

# Technical data sheet

## Dynamic reference diffuse sensor

Part no.: 50150353

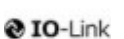
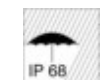
DRT33C.3R/LG-M8



For illustration purposes only

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## Technical data

### Basic data

|                     |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| Series              | 33C                                                                                  |
| Operating principle | Reference teach on reference surface (plastic roller chain or plastic link conveyor) |
| Application         | Detection of bottle and can containers                                               |

### Optical data

|                                  |                                                    |
|----------------------------------|----------------------------------------------------|
| Operating range                  | 0.08 ... 0.4 m, Max. distance to reference surface |
| Operating range limit, white 90% | 0.05 ... 0.45 m                                    |
| Light source                     | LED, Red                                           |
| Wavelength                       | 640 nm                                             |
| Transmitted-signal shape         | Pulsed                                             |
| LED group                        | Exempt group (in acc. with EN 62471)               |

### Electrical data

|                    |                                                         |
|--------------------|---------------------------------------------------------|
| Protective circuit | Polarity reversal protection<br>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                            |

### 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: $\geq(U_B - 2.5V)$<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) |

### Switching output 2

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

### Time behavior

|                     |        |
|---------------------|--------|
| Switching frequency | 300 Hz |
| Response time       | 1.6 ms |
| Readiness delay     | 300 ms |

### Interface

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

### IO-Link

|                  |                      |
|------------------|----------------------|
| COM mode         | COM3                 |
| Profile          | Smart sensor profile |
| Min. cycle time  | COM3 = 0.4 ms        |
| Frame type       | 2.5                  |
| Specification    | V1.1                 |
| Device ID        | 2135                 |
| SIO-mode support | Yes                  |
| Process data IN  | 8 bit                |
| Process data OUT | 8 bit                |

### Connection

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

### Connection 1

|                    |                                           |
|--------------------|-------------------------------------------|
| Function           | Signal IN<br>Signal OUT<br>Voltage supply |
| Type of connection | Connector                                 |
| Thread size        | M8                                        |
| Type               | Male                                      |
| Material           | Stainless steel                           |
| No. of pins        | 4 -pin                                    |

### Mechanical data

|                                 |                                                                         |
|---------------------------------|-------------------------------------------------------------------------|
| Dimension (W x H x L)           | 18.8 mm x 52.8 mm x 32.4 mm                                             |
| Housing material                | Stainless steel                                                         |
| Material of operational control | Plastic (POM Hostaform C9021, copolyester Tritan TX1001), non-diffusive |
| Housing roughness               | $Ra \leq 0,8$ , Typical value for the stainless steel housing           |
| Stainless steel housing         | AISI 316L, DIN X2CrNiMo17132, W. No1.4404                               |
| Lens cover material             | Plastic (PMMA+) with scratch-resistant Indium protective coating        |
| Net weight                      | 120 g                                                                   |
| Housing color                   | Silver                                                                  |
| Type of fastening               | Housing fit                                                             |
| Compatibility of materials      | CleanProof+<br>ECOLAB<br>Johnson Diversey                               |

### 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 | -40 ... 60 °C, (70 °C $\leq$ 15min) |
| Ambient temperature, storage   | -40 ... 70 °C                       |

### Certifications

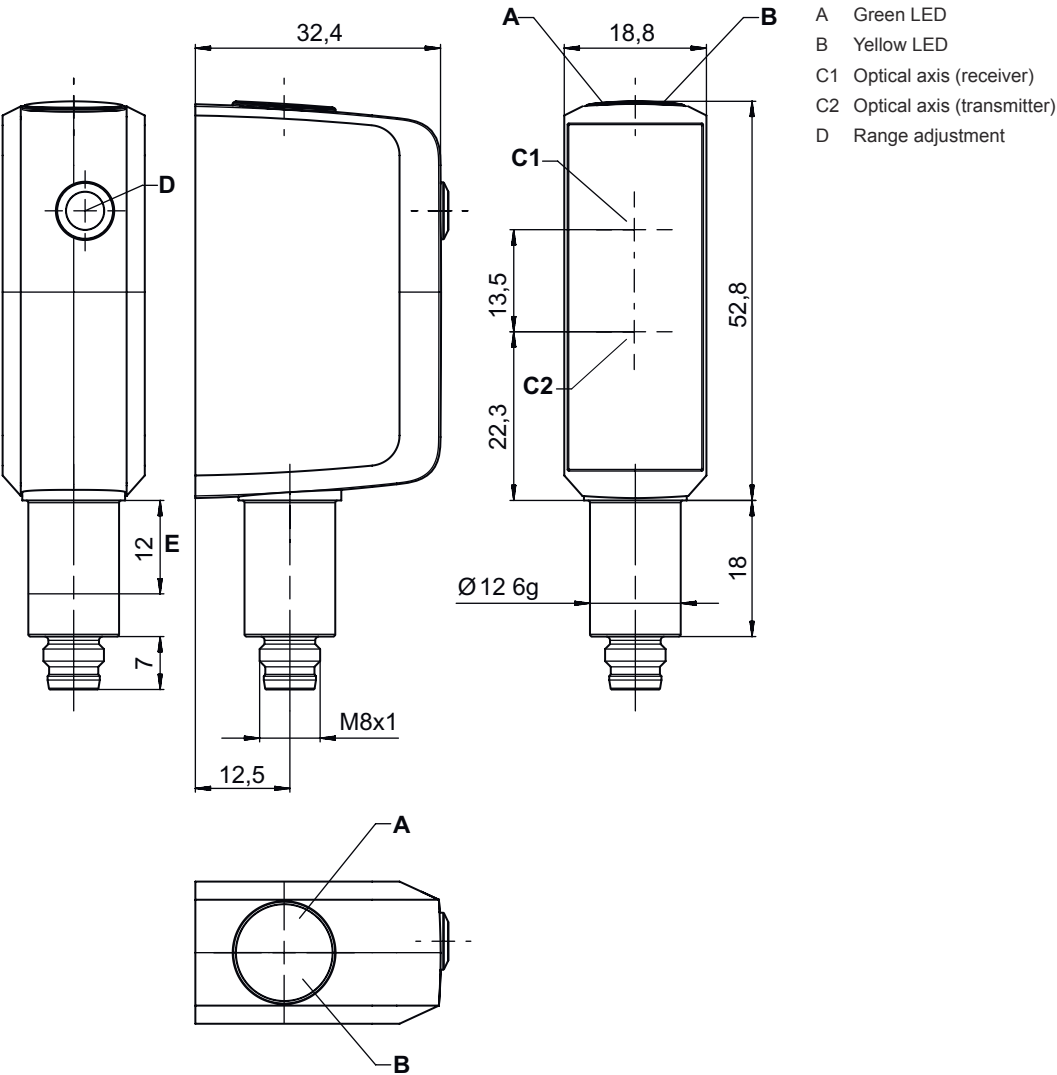
|                      |                          |
|----------------------|--------------------------|
| Degree of protection | IP 67<br>IP 68<br>IP 69K |
| Protection class     | III                      |
| Approvals            | c UL US                  |
| Standards applied    | IEC 60947-5-2            |

## Technical data

|                       |          |
|-----------------------|----------|
| 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

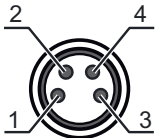


Electrical connection

Connection 1

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

| Pin | Pin assignment  |
|-----|-----------------|
| 1   | V+              |
| 2   | OUT 2           |
| 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: **AAA33C d EE.GGH/iJ-K**

|               |                                                                                                                                                                                                                                                                                                                             |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA33C</b> | <b>Operating principle</b><br>LS33C: Throughbeam photoelectric sensor transmitter<br>LE33C: Throughbeam photoelectric sensor receiver<br>PRK33C: Retro-reflective photoelectric sensor with polarization filter<br>HT33C: Diffuse reflection sensor with background suppression<br>DRT33C: 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                                                                                                                                                                                                                                             |
| <b>GG</b>     | <b>Equipment</b><br>A: Autocollimation principle (single lens)<br>D: Detection of stretch-wrapped objects<br>X: extended model<br>XL: Extra long light spot<br>TT: autocollimation principle (single lens) for highly transparent bottles with tracking<br>R: greater operating range<br>XXR: super power transmitter       |
| <b>H</b>      | <b>Operating range adjustment</b><br>1: 270° potentiometer<br>2: multiturn potentiometer<br>3: teach-in via button                                                                                                                                                                                                          |
| <b>i</b>      | <b>Switching output/function OUT 1/IN: Pin 4 or black conductor</b><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)                                                                                                     |
| <b>J</b>      | <b>Switching output / function OUT 2/IN: pin 2 or white conductor</b><br>T: teach-in via cable<br>G: Push-pull switching output, PNP dark switching, NPN light switching<br>X: pin not used                                                                                                                                 |
| <b>K</b>      | <b>Electrical connection</b><br>M8: M8 connector, 4-pin (plug)                                                                                                                                                                                                                                                              |

### Note

A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

## 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.

## Further information

- Ambient temperature, operation: +70 °C permissible only briefly (≤ 15min)
- IP 69K only with internal tube installation of M8 connector
- Light source: Average life expectancy 100,000h 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 |

### Connection technology - Connection cables

|                                                                                     | Part no. | Designation           | Article          | Description                                                                                                                                                                      |
|-------------------------------------------------------------------------------------|----------|-----------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50106153 | K-D M8A-4P-5m-FAB     | Connection cable | 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          |
|  | 50148347 | KD U-M8-4A-T0-050 F+B | Connection cable | Connection 1: Connector, M8, 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: TPE |
|  | 50130850 | KD U-M8-4A-V1-050     | Connection cable | 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          |

### Mounting technology - Other

|                                                                                     | Part no. | Designation       | Article         | Description                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------|----------|-------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50145361 | BTU 053M.5F-D12-T | Mounting system | Design of mounting device: Mounting system<br>Fastening, at system: Screw type<br>Mounting bracket, at device: For 12 mm rod<br>Type of mounting device: Turning, 360°, Adjustable<br>Material: Stainless steel |

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> |