



Figure can vary

Part no.: 50136249
HT3C.S/2N-200-M12
Diffuse sensor with background suppression



Contents

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

Technical data

| Basic data | |
|-------------------------------------|--|
| Series | 3C |
| Operating principle | Diffuse reflection principle with background suppression |
| Application | Detection of small parts |
| Special design | |
| Special design | Small light spot (S) |
| Optical data | |
| 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 |
| Light source | LED, Red |
| LED light wavelength | 633 nm |
| Transmitted-signal shape | Pulsed |
| Electrical data | |
| Protective circuit | Short circuit protected Polarity reversal protection |
| 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 | Low: $\leq 2V$ High: $\geq (U_B - 2V)$ |
| Switching output 1 | |
| Assignment | Connection 1, pin 4 |
| Switching element | Transistor, NPN |
| Switching principle | Light switching |
| Switching output 2 | |
| Assignment | Connection 1, pin 2 |
| Switching element | Transistor, NPN |
| Switching principle | Dark switching |
| Timing | |
| Switching frequency | 1,000 Hz |
| Response time | 0.5 ms |
| Readiness delay | 300 ms |
| Connection | |

Part no.: 50136249 – HT3C.S/2N-200-M12 – Diffuse sensor with background
Connection 1

| | |
|--------------------|------------------------------|
| Type of connection | Cable with connector |
| Function | Signal OUT Voltage supply |
| Cable length | 200 mm |
| Sheathing material | PUR |
| Cable color | Black |
| Wire cross section | 0.2 mm ² |
| 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 | 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

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

Certifications

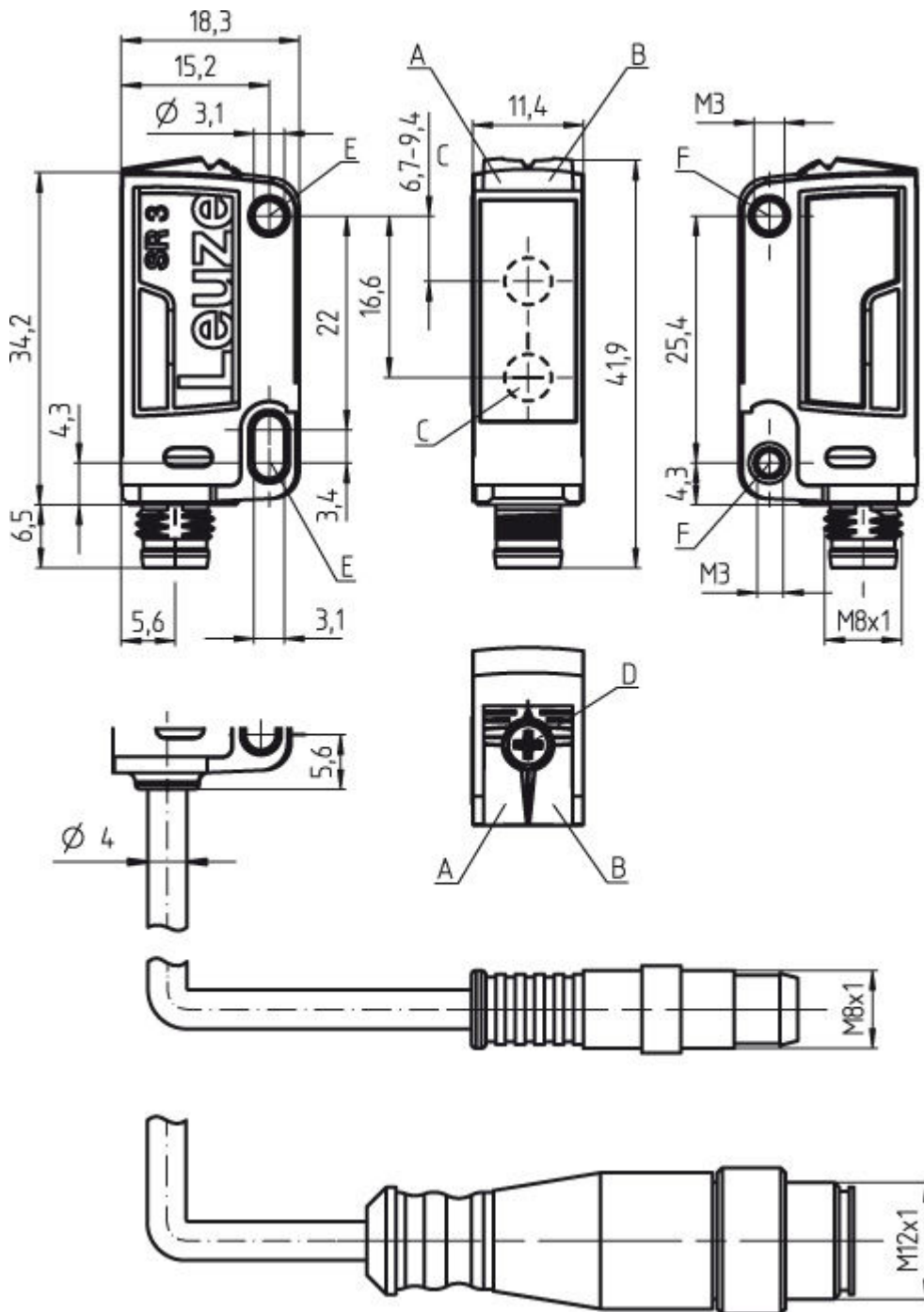
| | |
|----------------------|-----------------|
| Degree of protection | IP 69K IP 67 |
| Protection class | III |
| Certifications | c UL US |

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)

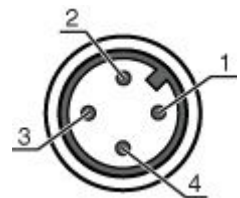
Electrical connection

| | |
|--------------------|----------------------|
| Connection 1 | |
| Type of connection | Cable with connector |

Part no.: 50136249 – HT3C.S/2N-200-M12 – Diffuse sensor with background

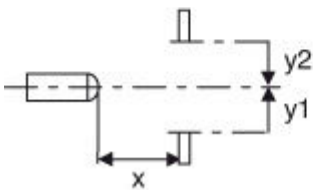
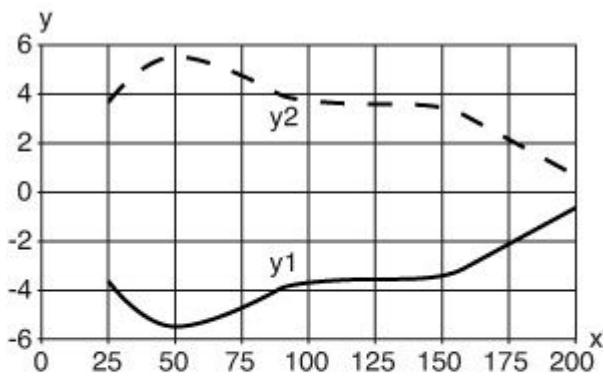
| Connection 1 | |
|--------------------|------------------------------|
| Function | Signal OUT Voltage supply |
| Cable length | 200 mm |
| Sheathing material | PUR |
| Cable color | Black |
| Wire cross section | 0.2 mm ² |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins |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

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



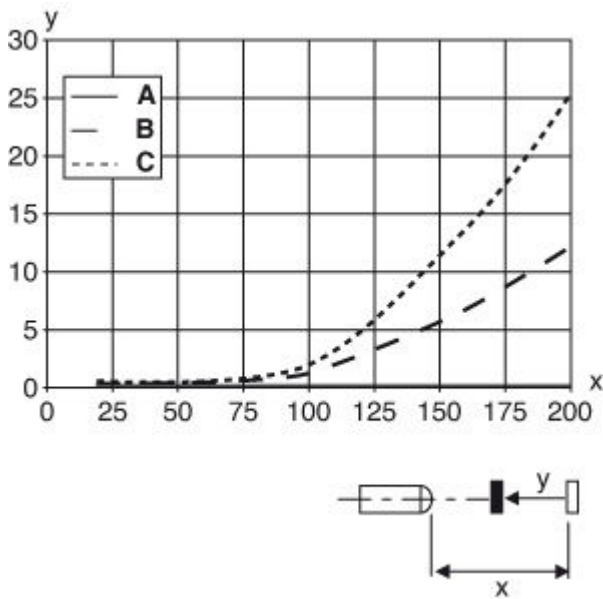
Diagrams

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 | 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 l: 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.: 50136249 – HT3C.S/2N-200-M12 – Diffuse sensor with background

| | |
|----|--|
| 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




Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|---|----------|--------------------|------------------|--|
|  | 50104570 | K-D M12A-4P-2m-FAB | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: FAB |
|  | 50104572 | K-D M12A-4P-5m-FAB | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: FAB |
|  | 50104571 | K-D M12W-4P-2m-FAB | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: FAB |

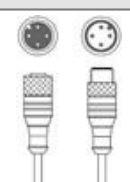
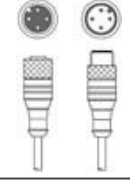


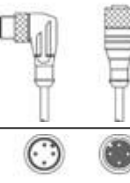

Part no.: 50136249 – HT3C.S/2N-200-M12 – Diffuse sensor with background

| | Part no. | Designation | Article | Description |
|---|----------|---------------------------|------------------|---|
|  | 50104573 | K-D M12W-4P-5m- FAB | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: FAB |
|  | 50130654 | KD U-M12-4A- P1-020 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR |
|  | 50130657 | KD U-M12-4A- P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR |
|  | 50130658 | KD U-M12-4A- P1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR |
|  | 50130648 | KD U-M12-4A- V1-020 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC |
|  | 50130652 | KD U-M12-4A- V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC |
|  | 50130653 | KD U-M12-4A- V1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC |
|  | 50130692 | KD U-M12-4W- P1-020 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR |
|  | 50130694 | KD U-M12-4W- P1-050 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR |
|  | 50130695 | KD U-M12-4W- P1-100 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR |


Part no.: 50136249 – HT3C.S/2N-200-M12 – Diffuse sensor with background

| | Part no. | Designation | Article | Description |
|---|----------|--------------------|------------------|---|
|  | 50130688 | KD U-M12-4W-V1-020 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC |
|  | 50130690 | KD U-M12-4W-V1-050 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC |
|  | 50130691 | KD U-M12-4W-V1-100 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC |






Connection technology - Interconnection cables

| | Part no. | Designation | Article | Description |
|---|----------|----------------------------|-----------------------|--|
|  | 50130741 | KDS U-M12-4A-M12-4A-P1-020 | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 4 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PUR |
|  | 50130743 | KDS U-M12-4A-M12-4A-P1-050 | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 4 -pin Shielded: No Cable length: 5,000 mm Sheathing material: PUR |
|  | 50130744 | KDS U-M12-4A-M12-4A-P1-100 | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 4 -pin Shielded: No Cable length: 10,000 mm Sheathing material: PUR |
|  | 50130759 | KDS U-M12-4A-M12-4W-P1-020 | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Connector, M12, Angled, Male, A-coded, 4 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PUR |
|  | 50130761 | KDS U-M12-4A-M12-4W-P1-050 | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Connector, M12, Angled, Male, A-coded, 4 -pin Shielded: No Cable length: 5,000 mm Sheathing material: PUR |
|  | 50130753 | KDS U-M12-4A-M12-4W-V1-020 | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Connector, M12, Angled, Male, A-coded, 4 -pin Shielded: No Cable length: 2,000 mm Sheathing material: PVC |



Part no.: 50136249 – HT3C.S/2N-200-M12 – Diffuse sensor with background

| | Part no. | Designation | Article | Description |
|---|----------|----------------------------|-----------------------|--|
|  | 50130755 | KDS U-M12-4A-M12-4W-V1-050 | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Connector, M12, Angled, Male, A-coded, 4 -pin Shielded: No Cable length: 5,000 mm Sheathing material: PVC |



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 |
|  | 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 |

Part no.: 50136249 – HT3C.S/2N-200-M12 – Diffuse sensor with background

| | Part no. | Designation | Article | Description |
|---|----------|----------------|-----------------|---|
|  | 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 |