



Figure can vary

**Part no.: 50129381**  
**HT3C.S/4P-200-M12**  
**Diffuse sensor with background suppression**



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Part no.: 50129381 – HT3C.S/4P-200-M12 – Diffuse sensor with background

## Technical data

| <b>Basic data</b>                   |  |
|-------------------------------------|--|
| Series                              | 3C   |
| Operating principle                 | Diffuse reflection principle with background suppression |
| Application                         | Detection of small parts                                 |
| <b>Special design</b>               |  |
| Special design                      | Small light spot (S)                                     |
| <b>Optical data</b>                 |  |
| Black-white error                   | < 10% up to 100 mm                                       |
| Operating range                     | Guaranteed operating range                               |
| Operating range, white 90%          | 0.005 ... 0.2 m  |
| Operating range, gray 18%           | 0.01 ... 0.15 m  |
| Operating range, black 6%           | 0.015 ... 0.12 m   |
| Operating range limit               | Typical operating range                                  |
| Operating range limit               | 0.005 ... 0.2 m  |
| Adjustment range                    | 15 ... 200 mm  |
| Light source                        | LED , Red  |
| LED light wavelength                | 650 nm   |
| LED group                           | Exempt group (in acc. with EN 62471)                     |
| Transmitted-signal shape            | Pulsed   |
| <b>Electrical data</b>              |  |
| Protective circuit                  | Polarity reversal protection<br>Short circuit protected  |
| <b>Performance data</b>             |  |
| Supply voltage $U_B$                | 10 ... 30 V , DC , Incl. residual ripple                 |
| Residual ripple                     | 0 ... 15 % , From $U_B$                                  |
| Open-circuit current                | 0 ... 15 mA  |
| <b>Outputs</b>                      |  |
| Number of digital switching outputs | 2 Piece(s)   |
| <b>Switching outputs</b>            |  |
| Voltage type                        | DC   |
| Switching current, max.             | 100 mA   |
| Switching voltage                   | High: $\geq (U_B - 2V)$<br>Low: $\leq 2V$                |
| <b>Switching output 1</b>           |  |
| Assignment                          | Connection 1, pin 4                                      |
| Switching element                   | Transistor , PNP   |
| Switching principle                 | Light switching  |
| <b>Switching output 2</b>           |  |
| Assignment                          | Connection 1, pin 2                                      |
| Switching element                   | Transistor , PNP   |
| Switching principle                 | Dark switching   |
| <b>Timing</b>                       |  |
| Switching frequency                 | 1,000 Hz   |
| Response time                       | 0.5 ms   |

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|                 |        |
|-----------------|--------|
| Readiness delay | 300 ms |
| Response jitter | 166 µs |

### Connection

#### Connection 1

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

### Mechanical data

|                            |   |
|----------------------------|---|
| Dimension (W x H x L)      | 11.4 mm x 34.2 mm x 18.3 mm                           |
| Housing material           | Plastic , PC-ABS                                      |
| Lens cover material        | Plastic / PMMA  |
| Net weight                 | 20 g  |
| Housing color              | Red   |
| Type of fastening          | Through-hole mounting<br>Via optional mounting device |
| Compatibility of materials | ECOLAB  |

### 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 ... 60 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

### Certifications

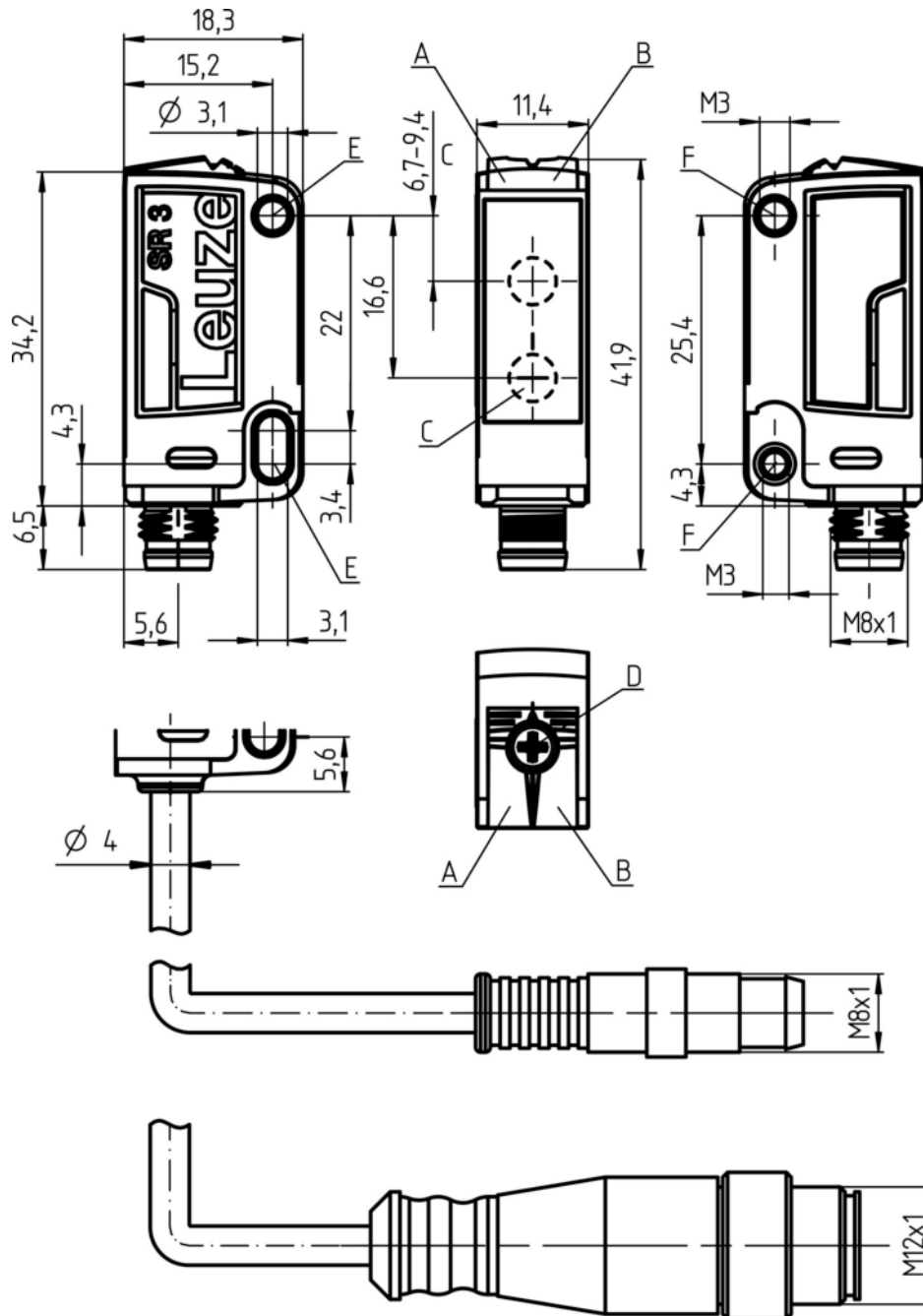
|                      |                 |
|----------------------|-----------------|
| Degree of protection | IP 67<br>IP 69K |
| Protection class     | III             |
| Certifications       | c UL US         |
| Standards applied    | IEC 60947-5-2   |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27270904 |
| eCl@ss 9.0            | 27270904 |
| ETIM 5.0              | EC002719 |

## Dimensioned drawings

All dimensions in millimeters

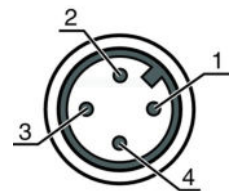


- A Green LED
- B Yellow LED
- C Optical axis
- D Multiturn potentiometer
- E Mounting sleeve (standard)
- F Threaded sleeve (3C.B series)

## Electrical connection

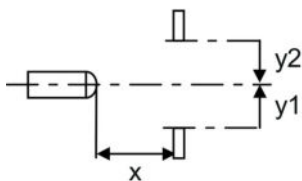
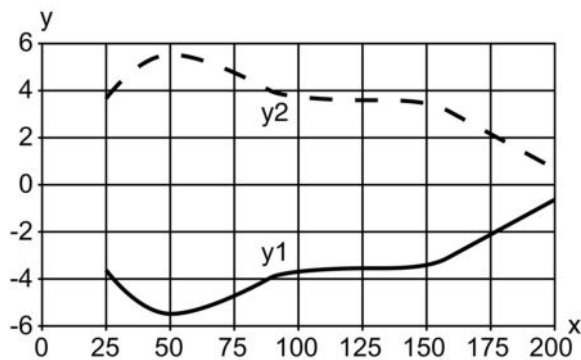
| Connection 1       |                              |
|--------------------|------------------------------|
| Function           | Signal OUT<br>Voltage supply |
| Type of connection | Cable with connector         |
| Cable length       | 200 mm                       |
| Sheathing material | PUR                          |
| Cable color        | Black                        |
| Wire cross section | 0.2 mm <sup>2</sup>          |
| Thread size        | M12                          |
| Type               | Male                         |
| Material           | Metal                        |
| No. of pins        | 4 -pin                       |
| Encoding           | A-coded                      |

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



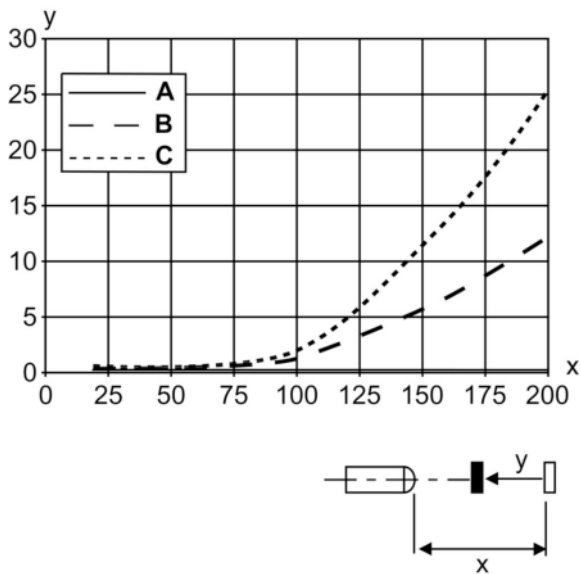
## Diagrams

Typ. response behavior (white 90 %)



x Distance [mm]  
y Misalignment [mm]

## Typ. black/white behavior



x Range [mm]  
y Reduction of range [mm]  
A White 90%  
B Gray 18%  
C Black 6%

## Operation and display

### LEDs

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

## Part number code

Part designation: **AAA 3C d EE-f.GG H/i J-K**

|       |   |
|-------|---|
| AAA3C | <b>Operating principle / construction:</b><br>HT3C: diffuse reflection sensor with background suppression<br>LS3C: throughbeam photoelectric sensor transmitter<br>LE3C: throughbeam photoelectric sensor receiver<br>PRK3C: retro-reflective photoelectric sensor with polarization filter |
| d     | <b>Light type:</b><br>n/a: red light<br>I: infrared light   |
| EE    | <b>Light source:</b><br>n/a: LED<br>L1: laser class 1<br>L2: laser class 2  |
| f     | <b>Preset range (optional):</b><br>n/a: operating range acc. to data sheet<br>xxxF: preset range [mm]   |

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|    |   |
|----|---|
| GG | <b>Equipment:</b><br>n/a: standard<br>A: autocollimation principle (single lens) for positioning tasks<br>B: housing model with two M3 threaded sleeves, brass<br>F: permanently set range<br>L: long light spot<br>S: small 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>V: V-optics<br>XL: extra long light spot<br>X: extended model  |
| H  | <b>Operating range adjustment:</b><br>n/a with HT: range adjustable via 8-turn potentiometer<br>n/a with retro-reflective photoelectric sensors (PRK): operating range not adjustable<br>1: 270° potentiometer<br>3: teach-in via button<br>6: auto-teach   |
| i  | <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>6: push-pull switching output, PNP light switching, NPN dark switching<br>G: push-pull switching output, PNP dark switching, NPN light switching<br>L: IO-Link interface (SIO mode: PNP light switching, NPN dark switching)<br>8: activation input (activation with high signal)<br>X: pin not used<br>1: IO-Link / light switching (NPN) / dark switching (PNP) |
| J  | <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>6: push-pull switching output, PNP light switching, NPN dark switching<br>G: push-pull switching output, PNP dark switching, NPN light switching<br>W: warning output<br>X: pin not used<br>8: activation input (activation with high signal)<br>9: deactivation input (deactivation with high signal)<br>T: teach-in via cable                                 |
| K  | <b>Electrical connection:</b><br>n/a: cable, standard length 2000 mm, 4-wire<br>5000: cable, standard length 5000 mm, 4-wire<br>M8: M8 connector, 4-pin (plug)<br>M8.3: M8 connector, 3-pin (plug)<br>200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)<br>200-M8.3: cable, length 200 mm with M8 connector, 3-pin, axial (plug)<br>200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (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.

### For UL applications:

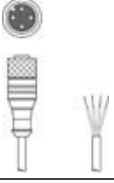

- For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).
- These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

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- Light source: Average life expectancy 100,000 h at an ambient temperature of 25 °C
- Response time: For short decay times, an ohmic load of approx. 5 kOhm is recommended
- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C

### 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>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>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  |
|---|----------|-------------|-----------------|--|
|  | 50060511 | BT 3        | Mounting device | 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  |
|---|----------|--------------|-----------------|--|
|  | 50117255 | BTU 200M-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 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 electronic website in the Download tab of the article detailed page.