

## Technical data sheet Energetic diffuse sensor

Part no.: 50122595

FT28.3/2N



Figure can vary

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## Technical data

### 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
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
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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 ... 20 mA

### Outputs

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

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

### 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 mm <sup>2</sup>

### 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

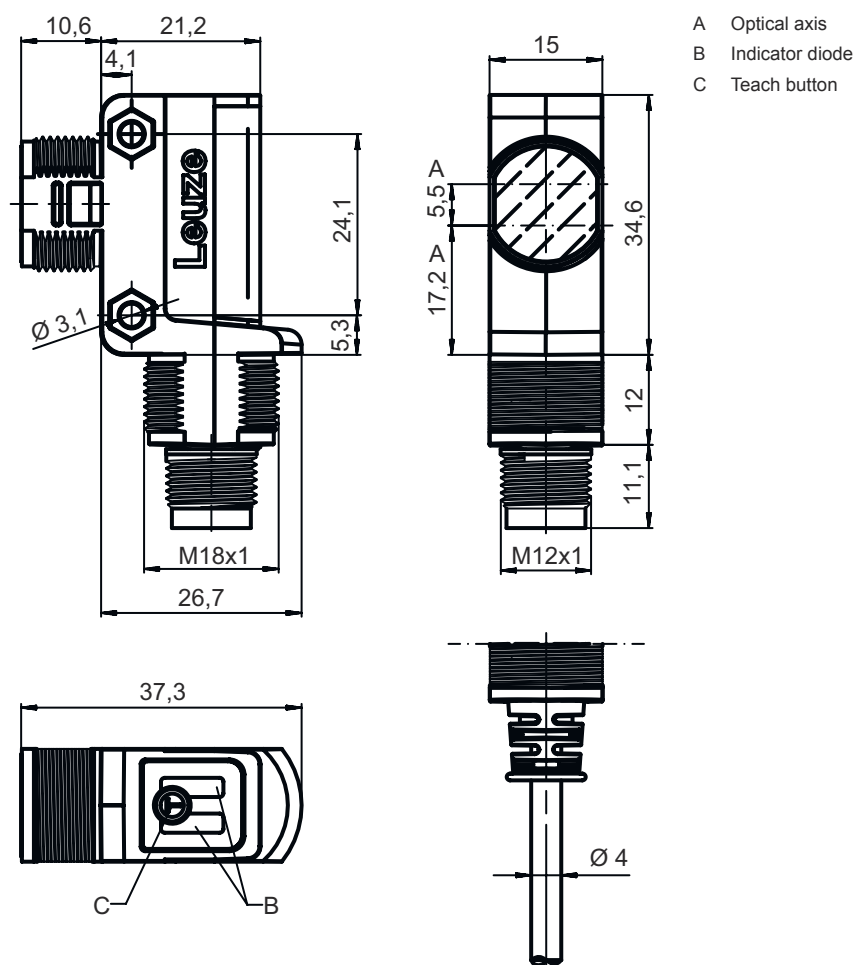
Degree of protection	IP 67
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

### 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

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 <sup>2</sup>

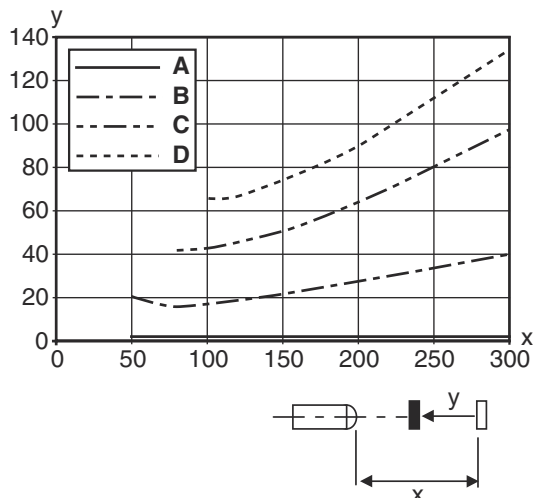
### Conductor color

### 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

<b>AAA28</b>	<b>Operating principle / construction</b> 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
<b>d</b>	<b>Light type</b> n/a: red light I: infrared light
<b>E</b>	<b>Equipment</b> 3: teach-in via button
<b>ff</b>	<b>Switching output / function / OUT1OUT2 (OUT1 = pin 4, OUT2 = pin 2)</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 D: Deactivation input (deactivation with low signal) 9: deactivation input (deactivation with high signal) X: pin not used
<b>hh</b>	<b>Electrical connection</b> n/a: cable, standard length 2000 mm, 4-wire 200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (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](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: 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: Montagesystem Fastening, at system: für Rundstange 12 mm, Blechklemmbefestigung Mounting bracket, at device: schraubbar, für M3-Schrauben geeignet Type of mounting device: klemmbar, drehbar 360°, justierbar Material: Metall

### Note



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