

SLSR 25B

Protective throughbeam photoelectric sensor

en 07-2016/06 50110388-05

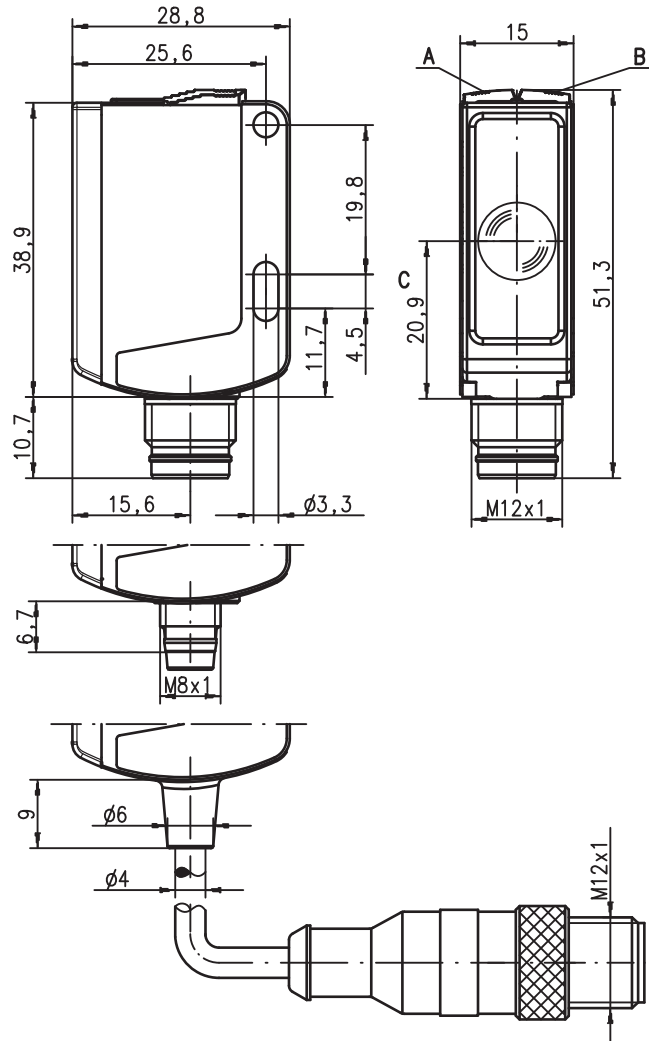


0 ... 22m



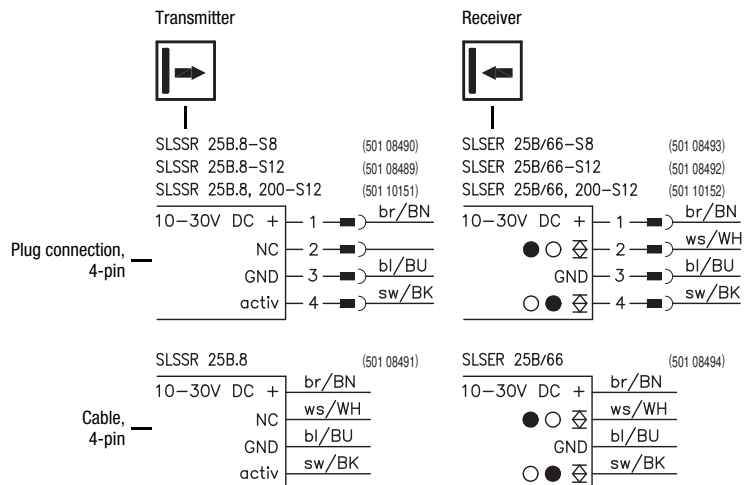
- Protective throughbeam photoelectric sensor with visible red light, type 2 according to EN IEC 61496-2, EN ISO 13849-1:2015 category 2 PL c
- Small and compact construction with robust plastic housing, protection class IP 66/IP 67 for industrial application
- Fast alignment through brightVision®
- Push-pull switching outputs

Dimensioned drawing



- A Green indicator diode
- B Yellow indicator diode
- C Optical axis

Electrical connection



We reserve the right to make changes • DS_SLSR25B_en_50110388_05.fm



Accessories:

(available separately)

- Mounting systems (BT 25, UMS 25...)
- M12 connectors (KD ...)
- Ready-made M12 cables (K-D ...)
- Test monitoring units
 - MSI-TR1B-01 (Part No. 547958)
 - MSI-TR1B-02 (Part No. 547959)
- Sensorscope SAT 5 (alignment control, Part No. 50109545)

Specifications

Safety-relevant data

Type in accordance with EN IEC 61496-2	type 2
Performance Level (PL) in accordance with EN ISO 13849-1 ¹⁾	PL c
Category in accordance with EN ISO 13849-1 ¹⁾	cat. 2
Mean time to dangerous failure (MTTFd)	425 years
Service life (TM)	20 years

Optical data

Typ. operating range limit ²⁾	0.5 ... 22m
Operating range ³⁾	0.5 ... 20m
Light source ⁴⁾	LED (modulated light)
Wavelength	624nm (visible red light)

Timing

Switching frequency	100Hz
Response time	5ms
Delay before start-up	≤ 100ms

Electrical data

Operating voltage U_B ⁵⁾	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 15mA per transmitter/receiver, ≤ 30mA per pair
Switching output/function ⁶⁾	2 push-pull switching outputs pin 2: PNP dark switching, NPN light switching pin 4: PNP light switching, NPN dark switching
Signal voltage high/low	≥ ($U_B - 2V$) / ≤ 2V
Output current	max. 100mA

Indicators

Transmitter	
Green LED	ready
Yellow LED	transmitter active
Receiver	
Green LED	ready
Yellow LED	light path free
Yellow LED, flashing	light path free, no performance reserve

Mechanical data

Housing	plastic (PC-ABS)
Optics cover	plastic (PMMA)
Weight (connector/cable/cable with connector)	50g/140g/60g per pair
Connection type	M8 connector, 4-pin, or M12 connector, 4-pin, or cable, length 2m (cross section 4x0.21mm ²), or cable, length 0.2m, with M12 connector, 4-pin

Environmental data

Ambient temp. (operation/storage) ⁷⁾	-30°C ... +55°C / -30°C ... +60°C
Protective circuit ⁸⁾	2, 3
VDE safety class ⁹⁾	II, all-insulated
Protection class	IP 66, IP 67
Light source	free group (in accordance with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 ^{5) 7) 10)}

Activation input active

Transmitter active/not active	≥ 8V / ≤ 2V
Activation/disable delay	≤ 1ms / ≤ 2ms
Input resistance	10KΩ ± 10%

- 1) In combination with a suitable test monitoring unit, e.g. MSI-TR1B-0x
- 2) Typ. operating range limit: max. attainable range without performance reserve
- 3) Operating range: recommended range with performance reserve
- 4) Average life expectancy 100,000h at an ambient temperature of 25°C
- 5) For UL applications: for use in class 2 circuits only
- 6) The push-pull switching outputs must not be connected in parallel
- 7) UL certified in the temperature range -30°C to 60°C
- 8) 2=polarity reversal protection, 3=short-circuit protection for all transistor outputs
- 9) Rating voltage 50V
- 10) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

Tables

0.5	20	22
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	Operating range [m]
	Typ. operating range limit [m]

UL REQUIREMENTS

Enclosure Type Rating: Type 1

For Use in NFPA 79 Applications only.

Adapters providing field wiring means are available from the manufacturer. Refer to manufacturers information.

CAUTION – the use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION ! Si d'autres dispositifs d'alignement que ceux préconisés ici sont utilisés ou s'il est procédé autrement qu'indiqué, cela peut entraîner une exposition à des rayonnements et un danger pour les personnes.

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Order guide ¹⁾

	Designation	Part No.
With M12 connector		
Transmitter and receiver	SLSR 25B/66.8-S12	
Transmitter	SLSSR 25B.8-S12	50108489
Receiver	SLSER 25B/66-S12	50108492
With M8 connector		
Transmitter and receiver	SLSR 25B/66.8-S8	
Transmitter	SLSSR 25B.8-S8	50108490
Receiver	SLSER 25B/66-S8	50108493
With 2m cable		
Transmitter and receiver	SLSR 25B/66.8	
Transmitter	SLSSR 25B.8	50108491
Receiver	SLSER 25B/66	50108494
With 0.2m cable and M12 connector		
Transmitter and receiver	SLSR 25B/66.8, 200-S12	
Transmitter	SLSSR 25B.8, 200-S12	50110151
Receiver	SLSER 25B/66, 200-S12	50110152

1) Version 2010 A-Z

Safety notices

Before using the safety sensor, a risk evaluation must be performed according to valid standards. For mounting, operation and tests, this document as well as all applicable national and international standards and regulations must be observed, printed out and handed to the affected personnel.

Before working with the safety sensor, completely read and observe the documents applicable to your task.

In particular, the following national and international legal regulations apply for the commissioning, technical inspections and work with safety sensors:

- Machinery directive 2006/42/EC
- Use of Work Equipment Directive
- Accident-prevention regulations and safety rules
- Other relevant standards
- Standards, e.g. ISO 13855

Symbols



Attention!

Warning sign – This symbol indicates possible dangers. Please pay especially close attention to these instructions!



This symbol identifies the transmitter.



This symbol identifies the receiver.

Safety sensor area of application

The protective throughbeam photoelectric sensor is an active optoelectronic protective device only in connection with a safety-relevant control system, in which the cyclical testing of transmitter and receiver is carried out in accordance with EN 61496-1, up to category 2 and PL c in accordance with EN ISO 13849-1.



Attention!

- The safety sensor protects persons at access points or at points of operation of machines and plants.
- The safety sensor only detects persons upon entry to the danger area; it does not detect persons who are located within the danger area. For this reason, a start-up/restart interlock is mandatory.
- No protective function without adequate safety distance.
- The power supply unit used to operate the photoelectric sensor has to be able to compensate for changes and interruptions of the supply voltage acc. to EN 61496-1.
- Also observe the safety notices in the documentation of the connected test device!
- Additional measures must be taken to ensure that the AOPD does not experience a dangerous failure due to glare from other light sources.

Proper use

The safety sensor must only be used after it has been selected in accordance with the respectively valid instructions and relevant standards, rules and regulations regarding occupational safety and safety at work, and after it has been installed on the machine, connected, commissioned, and checked by a competent person.

Foreseeable misuse

Any use other than that defined under the "Proper use" or which goes beyond that use is considered improper use. The user must ensure that no optical influence on the AOPD occurs through other forms of light beams, e.g. through

- wireless control devices on cranes,
- radiation from welding sparks,
- stroboscopic lights.

Competent personnel

Prerequisites for competent personnel:

- He has a suitable technical education.
- He knows the instructions for the safety sensor and the machine.
- He has been instructed by the responsible person on the mounting and operation of the machine and of the safety sensor.

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Responsibility for safety

Manufacturer and operator must ensure that the machine and implemented safety sensor function properly and that all affected persons are adequately informed and trained.

The **manufacturer** of the machine is responsible for:

- Safe implementation of the safety sensor.
- Imparting all relevant information to the operator.
- Adhering to all regulations and directives for the safe commissioning of the machine.

The **operator** of the machine is responsible for:

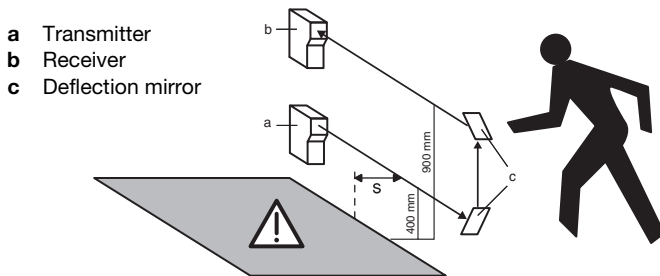
- Instructing the operating personnel.
- Maintaining the safe operation of the machine.
- Adhering to all regulations and directives for occupational safety and safety at work.
- Regular testing by competent personnel.

Safety distances



Attention!

The protective throughbeam photoelectric sensor must be installed with the correctly calculated safety distance as well as suitable beam distances from a potentially dangerous motion: if an interruption of the light beam occurs, the danger area may only be reached once the machine has already come to a dead stop.



Beam distances in accordance with ISO 13855		
Number of beams	Heights above reference plane, e.g. floor [mm]	Additional distance C [mm]
1	750	1200
2	400, 900	850
3	300, 700, 1100	850
4	300, 600, 900, 1200	850

The safety distance **S** between photoelectric sensor and danger area is calculated using the following formula (ISO 13855):

$$S = (K \cdot T) + C$$

S: Safety distance [mm] between photoelectric sensor and danger area.

K: Approach speed (constant = 1600 mm/s).

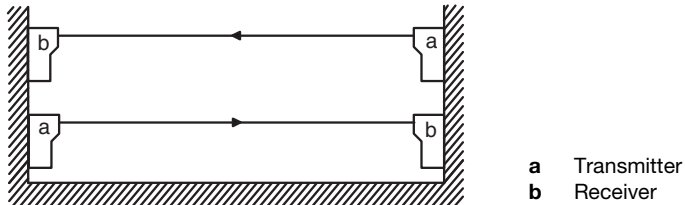
T: Time delay [s] between interruption of the light beam and stand-still of the machine.

C: Safety constant (additional distance) = 850mm or 1200mm, see table above.

Multi-axe installation

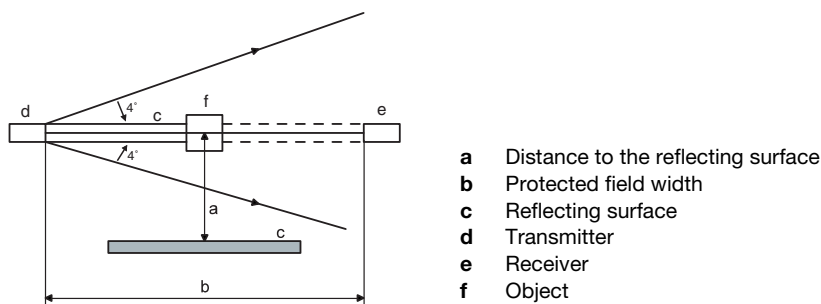
With multi-axe installation the light beams have to run parallel to the reference plane (e.g. floor) and must be aligned mutually parallel.

For this the beam direction must be set oppositely in each case. Otherwise the light beams could cause mutual interference and disturb proper functioning.



Distance to reflecting surfaces

When mounting, a sufficiently large distance from the optical axis to reflecting surfaces must be selected.



Commissioning

Alignment of the sensors

- Mount photoelectric sensors with corresponding fixing brackets from Leuze electronic.
- Apply operating voltage to transmitter and receiver and activate transmitter via activation input (see "Electrical connection").
- Yellow and green LEDs on transmitter illuminate.
- Position receiver until the yellow LED illuminates.

Receiver LED blinks yellow: Light path free, but no performance reserve; clean and readjust photoelectric sensor, or check operating conditions.

Safety notices for test function

1. To perform testing correctly the activation input of the SLSR 25B transmitter must be connected to a test monitoring unit.
2. The test duration during access protection must not exceed 150ms.
3. Subsequent to sensor activation the output switching elements of the test monitoring unit must remain in the 'off' state for at least 80ms so that the downstream equipment can be switched off safely when the photoelectric sensor is used for access protection.
4. In order to comply with points 2 and 3, the use of Leuze electronic test monitoring units (MSI-TR1B-01, MSI-TR1B-02) is recommended.

Check

The checks should ensure that the Optoelectronic Protective Devices have been used acc. to the national/international regulations, in particular in accordance with the machine and work-equipment directive.

Check before initial commissioning

- Observe the nationally and internationally valid regulations.
- Is the required safety distance (protective field of the safety sensor to the next point of operation) maintained?
- Is the safety sensor effective during the entire dangerous movement and in all adjustable operating modes of the machine?
- It must not be possible to climb over, climb under or circumvent the light path.
- Ensure that the sensor only detects persons upon entry to the danger area and does not detect whether persons are located within the danger area.
- Is a start-up/restart interlock present?
- Before they begin work, have a competent person train the operating personnel in their respective tasks.

Regular testing by competent personnel

The reliable interaction of safety sensor and machine must be periodically tested in order to detect changes to the machine or impermissible tampering with the safety sensor.

- Have all tests performed by competent personnel.
- Observe the nationally and internationally applicable regulations and the time periods specified therein.

Daily check of the effectiveness of the safety sensor

It is extremely important to examine the effectiveness of the protective field daily so that it is ensured that e.g. even with adjustments to e.g. parameters, the protective function is active at all points.

Interrupt the light beam between the transmitter and receiver (test rod Ø 14mm)

- in front of the transmitter.
- in the middle between the transmitter and receiver.
- in front of and behind the deflection mirror.

It must not be possible to initiate the dangerous state during beam interruption.

Disposal

For disposal observe the applicable national regulations regarding electronic components.



the **sensor** people

**EG-KONFORMITÄTS-
ERKLÄRUNG**

**EC DECLARATION
OF CONFORMITY**

**DECLARATION CE
DE CONFORMITE**

Hersteller:

Manufacturer:

Constructeur:

Leuze electronic GmbH + Co. KG
In der Braike 1, PO Box 1111
73277 Owen, Germany

Produktbeschreibung:

Description of product:

Description de produit:

**Einweg-Sicherheits-
Lichtschranke,
Berührunglos wirkende
Schutzeinrichtung,
Sicherheitsbauteil nach
2006/42/EG Anhang IV
SLSR 25B**

**Protective throughbeam
photoelectric sensor,
Active opto-electronic
protective device,
safety component in acc. with
2006/42/EC annex IV
SLSR 25B**

**Barrière unidirectionnelle,
Equipelement de protection
électrosensible,
Elément de sécurité selon
2006/42/CE annexe IV
SLSR 25B
N° série voir plaques
signalétiques**

Seriennummer siehe Typschild

Serial no. see name plates

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

This declaration of conformity is issued under the sole responsibility of the manufacturer.

La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.

Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union:

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation de l'Union applicable:

Angewandte EG-Richtlinie(n):

Applied EC Directive(s):

Directive(s) CE appliquées:

**2006/42/EG (*1)
2014/30/EG**

**2006/42/EC (*1)
2014/30/EC**

**2006/42/CE (*1)
2014/30/CE**

Angewandte harmonisierte Normen / Applied harmonized standards / Normes harmonisées appliquées :

EN 61496-1: 2013 (*1)

EN ISO 13849-1: 2015 (*1)

EN 55011: 2009 + A1: 2010

Angewandte technische Spezifikationen / Applied technical specifications / Spécifications techniques appliquées :


EN 61496-2: 2014 (*1)

Notified Body

(*1) TÜV-SÜD PRODUCT SERVICE GmbH Zertifizierungsstelle Ridlerstraße 65 D-80339 München / NB 0123

Dokumentationsbevollmächtigter ist der genannte Hersteller, Kontakt: quality@leuze.de.
Authorized for documentation is the stated manufacturer, contact: quality@leuze.de.
Autorisé pour documentation est le constructeur déclaré, contact: quality@leuze.de

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G.G. 2014 

Datum / Date / Date

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Sitz Owen, Registergericht Stuttgart, HRB 230550
Geschäftsführer: Ulrich Balbach
USt-IdNr. DE 145912521 | Zollnummer 2554232
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Only our current Terms and Conditions of Sale and Delivery shall apply



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