



Figure can vary

Part no.: 50137815
ODS9L2.8/LA6-200-M12
Optical distance sensor



 **IO-Link**



Contents

- Technical data
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- Electrical connection
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Technical data**Basic data**

Series	9
Application	Object measurement Length measurement in material cutting Fill-level monitoring
Type of scanning system	Against object

Optical data

Beam profile	Collimated
Light source	Laser, Red
Laser light wavelength	650 nm
Laser class	2, IEC/EN 60825-1:2007
Transmitted-signal shape	Pulsed
Pulse duration	22,000 µs
Light-spot size [at sensor distance]	1 mm [100 mm]
Type of light-spot geometry	Round

Measurement data

Measurement range	50 ... 200 mm
Resolution	0.01 mm
Accuracy, short range	0.5 %50 ... 100 mm
Accuracy, distant range	1 %100 ... 200 mm
Reproducibility (1 sigma)	0.05 mm
Referencing	No
Optical distance measurement principle	Triangulation

Electrical data

Protective circuit	Transient protection Short circuit protected Polarity reversal protection
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Performance data

Supply voltage	18 ... 30 V, DC
Residual ripple	0 ... 15 %, From U _B
Open-circuit current	0 ... 50 mA

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Outputs

Number of analog outputs 1 Piece(s)

Number of digital switching outputs 2 Piece(s)

Analog outputs

Analog output 1

Type Configurable, factory setting: current

Assignment Connection 1, pin 2

Switching outputs

Voltage type DC

Switching voltage Low: $\leq 2V$
High: $\geq (U_B - 2V)$

Switching output 1

Assignment Connection 1, pin 4

Switching element Transistor, Push-pull

Switching principle IO-Link / light switching (PNP)/dark switching (NPN)

Switching output 2

Assignment Connection 1, pin 5

Switching element Transistor, Push-pull

Switching principle Light switching (PNP)/dark switching (NPN)

Timing

Response time 1 ms, Under constant ambient conditions, 90% diffuse reflection, standard measure mode

Readiness delay 300 ms

Interface

Type IO-Link

IO-Link

COM mode COM3

Profile Smart sensor profile

Frame type 2.V

Port type A

Specification V1.1

SIO-mode support Yes

Process data IN 4 byte

Process data OUT 8 bit

Dual-core operating mode Yes

Min. cycle time COM3 = 0.5 ms

Connection

Number of connections 1 Piece(s)

Connection 1

Type of connection Connector, Turning, 90°

Function Voltage supply
Signal OUT

Thread size M12

Type Male

Material Plastic

No. of pins 5 -pin

Encoding A-coded

Part no.: 50137815 – ODS9L2.8/LA6-200-M12 – Optical distance sensor**Mechanical data**

Design	Cubic
Dimension (W x H x L)	21 mm x 50 mm x 50 mm
Lens cover material	Glass
Net weight	50 g
Housing color	Red
Type of fastening	Through-hole mounting Via optional mounting device

Operation and display

Type of display	OLED display LED
Number of LEDs	2 Piece(s)
Operational controls	Control buttons PC software

Environmental data

Ambient temperature, operation	-20 ... 50 °C
Ambient temperature, storage	-30 ... 70 °C

Certifications

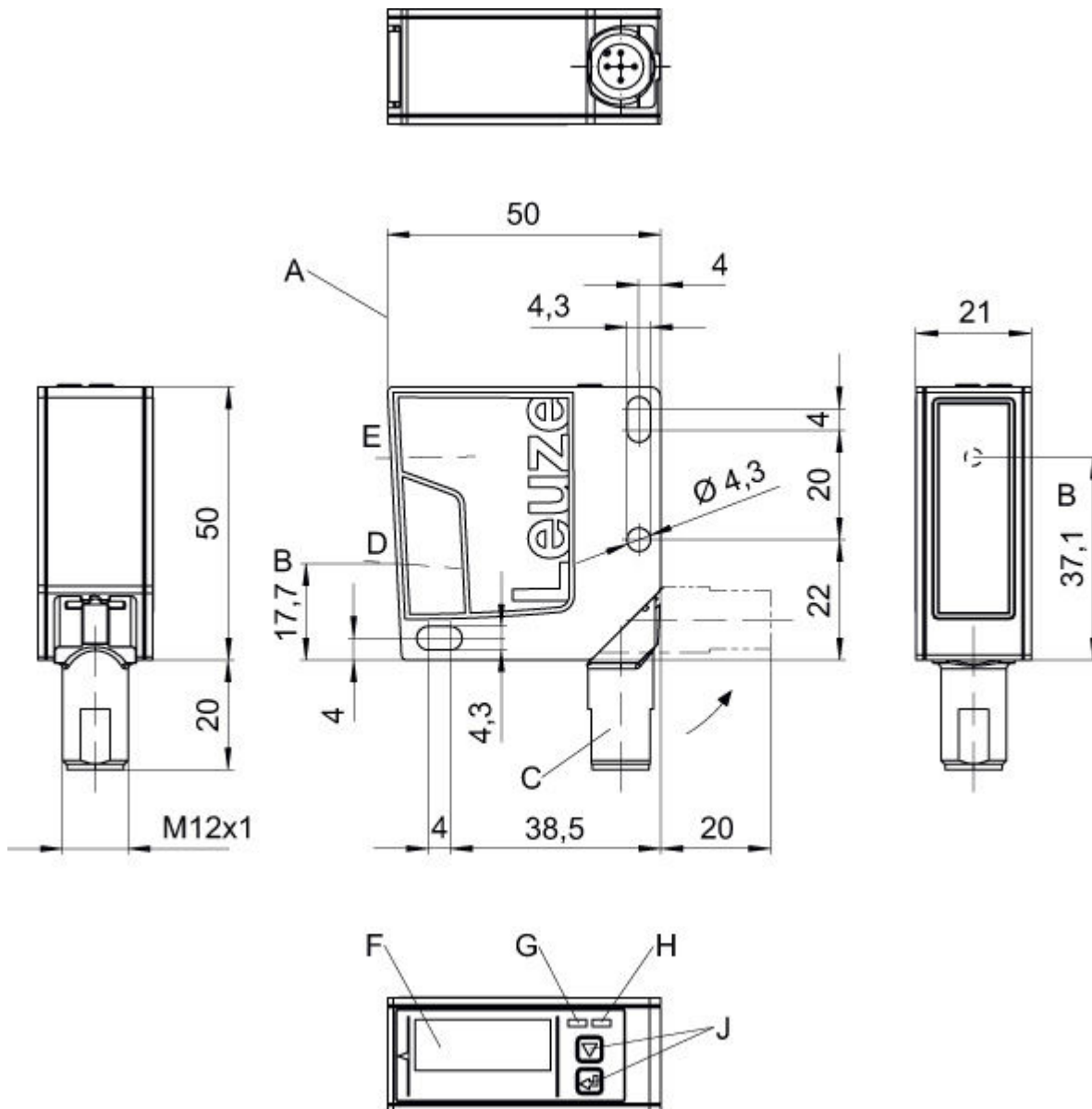
Degree of protection	IP 67
Protection class	III
Certifications	UL

Classification

eCl@ss 8.0	27270801
eCl@ss 9.0	27270801
ETIM 5.0	EC001825

Dimensioned drawings

All dimensions in millimeters



- A Reference edge for the measurement
- B Optical axis
- C Device plug M12
- D Receiver
- E Transmitter
- F Color display
- G Yellow LED
- H Green LED
- J Control buttons

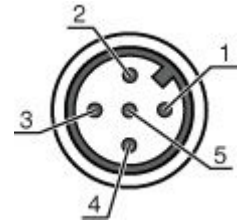
Electrical connection

Connection 1	
Type of connection	Connector
Function	Voltage supply Signal OUT
Thread size	M12
Type	Male
Material	Plastic

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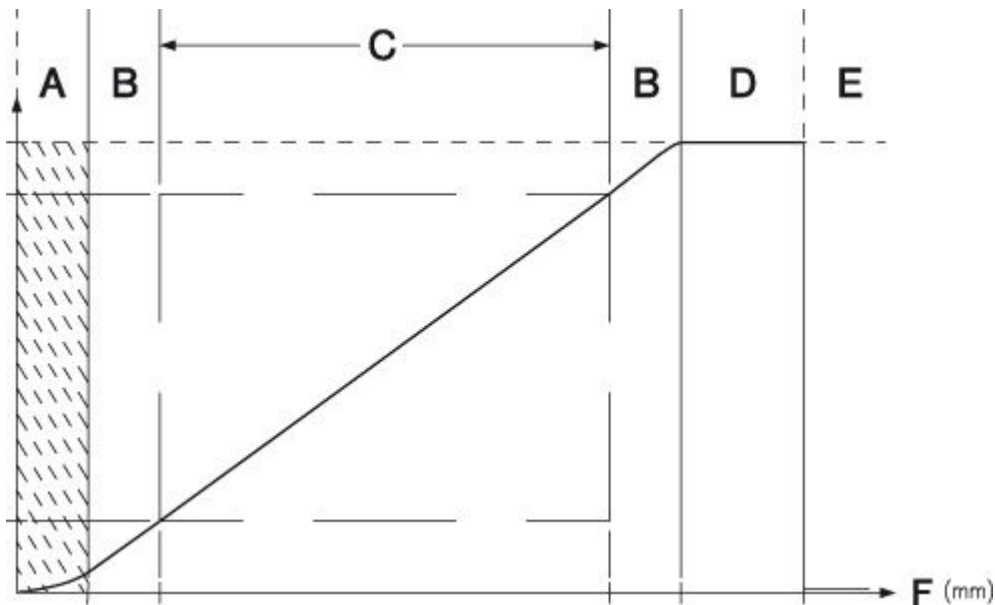
Connection 1	
No. of pins	5 -pin
Encoding	A-coded

Pin	Pin assignment
1	V+
2	OUT mA / V
3	GND
4	IO-Link / OUT 1
5	OUT 2



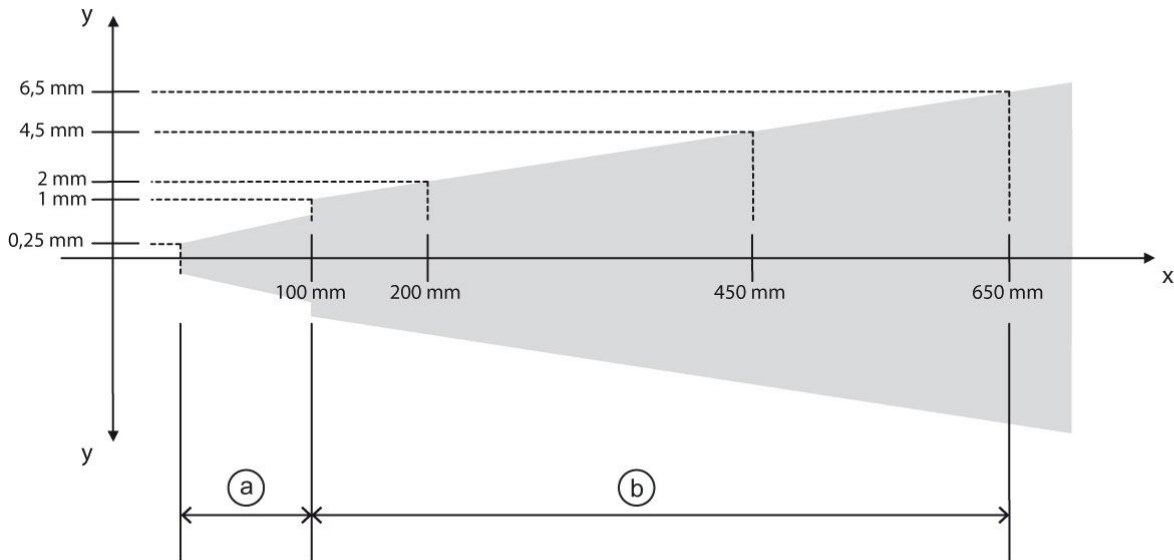
Diagrams

Characteristic curve of analog output



- A Area not defined
- B Linearity not defined
- C Measurement range
- D Object detected
- E No object detected (characteristic curve behavior adjustable via IO-Link)
- F Measurement distance

Accuracy of measurement of ODS 9 (measurement value * 0.01 = maximum measurement error):



x Measurement distance
y Max. measurement error
a 0.5% of measurement value
b 1% of measurement value

Operation and display

LEDs

LED	Display	Meaning
1	Green, continuous light	Ready
2	Yellow, continuous light	Object in the measurement range

Part number code

Part designation: **ODS9XX.Y/ZAB-CCC-DDD**

ODS9	Operating principle: Optical distance sensor of the 9 series
XX	Light source: L2: laser class 2
Y	Equipment: 8: OLED display and membrane keyboard for configuration
Z	Switching output/function OUT 1/IN: Pin 4 or black conductor: L: IO-Link
A	Switching output / function OUT 2/IN: pin 2 or white conductor: A: Analog output 6: push-pull switching output, PNP light switching, NPN dark switching

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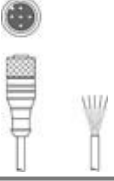
B	Switching output / function OUT 3/IN: Pin 5: X: pin not used 6: push-pull switching output, PNP light switching, NPN dark switching K: Multifunction input (factory setting: deactivation input)
CCC	Operating range: 100: operating range 50 ... 100 mm 200: operating range 50 ... 200 mm 450: operating range 50 ... 450 mm 650: operating range 50 ... 650 mm
DDD	Electrical connection: M12: M12 connector

Accessories

Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50133859	KD S-M12-5A-P1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
	50133860	KD S-M12-5A-P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
	50133855	KD S-M12-5A-V1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 2,000 mm Sheathing material: PVC
	50133856	KD S-M12-5A-V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PVC
	50133839	KD U-M12-5A-P1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
	50133841	KD U-M12-5A-P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50132077	KD U-M12-5A-V1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC

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	Part no.	Designation	Article	Description
	50132079	KD U-M12-5A-V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC

Connection technology - Connectors

	Part no.	Designation	Article	Description
	50020502	KD 095-5	Connector	Connection: Connector, M12, Angled, Female, A-coded, 5 -pin
	50020501	KD 095-5A	Connector	Connection: Connector, M12, Axial, Female, A-coded, 5 -pin

Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50118543	BT 300M.5	Mounting bracket	Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Adjustable Material: Stainless steel

Mounting technology - Rod mounts

	Part no.	Designation	Article	Description
	50117253	BTU 300M-D10	Mounting system	Contains: 2x M4 x 25 screw, 2x M4 x 20 screw, 4x position washers Design of mounting device: Mounting system Fastening, at system: For 10 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50117252	BTU 300M-D12	Mounting system	Contains: 2x M4 x 25 screw, 2x M4 x 20 screw, 4x position washers Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50117251	BTU 300M-D14	Mounting system	Contains: 2x M4 x 25 screw, 2x M4 x 20 screw, 4x position washers Design of mounting device: Mounting system Fastening, at system: For 14 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal

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	Part no.	Designation	Article	Description
	50120425	BTU 300M.5-D12	Mounting system	Contains: 2x M4 x 25 screw, 2x M4 x 20 screw, 2x position washers, 2x M4 mounting nut Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Stainless steel
	50132605	BTU 360-D18	Rod mounting	Contains: 2x M4 x 30 screw, 2x M4 x 20 screw, 2x M4 mounting nut Design of mounting device: Mounting system Fastening, at system: For 18 mm rod Mounting bracket, at device: Screw type Type of mounting device: Turning, 360°, Adjustable, Clampable Material: Plastic, Metal
	50132606	BTU 360-D30	Rod mounting	Contains: 2x M4 x 30 screw, 2x M4 x 20 screw, 2x M4 mounting nut Design of mounting device: Mounting system Fastening, at system: For 30 mm rod Mounting bracket, at device: Screw type Type of mounting device: Turning, 360°, Adjustable, Clampable Material: Plastic, Metal
	50128379	BTU 460M-D10	Mounting system	Design of mounting device: Mounting system Fastening, at system: For 10 mm rod Mounting bracket, at device: Screw type Type of mounting device: Adjustable, Turning, 360° Material: Metal
	50128380	BTU 460M-D12	Mounting system	Design of mounting device: Mounting system Fastening, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Adjustable, Turning, 360° Material: Metal

	Part no.	Designation	Article	Description
	50131483	MD 248i-12-8K/L4-2R2K	Distribution box	Type: IO-Link master Supply voltage: 18 ... 30 V Switching outputs for each sensor connection: 1 Piece(s) Switching output: Transistor, PNP / NPN reversible Interface: PROFINET, IO-Link Connections: 14 Piece(s) Sensor connections: 8 Piece(s) Connections for voltage supply: 4 Piece(s) Interface connections: 2 Piece(s) Degree of protection: IP 67
	50131485	MD 258i-12-8K/L4-2R2K	Distribution box	Type: IO-Link master Supply voltage: 18 ... 30 V Switching outputs for each sensor connection: 1 Piece(s) Switching output: Transistor, PNP / NPN reversible Interface: EtherNet IP, IO-Link, Modbus TCP Connections: 14 Piece(s) Sensor connections: 8 Piece(s) Connections for voltage supply: 4 Piece(s) Interface connections: 2 Piece(s) Degree of protection: IP 67
	50131482	MD 748i-11-42/L5-2222	Distribution box	Type: IO-Link master Supply voltage: 18 ... 30 V Switching outputs for each sensor connection: 1 Piece(s) Switching output: Transistor, PNP / NPN reversible Interface: PROFINET, IO-Link Connections: 8 Piece(s) Sensor connections: 4 Piece(s) Connections for voltage supply: 2 Piece(s) Interface connections: 2 Piece(s) Degree of protection: IP 67

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	Part no.	Designation	Article	Description
	50131484	MD 758i-11-42/ L5-2222	Distribution box	Type: IO-Link master Supply voltage: 18 ... 30 V Switching outputs for each sensor connection: 1 Piece(s) Switching output: Transistor, PNP / NPN reversible Interface: EtherNet IP, IO-Link, Modbus TCP Connections: 8 Piece(s) Sensor connections: 4 Piece(s) Connections for voltage supply: 2 Piece(s) Interface connections: 2 Piece(s) Degree of protection: IP 67
	50121098	SET MD12-US2-IL1.1 + Zub.	Diagnostics set	Interface: USB Connections: 2 Piece(s) Degree of protection: IP 20

Notes

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.

WARNING! LASER RADIATION – LASER CLASS 2

Never look directly into the beam!

The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 2** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.

- Never look directly into the laser beam or in the direction of reflected laser beams! If you look into the beam path over a longer time period, there is a risk of injury to the retina.
- Do not point the laser beam of the device at persons!
- Interrupt the laser beam using a non-transparent, non-reflective object if the laser beam is accidentally directed towards a person.
- When mounting and aligning the device, avoid reflections of the laser beam off reflective surfaces!
- CAUTION! Use of controls or adjustments or performance of procedures other than specified herein may result in hazardous light exposure.
- Observe the applicable statutory and local laser protection regulations.
- The device must not be tampered with and must not be changed in any way.
There are no user-serviceable parts inside the device.
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

NOTE

Affix laser information and warning signs!

Laser information and warning signs are affixed to the device. In addition, self-adhesive laser information and warning signs (stick-on labels) are supplied in several languages.

- Affix the laser information sheet to the device in the language appropriate for the place of use. When using the device in the US, use the stick-on label with the "Complies with 21 CFR 1040.10" note.
- Affix the laser information and warning signs near the device if no signs are attached to the device (e.g. because the device is too small) or if the attached laser information and warning signs are concealed due to the installation position.
- Affix the laser information and warning signs so that they are legible without exposing the reader to the laser radiation of the device or other optical radiation.