# Technical data sheet
# Optical distance sensor
Part no.: 50138066
ODS110L1.3/LTX-M12

Figure can vary

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# Technical data

## Basic data

| | |
|---|---|
| **Series** | 110 |
| **Application** | Collision protection for transport vehicles |
| | Fill-level monitoring |
| | Length measurement in material cutting |
| **Type of scanning system** | Against object |

## Optical data

| | |
|---|---|
| **Beam path** | Collimated |
| **Light source** | Laser, Red |
| **Laser light wavelength** | 655 nm |
| **Laser class** | 1, IEC/EN 60825-1:2007 |
| **Transmitted-signal shape** | Pulsed |
| **Light spot size [at sensor distance]** | 5.5 mm x 7 mm [5,000 mm] |
| **Type of light spot geometry** | Oval |

## Measurement data

| | |
|---|---|
| **Measurement range (6 … 90 % diffuse reflection)** | 60 ... 3,000 mm |
| **Measurement range (90 % diffuse reflection)** | 60 ... 5,000 mm |
| **Resolution** | 1.0 mm |
| **Reproducibility (1 sigma)** | , see diagram |
| **Temperature drift** | 2 mm/K |
| **Standard measurement object** | 50 x 50 mm² |
| **Optical distance measurement principle** | Time of flight |
| **Linearity error** | 30 mm |

## Electrical data

| | |
|---|---|
| **Protective circuit** | Polarity reversal protection |
| | Short circuit protected |

### Performance data

| | |
|---|---|
| **Supply voltage $U_B$** | 18 ... 30 V, DC |
| **Open-circuit current** | 60 mA |

### Inputs

| | |
|---|---|
| **Number of teach inputs** | 1 Piece(s) |

#### Teach inputs

| | |
|---|---|
| **Voltage type** | DC |
| **Switching voltage** | high: $+U_B$ |

##### Teach input 1

| | |
|---|---|
| **Assignment** | Connection 1, pin 2 |

### Outputs

| | |
|---|---|
| **Number of digital switching outputs** | 1 Piece(s) |
| **IO-Link note** | Two switching outputs via IO-Link process data (SSC 1 & SSC 2) |

#### Switching outputs

| | |
|---|---|
| **Voltage type** | DC |

##### Switching output 1

| | |
|---|---|
| **Assignment** | Connection 1, pin 4 |
| **Switching element** | Transistor, Push-pull |
| **Switching principle** | IO-Link / light switching (PNP)/dark switching (NPN) |

## Timing

| | |
|---|---|
| **Response time** | 4 ms, Axial object approach / 20 ms, lateral object entry |

## Interface

| | |
|---|---|
| **Type** | IO-Link |

### IO-Link

| | |
|---|---|
| **COM mode** | COM2 |
| **Profile** | Common Profile |
| **Frame type** | 2.2 |
| **Port type** | A |
| **Specification** | V1.1 |
| **Device ID** | 0x00087E |
| **SIO-mode support** | Yes |
| **Process data, length** | 24 bit |
| **Min. cycle time** | COM2 = 2.7 ms |

## Connection

| | |
|---|---|
| **Number of connections** | 1 Piece(s) |

### Connection 1

| | |
|---|---|
| **Function** | Signal IN |
| | Signal OUT |
| | Voltage supply |
| **Type of connection** | Connector, Turning, 90° |
| **Thread size** | M12 |
| **Type** | Male |
| **Material** | Plastic |
| **No. of pins** | 4 -pin |
| **Encoding** | A-coded |

## Mechanical data

| | |
|---|---|
| **Design** | Cubic |
| **Dimension (W x H x L)** | 23 mm x 50 mm x 50 mm |
| **Housing material** | Plastic |
| **Plastic housing** | ABS |
| **Lens cover material** | Plastic / PMMA |
| **Net weight** | 42 g |
| **Housing color** | Red |
| **Type of fastening** | Through-hole mounting |
| | Via optional mounting device |

## Operation and display

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

## Environmental data

| | |
|---|---|
| **Ambient temperature, operation** | -40 ... 50 °C |
| **Ambient temperature, storage** | -40 ... 80 °C |
| **Extraneous light protection, max.** | 5,000 lx |

## Certifications

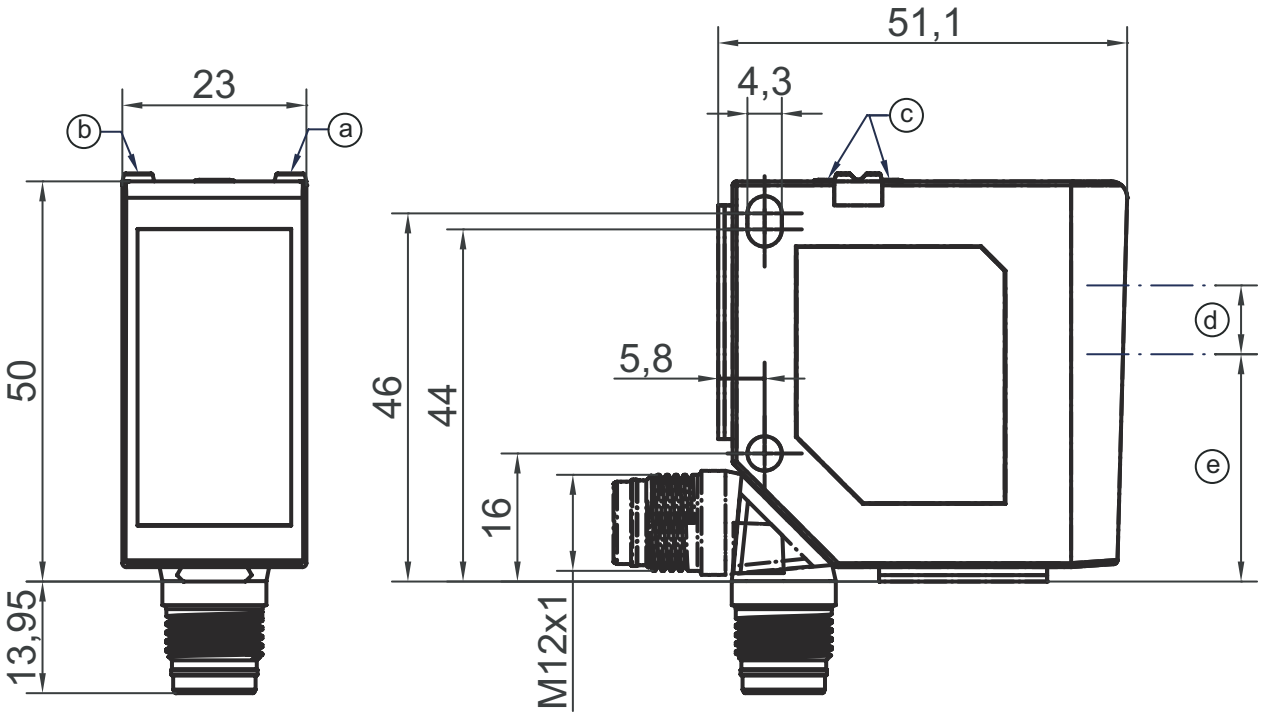
| | |
|---|---|
| **Degree of protection** | IP 67 |
| | IP 69K |
| **Protection class** | III |
| **Certifications** | c UL US |
| **Standards applied** | IEC/EN 60947-5-2 |

# Technical data

| | |
|---|---|
| **Customs tariff number** | 90318080 |
| **eCl@ss 5.1.4** | 27270801 |
| **eCl@ss 8.0** | 27270801 |
| **eCl@ss 9.0** | 27270801 |
| **eCl@ss 10.0** | 27270801 |
| **eCl@ss 11.0** | 27270801 |
| **ETIM 5.0** | EC001825 |
| **ETIM 6.0** | EC001825 |
| **ETIM 7.0** | EC001825 |

# Dimensioned drawings

All dimensions in millimeters



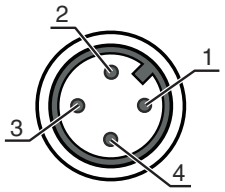

a Yellow LED
b Green LED
c Control buttons
d Transmitter
e Receiver

# Electrical connection

## Connection 1

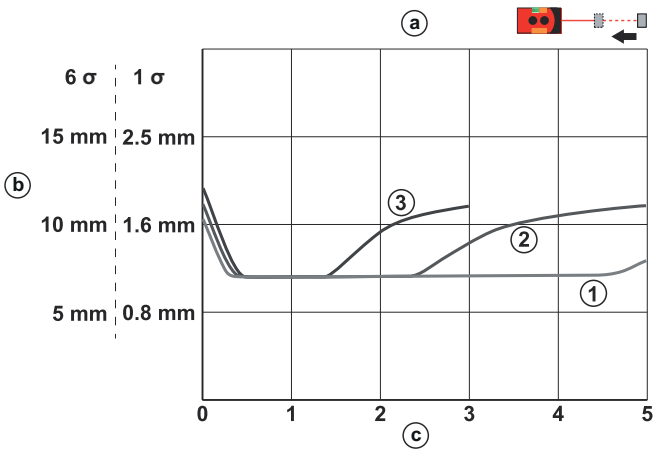
| | |
|---|---|
| **Function** | Signal IN |
| | Signal OUT |
| | Voltage supply |
| **Type of connection** | Connector |
| **Thread size** | M12 |
| **Type** | Male |
| **Material** | Plastic |
| **No. of pins** | 4 -pin |
| **Encoding** | A-coded |

| Pin | Pin assignment |
|---|---|
| **1** | 18 ... 30 V DC + |
| **2** | Teach-in |
| **3** | GND |
| **4** | IO-Link / OUT 1 |



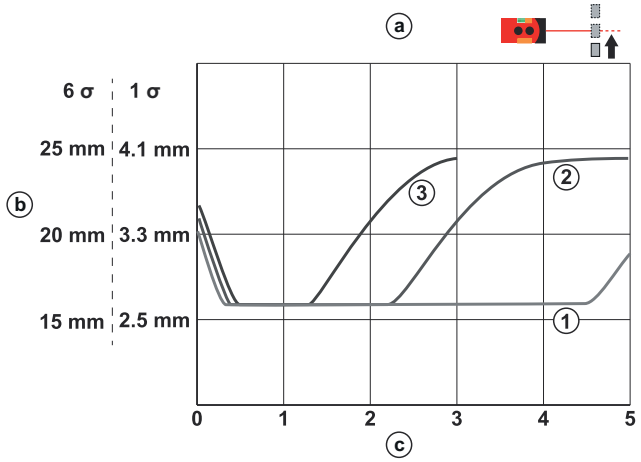

# Diagrams

## Repeatability (50 Hz)




a Axial object approach
b Repeatability (50 Hz)
c Distance [m]
1 White 90%
2 Gray 18%
3 Black 6%

## Repeatability (250 Hz)




a Lateral object approach
b Repeatability (250 Hz)
c Distance [m]
1 White 90%
2 Gray 18%
3 Black 6%

# Operation and display

| LED | Display | Meaning |
|---|---|---|
| 1 | Yellow, continuous light | Switching output/switching state |
| 2 | Green, continuous light | Operating voltage applied |
| | Yellow, continuous light | Analog output status display |

# Part number code

Part designation: **XXX110YY.Z/ABC-DDD**

| | |
|---|---|
| **XXX110** | **Operating principle**<br>ODS110: Optical distance sensor<br>HT110: diffuse reflection sensor with background suppression |
| **YY** | **Light source**<br>L1: laser class 1 |
| **Z** | **Equipment**<br>3: Control buttons for configuration |
| **A** | **Switching output/function OUT 1/IN: Pin 4 or black conductor**<br>L: IO-Link |
| **B** | **Switching output / function OUT 2/IN: pin 2 or white conductor**<br>6: push-pull switching output, PNP light switching, NPN dark switching<br>C: Current output<br>T: teach-in<br>V: Voltage output |
| **C** | **Switching output / function OUT 3/IN: Pin 5**<br>X: pin not used<br>T: teach-in |
| **DDD** | **Electrical connection**<br>M12: M12 connector |

**Note**

- A list with all available device types can be found on the Leuze website at www.leuze.com.

# 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 – CLASS 1 LASER PRODUCT**

- Observe the applicable statutory and local laser protection regulations.

# Notes

| | |
|---|---|
| | **WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT** |
| | The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 1 as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.**<br>Observe the applicable statutory and local laser protection regulations.<br>The device must not be tampered with and must not be changed in any way.<br>There are no user-serviceable parts inside the device.<br>Repairs must only be performed by Leuze electronic GmbH + Co. KG. |

# Further information

- Ambient temperature, operation: UL: max. +45°
- Warmup time: minimum 20 min at +24 VDC and an ambient temperature of 20 °C
- Response time: depending on the entry direction of the object to be measured

# Accessories

## Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
| | 50130654 | KD U-M12-4A-P1-020 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PUR |
| | 50130657 | KD U-M12-4A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PUR |
| | 50130648 | KD U-M12-4A-V1-020 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PVC |
| | 50130652 | KD U-M12-4A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC |

# Accessories

## Mounting technology - Rod mounts

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
| | 50117252 | BTU 300M-D12 | Mounting system | Design of mounting device: Mounting system<br>Fastening, at system: For 12 mm rod, Sheet-metal mounting<br>Mounting bracket, at device: Screw type, Suited for M4 screws<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal |

**Note**

A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.