Technical data sheet

Energetic diffuse sensor

Part no.: 50122595

FT28.3/2N

Contents

Figure can vary

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Technical data

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Basic data

Series	28
Operating principle	Diffuse reflection principle

Special version

Optical data

Operating range	Guaranteed operating range
Operating range, white 90%	0.001 ... 0.21 m
Operating range, gray 50%	0.002 ... 0.185 m
Operating range, gray 18%	0.003 ... 0.145 m
Operating range, black 6%	0.005 ... 0.125 m
Operating range limit	Typical operating range
Operating range limit, white 90%	0 ... 0.25 m
Operating range limit, gray 50%	0.002 ... 0.225 m
Operating range limit, gray 18%	0.003 ... 0.175 m
Operating range limit, black 6%	0.005 ... 0.15 m
Light source	LED, Red
LED light wavelength	620 nm
Transmitted-signal shape	Pulsed
LED group	Exempt group (in acc. with EN 62471)

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: ≥(U_B-2.5V)
	low: ≤2.5V

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	500 Hz
Response time	1 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 mm²

Mechanical data

Dimension (W x H x L)	15 mm x 46.5 mm
Thread size	M18
Length	31.8 mm
Housing material	Plastic
Plastic housing	ABS
Lens cover material	Plastic
Net weight	75 g
Housing color	Black
	Red

Operation and display

Type of display	LED
Number of LEDs	2 Piece(s)
Operational controls	Teach button

Environmental data

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

Certifications

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

Classification

Customs tariff number	85365019
eCl@ss 5.1.4	27270903
eCl@ss 8.0	27270903
eCl@ss 9.0	27270903
eCl@ss 10.0	27270903
eCl@ss 11.0	27270903
ETIM 5.0	EC001821
ETIM 6.0	EC001821
ETIM 7.0	EC001821

Dimensioned drawings

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All dimensions in millimeters

A   Optical axis
B   Indicator diode
C   Teach button
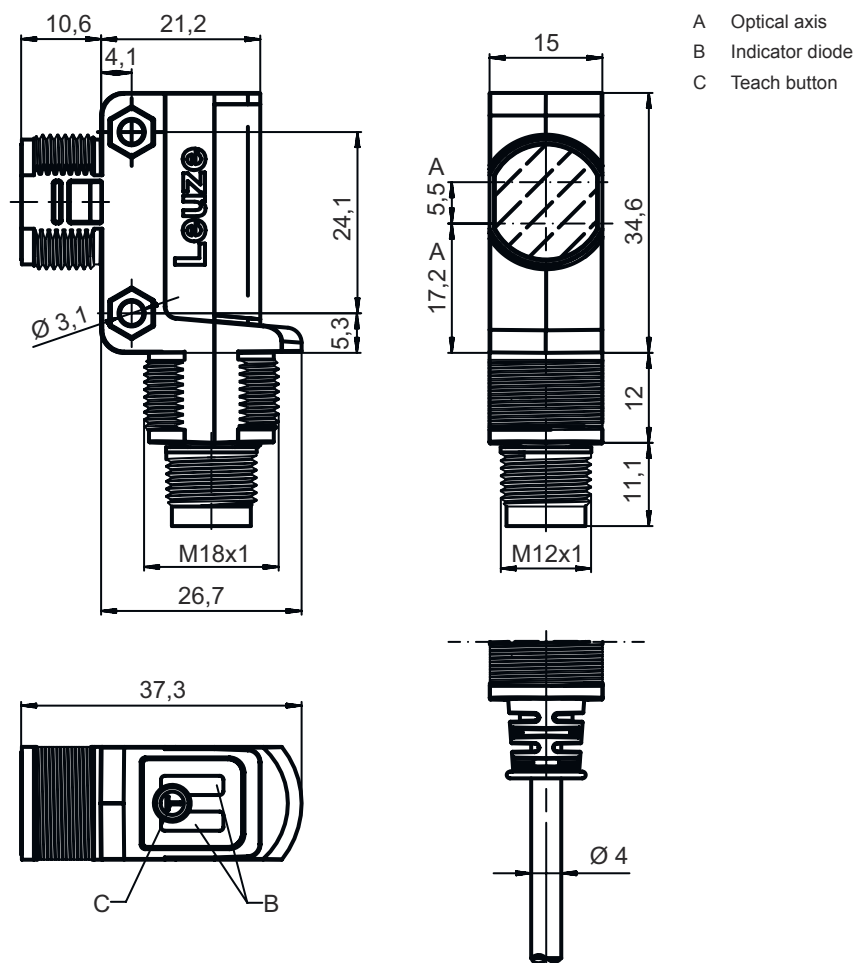
Electrical connection

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 mm²

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

Diagrams

Typ. black/white behavior
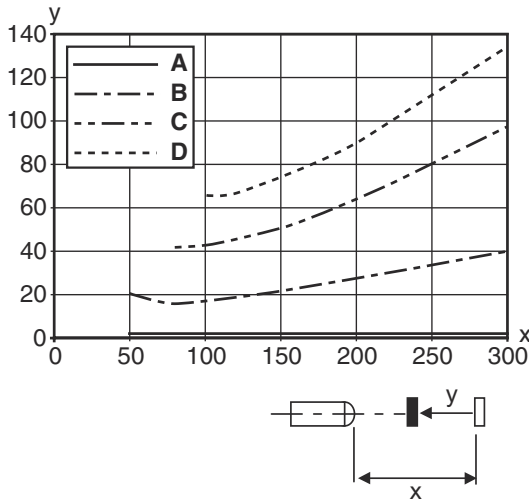
x	Range [mm]
y	Reduction of range [mm]

A	White 90%
B	Gray 50%
C	Gray 18%
D	Black 6%

Fading: black/white error < 50 % The black/white error is calculated from the operating range against white and the reduction of the operating range against black: **black/white error = reduction of the operating range against black / operating range against white x 100%**

Operation and display

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

Part number code

Part designation: **AAA28d.E/ ff-hh**

AAA28	**Operating principle / construction** LS28: throughbeam photoelectric sensor transmitter LE28: throughbeam photoelectric sensor receiver ET28: energetic diffuse reflection sensor FT28: diffuse reflection sensor with fading PRK28: retro-reflective photoelectric sensor with polarization filter
d	**Light type** n/a: red light I: infrared light
E	**Equipment** 3: teach-in via button
ff	**Switching output / function / OUT1OUT2 (OUT1 = pin 4, OUT2 = pin 2)** 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching D: deactivation input (deactivation with low signal) 9: deactivation input (deactivation with high signal)
hh	n/a: cable, standard length 2000 mm, 4-wire 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.

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Notes

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⚠	**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:
ℹ	↳ 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)

Further information

- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C
- With the set scanning range, a tolerance of the operating range is possible depending on the reflection properties of the material surface.

Accessories

Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50124651	BT 205M-10SET	Mounting device set	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
	50117255	BTU 200M-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 M3 screws Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal

	Note
ℹ	↳ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.