



**Part no.: 50140138**  
**ET412B.1/2X-M12**  
**Energetic diffuse sensor**



Figure can vary

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## Technical data

<b>Basic data</b>	
Series	412B
Operating principle	Diffuse reflection principle
<b>Optical data</b>	
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
LED group	Exempt group (in acc. with EN 62471)
Transmitted-signal shape	Pulsed
<b>Electrical data</b>	
Protective circuit	Polarity reversal protection Short circuit protected
<b>Performance data</b>	
Supply voltage $U_B$	10 ... 36 V , DC , Incl. residual ripple
Residual ripple	0 ... 20 % , From $U_B$
Open-circuit current	0 ... 15 mA
<b>Outputs</b>	
Number of digital switching outputs	1 Piece(s)
<b>Switching outputs</b>	
Voltage type	DC
Switching current, max.	200 mA
<b>Switching output 1</b>	
Switching element	Transistor , NPN
Switching principle	Light switching
<b>Timing</b>	
Switching frequency	1,000 Hz
Response time	0.5 ms
Readiness delay	60 ms
<b>Connection</b>	

**Connection 1**

Type of connection	Connector
Function	Signal OUT Voltage supply
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 , 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**

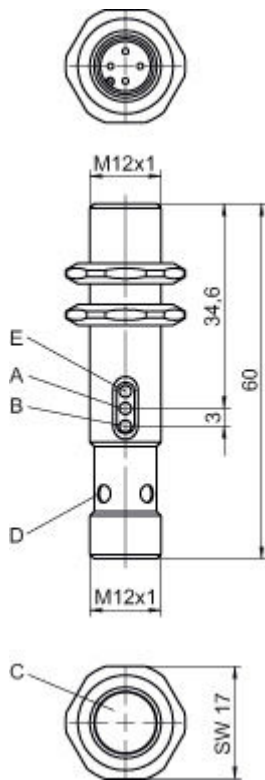
Degree of protection	IP 67
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

**Classification**

Customs tariff number	85365019
eCl@ss 8.0	27270903
eCl@ss 9.0	27270903
ETIM 5.0	EC001821
ETIM 6.0	EC001821

## Dimensioned drawings

All dimensions in millimeters

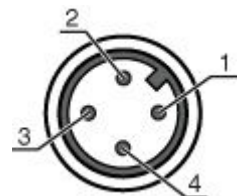


- A Green LED
- B Yellow LED
- C Optical axis
- D Yellow LED
- E Potentiometer

## Electrical connection

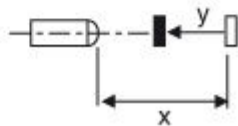
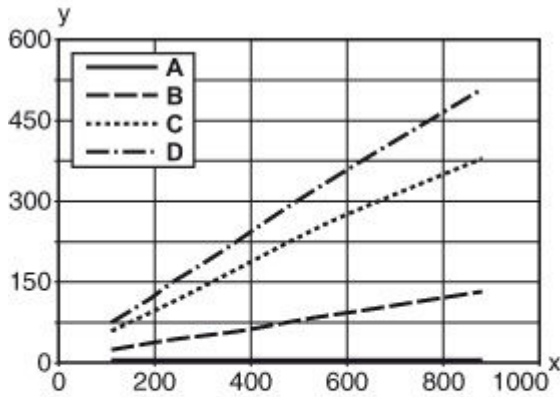
Connection 1	
Type of connection	Connector
Function	Signal OUT Voltage supply
Thread size	M12
Type	Male
Material	Metal
No. of pins	4 -pin
Encoding	A-coded

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%

## Operation and display

### LEDs

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**

AAA412B	<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
GG	<b>Light source:</b> n/a: LED L2: laser class 2
H	<b>Operating range adjustment:</b> 1: 270° potentiometer

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ii	<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
K	<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 electronic 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