



Figure can vary

Part no.: 50136245
HT3C.V/2N
Diffuse sensor with background suppression



Contents

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

Technical data

| Basic data | |
|-----------------------------|--|
| Series | 3C |
| Operating principle | Diffuse reflection principle with background suppression |
| Application | Detection of high-gloss or polished surfaces Detection of transparent objects |
| Special design | |
| Special design | V-optics |
| Optical data | |
| Black-white error | < 10% up to 100 mm |
| Operating range | Guaranteed operating range |
| Operating range, white 90% | 0.015 ... 0.15 m |
| Operating range, gray 18% | 0.015 ... 0.13 m |
| Operating range, black 6% | 0.015 ... 0.11 m |
| Operating range limit | Typical operating range |
| Operating range limit | 0.015 ... 0.15 m |
| Adjustment range | 20 ... 150 mm |
| Beam profile | Focused |
| Light source | LED, Red |
| LED light wavelength | 633 nm |
| LED protection class | Exempt group (in acc. with EN 62471) |
| Transmitted-signal shape | Pulsed |
| Type of light-spot geometry | Round |
| Light beam exit | Front 11° angle |
| Focus | Fixed |
| Focal distance | 150 mm |
| Electrical data | |
| Protective circuit | Polarity reversal protection Short circuit protected |
| Performance data | |
| Supply voltage | 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: $\geq(U_B-2V)$ Low: $\leq 2V$ |

Switching output 1

| | |
|---------------------|---------------------------|
| Assignment | Connection 1, conductor 4 |
| Switching element | Transistor, NPN |
| Switching principle | Light switching |

Switching output 2

| | |
|---------------------|---------------------------|
| Assignment | Connection 1, conductor 2 |
| Switching element | Transistor, NPN |
| Switching principle | Dark switching |

Timing

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

Connection
Connection 1

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

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 | Via optional mounting device Through-hole mounting |
| 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

Part no.: 50136245 – HT3C.V/2N – Diffuse sensor with background suppression

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

Certifications

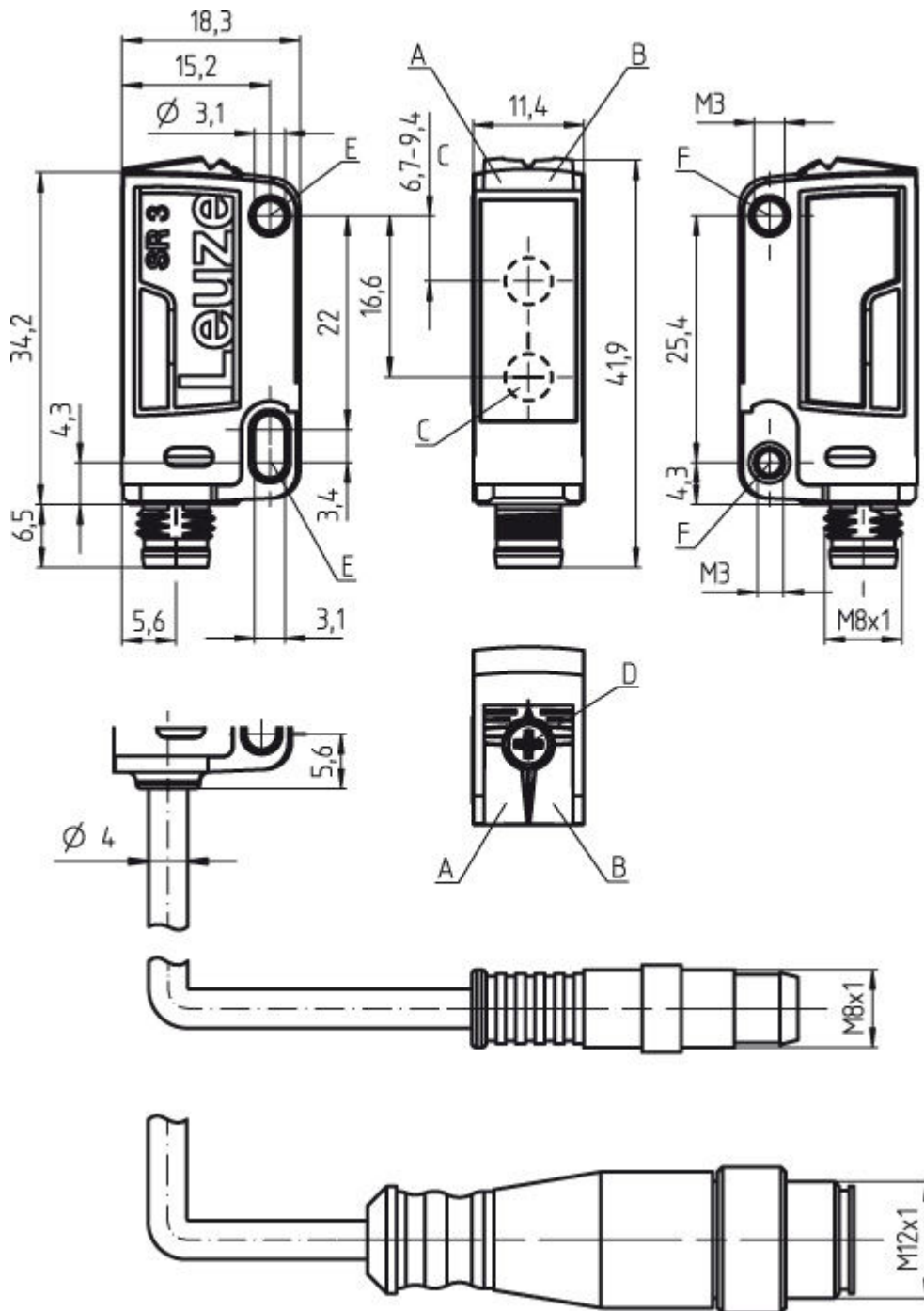
| | |
|----------------------|-----------------|
| Degree of protection | IP 69K IP 67 |
| Protection class | III |
| Certifications | c UL US |
| Standards applied | IEC 60947-5-2 |

Classification

| | |
|------------|----------|
| 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 | |
| Type of connection | Cable |

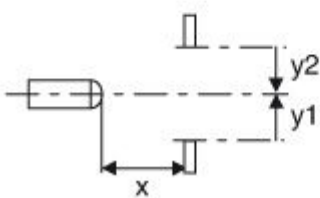
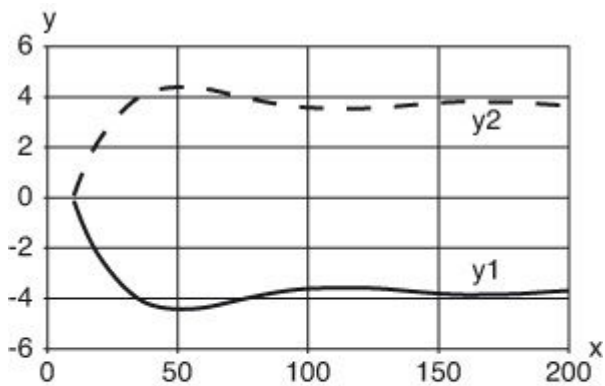
Part no.: 50136245 – HT3C.V/2N – Diffuse sensor with background suppression

| Connection 1 | |
|----------------------|------------------------------|
| Function | Voltage supply Signal OUT |
| Cable length | 2,000 mm |
| Sheathing material | PUR |
| Cable color | Black |
| Number of conductors | 4 -wire |
| Wire cross section | 0.2 mm ² |

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

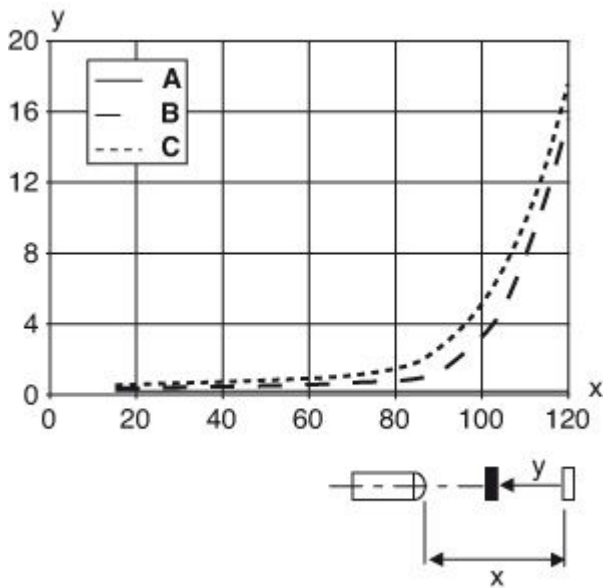
Diagrams

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: HT3C: diffuse reflection sensor with background suppression LS3C: throughbeam photoelectric sensor transmitter LE3C: throughbeam photoelectric sensor receiver PRK3C: retro-reflective photoelectric sensor with polarization filter |
| d | Light type: n/a: red light I: infrared light |
| EE | Light source: n/a: LED L1: laser class 1 L2: laser class 2 |
| f | Pre-set range (optional): n/a: operating range acc. to data sheet XXXX: pre-set range [mm] |

Part no.: 50136245 – HT3C.V/2N – Diffuse sensor with background suppression



| | |
|----|--|
| GG | Equipment: n/a: standard A: autocollimation principle (single lens) for positioning tasks B: housing model with two M3 threaded sleeves, brass F: permanently set range L: long light spot S: small light spot T: autocollimation principle (single lens) for highly transparent bottles without tracking TT: autocollimation principle (single lens) for highly transparent bottles with tracking V: V-optics XL: extra long light spot |
| H | Operating range adjustment: n/a with HT: range adjustable via 8-turn potentiometer n/a with retro-reflective photoelectric sensors (PRK): operating range not adjustable 1: 270° potentiometer 3: teach-in via button 6: auto-teach |
| i | Switching output/function OUT 1/IN: Pin 4 or black conductor: 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching 6: push-pull switching output, PNP light switching, NPN dark switching G: push-pull switching output, PNP dark switching, NPN light switching L: IO-Link 8: activation input (activation with high signal) X: pin not used |
| J | Switching output / function OUT 2/IN: pin 2 or white conductor: 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching 6: push-pull switching output, PNP light switching, NPN dark switching G: push-pull switching output, PNP dark switching, NPN light switching W: warning output X: not connected (n. c.) 8: activation input (activation with high signal) 9: deactivation input (deactivation with high signal) T: teach-in via cable |
| K | Electrical connection: n/a: cable, PVC, standard length 2000 mm, 4-wire 5000: cable, PVC, standard length 5000 mm, 4-wire M8: M8 connector, 4-pin (plug) M8.3: M8 connector, 3-pin (plug) 200-M8: cable, PVC, length 200 mm with M8 connector, 4-pin, axial (plug) 200-M8.3: cable, PVC, length 200 mm with M8 connector, 3-pin, axial (plug) 200-M12: cable, PVC, length 200 mm with M12 connector, 4-pin, axial (plug) |

Accessories





Mounting technology - Mounting brackets

| | Part no. | Designation | Article | Description |
|---|----------|---------------|---------------------|---|
|  | 50118542 | BT 200M.5 | Mounting bracket | Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Adjustable Material: Stainless steel |
|  | 50124651 | BT 205M-10SET | Mounting device set | Contains: 10x Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal |
|  | 50060511 | BT 3 | Mounting device | Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal |

Part no.: 50136245 – HT3C.V/2N – Diffuse sensor with background suppression

| | Part no. | Designation | Article | Description |
|---|----------|-------------|--------------------|---|
|  | 50105585 | BT 3.1 | Mounting strap set | Contains: 10x Design of mounting device: Retaining clip Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal |
|  | 50105546 | BT 3B | Mounting device | Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal |

Mounting technology - Rod mounts

| | Part no. | Designation | Article | Description |
|---|----------|----------------|-----------------|---|
|  | 50117256 | BTU 200M-D10 | Mounting system | Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 10 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal |
|  | 50117255 | BTU 200M-D12 | Mounting system | Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal |
|  | 50117254 | BTU 200M-D14 | Mounting system | Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 14 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal |
|  | 50120426 | BTU 200M.5-D12 | Mounting system | Contains: 2x M3 x 18 screw, 2x M3 mounting nut, 2x position washers Design of mounting device: Mounting system Fastening, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Turning, 360°, Clampable, Adjustable Material: Stainless steel |

Notes

| Observe intended use! |
|---|
| <ul style="list-style-type: none"> • 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. |

Part no.: 50136245 – HT3C.V/2N – Diffuse sensor with background suppression

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