

## Technical data sheet

### Distance diffuse sensor with background suppression

Part no.: 50148589

ODT25B/L6X.32-2500-S12

#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Notes
- Further information
- Accessories



For illustration purposes only



## Technical data

### Basic data

|                     |   |
|---------------------|---|
| Series              | 25B   |
| Operating principle | Distance diffuse sensor with background suppression |

### Special version

|                 |   |
|-----------------|---|
| Special version | 2 independent switching outputs<br>Measurement value output |
|-----------------|---|

### Optical data

|                                  |   |
|----------------------------------|---|
| Black-white error                | ± 50 mm (2 ... 90 % diffuse reflection)     |
| Operating range                  | 0.05 ... 2.5 m                              |
| Operating range                  | Guaranteed operating range                  |
| Operating range limit, white 90% | 0.05 ... 3 m                                |
| Adjustment range                 | 150 ... 3,000 mm, At 90% diffuse reflection |
| Beam path                        | Focused                                     |
| Light source                     | LED, Infrared                               |
| Wavelength                       | 850 nm                                      |
| Transmitted-signal shape         | Pulsed                                      |
| LED group                        | Exempt group (in acc. with EN 62471)        |
| Type of light spot geometry      | square                                      |

### Measurement data

|  |   |
|--|---|
| Measurement range                      | 50 ... 3,000 mm   |
| Resolution                             | 1.0 mm with active average value filter   |
| Accuracy                               | -100 ... 100 mm   |
| Reproducibility (1 sigma)              | -15 ... 15 mm, For measurement range 50 to 2500 mm, depending on diffuse reflectance and object distance, at 20°C after 20 min. warmup time, measurement object ≥ 50x50 mm <sup>2</sup> , with average value filter 10 (factory settings) |
| Measurement value output               | via IO-Link   |
| Temperature drift                      | -13 ... 13 mm/K   |
| Optical distance measurement principle | Time of flight  |

### Electrical data

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

### Performance data

|                                |  |
|--------------------------------|--|
| Supply voltage $U_B$           | 18 ... 30 V, DC, Incl. residual ripple |
| Residual ripple                | 0 ... 15 %, From $U_B$                 |
| Open-circuit current           | 0 ... 32 mA                            |
| Switching hysteresis           | 30 mm, Adjustable                      |
| Switching hysteresis (reserve) | 30 mm, Adjustable                      |

### Outputs

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

### Switching outputs

|                         |   |
|-------------------------|---|
| Voltage type            | DC                                      |
| Switching current, max. | 50 mA                                   |
| 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) |

### Switching output 2

|                     |  |
|---------------------|--|
| Assignment          | Connection 1, pin 2                        |
| Switching element   | Transistor, Push-pull                      |
| Switching principle | Light switching (PNP)/dark switching (NPN) |

### Time behavior

|                     |   |
|---------------------|---|
| Switching frequency | 2 ... 30 Hz, depending on diffuse reflectance |
| Response time       | 70 ms, depending on diffuse reflectance       |
| Readiness delay     | 300 ms  |

### Interface

|                  |                      |
|------------------|----------------------|
| Type             | IO-Link              |
| IO-Link          |                      |
| COM mode         | COM2                 |
| Profile          | Smart sensor profile |
| Min. cycle time  | COM2 = 4 ms          |
| Frame type       | 2.V                  |
| Specification    | V1.1                 |
| Device ID        | 2149 (0x000865)      |
| SIO-mode support | Yes                  |

### Connection

#### Connection 1

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

## Technical data

### Mechanical data

|                       |   |
|-----------------------|---|
| Dimension (W x H x L) | 15 mm x 38.9 mm x 28.7 mm                             |
| Housing material      | Plastic   |
| Plastic housing       | PC-ABS  |
| Lens cover material   | Plastic / PMMA  |
| Net weight            | 15 g  |
| Housing color         | Red   |
| Type of fastening     | Through-hole mounting<br>Via optional mounting device |

### Operation and display

|                                     |  |
|-------------------------------------|--|
| Type of display                     | LED                                      |
| Operational controls                | Teach button                             |
| Function of the operational control | Light/dark switching<br>Range adjustment |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -30 ... 50 °C |
| Ambient temperature, storage   | -40 ... 60 °C |

### Certifications

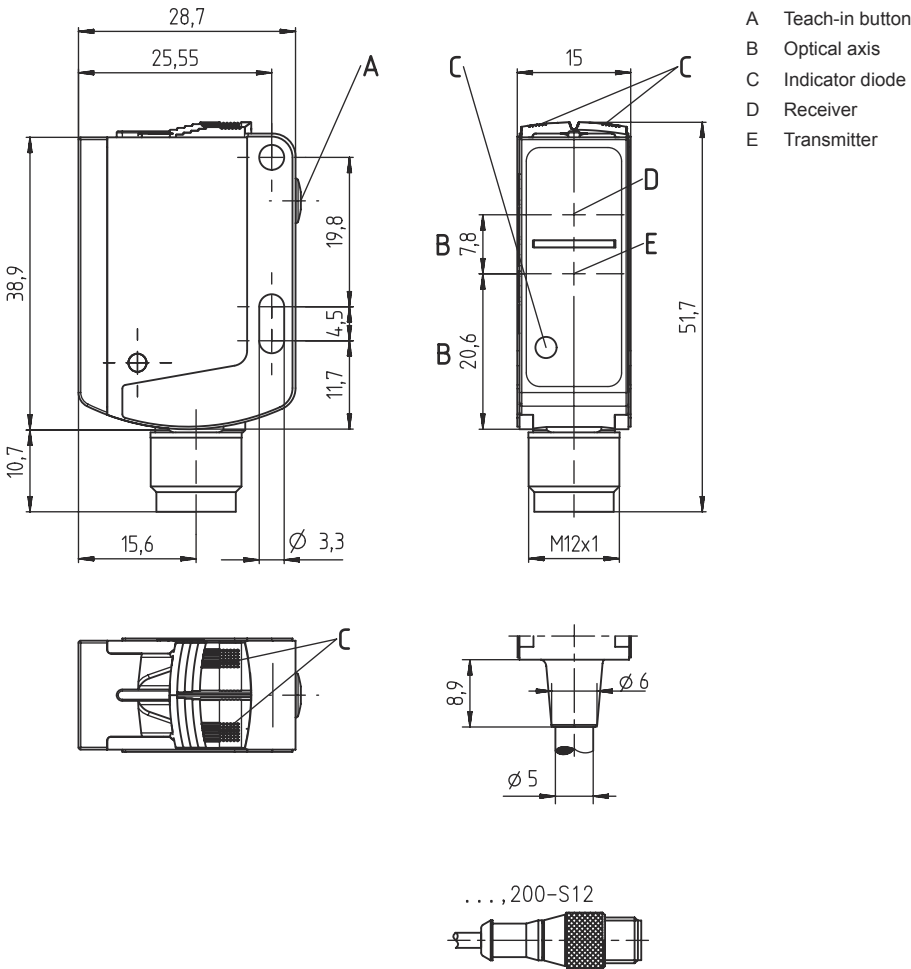
|                      |                |
|----------------------|----------------|
| Degree of protection | IP 66<br>IP 67 |
| Protection class     | III            |
| Certifications       | c UL US        |
| Standards applied    | IEC 60947-5-2  |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270904 |
| ECLASS 8.0            | 27270904 |
| ECLASS 9.0            | 27270904 |
| ECLASS 10.0           | 27270904 |
| ECLASS 11.0           | 27270904 |
| ECLASS 12.0           | 27270903 |
| ECLASS 13.0           | 27270903 |
| ETIM 5.0              | EC002719 |
| ETIM 6.0              | EC002719 |
| ETIM 7.0              | EC002719 |
| ETIM 8.0              | EC002719 |

# Dimensioned drawings

All dimensions in millimeters

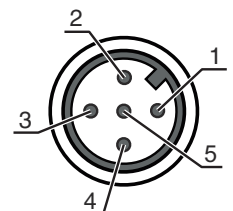


## Electrical connection

### Connection 1

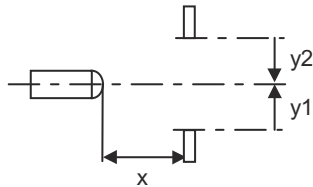
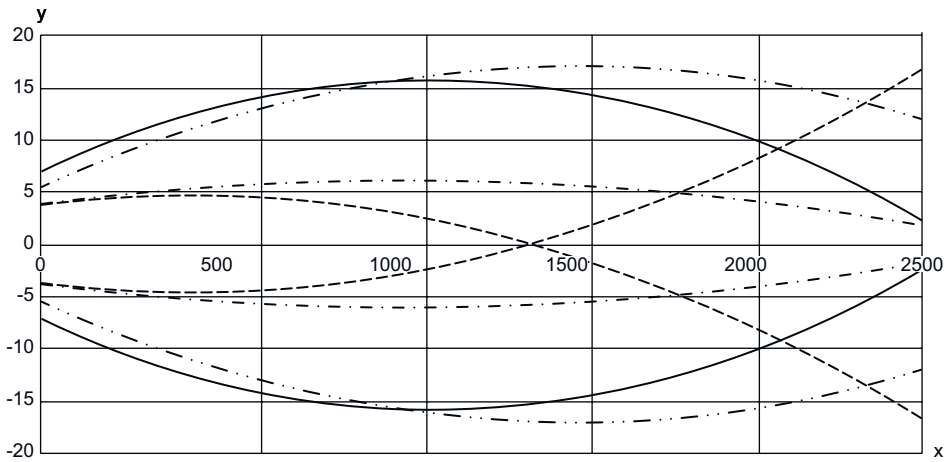
|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M12            |
| Type               | Male           |
| Material          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

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



# Diagrams

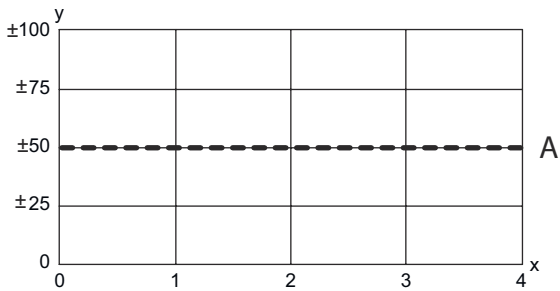
## Typ. response behavior



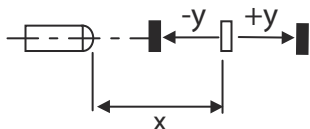
x Misalignment [mm]  
y Distance [mm]

A Object 90%, background 90%      C Object 90%, background 4%  
B Object 4%, background 90%      D Object 4%, background 4%

## Typ. black/white behavior



x Operating range [m]  
y Typ. range change [mm], reference: white 90%  
A 4 ... 90% diffuse reflectance




## Operation and display


| LED | Display                  | Meaning                               |
|-----|--------------------------|---------------------------------------|
| 1   | Yellow, continuous light | Object detected (switching output Q1) |
| 2   | Yellow, continuous light | Object detected (switching output Q2) |
|     | Green, continuous light  | Operational readiness                 |

## Operation and display


| LED | Display                                      | Meaning                                      |
|-----|--|--|
| 3   | Orange, continuous light (behind lens cover) | Object detected (switching output Q1)        |
|     | Blue, continuous light (behind lens cover)   | Object detected (switching output Q2)        |
|     | White, continuous light (behind lens cover)  | Object detected (switching output Q1 and Q2) |

## Notes

 **Observe intended use!**

|  |   |
|--|---|
|  | <ul style="list-style-type: none"> <li>⌘ This product is not a safety sensor and is not intended as personnel protection.</li> <li>⌘ The product may only be put into operation by competent persons.</li> <li>⌘ Only use the product in accordance with its intended use.</li> </ul> |
|--|---|

**For UL applications:**



|  |   |
|--|---|
|  | <ul style="list-style-type: none"> <li>⌘ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).</li> <li>⌘ These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/ CYJV7 or PVVA/PVVA7)</li> </ul> |
|--|---|

## Further information

- Light source: Average life expectancy 100,000h at an ambient temperature of 25 °C
- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C



## Accessories

### Connection technology - Connection cables



|  | Part no. | Designation        | Article          | Description  |
|--|----------|--------------------|------------------|--|
|  | 50130652 | KD U-M12-4A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC  |
|  | 50130690 | KD U-M12-4W-V1-050 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -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  |
|---|----------|---------------|---------------------|--|
|   | 50124651 | BT 205M-10SET | Mounting device set | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>Material: Metal |
|  | 50040269 | BT 25         | Mounting device     | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>Material: Metal |

### Mounting technology - Rod mounts

|   | Part no. | Designation  | Article         | Description  |
|---|----------|--------------|-----------------|--|
|   | 50117829 | BTP 200M-D12 | Mounting system | Design of mounting device: Protection hood<br>Fastening, at system: For 12 mm rod<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal   |
|  | 50117255 | BTU 200M-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 M3 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.