LS 96 Ex n — Throughbeam photoelectric sensor

0 … 150m

10 - 30 V DC

- Throughbeam photoelectric sensors with high performance reserve in infrared light
- Robust metal housing with shock-resistant optical window, protection class IP 67/ IP 69K for industrial application
- General light/dark switching and sensitivity adjustment for optimal adaptation to applications
- Connection via comfortable terminal compartment
- Ⓔx II 3G Ex nA op is IIB T4 Gc X
- Ⓔx II 3D Ex tc IIIC T70°C Dc IP67 X

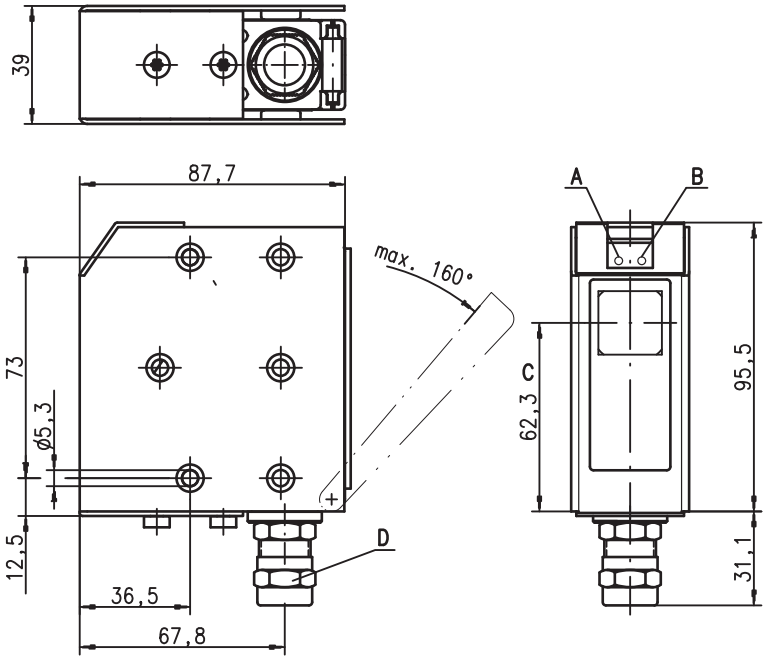
IEC 60947... IEC 60947... IP 69K IP 67

Accessories:

(available separately)

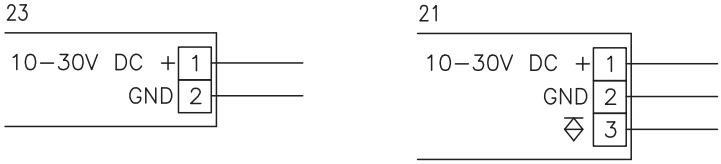
- Mounting systems (BT 96, BT 96.1, UMS 96, BT 450.1-96)
- Alignment aids ARH 96, SAT 5

Dimensioned drawing



A Green indicator diode
B Yellow indicator diode
C Optical axis
D Screwed cable gland M16x1.5 for Ø 5 … 9mm

Electrical connection



en 06-2017/02 50111017-03

Specifications

Optical data

Typ. operating range limit [1]	0 … 150 m
Operating range [2]	0 … 120 m
Light source	LED (modulated light)
Wavelength	880 nm

Timing

Sensor switching frequency	500 Hz
Sensor response time	1 ms
Delay before start-up	≤ 200 ms

Electrical data

Operating voltage U_B	10 V ... 30 V
Residual ripple	≤ 15 % of U_B
Open-circuit current	≤ 50 mA
Switching output	PNP transistor
Function characteristics	light/dark switching (reversible)
Signal voltage high/low	≥ (U_B - 2 V)/≤ 2 V (PNP)
Output current	max. 100 mA
Sensitivity	adjustable

Indicators

Green LED	ready
Yellow LED	light path free
Yellow LED, flashing	light path free, no performance reserve

Mechanical data — **Metal housing**

Housing	diecast zinc
Optics cover	polycarbonate
Weight	380 g
Connection type	terminals, cable diameter 5 … 9 mm
Screwed cable gland	EEx e II clamping torque 3.5 Nm

Environmental data

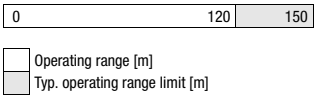
Ambient temp. (operation/storage)	-20 °C … +50 °C/-40 °C … +55 °C
Protective circuit [3]	1, 2
VDE safety class [4]	II, all-insulated
Protection class	IP 67, IP 69K [5]
Light source	exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2

Explosion protection

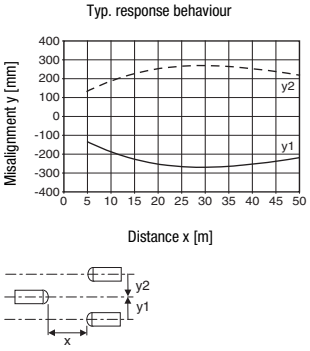
Labelling (CENELEC)	Ex II 3G Ex nA op is IIB T4 Gc X
	Ex II 3D Ex tc IIIC T70 °C Dc IP67 X

1) Typ. operating range limit: max. attainable range without performance reserve
2) Operating range: recommended range with performance reserve
3) 1=transient protection, 2=polarity reversal protection
4) Rating voltage 250 VAC
5) IP 69K test acc. to DIN 40050 part 9 simulated, high pressure cleaning conditions without the use of additives, acids and bases are not part of the test

Tables



Diagrams



Order guide

	Designation	Part No.
Transmitter and receiver	**LS 96M/P-3019-2 Ex n**	
Transmitter	LSS 96 M-1079-23 Ex n	50111015
Receiver	LSE 96 M/P-3019-21 Ex n	50111016

Remarks

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.

LS = Pair consisting of
LSS = transmitter
LSE = receiver

LS 96M/P-3019-2 Ex n
LSS 96M-1079-23 Ex n
LSE 96M/P-3019-21 Ex n

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Notices for the safe use of sensors in potentially explosive areas

This document is valid for devices with the following classifications:

Device group	Device category	Equipment protection level	Zone
II	**3G**	**Gc**	**Zone 2**
II	**3D**	**Dc**	**Zone 22**

Attention!

- Check whether the equipment classification corresponds to the requirements of the application.
- The devices are not suited for the protection of persons and may not be used for emergency shutdown purposes.
- 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 without fail.

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.
- 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-VM12-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 a person 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).
- Static charge on plastic surfaces must be avoided.