

## Technical data sheet

# Distance diffuse sensor with background suppression

Part no.: 50154568

ODT25CL1-3M.3/L6-M8



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CDRH

IO-Link



For illustration purposes only

# Technical data

## Basic data

Series	25C
Operating principle	Distance diffuse sensor with background suppression

## Special version

Special version	2 independent switching outputs Measurement value output
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## Optical data

Black-white error	±20 mm, see diagram
Operating range	0.07 ... 3 m (guaranteed operating range)
Adjustment range	50 ... 3,500 mm
Beam path	Focused
Light source	Laser, Red
Wavelength	680 nm
Laser class	1, IEC 60825-1:2014 / EN 60825-1:2014+A11:2021
Transmitted-signal shape	Pulsed
Type of light spot geometry	Round
Shift angle	typ. ± 2.5°

## Measurement data

Measurement range	50 ... 3,500 mm
Resolution	1.0 mm
Accuracy	-20 ... 20 mm
Reproducibility (1 sigma)	0 ... 13 mm
Measurement value output	via IO-Link
Optical distance measurement principle	Time of flight

## Electrical data

Protective circuit	Polarity reversal protection Short circuit protected Transient protection
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## Performance data

Supply voltage $U_B$	10 ... 30 V, DC, Incl. residual ripple
Residual ripple	0 ... 15 %, From $U_B$
Open-circuit current	0 ... 35 mA

## Outputs

Number of digital switching outputs	2 Piece(s)
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## Switching outputs

Type	Digital switching output
Voltage type	DC
Switching current, max.	90 mA
Switching voltage	high: $\geq (U_B - 2V)$ low: $\leq 2 V$

## Switching output 1

Assignment	Connection 1, pin 4
Switching element	Transistor, Push-pull
Switching principle	IO-Link / light switching (PNP)/dark switching (NPN)

## Switching output 2

Assignment	Connection 1, pin 2
Switching element	Transistor, Push-pull
Switching principle	Light switching (PNP)/dark switching (NPN)

## Time behavior

Switching frequency	7 ... 15 Hz, depending on diffuse reflectance
Response time	33 ... 70 ms, depending on diffuse reflectance
Readiness delay	300 ms

## Interface

Type	IO-Link
IO-Link	
COM mode	COM3
Profile	Smart sensor profile
Min. cycle time	COM3 = 0.6 ms
Frame type	2.V
Specification	V1.1
Device ID	2221
SIO-mode support	Yes

## Connection

Number of connections	1 Piece(s)
<b>Connection 1</b>	
Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Connector
Thread size	M8
Type	Male
Material	Plastic
No. of pins	4 -pin

## Mechanical data

Dimension (W x H x L)	15 mm x 42.7 mm x 30 mm
Housing material	Plastic
Plastic housing	PC-ABS
Lens cover material	Plastic / PMMA
Net weight	30 g
Housing color	Red
Type of fastening	Through-hole mounting
	Via optional mounting device
Recommended tightening torque for M3 fastening	0.9 N·m
Compatibility of materials	ECOLAB

## Operation and display

Type of display	LED
Number of LEDs	2 Piece(s)
Operational controls	Teach button
Function of the operational control	Light/dark switching
	Range adjustment

## Environmental data

Ambient temperature, operation	-30 ... 50 °C
Ambient temperature, storage	-40 ... 70 °C

## Technical data

### Certifications

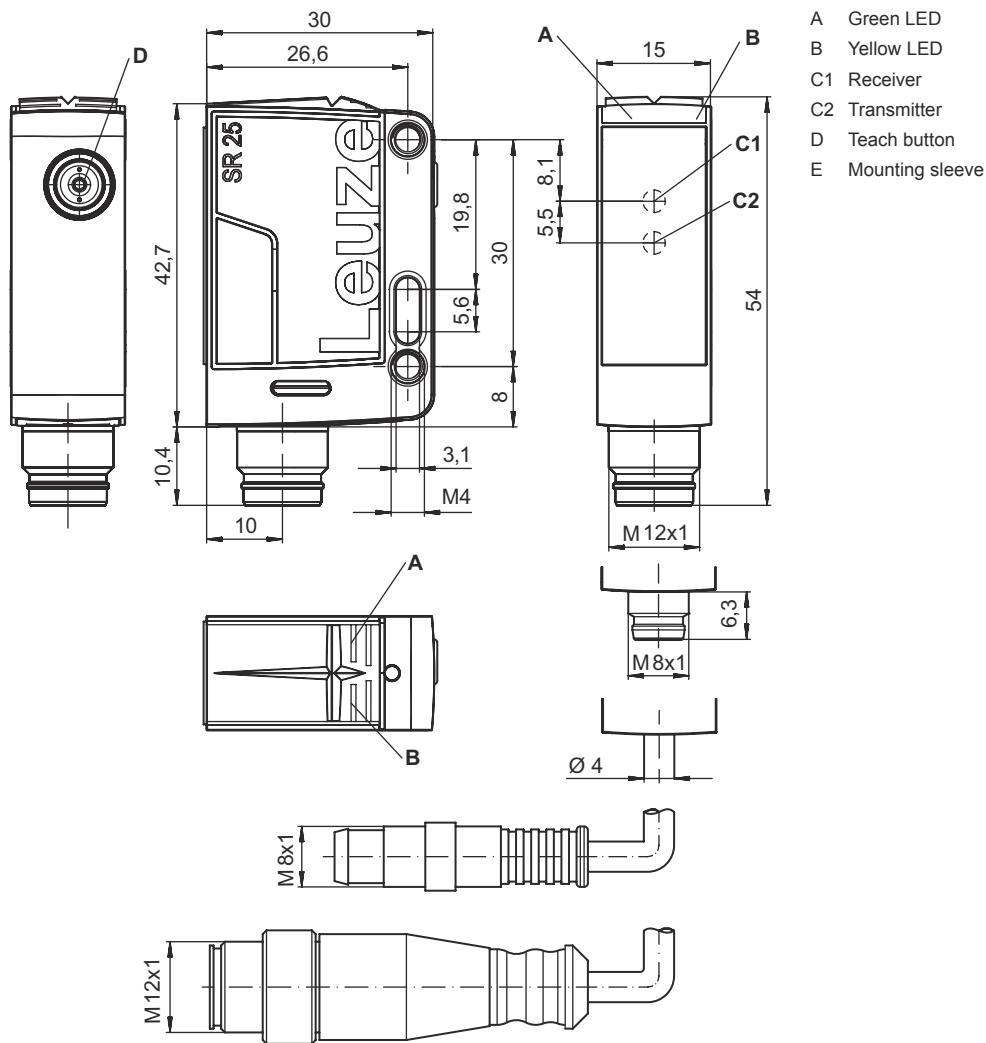
Degree of protection	IP 67
	IP 69K
Protection class	III
Approvals	c UL US
Standards applied	IEC 60947-5-2

### Classification

Customs tariff number	85365019
<b>ECLASS 5.1.4</b>	27270904
<b>ECLASS 8.0</b>	27270904
<b>ECLASS 9.0</b>	27270904
<b>ECLASS 10.0</b>	27270904
<b>ECLASS 11.0</b>	27270904
<b>ECLASS 12.0</b>	27270903
<b>ECLASS 13.0</b>	27270903
<b>ECLASS 14.0</b>	27270903
<b>ECLASS 15.0</b>	27270903
<b>ECLASS 16.0</b>	27270903
<b>ETIM 5.0</b>	EC002719
<b>ETIM 6.0</b>	EC002719
<b>ETIM 7.0</b>	EC002719
<b>ETIM 8.0</b>	EC002719
<b>ETIM 9.0</b>	EC002719
<b>ETIM 10.0</b>	EC002719

## Dimensioned drawings

All dimensions in millimeters

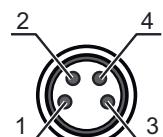


## Electrical connection

### Connection 1

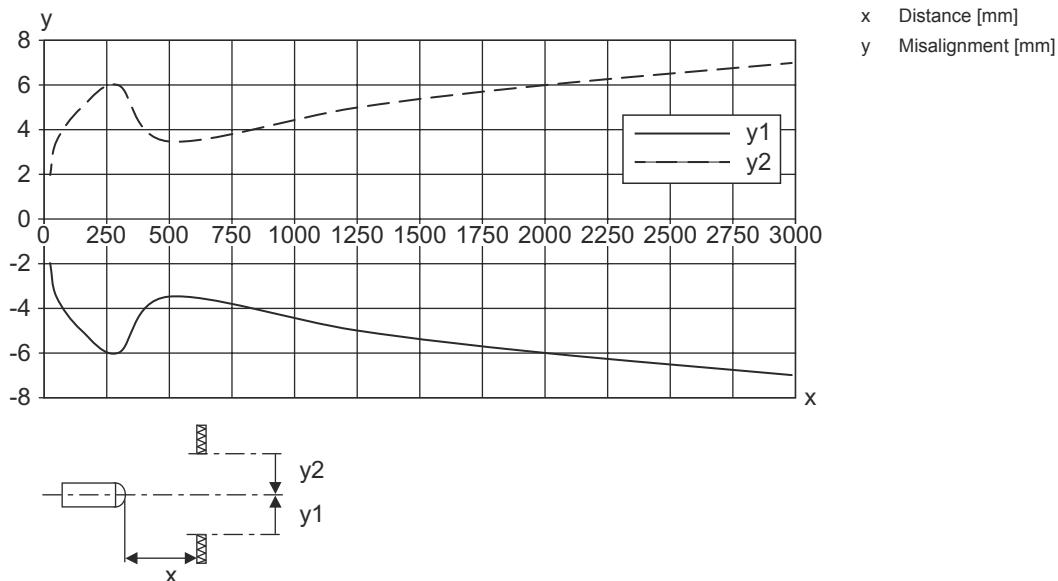
Function	Signal IN
Type of connection	Signal OUT
Thread size	Voltage supply
Type	Connector
Material	M8
No. of pins	Male

Pin	Pin assignment
1	V+
2	OUT 2
3	GND
4	IO-Link / OUT 1

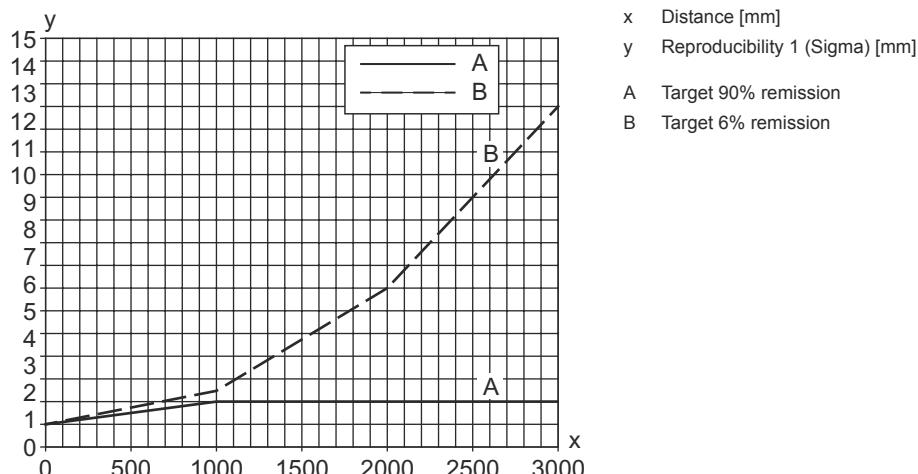


## Diagrams

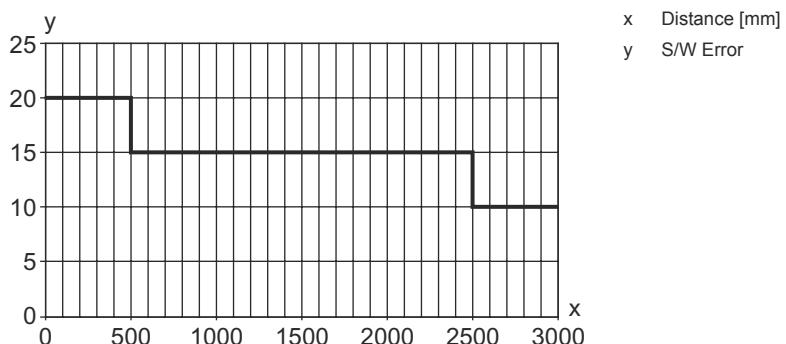
### Typ. response behavior (white 90 %)



### Typical reproducibility (1 Sigma / 25°C)



### S/W Error Diagram



## 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

AAA3C	<b>Operating principle / construction</b> 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 ODT3C: Distance diffuse sensor with background suppression ODT25C: Distance diffuse sensor with background suppression
d	<b>Light type</b> n/a: red light I: infrared light
EE	<b>Light source</b> n/a: LED L1: laser class 1 L2: laser class 2 PP: Power PinPoint® LED
f	<b>Preset range (optional)</b> n/a: operating range acc. to data sheet xxxF: Preset range [mm] 2M: operating range of 2 meters 3M: Operating range 3 meters
GG	<b>Equipment</b> 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 X: extended model HF: Suppression of HF illumination (LED)
H	<b>Operating range adjustment</b> 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	<b>Switching output/function OUT 1/IN: Pin 4 or black conductor</b> 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 interface (SIO mode: PNP light switching, NPN dark switching) 8: activation input (activation with high signal) X: pin not used 1: IO-Link / light switching (NPN) / dark switching (PNP)
J	<b>Switching output / function OUT 2/IN: pin 2 or white conductor</b> 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: pin not used 8: activation input (activation with high signal) 9: deactivation input (deactivation with high signal) T: teach-in via cable

## Part number code

K

### Electrical connection

n/a: cable, standard length 2000 mm, 4-wire  
 5000: cable, standard length 5000 mm, 4-wire  
 M8: M8 connector, 4-pin (plug)  
 M8.3: M8 connector, 3-pin (plug)  
 200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)  
 200-M8.3: cable, length 200 mm with M8 connector, 3-pin, axial (plug)  
 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: CYJV7 or PVVA/PVVA7)



### ATTENTION! LASER RADIATION – CLASS 1 LASER PRODUCT



The device satisfies the requirements of IEC 60825-1:2014 / EN 60825-1:2014+A11:2021 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.  
 There are no user-serviceable parts inside the device.  
 Repairs must only be performed by Leuze electronic GmbH + Co. KG.

## Further information

- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C
- With a supply voltage >18 V and an ambient temperature <40 °C, the maximum switching current is 100 mA per switching output.
- When starting the sensor below -20°C, a warmup time of one minute is required until the first teach-in
- At ambient temperatures up to 40°C, the operating range is 3m (6%-90% remission). For ambient temperatures between 40°C and 50°C the operating range is 2,7m (6%-90% remission)

## Accessories

### Connection technology - Connection cables

Part no.	Designation	Article	Description
	50130850	KD U-M8-4A-V1-050	Connection cable Application: Chemical resistant Connection 1: Connector, M8, Axial, Female, 4 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC
	50130871	KD U-M8-4W-V1-050	Connection cable Application: Chemical resistant Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC

### 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 Contains: 2x M4 x 25 screw, 2x M4 x 20 screw, 4x position washers 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.