

## Technical data sheet Energetic diffuse sensor

Part no.: 50140134

ET412B.1/4X-M12

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Figure can vary



## Technical data

### Basic data

Series	412B
Operating principle	Diffuse reflection principle

### Optical data

Operating range	Guaranteed operating range
Operating range, white 90%	0.004 ... 0.54 m
Operating range, gray 50%	0.007 ... 0.46 m
Operating range, gray 18%	0.008 ... 0.3 m
Operating range, black 6%	0.01 ... 0.22 m
Operating range limit	Typical operating range
Operating range limit, white 90%	0.004 ... 0.66 m
Operating range limit, gray 50%	0.007 ... 0.57 m
Operating range limit, gray 18%	0.008 ... 0.37 m
Operating range limit, black 6%	0.01 ... 0.285 m
Light source	LED, Red
LED light wavelength	660 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 ... 36 V, DC, Incl. residual ripple
Residual ripple	0 ... 20 %, From $U_B$
Open-circuit current	0 ... 15 mA

### Outputs

Number of digital switching outputs	1 Piece(s)
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### Switching outputs

Voltage type	DC
Switching current, max.	200 mA

### Switching output 1

Switching element	Transistor, PNP
Switching principle	Light switching

### Timing

Switching frequency	1,000 Hz
Response time	0.5 ms
Readiness delay	60 ms

### Connection

#### Connection 1

Function	Signal OUT Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	4 -pin
Encoding	A-coded

### Mechanical data

Thread size	M12 x 1 mm
Dimension (Ø x L)	12 mm x 60 mm
Housing material	Metal
Metal housing	Chromed brass
Lens cover material	Glass
Net weight	20 g
Housing color	Silver

### Operation and display

Type of display	LED
Number of LEDs	3 Piece(s)
Operational controls	270° potentiometer
Function of the operational control	Sensitivity adjustment

### Environmental data

Ambient temperature, operation	-25 ... 55 °C
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### Certifications

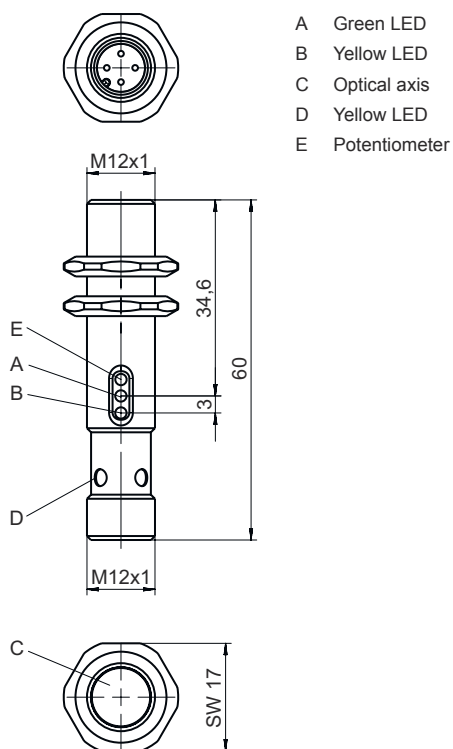
Degree of protection	IP 67
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

### 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

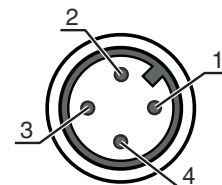


## Electrical connection

### Connection 1

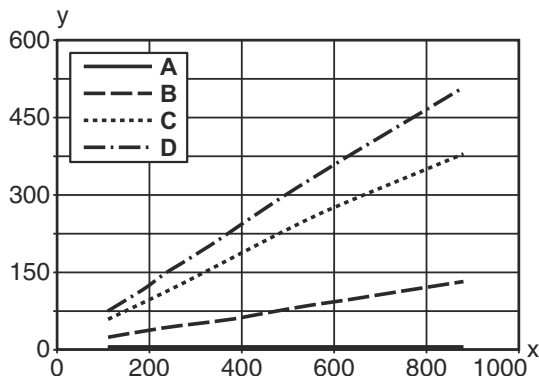
<b>Function</b>	Signal OUT
	Voltage supply
<b>Type of connection</b>	Connector
<b>Thread size</b>	M12
<b>Type</b>	Male
<b>Material</b>	Metal
<b>No. of pins</b>	4 -pin
<b>Encoding</b>	A-coded

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

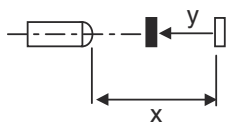


# Diagrams

## Typ. black/white behavior



x Range [mm]  
 y Reduction of range [mm]  
 A White 90%  
 B Gray 50%  
 C Gray 18%  
 D Black 6%



## Operation and display

LED	Display	Meaning
1	Green, continuous light	Function reserve
2	Yellow, continuous light	Switching output/switching state active

## Part number code

Part designation: AAA412BGG.H/ii-K

<b>AAA412B</b>	<b>Operating principle / construction</b> LS412B: throughbeam photoelectric sensor transmitter LE412B: throughbeam photoelectric sensor receiver ET412B: energetic diffuse reflection sensor PRK412B: retro-reflective photoelectric sensor with polarization filter
<b>GG</b>	<b>Light source</b> n/a: LED L2: laser class 2
<b>H</b>	<b>Operating range adjustment</b> 1: 270° potentiometer
<b>ii</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) X: pin not used
<b>K</b>	<b>Electrical connection</b> n/a: cable, standard length 2000 mm, 3-wire M12: M12 connector, 4-pin (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.

## 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
  	50130690	KD U-M12-4W-V1-050	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC

### Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50113549	BT D12M.5	Mounting bracket	Diameter, inner: 12 mm 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: Stainless steel

#### Note



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