

## Technical data sheet

### Diffuse sensor with background suppression

Part no.: 50141748

HT3CI/2N



For illustration purposes only

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## Technical data

### Basic data

|                     |  |
|---------------------|--|
| Series              | 3C   |
| Operating principle | Diffuse reflection principle with background suppression |

### Optical data

|                             |                                      |
|-----------------------------|--------------------------------------|
| Black-white error           | < 10% up to 250 mm                   |
| Operating range             | Guaranteed operating range           |
| Operating range, white 90%  | 0.005 ... 0.6 m                      |
| Operating range, gray 18%   | 0.01 ... 0.5 m                       |
| Operating range, black 6%   | 0.015 ... 0.4 m                      |
| Operating range limit       | Typical operating range              |
| Operating range limit       | 0.005 ... 0.6 m                      |
| Adjustment range            | 15 ... 600 mm                        |
| Beam path                   | Focused                              |
| Light source                | LED, Infrared                        |
| Wavelength                  | 880 nm                               |
| Transmitted-signal shape    | Pulsed                               |
| LED group                   | Exempt group (in acc. with EN 62471) |
| Type of light spot geometry | square                               |
| Focus                       | Fixed                                |
| Focal distance              | 200 mm                               |

### 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 ... 15 mA                            |

### Outputs

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

### Switching outputs

|                         |   |
|-------------------------|---|
| Voltage type            | DC  |
| Switching current, max. | 100 mA                                    |
| Switching voltage       | high: $\geq(U_B - 2V)$<br>low: $\leq 2 V$ |

### Switching output 1

|                     |                 |
|---------------------|-----------------|
| Switching element   | Transistor, NPN |
| Switching principle | Light switching |

### Switching output 2

|                     |                 |
|---------------------|-----------------|
| Switching element   | Transistor, NPN |
| Switching principle | Dark switching  |

### Time behavior

|                     |             |
|---------------------|-------------|
| Switching frequency | 1,000 Hz    |
| Response time       | 0.5 ms      |
| Readiness delay     | 300 ms      |
| Response jitter     | 166 $\mu$ s |

### Connection 1

|                      |                              |
|----------------------|------------------------------|
| Function             | Signal OUT<br>Voltage supply |
| Type of connection   | Cable                        |
| Cable length         | 2,000 mm                     |
| Sheathing material   | PUR                          |
| Cable color          | Black                        |
| Number of conductors | 4 -wire                      |
| Wire cross section   | 0.2 mm <sup>2</sup>          |

### Mechanical data

|                            |   |
|----------------------------|---|
| Dimension (W x H x L)      | 11.4 mm x 34.2 mm x 18.3 mm                           |
| Housing material           | Plastic   |
| Plastic housing            | PC-ABS  |
| Lens cover material        | Plastic / PMMA  |
| Net weight                 | 50 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 |
| 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 |
| ETIM 5.0              | EC002719 |
| ETIM 6.0              | EC002719 |
| ETIM 7.0              | EC002719 |
| ETIM 8.0              | EC002719 |

# Dimensioned drawings

All dimensions in millimeters



- A Green LED
- B Yellow LED
- C Optical axis
- C1 Receiver
- C2 Transmitter
- D Multiturn potentiometer
- E Mounting sleeve (standard)
- F Threaded sleeve (3C.B series)

## Electrical connection

### Connection 1

|                      |                     |
|----------------------|---------------------|
| Function             | Signal OUT          |
|                      | Voltage supply      |
| Type of connection   | Cable               |
| Cable length         | 2,000 mm            |
| Sheathing material   | PUR                 |
| Cable color          | Black               |
| Number of conductors | 4 -wire             |
| Wire cross section   | 0.2 mm <sup>2</sup> |

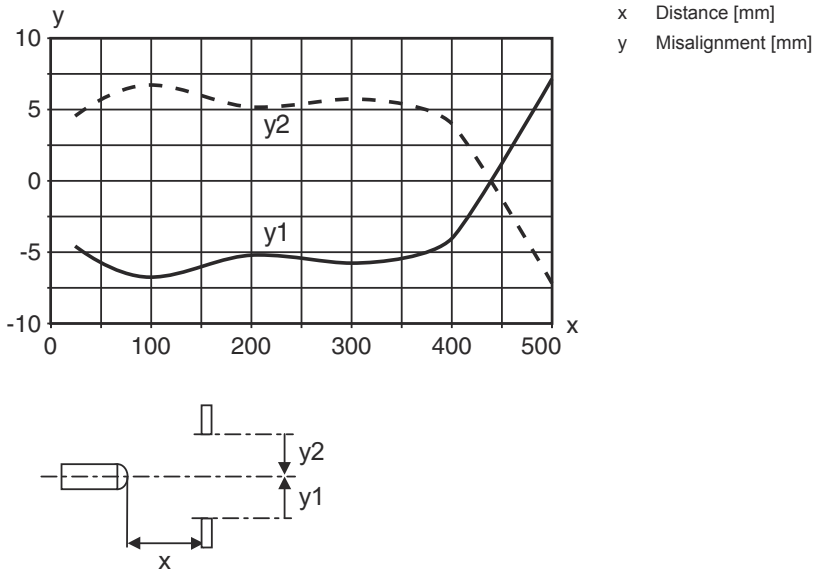
### Conductor color

### Conductor assignment

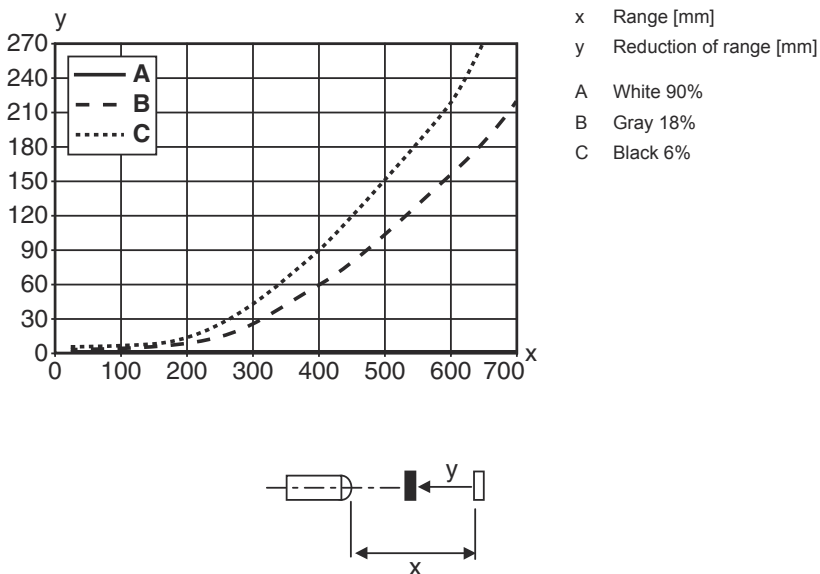
|       |       |
|-------|-------|
| Brown | V+    |
| White | OUT 2 |
| Blue  | GND   |
| Black | OUT 1 |

# Diagrams

## Typ. response behavior (white 90 %)



## Typ. black/white behavior



## Operation and display

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

## Part number code

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

|              |  |
|--------------|--|
| <b>AAA3C</b> | <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<br>ODT3C: Distance diffuse sensor with background suppression   |
| <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>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>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<br>HF: Suppression of HF illumination (LED)  |
| <b>H</b>     | <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   |
| <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>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) |
| <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>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                                 |
| <b>K</b>     | <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)

## Further information


- 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. 5kOhm is recommended
- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C

## Accessories

### 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 website in the Download tab of the article detailed page.