

Technical data sheet Energetic diffuse sensor

Part no.: 50140138

ET412B.1/2X-M12

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For illustration purposes only



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, 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 |
| Operating range limit | Typical operating range |
| Light source | LED, Red |
| 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 |
|--------------------|---|

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) |
|-------------------------------------|------------|

Switching outputs

| | |
|-------------------------|--------|
| Voltage type | DC |
| Switching current, max. | 200 mA |

Switching output 1

| | |
|---------------------|-----------------|
| Switching element | Transistor, NPN |
| Switching principle | Light switching |

Time behavior

| | |
|---------------------|----------|
| 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

| | |
|--------------------------------|---------------|
| Dimension (\varnothing x L) | 12 mm x 60 mm |
| Thread size | M12 x 1 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 |
|--------------------------------|---------------|

Certifications

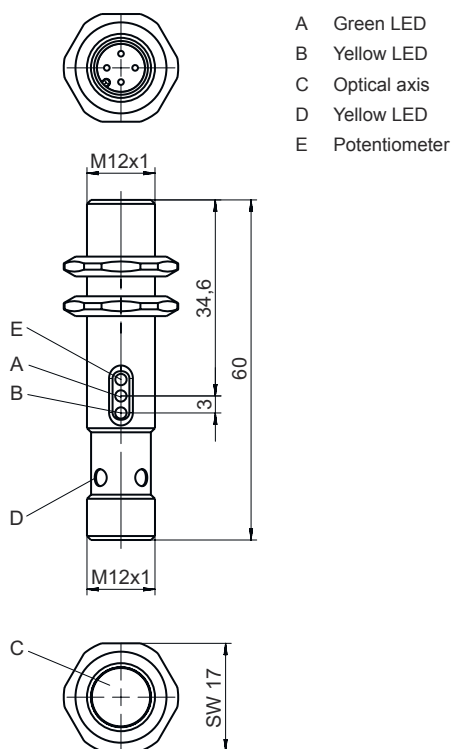
| | |
|----------------------|---------------|
| Degree of protection | IP 67 |
| Protection class | III |
| Approvals | c UL US |
| Standards applied | IEC 60947-5-2 |

Classification

| | |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4 | 27270903 |
| ECLASS 8.0 | 27270903 |
| ECLASS 9.0 | 27270903 |
| ECLASS 10.0 | 27270903 |
| ECLASS 11.0 | 27270903 |
| ECLASS 12.0 | 27270903 |
| ECLASS 13.0 | 27270903 |
| ECLASS 14.0 | 27270903 |
| ECLASS 15.0 | 27270903 |
| ETIM 5.0 | EC001821 |
| ETIM 6.0 | EC001821 |
| ETIM 7.0 | EC001821 |
| ETIM 8.0 | EC001821 |
| ETIM 9.0 | EC001821 |
| ETIM 10.0 | EC001821 |

Dimensioned drawings

All dimensions in millimeters

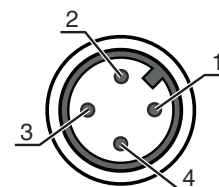


Electrical connection

Connection 1

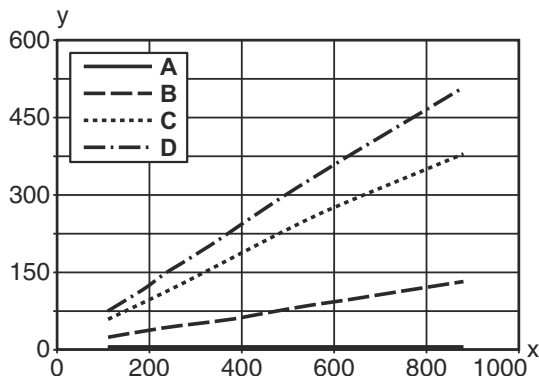
| | |
|---------------------------|------------------------------|
| Function | Signal OUT Voltage supply |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 4 -pin |
| Encoding | A-coded |

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

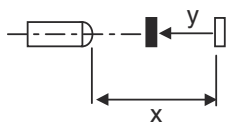


Diagrams

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

| | |
|----------------|---|
| AAA412B | Operating principle / construction LS412B: Throughbeam photoelectric sensor transmitter LE412B: Throughbeam photoelectric sensor receiver ET412B: Energetic diffuse reflection sensor PRK412B: Retro-reflective photoelectric sensor with polarization filter |
| GG | Light source n/a: LED L2: laser class 2 |
| H | Operating range adjustment 1: 270° potentiometer |
| ii | 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) X: pin not used |
| K | Electrical connection 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.

Notes



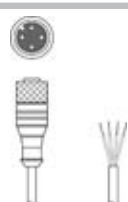

Observe intended use!




- ⚠ 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 Connector, LED: No 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 Connector, LED: No 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.