>₹</b>
Protection class			•	afe
Function input	Relay monitor, start release	•		Ň
Test input	Reset-input for system test	•	•	
Activation current	approx. 10 mA	•	•	
Activation time	0.03 1 s	•	• •	-
Sig nal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	•	•	
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•	ء
Safetyoutput	2 separated fail safe semiconductor outputs	•	•	safety light grids with internal control unit
Switching voltage	2 relay outputs, compelled connection NO-contact Operating voltage -2 V		<b>♦</b>	ids
Switching voltage		•		gr
	20 60 V DC, 12 25 V AC <sub>rms</sub>		<b>♦</b>	<u>5</u>
Switching current	max. 0.5 A	•		lig
	0.01 2 A		<b>♦</b>	erc
Switch power	100 VA		<b>♦</b>	inte
Response time	20 ms	•		v
	40 ms		•	
Ambient tempera ture	0 50 °C (273 323 K)	•	•	-
Storage temperature	-20 70 °C (253 343 K)	<b>•</b>	◆	
Relative humi dity	max. 95 %, not condensing	•	<b>♦</b>	
Protection de gree	IP65	•	•	ins
Connection	Cable screwed connection M16, terminal compartment with cage-terminals, M12-connector for emitter	•	•	ta
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	l no
Optical face	Plastic lens	•	•	ŧ
Mass	Per 3400 g	•	•	ligl
Connection options	Further electrical connection options on request:	•	•	2
	Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	Safety light curtains
System components				l w
Emitter	SLP10-3-T	•	<b>•</b>	
Re ceiver	SLPC10-3-R	•		
	SLPC10-3-R/31		•	



### **Electrical connection**

T1

T

-T2 T3

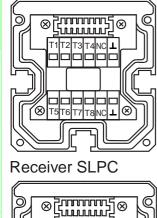
-

0 V

Emitter channel 1

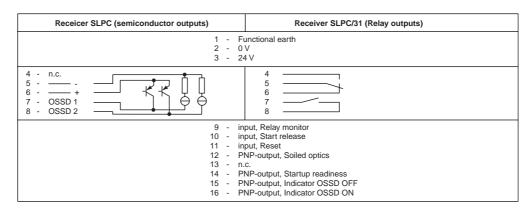
Emitter channel 2 Emitter channel 3

### **Emitter SLP**



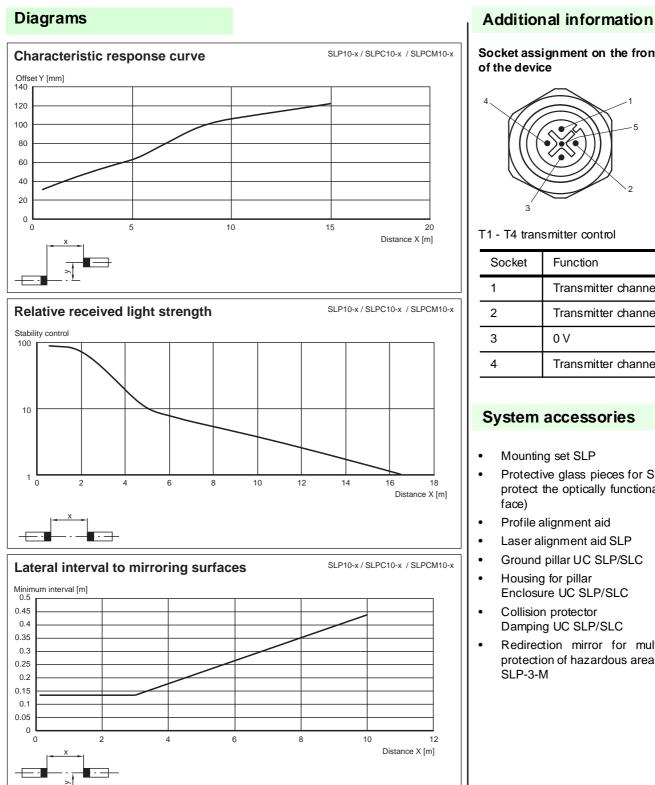
	T11	「2」 コ	「3 <sup>−</sup>	Г4	NC				
)  brace			-						
Ø			7	П Г8			$\otimes$	][	
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ece	ive	er	S	L	Ρ	С			
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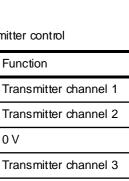
Safety light curtains

Safety light grids



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# Socket assignment on the front side



### System accessories

- Protective glass pieces for SLP (to protect the optically functional sur-

- Enclosure UC SLP/SLC
- Redirection mirror for multi-side protection of hazardous areas

Safety through beam sensors

Safety light grids

Safety light grid with integrated control unit

SLPC30-3/..

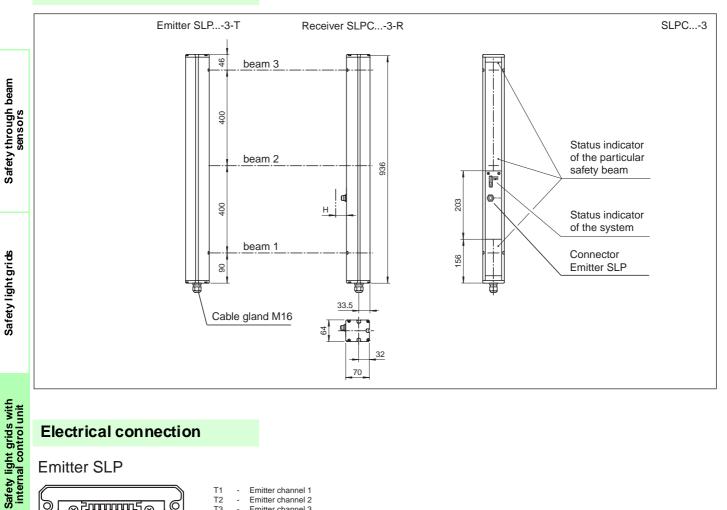




- Detection range up to 30 m
- 🔶 3-Radial design
- Beam spacing 400 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault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

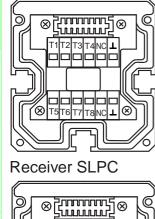
Technical data		SL	_PC30-3/	
				_
	Ordering code:	SLPC30-3	SL PC30-3/31	
Effective detection range	6 30 m	•	•	1
Number of beams	3	•	•	1
Bea m spacing	400 mm	•	• · · ·	1
Obstacle size	static:32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	ε
Light source	LED	•	• · · ·	l g
Light type	red, alternating light	•	÷ !	Safety through beam sensors
Angle of divergen œ	< 5 °	•	· · · · · ·	1 pi
Operating mo de	Start/restart disable, relay monitor,	•	•	10 SC
Safety category a ccording to IEC/EN 61496	4	Å	· · · · · ·	ser th
App rovals	ΤÜV		•	َ ج <u>َ</u> ا
Tests	IEC/EN 61496	•	· · · · ·	afe
Marking	CE	•		ŝ
Function display	LED red: per receiver channel off: interruption flashes: receiver	•	•	1
	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	٠	•	i 💆
Di agno sis d ispla y	7-segment display	▲ V	• · · ·	Safety light gri ds
Operating e lements	10 DIP switch in receiver terminal compartment	•	•	1 E
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	<b>•</b>	· · · · ·	l ≌
No-load supply current	max. 250 mA	<b>Å</b>		। <u>२</u>
Protection class				afe
Function input	Relay monitor, start release	•		l s
Test input	Reset input for system test			1
Activation current	approx. 10 mA			1
Activation time	0.03 1 s		·	1
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	•	•	1
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	· · · · ·	1
	-	•	•	눈물
Safetyoutput	2 separated fail safe semiconductor outputs 2 relay outputs, compelled connection NO-contact	•	· · · · ·	Nulur
Switching voltage	Operating voltage -2 V	•	•	: grids with ontrol unit
	20 60 V DC , 12 25 V AC <sub>rms</sub>		• · · ·	o t
Switching current	max. 0.5 A	•	,	lgh o la
	0.01 2 A		• · · · · ·	
Switch power	100 VA			Safety light ( internal cor
De en en es time	20 ms		· · · ·	Saf
Re spon se time		•		1
Archienttemporeture	40 ms		•	1
Ambient temperature	0 50 °C (273 323 K)	•	• I	1
Storage temperature	-20 70 °C (253 343 K)	•	•	1
Relative humidity	max. 95 %, not condensing	•	•	1 0
Protection de gree	IP65	•	• )	j.
Connection	Cable screwed connection M16, terminal compartment with cage-terminals, M12-connector for emitter	•		Lta
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•		1 3
Optical face	Plastic lens		· · · · ·	1 2
Mass	Per 3400 g	•	•	lig
Connection options	Further electrical connection options on request:	•	• ,	1 2
	Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	<b>•</b>	Safety light curtains
System components			1	ů,
Emitter	SLP30-3-T	•	• · · ·	1
Receiver	SLPC30-3-R	•	,	1
	SLPC30-3-R/31		▲ !	1

**Control units** 



### **Electrical connection**

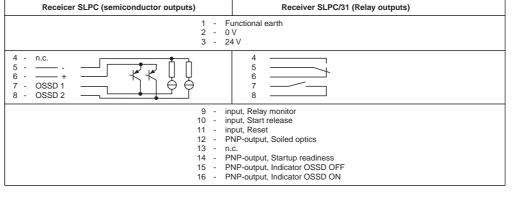
### **Emitter SLP**



6 15 14 13 12 11 10

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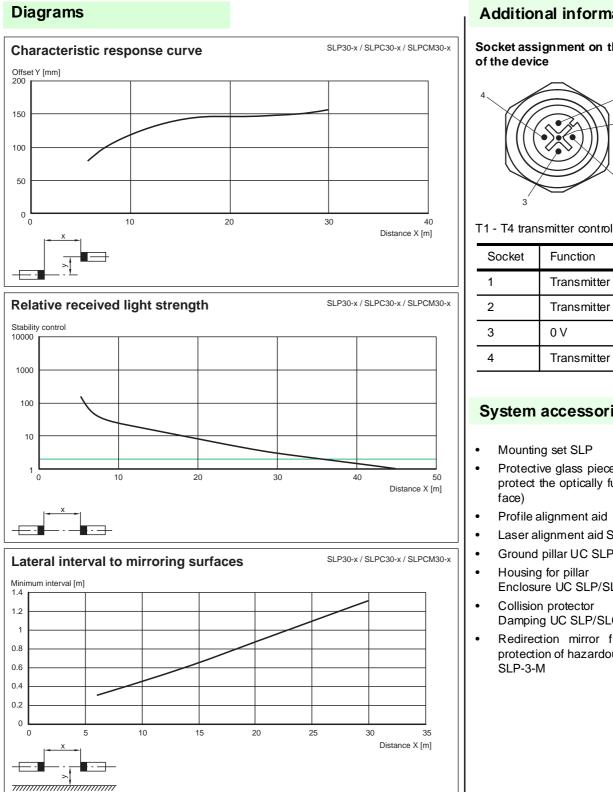
T1 T2 T3 <b>上</b>	- - -	Emitter channel 1 Emitter channel 2 Emitter channel 3 0 V
_		



Safety light curtains

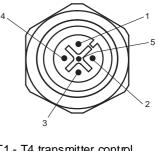
Safety light grids

### SLPC30-3/..



### Additional information

# Socket assignment on the front side



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 sur-
- 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

Safety through beam sensors

Safety light grid with integrated control unit

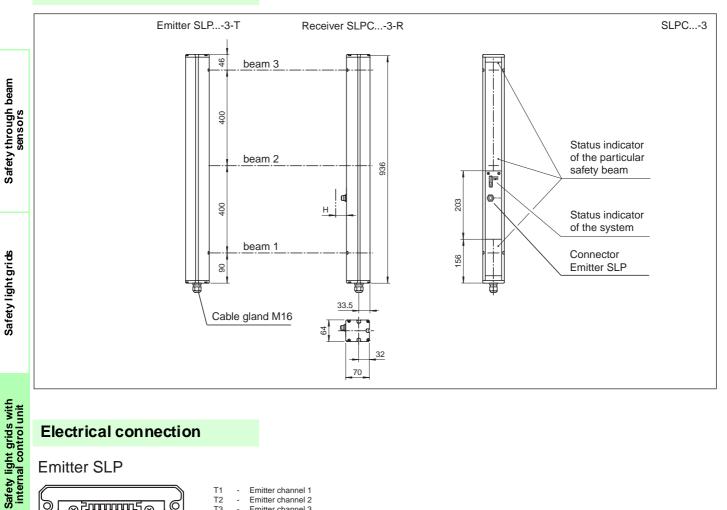
SLPC65-3/..





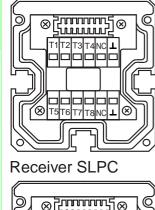
- Detection range up to 65 m
- 🔶 3-Radial design
- Beam spacing 400 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault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

Drawing code:         Sector of the science range         1265 m         12.	Technical data		SI	_PC65-3/	
Electre de adors mage Marker at loaren Detatuba size ador me Obtatuba size ador me ador me obtatuba size ador me obtatuba size ador me obtatuba size ador me construction () () () () () () () () () () () () () (					_
Number of baris 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		Ordering code:	SLPC65-3	<b>S.</b> PC65-3/31	
Number of beams in a 3 b b b b b b b b b b b b b b b b b b	Effective detection range	12 65 m	•	•	1
Beam spacing 400 mm Obtaice is a due: 23 mm dyname: 50 mm (due = 1.6 m/s of the obstade) 4 Light surce LED Light surce LED Light surce CED Light	5		•	•	1
Oblistics is size       attat:: 32 nmn       dynamic:: 50 rm (at v = 1.6 m/s of the obstade)       Implement of the obstade)       Imp	Beamspacing			• · · ·	1
Findion display       LED red: per receiver channel off: interruption flashes: receiver continuously on: receiver contection contection contection plots contection plot			•	•	ε
Marking       CL       Dec: per receiver channel off: Interruption Iffashes: receiver continuously on: receiver channel off: Interruption Iffashes: receiver continuously on: receiver fashes            Prefault indication       LED red: Dred: OSD of LED green: OSD of LED green: OSD of LED green: OSD of LED red next to receiver fashes <t< td=""><td>Liaht source</td><td></td><td>▲</td><td>•</td><td>ea I</td></t<>	Liaht source		▲	•	ea I
Pinction display       C.E.       Dec. per receiver channel off: Interruption Italiaes: receiver continuously on: receiver channel off: Interruption Italiaes: receiver continuously on: receiver dishels			<b>•</b>		<u>م</u> ا
Pinction display       C.E.       Dec. per receiver channel off: Interruption Italiaes: receiver continuously on: receiver channel off: Interruption Italiaes: receiver continuously on: receiver dishels			<b>▲</b>		
Marking       CL       Dec: per receiver channel off: Interruption Iffashes: receiver continuously on: receiver channel off: Interruption Iffashes: receiver continuously on: receiver fashes            Prefault indication       LED red: Dred: OSD of LED green: OSD of LED green: OSD of LED green: OSD of LED red next to receiver fashes <t< td=""><td></td><td></td><td>•</td><td>•</td><td></td></t<>			•	•	
Marking       CL       Dec: per receiver channel off: Interruption Iffashes: receiver continuously on: receiver channel off: Interruption Iffashes: receiver continuously on: receiver fashes            Prefault indication       LED red: Dred: OSD of LED green: OSD of LED green: OSD of LED green: OSD of LED red next to receiver fashes <t< td=""><td></td><td></td><td>•</td><td></td><td>l H</td></t<>			•		l H
Marking       CL       Dec: per receiver channel off: Interruption Iffashes: receiver continuously on: receiver channel off: Interruption Iffashes: receiver continuously on: receiver fashes            Prefault indication       LED red: Dred: OSD of LED green: OSD of LED green: OSD of LED green: OSD of LED red next to receiver fashes <t< td=""><td></td><td></td><td>•</td><td></td><td>۳<u>کر</u> ۱</td></t<>			•		۳ <u>کر</u> ۱
Marking       CL       Dec: per receiver channel off: Interruption Iffashes: receiver continuously on: receiver channel off: Interruption Iffashes: receiver continuously on: receiver fashes            Prefault indication       LED red: Dred: OSD of LED green: OSD of LED green: OSD of LED green: OSD of LED red next to receiver fashes <t< td=""><td></td><td></td><td>-</td><td></td><td>fet</td></t<>			-		fet
Marking       CL       Dec: per receiver channel off: Interruption If advise: receiver continuously on: receiver dannel off: Interruption If advise: receiver continuously on: receiver fashes <ul> <li>Prefault indication</li> <li>LED red next to receiver fashes</li> <li>Dignosis display</li> <li>Prefault indication</li> <li>LED red next to receiver fashes</li> <li>Operating elements</li> <li>Dip Switch in receiver terminal compartment</li> <li>Operating elements</li> <li>Operating values</li> <li>O</li></ul>			•	•	Sal
continuously on: reception with sufficient stability control		LED red: per receiver channel off: interruption	•	•	
I est input       Heset-Input for system test         Activation cirrent       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, +Ug2 V, max. 300 mA         Safety outputs       2 separated fail safe semiconductor outputs         2 relay outputs, compelied 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       -20 70 °C (273 323 K)         Storage temperature       -20 70 °C (253 343 K)         Protection degree       IP65         Connection       Cable screwed connection M16 , 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		continuously on: reception with sufficient stability control on the front plate: LED red:OSSD off LED green: OSSD on	•	•	ي
I est input       Heset-Input for system test         Activation cirrent       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, +Ug2 V, max. 300 mA         Safety outputs       2 separated fail safe semiconductor outputs         2 relay outputs, compelied 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       -20 70 °C (273 323 K)         Storage temperature       -20 70 °C (253 343 K)         Protection degree       IP65         Connection       Cable screwed connection M16 , 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	Pre-fault indication	LED red next to receiver flashes	•	•	i i
I est input       Heset-Input for system test         Activation cirrent       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, +Ug2 V, max. 300 mA         Safety outputs       2 separated fail safe semiconductor outputs         2 relay outputs, compelied 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       -20 70 °C (273 323 K)         Storage temperature       -20 70 °C (253 343 K)         Protection degree       IP65         Connection       Cable screwed connection M16 , 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	Di agno sis d ispla y	7-segment display	•	◆	t g
I est input       Heset-Input for system test         Activation cirrent       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, +Ug2 V, max. 300 mA         Safety outputs       2 separated fail safe semiconductor outputs         2 relay outputs, compelied 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       -20 70 °C (273 323 K)         Storage temperature       -20 70 °C (253 343 K)         Protection degree       IP65         Connection       Cable screwed connection M16 , 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	Operating e lements	10 DIP switch in receiver terminal compartment	•	•	l Ē
I est input       Heset-Input for system test         Activation cirrent       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, +Ug2 V, max. 300 mA         Safety output       2 separated fail safe semiconductor outputs         2 relay outputs, compelied 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       -20 70 °C (273 323 K)         Storage temperature       -20 70 °C (253 343 K)         Protection degree       IP65         Connection       Cable screwed connection M16 , 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			•	♦	I≓ĭ
Iest input       Heset-Input tor system test         Activation cirrent       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, +Ug2 V, max. 300 mA         Safety output       2 separated fail safe semiconductor outputs         2 relay outputs, compelied connection NO-contact       •         Switching voltage       Operating voltage -2 V         20 60 V DC, 12 25V AC rms       •         Switching current       max. 0.5 A         0.01 2 A       •         Switch power       100 VA         Response time       20 ms         40 ms       •         Ambient temperature       •.20 70 °C (273 323 K)         Storage temperature       •.20 70 °C (253 343 K)         Protection degree       IP65         Connection       Cable screwed connection M16, 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 on request:         Plug connector DIN 43 651 H			•	•	I Â
I est input       Heset-input for system lest         Activation cirrent       approx. 10 mA         Activation time       0.03 1 s         Signal output       1 PNP each, max. 300 mA for star readiness, OSSD on, OSSD off, muting lamp         Output of the pre-fault indication       1 PNP, +Ug2 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 25V AC rms       •         Switch power       100 VA         Response time       20 ms         40 ms       •         Ambient temperature       •         0.0 °C (273 323 K)       Storage temperature         2 rotection degree       IP65         Cornection       Cable screwed connection M16, 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 on request:         Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE         System components       •         Emitter			•	• · · ·	afe
Activation current       approx. 10 mA         Activation time       0.03 1 s         Activation time       0.03 1 s         Signal output       1 PNP, eug., max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp         Output of the pre-fault indication       1 PNP, +Ug2 V, max. 300 mA         Safetyoutput       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 V A         Response time       20 ms         40 ms       •         Ambient temperature       -20 70 °C (253 323 K)         Storage temperature       -20 70 °C (253 343 K)         Relative humidity       max. 95 %, not condensing         Protection digree       IP65         Connection       Cable screwed connection M16 , terrminals, M12-connector for emitter         Housing       aluminium extruded structural profile, RAL 1021 (yellow) coated         Optical face       Plasitc lens         Mass       Per 3400 g         Connection options       Furthere electri			<b>•</b>	•	ů
Activation time       0.03 1 s       • • • • • • • • • • • • • • • • • • •	•		•	<b></b>	1
Signal output       1 PNP each, max. 300 mÅ for start readiness, OSSD off, muting lamp <ul> <li>Output of the pre-fault indication</li> <li>1 PNP, +U<sub>B</sub> - 2V, max. 300 mÅ</li> <li>Safety output</li> <li>2 separated fail safe semiconductor outputs</li> <li>2 relay outputs, compelled connection NO-contact</li> <li>Switching voltage</li> <li>Operating voltage - 2V</li> <li>20 60 V DC, 12 25 V AC rms</li> <li>Switching current</li> <li>Max. 0.5 A</li> <li>OUT 2 A</li> <li>Switch power</li> <li>100 VA</li> <li>Response time</li> <li>20 ms</li> <li>40 ms</li> <li>Ambient tempera lare</li> <li>-0.0 · 50 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>Storage tempera lare</li> <li>-20 70 °C (273 323 K)</li> <li>-20 70 °</li></ul>			<b>•</b>		1
Output of the pre-fault indication       1 PNP, +Ug - 2 V, max. 300 mA       • <td< td=""><td></td><td></td><td><b>•</b></td><td></td><td>1</td></td<>			<b>•</b>		1
Safety output 2 separated fail safe semiconductor outputs 2 relay outputs, compelled connection NO-contact Switching voltage Operating voltage -2 V 2 0 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 tempera ture 0 50 °C (273 323 K) Storage tempera ture 0 50 °C (273 323 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 50 °C (273 323 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 50 °C (273 323 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 60 °C (273 323 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 2 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 3 0 70 °C (253 343 K) Storage tempera ture 4 0 50 °C (253 343 K) Storage tempera ture 4 0 50 °C (253 343 K) Storage tempera ture 4 0 50 °C (253 343 K) Storage tempera ture 4 0 50 °C (253	• ·		•		1
2 relay outputs, compelled connection NO-contact       Image: Competition of the second		5	•	<b>•</b> 1	1
Ambient tempera ture       0 50 °C (273 323 K)       • <t< td=""><td></td><td>2 relay outputs, compelled connection NO-contact</td><td>•</td><td>•</td><td>with</td></t<>		2 relay outputs, compelled connection NO-contact	•	•	with
Ambient tempera ture       0 50 °C (273 323 K)       • <t< td=""><td>Switchingvoltage</td><td></td><td>•</td><td></td><td>spo</td></t<>	Switchingvoltage		•		spo
Ambient tempera ture       0 50 °C (273 323 K)       • <t< td=""><td></td><td></td><td></td><td>◆</td><td>gri</td></t<>				◆	gri
Ambient tempera ture 0 50 °C (273 323 K) Storage tempera ture -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-R SLP65-3-R SLP65-3-R	Switching current	max. 0.5 A	•		5 J
Ambient tempera ture       0 50 °C (273 323 K)       • <t< td=""><td></td><td>0.01 2 A</td><td></td><td>•</td><td>alg</td></t<>		0.01 2 A		•	alg
Ambient tempera ture       0 50 °C (273 323 K)       • <t< td=""><td>Switch power</td><td>100 VA</td><td></td><td>♦</td><td>≥£</td></t<>	Switch power	100 VA		♦	≥£
Ambient tempera ture       0 50 °C (273 323 K)       • <t< td=""><td>•</td><td>20 ms</td><td>•</td><td></td><td>fei</td></t<>	•	20 ms	•		fei
Ambient tempera ture       0 50 °C (273 323 K)       • • • • •         Storage tempera ture       -20 70 °C (253 343 K)       • • • • •         Re lative humidity       max. 95 %, not condensing       • • • • •         Protection de gree       IP65       • • • • • •         Connection       Cable screwed connection M16 , terminals, M12-connector for emitter       • • • • • •         Housing       aluminium extruded structural profile, RAL 1021 (yellow) coated       • • • • • •         Optical face       Plastic lens       • • • • • • • • • • • • • • • • • • •			•		sa
Storage temperature       -20 70 °C (253 343 K)       • <t< td=""><td>Ambiont tomporature</td><td></td><td>•</td><td></td><td>1</td></t<>	Ambiont tomporature		•		1
Relative humidity       max. 95 %, not condensing <ul> <li>max. 95 %, not condensing</li> <li>Protection degree</li> <li>IP65</li> </ul> <ul> <li>Connection</li> <li>Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter</li> <li>terminal compartment with cage-terminals, M12-connector for emitter</li> </ul> <ul> <li>Stepsile</li> <li>Connection</li> <li>Plastic lens</li> <li>Per 3400 g</li> <li>Connection options</li> <li>Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE</li> <li>System components</li> </ul> <ul> <li>Supression</li> <li>Supressint supressint supressint supression</li> <li>Supressi</li></ul>			-		1
Protection degree       IP65 <ul> <li>Connection</li> <li>Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter</li> <li>Housing</li> <li>aluminium extruded structural profile, RAL 1021 (yellow) coated</li> <li>Optical face</li> <li>Plastic lens</li> <li>Per 3400 g</li> <li>Connection options</li> <li>Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE</li> <li>System components</li> </ul> <ul> <li>SuP65-3-R</li> <li>SuPc65-3-R</li> <li>Supcc5 -3 P. (4)</li> </ul> <ul> <li>Supcc5 -3 P. (4)</li> <li>Supcc5 -3 P. (4)</li> </ul> <ul> <li>Supcc5 -3 P. (4)</li> <li>Supcc5 -3 P. (4)</li> </ul> <li>Supcc5 -3 P. (4)</li> <li>Supcc5 -3 P. (4)</li>			•		1
Connection       Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter       Image: Connection options       Image: Connection option			•		1
Receiver SLPC65-3-R	-		•	+	l vo
Receiver SLPC65-3-R	Connection		•	◆	ain
Receiver SLPC65-3-R	Housing		•	•	1 3
Receiver SLPC65-3-R	Optical face	Plastic lens	•	•	ប
Receiver SLPC65-3-R	•	Per 3400 g	•	•	1 E
Receiver SLPC65-3-R		Further electrical connection options on request:	*	•	ty lig
Receiver SLPC65-3-R	System components	<b>.</b>			afe
Receiver SLPC65-3-R		SLP65-3-T	•	•	Ň
			•	, i i	1
		SLPC65-3-R/31	·	•	1

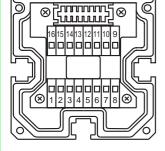


### **Electrical connection**

### **Emitter SLP**



	T1 T2 T3 ▲		Emitter channel 1 Emitter channel 2 Emitter channel 3 0 V
<u>ון</u>	Т	-	0 V



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



Safety light curtains



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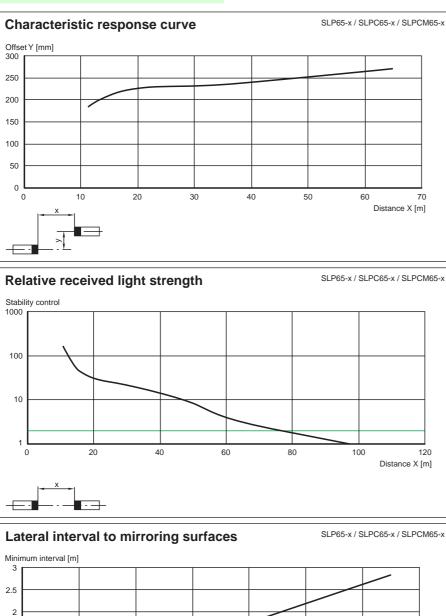
30

40

50

60

70 Distance X [m]



of the device

Additional information

Socket assignment on the front side

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
- 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 grids with internal control unit

Safety through beam sensors

Safety light grids

Safety light grid with integrated control unit

SLPC10-4/..



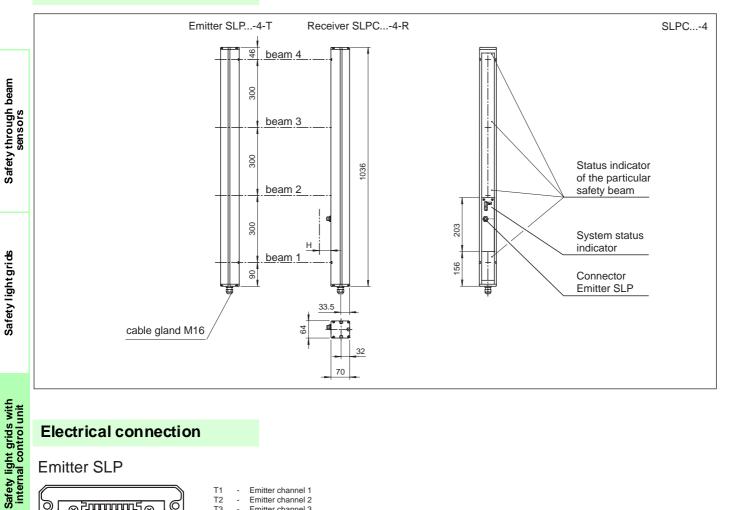
CE



- 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

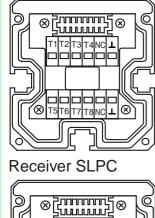
Technical data		SL	.PC10-4/	
	Ordering ∞ de:	SLPC10-4	SL PC10-4/31	
Effective detection range	0.2 10 m	•	•	
Number of beams	4	•	•	
Beam spacing	300 mm	•	•	
Obstacle size	static: 32 mm		•	
	dynamic: 50 mm (at $v = 1.6$ m/s of the obstacle)	•	•	Safety through beam sensors
Light source	LED	•	•	) Ö
Light type	red, alternating light	•	◆	л Г С
Ang le of divergen œ	< 5 °	•	◆	Bo
Operating mode	Start/restart disable, relay monitor,	•	•	us us
Safety category a ccording to IEC/EN 61496	4	•	♦	s t
Approvals	ΤÜV	•	•	l S
Tests	IEC/EN 61496	•	•	afe
Marking	CE	•	•	S
Function display	LED red: per receiver channel off: interruption flæhes: receiver	·	·	
	continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off LED green: OSSD on	•	•	w
Pre-fault indication	LED red next to receiver flashes	•	•	-id
Di agno sis d ispla y	7-segment display	•	•	Safety light gri ds
Operating elements	10 DIP switch in receiver terminal compartment	•	•	Ę
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	•	•	i≘i
No-load supply current	max. 250 mA	•	•	۲ <u>۲</u>
Protection class		•	•	afe
Function input	Relay monitor, start release	•	•	ů
Test i nput	Reset-input for system test			
Activation current	approx. 10 mA	•	•	
Activation time	0.03 1 s	•	•	
Sig nal ou tou t	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	•	•	
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•	_
	2 separated fail safe semiconductor outputs	•	•	it it
Safetyoutput	2 relay outputs, compelled connection NO-contact	•	•	Safety light grids with internal control unit
Switching voltage	Operating voltage -2 V 20 60 V DC, 12 25 V AC rms	•	•	t gri
Outline in a sum out	max. 0.5 A		•	Ξg
Switching current		•		a ji
	0.01 2 A		<b>♦</b>	ere
Switch power	100 VA		<b>♦</b>	int
Response time	20 ms	•		v
	40 ms		◆	
Ambient temperature	0 50 ℃ (273 323 K)	•	◆	
Storage temperature	-20 70 °C (253 343 K)	•	◆	
Relative humidity	max. 95 %, not condensing	•	◆	
Protection de gree	IP65	•	•	us
Connection	Cable screwed connection M16,	•	•	ai
	terminal compartment with cage-terminals, M12-connector for emitter	•	•	E E
Ho using	aluminium extruded structural profile, RAL 1021 (yellow) coated	<b>•</b>	◆	t t
Optical face	Plastic lens	•	•	р Ч
Mass	Per 3700 g	•	<b>♦</b>	
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	Safety light curtains
System comp onents				0
Emitter	SLP10-4-T	•	•	
Receiver	SLPC10-4-R	•		
	SLPC10-4-R/31		•	

**Control units** 



#### **Electrical connection**

#### **Emitter SLP**



6 15 14 13 12 11 10

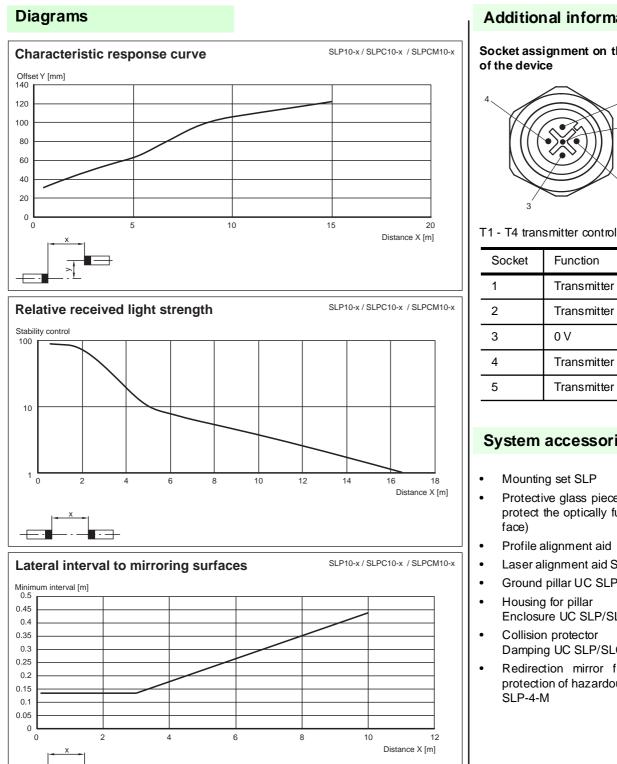
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**○**□□□□□□□□□□ ③ 1 2 3 4 5 6 7 8 ⊗

T1	-	Emitter channel 1
T2	-	Emitter channel 2
Т3	-	Emitter channel 3
Τ4	-	Emitter channel 4

- 0V

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



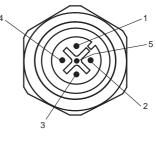
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#### Additional information

# Socket assignment on the front side



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 sur-
- 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

Safety through beam sensors



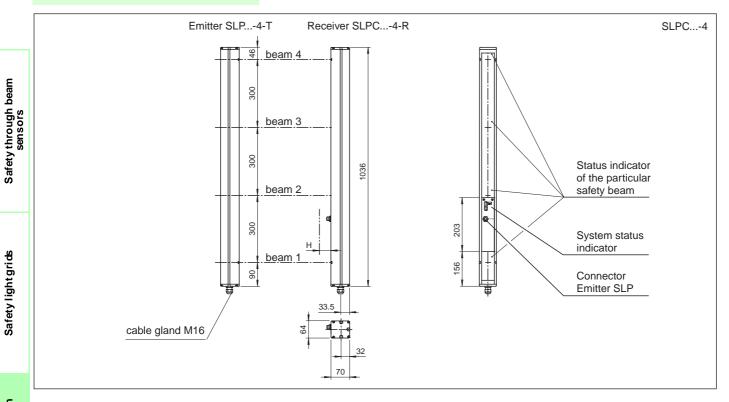
- Detection range up to 30 m
- 🔶 4-Radial design
- Beam spacing 300 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Red transmission light
- Usable with or without start/restart disable
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault indication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

Safety light grid with integrated control unit

SLPC30-4/...

Technical data		S	LPC30-4/	
	Ordering ∞ de:	SLPC30-4	SL PC30-4/31	
Effective detection range	6 30 m	•	•	
Number of beams	4	٠	•	·
Bea m spacing	300 mm	•	•	
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	Ε
Light source	LED	•	•	l se
Light type	red, alternating light	•	•	ر م لا
Angle of divergenæ	< 5 °	•	•	bn
Operating mode	Start/restart disable, relay monitor,	•	•	lo sc
Safety category a ccording to IEC/EN 61496	4	•	•	sert
Approvals	ΤÜV	•	•	ਿਨੂੰ
Tests	IEC/EN 61496	•	•	Safety through beam sensors
Marking	CE	•	•	s,
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	•	•	10
Di agno sis d ispla y	7-segment display		•	Safety light gri ds
Operatin g e lements	10 DIP switch in receiver terminal compartment	•	•	PT 1
Operating voltage	24 V DC -15 % / +25 %, electrically isolated		•	i
No-load supply current	max. 250 mA			₹.
Protection class			•	fe
Function input	Relay monitor, start release	•	•	လိ
Test input	Reset-input for system test	•	•	
Activation current	approx. 10 mA	•	•	
		•	•	
Activation time	0.031 s	•	•	
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off	•	<b>♦</b>	
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2V, max.300 mA	•	<b>♦</b>	달. 국
Safetyoutput	2 separated fail safe semiconductor outputs	•		is is
Switching voltage	2 relay outputs, compelled connection NO-contact Operating voltage -2 V	•	•	: grids with ontrol unit
	20 60 V DC, 12 25 V AC <sub>ms</sub>		•	0 t
Switching current	max. 0.5 A	٠		Safety light ( internal cor
	0.01 2 A	•	•	
Switch power	100 VA		•	fet
-	20 ms	•	•	in Saf
Response time		•		
A 11 11	40 ms		•	
Ambi ent tempera ture	0 50 °C (273 323 K)	•	•	
Storage temperature	-20 70 °C (253 343 K)	•	•	
Relative humi dity	max. 95 %, not condensing	•	<b>♦</b>	
Protection de gree	IP65	•	<b>♦</b>	iŋ,
Connection	Cable screwed connection M16,	•	•	ta
Lleuring	terminal compartment with cage-terminals, M12-connector for emitter	•	•	l 5
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	ž
Optical face	Plasic lens	•	•	ig
Mass	Per 3700 g	•	<b>♦</b>	
Connection options	Further electrical connection options on request: Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	Safety light curtains
System comp onents				
Emitter	SLP30-4-T	•	<b>♦</b>	
Receiver	SLPC30-4-R	•		
	SLPC30-4-R/31		•	

**Control units** 



#### **Electrical connection**

Τ1

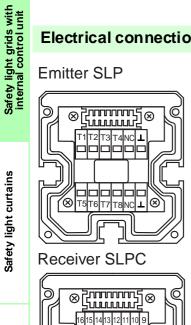
--T2 T3 T4

Emitter channel 1

Emitter channel 2 Emitter channel 3

Emitter channel 4 0 V

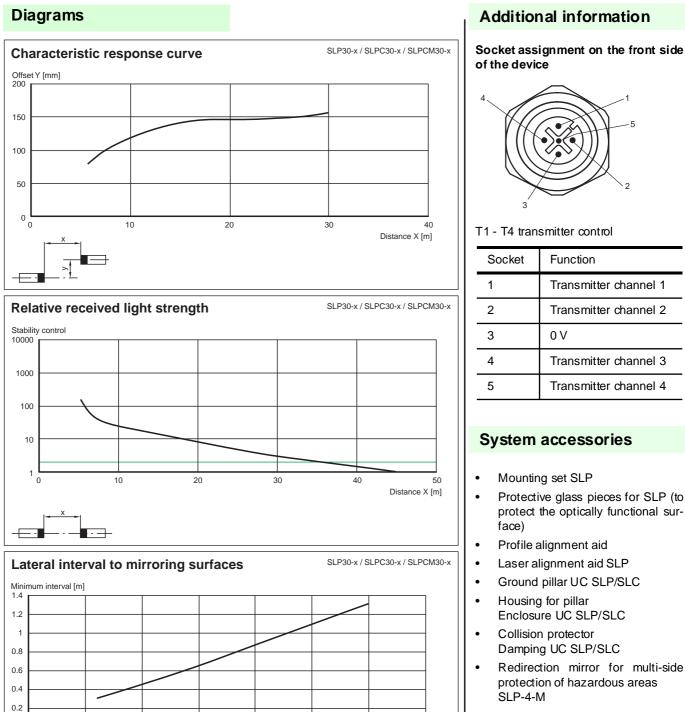
#### **Emitter SLP**



م م م م م م م م م

Receiver SLPC (semi-conductor outputs)	Receiver SLPC/31 (relay output)
1 - Fu 2 - 0 3 - 24	
- OSSD 1 OSSD 2	4 5 6 7 8
10 - Inj 11 - Inj 12 - PN 13 - n. 14 - PN 15 - PN	out, Relay monitor put, Start release put, Reset PF-Output, Soiled optics c. VF-Output, Startup readiness VP-Output, Indicator OSSD OFF VP-Output, Indicator OSSD ON

**Control units** 



0

0

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25

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35

Distance X [m]

# Socket assignment on the front side





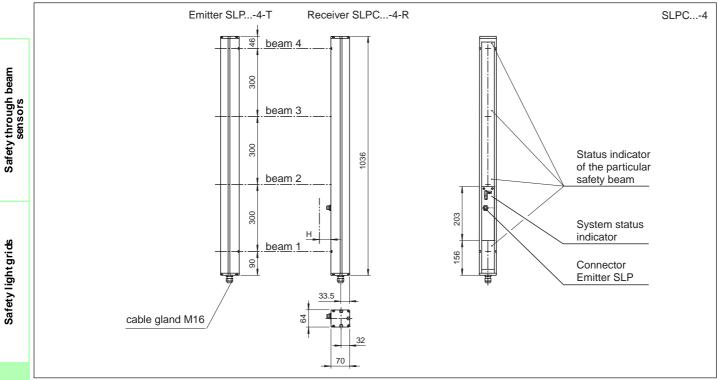
- Detection range up to 65 m
- 🔶 4-Radial design
- Beam spacing 300 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Integrierted relay monitor
- 7-segment diagnostic display
- Integrated function display
- Pre-fault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

Safety light grid with integrated control unit

SLPC65-4/..

Technical data		SL	_PC65-4/	
				_
	Ordering ∞ de:	SLPC65-4	SL PC65-4/31	
Effective de tection range	12 65 m	•	•	
Number of be ams	4	•	•	1
Bea m spacing	300 mm	•	♦	41
Obstacle size	static: 32 mm		<b>^</b>	11_
	dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	· · · ·	a
Light source	LED rod alternating light	•	♦ !	Safety through beam sensors
Light type	red, alternating light $< 5^{\circ}$	•	• !	-fg S
Angle of divergen œ		•	• I	ing os
Operating mode Safety category a ccording to IEC/EN 61496	Start/restart disable, relay monitor,	•	• /	ja ja
	4 TÜV	•	• !	<sup>s</sup> t
App rovals Tests	IUV IEC/EN 61496	•	•	fe
Tests Marking	CE	<b>•</b>	•	Sa
Marking 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	•	•	<b>x</b>
Pre-fault indication	LED red next to receiver flashes	•	♦ !	i
Di agno sis d ispla y	7-segment display	•	♦ !	Safety light grick
Operating e lements	10 DIP switch in receiver terminal compartment	•	♦ !	-iei
Operatin g vo lta ge	24 V DC -15 % / +25 %, electrically isolated	•	♦ !	115
No-load sup ply current	max. 250 mA	•	♦ !	et
Protection class		•	♦ !	Saf
Function input	Relay monitor, start release	•	♦ !	0,
Test input	Reset input for system test	•	♦ !	41
Activation current	approx. 10mA	•	<b>ب</b> ا	
Activation time	0.03 1 s	•	♦ 1	
Signaloutput	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off		♦ !	
	1 PN P each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	•	,	t; t
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	♦ !	Safety light grids with internal control unit
Safetyoutput	2 separated fail safe semiconductor outputs	•	,	ds
	2 relay outputs, compelled connection NO-contact		<u>+</u> ا	ntr.
Switching voltage	Operating voltage -2 V	•	/	<u>S</u>
-	20 60 V DC , 12 25 V AC <sub>rms</sub>		•	al o
Switching current	max. 0.5 A	•	· · · · · ·	2 E
0	0.01 2 A	•	•	Ife
Switch power	100 VA		· · · · · · · · · · · · · · · · · · ·	es =
Response time	20 ms	<b></b>	• •	
ne sponse tane	40 ms	•	· · · · · · · · · · · · · · · · · · ·	
Ambi ent tempera ture	0 50 ℃ (273 323 K)	•	¥ /	4T
Storage temperature	-20 70 °C (253 343 K)		· · · · · · · · · · · · · · · · · · ·	
Relative humi dity	max. 95 %, not condensing	×		s l
Protection de gree	IP65	<b>▼</b>	· · · · · · · · · · · · · · · · · · ·	air
Connection	Cable screwed connection M16,	•		1 S
	terminal compartment with cage-terminals, M12-connector for emitter	<b>♦</b>	◆ 1	C I
Ho using	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	• '	Ч
Optical face	Plastic lens	٠	• !	€
Mass	Per 3700 g	•	♦ /	et
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	Safety light curtains
System components			,	4
Emitter Be estiver	SLP65-4-T	•	• I	11
Re ceiver	SLPC65-4-R	•	. ,	4
	SLPC65-4-R/31		<b>•</b> '	<u> </u>

**Control units** 



#### **Electrical connection**

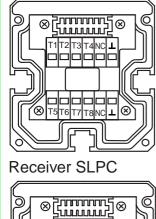
Τ1

-T2 T3 T4 - Emitter channel 1

Emitter channel 2 Emitter channel 3

Emitter channel 4 0 V

#### **Emitter SLP**



6 15 14 13 12 11 10 م م م م م م م م م

**○**□□□□□□□□□□ ③ 1 2 3 4 5 6 7 8 ⊗

Receiver SLPC (semi-conductor outputs	)		Receiver SLPC/31 (relay output)
	2 -	Fuctional e 0 V 24 V	earth
4 - n.c. 5	,	4 5 6 7 8	

Input, Relay monitor Input, Start release 10 11 12 13 14 15 -

-Input, Reset PNP-Output, Soiled optics

- -
- n.c. PNP-Output, Startup readiness PNP-Output, Indicator OSSD OFF PNP-Output, Indicator OSSD ON 16 -

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0.5 0

0

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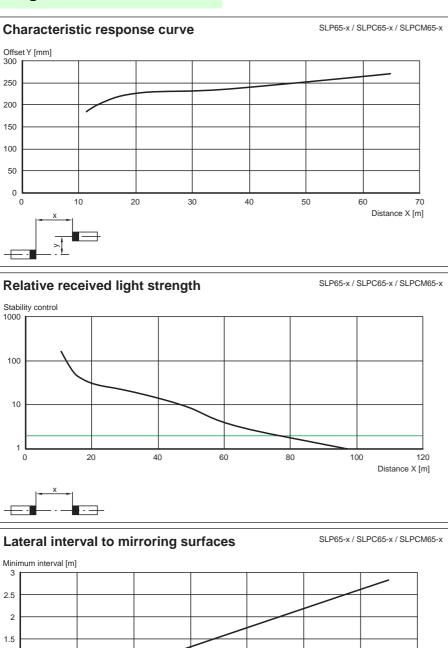
30

40

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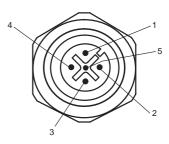
60

70 Distance X [m]



### 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 grids with internal control unit

Safety through beam sensors

Safety light grids

CE

Safety light grid with integrated control unit

**SLPCM8-2-...** 

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

			S	0)	
Effective detection range	0.2 8 m	•	•	•	
Number of beams	2	•	•	•	
Bea m 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	•	•	•	
Ang le of divergen œ	< 5 °	•	•	•	
Operatin g mo de	Start/restart disable, relay monitor, muting operating modes	•	•	•	
Safety category a ccording to IEC/EN 61496	4	•	•	•	
Approvals	TÜV	•	•	•	
Tests	IEC/EN 61496	•	•	•	
Marking	CE	•	•	•	
Function display Muting 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 Indicator lamp	٠	•	•	
Pre-fault indication	LED red next to receiver flashes	•	•	•	
Di agno sis d ispla y	7-segment display	•	*	*	
Operating e lements	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				•	
Function input	Relay monitor, start release, muting sensors (max. 4)	•			
Test i nput	Reset-input for system test	•	•	•	
Activation current	approx. 10 mA	•	•	•	
Activation time	0.03 1 s	•	•	•	
Signaloutput	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	•	•	٠	
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•	•	
Safetyoutput	2 separated fail safe semiconductor outputs	•		•	
	2 relay outputs, compelled connection NO-contact		•		
Switching voltage	Operating voltage - 2 V	٠	•	٠	
	20 60 V DC, 12 25 V AC rms	·	٠	÷	
Switching current	max. 0.5 A	•	•	٠	
	0.01 2 A	•	•	•	
Switch power	100 VA				
Response time	20 ms	٠	•	•	
	40 ms	•	•	•	
Ambient tempera ture	0 50 °C (273 323 K)	•	•	٠	
Storage temperature	-20 70 °C (253 343 K)	•	•	•	
Relative humi dity	max. 95 %, not condensing	•	•	•	
Protection de gree	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.	•	•	•	
Housing	Cable screwed connection M16, terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•		
Optical face	Plastic lens	•	•	•	
Mass	Per 2300 g	-	<b>▼</b>	•	
Connection options	Further electrical connection options on request:	•	•	•	
System comp onents	Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	٠	٠	•	
Transceive r	SLPCM8-2-A				
	SLPCM8-2-A-L	•		•	
	SLPCM8-2-A-L/31			•	
	SLPCM8-2-A/31		*		
Mirro r pi llar	SLP8-2-M	•	•	•	
		-			_

Ordering code:

SLPCM8-2-L

SL PCM8-2/31

SLPCM8-2

SLPCM8-2-L/31

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Safety through beam sensors

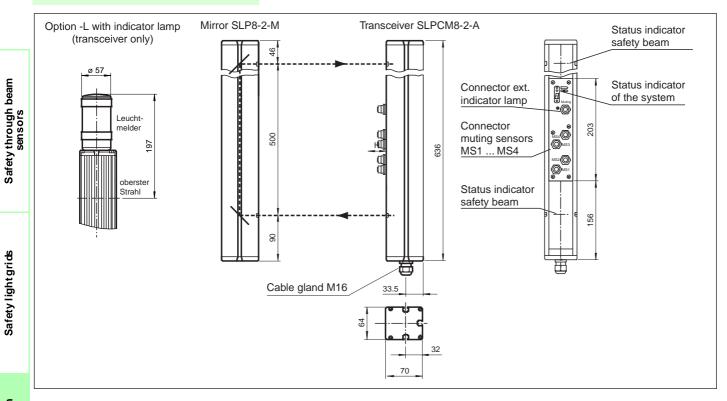
Safety light grids

Safety light grids with internal control unit

Safety light curtains

**Control units** 





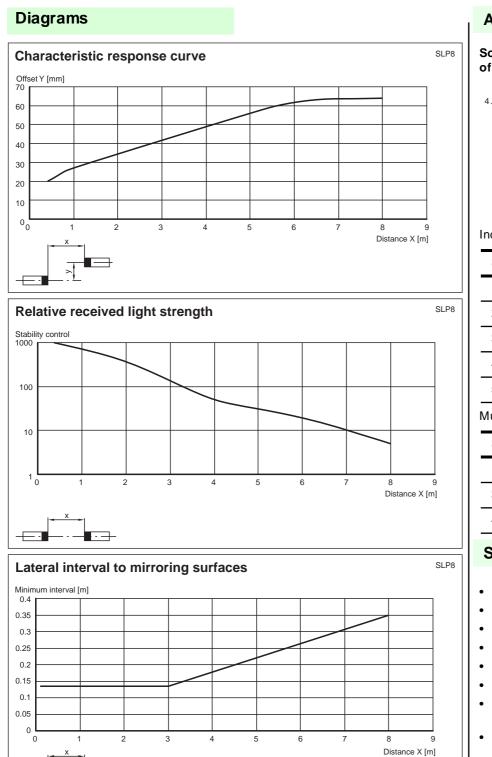
#### **Electrical connection**

Transceiver SLPCM8-2-A

# Safety light grids with internal control unit



	Transceiver SLPCM (semiconductor output)	Transceiver SLPCM/31 (Relay output)
© 200000005 SULLALL2 T61514131211109	1 - Fu 2 - 0 3 - 24	
	4 - n.c. 5	4 5 6 7 8
	10 - In 11 - In 12 - Pr 13 - Pr 14 - Pr 15 - Pr	put, Relay monitor put, Start release put, Reset NP-output, Soiled optics NP-output, Muting lamp NP-output, Startup readiness NP-output, Meldung OSSD AUS NP-output, Indicator OSSD ON

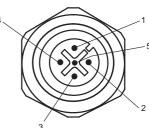


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Additional information

# Socket assignment on the front side of the device



Indicator lamp control	$\otimes$
------------------------	-----------

	0
Socket	Function
1	OSSD on
2	OSSD off
3	0 V
4	Readiness for startup
5	Muting (monitored)
Muting sens	sor 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/SLCHousing for pillar
- Enclosure UC SLP/SLC

  Collision protector
- Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-2-M

Control units



CE

# Safety light grid with integrated control unit

SLPCM10-2-...

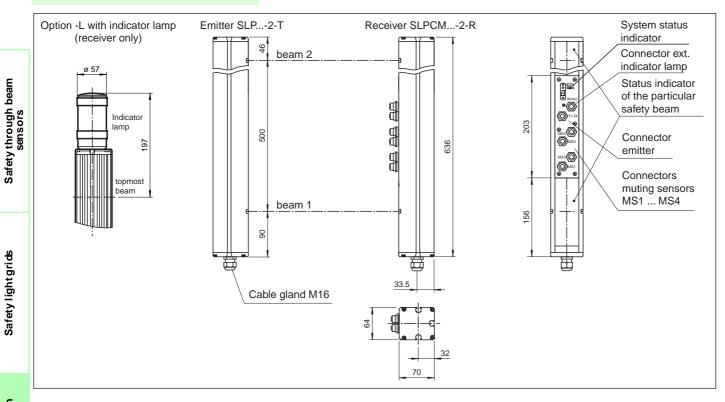


- Detection range up to 10 m
- 🔶 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of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

#### SLPCM10-2-...

	Ordering code:	10-2	0-2/31	0-2-L	-2-L/31	
		SLPCM10-2	SL PCM10-2/31	SLPCM10-2-L	SLPCM10-2-L/31	
Effective detection range	0.2 10 m	٠	٠	٠	•	
Number of beams	2				•	
Beam spacing	- 500 mm					
Obstacle size	static: 32 mm	•	•	•	•	E
	dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	Safety through beam
Light source	LED		•			
Light type	red, alternating light					- Ba
Angle of divergence	< 5 °					2 8
Operating mode	Start/restart disable, relay monitor, muting operating modes					t d
Safety category a coording to IEC/EN 61496	4	•	•	•	•	<b>₽</b>
, , , ,	4 TÜV	•	•	•	•	fe
Approvals		•	•	•	•	s,
Tests	IEC/EN 61496	•	•	•	•	
Marking	CE	•	•	•	•	
Function display	LED red: per receiver channel off: interruption flæhes: receiver continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off	٠	٠	٠	٠	Safety light grids
	LED green: OSSD on					l l
Muting diaplay	LED yellow: types of muting operation Indicator lamp					돌
Muting display				•	•	ig
Pre-fault indication	LED red next to receiver flashes	•	•	•	•	5
Di agno sis d ispla y	7-segment display	•	•	•	•	fe
Operating e lements	10 DIP switch in receiver terminal compartment	•	•	•	•	Sa
Operating voltage	24 V DC -15 % / +25 %, electrically isolated	•	•	•	•	
No-load sup ply current	max. 250 mA	•	•	•	•	
Protection class	III	٠	•	•	•	1
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Test input	Reset input for system test	•	•	•	•	
Activation current	approx. 10 mA	•				ء
Activation time	0.03 1 s					i i i
Signal output	1 PN P each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	•	•	•	•	s =
Sigilal output		•	•			i gi
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			•	•	Safety light grids with internal control unit
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•	•	•	je j
Safetyoutput	2 separated fail safe semiconductor outputs	٠		٠		
outoryoutput	2 relay outputs, compelled connection NO-contact	•	•	•	•	et
Curitah ing waltaga	Operating voltage -2 V		•		•	af
Switchingvoltage		•		•		S
	20 60 V DC , 12 25 V AC rms		•		•	
Switching current	max. 0.5 A	•		•		
	0.01 2 A		•		•	11
Switch power	100 VA		•		•	1
Response time	20 ms	<b></b>	•	•	•	S
no sponse une	40 ms	•	•	•		ai.
Ambienttemperature		•	•	•	•	ĽΪ
Ambient temperature	0 50 ℃ (273 323 K)	•	•	•	•	1 S
Storage temperature	-20 70 °C (253 343 K)	•	•	•	•	보
Relative humi dity	max. 95 %, not condensing	•	•	•	•	lig
Protection de gree	IP65	•	•	•	•	
Connection	Cable screwed connection M16, terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	٠	•			Safety light curtains
	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	<b></b>	<b></b>	•	<b></b>	11
Optical face	Plastic lens	•	-	*	-	1
•		-	-	•	•	S
Mass	Per 2300 g	•	•	•	•	l Ë
Connection options	Further electrical connection options on request: Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	٠	٠	٠	٠	1 3
System comp oporto	Fing Winnestor Ding 43 001 miscrimanin, emitter: o-pin+PE, receiver: 11-pin+PE	•	•	•	•	Control units
System components						Ē
Emitter	SLP10-2-T	•	•	•	•	8
Receiver	SLPCM10-2-R	•				۱Ŭ
	SLPCM10-2-R-L			٠		1
	SLPCM10-2-R-L/31			-	٠	11
	SLPCM10-2-R/31				•	11





### **Electrical connection**

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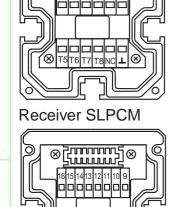
T1T2T3T4NC

**Emitter SLP** 

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Emitter channel 1 T1 -

T2 -Emitter channel 2 0 V



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

7/29/04

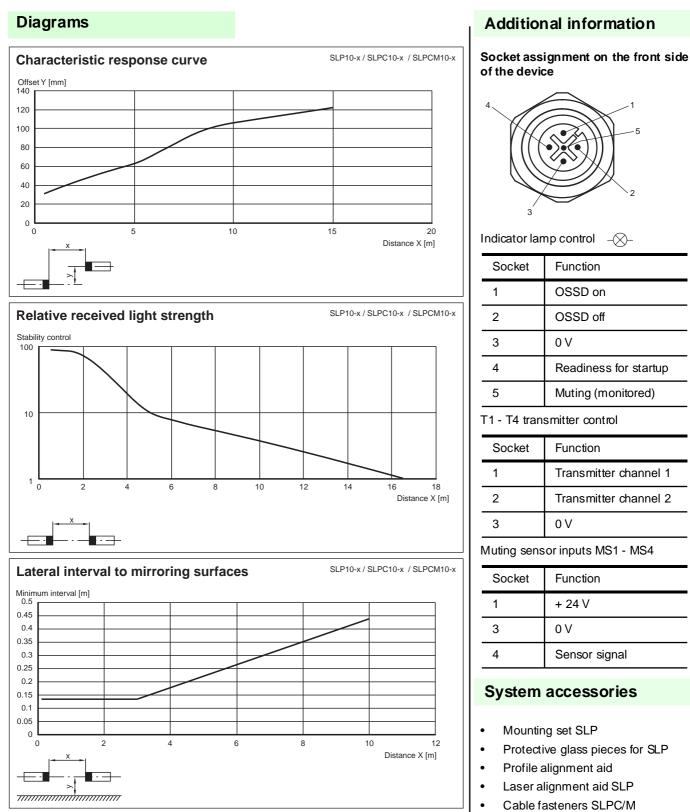
Safety through beam sensors

Safety light grids

Safety light grids with internal control unit

Safety light curtains

**Control units** 



- Ground pillar UC SLP/SLC
- Housing for pillar
- Enclosure UC SLP/SLCCollision protector
- Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-2-M

7/29/04



CE

# Safety through beam sensors

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Safety light grid with integrated control unit

SLPCM30-2-...

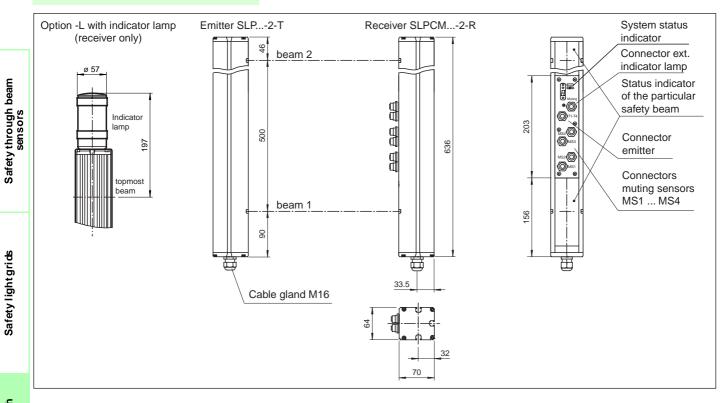


- Detection range up to 30 m
- 🔶 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of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

Technical da	ta
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	Ordering code:	SLPCM30-2	SL PCM30-2/31	SLPCM30-2-L	SLPCM30-2-L/31	
Effective data dia propos	6 - 20 m		S	00		
Effective detection range	6 30 m	•	•	•	•	
Number of beams	2	•	•	•	•	
Beamspacing	500 mm	•	•	•	•	ε
Obstacle size	static: 32 mm	٠	٠	٠	٠	beam
	dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	٩
Light source	LED	•	•	•	•	Safety through
Light type	red, alternating light	•	•	•	•	1 2 2
Ang le of divergen œ	< 5 °	•	•	•	•	Ě
Operatin g mo de	Start/restart disable, relay monitor, muting operating modes	•	•	•	•	। रु
Safety category a ccording to IEC/EN 61496	4	٠	•	٠	٠	e l
Approvals	TÜV					ať
Tests	IEC/EN 61496				•	S
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	•	٠	•	•	Safety light grick
	LED yellow: types of muting operation					Ĕ
Muting display	Indicator lamp			•	•	igi
Pre-fault indication	LED red next to receiver flashes	•	•	•	•	
Di agno sis d ispla y	7-segment display	•	•	•	•	e
Operating e lements	10 DIP switch in receiver terminal compartment	•		•		af
Operating voltage	24 V DC -15 % / +25 %, electrically isolated					S S
No-load sup ply current	max. 250 mA					
		•	•	•	•	
Protection class		•	•	•	•	
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Testinput	Reset-input for system test	•	•	•	•	
Activation current	approx. 10 mA	•	•	•	•	읖+
Activation time	0.03 1 s	•	•	•	•	Safety light grids with internal control unit
Signaloutput	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp		•	•	•	s =
o.g	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting	•	•			ie c
	lamp, signals in parallel in the lamp socket			•	•	D d
Output of the profoult indigation	$1 \text{ PNP}$ , $+\text{U}_{\text{B}}$ -2 V, max. 300 mA					t o
Output of the pre-fault indication	5	•	•	•	•	il ig
Safetyoutput	2 separated fail safe semiconductor outputs	•		•		2
	2 relay outputs, compelled connection NO-contact		•		•	te t
Switching voltage	Operating voltage -2 V		•	•	•	i Sal
ownering voltage		•		•	-	
	20 60 V DC, 12 25 V AC <sub>rms</sub>		•		•	
Switching current	max. 0.5 A	•		•		
	0.01 2 A		•		•	
Switch power	100 VA		•		•	
	20 ms	•	•	•	•	S
Response time		•		•		l i
	40 ms		•		•	ΞĔ
Ambient temperature	0 50 °C (273 323 K)	•	•	•	•	5
Storage temperature	-20 70 °C (253 343 K)	•	•	•	•	Ť
Relative humidity	max. 95 %, not condensing	•	•	•	•	6
Protection de gree	IP65		•		•	1
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	•	•	•	·	Safety light curtains
	Cable screwed connection M16, terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors,			٠	٠	
	lamp socket for muting lamp, etc.					
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	•	•	11
Optical face	Plastic lens	٠	•	•	•	11
Mass	Per 2300 g	•	•	•	•	ts
Connection options	Further electrical connection options on request:	Ŧ	•	•	•	Control units
	Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	•	•	11 2
System components						2
						Ξ
Emitter	SLP30-2-T	•	•	•	•	18
Receiver	SLPCM30-2-R	•				١Ŭ
	SLPCM30-2-R-L			٠		1
				•		
	SLPCM30-2-R-L/31				•	





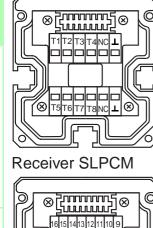
Emitter channel 1

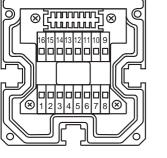
Emitter channel 2 0 V

T1 T2 -

### **Electrical connection**

#### **Emitter SLP**





Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
	unctional earth V 14 V
4 - n.c. 5	4 5 6 7 8
10 - Ir 11 - Ir 12 - P 13 - P 14 - P 15 - P	nput, Relay monitor nput, Relay monitor nput, Reset NP-output, Soiled optics NP-output, Muting lamp NP-output, Indicator OSSD OFF NP-output, Indicator OSSD ON

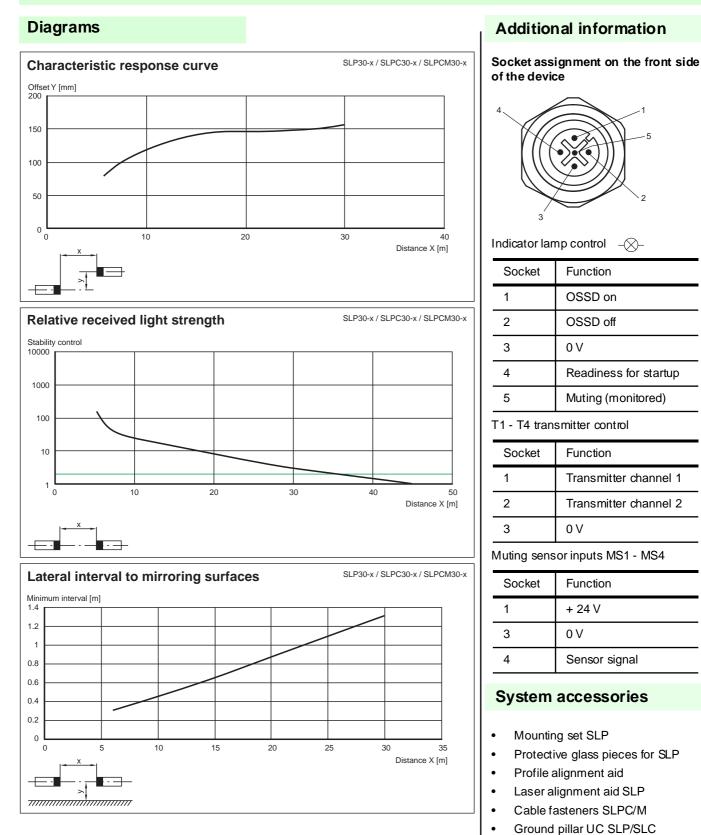


#### SLPCM30-2-...

Safety through beam sensors

Safety light grids

Safety light grids with internal control unit



Housing for pillar Enclosure UC SLP/SLC Collision protector Damping UC SLP/SLC

•

Muting Set MS SLPCM Redirection mirror SLP-2-M



CE

Safety light gri ds

Safety light grid with integrated control unit

SLPCM65-2-...

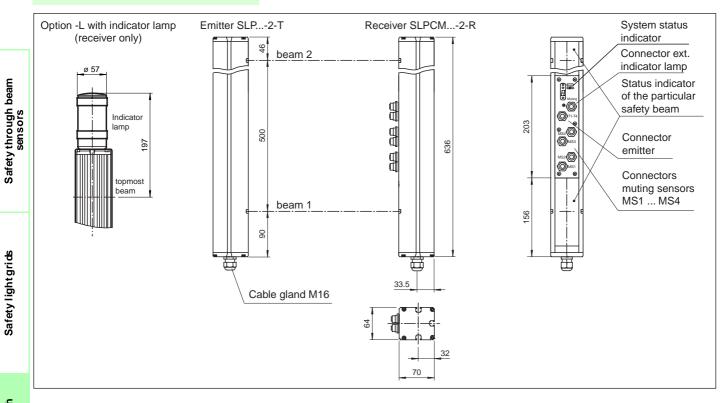
- Detection range up to 65 m
- 🔶 2-Radial design
- Beam spacing 500 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔸 Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of 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

Technical data	Tec	hni	ical	data
----------------	-----	-----	------	------

	Ordering code:	~	31	Ļ	/31	
		SLP CM65-2	SL PCM65-2/31	SLPCM65-2-L	SLPCM65-2-L/31	
		ร	S L L	SLF	SLPC	
Effective detection range	12 65 m	٠	٠	•	•	
Number of beams	2			•	•	
Beamspacing	_ 500 mm				•	
Obstacle size	static: 32 mm	•	•	•	•	E
	dynamic: 50 mm (at $v = 1.6$ m/s of the obstacle)	•	•	•	•	beam
Light source	LED	•	•	•	•	<u>ہ</u> ب
Light type	red, alternating light	•	•	•	•	Safety through
	< 5 °	•	•	•	•	0
Angle of divergenœ		•	•	•	•	L F a
Operating mo de	Start/restart disable, relay monitor, muting operating modes	•	•	•	•	15°
Safety category a ccording to IEC/EN 61496	4	•	•	•	•	e l
Approvals	ΤÜV	•	•	•	•	ai
Tests	IEC/EN 61496	•	•	•	•	
Marking	CE					
Function display	LED red: per receiver channel off: interruption flæhes: 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	•	•	•	•	Safety light grick
Muting display	Indicator lamp			•	•	j jo
Pre-fault indication	LED red next to receiver flashes	•	•	•	•	11
Di agno sis d ispla y	7-segment display	•	•	•	•	G I
Operating e lements	10 DIP switch in receiver terminal compartment	•	•	•	•	af
	24 V DC -15 % / +25 % , electrically isolated	•	•	•	•	S S
Operating voltage		•	•	•	•	
No-load supply current	max. 250 mA	•	•	•	•	
Protection class		•	•	•	•	
Function i nput	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Test i nput	Reset-input for system test	•	•	•	•	
Activation current	approx. 10 mA					ء
Activation time	0.03 1 s					ji ji
	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	•	•	•	•	
Signaloutput	1 PNP each, max. 300 mA for startup readiness, OCSD on, OSSD off, muting lamp	•	•			Safety light grids with
	lamp, signals in parallel in the lamp socket			•	•	of g
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•	•	•	5
Safetyoutput	2 separated fail safe semiconductor outputs					
Salety Suput	2 relay outputs, compelled connection NO-contact	•		•		te a
<b>A b b b</b>			•		•	af
Switching voltage	Operating voltage -2 V	•		•		
	20 60 V DC , 12 25 V AC <sub>rms</sub>		•		•	
Switching current	max. 0.5 A	٠		•		
•	0.01 2 A	•	•	•		
o h l			•		•	
Switch power	100 VA		•		•	
Response time	20 ms	•		•		<u> </u>
	40 ms		٠		٠	ta
Ambi ent tempera ture	0 50 ℃ (273 323 K)	•	•	•	•	ļ
Storage temperature	-20 70 °C (253 343 K)		<b></b>	<b></b>	<b></b>	t
Relative humidity	max. 95 %, not condensing	-	-	-	-	Ē
		•	•	•	•	l i≌î
Protection de gree	IP65	•	•	•	•	≿
Connection	Cable screwed connection M16, terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	٠	•			Safety light curtains
	Cable screwed connection M16, terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors, lamp socket for muting lamp, etc.			•	٠	-
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	<b></b>	•		<b></b>	11
Optical face	Plastic lens	•	•	-	-	
•		-	-	-	-	S
Mass	Per 2300 g	•	•	•	•	Control units
Connection options	Further electrical connection options on request:	▲	▲	<b></b>	▲	<del>5</del>
	Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	•	•	<b>0</b>
System components						l È
Emitter	SLP65-2-T	٠	٠	•	٠	<del>ا</del> ک
Receiver	SLPCM65-2-R	<b></b>				10
	SLPCM65-2-R-L	•		•		11
				•		11
	SLPCM65-2-R-L/31				•	11
	SLPCM65-2-R/31					





### **Electrical connection**

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T1T2T3T4NC 

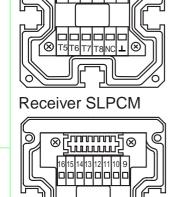
**Emitter SLP** 

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T1

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Emitter channel 1 -T2 -Emitter channel 2 0 V



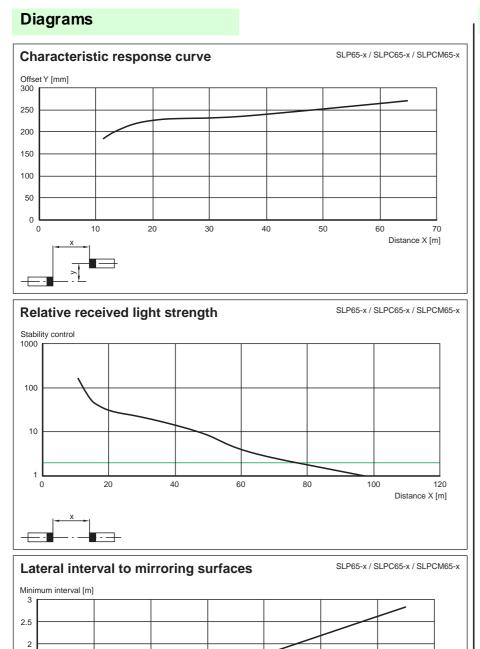
Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (relay outputs)
1	Functional earth
2	0 V
3	24 V
4 - n.c. 5	4 5 6 7 8
9	Input, Relay monitor
10	Input, Start release
11	Input, Reset
12	PNP-output, Soiled optics
13	PNP-output, Muting lamp
14	PNP-output, Startup readiness
15	PNP-output, Indicator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

7/29/04

Additional information

of the device

Socket assignment on the front side



#### Indicator lamp control $-\infty$ 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 + 24 V 1 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

**Control units** 

1.5

0.5

0

0

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20

10

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30

40

50

60

70

Distance X [m]

Safety through beam sensors

Safety light grids

Safety light grids with internal control unit

#### Safety light grid with integrated control unit

SLPCM10-3-...

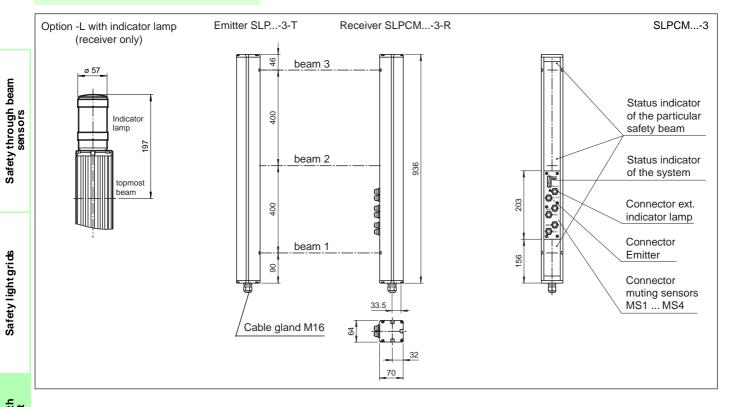




- Detection range up to 10 m
- 🔶 3-Radial design
- Beam spacing 400 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of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

	Ordering code:		<del>.</del>		31	]
		SLPCM10-3	SL PCM10-3/31	SLPCM10-3-L	SLPCM10-3-L/31	
		ž	110	M10	ģ	
		Å	5 2	PC	S	
		S	പ	SL	SLP	
Effective detection range	02 10 m	•	•	•	•	
Number of beams	3	•	•	•	•	
Beam spacing	400 mm	•	•	•	•	-
Obstacle size	static: 32 mm		•	•	•	Safety through beam sensors
	dynamic: 50 mm (at $v = 1.6$ m/s of the obstacle)	•	•	•	•	ă
Light source Light type	LED red, alternating light	•	•	•	•	ors
Angle of divergen œ	< 5 °	•		•	◆ ◆	ns i
Operating mo de	Start/restart disable, relay monitor, muting operating modes	•	•	•	•	set
Safety category a ccording to IEC/EN 61496	4	•	•	•	•	et
Approvals	TÜV	•	•	•	•	. af
Tests	IEC/EN 61496	•	•	•	•	0,00
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					8
	LED green: OSSD on					gri
Muting display	LED yellow: types of muting operation Indicator lamp			•	•	<u> </u>
Pre-fault indication	LED red next to receiver flashes		•			Safety light gri ds
Di agno sis displa y	7-segment display					l Ś
Operating e lements	10 DIP switch in receiver terminal compartment	•		•	•	af
Operatin g vo lta ge	24 V DC -15 % /+25 %, electrically isolated	•	•	•	•	S S
No -load sup ply current	max. 250 mA	•	•	•	•	
Protection class	III	٠	٠	•	٠	
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Test i nput	Reset-input for system test	•	•	•	•	
Activation current	approx. 10 mA	•	•	•	•	it it
Activation time	0.03 1 s 1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	•	•	•	•	Safety light grids with internal control unit
Signal output	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting amp	•	•			<u>i i c</u>
	lamp, signals in parallel in the lamp socket			•	•	b t d
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	٠	٠	٠	٠	l dh
Safetyoutput	2 separated fail safe semiconductor outputs	•	•	•	•	v li 'na
	2 relay outputs, compelled connection NO-contact	·	٠	•	•	fet
Switching voltage	Operating voltage -2 V	٠	•	٠	•	Sat
	20 60 V DC, 12 25 V AC <sub>rms</sub>		•		•	
Switching current	max. 0.5 A	٠		•		
-	0.01 2 A		•		•	
Switch power	100 VA		•		٠	
Response time	20 ms	•		•		ins
	40 ms		•		•	rta
Ambient tempera ture	0 50 °C (273 323 K)	•	•	•	•	C.
Storage temperature	-20 70 °C (253 343 K)	٠	•	•	٠	Ĕ
Re lative humi dity Protection de gree	max. 95 %, not condensing IP65	•	•	•	•	Safety light curtains
Connection	Cable screwed connection M16,	•	•	•	•	۲, I
Connection	terminal compartment with cage-terminals,	•	•			gi e
	M12-connector for emitter, muting lamp as well as other muting sensors	•	•			00
	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	٠	٠	٠	٠	
Optical face	Plastic lens	٠	٠	•	•	11
Mass	Per 3400 g	•	•	•	•	its
Connection options	Further electrical connection options on request:	•	•	•	•	1 5
Sustem comp opents	Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	•	•	Control units
System components Emitter	SLP10-3-T		•	•	•	, T
Re ceiver	SLP 10-3-1 SLPCM10-3-R	<b>▼</b>	-	-	-	ŭ
The Gerver	SLPCM10-3-R-L	•				
	SLPCM10-3-R-L/31			•	•	





Emitter channel 1

Emitter channel 2 Emitter channel 3 0 V

T1 -

T2 T3 -

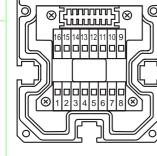
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# Safety light grids with internal control unit

**Control units** 



**Receiver SLPCM** 

**Electrical connection** 

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T1T2T3T4NC 

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**Emitter SLP** 

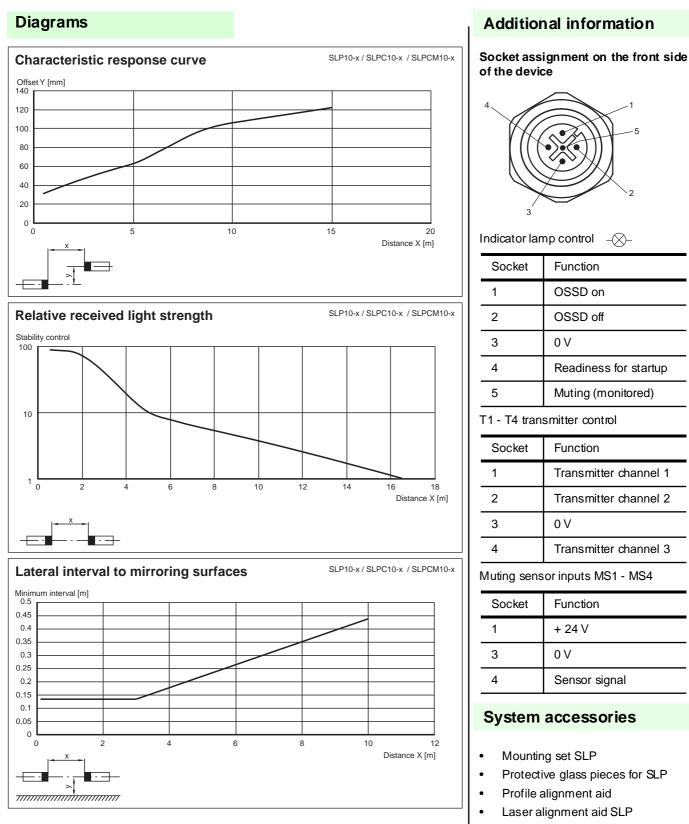
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Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
	Functional earth ) V 24 V
4 - n.c. 5 + 6 + 7 - OSSD 1 8 - OSSD 2	4 5 7 8
10 - 1 11 - 1 12 - 1 13 - 1 14 - 1 14 - 1 15 - 1	nput, Relay monitor nput, Start release nput, Reset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

7/29/04



Safety light grids with internal control unit

Safety through beam sensors

Safety light grids

- Protective glass pieces for 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 •

**Control units** 

Safety through beam sensors

Safety light grids

Safety light grids with internal control unit

# Safety light grid with integrated control unit

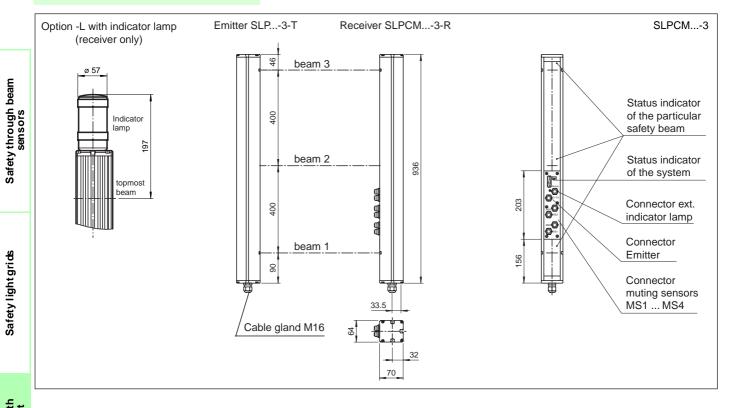
SLPCM30-3-...



- 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:	SLP CM 30-3	SL PCM30-3/31	SLPCM30-3-L	SLPCM30-3-L/31	
	000					
Effective detection range	6 30 m	•	•	•	•	
Number of beams	3	•	•	•	•	
Bea m spacing	400 mm	•	•	•	•	2
Obstacle size	static: 32 mm	•		•	•	Safety through beam
	dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	pe l
Light source	LED	•	•	•		ہ ہے ا
Light type	red, alternating light		•	•		l S c
Angle of divergence	<5 °					2 8
						무경
Operating mode	Start/restart disable, relay monitor, muting operating modes	•	•	•	•	<u>_</u>
Safety category a ccording to IEC/EN 61496	4	•	•	•	•	fe
Approvals	ΤÜV	•	•	•	•	a l
Tests	IEC/EN 61496	•	•	•	•	0,0
Marking	CE		•			
5		•	•	•	•	
Function di splay	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	•	٠	•	•	Safety light grick
Muting display	Indicator lamp					É.
Pre-fault indication	LED red next to receiver flashes	•	•	*	•	li∺
		•	•	•	•	L⊇
Di agno sis d ispla y	7-segment display	•	•	•	•	e l
Operating e lements	10 DIP switch in receiver terminal compartment	•	٠	•	٠	a
Operating voltage	24 V DC -15 % /+25%, electrically isolated				•	0,0
	max. 250 mA					
No -load sup ply current		•	•	•	•	
Protection class		•	•	•	•	
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	1
Testinput	Reset-input for system test	•	•	•	•	
Activation current	approx. 10 mA	•		•		
Activation time	0.03 1 s					÷ ÷
		•	•	•	•	Safety light grids with
Signaloutput	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	•	•			β
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting			•		5
	lamp, signals in parallel in the lamp socket			•	•	, it
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•		•	•	6
	2 separated fail safe semiconductor outputs	•	•	•	•	
Safetyoutput		•		•		l ≥
	2 relay outputs, compelled connection NO-contact		•		•	fef
Switchingvoltage	Operating voltage - 2 V	٠		•		- Sa
5 5	20 60 V DC, 12 25 V AC <sub>rms</sub>	•	•	•	•	
			•		•	
Switching current	max. 0.5 A	•		•		
	0.01 2 A		•		•	
Switch power	100 VA					11
-	20 ms	•	•	•	•	Ś
Response time		•		•		<u>ا</u> . ا
	40 ms		•		•	La I
Ambient temperature	0 50 °C (273 323 K)	•	•	•	•	II Ž
Storage temperature	-20 70 °C (253 343 K)	٠	•	•		t I
Relative humi dity	max. 95 %, not condensing	•	•	•		١Ę
			-	•		≌́
Protection de gree	IP65	•	•	•	•	≿
Connection	Cable screwed connection M16, terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	٠	٠			Safety light curtains
	Cable screwed connection M16, terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors,			٠	٠	
	lamp socket for muting lamp, etc.					11
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	•	•	
Optical face	Plastic lens	•	•	•	•	l
Mass	Per 3400 g	•	•	•	•	Control units
Connection options	Further electrical connection options on request:					<u> </u>
	Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	•	•	11 2
System comp opents						2
System components						l E
Emitter	SLP30-3-T	•	•	•	•	I S
Receiver	SLPCM30-3-R	•				
	SLPCM30-3-R-L	•		•		11
				•		1
	SLPCM30-3-R-L/31				•	11





# Safety light grids with internal control unit

#### **Electrical connection**

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**Emitter SLP** 

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Emitter channel 1 T1 -

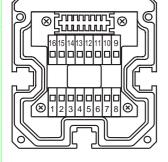
Emitter channel 2 Emitter channel 3 0 V T2 T3 -

T,

Receiver	SLPCM
100001001	

⊗ç<u>uuuu</u>u2⊗

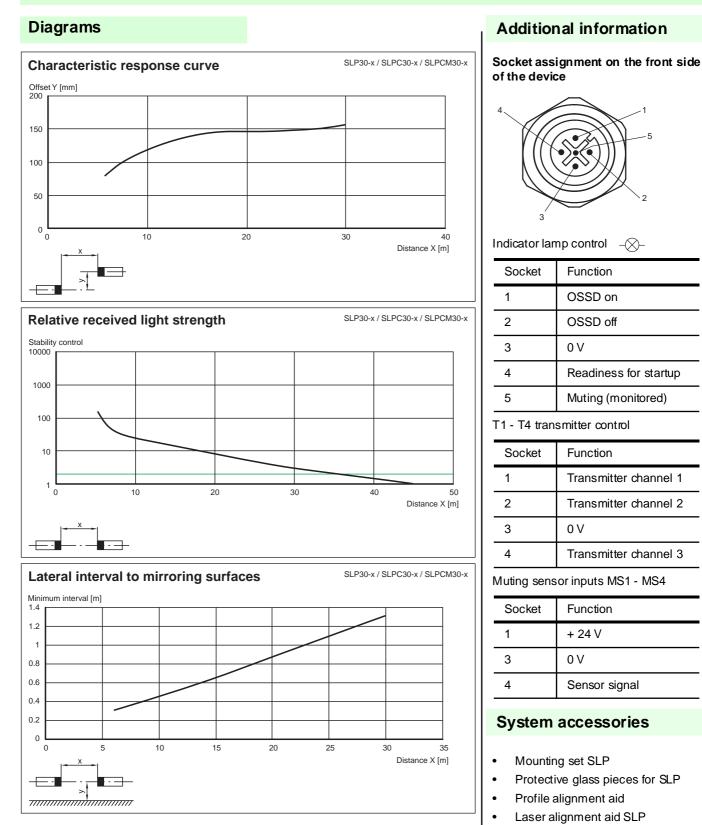
T1T2T3T4NC 



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

7/29/04

#### SLPCM30-3-...



**Control units** 

- Housing for pillar Enclosure UC SLP/SLC

Cable fasteners SLPC/M Ground pillar UC SLP/SLC

Collision protector Damping UC SLP/SLC

•

•

- Muting Set MS SLPCM •
- Redirection mirror SLP-3-M •

# Safety light grid with integrated control unit SLPCN65-3-...

Safety light grids

Safety light grids with internal control unit

Safety light curtains

Control units

CE

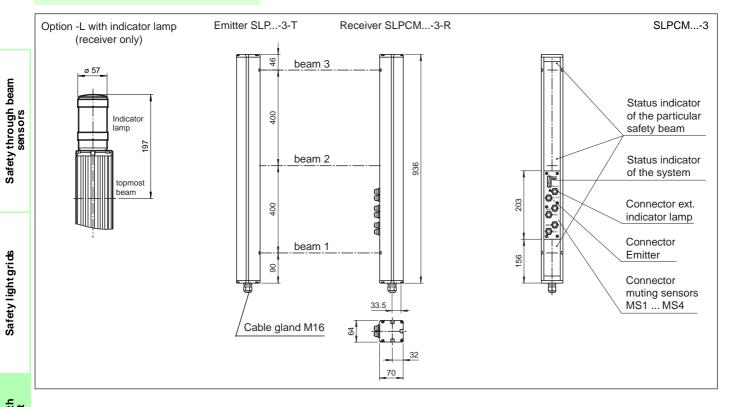
- Detection range up to 65 m
- 3-Radial design
- Beam spacing 400 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- 🔶 Red transmission light
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of the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

Technical data
----------------

	Ordering code:	~	31	Ļ	/31	
		SLP CM65-3	SL PCM65-3/31	SLPCM65-3-L	SLPCM65-3-L/31	
Effective detection range	12 65 m	•	•			
•	3	•	•	•	•	41
Number of be ams		•	•	•	•	
Beam spacing	400 mm	•	•	•	•	ε
Obstacle size	static: 32 mm dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	Safety through beam sensors
Light source	LED	•	•	٠	•	4.5
Light type	red, alternating light	•	•	•	•	۵ تو ا
Angle of divergen œ	<5 °	•	•	•	•	
Operatin g mo de	Start/restart disable, relay monitor, muting operating modes	•	•	•	•	÷ ۳
Safety category a ccording to IEC/EN 61496	4	•	<b>•</b>		<b>.</b>	l Ĝ
Approvals	ΤÜV					ať
Tests	IEC/EN 61496					S
Marking	CE	•	•	•	•	41
Function di splay	LED red: per receiver channel off: interruption flashes: receiver continuously on: reception with sufficient stability control on the front plate: LED red: OSSD off	•	•	•	•	R
	LED green: OSSD on LED yellow: types of muting operation					Safety light grids
Muting display	Indicator lamp			٠	•	l f
Pre-fault indication	LED red next to receiver flashes	•	•		<b>.</b>	l Ŧ
Di agno sis d ispla y	7-segment display					l È
Operating e lements	10 D IP switch in receiver terminal compartment	•	•	•	•	afe
Operating voltage	24 V DC -15 % / +25 % , electrically isolated	•	•	•	•	ů.
		•	•	•	•	
No-load supply current	max. 250 mA	•	•	•	•	41
Protection class		•	•	•	•	
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Test i nput	Reset-input for system test	•	•	•	•	
Activation current	approx. 10 mA	•	•	•	•	it H
Activation time	0.03 1 s	•	•	•	•	iz či
Signaloutput	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	•	•			ol c
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			٠	٠	Safety light grids with internal control unit
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•	•	•	<u>s</u>
		•	•	•	•	alie
Safetyoutput	2 separated fail safe semiconductor outputs	•		•		l ⇒ r
	2 relay outputs, compelled connection NO-contact		•		•	nte l
Switching voltage	Operating voltage -2 V	٠		•		i, S
	20 60 V DC, 12 25 V AC <sub>rms</sub>		٠		•	
Switching current	max. 0.5 A	•	•	•	•	
of Rolling of all of R	0.01 2 A	•		•	•	
Curitab nouna	100 VA		•		•	41
Switch power	20 ms		•		•	S
Response time		•		•		l i
	40 ms		•		•	Ĕ
Ambient tempera ture	0 50 °C (273 323 K)	•	•	•	•	5
Storage temperature	-20 70 °C (253 343 K)	•	•	•	•	ᆂ
Relative humi dity	max. 95 %, not condensing	•	•	•	•	lije
Protection de gree	IP65	•	٠	•	٠	
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	٠	٠			Safety light curtains
	Cable screwed connection M16, terminal compartment with cage terminals, M12 connector for transmitters, muting lamp, etc., muting sensors,			٠	٠	
	lamp socket for muting lamp, etc.					11
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	•	•	11
Optical face	Plastic lens	•	•	•	•	
Mass	Per 3400 g	•	•	•	•	i;
Connection options	Further electrical connection options on request:	•	•	•	•	1 5
System components	Plug connector DIN 43 651 Hirschmann, emitter: 6-pin+PE, reœiver: 11-pin+PE	•	•	•	•	Cantrol units
Emitter	SLP65-3-T		•	•	•	Ĩ
	SLP 05-3-1 SLPCM65-3-R	•	-	•	-	ΙŬ
Receiver		•				41
	SLPCM65-3-R-L			•		11
	SLPCM65-3-R-L/31				•	11
	SLPCM65-3-R/31					11



### Dimensions

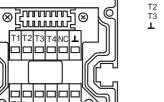


## Safety light grids with internal control unit

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**Electrical connection** 



### Emitter channel 1 T1 -

Emitter channel 2 Emitter channel 3 0 V -

### ⊗ ́⊗ ò 6 **Receiver SLPCM** 0 ⊗ç<u>uuuu</u>uy⊗ ര 6 15 14 13 12 11 10 م م م م م م م م م

**○**□□□□□□□□□□ ③ 1 2 3 4 5 6 7 8 ⊗

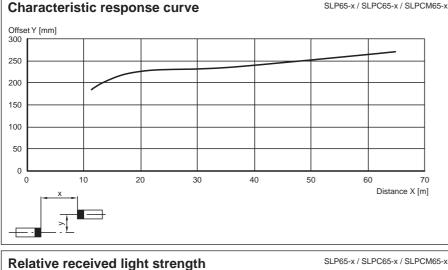
Receiver SLPCM (semiconductor outputs)	Receiver SLPCM/31 (Relay outputs)
1 - 2 - 3 -	Functional earth 0 V 24 V
$\begin{array}{c} 4 & - & \text{n.c.} \\ 5 & - & - & - \\ 6 & - & - \\ 7 & - & \text{OSSD 1} \\ 8 & - & \text{OSSD 2} \end{array}$	4 5 6 7 8
13 - 14 -	Input, Relay monitor Input, Start release Input, Reset PNP-output, Soiled optics PNP-output, Muting lamp PNP-output, Indicator OSSD OFF PNP-output, Indicator OSSD OFF

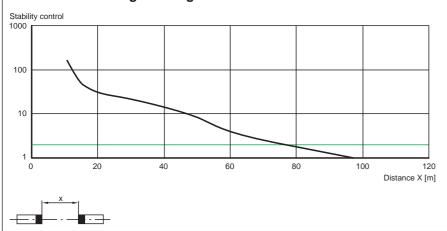
7/29/04

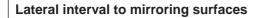
Additional information



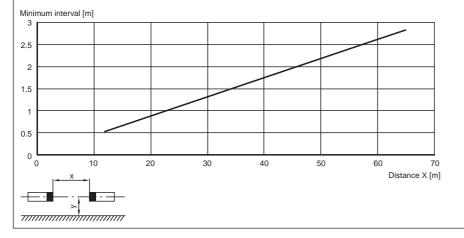








SLP65-x / SLPC65-x / SLPCM65-x



### Socket assignment on the front side of the device Indicator lamp control $-\infty$ 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

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- Protective glass pieces for SLP
  - Profile alignment aid
- Laser alignment aid SLP
   Cable fasteners SLPC/M
- 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

Safety light grid with integrated control unit

SLPCM10-4-...

## Safety through beam sensors CE Safety light grids with internal control unit

Safety light grids

Safety light curtains



- 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

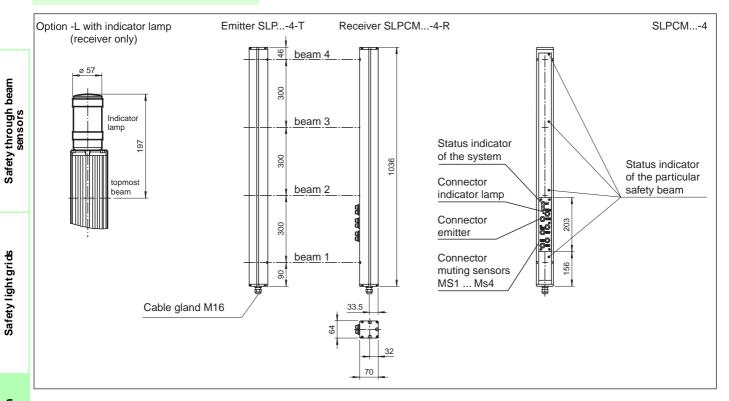
Technical dat	а
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### SLPCM10-4-...

	Ordering code:	4	31	Ļ	/31	
		SLPCM10-4	SL PCM10-4/31	SLPCM10-4-L	SLPCM10-4-L/31	
		S	പ	SL	SLP	
Effective detection range	0.2 10 m	•	•	•	•	
Number of beams	4	•	•	•	•	
Beam spacing	300 mm	•	•	•	•	-
Obstacle size	static: 32 mm	•		•		beam
	dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	þe
Light source	LED	٠	٠	٠	٠	L S
Light type	red, alternating light	•				afety through sensors
Ang le of divergenæ	<5 °	•		•		l S S
Operating mode	Start/restart disable, relay monitor, muting operating modes	•		•	•	s t
Safety category a ccording to IEC/EN 61496	4					L ÷
Approvals	TÜV					ate
Tests	IEC/EN 61496					S
Marking	CE	•	•	•	•	
Function display		•	•	•	•	
r unction 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	٠	٠	٠	٠	Safety light grids
	LED yellow: types of muting operation					tg
Muting display	Indicator lamp			٠	٠	ηG
Pre-fault indication	LED red next to receiver flashes		•	•	•	i≓í
Di agno sis d ispla y	7-segment display					L È
· · · ·	10 DIP switch in receiver terminal compartment	•	•	•	•	l fe
Operating elements		•	•	•	•	ů,
Operatin g vo lta ge	24 V DC -15 % / +25 %, electrically isolated	•	•	•	•	
No-load sup ply current	max. 250 mA	•	•	•	•	
Protection class		•	•	•	•	
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Testinput	Reset-input for system test	•	•	•	•	
Activation current	approx. 10 mA	•	•	•	•	t t
Activation time	0.03 1 s	•	•	•	•	Safety light grids with internal control unit
Signaloutput	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	٠	٠			el c
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting	•	•			t ci
	lamp, signals in parallel in the lamp socket			•	•	b d
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•			ц о
	2 separated fail safe semiconductor outputs		•	•	•	ali
Safetyoutput		•		•		er s
	2 relay outputs, compelled connection NO-contact		•		•	u afe
Switchingvoltage	Operating voltage -2 V	•		•		ŝ.–
	20 60 V DC , 12 25 V AC <sub>rms</sub>		•		•	
Switching current	max. 0.5 A	٠		٠		1.
5	0.01 2 A	•	•	·	•	
Switch power	100 VA		•		•	
-	20 ms	•	•	•	•	Ś
Response time		•		•		l i
	40 ms		•		•	ĽΫ
Ambient tempera ture	0 50 ℃ (273 323 K)	•	•	•	•	5
Storage temperature	-20 70 °C (253 343 K)	•	•	•	•	ᆂ
Relative humi dity	max. 95 %, not condensing	•	•	•	•	i <u>e</u>
Protection de gree	IP65	•	•	•	•	
Connection	Cable screwed connection M16, terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors	٠	•			Safety light curtains
	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	•	•	•	•	11
Optical face	Plastic lens	•	•	•	•	
•		•	•	•	•	s
Mass	Per 3700 g	•	•	•	•	Cantrol units
Connection options	Further electrical connection options on request:	٠	٠	۵	٠	5
Out the second sec	Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	•	•	<u></u>
System components						Ē
Emitter	SLP10-4-T	•	•	•	•	8
Re cei ver	SLPCM10-4-R	•				١Ŭ
	SLPCM10-4-R-L			٠		11
	SLPCM10-4-R-L/31			•		11



### Dimensions



## Safety light grids with internal control unit

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Electrical c	onnection
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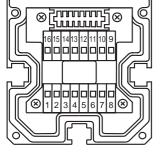
### **Emitter SLP**

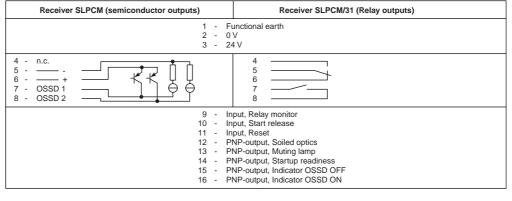
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T1 T2 T3 T4 NC









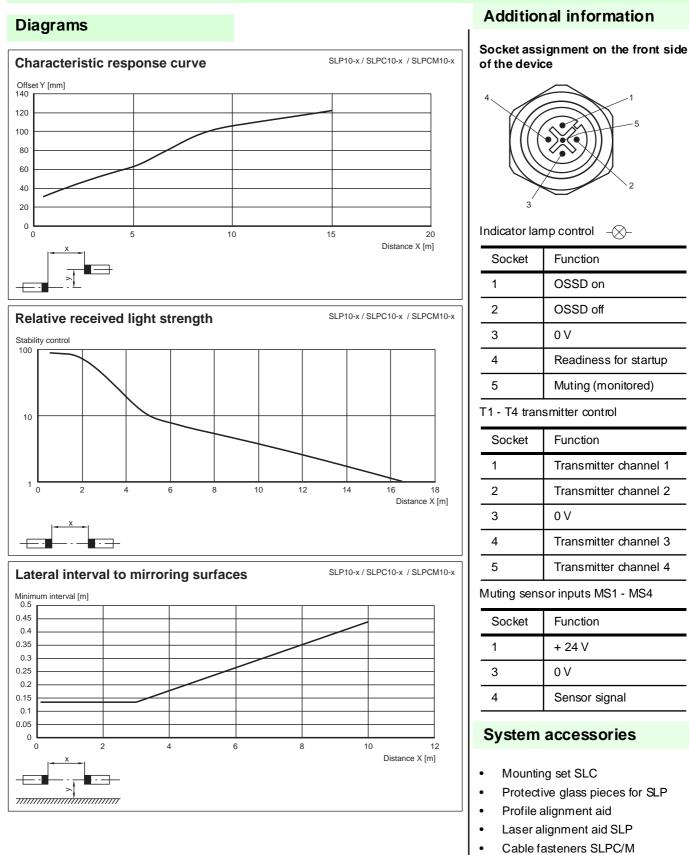
### SLPCM10-4-...

Safety through beam sensors

Safety light grids

Safety light grids with internal control unit

Safety light curtains



- Housing for pillar Enclosure UC SLP/SLC
- Collision protector
   Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-4-M

Safety light grid with integrated control unit

SLPCM30-4-...

Safety through beam sensors

Safety light grids

Safety light grids with internal control unit

Safety light curtains

Control units

# CE

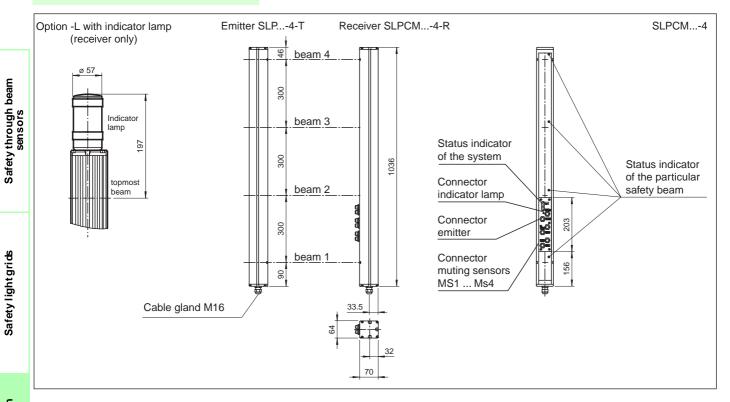
- Detection range up to 30 m
- 4-Radial design
- Beam spacing 300 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- **Red transmission light**
- Usable with or without start/restart disable
- Sequential and parallel muting in various operating modes
- Emergency muting for the correction of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

Tec	hn	ical	data
			~~~~

	Ordering code:	4	31	Ļ	/31	
		SLPCM30-4	SL PCM30-4/31	SLPCM30-4-L	SLPCM30-4-L/31	
Effective detection range	6 30 m	•	•	•		
Number of be ams	4	•	•	•	•	
Beam spacing	4 300 mm	•	•	•	•	
Obstacle size	static: 32 mm	•	•	•	•	Ξ
	dynamic: 50 mm (at v = 1.6 m/s of the obstacle)	•	•	•	•	beam
Light source	LED			•	•	ه <del>ب</del>
Light type	red, alternating light	•	•	•		Safety through sensors
Angle of divergenæ	< 5 °					2 S
Operating mode	Start/restart disable, relay monitor, muting operating modes					s th
Safety category a cording to IEC/EN 61496	4	•	•	•	•	Ţ,
App rovals	TÜV	-	•	•	-	ate
		•	•	•	•	ő
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	•	٠	•	•	Safety light grids
Muting display	Indicator lamp			•	•	Ę
Pre-fault indication	LED red next to receiver flashes	•	•	•		ĭ≓
Di agno sis d ispla y	7-segment display					Ę I
	10 DIP switch in receiver terminal compartment	•	•	•	•	afe
Operating e lements	24 V DC -15 % /+25 %, electrically isolated	•	•	•	•	ů
Operatin g vo lta ge		•	•	•	•	
No-load supply current	max. 250 mA	•	•	•	•	
Protection class		•	•	•	•	
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Test input	Reset input for system test	•	•	•	•	
Activation current	approx. 10 mA	•	•	•	•	it H
Activation time	0.03 1 s	•	•	•	•	iž C
Signal output	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	•	•			ol c
	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting lamp, signals in parallel in the lamp socket			٠	•	Safety light grids with internal control unit
Output of the pre-fault indication	1 PNP, +U <sub>B</sub> -2 V, max. 300 mA	•	•	•	•	- g-
Safetyoutput	2 separated fail safe semiconductor outputs	•		•		i l
calotycalpat	2 relay outputs, compelled connection NO-contact	•	•	•	•	et e
Switching voltage	Operating voltage -2 V		•		•	ing
Switchingvoltage		•		•		0,
	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	•		•		us
•	40 ms		•		•	ai
Ambient temperature	0 50 ℃ (273 323 K)	٠	•	٠	•	5
Storage tempera ture	-20 70 °C (253 343 K)					10
Relative humidity	max. 95 %, not condensing					Ē
Protection de gree	IP65					ĭ≌ĭ
Connection	Cable screwed connection M16 , terminal compartment with cage-terminals,	•	•	•	•	Safety light curtains
	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	•	•	•	•	Cantrol units
Connection options	Further electrical connection options on request:	•	•	•	•	1 5
	Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	-	•	-	<b>o</b>
System comp onents						1 ž
Emitter	SLP30-4-T	•	•	•	•	jo Jo
Receiver	SLPCM30-4-R	•				
	SLPCM30-4-R-L			٠		11
	SLPCM30-4-R-L/31			•		11
					-	



### Dimensions



## Safety light grids with internal control unit

### **Electrical connection**

**Emitter SLP** 

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T1

C



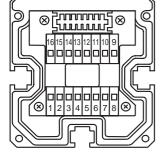
T2 T3 T4 Emitter channel 4 0 V -



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T1T2T3T4NC

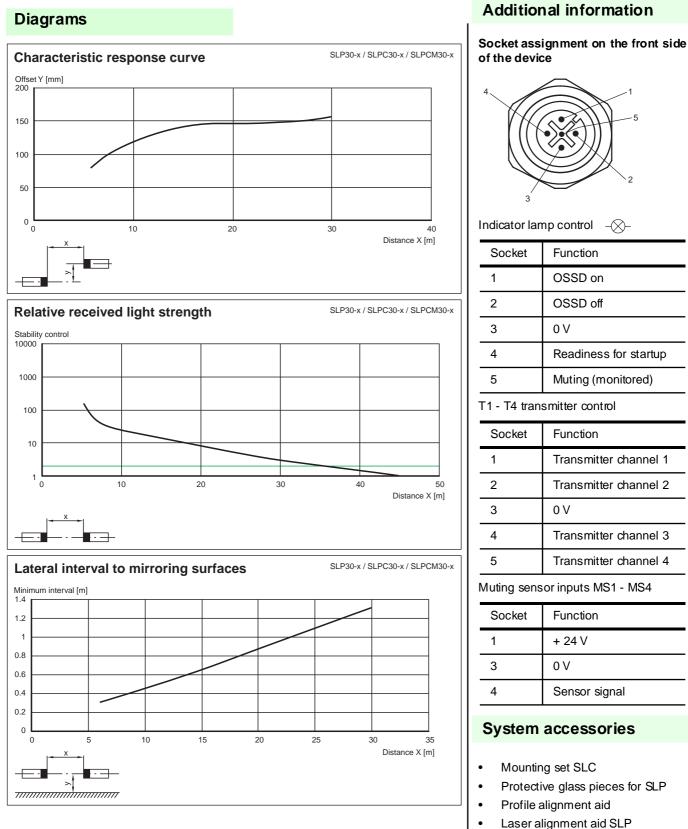
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Receiver SLPCM (semiconductor outputs)	)	Receiver SLPCM/31 (Relay outputs)
	1 - 2 - 3 -	Functional earth 0 V 24 V
4 - n.c. 5 + 6 + 7 - OSSD 1 8 - OSSD 2		4 5 6 7 8
	9 -	Input, Relay monitor
	10 -	Input, Start release
	11 -	Input, Reset
	12 -	PNP-output, 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

### SLPCM30-4-...



**Control units** 

Safety through beam sensors

Safety light grids

Housing for pillar . Enclosure UC SLP/SLC

.

.

- Collision protector Damping UC SLP/SLC
- Muting Set MS SLPCM
- Redirection mirror SLP-4-M

7/29/04 Date of edition: Safety light grid with integrated control unit

## Safety through beam sensors Safety light grids Safety light grids with internal control unit Safety light curtains

Control units



- 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

CE

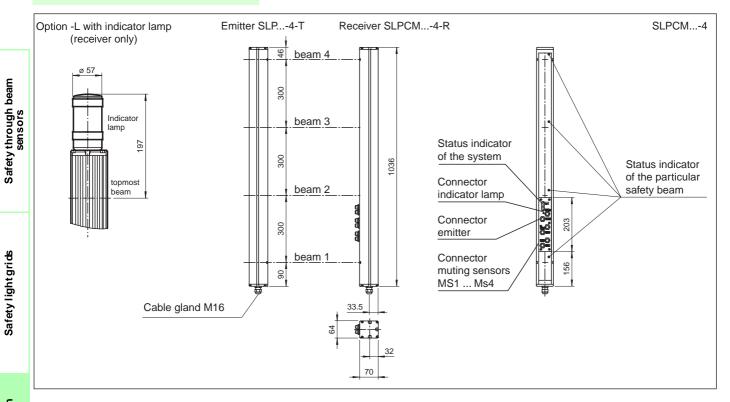
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	hn	100	data
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7/29/04

	Ordering code:	SLP CM65-4	SL PCM65-4/31	SLPCM65-4-L	12-4-L/3	
		SLPCI	SL PCM	SLPCN	SLPCM65-4-L/31	
Effective detection range	12 65 m	•	٠	•	•	
Number of beams	4	•	•	•	•	
Beamspacing	300 mm				•	
Obstacle size	static: 32 mm	•	•	•	•	E E
	dynamic: 50 mm (at $v = 1.6$ m/s of the obstacle)	•	•	•	•	ğ
Light source	LED		•		•	Safety through beam
Light type	red, alternating light	•	•	•		98
Angle of divergen œ	< 5 °					2 8
Operating mode	Start/restart disable, relay monitor, muting operating modes		•	•		1 ÷ 3
Safety category a cording to IEC/EN 61496	4	•		•		l ⊋
App rovals	TÜV	•	•	•	•	l f
		•	•	•	•	l ů
Tests	IEC/EN 61496	•	•	•	•	
Marking	CE	•	•	•	•	
Function display	LED red: per receiver channel off: interruption flæshes: 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	•	•	•	•	Safety light grids
Muting display	Indicator lamp			•	٠	l f
Pre-fault indication	LED red next to receiver flashes		•	•	•	1
Di agno sis d ispla y	7-segment display					E E
Operating e lements	10 DIP switch in receiver terminal compartment		•		•	af
Operating volta ge	24 V DC -15 % / +25 %, electrically isolated					S
	max. 250 mA					
No load sup ply current		•	•	•	•	
Protection class		•	•	•	•	
Function input	Relay monitor, start release, muting sensors (max. 4)	•	•	•	•	
Testinput	Reset-input for system test	•	•	•	•	
Activation current	approx. 10 mA	•	•	•	•	÷.÷
Activation time	0.03 1 s	•	•	•	•	i ki
Signaloutput	1 PNP each, max. 300 mA for start readiness, OSSD on, OSSD off, muting lamp	٠	٠			Safety light grids with
•	1 PNP each, max. 300 mA for startup readiness, OSSD on, OSSD off, muting	•	•			r ic
	lamp, signals in parallel in the lamp socket			•	•	b d
Output of the pre-fault indication	1 PNP, + U <sub>B</sub> - 2 V, max. 300 mA			•	٠	특히
		•	•		•	i ≕ g
Safetyoutput	2 separated fail safe semiconductor outputs	•		•		l ≥
	2 relay outputs, compelled connection NO-contact		•		•	afe
Switchingvoltage	Operating voltage -2 V	•		•		ů.
	20 60 V DC , 12 25 V AC rms		٠		•	
Switching current	max. 0.5 A		•		•	
	0.01 2 A	•	•	•	•	
o * /	100 VA		•		•	
Switch power			•		•	6
Response time	20 ms	•		•		Ĩ.
	40 ms		•		•	ta
Ambient temperature	0 50 ℃ (273 323 K)	•	•	•	•	۱ E
Storage temperature	-20 70 °C (253 343 K)	٠	٠	٠	٠	12
Relative humidity	max. 95 %, not condensing	<b>Å</b>	•	•	•	l lg
Protection de gree	IP65			<b></b>		<del>.</del>
,	Cable screwed connection M16,	•	•	•	•	l ž
Connection	terminal compartment with cage-terminals, M12-connector for emitter, muting lamp as well as other muting sensors Cable screwed connection M16,	•	•			Safety light curtains
	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	•	•	•	•	its
Connection options	Further electrical connection options on request:					Control units
•	Plug connector DIN 43651 Hirschmann, emitter: 6-pin+PE, receiver: 11-pin+PE	•	•	•	•	<u>ج</u>
System comp onents						E
Emitter	SLP65-4-T	•	•	•	•	l S
	SLPCM65-4-R	•	•	•	•	Ŭ
Re ceiver		•				
	SLPCM65-4-R-L			•		
	SLPCM65-4-R-L/31				•	
	SLPCM65-4-R/31		•			11



### Dimensions



Emitter channel 1

Emitter channel 2

Emitter channel 3 Emitter channel 4 0 V

T1 -

T2 T3 T4

C

-

## Safety light grids with internal control unit

**Electrical connection** 

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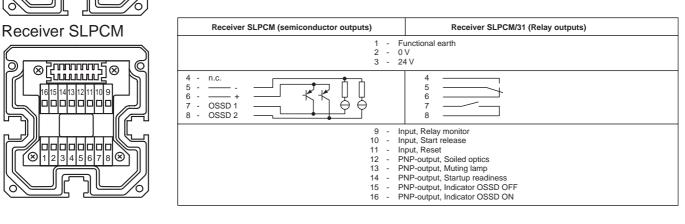
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T1 T2 T3 T4 NC

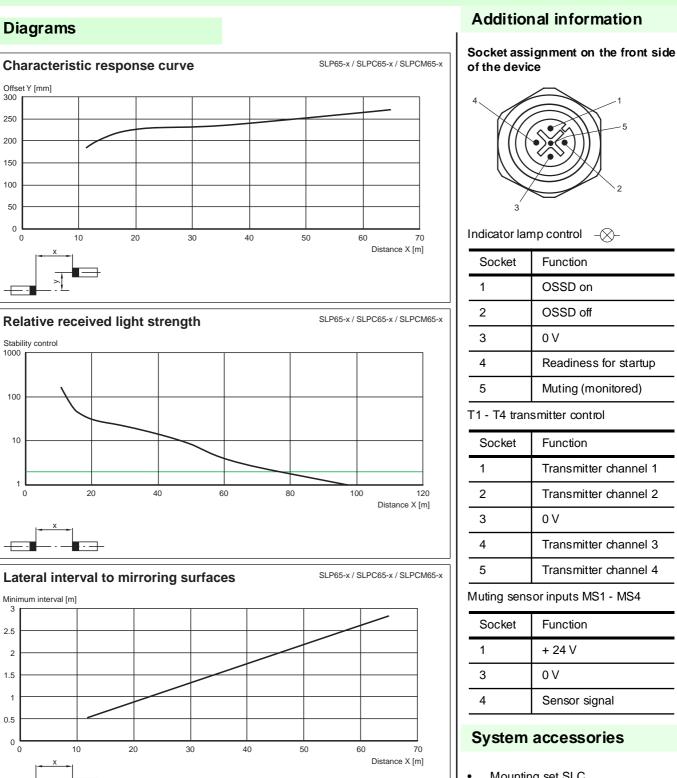
**Emitter SLP** 

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0



### SLPCM65-4-...



**Control units** 

- 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

300 250 200

3

2.5

2

1.5

0.5

0

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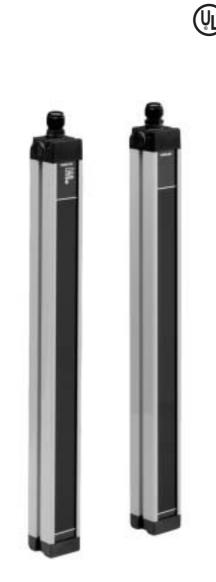


CE

**SLC-...** 

SLC-...

Safety light grid with integrated control unit



- 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 potentialseparated semiconductor design or with monitored, compelled connection NC-contacts
- Optional with relay monitor (Option 129)
   SLC-2/31
   SLC-3/31
   SLC-4/31

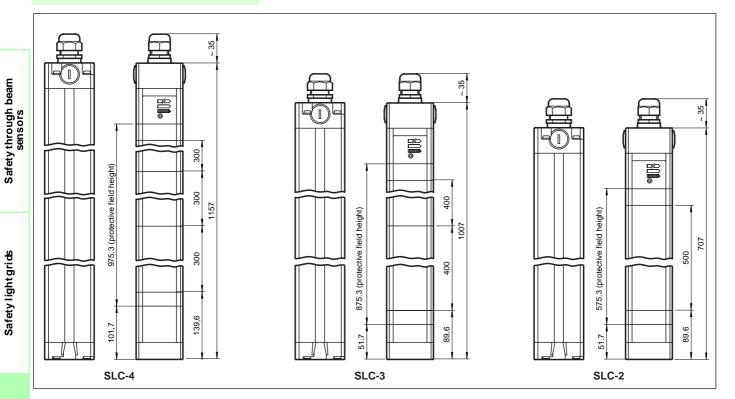
### **Technical data**

	Ordering code:	SLC-2	SLC-3	SLC-4	SLC-281	SLC-3.81	SLC-481	
		S	S	S	SLO	SLO	SLO	
Effective detection range	0.2 20 m	•	•	•	•	•	•	
Number of beams	2	٠			٠			
	3		٠			٠		
	4		•	٠		•	٠	
Po om on coing	300 mm						•	
Beam spacing	400 mm			•			•	L C
	500 mm		•			•		an
		•			•			Safety through beam sensors
Obstacle size	50 mm	•	•	•	•	•	•	f f s
Light source	IRED	•	•	•	•	•	•	l Si c
Light type	infrared, alternating light	•	•	•	•	•	•	
Ang le of divergen œ	< 5 °	•	•	•	•	•	•	t s
Operatin g mo de	can be selected with or without start/restart disable	•	٠	•	٠	٠	٠	L ÷
Safety category a ccording to IEC/EN 61496	4	•	•	•	•	•	•	afe
Approvals	TÜV, UL	•	•	•	•	•	•	ŝ
Tests	IEC/EN 61496							
Marking	CE				•			
Function display	in receiver:	•	•	•	•	•	•	
r unction ursplay	LED red: OSSD off LED green: OSSD on LED yellow: Protected area free, system start-ready	٠	٠	٠	٠	٠	٠	
Pre-fault indication	LED genow. Frotected area free, system star freedy							100
	5	•	•	•	•	•	•	Safety light grids
Di agno sis d ispla y	7-segment display in receiver	•	•	•	•	•	•	Ĕ
Operating e lements	switch for start/restart disable, transmission coding	•	•	•	•	•	•	ig
Operating d ispla y	7-segment display in emitter	•	•	•	•	•	•	
Operating voltage	24 V DC (-30 %/+25 %)	•	•	•				<u>e</u>
	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)				٠	٠	•	Sat
No-load supply current	emitter: 100 mA, receiver 150 mA	٠	٠	٠	•	•	•	
Protection class						•	•	
Function input	Start release					•	•	
Test input							•	
Activation current	Reset-input for system test	•	•	•	•	•	•	
	approx. 10 mA	•	•	•	•	•	•	
Activation time	0.03 1 s	•	•	•	•	•	•	it it
Sig nal ou tpu t	1 PNP each, max. 100 mA for start readiness and OSSD status	•	•	•	•	•	•	≥ 5
Safetyoutput	2 separated fail safe semiconductor outputs	•	•	•				Safety light grids with internal control unit
	2 relay outputs, compelled connection NO-contact				٠	٠	٠	tri
Switching voltage	Operating voltage -2 V	•	•	•				o t
5 5	50 V	•	•	•	•	•	•	l dh
Curitale instant	max. 0.5 A	•	•	•	•	•	•	, li na
Switching current		•	•	•				ety
	max. 2 A				•	•	•	af
Switch power	100 VA				•	•	•	ິ <u>ທ</u>
Response time	10 ms	•	•	•				
•	30 ms							
Ambi ent tempera ture	0 55 °C (273 328 K)	•	•	•				
Storage temperature	-25 70 °C (248 343 K)							
Relative humidity	max. 95 %, not condensing	•	•	•	•	•	•	S
		•	•	•	•	•	•	.Ë
Protection de gree	IP67	•	•	•	•	•	•	ta
Connection	Cable screwed connection M20,	•	•	•				1 3
	terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup>	•	•	•	•	•	•	Ť
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	•	•	•	•	-b
Optical face	Plastic lens	•	٠	٠	٠	٠	٠	Safety light curtains
Mass	Per 2100 g							E E
indo o	Per 3000 g	•	•		•	•		af
	Per 3450 g		•	•		•	•	S
Connection ontions	Further electrical connection options on request:			•			•	
Connection options	Plugconnector M12, 8-pin Plugconnector DIN 43 651 Hirschmann, 6-pin+PE	٠	•	•	٠	٠	٠	
Dimensione	Plug connector M26x11 Hirschmann, 11-pin+PE Length of housing 1007mm							
Dimension s			•			•		
	Length of housing 1157 mm			•			•	S
	Length of housing 707 mm	•			•			i ti
System comp onents								5
Emitter	SLC-2-T	٠			٠			2
	SLC-3-T	•			Ŧ			Control units
	SLC-4-T		*			•		8
Re ceiver	SLC-2-R			•			•	11 <sup>–</sup>
ne ceivei		•						11
	SLC-2-R/31				•			
	SLC-3-R		•					11
	SLC-3-R/31					•		└───
	SLC-4-R			٠				1
	SLC-4-R/31							1

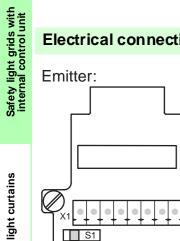


SLC-...

### Dimensions



### **Electrical connection**



Safety light curtains

**Control units** 

Receiver: Х2 • 2345 1 3 8 2 7 6 5 4 1 • • . • • • S2 S3 S1

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		Start release (output)	Start release (output)
X2:2		Status OSSD (output)	Status OSSD (output)
X2:3	not placed on board	24 V reference potential for I/O	n. c.
X2:4		0 V reference potential for I/O	n. c.
x2:5	7	Startup readiness (input)	Startup readiness (input)

### Additional information

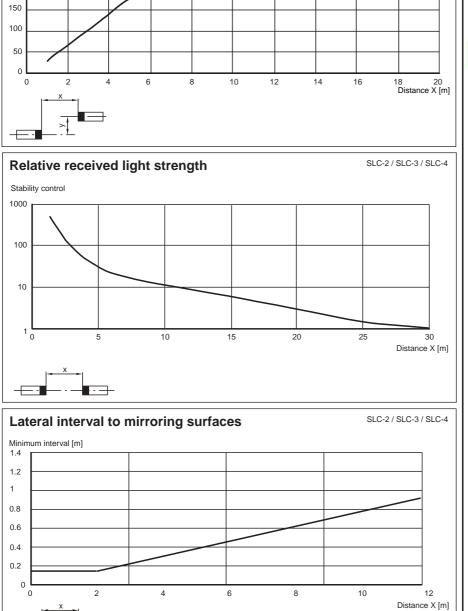
### Profile dimensions, front view



SLC-2 / SLC-3 / SLC-4

### 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



### Diagrams

Offset Y [mm] 300 250 200

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Characteristic response curve

### Safety through beam sensors

Safety light grids

Safety light grid with integrated control unit

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Safety light grids

Safety light grids with internal control unit

Safety light curtains

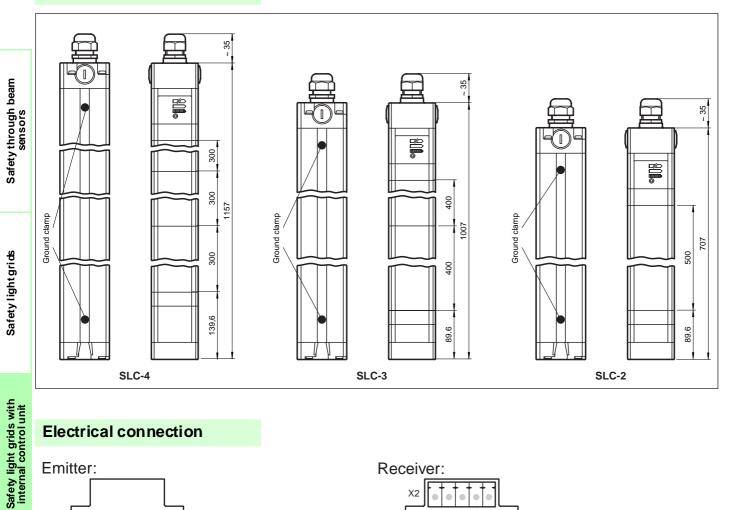




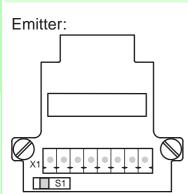
- Detection range up to 20 m
- ATEX-approval for zone 2 and zone 22
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Safety outputs OSSD, external status displays OSSD
- Start/Restart disable
- 🔶 7-segment diagnostic display
- Pre-fault indication
- Protection degree IP66
- Beam spacing 300 mm SLC-4/133
- Beam spacing 400 mm SLC-3/133
- Beam spacing 500 mm SLC-2/133

Technical data			SLC	/133	
	Ordering code:	33	33	33	]
	-	SLC-2/133	SLC-3/133	SLC-4/133	
Effective detection range	0.2 20 m	•	•	•	
Number of beams	2	•			
	3		•		I
	4			٠	
Be am spacing	300 mm			•	
	400 mm		•		an
	500 mm	•			ă
Obstacle size	50 mm	•	•	•	Safety through beam
Light source	IRED	•	•	•	l S
Light type	infrared, alternating light	•	•	•	1 E f
Ang le of divergenæ	< 5 °	•	•	•	15
Dperating mo de	can be selected with or without start/restart disable	•	•	•	e
Safety category a ccording to IEC/EN 61496	4	•	•	•	Saf
Approvals	TÜV,UL	•	•	•	0
Tests	IEC/EN 61496	•	•	•	
Marking	zone 2: 🐼 II 3 G EEx nA II T4; Zone 22: 🐼 II 3 D IP66 T 90°C	•	•	•	1
Function display	in receiver:	•	Ť	*	
under ziepzy	LED red: OSSD off LED green: OSSD on LED yellow: Protected area free, system start-ready	•	•	•	<del>8</del>
Pre-fault indication	LED orange	٠	•	•	gri
Di agno sis d ispla y	7-segment display in receiver	•	•	•	Safety light grids
Dperating e lements	switch for start/restart disable, transmission coding	•	•	•	igi
Dperating d ispla y	7-segment display in emitter	•	<b>Å</b>	•	5
Operating volta ge	24 V DC (-30 %/+25 %)	•	•	•	fet
No-load supply current	emitter: 100 mA, receiver 150 mA	•	•	•	Sa
Protection class		•	•	•	41
Function input	Start release	•	•	•	
Test i nput	Reset-input for system test	•	•	<ul><li></li><li></li></ul>	4
Activation current	approx. 10 mA	•	•	•	
Activation time	0.03 1 s	•	•	•	4
	1 PNP each, max. 100 mA for start readiness and OSSD status	•	•	•	ي
Signal output	2 separated fail safe semiconductor outputs	•	•	•	vit
Safety output		•	•	•	S
Switching voltage	Operating voltage -2 V	•	•	•	rid
Switching current	max. 0.5 A	•	•	•	Safety light grids with
Response time	10 ms	•	•	•	Ē
Ambient tempera ture	0 55 °C (273 328 K)	•	•	•	
Storage temperature	-25 70 °C (248 343 K)	•	•	•	₹
Relative humi dity	max. 95 %, not condensing	•	•	•	afc
Protection de gree	IP66	•	•	•	S
Connection	Cable screwed connection M20, terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup>	•	•	•	
Ho using	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	•	4
Optical face	Plastic lens	•	•	•	
Mass	Per 2100 g	•			Safety light curtains
	Per 3000 g		•		a.
	Per 3450 g			•	비명
System components	/				1 p
Emitter	SLC-2-T/133	•			ll 돌
	SLC-3-T/133	Ţ			4 ≚
	SLC-3-1/133 SLC-4-T/133		•	•	<u>⊋</u>
	SLC-4- 1/133 SLC-2-R/133			•	4  ¥
Receiver		•			Ö
	SLC-3-R/133		•		41
	SLC-4-R/133			•	

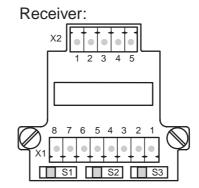
### Dimensions



### **Electrical connection**

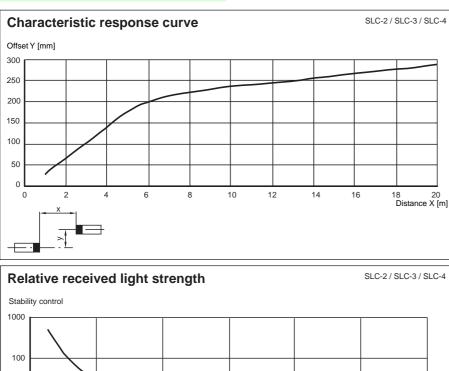


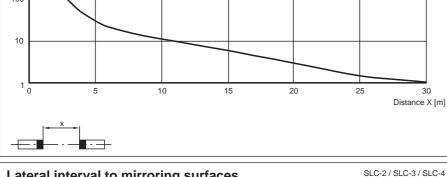
Safety light curtains

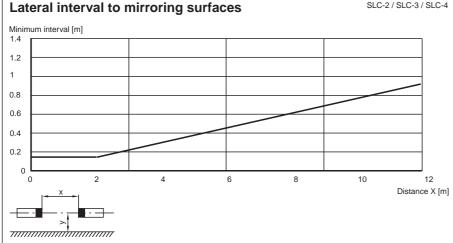


terminal	emitter	receiver (relay output)	receiver (semiconductor output)
X1:1	Functional earth	Functional earth	Functional earth
X1:2		test (input)	Test (input)
X1:3		OSSD2.2 (output)	0 V OSSD
X1:4		OSSD1.2 (output)	24 V OSSD
X1:5		OSSD2.1 (output)	OSSD2 (output)
X1:6		OSSD1.1 (output)	OSSD1 (output)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

### Diagrams







### Additional information

### Profile dimensions, front view



### System accessories

- Mounting set SLC
- Protective glass pieces for SLC (to protect the optically functional surface)
- Lateral screwed connection SLC
- Mirror 2, 3 or 4-beam for 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 grids



### Description of SLC light curtain

The safety light curtain SLC consists of a transmitter and receiver unit which form the photoelectric 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 masterslave 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.

		1					
Principle	Туре	Function	Resolution	Height of the protected area	Effective operating distance	Page	
	SLC14	with semiconductor output	14 mm	up to 1800 mm		184	00104
	SLC14/31	with relay output	Finger protection		0.2 m - 5 m	188	4
	SLC14S	Slave-device		up to 750 mm		192	Cofatul liabt a
	SLC30	with semiconductor output	30 mm	up to 1800 mm		196	- - - - - - - - - - - - - - - - - - -
$\langle x3 \rangle$	SLC30/31	with relay output	Hand protection		0.2 m - 15 m	200	
(Option /133)	SLC30S	Slave-device		up to 1650 mm		204	
	SLC60	with semiconductor output	60 mm			208	
	SLC60/31	with relay output	protection against access	up to 1800 mm	0.2 m - 15 m	212	
	SLC60S	Slave-device	from the rear			216	
	SLC90	with semiconductor output	90 mm			220	
	SLC90/31	with relay output	protection against access	up to 1800 mm	0.2 m - 15 m	224	
	SLC90S	Slave-device	from the rear			228	
		1	1	1			

Safety light curtain



Safety light grids

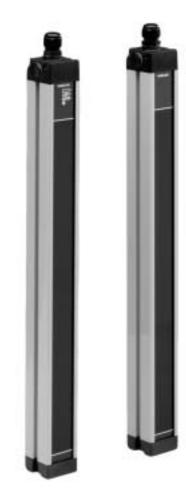
Safety light grids with internal control unit

Safety light curtains

**Control units** 

CE





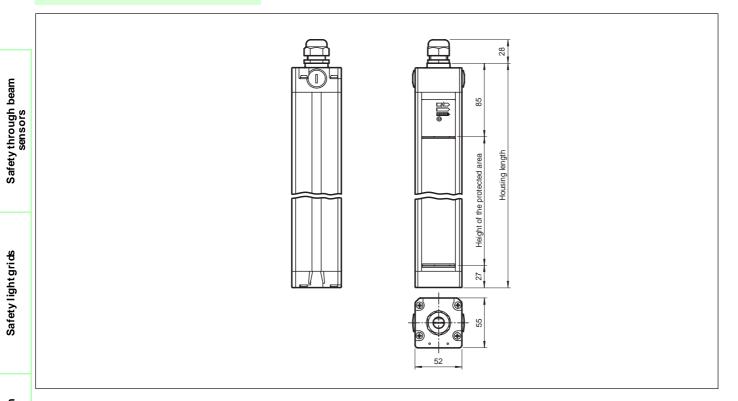
- Detection range up to 5 m
- Resolution 14 mm (finger protection)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication
- Safety outputs OSSD in potentialseparated 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

Technical data											SL	C14		
	Ordering co	а в 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	0.25m	•	•	•	•	•	•	•	•	•	•	•	•	i
Width of protected area	0.2 5 m	•	•	•	•	•	•	•	•	•	•	•	•	ł
Height of the protected area	[mm]	150	300	450	600	750	900	1 050	1200	1350	1500	1650	1 800	
Number of beams		16	32	48	64	80	96	112	128	144	1 60	176	192	1
Optical resolution	14 mm	•	•	•	•	•	•	•	•	•	•	•	•	
Light source	IRED	•	٠	٠	٠	٠	•	•	٠	٠	٠	٠	•	beam
Light type	infrared, alternating light	•	•	•	•	•	•	•	•	•	•	•	•	pe
Angle of divergence	<5 °	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	لي ت
Operating mode	can be selected with or without start/restart disable	•	•	•	•	•	•	•	•	•	•	•	•	ju și
Safety category according to	4	•												an si
IEC/EN 61496		•	•	•	•	•	•	•	•	•	•	•	•	Safety through sensors
Approvals		•	•	•	•	•	•	•	•	•	•	•	•	et
Tests	IEC/EN 61496	•	•	•	•	•	٠	•	٠	٠	•	•	•	af
Marking	Œ	•	•	•	•	•	•	•	•	•	•	•	•	S S
Operating display	7-segment display in emitter	•	•	•	•	•	•	•	•	•	•	•	•	1
Function display	in receiver: LED red: OSSD off LED green: OSSD on LED yellow: Protected area free, system start-ready	•	•	•	•	•	•	•	•	•	•	•	•	
Pre-fault indication	LEDorange	•	•	•	•	•	•	•	•	•	•	٠	•	u u
Diagnosis display	7-segment display in receiver	•	- ¥	- ¥	- ě	- <b>•</b>	,	•		- <b>•</b> -	•		•	Safety light gri ds
Operating elements	switch for start/restart disable, transmission coding	•	•	•	•	•	•	•	•		•	•	•	[]
Operating voltage	24 V DC (-30 %/+25 %)	•	•	•	•	- <b>*</b>	•	•	<b>—</b>	<b>•</b>	•	•	•	<u></u>
No-load supply current	emitter: $\leq 100$ mA receiver: $\leq 150$ mA	•	•	•	•	-		•			<b>•</b>	•		, i≕
Protection class		•	-	•	-	-	- <b>*</b>	•	<b>—</b>	▲ ·			•	۲. کو
Function input	Start release			-	-	-	•	4	•	▲	▲			afe
Test input	Reset-input for system test	•	-	-			-		-	-	-	-	•	Ň
Activation current	approx. 10 mA	•	4	-	*	*	*	*	*	*	*	*	•	1
Activation time	0.031s	•	-	-	-	-	-	-	-	-	-	*	•	
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD sta				-	-	-	4		4	4	*	•	í L
Safety output	2 separated fail safe semiconductor outputs	JU	•	•		-	- <b>*</b>	-	-	-	-		•	i T
Switching voltage	Operating voltage -2 V	•	•	•	•	•	•	•	•	•	•	•	•	. L
Switching current	max. 0.5 A	•	•	•	•		•	•	•	•	•	•	i i	: grids with ontrol unit
Response time	[ms]	10	14	18	22	26	30	22	25	28	31	▼ 34	36	u s i
Ambient temperature	055 °C (273 328 K)	•	•	•	•	•	•	•	•	•	•	•	•	i și o
Storage temperature	-25 70 ℃ (248 343 K)	•	٠	٠	٠	٠	٠	٠	٠	٠	•	٠	•	ng d
Relative humidity	max. 95 %, not condensing	•	•	•	•	•	•	•	•	•	•	•	•	불성
Protection degree	IP67	•	٠	٠	٠	٠	٠	٠	•	•	٠	•	•	al lig
Connection	Cable screwed connection M20, terminal compartment with screw terminals, lead cross-section max, 1.5 mm <sup>2</sup>	n 🔶	•	•	•	•	•	•	•	•	•	•	•	Safety light ( internal con
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin Plug connector DIN 43 661 Hirschmann, 6-pin+PE Plug connector M26x11 Hrschmann, 11-pin+PE	•	٠	•	•	٠	•	٠	٠	•	•	•	•	
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coal	ed 🔶	•	•	•	•	•	•	•	•	•	•	•	<u>v</u>
Optical face	Plastic lens	•	٠	•	٠	٠	٠	•	٠	٠	٠	٠	•	Safety light curtains
Length of housing L	[mm] Per ki	260	410		710	860	1010		1310	1460	1610	1760	1910	Ϊ
Mass	Per [g]	750	1200	0 1650	2100	2550	3000	3450	3900	4350	4800	5250	5700	บ
System components Emitter	C 0 1 4 4050 T/ 420							<u> </u>						Jht
Emitter	SLC 14 - 1050 -T/ 130 SLC 14 - 1200 -T/ 130							•						.≘°
	SLC 14 - 1200 -17 130 SLC 14 - 1350 -T/ 130								•					¥,
	SLC 14 - 1300 -17 130 SLC 14 - 1500 -T/ 130									•	•			afe
	SLC 14 - 1500 -17 130 SLC 14 - 1650 -T/ 130										•			S
												•		1
	SLC14 - 1800 -T/ 130												•	1
	SLC14150T	•												
	SLC14300-T		•											1
	SLC14450-T SLC14600-T			•										1
	SLC14750-T				•	•								1
	SLC14900-T					•								its
Receiver	SLC14 - 1050 -R/ 130						•							Control units
Neceiver	SLC 14 - 1200 -R/ 130							•						0
	SLC 14 - 1350 -R/ 130								•					it.
	SLC 14 - 1300 -R/ 130 SLC 14 - 1500 -R/ 130									•				ō
	SLU14 - IDW -K/ IDU										•			
												•		1
	SLC 14 - 1650 -R/ 130													
	SLC 14 - 1650 -R/ 130 SLC 14 - 1800 -R/ 130												- <b>-</b> 1	' I
	SLC14 - 1650 -R/ 130 SLC14 - 1800 -R/ 130 SLC14150-R	•												1
	SLC14 - 1650 -R/ 130 SLC14 - 1800 -R/ 130 SLC14150R SLC14300R	•	•											
	SLC14 - 1650 -R/ 130 SLC14 - 1800 -R/ 130 SLC14150R SLC14300R SLC14450R	•	•	•										
	SLC14 - 1650 -R/ 130 SLC14 - 1800 -R/ 130 SLC14150R SLC14300R SLC14450R SLC14450R SLC14600R	•	٠	•	•									
	SLC14 - 1650 -R/ 130 SLC14 - 1800 -R/ 130 SLC14150R SLC14300R SLC14450R	•	•	•	•	•								

Date of edition: 7/29/04

SLC14-...

### Dimensions



Receiver:

### **Electrical connection**

Safety light grids with internal control unit

Emitter:

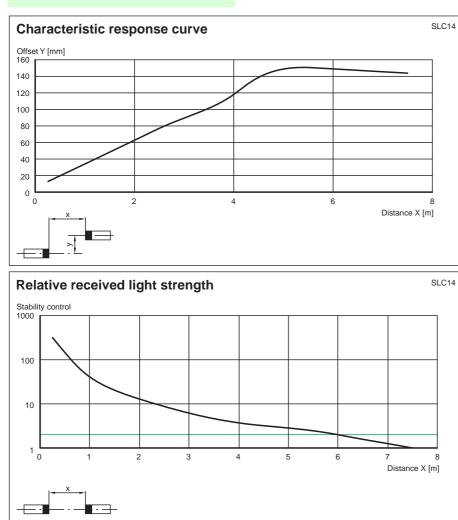
	S1: Beam co	ding $X_{2}$
Terminal	Emitter	Receiver semiconductor output
X1:1	Functional earth	Functional earth
X1:2		Test (input)
X1:3		0 V OSSD
X1:4		24 V OSSD

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

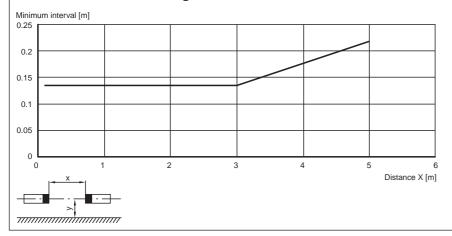
Terminal	Emitter	Receiver semiconductor output
X1:1	Functional earth	Functional earth
X1:2		Test (input)
X1:3		0 V OSSD
X1:4		24 V OSSD
X1:5		OSSD2 (output)
X1:6		OSSD1 (output)
X1:7	0 V AC/DC	0 V DC
X1:8	24 V AC/DC	24 V DC
X2:1		Start release (output)
X2:2		Status OSSD (output)
X2:3	Not placed on board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

SLC14-...

### Diagrams



### Lateral interval to mirroring surfaces



### Notes

### Master slave mode

Master:	SLC (semiconductor)
	or
	SLC/31 (relay)
Slave:	SLCS

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:

SLC14

- 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 hazard-
- Mirror for SLC (for securing hazardous areas on multiple sides)
- Ground pillar UC SLP/SLCHousing for pillar
- Enclosure UC SLP/SLC
  - Collision protector Damping UC SLP/SLC

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CE

Safety light curtain

### SLC14-.../31/...

(VL

Safety through beam sensors

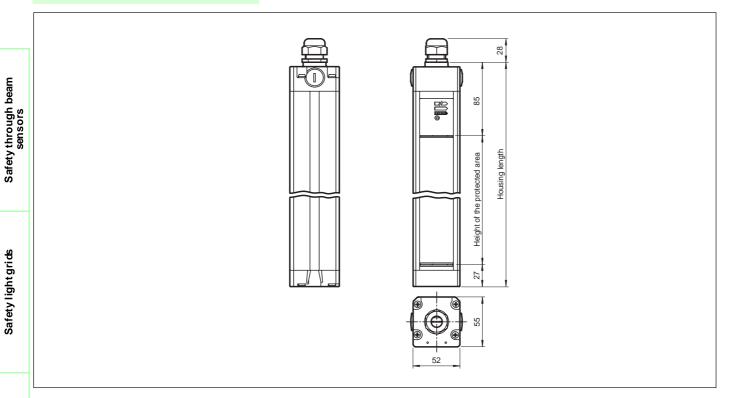


- Detection range up to 5 m
- Resolution 14 mm (finger protection)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication
- Safety outputs OSSD in potentialseparated 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

Technical data									SL	.C1	4	./31	<i>I</i>	
	Ordering code:	SLC14-150/31	SLC14-300/31	SLC14-450/31	SL C14-600/31	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 5m	•	•	•	•	•	•	•	•	•	•	•	•	1
Width of protected area Height of the protected area	0.2 5 m [mm]	450	÷	45.0	¢	◆ 750	•	4050	4200	4250	4500	4650	4900	1
Number of beams	[mm]	150 16	30 0 32	450 48	600 64	750 80	900 96	1050 112	1200 128	1350 1 44	1500 160	1650 176	1800 192	1
Optical resolution	14 mm	•	•	+~- ◆	•	•	•	•	1 2€ ♦	1	•	170	192	<u>ا ۾</u>
Light source	IRED	•	•	•	•	•	•	•	•	•	•	•	•	)ea
Light type	infrared, alternating light	•	•	•	•	•	•	•	•	•	•	•	)	s P
Angle of divergence	<5 °	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	n gu
Operating mode Safety category according to IEC/EN 61496	can be selected with or without start/restart disable 4	* *	* *	* *	* *	* *	* *	* *	* *	<ul><li></li><li></li></ul>	* *	* *	* *	Safety through beam sensors
Approvals	TÜV, UL	•	•	•	•	•	•	•	•	•	٠	•	•	e l
Tests	IEC/EN 61496	•	•	•	•	•	•	•	•	•	•	•	•	Sa
Marking	Œ	•	•	•	•	•	•	•	•	•	•	•	)	1
Operating display	7-segment display in emitter	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	1
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	•	٠	٠	٠	•	•	•	٠	٠	٠	•	•	1 8
Diagnosis display	7-segment display in receiver	•	•	•	•	•	•	•	•	•	•	•	•	Safety light gri ds
Operating elements	switch for start/restart disable, transmission coding	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	ht.
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)	•	•	•	•	•	•	•	•	•	•	•	•	lig
No-load supply current	emitter: ≤100 mA receiver:≤150 mA	•	•	•	•	٠	•	•	٠	٠	٠	•	•	چ ا
Protection class	III Start release	•	•	•	•	•	•	•	•	•	•	•	•	afe
Function input	Start release Reset input for system text	•	•	•	•	•	•	•	•	•	•	+	•	Ň
Test input Activation current	Reset-input for system test	•	•	•	•	•	•	+	•	•	•	•	•	1
Activation current Activation time	approx. 10 mA 0.031 s	+	*	*	•	•	*	•	+		*	*	•	1
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	•	•	•	•	•	•	•	•	•	•	•	•	ı—
Safety output	2 relay outputs, compelled connection NO-contact	•	•	•	•	•	•	•	•	•	•	•	)	1
Switching voltage	50 V	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	ر ج ا
Switching current	max.2 A	•	•	•	•	•	•	•	•	•	•	•	•	ı ši
Switch power	100 VA	<b>♦</b>	•	•	<b>♦</b>	46	•	<b>♦</b>	45	40	<b>•</b>	<b>♦</b>	•	grids with ontrol unit
Response time Ambient temperature	[ms] 055 °C (273 328 K)	30 ♠	34 ♠	38	42	46	50	42	45	48	51 ♠	54 ♠	56	i ž ž
Storage temperature	055 °C (273 328 K) -25 70 °C (248 343 K)	*	•	•	•	•	*	•	*	*	*	*	- <b>*</b> !	i të b
Relative humidity	max. 95 %, not condensing	•	•	•	•	•	•	•	•	•	•	•	•	aligh
Protection degree	IP67		•		•	•		•	•		•		)	I ≥ Ľ
Connection	Cable screwed connection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup>	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	Safety light g internal con
Connection options	Further electrical cornection options on request: Plug connector M12, 8-pin Plug connector DIN 43 651 Hirschmann, 6-pin+PE Plug connector M26x11 Hrschmann, 11-pin+PE	•	•	•	•	•	•	•	•	•	•	•	•	10
Housing	aluminium extruded structur al profile, RAL 1021 (yellow) coated	ı ♦	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	i și
Optical face	Plastic lens	•	•	•	•	•	•	•	•	•	•	•	•	rta
Length of housing L Mass	[mm] Per fal	260 750				860	1010				1610			5
Mass System components	Per [g]	/50	1200	) 1650	2100	2550	3000	3450	3900	4350	4800	5250	5700	<u>ht</u>
Emitter	SLC 14 - 1050 -T/ 130							•					_	lig
	SLC 14 - 1200 -T/ 130								٠				ļ	Safety light curtains
	SLC 14 - 1350 -T/ 130									•				Saf
	SLC14 - 1500 -T/ 130										٠	•		
	SLC 14 - 1650 -T/ 130 SLC 14 - 1800 -T/ 130											•		1
	SLC14 - 1800 -T/ 130 SLC14150T	•											• )	1
	SLC14150-1 SLC14300-T	*	•											1
	SLC14450T		Ì	•										1
	SLC14600-T				٠									1
	SLC14750T					•							)	Its
	SLC14900T						•							Control units
Receiver	SLC14 - 1050 -R/31 / 130 SLC14 - 1200 -R/31 / 130							•						0
	SLC14 - 1200 -R/ 31 / 130 SLC14 - 1350 -R/ 31 / 130								•	•				i ti
	SLC 14 - 1500 -R/ 31 / 130									•	٠			၊ ပိ
	SLC 14 - 1650 -R/ 31 / 130										ġ	•		1
	SLC 14 - 1800 -R/ 31 / 130												•	1
	SLC14150R/31	•											ļ	1
	SLC14300-R/31		•											<u>، لــــــــــــــــــــــــــــــــــــ</u>
	SLC14450-R/31			•										1
	SLC14600-R/31 SLC14750-R/31				•	•								1
	SLC14750-R/31 SLC14900-R/31					•	•							1
<u> </u>	SLU1490047/31						<b>_</b>							

Date of edition: 7/29/04

### Dimensions



### **Electrical connection**

• • • 2 1

• e

Safety light grids with internal control unit

**Control units** 

X1:6 X1:7

X1:8

X2:1

X2:2

X2:3

X2:4 x2:5

Emitter:

S1:	Beam coding

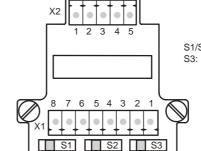
emitter

Functional earth

0 V AC/DC

24 V AC/DC

Not placed on board



Receiver:

receiver relay output

Functional earth

OSSD2.2 (output)

OSSD1.2 (output) OSSD2.1 (output)

OSSD1.1 (output)

Start release (output) Status OSSD (output)

24 V reference potential for I/O

0 V reference potential for I/O

Startup readiness (input)

test (input)

0 V AC/DC

24 V AC/DC

S1/S2: Startup/restar interlock Beam coding

7/29/04

SLC14-.../31/...

Notes

Master:

Slave:

ded.

ver unit. Installation:

gland).

1

Master slave mode

SLC ...-...

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 num-

ber of 96 light rays must not be excee-

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 recei-

The end cap should be screwed off

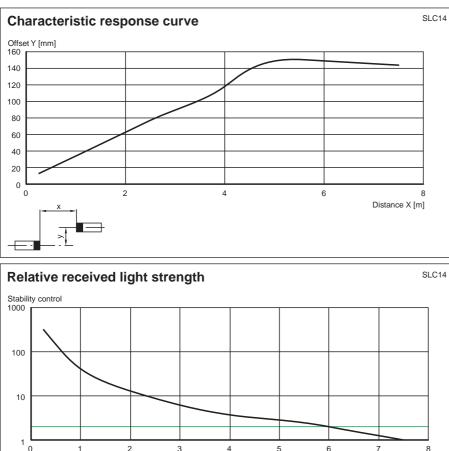
for the light curtain (without cable

or

(semiconductor)

SLC .. -.../31 (relay)

### Diagrams



Lateral interval to mirroring surfaces

2

3

4

5

Minimum interval [m]

0.25

0.2

0.15

0.1

0.05

0

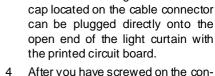
\_\_\_\_

### 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

SLC14

6

Distance X [m]



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 through beam sensors

Safety light grick

## Safety light curtains

(£x

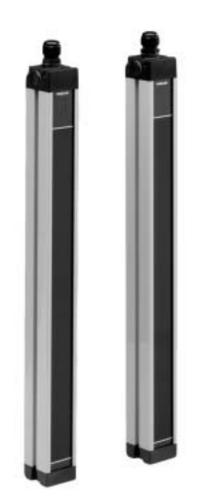


SLC14-...-S

(VL

Safety through beam sensors

CE

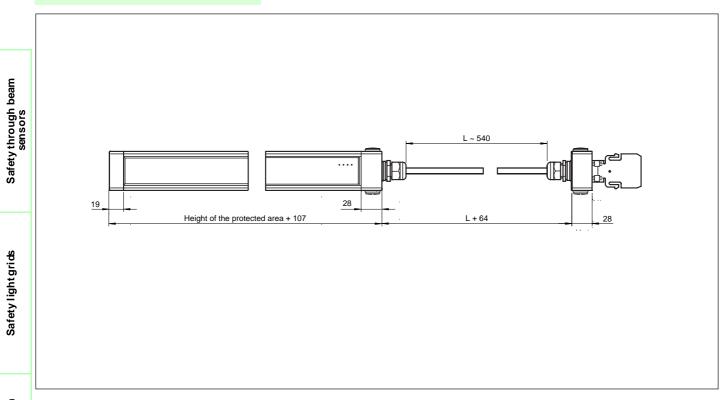


- Detection range up to 5 m
- Resolution 14 mm (finger protection)
- Protection field height up to 750 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication
- Safety outputs OSSD in potentialseparated 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				SI	LC14-	·S	
	Ordering code:	SL C14150 S	SL C14 300 S	SL C14 450 S	SL C14600-S	SL C14750 S	
Effective detection range	0.2 5 m	•	•	•	•	•	1
Width of protected area	0.25m	•	•	•	•	•	1
Height of the protected area		150 mm	300 mm	450 mm	600 mm	750 mm	1
Number of beams		16	32	48	64	80	1
Optical resolution	14 mm	•	•	•	•	•	1
Light source	IRED	•	•	•	•	•	<u>_</u>
Light type	infrared, alternating light	•	•	•	•	•	ean
Angle of divergence	<5 °	•	•	•	•	•	ă
Operating mode	in the master device	•	•	•	•	•	l de s
Safety category according to IEC/EN 61496	4	•	٠	•	•	•	Safety through beam
Approvals	TÜV, UL	•	•	•	•	•	1 7 "
Tests	IEC/EN 61496	•	•	•	•	•	fe
Marking	Œ	•	•	•	•	•	Sa
Operating display	in the mæster device	•	•	•	•	•	🔭
Functiondisplay	in the master device	•	•	•	•	•	1
Pre-fault indication	in the master device	•	•	•	•	•	1
Diagnosis display	in the mæster device	•	•	•	•	•	1
Operating elements	in the master device	•	•	•	•	•	1
Operating voltage	from mæster	•	•	•	•	•	4
No-load supply current	from master	•	•	•	•	•	Ξ
Protection class		•	•	•	•	•	l g
Function input	in the master device	•	•	•	•	•	ig
Test input	in the master device	•	•	•	•	•	
Signal output	in the mæster device	•	•	•	•	•	Safety light grids
Safety output	in the master device	•	•	•	•	•	Sa
Response time	depends on height of protective field 055 °C (273 328 K)	•	•	•	•	•	11
Ambient temperature Storage temperature	055 °C (273 328 K) -25 70 °C (248 343 K)	•	•	•	•	<b>•</b>	1
Relative humidity	-20 70 °C (246 343 N) max. 95 %, not condensing	•	•	•	•	<b>♦</b>	1
Protection degree	IP67	•	•	•	•	•	1
Connection	Cable screwed connection M20 ,	-	•	•	•	•	11 _
Connection	terminal compartment with screw terminals, lead cross-section max. 15 mm <sup>2</sup>	•	•	•	•	•	1 년 1
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	•	•	•	3
Optical face	Plastic lens			•	•		Safety light grids with
Length of housing L	T Idolo To To	260 mm	410 mm	▼ 560 mm	7 10 mm	▼ 860 mm	5
Mass	Per						ا لغ ا
System components		750 g	1 200 g	1650 g	21 00 g	2550 g	≌ <u>-</u>
Emitter	SLC14150T-S	•					1 2
Linitier	SLC14300T-S	•					at
	SLC14450-T-S		•	•			S I
	SLC14600T-S			•			1
	SLC14750T-S				•	•	1
Receiver	SLC14150R-S					•	1
Receiver	SLC14300R-S	•	•				
	SLC14450R-S		•	•			ht curtains
	SLC14600R-S			•	•		ta
	SLC147500-R-S SLC14750-R-S				•		n n
L	32014/301-3					•	Ť,

SLC14-...-S

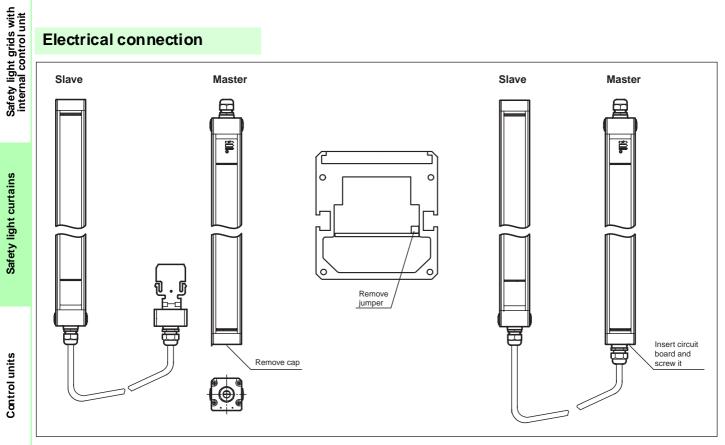
### Dimensions



### **Electrical connection**

Safety light curtains

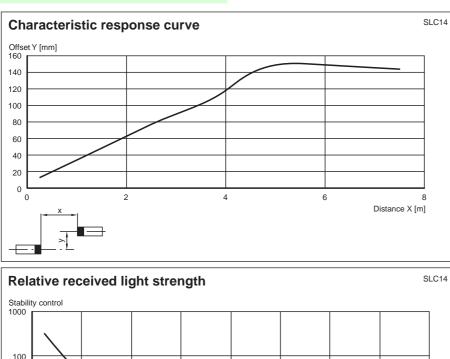
**Control units** 

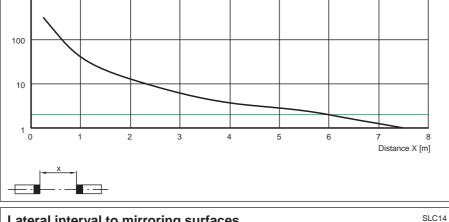


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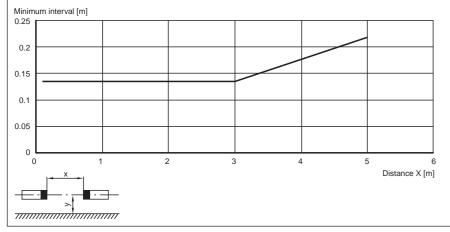
SLC14-...-S

### Diagrams





### Lateral interval to mirroring surfaces



# Notes

#### Master slave mode

Master:	SLC (semiconductor)
	or
	SLC/31 (relay)
Slave:	SLCS

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:

- The end cap should be screwed off 1 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 hazard-• ous areas on multiple sides)
- Ground pillar UC SLP/SLC
- Housing for pillar Enclosure UC SLP/SLC
- Collision protector Damping UC SLP/SLC



CE

Safety light curtain

SLC30-...

(Ex

Safety through beam sensors

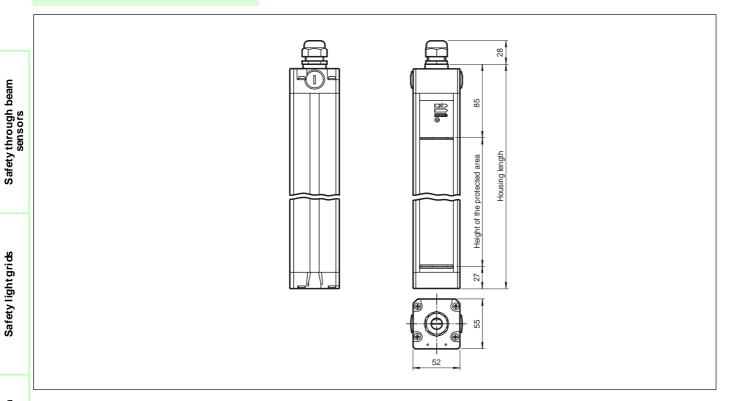
- Detection range up to 15 m
- Resolution 30 mm (hand protection)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication
- Safety outputs OSSD in potentialseparated 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											SL	_C30	)	
		Ordering cod	я SLC30-150	SLC30-300	SL C30-450	SL C30-600	SLC30-750	SL C30-900	SL C30-1200	SL C30-1350	SL C30-1500	SL C30-1650	SL C30-1800	
Effective detection range	0.215m		•	•	•	•	•	•	•	•	•	•	•	4
Width of protected area	0.215m		٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	1
•			150	300	4 50	600	750	90.0	1200	1 350	15 00	1650	) 1800	4
Number of beams			8	16	24	32	40	48	64	72	80	88	96	1
Optical resolution	30 mm		•	•	•	•	•	•	•	•	•	•	•	41 -
Light source	IRED		•	•	•	٠	•	•	•	•	•	•	•	11_
Light type	infrared, alternating light		•	<b>A</b>	•	•	•	•	<b>\</b>	•	•	<b>A</b>	• • '	beam
Angle of divergence	<5 °		•	•	•	•	•	•	•	•	•	•	•	pe,
Operating mode	can be selected with or without start/rest	tart disable	•	•	•	•	•	•	•	•	•	•	• · ·	1 4
Safety category according to	4		•							•				Î
IEC/EN 61496			•	•	•	•	•	•	•	•	•	•	• I	1 2
Approvals	tüv, ul		•	•	•	•	•	•	•	•	•	•	• '	<b>小</b> も
Tests	IEC/EN 61496		٠	٠	٠	٠	٠	٠	٠	•	٠	٠	•	l Ş
Marking	Œ		•	•	•	•	•	•	•	•	•	•	•	afety through
Operating display	7-segment display in emitter		•	•	•	•	•	•	•	•	•	•	•	l
Function display	in receiver: LED red: OSSD off LED green: OSSD on LED yellow: Protected area free, system	n start-ready	•	•	•	•	•	•	•	•	•	•	•	
Pre-fault indication	LED orange		٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	11
Diagnosis display	7-segment display in receiver		•	•	•	•	•	•	•	•	•	•	•	த
	switch for start/restart disable, transmiss	sion coding	•	•	٠	٠	٠	٠	•	٠	٠	٠	•	Safety light grids
Operating voltage	24 V DC (-30 %/+25 %)		•		•		è	. ↓	•	è	. ♦	<b>A</b>	• · ·	1  ž
No-load supply current	emitter: $\leq$ 100 mA receiver: $\leq$ 150 mA		•	•	•	•	•	•	•	•	•	•	•	l þ
Protection class			•	▲	•	•	•	•	•	<b>\</b>	. ↓		• • '	115
Function input	Start release		•				•			•		•		ef
Test input	Reset-input for system test				-	-	-	-	-	-	-	-	•	laf
Activation current	approx. 10 mA		•	•	•	•	•		•	•	•	•	•	10
Activation time	0.03 1s		<ul> <li>▼</li> <li>▲</li> </ul>	-	-	-		-	-		-	-	•	41 -
Signal output	1 PNP each, max. 100 mA for start read	vinces and OSSD statu		*	*	*	*	*	*	*	*	*	•	11
Safety output	2 separated fail safe semiconductor outp		- <b>*</b>	-	-	-	-	-	-	-	-	-	•	4-
Switching voltage	Operating voltage -2 V	<i>L</i> II3	-	-	*	*	*	*	*	*	*	*		41 -
Switching current	max. 0.5 A		-	-	-	-	-	-	-	-	-	•	•	ء ا
Response time	[ms]		40	10	40	4.4	♦ 16	40	•	•	•	•	20	Į
Ambient temperature	• •		10	10	12	14	16	18	22	24	26	28	30	s
	055℃ (273328K) -25 70℃ (248 343K)		•	•	•	•	•	•	•	•	•	•	•	i ie
Storage temperature	-25 70 °C (248 343 K)		•	•	•	•	•	•	•	•	•	•	-	0
Relative humidity	max. 95 %, not condensing		•	•	•	•	•	•	•	•	•	•	•	4 <u>द</u>
Protection degree	P67 Cable screwed connection M20		•	•	•	•	•	•	•	•	•	•	• •	li i
Connection	Cable screwed connection M20, terminal compartment with screw termina max. 1.5 mm <sup>2</sup>	als, lead cross-section	•	•	•	•	٠	٠	•	•	•	٠	•	Safety light grids with
Connection options	Further electrical connection options on Plug connector M12, 8-pin Plug connector DIN 43 651 Hirschmann, Plug connector M26x11 Hirschmann, 11-	n, 6-pin+PE	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	
Housing	aluminium extruded structural profile, RA		d 🔶	•	•	•	•	•	•	•	•	•	•	
Optical face	Plastic lens	1	•	•	٠	٠	٠	٠	•	•	٠	•	•	su
Length of housing L	[mm]		260	410	560	710	8 60	1 010	131 0	1 460	16 10	1760	) 1910	tai
Mass	Per [g]		750	1200	165.0				390.0				5700	<u> </u>
System components	1 ~ [9]		141	Inc.	Too .	4140	200	000.	000.	400.	40.00	ULC .	J. 1	L L
Emitter	SLC30-1200-T												,	h
	SLC30-1350-T								-				/	15
1	SLC30150-T									•				e
	SLC301500-T		•								•		-	Sa
1	SLC301650-T										•		,	1
	SLC3018001 SLC301800T											-	-	
1	SLC30-1800-1 SLC30-300-T			•									•	1
	SLC30-450-T			•	•								/	41-
1	SLC30-450-1 SLC30-600-T				•								,	4] –
	SLC30-600-1 SLC30-750-T					•	•						/	4
	SLC30-750-1 SLC30-900-T						•							4   o
1	SLC30-1200-R							•	•				'	Control units
Receiver									•				,	41 <u>Þ</u>
I	SLC301350-R									•			/	1 2
	SLC30-150-R		•											4  ž
	SLC301500-R										•		'	1 č
	SLC301650-R											•		4 -
	SLC301800-R												• •	11-
	SLC30-300-R			•										41
1	SLC30-450-R				٠								/	
1	SLC30-600-R					•							1	
1	SLC30-750-R						٠						· · · ·	1
	SLC30-900-R							•						4



SLC30-...

### Dimensions



# **Electrical connection**



X1:7

X1:8

X2:1 X2:2

X2:3

X2:4

x2:5

Emitter:	S1: Beam cod	ling $Receiver:$ $x_{2}$ $x_{1}$ $x_{2}$ $x_{1}$ $x_{1}$ $x_{1}$ $x_{1}$ $x_{1}$ $x_{1}$ $x_{2}$ $x_{1}$ $x_{1}$ $x_{2}$ $x_{3}$ $x_{4}$ $x_{1}$ $x_{1}$ $x_{2}$ $x_{3}$ $x_{5}$ $x_{1}$ $x_{1}$ $x_{2}$ $x_{3}$ $x_{5}$
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)
N/4 =	01/10/20	01/100

0 V DC

24 V DC Start release (output)

n.c.

n.c.

Status OSSD (output)

Startup readiness (input)

0 V AC/DC

24 V AC/DC

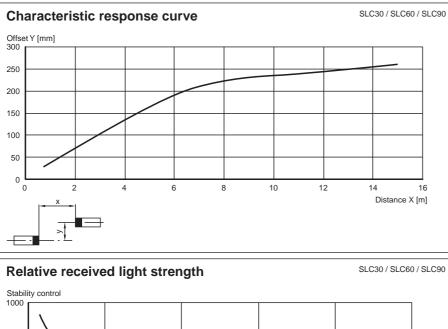
Not placed on board

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

	Σ	
	ž	
	č	ļ
	ř	

SLC30-...

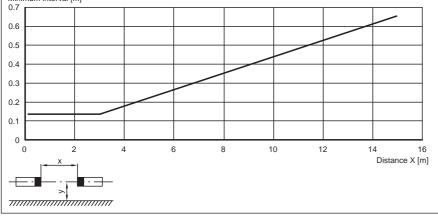
### Diagrams





### Lateral interval to mirroring surfaces

Minimum interval [m]



# Notes

#### Master slave mode

Master:	SLC (semiconductor)
	or
	SLC/31 (relay)
Slave:	SLCS

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:

SLC30 / SLC60 / SLC90

- 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



CE

Safety light curtain

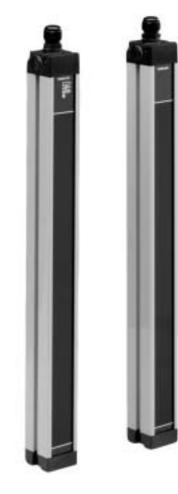
SLC30-.../31

Safety through beam sensors

Safety light grids

Safety light grids with internal control unit



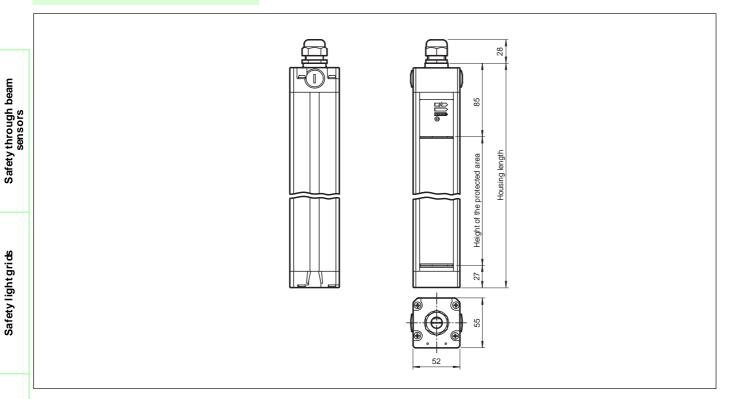


- Detection range up to 15 m
- Resolution 30 mm (hand protection)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication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

Safety light curtains

Technical data										SL	C30	0/	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	•	•	•	•	•	•	•	•	•	•	•	•	4
Width of protected area	0.2 15 m	-	•	•		•		•	•	•	4	•	•	1
Height of the protected area		◆ 1 50	● 300	<b>4</b> 50	<b>●</b> 600	◆ 750	● 900	● 1050	◆ 1200	● 1350	◆ 1500	● 1650		4
Number of beams	[min]	8	300 16	4 50 24	32	40	48	56	64	72	80	88	96	1
Optical resolution	30 mm	•	•	<b>∠</b> -•	•	40	***	•	•	•	•	•	96	4
Light source	IRED	•	•	•	•	•	•	•	•	•	•	•	•	1 <u> </u>
Light type	infrared, alternating light	•	•	-	-	-	-		- <b>•</b>	• •	•	•	- 🍎 I	an Na
Angle of divergence	<5°	•	•	•	•	•	•	•	•	•	•	•	•	ı ä
Operating mode	can be selected with or without start/restart disable	- •	•	•	•	•	•	•	•	•	•		- 🕹 I	1 អូន
Safety category according to IEC/EN 61496	4	•	*	*	•	•	•	*	•	*	*	•	•	afety through beam sensors
Approvals	TÜV, UL	•	•	•	•	•	•	•	•	•	•	•	• I	۱ £ ۵
Tests	IEC/EN 61496	•	•	٠	٠	٠	٠	٠	•	٠	•	•	•	i) j
Marking	CE	•	•	•	•	•	•	•	•	•	•	•	•	at
Operating display	7-segment display in emitter	•	•	•	٠	٠	٠	•	٠	•	•	٠	•	Ś
Function display	in receiver: LED red: OSSD off LED green: OSSD on	•	•	•	•	•	•	•	•	•	•	•	•	1-
	LED yellow: Protected area free, system start-ready						<b>_</b>					<b>_</b>	- I	4
Pre-fault indication	LED orange	•	•	•	•	•	•	•	•	•	•	•	• 1	1
Diagnosis display	7-segment display in receiver	•	•	•	•	•	•	•	•	•	•	•	•	1 8
Operating elements	switch for start/restart disable, transmission coding	•	•	•	•	•	•	•	•	•	•	•	• 1	i i
Operating voltage	$24 \vee DC$ (-30 %/+25 %) / 24 $\vee AC$ (-20 %/+10 %)	•	•	•	•	•	•	•	•	•	•	•	•	1 ž
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	•	•	•	•	•	•	•	•	•	•	•	• J	Safety light gri ds
Protection class	III Optical and a	•	•	•	•	•	•	•	•	•	•	•	•	15
Function input	Start release	•	•	•	•	•	•	•	•	•	•	•	• 1	et
Test input	Reset-input for system test	•	•	•	•	•	•	•	•	•	•	•	•	l Saf
Activation current	approx.10mA	•	•	•	•	•	•	•	٠	•	•	٠	•	1 00
Activation time	0.031 s	•	•	•	•	•	•	•	•	•	•	•	•	4
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	3	•	•	•	•	•	•	•	•	•	•	•	1
Safety output	2 relay outputs, compelled connection NO-contact	•	•	•	•	•	•	•	•	•	•	•	•	1 <b></b>
Switching voltage	50V	•	•	•	•	•	•	•	•	•	•	•	•	1
Switching current	max. 2A	•	•	•	•	•	•	•	•	•	•	•	• 1	. ء ۱
Switch power	100 VA	•	•	•	•	•	•	•	•	•	<b>♦</b>	•	• J	i Fi
Response time Ambient temperature	[ms] 0 55 °C (273 328 K)	30	30	32	34	36	38	40	42	44	46	48	50	l s l
	0 55 °C (273 328 K) -25 70 °C (248 343 K)	-	-	-	-	•	-	-	-	-	-	-	•	1 g S
Storage temperature		*	•	*	*	*	-	*	*	-	*	*		1 BZ
Relative humidity Protection degree	max. 95 % not condensing	*	*	*	+	+	*	*	+	•	+	+	- <b>*</b> J	। ਵੁੱਠ
Connection	Cable screwed connection M20, terminal compartment with	•	•	•	•	•	•	•	•	•	•	•	•	lic al
Connection options	screw terminals, lead cross-section max. 1.5 mm <sup>2</sup> Further dectrical connection options on request: Plug connector M12, 8-pin	•	•	•	•	•	•	•	•	•	•	•	•	Safety light grids with internal control unit
	Plug connector DIN 43 651 Hrschmann, 6-pin+PE Plug connector M26x11 Hirschmann, 11-pin+PE	•	Ť	•	•	•	•		•	•	•	•	•	1
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	4 <b>(</b>	•	•	•	•	•	•	•	•	٠	•	• I	1
Optical face	Plastic lens	•	•	•	•	•	•	•	•	•	•	•	•	1
Length of housing L Mass	[mm] Per [d]	260		560	710	860								Ins
Mass System components	Per [g]	750	1200	165 U	2100	2550	300 0	3450	39 00	43 50	48 00	52 50	57.00	ta
Emitter	SLC30-1050-T													Safety light curtains
Emitter	SLC30-1050-1 SLC30-1200-T							•					<b>_</b>	Ĕ
	SLC30-1200-1 SLC30-1350-T								-	•				igh
	SLC30-1350-1 SLC30-150-T	•								•			<b>_</b>	i -
	SLC30-150-T										•			fet
	SLC30-1650-T										•			Saf
	SLC30-1800-T											-	• J	1
	SLC30-300-T		•											1
	SLC30-450-T			•										1
	SLC30-600-T			v	٠									1
	SLC30-750-T				<u> </u>	•								4
	SLC30-900-T						٠							1
Receiver	SLC30-1050-R/31							•						1 0
	SLC30-1200-R/31								٠					i ii
	SLC30-1350-R/31									•				12
	SLC30-150-R/31	٠												Control units
	_										•			i t
	SLC30-1500-R/31												1	၊ ပိ
	SLC30-1650-R/31											•		
	SLC30-1650-R/31 SLC30-1800-R/31												•	4 L
	SLC30-1650-R/31 SLC30-1800-R/31 SLC30-300-R/31		٠									Ť	•	1
	SLC30-1650-R/31 SLC30-1800-R/31 SLC30-300-R/31 SLC30-450-R/31		٠	•								Ĭ	•	
	SLC30-1650-R/31 SLC30-1800-R/31 SLC30-300-R/31 SLC30-450-R/31 SLC30-450-R/31		•	•	•								•	
	SLC30-1650-R/31 SLC30-1800-R/31 SLC30-300-R/31 SLC30-450-R/31		٠	٠	•	•							•	

# Dimensions



Receiver:

# **Electrical connection**

Safety light grids with internal control unit

Emitter:

X2:4

x2:5

**Control units** 

	S1: Beam codin	$x_{2}$
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)
X1:4 X1:5		OSSD1.2 (output)
X1:5	0 V AC/DC	OSSD2.1 (output)
X1:5 X1:6	0 V AC/DC 24 V AC/DC	OSSD2.1 (output) OSSD1.1 (output)
X1:5 X1:6 X1:7		OSSD2.1 (output)         Image: Construction of the second se
X1:5 X1:6 X1:7 X1:8		OSSD2.1 (output)

0 V reference potential for I/O

Startup readiness (input)

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

7/29/04

### SLC30-.../31

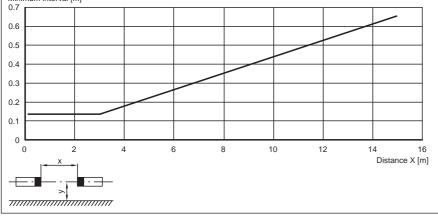
### Diagrams

SLC30 / SLC60 / SLC90 Characteristic response curve Offset Y [mm] 300 250 200 150 100 50 0 4 6 8 10 12 14 16 Distance X [m] SLC30 / SLC60 / SLC90 **Relative received light strength** Stability control 1000



#### Lateral interval to mirroring surfaces

Minimum interval [m]



# 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:

SLC30 / SLC60 / SLC90

- 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

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SLC30-...-S

(VL

Safety through beam sensors

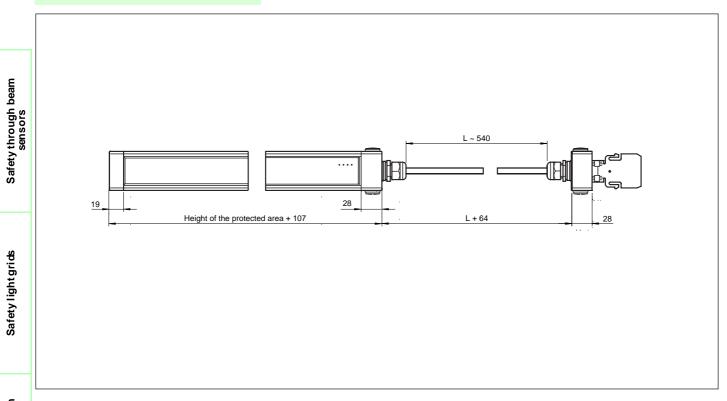
CE

- 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 potentialseparated 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										S	SLC	30	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	0.215m								•	•	•	•	•	
Nidth of protected area	0.215m		•	•	* *	•	•	•		•	•	•	•	
Height of the protected area			1 50	300	450	600	750	900	1050	1 200	1350	1 500	1650	
Number of beams			8	16	24	32	40	48	56	64	72	80	88	
Optical resolution	30 mm		•		<b>∠</b> ¬									
Light source	RED			•	•	•	•	•		•	•	•	* *	ءا
Light type	infrared, alternating light				•		•	* *	• •		• •	•		ear
Angle of divergence	<5 °				•		•		•					Ā
Operating mode	in the master device													님
Safety category according to IEC/EN 61496	4		•	•	•	•	•	•	•	•	•	•	•	afety through beam
Approvals	TÜV, UL		٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	ΙĒ
Tests	EC/EN 61496		•	•	•	•	•	•	•	•	•	•	•	fe
Marking	Œ		•	•	•	•	•	•	•	•	•	•	•	ပိ
Operating display	in the master device		÷	٠.	•	•	•			•	•	٠.	•	
Function display	in the master device		•	•	•	•	•	•	•	•	•	•	•	11
Pre-fault indication	in the master device		٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	
Diagnosis display	in the master device		•	•	•	•	•	•	•	•	•	•	•	
Operating elements	in the master device		•	•	•	•	•	•	•	•	•	•	•	
Operating voltage	from master		•	•	•	•	٠	•	•	•	•	•	•	-8
No-load supply current	from master		•	•	•	•	•	•	•	•	•	•	•	Ë
Protection class	II		•	•	•	•	•	•	•	•	•	•	•	Ē
Function input	in the master device		٠	٠	•	٠	٠	٠	٠	٠	•	٠	•	l je
Test input	in the master device		•	•	•	•	•	•	•	•	•	•	•	ΙĒ
Signal output	in the master device		•	•	•	•	•	•	•	•	•	•	•	Safety light grids
Safety output	in the master device		•	•	•	•	•	•	•	•	•	•	•	l s
Response time	depends on height of protective field		•	•	•	•	•	•	•	•	•	•	•	
Ambient temperature	0 55℃ (273328K)		•	•	•	•	•	•	•	•	•	•	•	
Storage temperature	-25 70 ℃ (248 343 K)		•	•	•	•	•	•	•	•	•	•	•	
Relative humidity	max. 95 %, not condensing		•	•	•	•	•	•	•	•	•	•	•	
Protection degree Connection	IP67 Cable screwed connection M20, terminal compartment with screw termin	nals, lead cross-section	• •	•	•	* •	•	•	•	•	•	•	* •	Safety light grids with
	max.1.5 mm <sup>2</sup>													l sp
Housing	aluminium extruded structural profile, R	AL 1021 (yellow) coated	•	•	•	•	•	•	•	•	•	•	•	gri
Optical face	Plastic lens		•	•	•	•	•	•	•	•	•	•	•	보
Length of housing L	[mm]		260	410	560	710	860	1010	1160	1 310	1460	1610	1760	lig
Mass	Per [g]		750	1 200	1650	2100	2550	30 00	3450	3 900	4350	4800	5250	≥
System components														afe
Emitter	SLC30-1050-T-S								•					Ŋ,
	SLC30-1200-T-S									•				
	SLC30-1350-T-S										•			
	SLC30-150-T-S		•											
	SLC30-1500-T-S											•		
	SLC30-1650-T-S												•	Safety light curtains
	SLC30-300-T-S			•										tai
	SLC30-450-T-S				•									<u>اج</u>
	SLC30-600-T-S					•								Ĕ
	SLC30-750-T-S						•							ig
	SLC30-900-T-S							•						<u> </u>
Receiver	SLC30-1050-R-S								•					fet
	SLC30-1200-R-S									•				Sa
	SLC30-1350-R-S		•								•			
	SLC30-150-R-S		•											4
	SLC301500-R-S											•		
	SLC30-1650-R-S SLC30-300-R-S			•									•	11
	SLC30450-R-S			•	٠									11
	SLC30-600-R-S				•	•								1
						•	•							ts
	SI C30-7500-R-S													
	SLC30-7500-R-S SLC30-900-R-S						•							Control units

SLC30-...-S

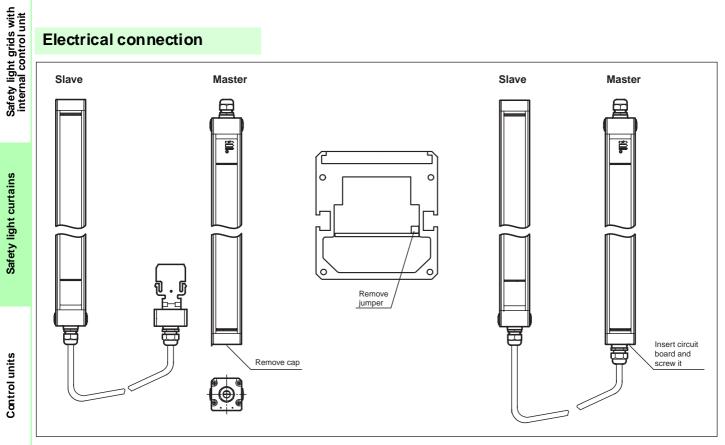
# Dimensions



# **Electrical connection**

Safety light curtains

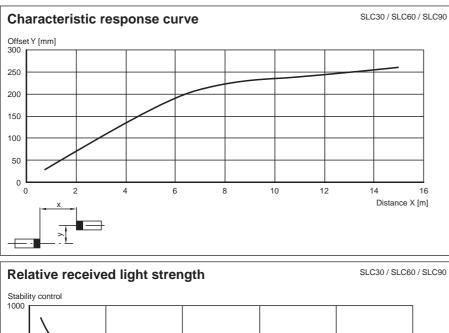
**Control units** 



7/29/04

SLC30-...-S

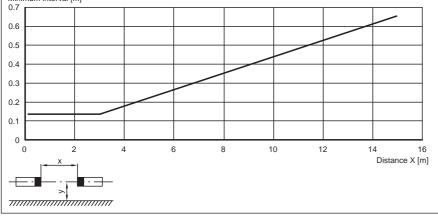
### Diagrams





#### Lateral interval to mirroring surfaces

Minimum interval [m]



# 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:

SLC30 / SLC60 / SLC90

- 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

CE

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Safety light curtain

SLC60-...

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Safety through beam sensors



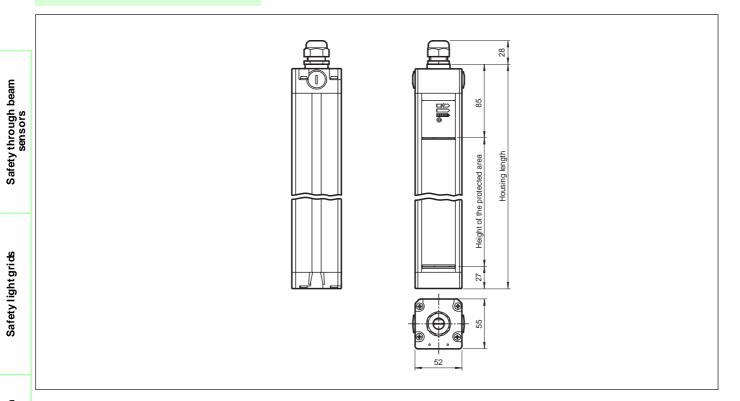
- Detection range up to 15 m
- Resolution 60 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication
- Safety outputs OSSD in potentialseparated 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					5	LC6	0	
	Ordering code:	SL C60-300	SL C60-600	SL C60-900	SL C60-1200	SL C60-1500	SL C60-1800	
Effective detection range	0.2 15 m	•	•	•	•	•	•	
Width of protected area	0.2 15 m	•	•	•	•	•	•	
Height of the protected area		300	600	90.0	1200	1500	1 800	
Number of beams		mm 8	mm 16	mm 24	mm 32	mm 40	mm 48	1
Optical resolution	60 mm	•	•	•	•	•	•	
Light source	IRED	•	•	•	•	•	•	
Light type	infrared, alternating light		•			•		
Angle of divergence	<5 °		•			•		٩ ٩
Operating mode	can be selected with or without start/restart disable		•			•		18
Safety category according to	4	•	•	•	•	•	•	Safetv through beam
IEC/EN 61496	TÜA / 1 II	•	•	•	•		•	÷
Approvals		•	•	•	•	•	•	II ≩
Tests	IEC/EN 61496	•	•	•	•	•	•	afe
Marking	Œ	•	•	•	•	•	•	S S
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	•	•	•	٠	•	•	┢
Pre-fault indication	LED orange	•	•	•	•	•		1
Diagnosis display	7-segment display in receiver		• •	* *	•	•		Safety light grids
Operating elements	switch for start/restart disable, transmission coding	•	•		•			Ë
Operating voltage	24 V DC (-30 %/+25 %)	•	•			•		Ĭž
No-load supply current	emitter: ≤ 100 mA receiver: ≤ 150 mA	•	•	•	•	•	•	i je
Protection class		•	•	•	•	•	•	5
		•	•	•	•	•	•	Ē
Function input	Start release	•	•	•	•	•	•	Saf
Test input	Reset input for system test	•	•	•	•	•	•	1 "
Activation current	approx. 10 mA	•	•	•	•	•	•	
Activation time	0.031s	•	•	•	•	•	•	
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	•	•	•	•	•	•	ء
Switching current	max. 0.5 A	•	•	•	•	•	•	Ę
Responsetime		10 ms	10 ms	12 ms	14 ms	16 ms	18 ms	l s
Ambient temperature	055 °C (273 328 K)	•	•	•	•	•	•	l 5
Storage temperature	-25 70 ℃ (248 343 K)	•	•	•	•	•	•	ō
Relative humidity	max. 95 %, not condensing	•	•	•	•	•	•	ΙĘ
Protection degree	IP67	•	•	•	•	•	•	
Connection	Cable screwed comection M20 , terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup>	•	٠	٠	٠	•	٠	Safety light grids with
Connection options	Further electrical connection options on request: Plug connector M12, 8-pin Plug connector DIN43 661 Hirschmann, 6-pin+PE Plug connector M26x11 Hirschmann, 11-pin+PE	•	٠	•	٠	•	٠	
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	۵	٠	٠	٠	٠	٠	
Optical face	Plastic lens	•	•	•	•	•	•	S
Length of housing L		410	710	1 010	1310	161 0	1 910	l i
Mass	Per	mm 1200	mm 2100	mm 3000	mm 39 00	mm 480 0	mm 5 700	Safetv light curtains
		1200 g	2100 g	g	900 g	480 U g	g 5700	t c
System components								io.
Emitter	SL060-1200-T				•			>
	SL060-1500-T					•		fet
	SL060-1800-T						•	S
	SL060-300-T	•						
	SL060-600-T		•					
	SL060-900-T			•				
Receiver	SLC60-1200-R				•			
	SL060-1500-R					•		
	SL060-1800-R						•	11
	SL060-300-R	•						0
	SLC60-600-R	•						11 봄
	SLOUGUUR		-					
	SL00000R		•	•				Control units



SLC60-...

### Dimensions



Receiver:

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•

1 2 3 4 5

# **Electrical connection**

S1:

Beam coding

Emitter:

x2:5

		$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
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		Start release (output)
X2:2		Status OSSD (output)
X2:3	Not placed on board	n.c.
X2:4		n.c.

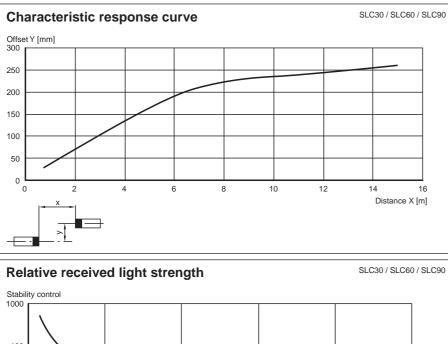
Startup readiness (input)

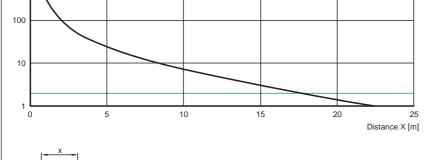
S1/S2: Startup/restart interlock S3: Beam coding

# 7/29/04

SLC60-...

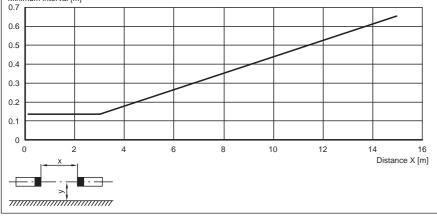
#### Diagrams





#### Lateral interval to mirroring surfaces

Minimum interval [m]



# 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:

SLC30 / SLC60 / SLC90

- 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

(Ex



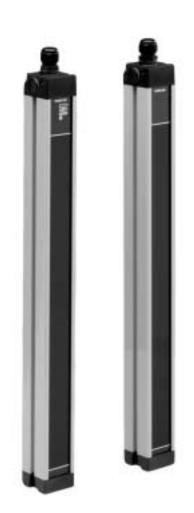
CE

Safety light curtain

SLC60-.../31

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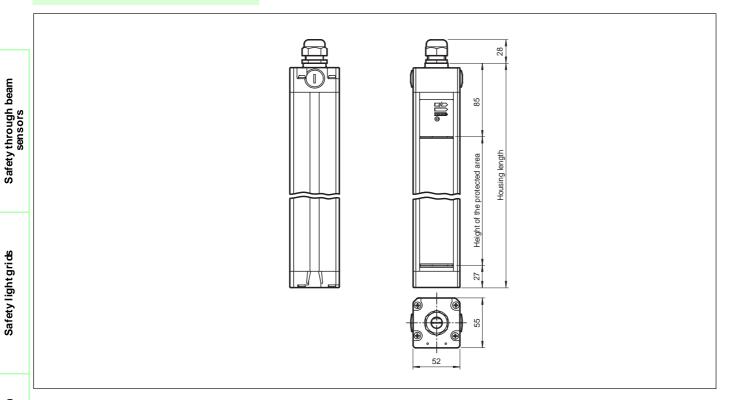
Safety through beam sensors



- 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 potentialseparated semiconductor design or with monitored, compelled connection NC-contacts
- Optional with relay monitor (Option 129)

Technical data					SLC	60	./31	
	Ordering code:	SL C60-300/31	SL C60-600/31	SLC60-900/31	SLC60-1200/31	SLC60-1500/31	SLC60-1800/31	
Effective detection range	0.2 15 m	•	•	•	<i>0</i> 5	<i>0</i> 5	<i>6</i>	
Width of protected area	0.2 15m	•	•	•	•	•	•	
Height of the protected area		300	600	90.0	1200	1500	1 800	
		mm	mm	mm	mm	mm	mm	
Number of beams		8	16	24	32	40	48	
Optical resolution	60 mm	•	•	•	•	•	•	E
Light source	IRED	•	•	•	•	•	•	ĕ
Light type	infrared, alternating light	•	•	•	•	•	•	afety through beam
Angle of divergence	<5 °	•	•	•	•	٠	•	n n
Operating mode	can be selected with or without start/restart disable	•	•	•	•	•	•	12
Safety category according to IEC/EN 61496	4	•	•	٠	•	٠	•	l t
Approvals	TÜV, UL					•		et
Tests	IEC/EN 61496	•	•		-	-	* *	Saf
Marking	Œ	•	•		•			0
Operating display	7-segment display in emitter	•	<ul><li>♦</li><li>♦</li></ul>	•	•	•	<ul><li>♦</li><li>♦</li></ul>	
Function display	in receiver:	•	•	•	•	*	-	
	LED red: OSSD aff LED green: OSSD an	•	٠	•	٠	٠	•	
	LED yellow: Protected area free, system start-ready							ഹ
Pre-fault indication	LED orange	•	•	•	•	•	•	Safety light gri ds
Diagnosis display	7-segment display in receiver	•	•	•	•	•	•	t a
Operating elements	switch for start/restart disable, transmission coding	•	•	•	•	•	•	님 등
Operating voltage	24 V DC (-30 %/+25 %) / 24 V AC (-20 %/+10 %)	•	•	•	•	•	•	I ÷
No-load supply current	emitter: ≤ 100 mA reœiver: ≤ 150 mA	•	•	•	•	•	•	et
Protection class	II .	•	•	•	•	•	•	af
Function input	Start release	•	•	•	•	•	•	
Test input	Reset-input for system test	•	•	•	•	•	•	
Activation current	approx. 10 mA	•	•	•	•	•	•	
Activation time	0.031s	•	•	•	•	•	•	
Signal output	1 PNP each, max. 100 mA for start readiness and OSSD status	•	•	•	•	•	•	
Safety output Switching voltage	2 relay autputs, compelled connection NO-contact 50 V	•	•	•	•	•	•	÷
Switching current	max.2 A	•	•	-	•	•	•	li≥
Switch power	100 VA	•	◆ ◆	•	•	•	•	l sp
		20 ma	•	22.000	24.000	20	20 ma	i j
Response time Ambient temperature	055 °C (273 328 K)	30 ms	30 ms	32 ms	34 ms	36 ms	38 ms	Ĕ
Storage temperature	-25 70 °C (248 343 K)		-		-		-	lia
Relative humidity	max. 95 %, not condensing							≥
Protection degree	IP67					•		Safety light grids with
Connection	Cable screwed connection M20 ,	•	•	•	•	•	•	ů
	terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup>	•	•	•	•	•	•	
Connection options	Futher 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							S
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	٠	٠	٠	•	٠	•	ai I
Optical face	Plastic lens	•	•	•	•	•	•	Ľ
Length of housing L		410	710	1 010	1310	161 0	1 910	ರ
Mass	Per	mm 1200	mm 2100	mm 3000	mm 39 00	mm 480 0	mm 5700	Safetv light curtains
System components		g	g	g	g	g	g	Ş
Emitter	SL0601200-T				•			afe
Emitter					•			Ű
	SLC60-1500-T SLC60-1800-T					•	•	
	SL060-300-T	•					•	
	SL060-600-T	•	•					
	SL060-900-T		•	•				
Receiver	SL0601200-R/31			•	•			
1.0001401	SL060-1500-R/31				•			
	SLC60-1800-R/31					•	<b></b>	Control units
	SLC60-1800-R/31	•					•	1
	SL060600R/31	•						2
			-					• •

# Dimensions



# Electrical connection

Safety light grids with internal control unit

Emitter:

**Control units** 

X2:3

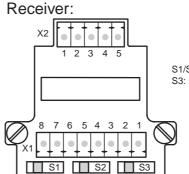
X2:4 x2:5

terminal	emitter	
X1:1	Functional earth	
X1:2		
X1:3		
X1:4		
X1:5		
X1:6		
X1:7	0 V AC/DC	
X1:8	24 V AC/DC	
X2:1		
X2:2		
	terminal           X1:1           X1:2           X1:3           X1:4           X1:5           X1:6           X1:7           X1:8           X2:1	terminal         emitter           X1:1         Functional earth           X1:2         X1:3           X1:3         X1:4           X1:5         X1:6           X1:7         0 V AC/DC           X1:8         24 V AC/DC           X2:1         X1:0

S1:

Not placed on board

Beam coding



receiver relay output

Functional earth test (input) OSSD2.2 (output) OSSD1.2 (output) OSSD2.1 (output) OSSD1.1 (output) 0 V AC/DC

24 V AC/DC Start release (output) Status OSSD (output)

24 V reference potential for I/O

0 V reference potential for I/O

Startup readiness (input)

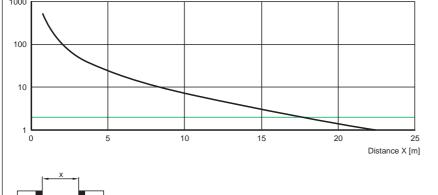
S1/S2: Startup/restar interlockS3:Beam coding

104
7/29

### SLC60-.../31

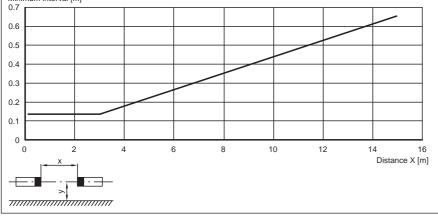
### Diagrams

SLC30 / SLC60 / SLC90 Characteristic response curve Offset Y [mm] 300 250 200 150 100 50 0 4 6 8 10 12 14 16 Distance X [m] SLC30 / SLC60 / SLC90 **Relative received light strength** Stability control 1000



#### Lateral interval to mirroring surfaces

Minimum interval [m]



# 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:

SLC30 / SLC60 / SLC90

- 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

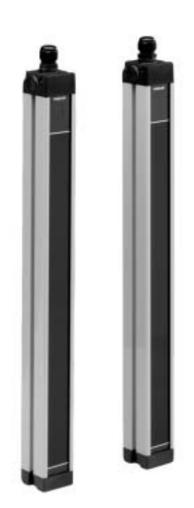
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Safety through beam sensors

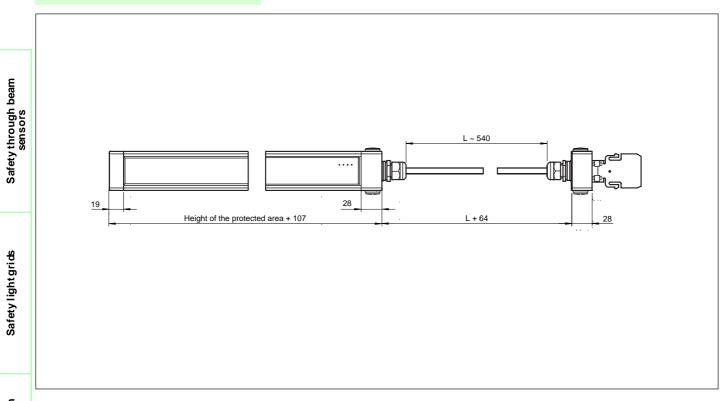


- Detection range up to 15 m
- Resolution 60 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display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

Ordering code:	SLC60-300-S	SLC60-600-S	S-006-090-S	iL C60-1200-S	IL C60-1500-S	iL C60-1800-S	
0.2 15 m							
	•						
	300	600	90.0	1200	1500	1 800	
	mm	mm	mm	mm	mm	mm	
~	8	16	24		40	48	
	•	•	•	•	•	•	ε
	•	•	•	•	•		ea
	•	•	•	•	•	•	۾ ا
	•	•	•	•	•	•	1 5
	•	•	•	•	•	•	
	•	•	•	•	•	•	afety through beam
TÜV, UL	•	•	•	•	•	•	et
IEC/EN 61496	•	•	•	•	•	•	Sat
Œ	•	•	•	•	•	•	
in the master device	•	•	•	•	•	•	
in the mæster device	•	•	•	•	•	•	II
in the mæster device	•	•	•	٠	٠	•	1
in the master device	•	•	•	•	•	•	
in the master device	•	•	٠	•	•	•	s a
from mæster	•	•	•	•	•	•	i
from mæster	٠	٠	٠	٠	٠	٠	ţ <u>ā</u>
II	•	•	•	•	•	•	j,
in the master device	•	٠	٠	٠	٠	•	Safety light grids
in the master device	•	•	•	•	•	•	e l
in the master device	•	•	•	•	•	•	af
in the master device	•	•	•	•	•	•	S S
depends on height of protective field	•	•	•	•	•	•	11
055°C(273 328K)	•	•	•	•	•	•	
-25 70 ℃ (248 343 K)	•	•	٠	٠	•	•	II
max. 95 %, not condensing	•	•	•	•	•	•	
	•	•	•	•	•	•	_ ع ا
	•	•	•	•	•	•	Safety light grids with internal control unit
	•	٠	٠	٠	٠	•	i je o
Plastic lens	•		•			•	bt
	410	710	1 010	1310	161 0	1910	ght c
Par							i li
Fei							et et
	5	3	3	3	3	9	i ga
SL060-1200-T-S				•			"
SL060-1500-T-S					٠		11
SL060-1800-T-S						•	
SL060-300-T-S	٠						
SL060-600-T-S	·	•					s
SL060-900-T-S			•				in
SL060-1200-R-S				•			rta
SL060-1500-R-S				•	٠		Safety light curtains
SL060-1800-R-S					*	•	ht
	•					*	lig
SL060600R-S	·	٠					ţ
SLC60-900-R-S		•					ē
	02 15m 02 15m 02 15m 60 rm IRED infrared alternating light <5 ° in the master device 4 $T\dot{U}$ , UL IECEN 61496 CC in the master device in the master devi	O 2 15 m     O 2 15 m     O 2 15 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m     O 7 m	02 15 m 02 15 m 02 15 m 02 15 m 00 mm 18 0 18 0 mm 18 0 19 0 mm 19 0 mm 10 0 mm	02 15 m       0       •       •         02 15 m       0       •       •         02 15 m       0       •       •         02 15 m       •       •       •         02 15 m       •       •       •         02 15 m       •       •       •         00 mm       8       16       24         00 mm       •       •       •         1hfacd atemating light       •       •       •         1170, UL       1000       •       •       •         110, UL       1000       •       •       •         110, UL       1000       •       •       •         110, UL       1000       •       •       •         1110, 1000       •       •       •       •         1110, 1010       •       •       •       •         1111, 1010, 1010       •       •       •       •         1111, 1010, 1010       •       •       •       •         1111, 1010, 1010       •       •       •       •         11111, 1010, 1010       •       •       •       •	02 15m       300       600       900       1200         mm       mm       mm       fmm       fmm       fmm         1RED       1       4       4       4       4         1RED       1       4       4       4       4       4         1RED       1       4       4       4       4       4       4         1RED       1       1       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4	0.2 15m       300       600       900       12.00       1500         mm       mm       mm       mm       mm       mm       mm         00 rm       1920       320       600       900       12.00       1500         IARD       IARD       IARD       IARD       IARD       IARD       IARD       IARD         IARD	12215m       300       600       900       1200       1600       1800         00 mm       mm       mm       124       32       4       4         60 mm       1200       1600       1800       1800       1800       44         60 mm       121       32       4       4       4       4       4         60 mm       120       1600       1800       1800       44       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4

SLC60-...-S

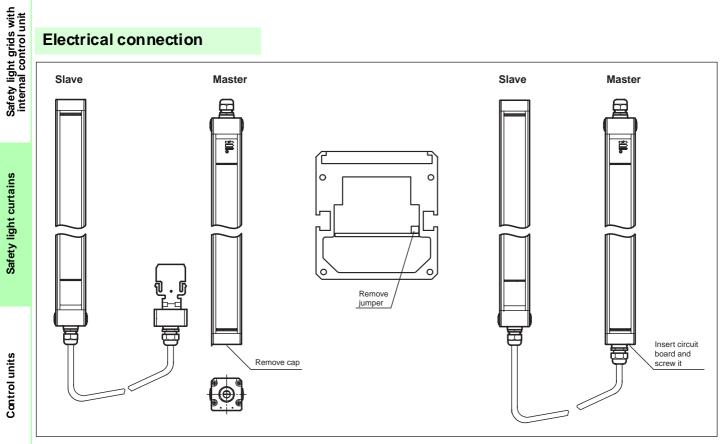
# Dimensions



# **Electrical connection**

Safety light curtains

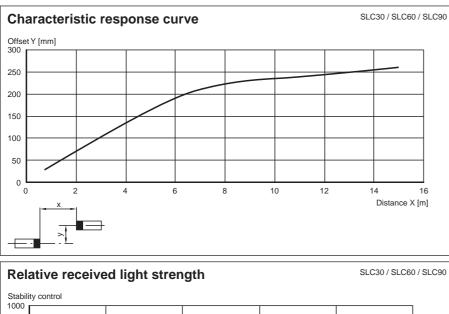
**Control units** 

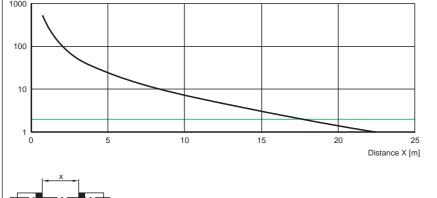


7/29/04

SLC60-...-S

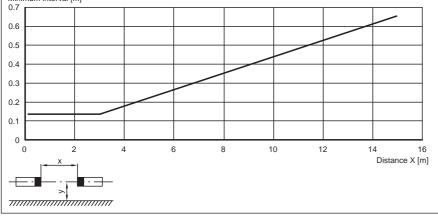
### Diagrams





### Lateral interval to mirroring surfaces

Minimum interval [m]



# 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:

SLC30 / SLC60 / SLC90

- 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 hazard-
- Mirror for SLC (for securing hazardous areas on multiple sides)
   Ground pillar UC SLP/SLC
- Ground pillar UC SLP/SLCHousing for pillar
- Housing for pillar
   Enclosure UC SLP/SLC
  - Collision protector Damping UC SLP/SLC



CE

Safety light curtain

SLC90-...

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Safety through beam sensors

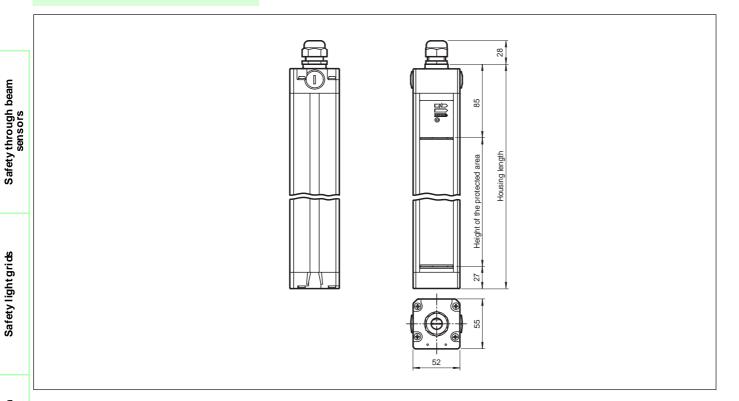
- Detection range up to 15 m
- Resolution 90 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display
- Pre-fault indication
- Safety outputs OSSD in potentialseparated 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)

					SLC	<i>9</i> 0
	Ordering code:	SL C90-600	SL C90-900	SL C90-1200	SL C90-1500	SL C90-1800
Effective detection range	0.2 15 m	•	٠	•	•	•
Width of protected area	0.2 15m	•	•	•	•	•
Height of the protected area		60 0	900	1200	1 500	18 00
		mm	mm	mm	mm	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	4					
IEC/EN 61496		•	•	•	•	•
Approvals	TÜV, UL	•	•	•	•	•
Tests	IEC/EN 61496	•	•	•	•	•
Marking	Œ	•	•	•	•	•
Operating display	7-segment display in emitter	•	•	•	•	•
Function display	in receiver:	•	•	•	•	•
	LED red: OSSD off LED græn: OSSD on LED yellow: Protected area fræ, system start-ready	•	•	•	•	•
Pre-fault indication	LEDorange	•	٠	٠	•	•
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: $\leq 100$ mA receiver: $\leq 150$ mA					
Protection class						
Function input	Start release	•	•	•	•	•
•		•	•	•	•	•
Test input Activation current	Reset-input for system test	•	•	•	•	•
	approx. 10 mA	•	•	•	•	•
Activation time	0.031s	•	•	•	•	•
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 tim e	10 ms	•	•	•		
	11 ms				•	
	12 ms					٠
Ambient temperature	055°C (273 328 K)	•	٠	٠	٠	•
Storage temperature	-25 70 °C (248 343 K)	•	•	•	•	•
Relative humidity	max. 95%, not condensing		<b>Å</b>			
Protection degree	IP67					
Connection	Cable screwed connection M20 ,	•	•	•	•	•
	terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup>	•	•	•	•	•
Connection options	Futher electrical connection options on request: Plug connector M12, 8-pin Plug connector DIN 43 651 Hirschmann, 6-pin+PE	٠	٠	٠	٠	٠
	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	1010	1310	1610	1910
Mass	Per	mm 21 00 g	mm 3000 g	mm 3900 g	mm 48 00 g	mm 5700 g
System components		2100 g	3000 g	3900 g	4000 g	5700 g
	SI (000 1200 T					
Emitter	SLC90-1200-T			•		
	SLC90-1500-T				•	
	SLC90-1800-T					•
	SLC90-600-T	•				
	SLC90900-T		•			
Receiver	SLC90-1200-R			•		
	SLC90-1500-R				•	
	SLC90-1800-R					•
	SLC90600-R	•				•
	SLC90-900-R		•			



SLC90-...

### Dimensions



# **Electrical connection**

Safety light grids with internal control unit

Emi	tter:		
		S1:	Bea

3

2

Emitter

Functional earth

0 V AC/DC

24 V AC/DC

Not placed on board

7 6 5 4

.

8

**S**1

. .

Terminal

X1:1

X1:2

X1:3

X1:4

X1:5

X1:6 X1:7

X1:8

X2:1

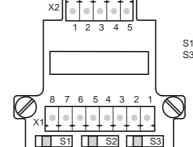
X2:2

X2:3

X2:4

x2:5

eam coding



Receiver:

Receiver semiconductor output

Functional earth

OSSD1 (output)

Start release (output) Status OSSD (output)

Startup readiness (input)

Test (input)

0 V OSSD

0 V DC

24 V DC

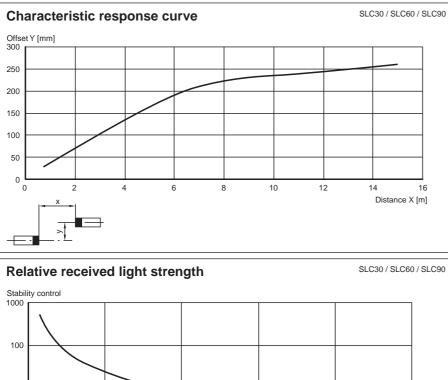
n.c.

n.c.

24 V OSSD OSSD2 (output) S1/S2: Startup/restart interlock S3: Beam coding

SLC90-...

### Diagrams

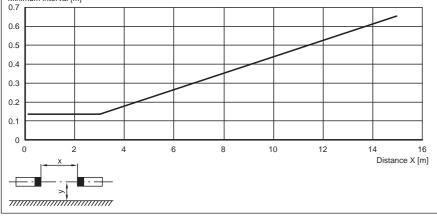


5 10 15 20 25 Distance X [m]

#### Lateral interval to mirroring surfaces

Minimum interval [m]

10



# 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:

SLC30 / SLC60 / SLC90

- 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



CE

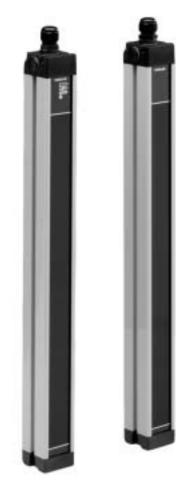


Safety through beam sensors

Safety light grids

Safety light grids with internal control unit



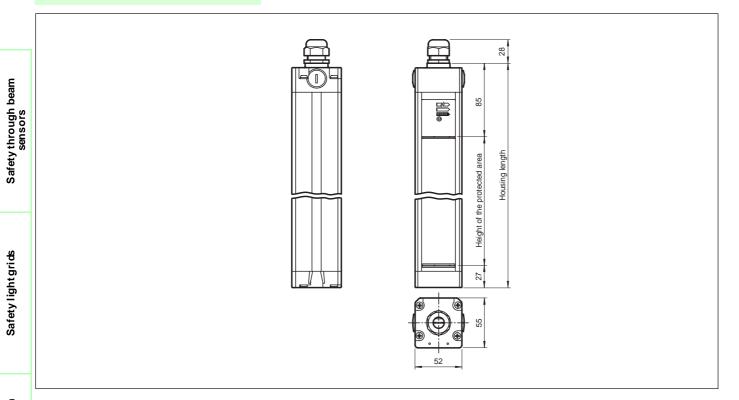


- Detection range up to 15 m
- Resolution 90 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display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

Safety light curtains

Technical data				SL	C90	/31
	Ordering cod e:	SL C90-600/31	SL C90-900/31	SLC90-1200/31	SLC90-1500/31	SLC90-1800/31
Effective detection range	0.2 15 m	•		<i>0</i> 5	•	<i>0</i> 5
Width of protected area	0.2 15m	•	* *	•	•	•
Height of the protected area		60 0	900	12 00	1 500	1800
		mm	mm	mm	mm	mm
Number of beams	~	8	12	16	20	24
Optical resolution	90 mm	•	•	•	•	•
Light source	IRED	•	•	•	•	•
Light type	infrared, atternating light <5 °	•	•	•	•	•
Angle of divergence		•	•	•	•	•
Operating mode	can be selected with or without start/restart disable 4	•	•	•	•	•
Safety category according to IEC/EN 61496	4	•	•	•	•	•
Approvals	TÜV, UL	٠	•		•	•
Tests	IEC/EN 61496	•	•		•	•
Marking	Œ	•	<b>•</b>	<b>•</b>	•	•
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	LEDorange	•	•	•	•	•
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		•	•	•	•	•
Function input	Start release	•	•	•	•	•
Test input	Reset-input for system test	•	•	•	•	•
Activation current	approx. 10 mA	•	•	•	•	•
Activation time	0.031s	•	•	•	•	•
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 Switch power	max.2 A 100 VA	•	•	•	•	•
·		•	•	•	•	•
Response time	am 00	•	•	•		
	31 ms				•	
	32 ms					•
Ambient temperature	055°C (273 328 K)	•	•	•	•	•
Storage temperature Relative humidity	-25 70 °C (248 343 K)	•	•	•	•	•
Protection degree	max. 95 %, not condensing	•	•	•	•	•
Connection		•	•	•	•	•
Connection	Cable screwed connection M20,	•	•	•	•	•
Connection options	terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup> Further electrical connection options on request: Plug connector M12, 8-pin Plug connector DIN 43 661 Hirschmann, 6-pin+PE	•	٠	٠	٠	٠
	Plug connector M26x11 Hrschmann, 11-pin+PE					
Housing	aluminium extruded structural profile, RAL 1021 (yellow) coated	•	•	•	•	•
Optical face Length of housing L	Plastic lens	◆ 710	◆ 101 0	◆ 1310	◆ 1 610	◆ 1910
		mm	mm	mm	mm	mm
Mass	Per	21 00 g	3000 g	3900 g	48 00 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**

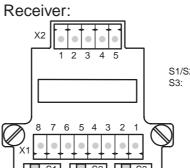
S1:

Beam coding

Safety light grids with internal control unit

Emitter:

8 7 6 5 4 X1 51		$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
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		Start release (output)
X2:2		Status OSSD (output)
X2:3	Not placed on board	24 V reference potential for I/O
X2:4		0 V reference potential for I/O
x2:5		Startup readiness (input)



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

### SLC90-.../31

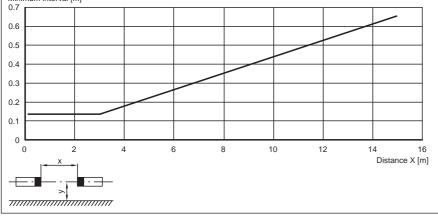
### Diagrams

SLC30 / SLC60 / SLC90 Characteristic response curve Offset Y [mm] 300 250 200 150 100 50 0 4 6 8 10 12 14 16 Distance X [m] SLC30 / SLC60 / SLC90 **Relative received light strength** Stability control 1000



#### Lateral interval to mirroring surfaces

Minimum interval [m]



# 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:

SLC30 / SLC60 / SLC90

- 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

(Ex

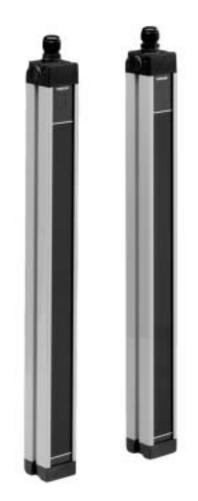


SLC90-...-S

(Ůľ

Safety through beam sensors

CE



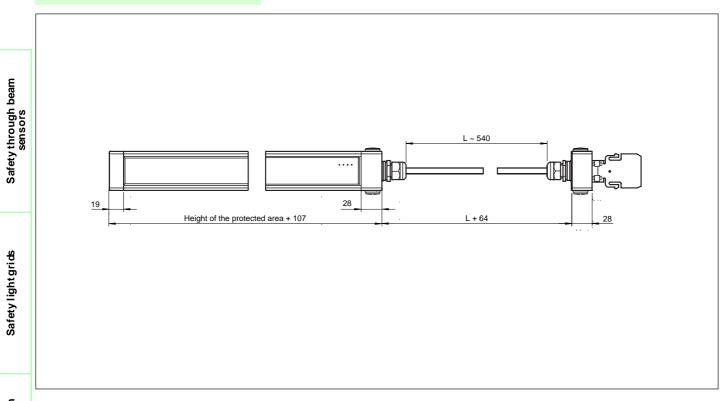
- Detection range up to 15 m
- Resolution 90 mm (protection against access from the rear)
- Protective field height up to 1800 mm
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Master/Slave detection, Plug and Play
- Start/Restart disable
- Protection degree IP67
- Integrated function display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

				31	_C90-	·5	
	Ordering code:	ST C90 600 S	SLC90-900-S	SL C90-1200-S	SL C90-1500-S	SL C90-1800-S	
Effective detection range	0.2 15 m						
Width of protected area	0.2 15m	* *	<ul><li>♦</li><li>♦</li></ul>	◆ ◆	◆ ◆	* *	
Height of the protected area	0.2 15111	<b>●</b> 60 0	9 00	1200	1 500	1800	
		mm	mm	mm	mm	mm	
Number of beams	~	8	12	16	20	24	
Optical resolution	90 mm	•	•	•	•	•	E
Light source	IRED	•	•	•	•	•	
Light type	infrared, alternating light <5 °	•	•	•	•	•	
Angle of divergence		•	•	•	•	•	Ī
Operating mode	in the master device	•	•	•	•	•	1
Safety category according to IEC/EN 61496	4	•	•	•	•	•	Safaty through heam
Approvals	TÜV, UL	•	•	•	•	•	ŧ
Tests	IEC/EN 61496	•	•	•	•	•	5
Marking	Œ	•	•	•	•	•	U U
Operating display	in the mæster device	•	•	•	•	•	11
Function display	in the mæster device	•	•	•	•	•	4
Pre-fault indication	in the master device	•	•	•	•	•	11
Diagnosis display	in the mæster device	•	•	•	•	•	
Operating elements	in the mæster device	•	•	•	•	•	11,
Operating voltage	frommæster	•	•	•	•	•	17
No-load supply current	frommæster	•	•	•	•	•	
Protection class	11	•	•	•	•	•	13
Function input	in the mæster device	•	•	•	•	•	Sofatu liabt ari de
Test input	in the master device	•	•	•	•	•	13
Signal output	in the master device	•	•	•	•	•	1
Safety output	in the master device	•	•	•	•	•	0
Response time	depends on height of protective field	•	•	٠	•	•	1
Ambient temperature	055 °C (273 328 K)	•	•	•	•	•	
Storage temperature	-25 70 °C (248 343 K)	•	•	٠	•	٠	╟
Relative humidity	max. 95 %, not condensing	•	•	•	•	•	
Protection degree	IP67	•	•	•	•	•	11,
Connection	Cable screwed connection M20,	•	•	•	•	•	define of the
	terminal compartment with screw terminals, lead cross-section max. 1.5 mm <sup>2</sup>	•	Ŧ	•	•	Ŧ	4
Housing	al uminium extruded structur al profile, RAL 1021 (yellow) coated	•	•	•	•	•	1
Optical face	Plastic lens	•	•	•	•	•	
Length of housing L		710 mm	101 0 mm	13 10 mm	1 610 mm	1910 mm	
Mass	Per	21 00 g	3000 g	390 0 g	48 00 g	5700 g	
System components			-	-	-	-	114
Emitter	SLC90-1200-T-S			•			ġ
	SLC90-1500-T-S				•		11
	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				•	٠	1
	SLC90-600-R-S						
		•					

|--|--|

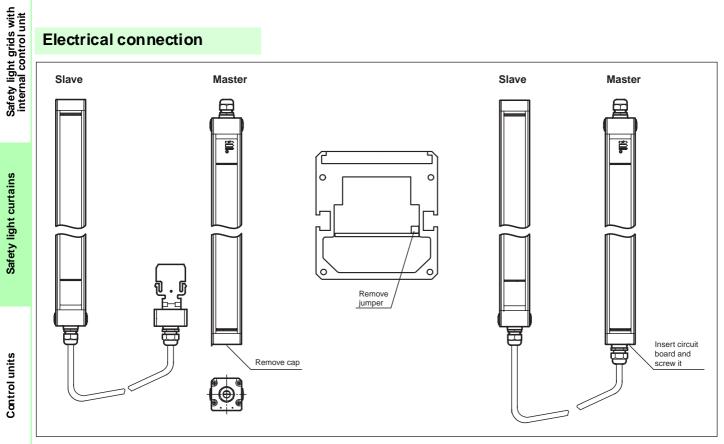
SLC90-...-S

# Dimensions



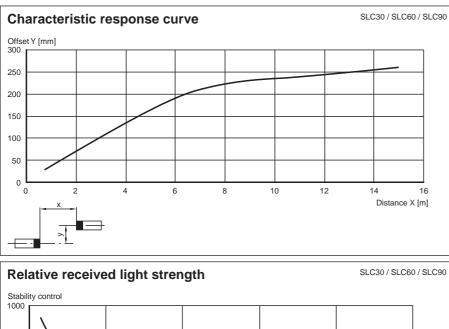
# **Electrical connection**

Safety light curtains



SLC90-...-S

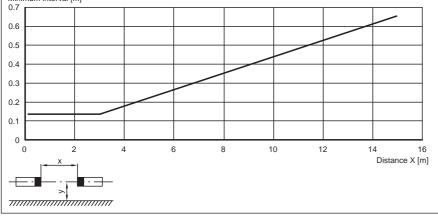
#### Diagrams





#### Lateral interval to mirroring surfaces

Minimum interval [m]



# 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:

SLC30 / SLC60 / SLC90

- 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

**Control units** 



#### 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

Control units

Evaluation unit

CE

# **SC2-2 24VDC**

Safety through beam sensors

 Evaluation device for safety throughbeam 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

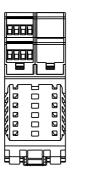
# Technical data

# SC2-2 24VDC

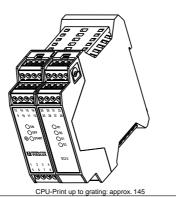
Operating mode	Start/restart disable, relay monitor,	
Approvals	TÜV	
Tests	IEC/EN 61496	
Marking	CE	
Safety category according to IEC/EN 61496	2	
Function display	LED red: OSSD OFF LED græn: OSSD ON LED yellow : Start readiness LED yellow (2x): indicator lamp channel 1 2	
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 2	ε
Diagnosis display	2 LEDs red for error display	beam
Operating elements	DIP-switch	rs h
Operating voltage	24 V DC, -15 %/+20 %	ino
No-load supply current	160 mA	ser
Activation current	approx. 10 mA	Safety through sensors
Activation time	0.051 s	Saf
Test input	Irput 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. 35 A; DC, max. 35 A (Limitswitching power 60 W)	ide
Response time	30 ms	itgr
Ambient temperature	050°C (273 323 K)	ligh
Storage temperature	-20 70 ℃ (253 343 K)	et y
Protection degree	IP20	Safety light grids
Connection	screw terminals, lead cross section 0.22 mm <sup>2</sup>	
Housing	Polyamide (PA)	
Mass	230 g	

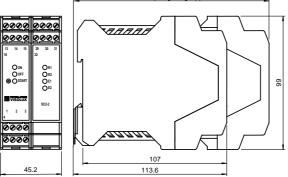
# SC2-2 24VDC

# Dimensions

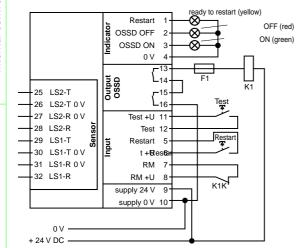


2





# **Electrical connection**



#### Connections of the OSSD module

Ter	minal/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

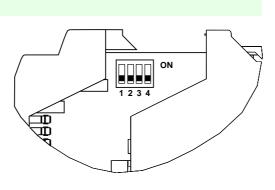
Ter	minal/Assignment	Function		
25	LS2-T2	Transmitter 2 connection		
26	LS2-T 0 V			
27	LS2-R 0 V	Receiver 2 connection		
28	LS2-R			
29	LS1-T	Transmitter 1 connection		
30	LS1-T 0 V			
31	LS1-R 0 V	Receiver 1 connection		
32	LS1-R			

Safety light curtains

# **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			
	2	3	4	
Start/restart interlock (RI)			Х	Х
Relay monitor (RM)	Х	Х		

#### 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		OSSD output turned on
Start	Yellow	Continuous light: Protective field free, OSSD off, readi- ness 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.

		1
0000	0000	
0000	0000	-
1314 15 16	2930 31 32	
9 10 11 12	2526 27 28	yellow
OON		red
		100
		1
	SC2-2	
1234		
5678		
0000		-
<u></u>		1
		1

#### 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

CE

**SC4-2 24VDC** 

Safety through beam sensors

 Evaluation device for safety throughbeam 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



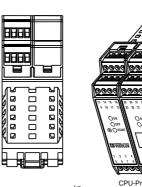
# Technical data

# SC4-2 24VDC

Operating mode	Start/restart disable, relay monitor,	]
Approvals	TÜV	
Tests	IEC/EN 61496	1
Marking	CE	
Safety category according to IEC/EN 61496	4	1
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	lε
Diagnosis display	7-segment display	pea
Operating elements	DIP-switch	l dg
Operating voltage	24 V DC, -15 %420 %	ino
No-load supply current	160 mA	Safety through beam sensors
Activation current	approx. 10 mA	fety
Activation time	0.05 1s	Sat
Test input	Reset-input for system test	1
Signal output	Output for displaying the switching state of the OSSDs	1
Safety output	2 relay outputs, compelled connection NO-contact	
Switching voltage	20230 V AC/DC	11
Switching current	AC: 0.01 2 A DC see diagram of limit load curve	l is
Response time	30 ms	Itgi
Ambient temperature	0 50 ℃ (273 323 K)	ligh
Storage temperature	-2070°C (253 343 K)	at
Protection degree	IP20	Safety light grids
Connection	screw terminals, lead cross section 0.22 mm <sup>2</sup>	
Housing	Polyamide (PA)	1
Mass	230 g	1

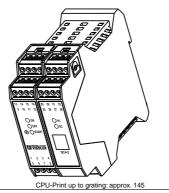
# SC4-2 24VDC

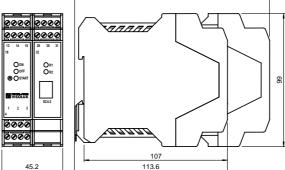
# Dimensions



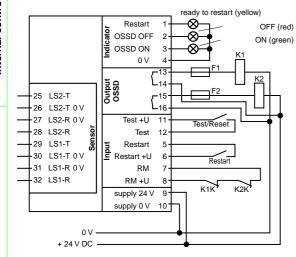
i v

1 2





# **Electrical connection**



#### Connections of the OSSD module

Тал	uninal/A anima na t	Function			
	minal/Assignment				
1	pnp output readiness	Option for connecting external indicator lamps to indicate restart (start)			
	for startup message	or error message			
2	PNP output OSSD reporting	Option for connecting external indicator lamps to indicate the OSSD state Off			
	OFF				
3	PNP output OSSD reporting	Option for connecting external indicator lamps to indicate the OSSD state On			
	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

Ter	minal/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			

Safety light grids

Safety through beam sensors

# **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)			Х	Х
Relay monitor (RM)	Х	Х		

### 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	Gre en	OSSD output turned on
Start	Yel- Iow	Continuous light: Protective field free, OSSD off, readi- ness for startup, activate restart button Flashing: System error (see 7-segment diaplay)
R1	Yel- Iow	Status of light barrier 1 Off: Interrupted On: Light beam free Flashing: Light beam free, level below function reserve.
R2	Yel- Iow	Status of light barrier 2 Off: Interrupted On: Light beam free Flashing: Light beam free, level below function reserve.

0000 0000	0000
13 14 15 16 9 10 11 12	29 30 31 32 25 26 27 28 yellow
ON Off O START	ORI OR2 7-segment display
1 2 3 4 5 6 7 8	
0000	
000	

#### 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
	Protective beams free, OSSD ON (running light)	Β	Error on one of the transmitters
	One or both protective beams interrupted	∃	Extraneous light detected
8	Protective beams free, OSSD off, readiness for startup	8	Sensor error in Channel 1
8	System start	8	Sensor error in Channel 2
$\square$	DIP switch position incorrect	8	System errors
8	Both light barrier channels jumpered	Ξ	Error in an external relay

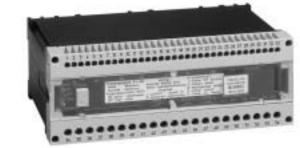
7/29/04

Evaluation unit

CE

Safety through beam sensors

Safety light grids

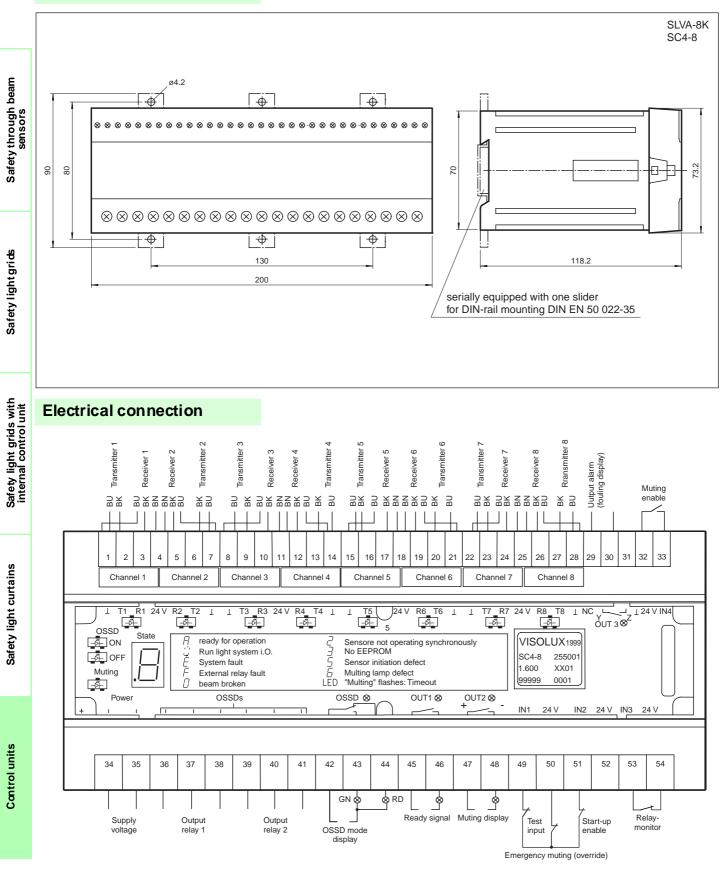


- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Evaluation device for safety throughbeam sensors SLA,
- Muting module for safety light curtain SLC
- Consideration of special customer requirements
- Function defined on programmable memory module, in the factory
- Start/Restart disable
- Relay 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

Technical data				SC	4-8	
						_
	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	•	•	•	•	ean
Marking	Œ	•	•	•	•	ğ
Safety category according to IEC/EN 61496	4	•	•	•	•	rough
Function display	LED red: OSSD off LED green: OSSD on LED yellow 8x: indicator lamp channel 1 8 LED yellow: Muting status	•	٠	•	•	Safety through beam sensors
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 8	•	•	•	•	
Diagnosis display	7-segment display	•	•	•	•	
Operating voltage	230VAC ; ±10%			•		
	230 V AC; ±10%		•			
	24 V AC; ± 10%; 24 V DC, ± 15%	•				4
	24 V DC; ± 15%				•	ji
No-load supply current	400 mA	•			•	htç
	50 mA		•	٠		lig
Power consumption	7 VA		•	•		ety
Function input	Pelay monitor, startup enable, emergency muting, max.4 muting sensors, input for 2-charnel protective device	•	٠	٠	٠	Safety light grids
Activation current	approx. 8 mA	•	•	•	•	
Activation time	0.051s	•	•	٠	•	
Test input	Peset-input for system test	•	•	•	•	
Signal output	Pelay contacts for the switching state message of the OSSDs, start readiness, muting	٠	٠	٠	٠	ght grids with control unit
Output of the pre-fault indication	1 NC-contact alarm output: max. 48 V AC/DC, 500 mA	•	•	•	•	rids I ds
Safety output	2 separated fail safe semiconductor outputs				•	ort of
	2 relay outputs, compelled connection alternator contact	•	•	•		lgh Cgh
Switching voltage	12 30 V DC	•	•	•	٠	Safety light ( internal cor
	20 230 V AC/DC	•	•	٠	·	Ifet
Switching current	AC: 0.01 2 A DC see diagram of limit load curve	•	•	•		≓.⊗
5	max. 0.5 A	•	•	•	•	
Switch power	min. 0.06 VA / max. 460 VA	•	•	٠	•	
Response time	20 ms	•	•	•	•	
	40 ms	•	•	•	•	s
Ambient temperature	050 °C (273 323 K)	•	٠	•	•	tair
Storage temperature	-20 75 °C (253 348 K)	•	•	•	•	Safety light curtains
Protection degree	IP20	•	•	•	•	Ť
Connection	Connection terminals, max. conductor cross-sectional area 1.5 mm <sup>2</sup>	<b>•</b>	•	•	•	lig
Housing	Polycarbonate/V-0	•	•	•	•	ety
Mass	1300 g	•	•	• •	•	Saf
	750 g		•	•		11

### SC4-8-...

Dimensions



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.

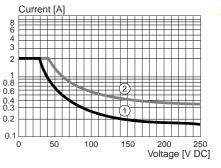
### Indicator lamps and diagnostic display

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).

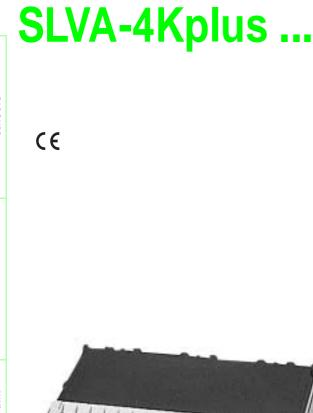
LED	Red	OSSD outputs turned off
	Green	OSSD outputs turned on
	Yellow	off: System works without muting
		on: System with muting
		flashing: Muting time error
	Yellow	Indicator lamps for channels (1-8)
		On = light beam free or muting sensor active
		Flashing = light beam free, minimum function reserve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



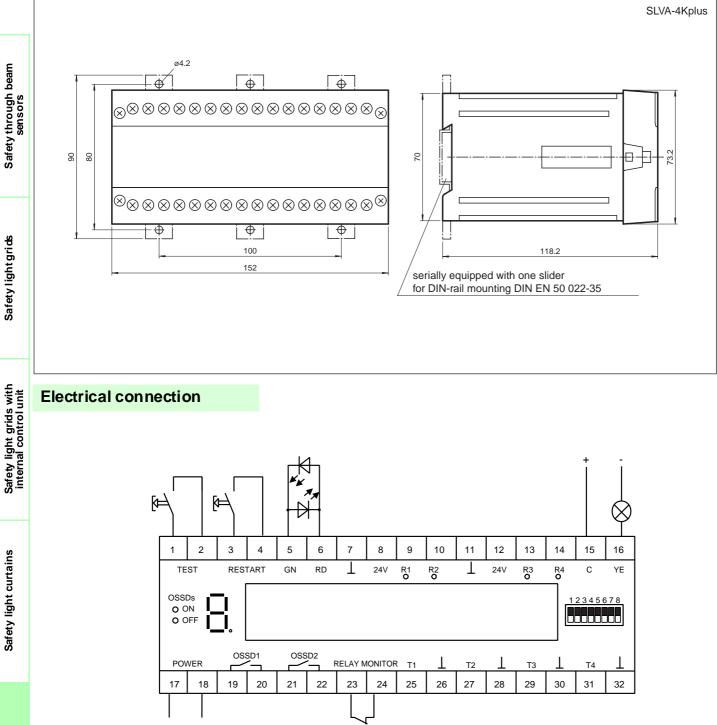
- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Evaluation device for safety throughbeam sensors SLA,
- Operating mode can be selected by means of DIP switches
- Start/Restart disable
- Relay monitor
- Pre-fault indication
- Clearly visible LED functional display
- 7-segment diagnostic display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

**Evaluation unit** 

	Ordering cod e:	SLVA-4Kplus 24VAC/DC	SL VA-4K plus 24VAC/DC-RI	SL VA-4Kplus 24VAC/DC-RM	SLV A-4Kplu s 24V AC/DC-RI,RM	SLVA-4Kplus-252824VAC/DC	SLVA-4Kplus 230VAC	SL VA-4Kplus 230VAC-RI	SL VA-4Kplus 230VAC-RM	SLVA-4Kplus 230VAC-RI,RM	SLVA-4Kplus-2528 230VAC	SLVA-4Kplus 115VAC	SL VA-4Kplus 115VAC-RI	SL VA-4Kplus 115VAC-RM	SLVA-4Kplus 115VAC-RI, RM	SLVA-4Kplus-2528 115VAC	am
Outputing mode	Obertury/or start startile and starting of the		•	•,	S	S		•		0)			•		S		Safety through beam sensors
Operating mode	Startup/restart disable, emergency off		•					•					•				ors
	Startup/restart disable, relay motor, emergency off				•					•					٠		ILOI
	Emergency off	•				•	•				•	•				•	s ,t
	Relay monitor, emergency off			٠					٠					•			fet
Approvals	ΤÜV	•	•	•	•	•	•	٠	•	•	•	•	•	•	٠	٠	Sat
Tests	IEC/EN 61496	•	٠	٠	٠	•	٠	٠	٠	٠	٠	٠	•	•	٠	٠	
Marking	Œ	•	٠	٠	٠	•	•	٠	٠	٠	٠	٠	•	•	٠	٠	
Safety category according to IEC/EN 61496	4	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	
Function display	LED red: OSSD off LED green: OSSD on LED yellow 4x: Indicator lamp channel 14	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	•	٠	٠	Safety light grick
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 4	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	Ĕ
Diagnosis display	7-segment display	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	lig
Operating elements	8 DIP-switches for selection of operating modes	•	٠	٠	٠	•	•	٠	•	٠	٠	•	٠	•	٠	٠	Ę.
Operating voltage	115 V AC +10'-15%											•	•	•	٠	٠	afe
	230 V AC +10/15 %						٠	٠	٠	٠	٠						S
	24 V AQ/DC, ±10%	٠	٠	٠	٠	٠	•	•	•	•	•						
No-load supply current	220 mA	•	•	•	•	•											
	50 mA	•	•	•	•	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	
Power consumption	12 VA						•	•	•	•		•		•	•		
Function in put	Start release						•		•	•	•	•	•	•	•	•	nit]
	Pelay monitor		•	•				•					•	•			ds v
	Pelay monitor, startup enable, input for 2-channel protective device			•	•				•	•				•	•		tr ig
Activation current	approx. 1 mA			•		•	•		•	•			•		•		보호
Activation time	0.03 1s		•		•		•		•	•		•	•		•		Safety light grids with internal control unit
Test input		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	erd
•	Pesetinput for system test	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	int
Signal output	Direct output for LEDs for displaying the switching state of the OSSDs	•	•	•	•		•	•	•	•		•	•	•	•		
	Relay contacts for the switching state message of the OSSDs					•					•					٠	
Safety output	2 relay outputs, compelled connection NO-contact	•	•	•	•	•	•	•	•	•	•	•	•	•	•	٠	
Switching voltage	20 230 V AC/DC	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	
Switching current	AC: 0.01 2 A DC see diagram of limit load curve	•	•	•	•	•	٠	•	•	•	٠	٠	•	•	٠	٠	ins
Response time	40 ms	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	٠	٠	٠	Safety light curtains
Ambient temperature	050 ℃ (273323 K)	•	•	•	•	•	•	٠	•	•	•	٠	•	•	٠	٠	CU
Storage temperature	-20 75 °C (253 348 K)	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	٠	٠	٠	<u>J</u> ht
Protection degree	IP20	•	•	•	•	•	•	•	•	•	٠	•	•	•	•	٠	, liç
Connection	Connection terminals, max. conductor cross-sectional area 1.5 mm <sup>2</sup>	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	•	٠	٠	fet)
Housing	Pdycarbonate/V-0	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	•	•	٠	Sal
Mass	900 g																

# SLVA-4Kplus ...

Dimensions



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

**Control units** 

# **Operating modes**

7/29/04

Date of edition:

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)
1+5	ON	With startup/restart disable (restart)
2+6	OFF	Without relay monitor (EDM)
2+0	ON	With relay monitor (EDM)
3+7	OFF	Optical barriers on channels 3 and 4
3+7	ON	Emergency off on channels 3 and 4
4 + 8	OFF	Emergency off static
4+0	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).

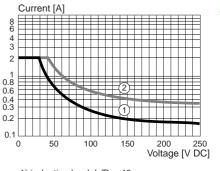
# Indicator lamps and 7-segment diagnostic display

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.

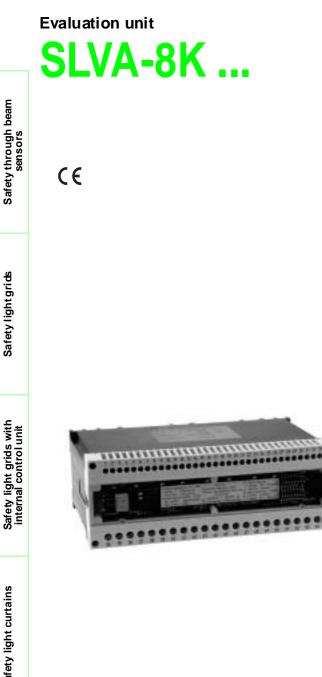
I FD	Red	OCCD outputs turned off
		OSSD outputs turned off
	Green	OSSD outputs turned on
	Yellow	Indicator lamps for channels (1-4)
		On = lightbeam free or emergency off circuit on
		Flashing = light beam free, minimum function reserve not met
		Off = light beam interrupted or emergency off circuit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

#### Diagrams

# Load limit curve of relay OSSD for DC-current



inductive load, L/R = 40 ms
 ohmic load

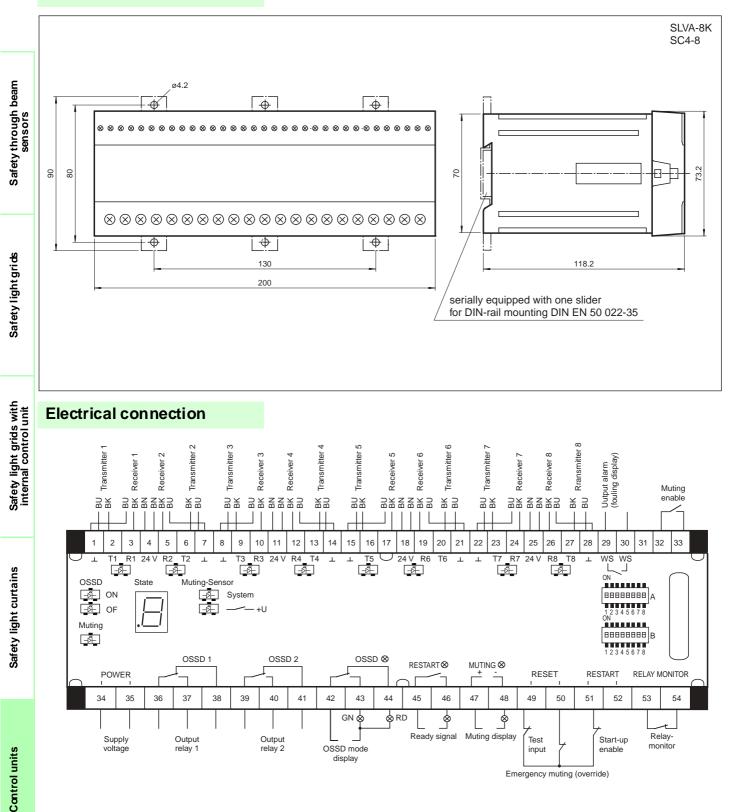


- Self-monitoring (type 4 according to IEC/EN 61496-1)
- Evaluation device for safety throughbeam sensors SLA and for safety light grids SLP
- Operating mode can be selected by means of DIP switches
- Start/Restart disable
- **Relay monitor**
- Sequential and parallel muting in various operating modes
- 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

Technical data			SLVA-8	3K	
					1
	Ordering code:	SLVA-8K 24V AC/DC	SLVA-8K 115VAC	SLV A-8K 230V AC	
Operating mode	Start/restart disable, relay monitor, muting operating modes	•	•	•	
Approvals	TÜV	•	•	•	
Tests	IEC/EN 61496	•	•	•	E
Marking	CE	•	•	•	) Sec
Safety category according to IEC/EN 61496	4	•	•	•	л Р
Function display	LED red: OSSD off LED green: OSSD on LED yellow &: indicator lamp channel 1 8 LED yellow 2x: Type of muting sensor LED yellow: Muting operation	•	•	•	Safety through beam sensors
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 8	٠	٠	٠	Sa
Diagnosis display	7-segment display	•	•	•	
Operating elements	two 8-pin DIP-switches for selection of operating modes	•	•	•	
Operating voltage	1 15 V/AC ± 10 %	•		•	
operating relage	230 V AC ±10%		•		
	24 V AC; ± 10 % ; 24 V DC; ± 15 %	•		•	
No-load supply current	100 mA	•			so.
No load supply current	200 mA		•	•	Safety light gri ds
	400 mA	•	•		ťg
Power consumption	12 VA	•		•	ĥ
			•	•	i.
Function input Activation current	Relay monitor, start release, muting enable, emergency muting, max. 4 muting sensors	•	•	•	G,
Activation time	approx.10mA 0.031 s	•	•	•	af
		•	•	•	S
Test input	Reset-input for system test	•	•	•	
Signal output Output of the pre-fault indication	Relay contacts for the switching state message of the OSSDs 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	•	•	•	ini
Switch power	min. 0.06 VA / max. 460 VA	•	•	•	al c
Response time	40 ms	•	•	•	t j
Ambient temperature	050°C(273323K)	•	•	•	o it
Storage temperature	-2075°C (253348 K)	•	•	•	Safety light grids with internal control unit
Protection degree	IP20	•	•	•	ina Ina
Connection	Connection terminals, max. conductor cross-sectional area 1.5 mm <sup>2</sup>	•	•		fet
Housing	Polycarbonate/V-0	•	•	•	ing
Mass	900 g	•	•	•	
		•	•	•	

# SLVA-8K ...

Dimensions



### **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).

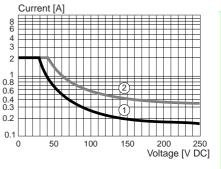
### Indicator lamps and 7-segment diagnostic display

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).

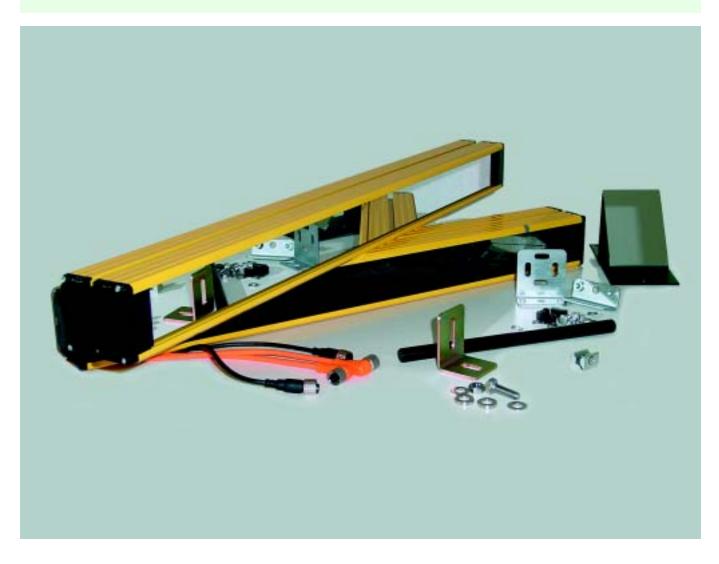
LED	Red	OSSD outputs turned off
	Green	OSSD outputs turned on
	Yellow	Muting mode selected, flashing: Muting time error
	Yellow	Indicator lamps for channels (1-8)
		On = light beam free or muting sensor active
		Flashing = light beam free, minimum function reserve not met
		Off = light beam interrupted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



# Screw terminal-pin M12 connection fastener for safety optical barriers

Design	Order code	Design	Connection method	Number of pins	Wire cross section (mm²)	Fig.
	V1-G	Socket, straight		4-pin	Max. 2.5	1
	V1-W	Socket, angled	Screwed terminal method, PG7	4-pin	Max. 2,5	2
	V1S-G	Connector, straight	screwed connection	4-pin	Max. 2.5	-
M12	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 (mm²)
	V1S-WM-VIS	Connector, angled	Line connector without cable	4-pin	Max. 2.5
2	V15S-WM-VIS	Connector, angled	Line connector without cable	5-pin	Max. 2.5
M	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 V13types)
Max. operating current	4 A
Pass-through resistance	<5 mΩ
Insulation resistance	In accordance with VDE 0295
Test voltage	1500 V <sub>eff.</sub> AC, 50 Hz

#### Lead

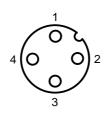
Structure of lead	fine-wired, flexible	
Cross-section of wire	Leads for M12 connections: 0.34 mm <sup>2</sup>	
Color of covering	Black	
Temperature range for PVC leads	movable: -5 °C to +70 °C immovable: -30 °C to +80 °C	
Temperature range for PUR lines <sup>1)</sup>	movable: -5 °C to +70 °C immovable: -30 °C to +100 °C	
Minimum permissible bending radius	> 10 x diameter of line	
Diameter of covering	Ø4.8 mm with 4-pin design Ø5.2 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  $^{\circ}\text{C}.$ 

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

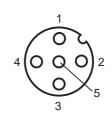
Color assignment for pre-configured cable sockets V1 and V15:

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	S	sign		3.1.	S Face	Contract of the second
Cable covering	Length	Number of wires	Ø (mm²)	Design Straight	Design Angled	Design Angled with 2 LEDs
	2 m	4	0.34	V1-G-2M-PVC	V1-W-2M-PVC	
PVC, black	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	
	2 m	4	0.34	V1-G-2M-PUR	V1-W-2M-PUR	V1-W-A2-2M-PUR
PUR, black	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
	2 m	3	0.34			V1-W-E2-2M-PUR
PUR, black	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,	2 m	5	0.25		V15-W-2M-PUR	
black	5 m	5	0.25		V15-W-5M-PUR	

#### For pin assignment see page 257

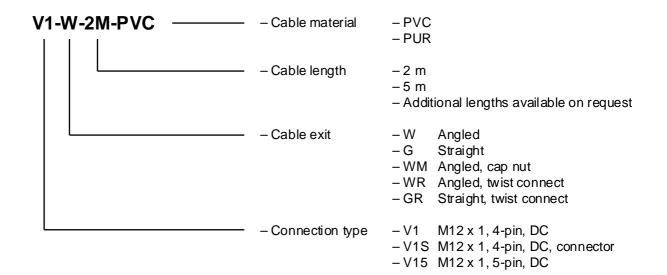
# M12 connection cable in PUR 4 x 0.34 mm<sup>2</sup>, color of covering black

Suitable for all DC sensors in 2-, 3- and 4-wire design		G. La Mar		
		Length	Socket, straight	Socket, angled
101		1 m	V1-G-1M-PUR-V1-G	V1-W-1M-PUR-V1-G
EN.	Connector, straight	2 m	V1-G-2M-PUR-V1-G	V1-W-2M-PUR-V1-G
(355))))		5 m	V1-G-5M-PUR-V1-G	V1-W-5M-PUR-V1-G

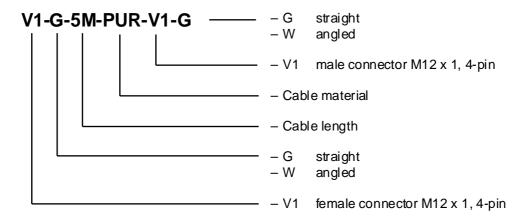
#### For pin assignment see page 257

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

### Type code for cable sockets



#### Type code for connection cables



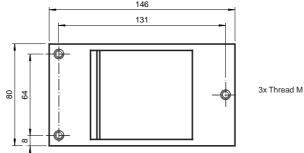
# **Redirection mirror**

#### Mirror, 1-beam for SLA

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

Order code: SLA-1-M

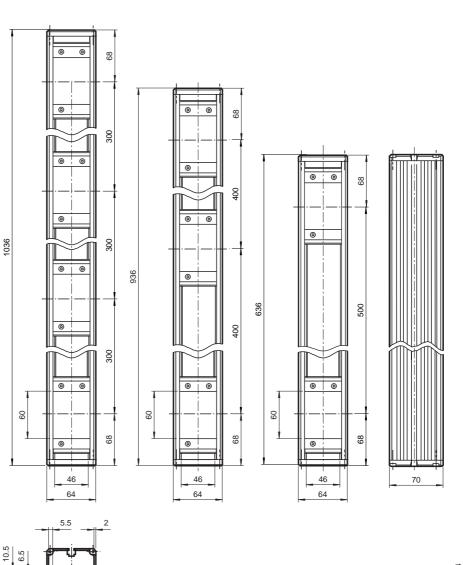
Mirror 103 x 70 approx. 86.5 10.5 r 80 146



#### 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



8

9.5

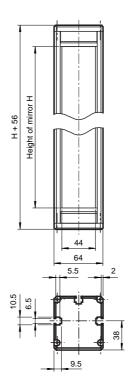
Date of edition 8/13/04

70

#### **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



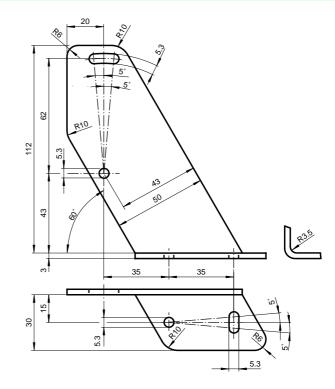
# Mounting aids and mounting sets

#### 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

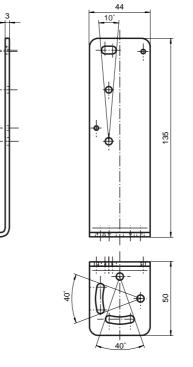
predominantly for mounting on aluminum profile (see Muting Set MS SLPCM at PageXXX).

Material: Sheet steel

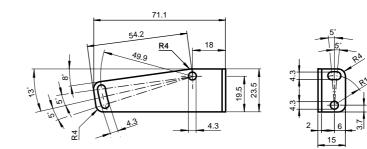
#### Mounting aid OMH-40

Support bracket for safety through beam sensors of series SLA40.

#### Material: Sheet steel









Date of edition 8/13/04

# Mounting aids and mounting sets

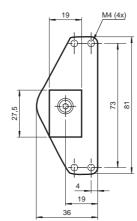
#### Mounting aid OMH-05

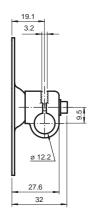
Support bracket for safety through beam sensors of series:

- ٠ SLA28
- SL29 •
- SLA29 .

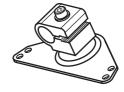
Material: mounting plate: clamping block:

Sheet steel Aluminum









#### Mounting aid OMH-06

Support bracket for safety through beam sensors of series:

Mounting aid OMH-MLV12-HWG

Support bracket for safety through beam

Sheet steel

sensors of series: SLA12

SL12

Material:

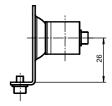
•

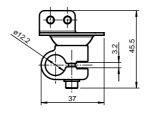
•

- SLA12 •
- SL12

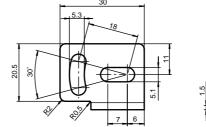
Material: mounting plate: Sheet steel clamping block: Aluminum

φ 51.5

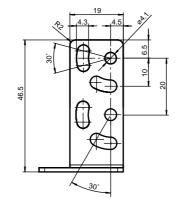














# Mounting aids and mounting sets

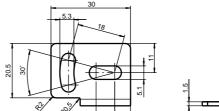
#### Mounting aid OMH-MLV12-HWK

Support bracket for safety through beam sensors of series:

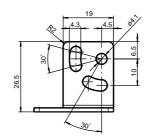
- SLA12
- SL12

Material:

Sheet steel









# Mounting aid OMH-MLV11-K

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



Material:

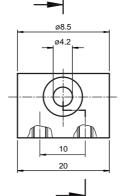
Aluminum

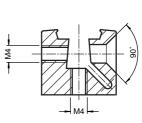
#### Mounting aid OMH-K01

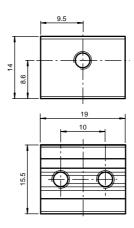
Clamp body for safety through beam sensors of series SL12 and SLA12.

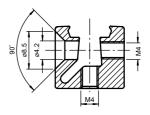
Material:

Aluminum







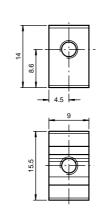


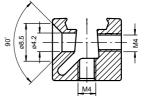
#### Mounting aid OMH-K02

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

Material: Alu





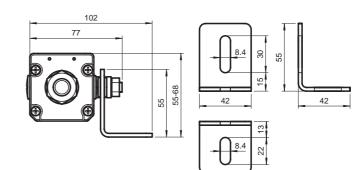


# Mounting aids and mounting sets

#### Mounting set SLC

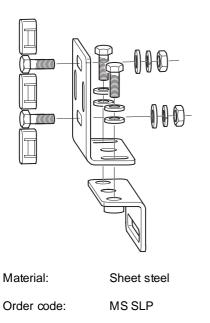
Fastening bracket for SLC safety light curtains and SLC safety light grids.

Material:	Sheet steel
Order code:	MS SLC
Packaging unit:	1 piece

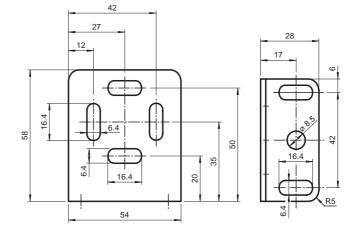


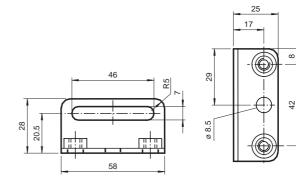
#### SLP Mounting set

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



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).

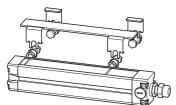
One packaging unit contains 2 glass panes (one each for transmitter and receiver).

Protective glass panes 1050 mm or larger are separated.

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

# 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

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)

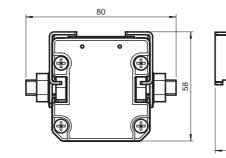
# Holders for SLP protective glass panes

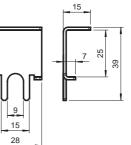
Support bracket for mounting protective glass panes on our safety light grids SLP, SLPC and SLPCM. One packaging unit contains 4 supports including nuts and bolts for fastening. Material: Sheet steel

Order code: PG Holder SLP

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 <sup>*</sup>
SLCxx-450	PG SLC-450	2 <sup>*</sup>
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





Thickness of material

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

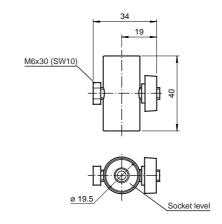
Date of edition 8/13/04

# Alignment aids

#### 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

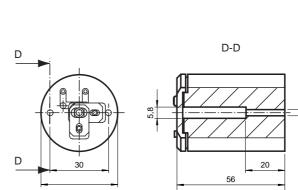
Laser alignment aid for safety light grid and safety light curtains in SLP and SLC profiles.

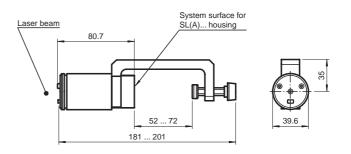
The basic device and a suitable adapter are included with delivery.

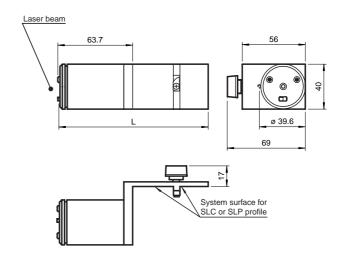
Dimensions:

Date of edition 8/13/04

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





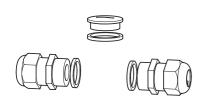


#### Others

#### Test rods for SLC

Test rods for testing resolution of our safety light curtains.

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: T

TC SLC(M16)

#### SLPC/M cable fastener

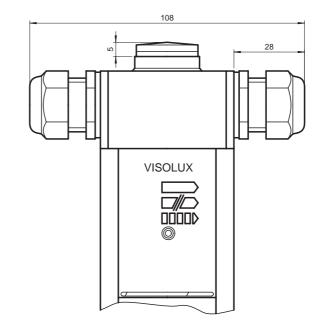
Cable fastener for fastening and secure laying of connection leads, especially the connected muting sensors

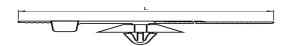


Length L:	180 mm
Width B:	4.6 mm
Bundle-Ømax:	45 mm
Plate Ø:	24.4 mm
Holding force:	≥ 356 N
-	

Order code: Fastener SLPC/M

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





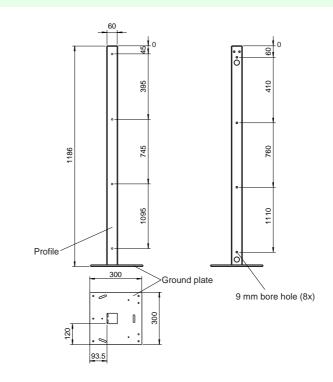
#### Floor stand UC SLP/SLC

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.

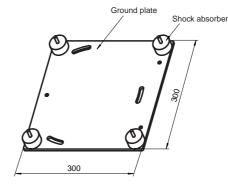


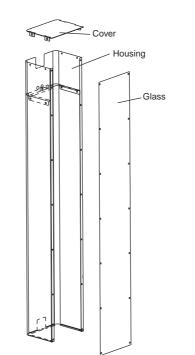
#### **Ramming protector**

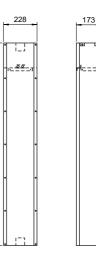
Shock absorber as ramming protector for floor stand UC SLP/SLC for all series SLP/SLC devices.

The fixation set is included with delivery.

Order code: Damping UC SLP/SLC







1300

# 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.

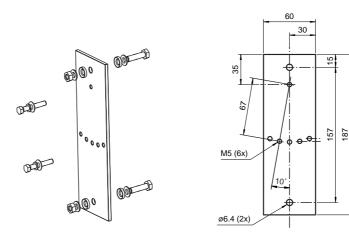
Order code: Enclosure UC SLP/SLC

#### 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.



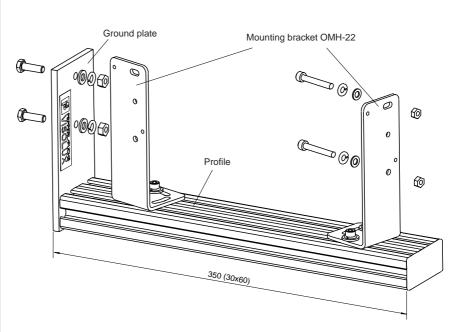
#### Muting set MS SLPCM

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



### Others

# **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

# Additional Information

# Guidelines and standards

#### 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/enter- prise/newapproach/ index.htm

# Protection types provided by housing

(DIN VDE 0470 Part 1, EN 60529)

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

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).

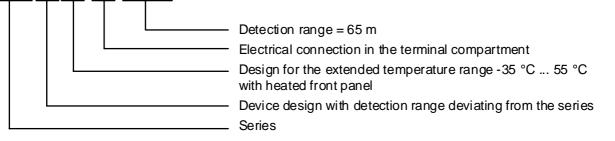
#### **Device options**

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).

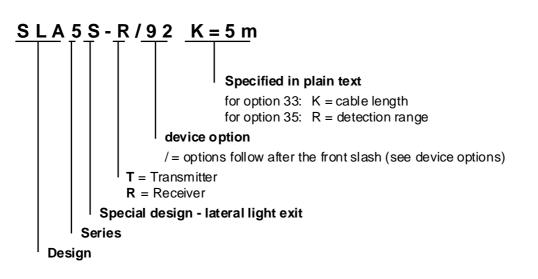
Option	Description
/31	Relay output instead of transistor output.
/33	Length of the cable connector deviating from the series design. Preferred lengths: 5 m and 10 m. The length of the cable is specified at the end of the type code in plain text. Example: K=5m.
/35	Detection or sensing range that deviates 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





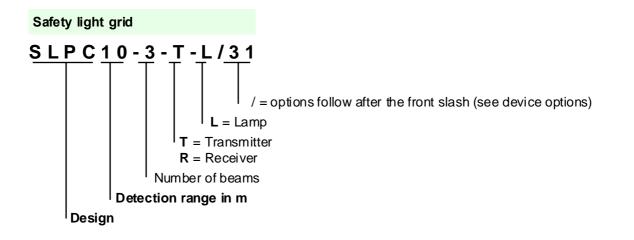


#### Design SLA:

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

#### Special designs:

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

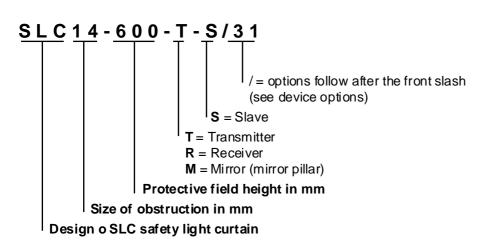


Designs	
SLP	Safety light grid for external control units
SLPC	Safety light grid with internal control unit
SLPCM	Safety light grid with internal control unit, with muting
SLC	Safety light grid with internal control unit in the SLC profile

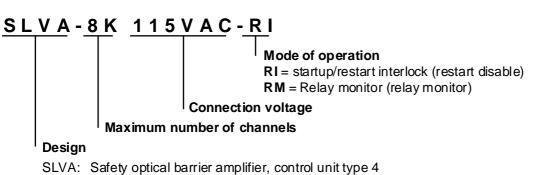
#### Designs

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

#### Safety light curtain



**Control units** 



SC: Safety control unit, type 4

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