

Technical data sheet

Diffuse sensor with background suppression

Part no.: 50139640

HT25CL1/4P



For illustration purposes only

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Technical data

Basic data

| | |
|---------------------|--|
| Series | 25C |
| 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% | 0.015 ... 0.45 m |
| Operating range, black 6% | 0.02 ... 0.3 m |
| Operating range limit | Typical operating range |
| Operating range limit | 0.005 ... 0.6 m |
| Adjustment range | 50 ... 600 mm |
| Beam path | Collimated |
| Light source | Laser, Red |
| Wavelength | 650 nm |
| Laser class | 1, IEC/EN 60825-1:2014 |
| Max. laser power | 0.0043 W |
| Transmitted-signal shape | Pulsed |
| Pulse duration | 4.5 μ s |
| Light spot size [at sensor distance] | 3 mm x 5 mm [1,000 mm] |
| Type of light spot geometry | elliptic |
| Shift angle | Typ. \pm 1.5° |

Electrical data

| | |
|--------------------|---|
| Protective circuit | Polarity reversal protection 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 ... 20 mA |

Outputs

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

Switching outputs

| | |
|-------------------------|---|
| Voltage type | DC |
| Switching current, max. | 100 mA |
| Switching voltage | high: $\geq(U_B - 2.5V)$ low: $\leq 2.5 V$ |

Switching output 1

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

Switching output 2

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

Time behavior

| | |
|---------------------|----------|
| Switching frequency | 2,500 Hz |
| Response time | 0.2 ms |
| Readiness delay | 300 ms |

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 ² |

Mechanical data

| | |
|----------------------------|--|
| Dimension (W x H x L) | 15 mm x 42.7 mm x 30 mm |
| Housing material | Plastic |
| Plastic housing | ABS |
| Lens cover material | Plastic |
| Net weight | 55 g |
| Housing color | Red |
| Type of fastening | Through-hole mounting with M4 thread 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

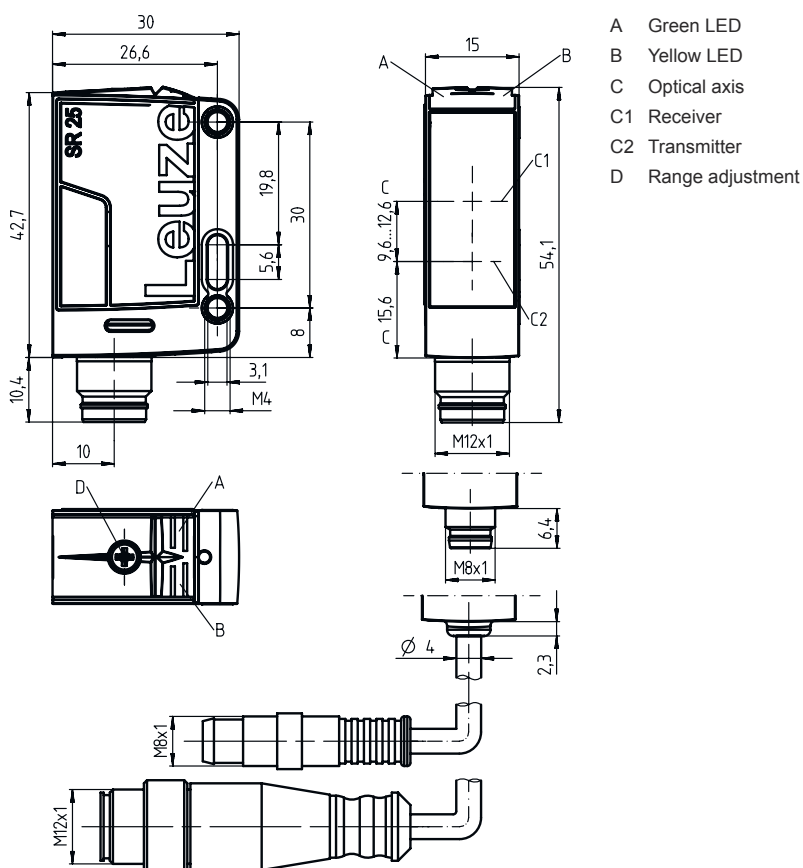
| | |
|----------------------|-----------------|
| Degree of protection | IP 67 IP 69K |
| Protection class | III |
| Certifications | c UL US |
| Standards applied | IEC 60947-5-2 |

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



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 ² |

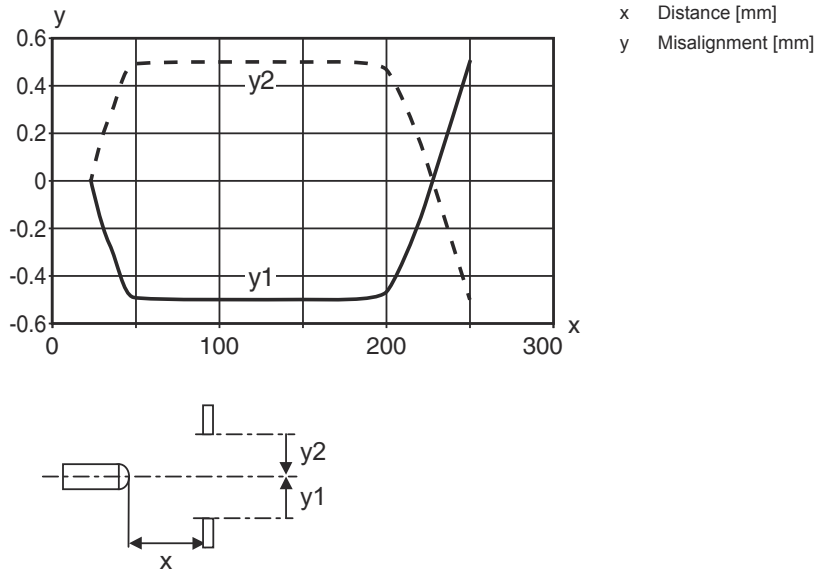
Conductor color

Conductor assignment

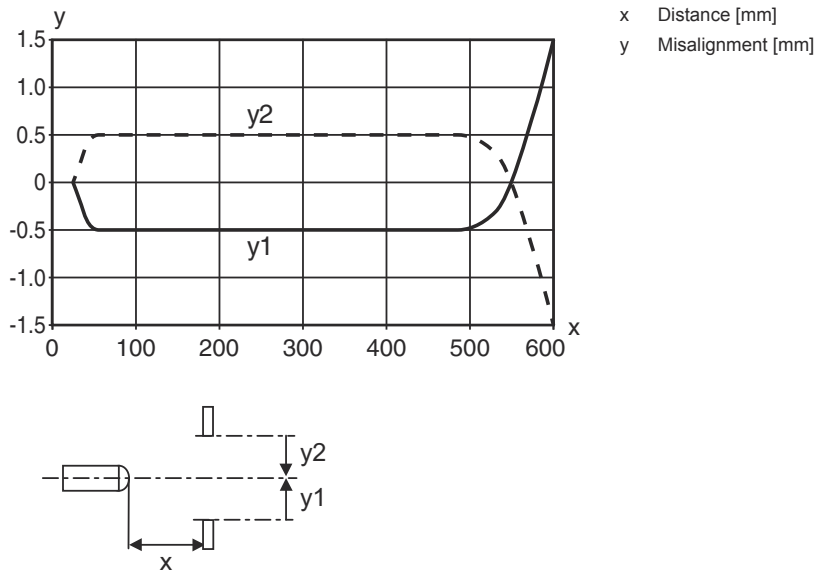
| | |
|-------|-------|
| Brown | V+ |
| White | OUT 2 |
| Blue | GND |
| Black | OUT 1 |

Diagrams

Typ. response behavior (focusing distance 250 mm)

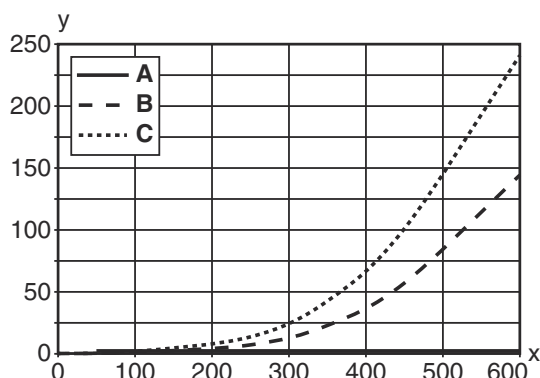


Typ. response behavior (focusing distance 600 mm)



Diagrams

Typ. black/white behavior



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



Operation and display

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

Part number code

Part designation: **AAA25C d EE-f.GGH/IJ-K**

| | |
|---------------|---|
| AAA25C | Operating principle / construction HT25C: Diffuse reflection sensor with background suppression PRK25C: Retro-reflective photoelectric sensor with polarization filter LS25C: Throughbeam photoelectric sensor transmitter LE25C: Throughbeam photoelectric sensor receiver DRT25C: Dynamic reference diffuse sensor |
| 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 | Preset range (optional) n/a: operating range acc. to data sheet xxxF: Preset range [mm] |
| GG | Equipment A: Autocollimation principle (single lens) S: small light spot D: Detection of stretch-wrapped objects X: extended model HF: Suppression of HF illumination (LED) XL: Extra long light spot T: autocollimation principle (single lens) for highly transparent bottles without tracking TT: autocollimation principle (single lens) for highly transparent bottles with tracking F: Foreground suppression R: greater operating range SL: Slit diaphragm |

Part number code

| | |
|----------|---|
| H | Operating range adjustment 1: 270° potentiometer 2: multiturn potentiometer 3: teach-in via button R: greater operating range |
| 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 X: pin not used 8: activation input (activation with high signal) L: IO-Link interface (SIO mode: PNP light switching, NPN dark switching) 6: push-pull switching output, PNP light switching, NPN dark switching G: Push-pull switching output, PNP dark switching, NPN light switching |
| 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 W: warning output X: pin not used 6: push-pull switching output, PNP light switching, NPN dark switching T: teach-in via cable G: Push-pull switching output, PNP dark switching, NPN light switching 8: activation input (activation with high signal) |
| K | Electrical connection n/a: cable, standard length 2000 mm, 4-wire 200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug) M8: M8 connector, 4-pin (plug) M12: M12 connector, 4-pin (plug) 200-M8: cable, length 200 mm with M8 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.



WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT




- The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of **laser class 1** and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.
- ⌘ Observe the applicable statutory and local laser protection regulations.
 - ⌘ The device must not be tampered with and must not be changed in any way.
There are no user-serviceable parts inside the device.
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

Further information



- Light source: Average life expectancy 50,000h at an ambient temperature of 25 °C
- Sum of the output currents for both outputs 100 mA

Accessories

Mounting technology - Mounting brackets

| | Part no. | Designation | Article | Description |
|---|----------|-------------|------------------|---|
|  | 50118543 | BT 300M.5 | Mounting bracket | Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type, Suited for M4 screws Type of mounting device: Adjustable Material: Stainless steel |

Mounting technology - Rod mounts

| | Part no. | Designation | Article | Description |
|---|----------|--------------|-----------------|--|
|  | 50117829 | BTP 200M-D12 | Mounting system | Design of mounting device: Protection hood Fastening, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal |
|  | 50117252 | BTU 300M-D12 | Mounting system | Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type, Suited for M4 screws Type of mounting device: Clampable, Adjustable, Turning, 360° 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.