

Technical data sheet Energetic diffuse sensor

Part no.: 50134894

FT5.3/4X-200-M12

Contents

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



Figure can vary



Technical data

Basic data

Series	5
Operating principle	Diffuse reflection principle

Optical data

Operating range	Guaranteed operating range
Operating range, white 90%	0.001 ... 0.215 m
Operating range, gray 50%	0.001 ... 0.19 m
Operating range, gray 18%	0.003 ... 0.15 m
Operating range, black 6%	0.003 ... 0.125 m
Operating range limit	Typical operating range
Operating range limit, white 90%	0 ... 0.28 m
Operating range limit, gray 50%	0.001 ... 0.245 m
Operating range limit, gray 18%	0.003 ... 0.19 m
Operating range limit, black 6%	0.001 ... 0.16 m
Light source	LED, Red
LED light wavelength	620 nm
LED group	Exempt group (in acc. with EN 62471)
Transmitted-signal shape	Pulsed

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	1 Piece(s)
-------------------------------------	------------

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, pin 4
Switching element	Transistor, PNP
Switching principle	Light 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 with connector
Cable length	200 mm
Sheathing material	PUR
Cable color	Black
Wire cross section	0.2 mm ²
Thread size	M12
Type	Male
Material	Plastic
No. of pins	4 -pin
Encoding	A-coded

Mechanical data

Dimension (W x H x L)	14 mm x 32.5 mm x 20.2 mm
Housing material	Plastic
Plastic housing	ABS
Lens cover material	Plastic
Net weight	40 g
Housing color	Black Red

Operation and display

Type of display	LED
Number of LEDs	1 Piece(s)
Operational controls	Teach button

Environmental data

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

Certifications

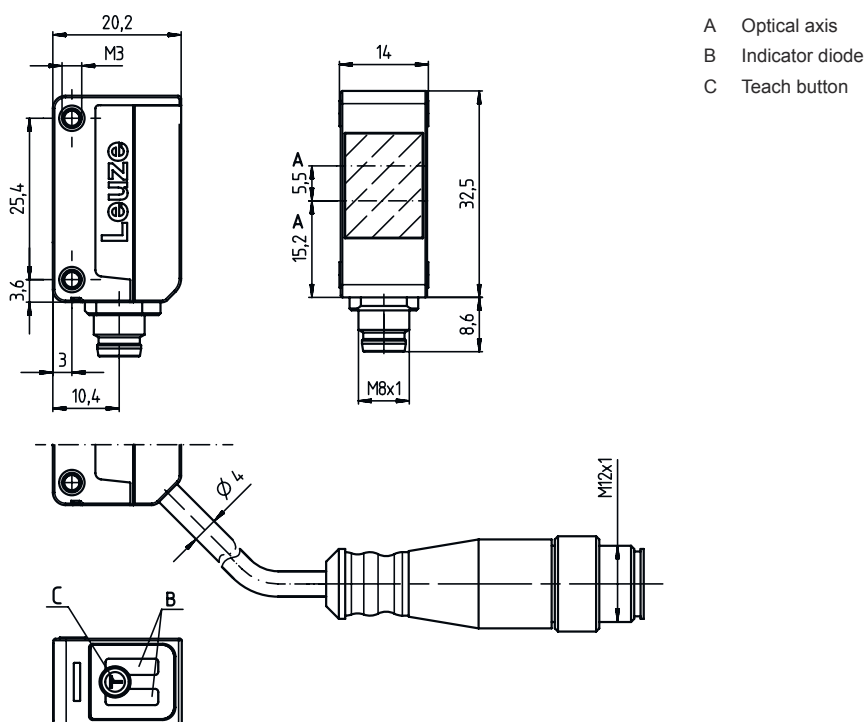
Degree of protection	IP 67
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

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



- A Optical axis
- B Indicator diode
- C Teach button

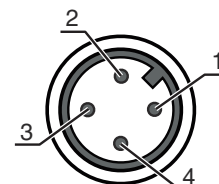
Electrical connection

Connection 1

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

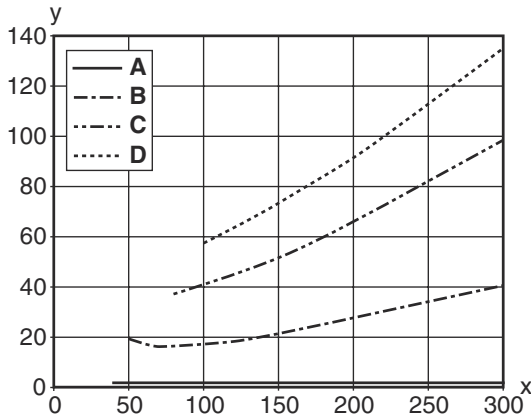
Pin Pin assignment

1	V+
2	n.c.
3	GND
4	OUT 1



Diagrams

Typ. black/white behavior



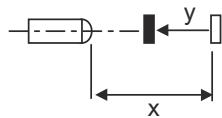
x Range [mm]
y Reduction of range [mm]

- 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:

$$\text{black/white error} = \frac{\text{reduction of the operating range against black}}{\text{operating range against white}} \times 100\%$$



Operation and display

LED	Display	Meaning
1	Yellow, continuous light	Object detected

Part number code

Part designation: AAA5d.EE/ ff-GG-hh-l

AAA5	<p>Operating principle / construction HT5: diffuse reflection sensor with background suppression LS5: throughbeam photoelectric sensor transmitter LE5: throughbeam photoelectric sensor receiver ET5: energetic diffuse reflection sensor FT5: diffuse reflection sensor with fading PRK5: retro-reflective photoelectric sensor with polarization filter</p>
d	<p>Light type n/a: red light l: infrared light</p>
EE	<p>Equipment 1: adjustable range M: for semi-transparent objects H: for the detection of transparent films X: reinforced fading 3: teach-in via button R: combination product for reflector DTKS 30x50</p>
ff	<p>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 X: pin not used 9: deactivation input (deactivation with high signal) D: deactivation input (deactivation with low signal)</p>
GG	<p>Version P1: narrow light beam</p>



Part number code

hh	Electrical connection n/a: cable, standard length 2000 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) M8.1: Snap-in, M8 connector, 4-pin (plug)
I	Configuration P1: different configuration

Note

i	A list with all available device types can be found on the Leuze website at www.leuze.com .
---	--

Notes

 Observe intended use!	
	<ul style="list-style-type: none"> ⌘ 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:

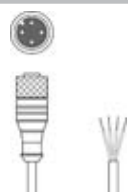
i	<ul style="list-style-type: none"> ⌘ Only for use in "class 2" circuits ⌘ These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/ CYJV7 or PVVA/PVVA7)
---	--

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

Connection technology - Connection cables



	Part no.	Designation	Article	Description
	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

Accessories

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, Suited for M3 screws Type of mounting device: Adjustable Material: Stainless steel
	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
	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
	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



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