# Technical data sheet

## Dynamic reference diffuse sensor

Part no.: 50141903

## DRT25C.3/LT-200-M12



For Illustration purposes only

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# Technical data

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## Basic data

| | |
|---|---|
| **Series** | 25C |
| **Operating principle** | Reference teach on background |

## Special version

| | |
|---|---|
| **Special version** | Teach input |

## Optical data

| | |
|---|---|
| **Operating range** | 0.05 ... 0.2 m, Max. distance to reference surface |
| **Adjustment range** | 50 ... 200 mm |
| **Light source** | LED, Red |
| **Wavelength** | 645 nm |
| **Transmitted-signal shape** | Pulsed |
| **LED group** | Exempt group (in acc. with EN 62471) |

## Electrical data

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

### Performance data

| | |
|---|---|
| **Supply voltage $U_B$** | 12 ... 30 V, DC, Incl. residual ripple |
| **Residual ripple** | 0 ... 15 %, From $U_B$ |
| **Open-circuit current** | 0 ... 40 mA |

### Inputs

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

#### Teach inputs

| | |
|---|---|
| **Type** | Teach input |
| **Voltage type** | DC |
| **Switching voltage** | high: ≥10V |
| | low: ≤ 2 V |
| **Input resistance** | 22,000 Ω |

##### Teach input 1

| | |
|---|---|
| **Assignment** | Connection 1, pin 2 |
| **Function** | Keyboard lockout |
| | Setting the teach levels |
| **Active switching state** | High |

### Outputs

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

#### Switching outputs

| | |
|---|---|
| **Type** | Digital switching output |
| **Voltage type** | DC |
| **Switching current, max.** | 100 mA |
| **Switching voltage** | high: ≥($U_B$-2.5V) |
| | low: ≤ 2.5 V |

##### Switching output 1

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

## Time behavior

| | |
|---|---|
| **Switching frequency** | 750 Hz, (Teach level 1: 500 Hz) |
| **Response time** | 0.66 ms |
| **Readiness delay** | 300 ms |

## Interface

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

### IO-Link

| | |
|---|---|
| **COM mode** | COM3 |
| **Min. cycle time** | COM3 = 0.4 ms |
| **Frame type** | 2.5 |
| **Specification** | V1.1 |
| **Device ID** | 2142 |
| **SIO-mode support** | Yes |
| **Process data IN** | 8 bit |
| **Process data OUT** | 8 bit |
| **Dual Channel** | No |

## Connection

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

### Connection 1

| | |
|---|---|
| **Function** | Signal IN |
| | Signal OUT |
| | Voltage supply |
| **Type of connection** | Cable with connector |
| **Cable length** | 200 mm |
| **Sheathing material** | PUR |
| **Cable color** | Black |
| **Number of conductors** | 4 -wire |
| **Wire cross section** | 0.2 mm² |
| **Thread size** | M12 |
| **Type** | Male |
| **Material** | PUR |
| **No. of pins** | 4 -pin |
| **Encoding** | A-coded |

## Mechanical data

| | |
|---|---|
| **Dimension (W x H x L)** | 15 mm x 42.7 mm x 30 mm |
| **Housing material** | Plastic |
| **Plastic housing** | ABS |
| **Lens cover material** | Plastic |
| **Net weight** | 33 g |
| **Housing color** | Red |
| **Type of fastening** | Through-hole mounting with M4 thread |
| | Via optional mounting device |
| **Recommended tightening torque for M3 fastening** | 0.9 N·m |
| **Recommended tightening torque for M4 fastening** | 1.4 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** | Teach-in on reference surface |

## Environmental data

| | |
|---|---|
| **Ambient temperature, operation** | -10 ... 50 °C, Temperature compensation ±15°C |
| **Ambient temperature, storage** | -40 ... 70 °C |

# Technical data

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## Certifications

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

## Classification

| Customs tariff number | 85365019 |
|---|---|
| ECLASS 5.1.4 | 27270903 |
| ECLASS 8.0 | 27270903 |
| ECLASS 9.0 | 27270903 |
| ECLASS 10.0 | 27270903 |
| ECLASS 11.0 | 27270903 |
| ECLASS 12.0 | 27270903 |
| ECLASS 13.0 | 27270903 |
| ECLASS 14.0 | 27270903 |
| ECLASS 15.0 | 27270903 |
| ECLASS 16.0 | 27270903 |
| ETIM 5.0 | EC001821 |
| ETIM 6.0 | EC001821 |
| ETIM 7.0 | EC001821 |
| ETIM 8.0 | EC001821 |
| ETIM 9.0 | EC001821 |
| ETIM 10.0 | EC001821 |

All dimensions in millimeters

A    Green LED
B    Yellow LED
C    Optical axis
C1   Receiver
C2   Transmitter
D    Range adjustment

# Electrical connection

## Connection 1

| Function | Signal IN |
|---|---|
| | Signal OUT |
| | Voltage supply |
| **Type of connection** | Cable with connector |
| **Cable length** | 200 mm |
| **Sheathing material** | PUR |
| **Cable color** | Black |
| **Number of conductors** | 4 -wire |
| **Wire cross section** | 0.2 mm² |
| **Thread size** | M12 |
| **Type** | Male |
| **Material** | PUR |
| **No. of pins** | 4 -pin |
| **Encoding** | A-coded |

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

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# Operation and display

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

# Part number code

Part designation: **AAA25C d EE-f.GGH/iJ-K**

| | | |
|---|---|---|
| **AAA25C** | **Operating principle / construction**<br>HT25C: Diffuse reflection sensor with background suppression<br>PRK25C: Retro-reflective photoelectric sensor with polarization filter<br>LS25C: Throughbeam photoelectric sensor transmitter<br>LE25C: Throughbeam photoelectric sensor receiver<br>DRT25C: Dynamic reference diffuse sensor | |
| **d** | **Light type**<br>n/a: red light<br>I: infrared light | |
| **EE** | **Light source**<br>n/a: LED<br>PP: Power PinPoint® LED<br>L1: laser class 1<br>L2: laser class 2 | |
| **f** | **Preset range (optional)**<br>n/a: operating range acc. to data sheet<br>xxxF: Preset range [mm] | |
| **GG** | **Equipment**<br>A: Autocollimation principle (single lens)<br>S: small light spot<br>D: Detection of stretch-wrapped objects<br>X: extended model<br>HF: Suppression of HF illumination (LED)<br>XL: Extra long light spot<br>T: autocollimation principle (single lens) for highly transparent bottles without tracking<br>TT: autocollimation principle (single lens) for highly transparent bottles with tracking<br>F: Foreground suppression<br>R: greater operating range<br>SL: Slit diaphragm | |
| **H** | **Operating range adjustment**<br>1: 270° potentiometer<br>2: multiturn potentiometer<br>3: teach-in via button<br>R: greater operating range | |
| **i** | **Switching output/function OUT 1/IN: Pin 4 or black conductor**<br>2: NPN transistor output, light switching<br>N: NPN transistor output, dark switching<br>4: PNP transistor output, light switching<br>P: PNP transistor output, dark switching<br>X: pin not used<br>8: activation input (activation with high signal)<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<br>G: Push-pull switching output, PNP dark switching, NPN light switching | |
| **J** | **Switching output / function OUT 2/IN: pin 2 or white conductor**<br>2: NPN transistor output, light switching<br>N: NPN transistor output, dark switching<br>4: PNP transistor output, light switching<br>P: PNP transistor output, dark switching<br>W: warning output<br>X: pin not used<br>6: push-pull switching output, PNP light switching, NPN dark switching<br>T: teach-in via cable<br>G: Push-pull switching output, PNP dark switching, NPN light switching<br>8: activation input (activation with high signal) | |

# Part number code

| | |
|---|---|
| **K** | **Electrical connection**<br>n/a: cable, standard length 2000 mm, 4-wire<br>200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug)<br>M8: M8 connector, 4-pin (plug)<br>M12: M12 connector, 4-pin (plug)<br>200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)<br>M8.1: Snap-in, M8 connector, 4-pin (plug) |

| 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.<br>✎ The product may only be put into operation by competent persons.<br>✎ Only use the product in accordance with its intended use. |

# Further information

- Light source: Average life expectancy 100,000 h at an ambient temperature of 25 °C

# 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<br>Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET<br>Connections: 12 Piece(s)<br>Sensor connections: 8 Piece(s)<br>Degree of protection: IP 67, IP 65, IP 69K |

## Connection technology - Connection cables

| Part no. | Designation | Article | Description |
|---|---|---|---|
| 50130652 | KD U-M12-4A-V1-050 | Connection cable | Application: Chemical resistant<br>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 |

# Accessories

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| Part no. | Designation | Article | Description |
|---|---|---|---|
| 50130690 | KD U-M12-4W-V1-050 | Connection cable | Application: Chemical resistant<br>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 |

## 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 |
|---|---|---|---|
| 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 |
| 50117252 | BTU 300M-D12 | Mounting system | Contains: 2x M4 x 25 screw, 2x M4 x 20 screw, 4x 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 M4 screws<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal |
| 50142207 | BTU 300M-D12-90 | Rod mounting | Contains: 2 M4 x 8 screws<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 M4 screws<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal |
| 50142208 | BTU D12M-L-200 | Rod | Design of mounting device: Rod<br>Fastening, at system: Clampable<br>Mounting bracket, at device: Clampable<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. |