

LSR 55 Ex

Throughbeam photoelectric sensors

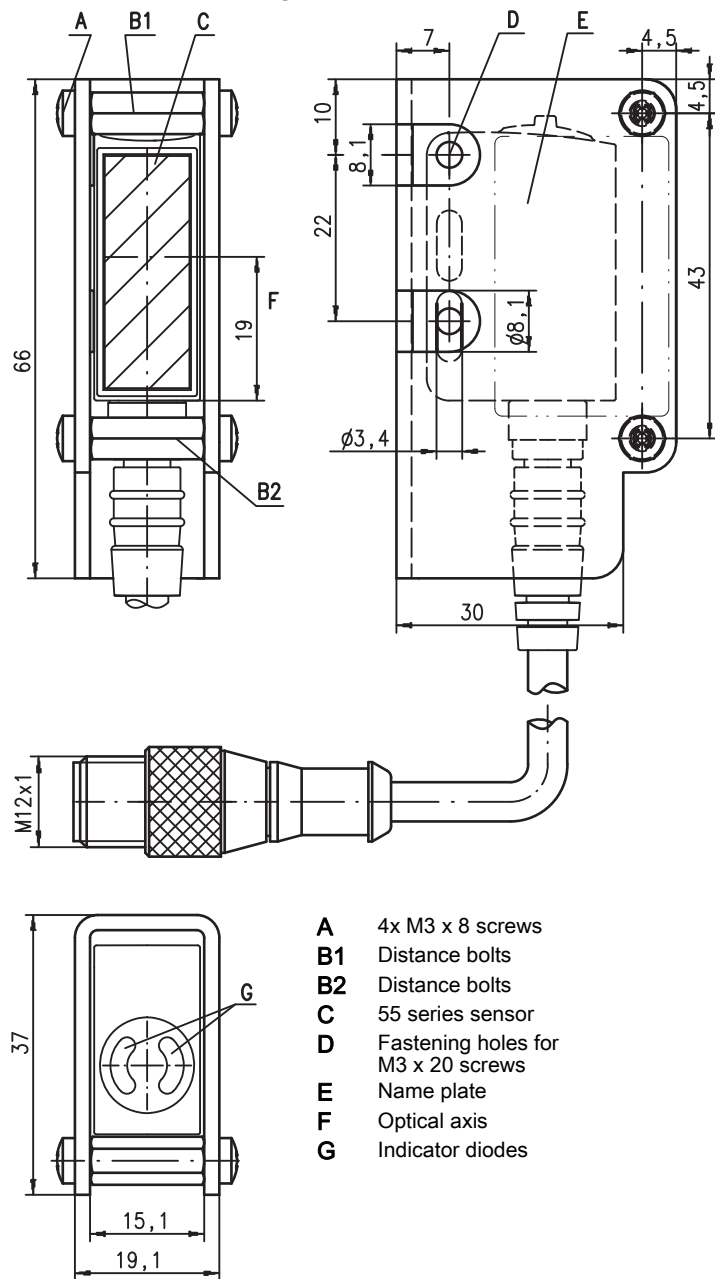
en 2020/08/21 50135475-01



0 ... 10m

- Throughbeam photoelectric sensor with visible red light
- 316L stainless steel housing in WASH-DOWN-Design
- Scratch resistant and non-diffusive plastic front cover
- High switching frequency for detection of fast events
- Certification
 - Ex II 3G Ex nA op is IIB T4 Gc X
 - Ex II 3D Ex tc IIIC T70°C Dc IP67 X

Dimensioned drawing



- A** 4x M3 x 8 screws
B1 Distance bolts
B2 Distance bolts
C 55 series sensor
D Fastening holes for M3 x 20 screws
E Name plate
F Optical axis
G Indicator diodes

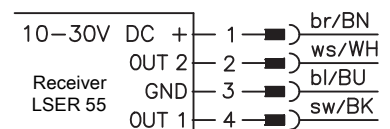
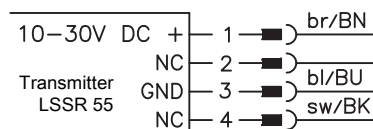
Accessories:

(available separately)

- Cables with M12 connector

Electrical connection

Connector, 4-pin



⚠ DANGER!



- Observe the notices for installation and commissioning!
- Do not disconnect the sensor connection within the potentially explosive area while under voltage!

We reserve the right to make changes ? DS_LSR55_Ex_en_50135475_01.fm

Technical data

Optical data

Typ. operating range limit ¹⁾	0 ... 10m
Operating range ²⁾	0.05 ... 8.5m
Light source ³⁾	LED (modulated light)
Wavelength	620nm (visible red light)

Time behavior

Switching frequency	1,000Hz (see order guide)
Response time	0.5ms
Readiness delay	≤ 300ms

Electrical data

Operating voltage U_B	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 14mA (per sensor)
Switching output	2 push-pull switching outputs
	Pin 2: PNP dark switching, NPN light switching
	Pin 4: PNP light switching, NPN dark switching
	Light/dark switching
	≥ ($U_B - 2V$) / ≤ 2V
	Max. 100mA
	Fixed setting

Function	
Signal voltage high/low	
Output current	
Operating range	

Indicators

Green LED	Ready
Yellow LED	Light path free
Yellow LED, flashing	Light path free, no function reserve

Mechanical data

Housing	AISI 316L stainless steel, DIN X2CrNiMo17132, W.No1.4404
Housing design	WASH-DOWN design
Housing roughness ⁵⁾	$R_a \leq 2.5$
Connector	AISI 316L stainless steel, DIN X2CrNiMo17132, W.No1.4404
Optics cover	Coated plastic (PMMA), scratch resistant and non-diffusive
Operation	Plastic (TPV-PE), non-diffusive
Weight	60g
Connection type	Cable 300 mm with M12 connector, 4-pin

Environmental data

Ambient temp. (operation/storage) ⁶⁾	-20°C ... +50°C / -30°C ... +60°C
Protective circuit ⁷⁾	2, 3
VDE protection class ⁸⁾	III
Degree of protection	IP 67, IP 69K ⁹⁾
Environmentally tested acc. to	ECOLAB, CleanProof+
Light source	Exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2
Chemical resistance	Tested in accordance with ECOLAB and CleanProof+ (see Remarks)

Explosion protection

Certification (CENELEC)	Ⓔ II 3G Ex nA op is IIB T4 Gc X
	Ⓔ II 3D Ex tc IIIC T70 °C Dc IP67 X

- 1) Typ. operating range limit: max. attainable range without function reserve
- 2) Operating range: recommended range with function reserve
- 3) Average life expectancy 100,000h at an ambient temperature of 25°C
- 4) The push-pull switching outputs must not be connected in parallel
- 5) Typical value for the stainless steel housing
- 6) Operating temperatures of +70°C permissible only briefly (≤ 15min)
- 7) 2=polarity reversal protection, 3=short circuit protection for all transistor outputs
- 8) Rating voltage 50V
- 9) Only in combination with M12 connector

Order guide

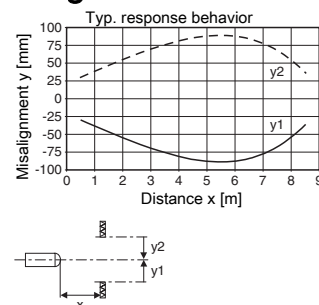
Selection table		Order code →	Set LSR 55/66, 300-S12 Ex Part no. 50135419 (Se) Part no. 50135420 (Re)
Equipment ↓			
Switching output	2x push-pull output		●
Switching function	1 PNP light switching and NPN dark switching output		●
	1 PNP dark switching and NPN light switching output		●
Connection	Cable 300mm with M12 connector, metal, 4-pin		●
Indicators	green LED: ready		●
	yellow LED: switching output		●
Features	Activation input		

Tables

0	8.5	10
---	-----	----

	Operating range [m]
	Typ. operating range limit [m]

Diagrams



Notes

A light axis consists of a transmitter and a receiver with the following designations:

LSR	= Complete light axis
LSSR	= Transmitter
LSER	= Receiver


A list of tested chemicals can be found in the first part of the product description.

Observe intended use!

- ⚠ This product is not a safety sensor and is not intended as personnel protection.
- ⚠ The product may only be put into operation by competent persons.
- ⚠ Only use the product in accordance with its intended use.

Notices for the safe use of sensors in potentially explosive areas

The valid range encompasses devices of Group II, Category 3, Zones 2 ("Gas Ex") and 22 ("Dust Ex").

⚠ ATTENTION!	
	<ul style="list-style-type: none">● Check whether the equipment classification corresponds to the requirements of the application.● A safe operation is only possible if the equipment is used properly and for its intended purpose.● Electrical equipment may endanger humans and (where applicable) animal health, and may threaten the safety of goods if used incorrectly or under unfavorable conditions in potentially explosive areas.● The applicable national regulations (e.g. EN 60079-14) for the configuration and installation of explosion-proof systems must be observed.

Installation and Commissioning

- The devices must only be installed and commissioned by trained electricians. They must be aware of the regulations and operation of explosion-proof equipment.
- Static charge on plastic surfaces must be avoided.
- To prevent unintentional separation under voltage, devices with connector (e.g. Series 46B) must be equipped with a safeguard or a mechanical interlocking guard (e.g. K-V M12-Ex, part no. 50109217). The warning sign "Do not disconnect under voltage" that is supplied with the device must be attached to the sensor or its mounting bracket so that it is clearly visible.
- Devices with terminal compartment lid (e.g. Series 96) must only be commissioned if the terminal compartment lid of the device is properly sealed.
- Connection cables and connectors must be protected from excessive or unintended pulling or pushing strain.
- Prevent dust deposits from forming on the devices.
- Metallic parts (e.g. housing, mounting devices) are to be integrated into the potential equalization to prevent electrostatic charge.

Maintenance

- No changes may be made to explosion-proof devices.
- Repairs may only be performed by persons trained for such work or by the manufacturer.
- Defective devices must be replaced immediately.
- Cyclical maintenance is generally not necessary.
- Depending on the environmental conditions, it may occasionally be necessary to clean the optical surfaces of the sensors. The cleaning must only be performed by persons trained for performing this task. We recommend the use of a soft and damp cloth. Cleaning agents containing solvents must not be used.

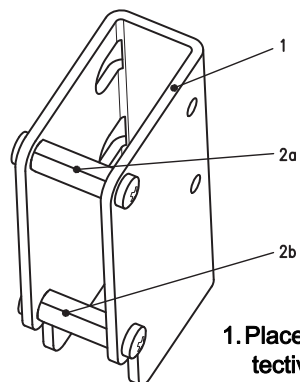
Chemical resistance

- The sensors demonstrate good resistance against diluted (weak) acids and bases.
- Exposure to organic solvents is possible only under certain circumstances and only for short periods of time.
- Resistance to chemicals must be examined on a case by case basis.

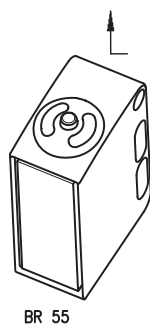
Special conditions

- The devices must be installed in such a way that they are protected from direct exposure to UV rays (sunlight).

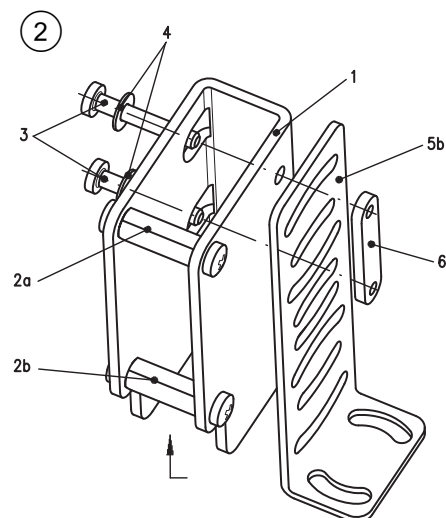
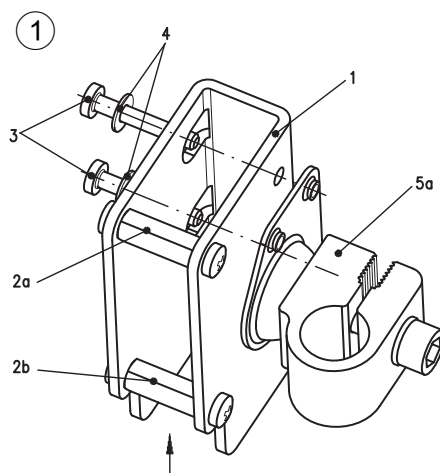
Mounting instructions



1. Place device in the protective housing in the direction of the arrow.



BR 55



2. Fit fastening screws (item 3) with washers (item 4) according to diagrams ①, ①, ① depending on the installation situation, push through the device and securely tighten.

- 1 Protective housing
- 2a, 2b Distance bolts (mounted)
- 3 M3 screw
- 4 Disc
- 5a, 5b Mounting devices (e.g. UMS 25, BT 25, ...)
- 6 Plate BT 3