

## Technical data sheet

### Diffuse sensor with background suppression

Part no.: 50150314

HT35C.XL/LG-200-M12



For illustration purposes only

#### Contents

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



## Technical data

### Basic data

|                     |  |
|---------------------|--|
| Series              | 35C  |
| Operating principle | Diffuse reflection principle with background suppression |

### Special version

|                 |                            |
|-----------------|----------------------------|
| Special version | Extra long light spot (XL) |
|-----------------|----------------------------|

### Optical data

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Black-white error                    | < 10% up to 350 mm                   |
| Operating range                      | Guaranteed operating range           |
| Operating range, white 90%           | 0 ... 0.6 m                          |
| Operating range, gray 18%            | 0.005 ... 0.5 m                      |
| Operating range, black 6%            | 0.005 ... 0.45 m                     |
| Operating range limit                | 0 ... 0.6 m                          |
| Operating range limit                | Typical operating range              |
| Adjustment range                     | 50 ... 600 mm                        |
| Beam path                            | Divergent                            |
| Light source                         | LED, Red                             |
| Wavelength                           | 640 nm                               |
| Transmitted-signal shape             | Pulsed                               |
| LED group                            | Exempt group (in acc. with EN 62471) |
| Light spot size [at sensor distance] | 15 mm x 40 mm [300 mm]               |
| Type of light spot geometry          | Rectangular                          |
| Shift angle                          | Typ. $\pm 2^\circ$                   |

### Electrical data

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

### Performance data

|                      |  |
|----------------------|--|
| Supply voltage $U_B$ | 10 ... 30 V, DC, Incl. residual ripple |
| Residual ripple      | 0 ... 15 %, From $U_B$                 |
| Open-circuit current | 0 ... 20 mA                            |

### Outputs

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

### Switching outputs

|                         |   |
|-------------------------|---|
| 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 | 1,000 Hz |
| Response time       | 0.5 ms   |
| Readiness delay     | 300 ms   |

### Interface

|                  |                      |
|------------------|----------------------|
| Type             | IO-Link              |
| <b>IO-Link</b>   |                      |
| COM mode         | COM2                 |
| Profile          | Smart sensor profile |
| Min. cycle time  | COM2 = 2.3 ms        |
| Frame type       | 2.5                  |
| Specification    | V1.1                 |
| Device ID        | 6104                 |
| SIO-mode support | Yes                  |

### Connection

#### Connection 1

|                    |   |
|--------------------|---|
| Function           | Signal IN<br>Signal OUT<br>Voltage supply |
| Type of connection | Connector                                 |
| Cable length       | 200 mm                                    |
| Sheathing material | PVC                                       |
| Cable color        | Black                                     |
| Wire cross section | 0.2 mm <sup>2</sup>                       |
| Thread size        | M12                                       |
| Type               | Male                                      |
| Material           | Stainless steel                           |
| No. of pins        | 4 -pin                                    |
| Encoding           | A-coded                                   |

### Mechanical data

|                                 |  |
|---------------------------------|--|
| Dimension (W x H x L)           | 18.8 mm x 55.3 mm x 32.4 mm  |
| Housing material                | Stainless steel  |
| Material of operational control | Plastic (POM Hostaform C9021, copoly-ester 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               | Through-hole mounting<br>Via optional mounting device                    |
| Compatibility of materials      | CleanProof+<br>ECOLAB<br>Johnson Diversey                                |

### Operation and display

|                                     |                         |
|-------------------------------------|-------------------------|
| Type of display                     | LED                     |
| Number of LEDs                      | 2 Piece(s)              |
| Operational controls                | Multiturn potentiometer |
| Function of the operational control | Range adjustment        |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 70 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

## Technical data

### Certifications

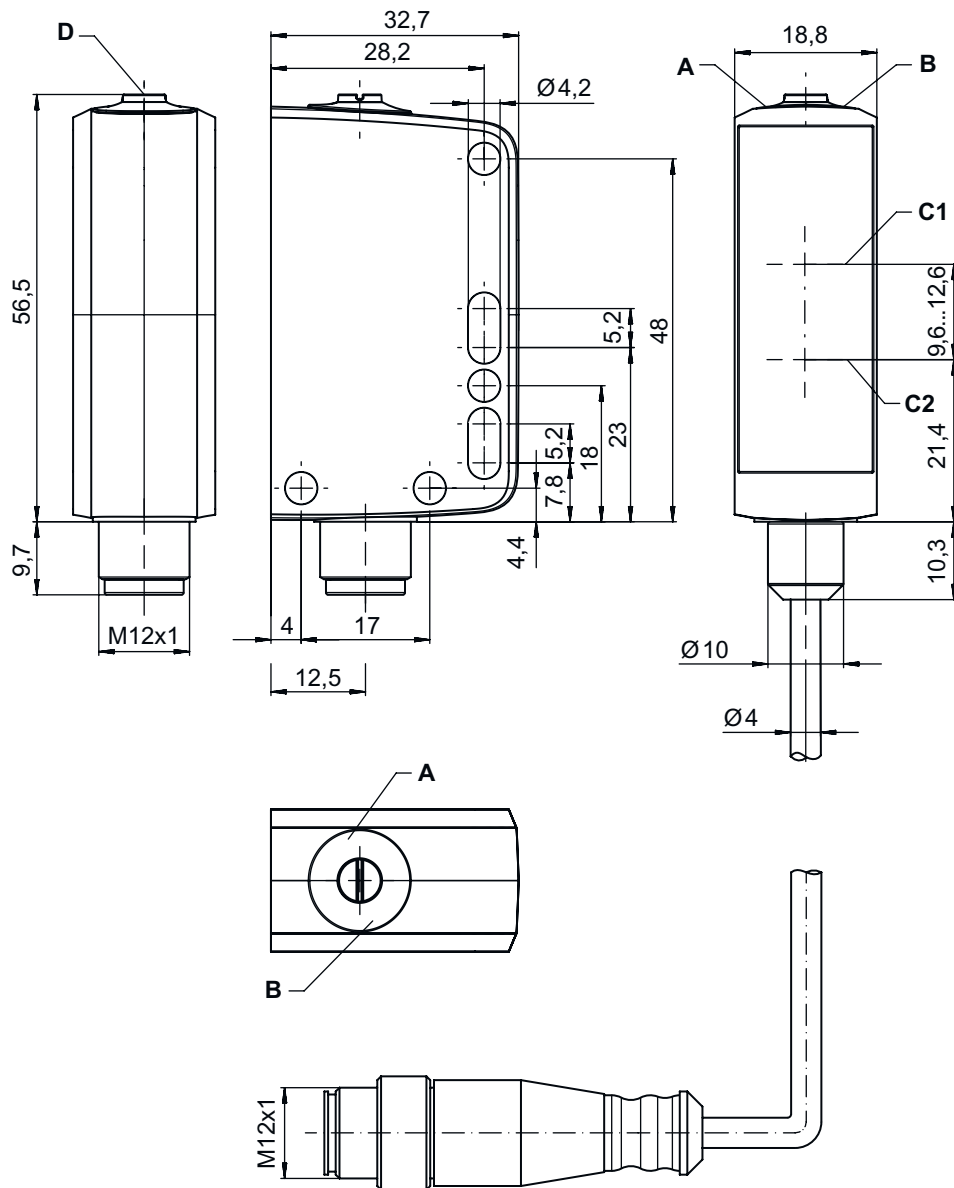
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
|                      | IP 68         |
|                      | IP 69K        |
| Protection class     | III           |
| Approvals            | c UL US       |
| Standards applied    | 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 |
| ETIM 5.0              | EC002719 |
| ETIM 6.0              | EC002719 |
| ETIM 7.0              | EC002719 |
| ETIM 8.0              | EC002719 |
| ETIM 9.0              | EC002719 |
| ETIM 10.0             | EC002719 |

# Dimensioned drawings

All dimensions in millimeters



- A Green LED
- B Yellow LED
- C1 Optical axis (receiver)
- C2 Optical axis (transmitter)
- D Range adjustment

## Electrical connection

### Connection 1

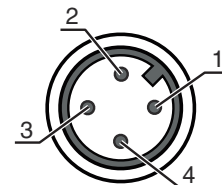
|                    |                |
|--------------------|----------------|
| Function           | Signal IN      |
|                    | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Cable length       | 200 mm         |
| Sheathing material | PVC            |
| Cable color        | Black          |

# Electrical connection

## Connection 1

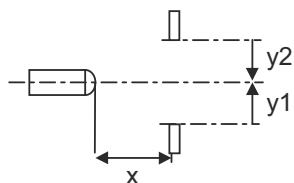
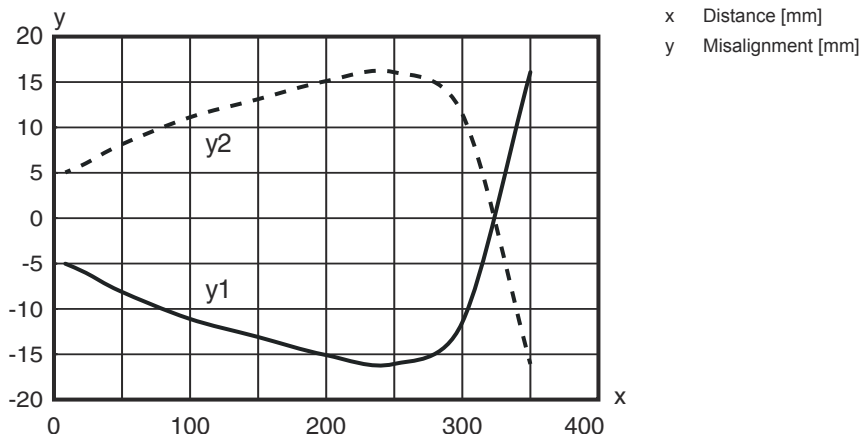
|                    |                     |
|--------------------|---------------------|
| Wire cross section | 0.2 mm <sup>2</sup> |
| Thread size        | M12                 |
| Type               | Male                |
| Material           | Stainless steel     |
| No. of pins        | 4 -pin              |
| Encoding           | A-coded             |

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



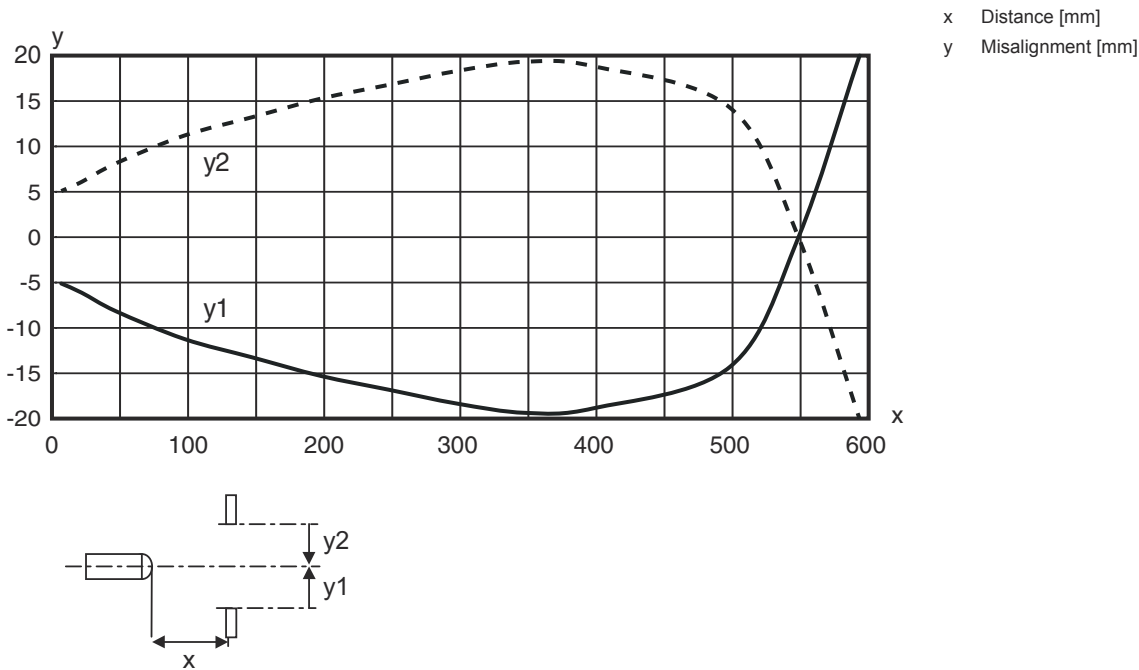
## Diagrams

Typ. response behavior (focusing distance 350 mm)

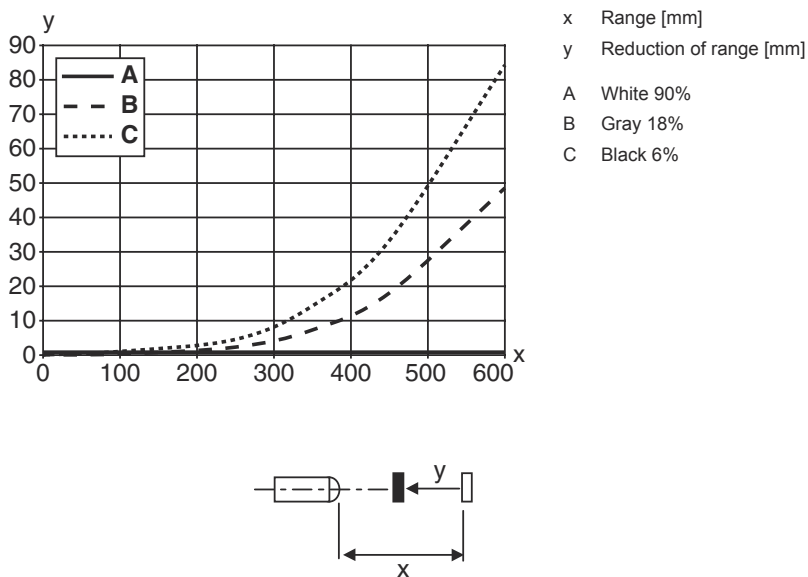


# Diagrams

## Typ. response behavior (focusing distance 600 mm)



## Typ. black/white behavior



## Operation and display

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

## Part number code

Part designation: AAA35C d EE.GGH/iJ-K

|               |   |
|---------------|---|
| <b>AAA35C</b> | <b>Operating principle</b><br>LS35C: Throughbeam photoelectric sensor transmitter<br>LE35C: Throughbeam photoelectric sensor receiver<br>PRK35C: Retro-reflective photoelectric sensor with polarization filter<br>HT35C: Diffuse reflection sensor with background suppression<br>DRT35C: 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)<br>4: PNP transistor output, light 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<br>P: PNP transistor output, dark switching   |
| <b>K</b>      | <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>M12: M12 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 in combination with connector
- Light source: Average life expectancy 100,000h at an ambient temperature of 25 °C
- Sum of the output currents for both outputs 100 mA

## 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   |
|---|----------|------------------------|------------------|---|
|  | 50130657 | KD U-M12-4A-P1-050     | 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: PUR |
|  | 50148349 | KD U-M12-4A-T0-020 F+B | 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: 2.000 mm<br>Sheathing material: TPE |
|  | 50148350 | KD U-M12-4A-T0-050 F+B | 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: TPE |





## Accessories

### 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  |
|---|----------|----------------|-----------------|--|
|  | 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           |
|  | 50120425 | BTU 300M.5-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: Stainless steel |

#### Note



A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.