

## Technical data sheet

### Optical distance sensor

Part no.: 50129535  
ODS10L1.8/LA6,200-M12



For illustration purposes only

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CDRH  IO-Link

## Technical data

### Basic data

|                         |  |
|-------------------------|--|
| Series                  | 10   |
| Application             | Collision protection for transport vehicles<br>Fill-level monitoring |
| Type of scanning system | Against object   |

### Characteristic parameters

|      |          |
|------|----------|
| MTTF | 29 years |
|------|----------|

### Optical data

|                                      |                        |
|--------------------------------------|------------------------|
| Beam path                            | Collimated             |
| Light source                         | Laser, Red             |
| Wavelength                           | 658 nm                 |
| Laser class                          | 1, IEC/EN 60825-1:2014 |
| Transmitted-signal shape             | Pulsed                 |
| Light spot size [at sensor distance] | 7 mm x 7 mm [8,000 mm] |
| Type of light spot geometry          | Rectangular            |

### Measurement data

|   |   |
|---|---|
| Measurement range                           | 50 ... 3,500 mm, at 6 ... 90% diffuse reflection  |
| Measurement range (90 % diffuse reflection) | 50 ... 8,000 mm   |
| Resolution                                  | 1.0 mm  |
| Accuracy                                    | 15 mm   |
| Measurement time, measure mode              | "High precision": response time = 1000 ms/output time = 3.4 ms<br>"Individual": response time = 3.4 ... 1020 ms/output time = 3.4 ms<br>Fast: response time = 15 ms/output time = 3.4 ms<br>Individual measure modes, see diagram<br>Outlier suppression: response time = 17 ... 1020 ms/output time = 17 ... 1020 ms<br><br>Precision: response time = 200 ms/output time = 3.4 ms<br>Standard: response time = 50 ms/output time = 3.4 ms |
| Reproducibility (1 sigma)                   | 4 mm  |
| Temperature drift                           | 2 mm/K  |
| Referencing                                 | No  |
| Black/white behavior                        | 10 mm   |

### Electrical data

|                    |   |
|--------------------|---|
| Protective circuit | Polarity reversal protection<br>Short circuit protected<br>Transient protection |
|--------------------|---|

### Performance data

|                      |                        |
|----------------------|------------------------|
| Supply voltage $U_B$ | 18 ... 30 V, DC        |
| Residual ripple      | 0 ... 15 %, From $U_B$ |
| Open-circuit current | 0 ... 150 mA           |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of analog outputs            | 1 Piece(s) |
| Number of digital switching outputs | 2 Piece(s) |

### Analog output 1

|            |  |
|------------|--|
| Type       | Configurable, factory setting: current |
| Assignment | Connection 1, pin 2                    |

### Switching outputs

|                   |   |
|-------------------|---|
| Voltage type      | DC                                      |
| Switching voltage | high: $\geq(U_B-2V)$<br>low: $\leq 2 V$ |

### Switching output 1

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

### Switching output 2

|                     |  |
|---------------------|--|
| Assignment          | Connection 1, pin 5                        |
| Switching element   | Transistor, Push-pull                      |
| Switching principle | Light switching (PNP)/dark switching (NPN) |

### Time behavior

|                 |        |
|-----------------|--------|
| Readiness delay | 300 ms |
|-----------------|--------|

### Interface

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

### IO-Link

|                  |               |
|------------------|---------------|
| COM mode         | COM2          |
| Min. cycle time  | COM2 = 2.3 ms |
| Frame type       | 2.V           |
| Port type        | A             |
| Specification    | V1.1          |
| SIO-mode support | Yes           |
| Process data IN  | 3 byte        |
| Process data OUT | 0 byte        |
| Dual Channel     | Yes           |

### Connection

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

### Connection 1

|                    |                                    |
|--------------------|------------------------------------|
| Function           | Signal OUT<br>Voltage supply       |
| Type of connection | Cable with connector, Turning, 90° |
| Cable length       | 200 mm                             |
| Sheathing material | PUR                                |
| Cable color        | Black                              |
| Wire cross section | 0.14 mm <sup>2</sup>               |
| Thread size        | M12                                |
| Type               | Male                               |
| Material           | Plastic                            |
| No. of pins        | 5 -pin                             |
| Encoding           | A-coded                            |

## Technical data

### Mechanical data

|                       |   |
|-----------------------|---|
| Design                | Cubic   |
| Dimension (W x H x L) | 25 mm x 65 mm x 55 mm                                 |
| Housing material      | Plastic   |
| Lens cover material   | Glass   |
| Net weight            | 90 g  |
| Housing color         | Red   |
| Type of fastening     | Through-hole mounting<br>Via optional mounting device |

### Operation and display

|                      |                                |
|----------------------|--------------------------------|
| Type of display      | LED<br>OLED display            |
| Number of LEDs       | 5 Piece(s)                     |
| Operational controls | Control buttons<br>PC software |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 50 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

### Certifications

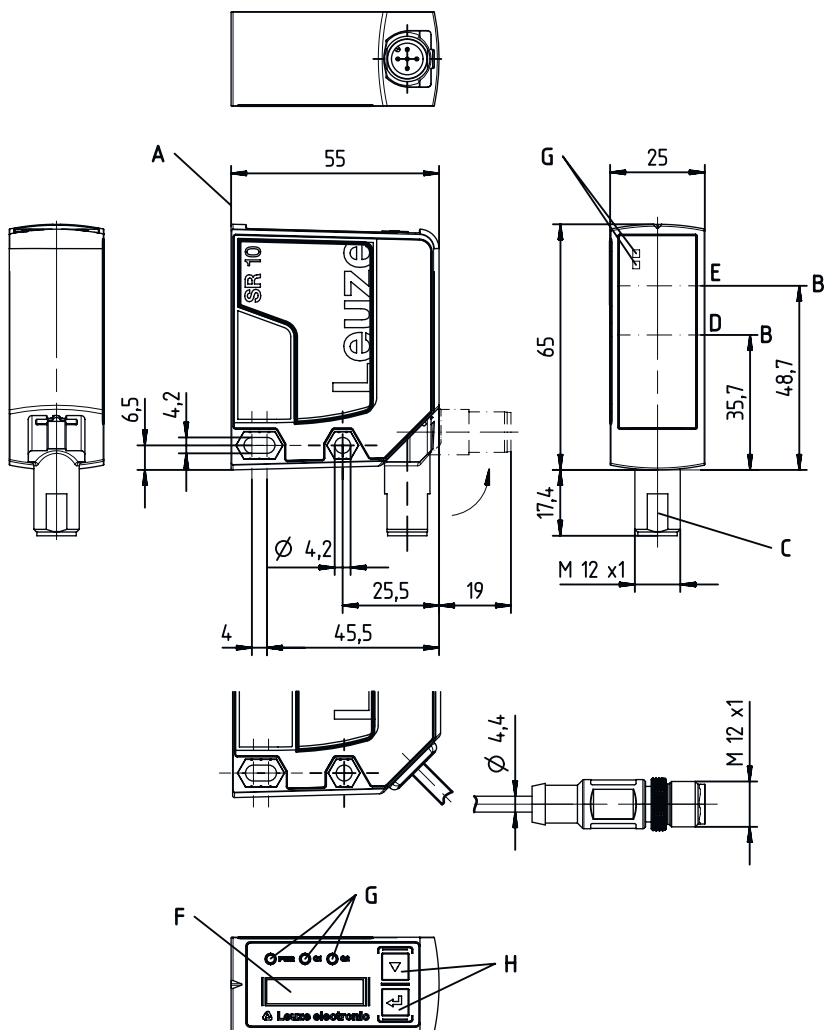
|                      |         |
|----------------------|---------|
| Degree of protection | IP 67   |
| Protection class     | III     |
| Certifications       | c UL US |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 90318020 |
| ECLASS 5.1.4          | 27270801 |
| ECLASS 8.0            | 27270801 |
| ECLASS 9.0            | 27270801 |
| ECLASS 10.0           | 27270801 |
| ECLASS 11.0           | 27270801 |
| ECLASS 12.0           | 27270916 |
| ECLASS 13.0           | 27270916 |
| ECLASS 14.0           | 27270916 |
| ETIM 5.0              | EC001825 |
| ETIM 6.0              | EC001825 |
| ETIM 7.0              | EC001825 |
| ETIM 8.0              | EC001825 |
| ETIM 9.0              | EC001825 |

# Dimensioned drawings

All dimensions in millimeters



## Electrical connection

### Connection 1

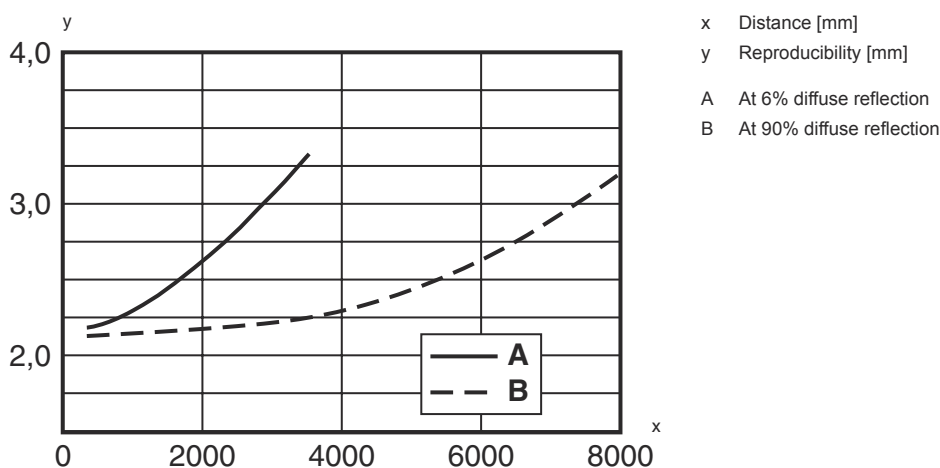
|                    |                              |
|--------------------|------------------------------|
| Function           | Signal OUT<br>Voltage supply |
| Type of connection | Cable with connector         |
| Cable length       | 200 mm                       |
| Sheathing material | PUR                          |
| Cable color        | Black                        |
| Wire cross section | 0.14 mm <sup>2</sup>         |
| Thread size        | M12                          |
| Type               | Male                         |
| Material           | Plastic                      |
| No. of pins        | 5 -pin                       |
| Encoding           | A-coded                      |

# Electrical connection

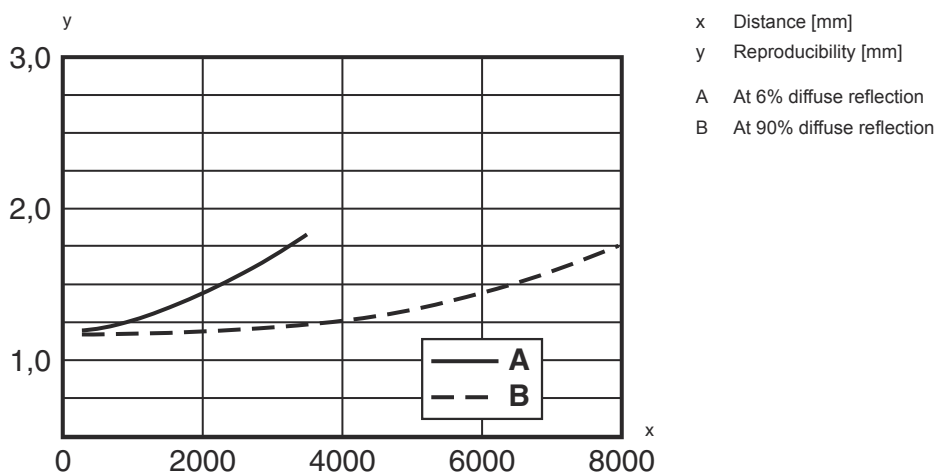
| Pin | Pin assignment   |
|-----|------------------|
| 1   | 18 ... 30 V DC + |
| 2   | OUT mA / V       |
| 3   | GND              |
| 4   | IO-Link / OUT 1  |
| 5   | OUT 2            |

## Diagrams

Typical reproducibility: "Fast" measure mode

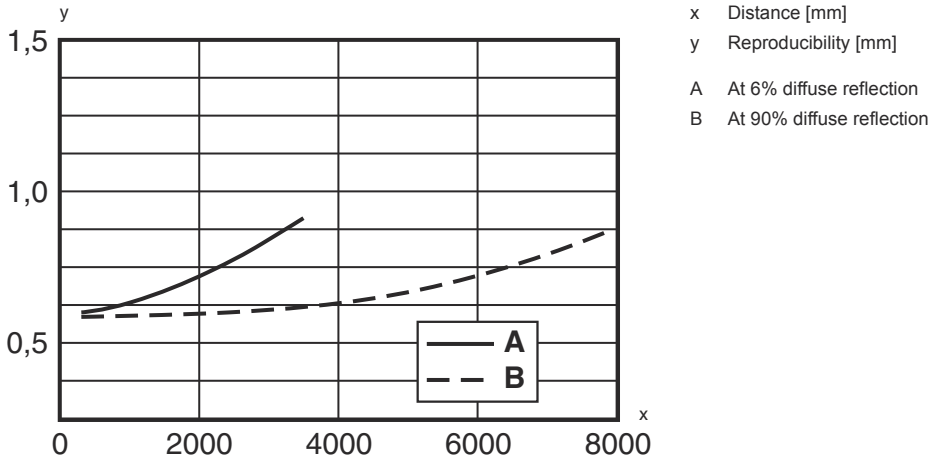


Typical reproducibility: "Standard" measure mode

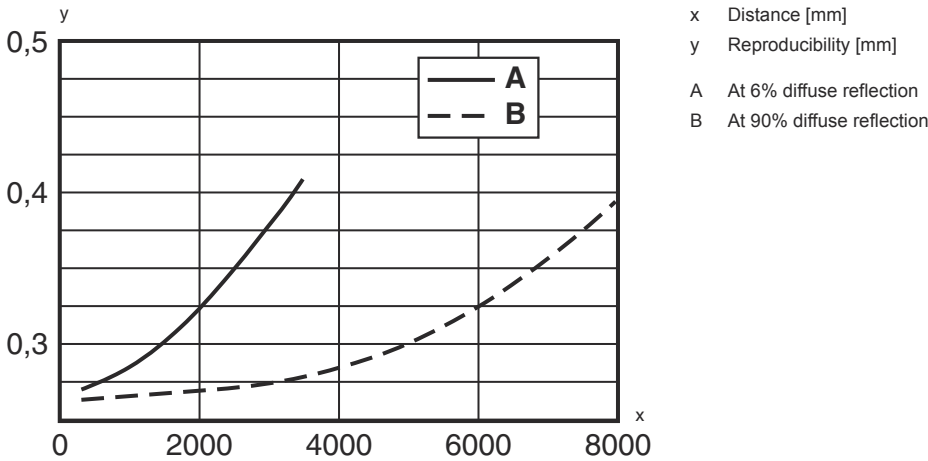


## Diagrams

### Typical reproducibility: "Precision" measure mode



### Typical reproducibility: "High precision" measure mode



## Operation and display

| LED   | Display                                      | Meaning               |
|-------|--|-----------------------|
| 1 PWR | Green, continuous light                      | Operational readiness |
|       | Red, continuous light                        | Sensor error          |
|       | Orange, continuous light                     | No function reserve   |
|       | Off  | No supply voltage     |
| 2 Q1  | Yellow, continuous light                     | Object detected       |
| 3 Q2  | Yellow, continuous light                     | Object detected       |
| 4     | Yellow, continuous light (behind lens cover) | Object detected       |
| 5     | Yellow, continuous light (behind lens cover) | Object detected       |

## Part number code

Part designation: ODS10XX-YYY.Z/ABC,DDD-EEE

|       |  |
|-------|--|
| ODS10 | <b>Operating principle</b><br>ODS10: Optical distance sensor |
| XX    | <b>Light source</b><br>L1: laser class 1                     |

## Part number code

|                |  |
|----------------|--|
| <b>YYY</b>     | <b>Measurement range</b><br>25M: Extended measurement range 50 ... 25000 mm, measurement on HighGain tape REF 7-A-100x100  |
| <b>Z</b>       | <b>Equipment</b><br>8: OLED display and membrane keyboard for configuration  |
| <b>A</b>       | <b>Assignment pin 4</b><br>L: IO-Link (with dual channel, also push/pull switching output)   |
| <b>B</b>       | <b>Assignment pin 2</b><br>A: Analog output current (factory setting) and voltage<br>6: push-pull switching output, PNP light switching, NPN dark switching  |
| <b>C</b>       | <b>Assignment pin 5</b><br>K: Multifunction input (factory setting: deactivation input)<br>6: push-pull switching output, PNP light switching, NPN dark switching<br>X: pin not used   |
| <b>DDD-EEE</b> | <b>Electrical connection</b><br>M12: M12 connector, 5-pin<br>200-M12: Cable, length 200 mm with M12 connector, 5-pin<br>YYYY: Cable, length YYYY mm with wire-end sleeves, 5-wire (no information = standard length 2000 mm) |

### Note



A list with all available device types can be found on the Leuze website at [www.leuze.com](http://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.



### For UL applications:



- ⌘ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).




### WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT









- The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of **laser class 1** and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.
- ⌘ 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.

## Accessories

### Connection technology - Connection unit

|  | Part no. | Designation           | Article        | Description   |
|--|----------|-----------------------|----------------|---|
|  | 50144900 | MD 798i-11-82/L5-2222 | IO-Link master | Type: IO-Link master<br>Current consumption, max.: 11,000 mA<br>Switching outputs for each sensor connection: 1 Piece(s)<br>Switching output: Transistor, PNP<br>Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET<br>Connections: 12 Piece(s)<br>Sensor connections: 8 Piece(s)<br>Connections for voltage supply: 2 Piece(s)<br>Interface connections: 2 Piece(s)<br>Degree of protection: IP 67, IP 65, IP 69K |


### Connection technology - Connection cables

|  | Part no. | Designation        | Article          | Description  |
|--|----------|--------------------|------------------|--|
|    | 50133855 | KD S-M12-5A-V1-020 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 2.000 mm<br>Sheathing material: PVC |
|   | 50133856 | KD S-M12-5A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 5.000 mm<br>Sheathing material: PVC |
|  | 50132077 | KD U-M12-5A-V1-020 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2.000 mm<br>Sheathing material: PVC  |
|  | 50132079 | KD U-M12-5A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC  |
|  | 50133842 | KD U-M12-5W-V1-020 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2.000 mm<br>Sheathing material: PVC |
|  | 50133802 | KD U-M12-5W-V1-050 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC |




## Accessories

### Mounting technology - Mounting brackets

|   | Part no. | Designation | Article          | Description   |
|---|----------|-------------|------------------|---|
|  | 50118543 | BT 300M.5   | Mounting bracket | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type, Suited for M4 screws<br>Type of mounting device: Adjustable<br>Material: Stainless steel |

### 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.