

## Technical data sheet

### Distance diffuse sensor with background suppression

Part no.: 50155326

ODT5BIL1-2000.XV3/L6-M8



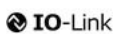
For illustration purposes only

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CDRH



## Technical data

### Basic data

|                         |                                                     |
|-------------------------|-----------------------------------------------------|
| Series                  | 5B                                                  |
| Operating principle     | Distance diffuse sensor with background suppression |
| Type of scanning system | Against object                                      |

### Special version

|                 |                                 |
|-----------------|---------------------------------|
| Special version | 2 independent switching outputs |
|                 | Measurement value output        |
|                 | Speed version                   |

### Optical data

|                             |                                                |
|-----------------------------|------------------------------------------------|
| Black-white error           | -15 ... 30 mm                                  |
| Operating range             | 0.03 ... 2 m (guaranteed operating range)      |
| Adjustment range            | 20 ... 2,500 mm                                |
| Beam path                   | Focused                                        |
| Light source                | Laser, Infrared                                |
| Wavelength                  | 940 nm                                         |
| Laser class                 | 1, IEC 60825-1:2014 / EN 60825-1:2014+A11:2021 |
| Transmitted-signal shape    | Pulsed                                         |
| Type of light spot geometry | Round                                          |
| Shift angle                 | Typ. $\pm 1.5^\circ$                           |

### Measurement data

|                                        |                |
|----------------------------------------|----------------|
| Measurement range                      | 0 ... 2,500 mm |
| Resolution                             | 1.0 mm         |
| Accuracy                               | -40 ... 20 mm  |
| Reproducibility (1 sigma)              | 0 ... 12 mm    |
| Measurement value output               | via IO-Link    |
| Optical distance measurement principle | Time of flight |

### Electrical data

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

### Performance data

|                      |                                        |
|----------------------|----------------------------------------|
| Supply voltage $U_B$ | 10 ... 30 V, DC, Incl. residual ripple |
| Residual ripple      | 0 ... 15 %, From $U_B$                 |
| Open-circuit current | 0 ... 35 mA                            |

### Outputs

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

### Switching outputs

|                         |                                            |
|-------------------------|--------------------------------------------|
| Type                    | Digital switching output                   |
| Voltage type            | DC                                         |
| Switching current, max. | 100 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 | 100 Hz |
| Response time       | 5 ms   |
| Readiness delay     | 300 ms |

### Interface

|                  |                      |
|------------------|----------------------|
| Type             | IO-Link              |
| IO-Link          |                      |
| COM mode         | COM3                 |
| Profile          | Smart sensor profile |
| Min. cycle time  | COM3 = 0.6 ms        |
| Frame type       | 2.V                  |
| Specification    | V1.1                 |
| Device ID        | 2252                 |
| SIO-mode support | Yes                  |

### Connection

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

### Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal IN      |
|                    | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M8             |
| Type               | Male           |
| Material           | Plastic        |
| No. of pins        | 4 -pin         |

### Mechanical data

|                                                |                              |
|------------------------------------------------|------------------------------|
| Dimension (W x H x L)                          | 11 mm x 32.4 mm x 20 mm      |
| Housing material                               | Plastic                      |
| Plastic housing                                | PC-ABS                       |
| Lens cover material                            | Plastic                      |
| Net weight                                     | 18 g                         |
| Housing color                                  | Red                          |
| Type of fastening                              | Through-hole mounting        |
|                                                | Via optional mounting device |
| Recommended tightening torque for M3 fastening | 0.9 N·m                      |
| Compatibility of materials                     | ECOLAB                       |

### Operation and display

|                                     |                      |
|-------------------------------------|----------------------|
| Type of display                     | LED                  |
| Number of LEDs                      | 2 Piece(s)           |
| Operational controls                | Teach button         |
| Function of the operational control | Light/dark switching |
|                                     | Range adjustment     |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -30 ... 55 °C |
| Ambient temperature, storage   | -30 ... 70 °C |

## Technical data

### Certifications

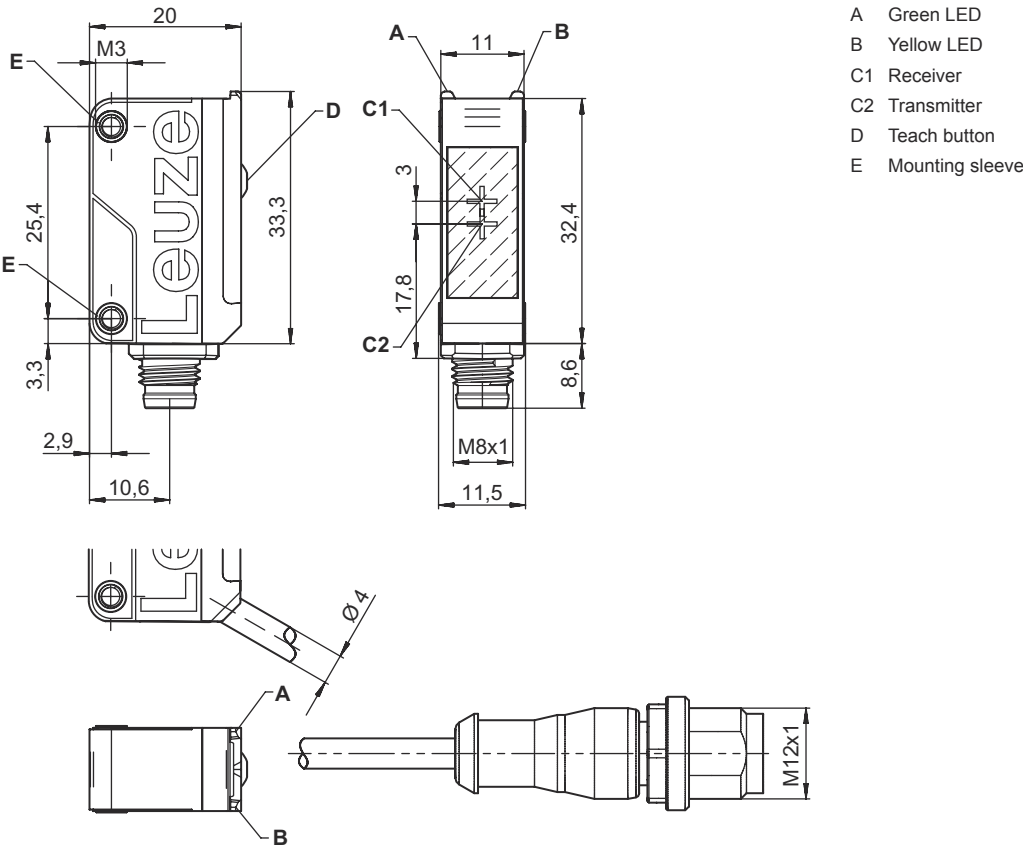
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Approvals            | c UL US       |
| Standards applied    | IEC 60947-5-2 |

### 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 |
| ECLASS 14.0           | 27270903 |
| ECLASS 15.0           | 27270903 |
| ECLASS 16.0           | 27270903 |
| ETIM 5.0              | EC002719 |
| ETIM 6.0              | EC002719 |
| ETIM 7.0              | EC002719 |
| ETIM 8.0              | EC002719 |
| ETIM 9.0              | EC002719 |
| ETIM 10.0             | EC002719 |
| UNSPSC 26.08          | 39121528 |

Dimensioned drawings

All dimensions in millimeters

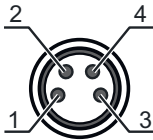


Electrical connection

Connection 1

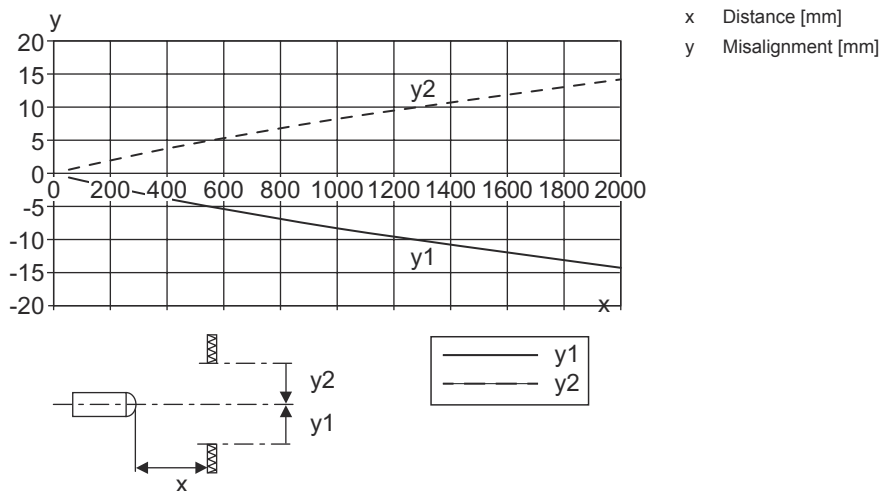
|                    |                |
|--------------------|----------------|
| Function           | Signal IN      |
|                    | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M8             |
| Type               | Male           |
| Material           | Plastic        |
| No. of pins        | 4 -pin         |

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

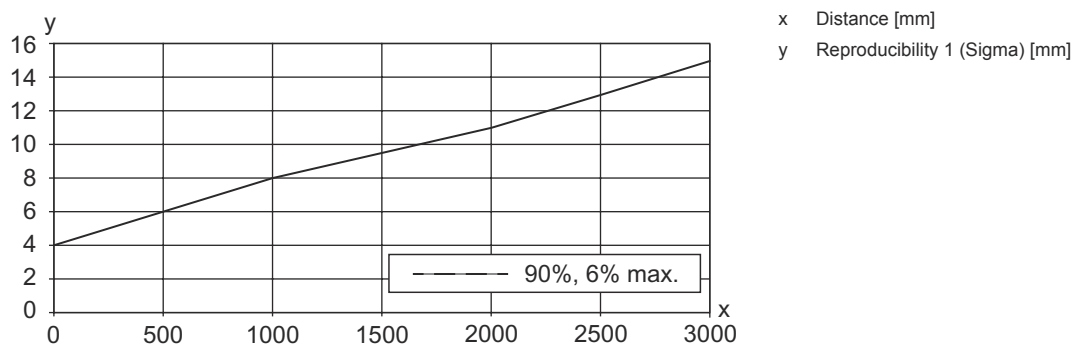


## Diagrams

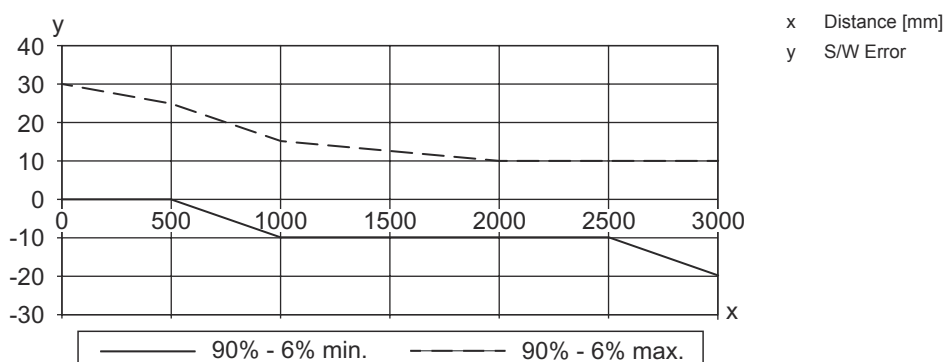
### Typ. response behavior (white 90 %)



### Typical reproducibility (1 Sigma / 25°C)

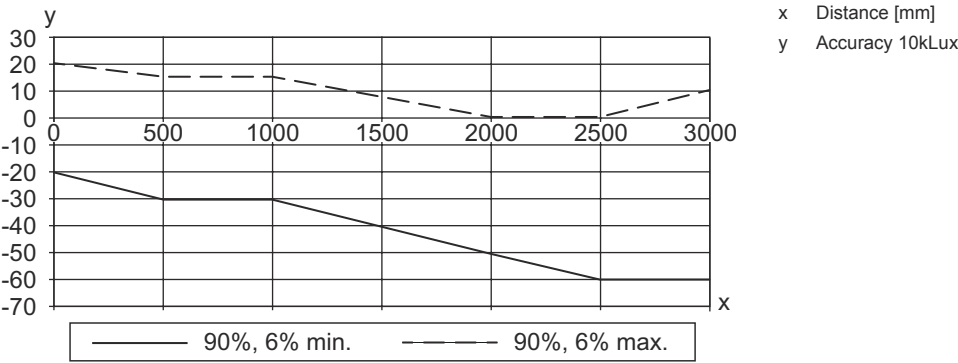


### S/W Error Diagram



Diagrams

Accuracy (absolute measurement error)



Operation and display

| LED | Display                  | Meaning         |
|-----|--------------------------|-----------------|
| 1   | Green, continuous light  | Ready           |
| 2   | Yellow, continuous light | Object detected |

Part number code

Part designation: ODT5B D-E.FF/GG.HH-JJ

|       |                                                                                                                                                                                                           |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ODT5B | <b>Operating principle / construction</b><br>ODT5B: Distance diffuse sensor with background suppression                                                                                                   |
| D     | <b>Light type</b><br>L1: Laser Class 1 (red light)<br>IL1: Laser Class 1 (infrared light)                                                                                                                 |
| E     | <b>Preset range (optional)</b><br>xxxx: maximum operating range [mm]                                                                                                                                      |
| FF    | <b>Operating range adjustment</b><br>n/a: standard<br>XV: Speed version<br>3: teach-in via button                                                                                                         |
| GG    | <b>Switching output / Function</b><br>n/a: standard<br>L: IO-Link interface (SIO mode: PNP light switching, NPN dark switching)<br>6: push-pull switching output, PNP light switching, NPN dark switching |
| HH    | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm, 4-wire<br>M8: M8 connector, 4-pin (plug)                                                                                             |

Note

|  |                                                                                                                                |
|--|--------------------------------------------------------------------------------------------------------------------------------|
|  | A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a> . |
|--|--------------------------------------------------------------------------------------------------------------------------------|

## 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).
- ⚠ 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)



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



- The device satisfies the requirements of IEC 60825-1:2014 / EN 60825-1:2014+A11:2021 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.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

## Further information

- Sum of the output currents for both outputs 100 mA
- When starting the sensor below 0°C, a warmup time of one minute is required until the first teach-in
- All values in the 'Optical Data' and 'Measurement Data' sections of the data sheet refer to an ambient light level of 10,000 lx (sunlight)

## Accessories

### Connection technology - Connection cables

|  | Part no. | Designation       | Article          | Description                                                                                                                                                                                                 |
|--|----------|-------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130850 | KD U-M8-4A-V1-050 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC  |
|  | 50130871 | KD U-M8-4W-V1-050 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M8, Angled, Female, 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                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|----------|---------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50118542 | BT 200M.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 M3 screws<br>Type of mounting device: Adjustable<br>Material: Stainless steel |
|   | 50124651 | BT 205M-10SET | Mounting device set | Contains: 10x<br>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 | Contains: 2x M3 x 16 screw, 2 M3 x 20 screws, 2x position washers<br>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.