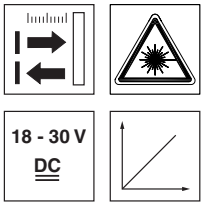
ODS 96 Ex

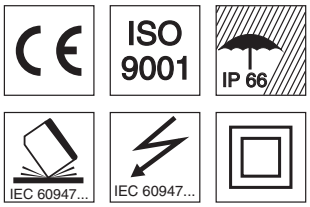
Optical laser distance sensors

Part No. 501 09363



200 … 2000 mm

- Reflection-independent distance information
- Highly insensitive to extraneous light
- Analogue current output
- Measurement range and mode adjustable
- Teachable switching output
- EC type examination certificate CESI 02 ATEX 096
- ⟨Ex⟩ II 2G EEx d IIC T6
- ⟨Ex⟩ II 2D IP 66 T 85°C

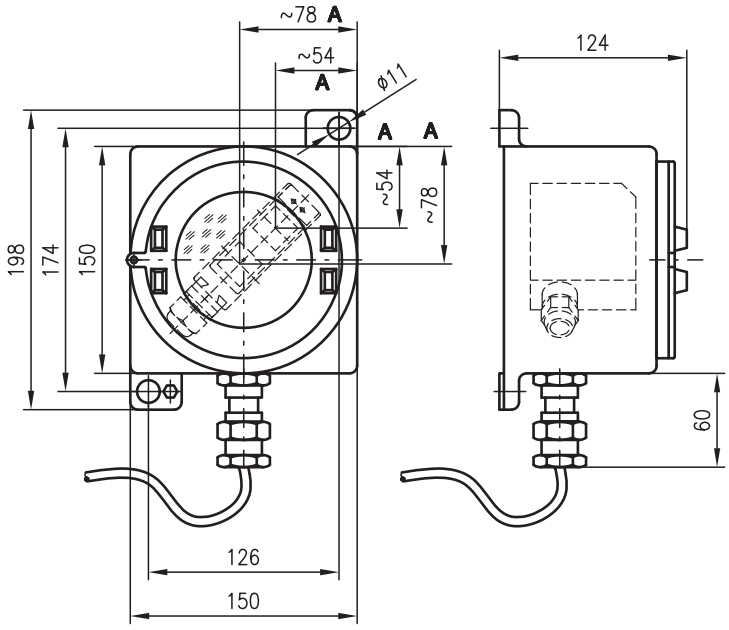


Accessories:

(available separately)

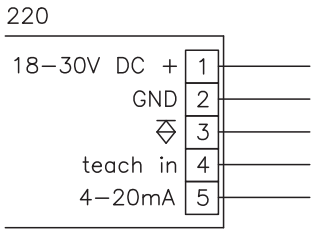
- Configuration software

Dimensioned drawing



A Optical axis

Electrical connection



Specifications

Optical data

Measurement range [1]	200 … 2000mm
Resolution [2]	1 … 3mm
Light source	laser (modulated light)
Wavelength	660nm (visible red light)
Light spot diameter	divergent, 3x12mm² at 2m (laser)
Laser warning notice	see remarks

Error limits

Absolute measurement accuracy [1]	± 2% (relative to the measurement distance)
Repeatability [3]	± 0.5%
b/w detection thresholds (6%/90%)	< 1%

Timing

Switching frequency	10 … 100Hz
Response time	≤ 100ms
Delay before start-up	≤ 300ms

Electrical data

Operating voltage U_B	18 … 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 150mA
Switching output	PNP transistor, high-active
Signal voltage high/low	≥ (U_B-2V)/≤ 2V
Analogue output	voltage 1 … 10V, R_L ≥ 2kΩ current 4 … 20mA, R_L ≤ 500Ω

Indicators		**teach-in on GND**	**teach-in on +U_B**
LED green	continuous light	ready	
	flashing	fault	teaching procedure
	off	no voltage	
LED yellow	continuous light	object inside teach-in measurement distance	
	flashing		teaching procedure
	off	object outside teach-in measurement distance	

Mechanical data	**Metal housing**
Housing	diecast zinc
Optics cover	glass
Weight	3300g
Connection type	cable, 5m long

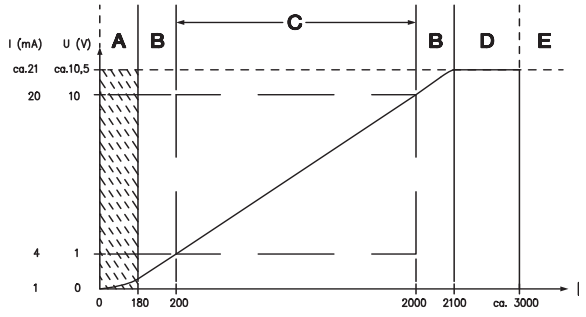
Environmental data

Ambient temp. (operation/storage)	-20°C … +40°C/-30°C … +70 C
Protective circuit [4]	1, 2, 3
VDE safety class [5]	II
Protection class	IP 66
Standards applied	IEC 60947-5-2

Explosion protection

Labelling (CENELEC)	⟨Ex⟩ II 2G EEx d IIC T6	⟨Ex⟩ II 2D IP 66 T85°C

1) Luminosity coefficient from 6% … 90%, over complete temperature range, measured object ≥ 50x50mm²
2) Minimum and maximum value depend on measurement distance and configuration of the analogue output
3) Same object, measurement object ≥ 5x50mm²
4) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs
5) Rating voltage 250VAC



A Area not defined
B Linearity not defined
C Measurement range
D Object present
E No object detected
F Measurement distance

Order guide

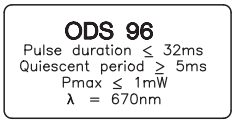
	Designation	**Part No.**
Cable connection		
Current output	ODS 96M/V-5060-220 Ex d	500 42001

Tables

Diagrams

Remarks

- To configure with the 'ODS 96' PC software, the sensor must be removed from the Ex housing.
- Switching frequency depends on the reflectivity of the measurement object and on the measurement mode.
- **Teaching procedure:** Position measured object at desired measurement distance. Connect teach input to +U_B for ≥ 2s. Reconnect teach input to GND, switching output is programmed.
- **Approved purpose**: The ODS 96M distance sensors are optical electronic sensors for the optical, contactless measurement of distance to objects.



Operating Instructions for ODS(L) 96(B) Ex d for Use in Potentially Explosive Areas

Intended application range

The sensors produced by Leuze electronic GmbH + Co. KG for use in potentially explosive areas operate according to the optoelectronics principle. Without making physical contact, these sensors detect objects located within or passing through the light beam, and measure the distance to these objects.

The distance sensors of type ODS(L) 96(B) Ex d have a housing of encapsulated pressure-proof design according to EN 50014: 1997+A1…A2, EN 50018: 2000 and EN50281-1-1: 1999. This technology enables operation in zones 1 and 21 and zones 2 and 22.

Installation, Commissioning

Attention!

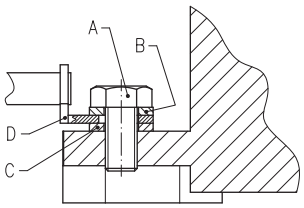
Electrical equipment may endanger humans and (where applicable) animal health, and may threaten the safety of goods if used incorrectly and under unfavourable conditions in potentially explosive areas.

A safe operation in potentially explosive areas is only possible if the equipment is used properly and for its intended purpose.

The distance sensors of type ODS(L) 96(B) Ex d must only be installed and maintained by trained electricians.

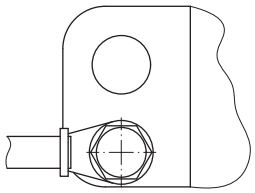
When installing the sensors in Ex zones 1 and 21, the connection cable must be connected in a connection space with increased safety Ex e, or outside the Ex area.

The housing must be connected to the protective conductor system at the marked external connection terminal. For this purpose, always use a cable lug and make the connection as shown in the diagram. Fastening screw (A) is to be secured with a lock washer (B) to protect against loosening.



A Screw M6
B Lock washer
C Washer
D Cable lug

The respective applicable national regulations for the installation of electrical equipment in potentially explosive areas must be observed.



Maintenance

No changes may be made to the devices of type ODS(L) 96(B) Ex d for potentially explosive areas.

Repairs to the sensors may only be performed by persons trained for such work or by the manufacturer. Defective devices must be replaced immediately.

The housing must not be opened while the power is on! After switching off power, wait at least 10 min. before opening the housing.

Cyclical maintenance of the sensors is not necessary.

Depending on the environmental conditions, it may occasionally be necessary to clean the light-emission surfaces of the sensors. This cleaning must only be performed by persons trained for performing this task. A soft, damp cloth should be used for this purpose. Cleaning agents that contain solvents must not be used.

Chemical resistance

The sensors of type ODS(L) 96(B) Ex d demonstrate good resistance against many diluted acids and bases.

Exposure to organic solvents is possible only under certain circumstances and only for short periods of time.

Resistance to chemicals should be examined on a case by case basis.

Teach-in of switching outputs and characteristic output curve (Time Control, factory setting)

- Position the measured object at the desired distance.
- Activate the "**teach in**" input (pin 2) (with factory settings by applying $+U_B$).

The duration of the activation of the teach input determines the teach step according to the table shown below. The teach event is indicated by the flashing of the LEDs and on the display.

Teach function	Duration of teach signal	Green LED	Yellow LED
switching output Q1 Teach point	2 … 4s	Flash synchronously	
Distance value for start of measurement range = 1V / 4mA at analogue output (pin 5)	4 … 6s	Continuous light	Flash
Distance value for end of measurement range = 10V / 20mA at analogue output (pin 5)	6 … 8s	Flash	Continuous light

At the end of the given teach event:

- Reconnect the teach input to GND.

A successful teach event is signalled by the end of the flashing of the LEDs.

Notice

If the measurement range start is taught to a distance greater than the measurement range end, a declining characteristic output curve is automatically set.

Error messages

Continuously flashing LEDs signal an unsuccessful teach event. The sensor remains ready for operation and continues to function with the old values.

Remedy:

- Repeat teach event **or**
- Activate teach input for more than 8s **or**
- Disconnect sensor from voltage to restore the old values.

BARTEC

Erklärung der EG Konformität
CE Declaration of Conformity
Attestation de Conformité CE

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Wir/We/Nous

BARTEC NEDERLAND b.v.

Erklären in alleiniger Verantwortung/declare under our sole responsibility/

attestons sous notre seule responsabilité

daß das Produkt/that the product/que le produit

Druckfest gekapseltes Gehäuse Typ GUB-0V, komplett mit optische Laser-Distanzsensor, LEUZE Typ ODS 96

Zündschutzart: Ⓔx **II 2GD EEx d IIC T6 IP 66 T85°C**

auf das sich diese Erklärung bezieht/to which this declaration relates/se

référant à cette attestation

den Bestimmungen der folgenden Richtlinien entspricht/is in accordance

with the provision of the following directives/correspond aux dispositions

des directives sulvantes

ATEX Directive 94/9/EC – 1994

und mit folgenden Normen oder normativen Dokumenten übereinstimmt/

and is in conformity with the following standards or other normative

documents/ et est conforme aux normes ou documents normatifs

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EN 50014 : 1997+A1...A2

EN 50018 : 2000

EN 50281-1-1 : 1999

Weitere angewendete Normen/ further used standards/ norme plus utiliser

EN 60079-0: 2006, EN 60079-1: 2004, EN 61241-0: 2006, EN 61241-1: 2004

Ridderkerk, October 9, 2008

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Erklaerung der EG Konformitaet GUB-0V LEUZE ODS 96