

Technical data sheet Optical distance sensor

Part no.: 50129528

ODS10L1.8/L6X-M12

Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Notes
- Accessories



For illustration purposes only



CDRH  IO-Link

Technical data

Basic data

| | |
|-------------------------|--|
| Series | 10 |
| Application | Collision protection for transport vehicles 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 Fast: response time = 15 ms/output time = 3.4 ms Individual measure modes, see diagram Individual: response time = 3.4 ... 1020 ms/output time = 3.4 ms Outlier suppression: response time = 17 ... 1020 ms/output time = 17 ... 1020 ms Precision: response time = 200 ms/output time = 3.4 ms 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 Short circuit protected 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 digital switching outputs 2 Piece(s)

Switching outputs

| | |
|-------------------|---|
| Type | Digital switching output |
| Voltage type | DC |
| Switching voltage | high: $\geq(U_B - 2V)$ 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 2 |
| 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 Voltage supply |
| Type of connection | Connector, Turning, 90° |
| Thread size | M12 |
| Type | Male |
| Material | Plastic |
| No. of pins | 5 -pin |
| Encoding | A-coded |

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 | 70 g |
| Housing color | Red |
| Type of fastening | Through-hole mounting Via optional mounting device |

Operation and display

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

Technical data

Environmental data

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

Certifications

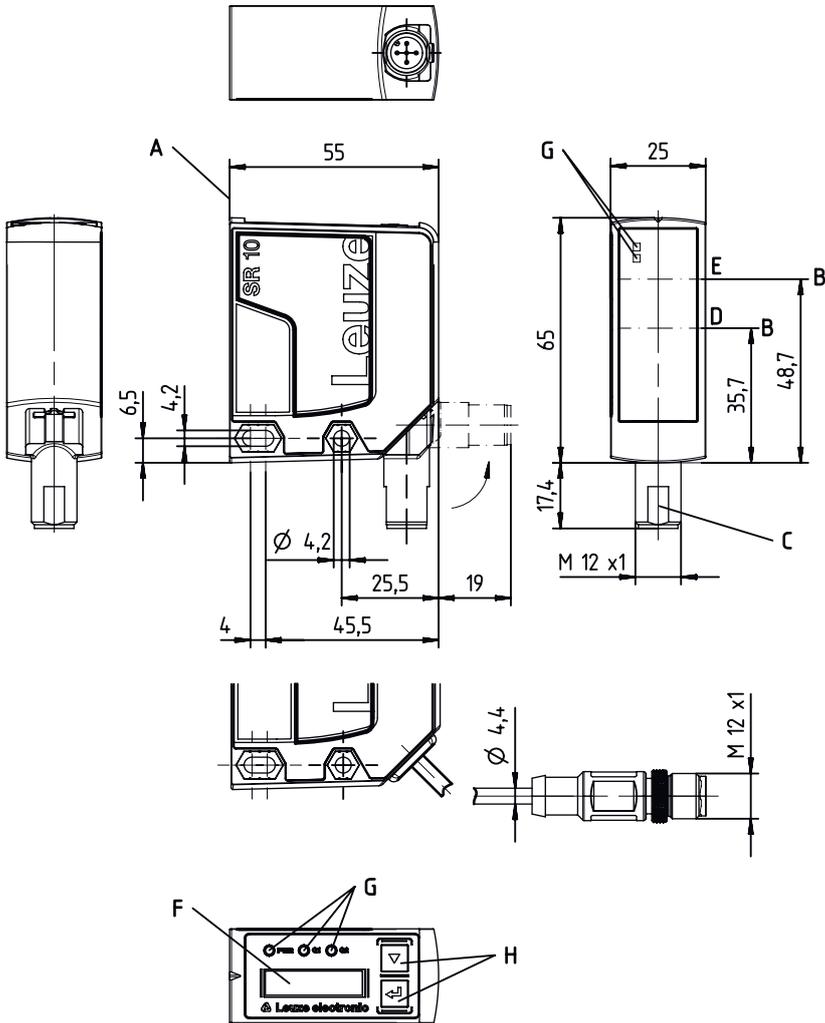
| | |
|----------------------|---------|
| Degree of protection | IP 67 |
| Protection class | III |
| Approvals | c UL US |

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 |
| ECLASS 15.0 | 27270916 |
| ECLASS 16.0 | 27270916 |
| ETIM 5.0 | EC001825 |
| ETIM 6.0 | EC001825 |
| ETIM 7.0 | EC001825 |
| ETIM 8.0 | EC001825 |
| ETIM 9.0 | EC001825 |
| ETIM 10.0 | EC001825 |

Dimensioned drawings

All dimensions in millimeters



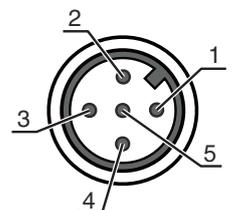
Electrical connection

Connection 1

| | |
|--------------------|------------------------------|
| Function | Signal OUT Voltage supply |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Plastic |
| No. of pins | 5 -pin |
| Encoding | A-coded |

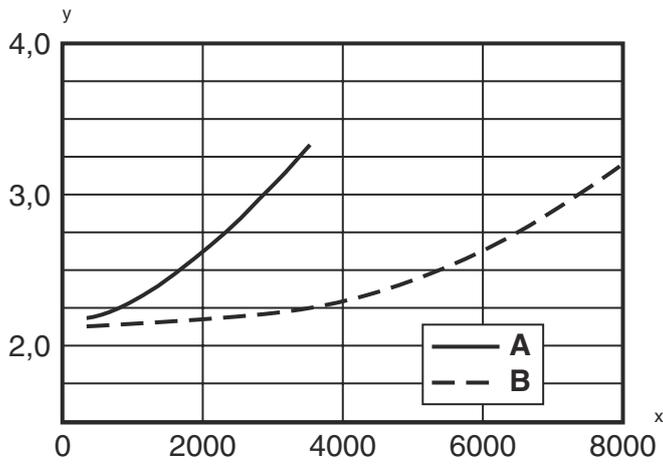
Pin Pin assignment

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



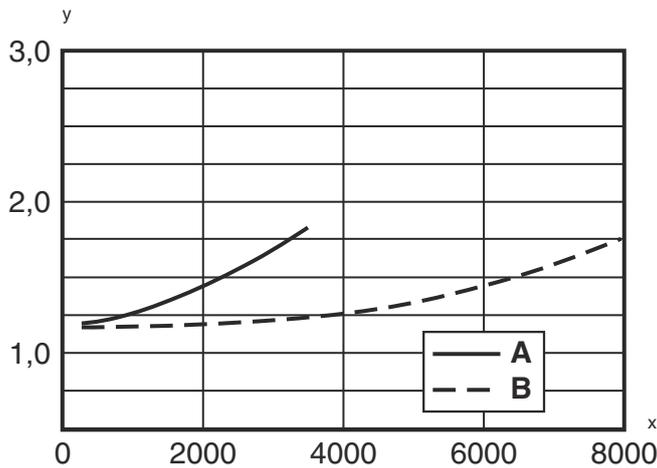
Diagrams

Typical reproducibility: "Fast" measure mode



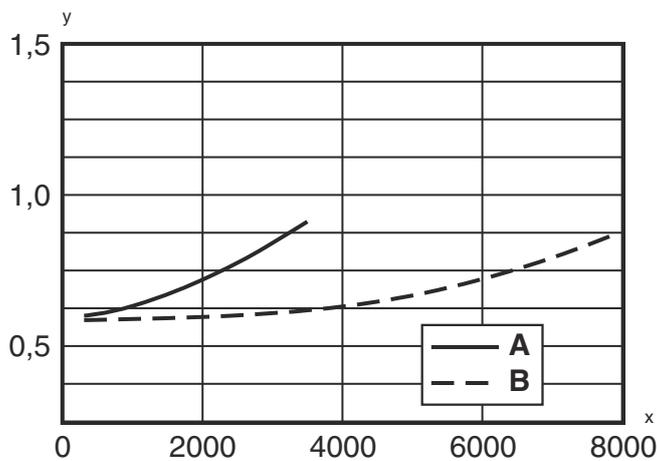
x Distance [mm]
 y Reproducibility [mm]
 A At 6% diffuse reflection
 B At 90% diffuse reflection

Typical reproducibility: "Standard" measure mode



x Distance [mm]
 y Reproducibility [mm]
 A At 6% diffuse reflection
 B At 90% diffuse reflection

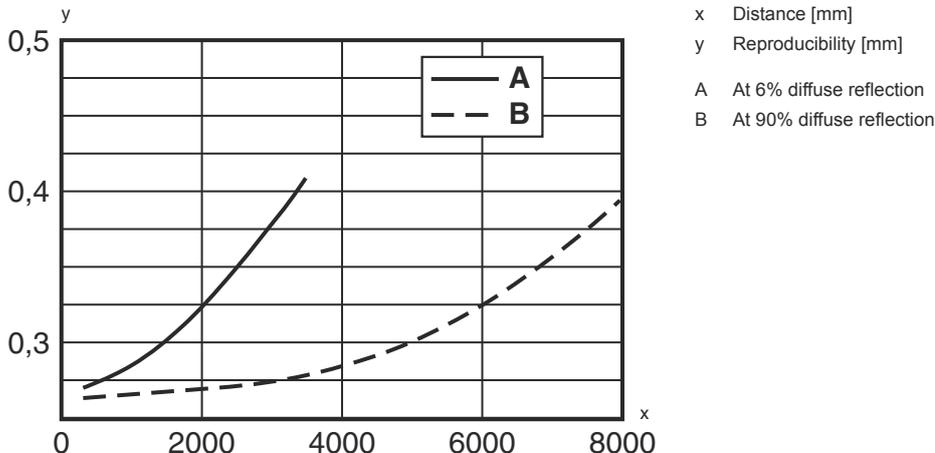
Typical reproducibility: "Precision" measure mode



x Distance [mm]
 y Reproducibility [mm]
 A At 6% diffuse reflection
 B At 90% diffuse reflection

Diagrams

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 | Operating principle ODS10: Optical distance sensor |
| XX | Light source L1: laser class 1 |
| YYY | Measurement range 25M: Extended measurement range 50 ... 25000mm, measurement on HighGain tape REF 7-A-100x100 |
| Z | Equipment 8: OLED display and membrane keyboard for configuration |
| A | Assignment pin 4 L: IO-Link (with dual channel, also push/pull switching output) |
| B | Assignment pin 2 A: Analog output current (factory setting) and voltage 6: push-pull switching output, PNP light switching, NPN dark switching |

Part number code

| | |
|--|--|
| C | Assignment pin 5 K: Multifunction input (factory setting: deactivation input) 6: push-pull switching output, PNP light switching, NPN dark switching X: pin not used |
| DDD-EEE | Electrical connection M12: M12 connector, 5-pin 200-M12: Cable, length 200 mm with M12 connector, 5-pin 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 . |

Notes

| | |
|--|---|
|  Observe intended use! | |
|  | <ul style="list-style-type: none"> ⌘ 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: | |
|  | <ul style="list-style-type: none"> ⌘ 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 | |
|  | <p>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.</p> <ul style="list-style-type: none"> ⌘ 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 | Current consumption, max.: 11,000 mA Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET Connections: 12 Piece(s) Sensor connections: 8 Piece(s) Degree of protection: IP 67, IP 65, IP 69K |

Accessories

Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|---|----------|--------------------|------------------|--|
|  | 50132077 | KD U-M12-5A-V1-020 | Connection cable | Application: Chemical resistant Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC |
|  | 50132079 | KD U-M12-5A-V1-050 | Connection cable | Application: Chemical resistant Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC |

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, Suited for M4 screws Type of mounting device: Adjustable Material: Stainless steel |

Mounting technology - Rod mounts

| | Part no. | Designation | Article | Description |
|---|----------|--------------|-----------------|---|
|  | 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, Suited for M4 screws Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal |

Configuration devices

| | Part no. | Designation | Article | Description |
|--|----------|------------------------------|-----------------|--|
|  | 50121098 | SET MD12-US2-IL1.1 + Zub. | Diagnostics set | Supply voltage: DC Interface: USB Connections: 2 Piece(s) Degree of protection: IP 20 |

Note



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