

LSR 55 Ex

Throughbeam photoelectric sensors

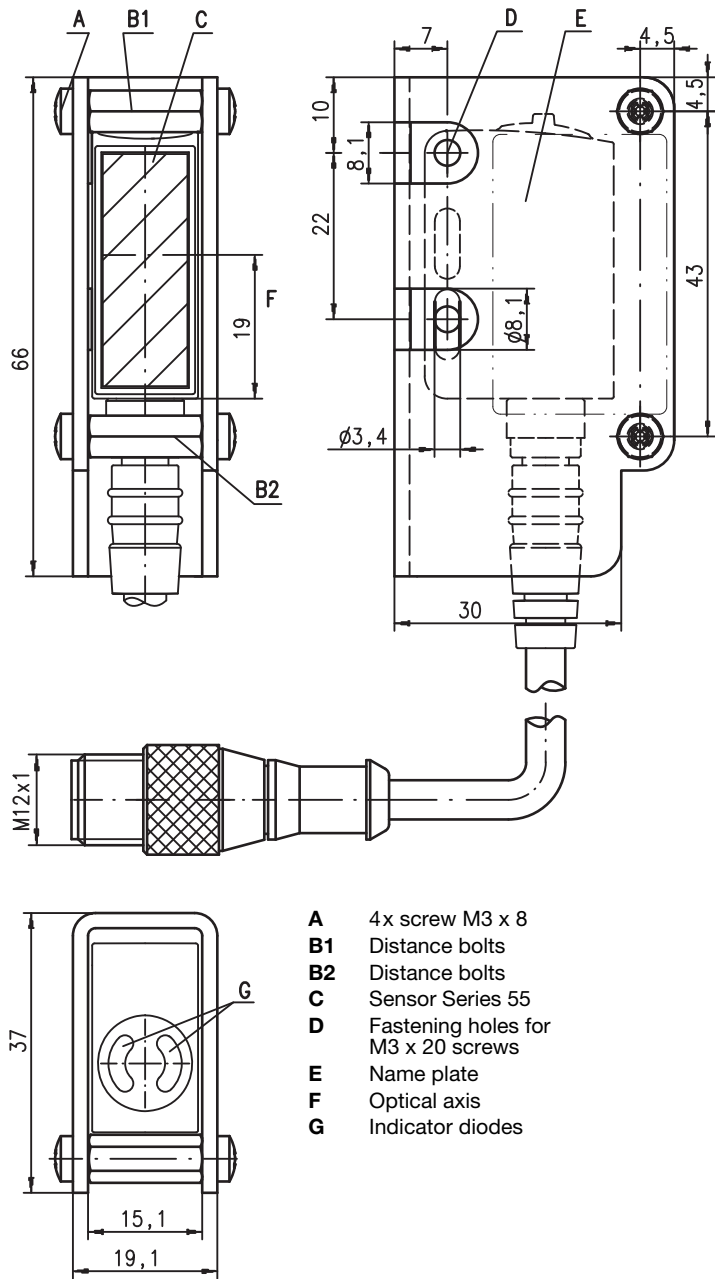
en 01-2016/11 50135475



1 kHz
 0 ... 10m

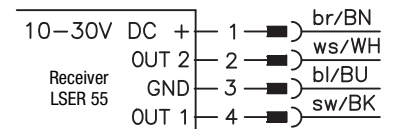
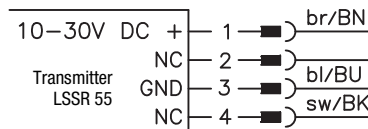
- Throughbeam photoelectric sensor with visible red light
- 316L stainless steel housing in WASH-DOWN-Design
- Scratch resistant and non-diffusive plastic front cover
- High switching frequency for detection of fast events
- Certification
 - ⊕ II 3G Ex nA op is IIB T4 Gc X
 - ⊕ II 3D Ex tc IIIC T70°C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

Dimensioned drawing



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!



Accessories:

(available separately)

- Cables with M12 connector

We reserve the right to make changes • DS_LSR55_Ex_en_50135475.fm

Specifications

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)

Timing

Switching frequency	1,000Hz (see order guide)
Response time	0.5ms
Delay before start-up	≤ 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 .../66 ⁴⁾	2 push-pull switching outputs pin 2: PNP dark switching, NPN light switching pin 4: PNP light switching, NPN dark switching light/dark switching
Function characteristics	≥ ($U_B - 2V$) / ≤ 2V
Signal voltage high/low	max. 100mA
Output current	fixed setting
Operating range	

Indicators

Green LED	ready
Yellow LED	light path free
Flashing yellow LED	light path free, no performance 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	300mm cable with M12 connector, 4-pin

Environmental data

Ambient temp. (operation/storage) ⁶⁾	-20 °C ... +50 °C / -30 °C ... +70 °C
Protective circuit ⁷⁾	2, 3
VDE safety class ⁸⁾	III
Protection class	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 performance reserve
- 2) Operating range: recommended range with performance 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

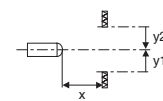
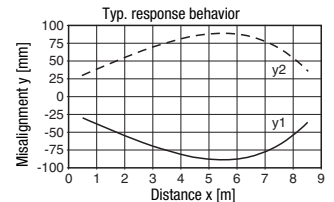
Selection table		Order code →	Set LSR 55/66, 300-S12 Ex Part No. 50135419 (Tr) Part No. 50135420 (Re)
Equipment ↓			
Switching output	2 x Push-pull switching output		●
Switching function	1 PNP light switching and NPN dark switching output		●
	1 PNP dark switching and NPN light switching output		●
Connection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

Tables

0	8.5	10
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	Operating range [m]
	Typ. operating range limit [m]

Diagrams



Remarks

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.

Operate in accordance with 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 the 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").



- 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. This cleaning must only be performed by persons trained for this task. We recommend using a soft, damp cloth. Cleaning agents that contain solvents must not be used.

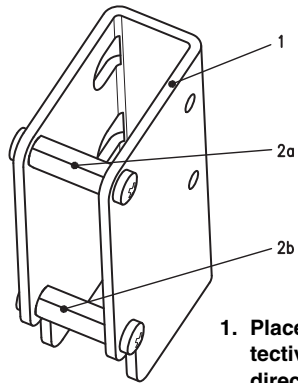
Chemical resistance

- 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.

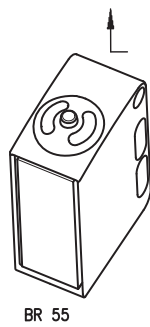
Special conditions

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

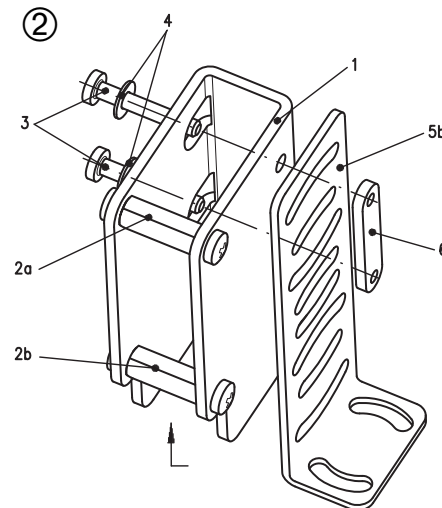
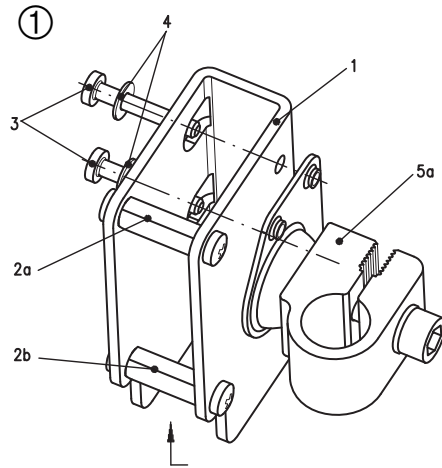
Mounting instructions



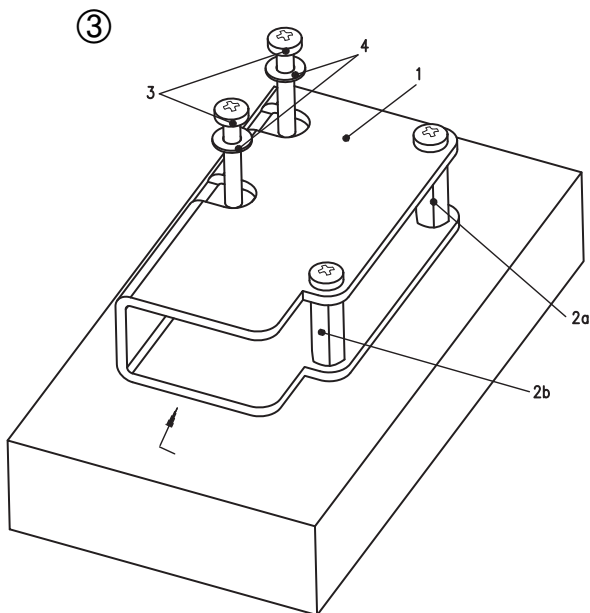
1. Place device in the protective housing in the direction of the arrow.



BR 55



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



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