

# Technical data sheet

## Dynamic reference diffuse sensor

Part no.: 50145970

DRT25C.3R/LT-200-M12

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- Operation and display
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For illustration purposes only



## Technical data

### Basic data

|                     |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| Series              | 25C                                                                                  |
| Operating principle | Reference teach on reference surface (plastic roller chain or plastic link conveyor) |
| Application         | Detection of bottle and can containers                                               |

### Special version

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

### Optical data

|                                  |                                                    |
|----------------------------------|----------------------------------------------------|
| Operating range                  | 0.08 ... 0.4 m, Max. distance to reference surface |
|                                  | Recommended operating range:                       |
| Operating range limit, white 90% | 0.05 ... 0.45 m                                    |
| Minimum object height            | 80 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: $\geq 10V$<br>low: $\leq 2 V$ |
| Input resistance  | 22,000 $\Omega$                     |

#### 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: $\geq (U_B - 2.5V)$<br>low: $\leq 2.5 V$ |

#### 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 | 300 Hz  |
| Response time       | 1.66 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        | 2139          |
| SIO-mode support | Yes           |
| Process data IN  | 8 bit         |
| Process data OUT | 8 bit         |
| Dual Channel     | Yes           |

### 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 mm <sup>2</sup>  |
| 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 |

## Technical data

### Environmental data

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

### Certifications

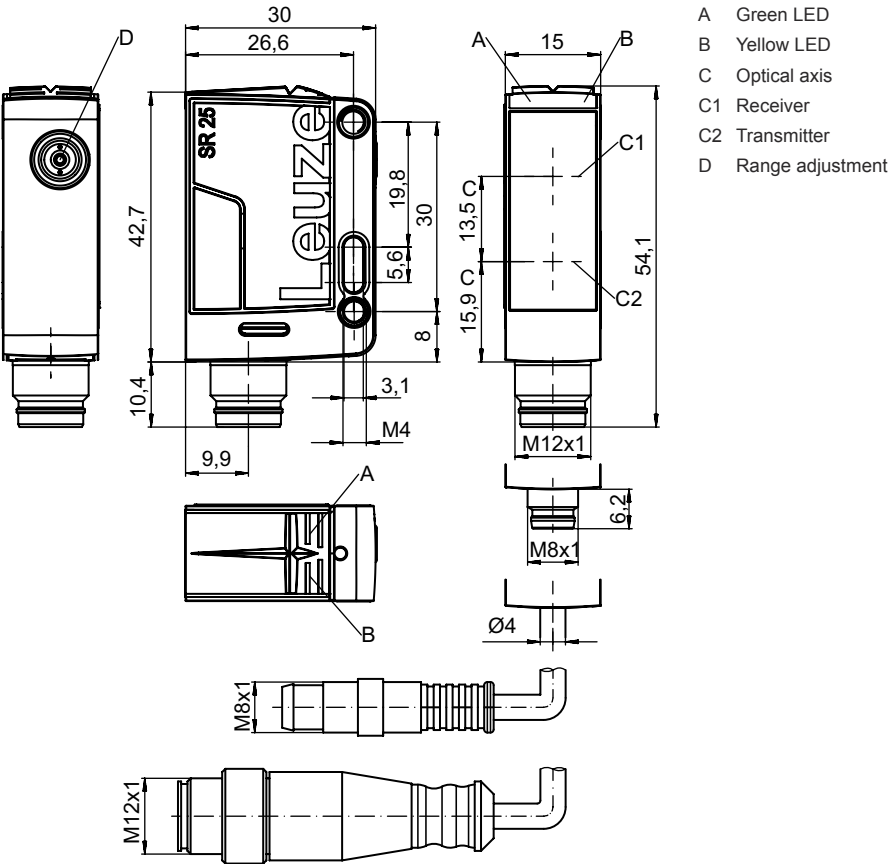
|                      |                 |
|----------------------|-----------------|
| Degree of protection | IP 67<br>IP 69K |
| Protection class     | III             |
| Approvals            | c UL US         |
| Standards applied    | IEC 60947-5-2   |

### 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 |
| ETIM 5.0              | EC001821 |
| ETIM 6.0              | EC001821 |
| ETIM 7.0              | EC001821 |
| ETIM 8.0              | EC001821 |
| ETIM 9.0              | EC001821 |
| ETIM 10.0             | EC001821 |

Dimensioned drawings

All dimensions in millimeters



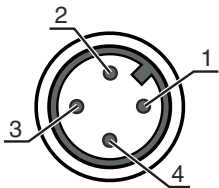
Electrical connection

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 |



# Operation and display

| 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**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA25C</b> | <b>Operating principle / construction</b><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                                                                                                                                                                                                                    |
| <b>d</b>      | <b>Light type</b><br>n/a: red light<br>I: infrared light                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>EE</b>     | <b>Light source</b><br>n/a: LED<br>PP: Power PinPoint® LED<br>L1: laser class 1<br>L2: laser class 2                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>f</b>      | <b>Preset range (optional)</b><br>n/a: operating range acc. to data sheet<br>xxxF: Preset range [mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>GG</b>     | <b>Equipment</b><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                                                     |
| <b>H</b>      | <b>Operating range adjustment</b><br>1: 270° potentiometer<br>2: multiturn potentiometer<br>3: teach-in via button<br>R: greater operating range                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>i</b>      | <b>Switching output/function OUT 1/IN: Pin 4 or black conductor</b><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 |
| <b>J</b>      | <b>Switching output / function OUT 2/IN: pin 2 or white conductor</b><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 | <b>Electrical connection</b><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 <a href="http://www.leuze.com">www.leuze.com</a> . |

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> |

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 | 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 |

## 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 |

### 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 | 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    | 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                                                                                                                               |

Accessories

| Note                                                                             |                                                                                                                                  |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|  | <p>A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.</p> |