SMART
**SENSOR**
BUSINESS

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the sensor people

Figure can vary

**Part no.: 50136247**
**HT3C.XL/2N**
**Diffuse sensor with background suppression**

# Contents




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# Part no.: 50136247 – HT3C.XL/2N – Diffuse sensor with background

## Technical data

| | |
|---|---|
| ***Basic data*** | |
| Series | 3C |
| Operating principle | Diffuse reflection principle with background suppression |
| Application | Detection of highly transparent bottles<br>Detection of objects with openings<br>Detection of transparent films |

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| ***Special design*** | |
| Special design | Extra long light spot (XL) |

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| ***Optical data*** | |
| Black-white error | < 10% up to 60 mm |
| Operating range | Guaranteed operating range |
| Operating range, white 90% | 0.005 ... 0.05 m |
| Operating range, gray 18% | 0.005 ... 0.045 m |
| Operating range, black 6% | 0.005 ... 0.04 m |
| Operating range limit | Typical operating range |
| Operating range limit, white 90% | 0.005 ... 0.1 m |
| Operating range limit, gray 18% | 0.005 ... 0.09 m |
| Operating range limit, black 6% | 0.005 ... 0.08 m |
| Adjustment range | 20 ... 100 mm |
| Beam path | Divergent |
| Light source | LED , Red |
| LED light wavelength | 633 nm |
| LED group | Exempt group (in acc. with EN 62471) |
| Transmitted-signal shape | Pulsed |
| Light spot size [at sensor distance] | 3 mm x 40 mm [50 mm] |
| Type of light spot geometry | Rectangular |

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| ***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: ≥($U_B$-2V)<br>Low: ≤2V |
| ***Switching output 1*** | |
| Switching element | Transistor , NPN |
| Switching principle | Light switching |
| ***Switching output 2*** | |
| Switching element | Transistor , NPN |
| Switching principle | Dark switching |

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|---|---|
| ***Timing*** | |
| Switching frequency | 1,000 Hz |
| Response time | 0.5 ms |
| Readiness delay | 300 ms |
| Response jitter | 166 µs |

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|---|---|
| ***Connection*** | |
| ***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 mm² |

| | |
|---|---|
| ***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 | 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 |

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| ***Environmental data*** | |
| Ambient temperature, operation | -40 ... 60 °C |
| Ambient temperature, storage | -40 ... 70 °C |

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

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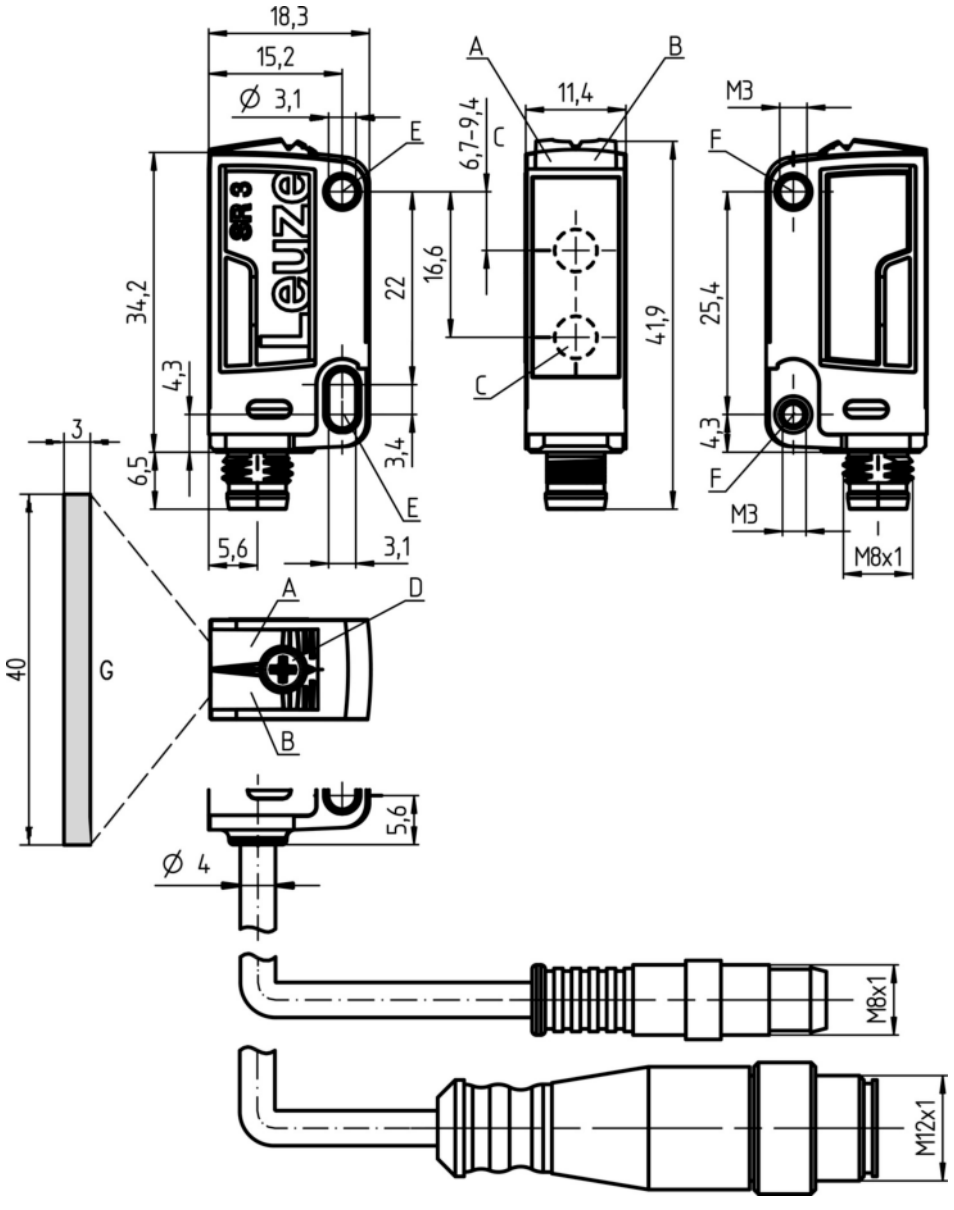
|---|---|
| ***Classification*** | |
| Customs tariff number | 85365019 |
| eCl@ss 8.0 | 27270904 |
| eCl@ss 9.0 | 27270904 |
| ETIM 5.0 | EC002719 |
| ETIM 6.0 | EC002719 |

## 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)
G Light spot 3 mm x 40 mm at a range of 50 mm

## Electrical connection

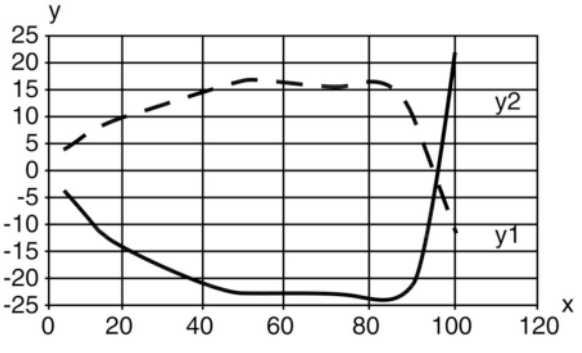
| Connection 1 | |
|---|---|
| Function | Signal OUT<br>Voltage supply |
| Type of connection | Cable |
| Cable length | 2,000 mm |

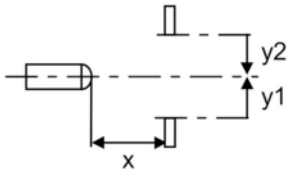
| Connection 1 | |
|---|---|
| Sheathing material | PUR |
| Cable color | Black |
| Number of conductors | 4 -wire |
| Wire cross section | 0.2 mm² |

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

## Diagrams

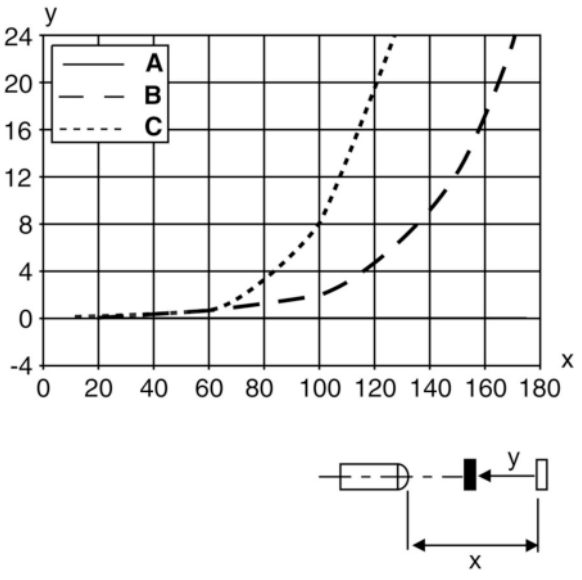
Typ. response behavior (white 90 %)




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 | **Operating principle / construction:**<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 | **Light type:**<br>n/a: red light<br>I: infrared light |
| EE | **Light source:**<br>n/a: LED<br>L1: laser class 1<br>L2: laser class 2 |
| f | **Preset range (optional):**<br>n/a: operating range acc. to data sheet<br>xxxF: preset range [mm] |

| | |
|---|---|
| GG | **Equipment:**<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 | **Operating range adjustment:**<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 | **Switching output/function OUT 1/IN: Pin 4 or black conductor:**<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 | **Switching output / function OUT 2/IN: pin 2 or white conductor:**<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 | **Electrical connection:**<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.

## 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)

- 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

### 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. |