

## Technical data sheet

### Throughbeam photoelectric sensor receiver

Part no.: 50140163

LE412BL2.1/4X-M12



For illustration purposes only

#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Operation and display
- Suitable transmitters
- Part number code
- Notes
- Accessories



CDRH

UK  
CA

## Technical data

### Basic data

|                     |                       |
|---------------------|-----------------------|
| Series              | 412B                  |
| Operating principle | Throughbeam principle |
| Device type         | Receiver              |

### Optical data

|                  |                 |
|------------------|-----------------|
| Operating range  | see transmitter |
| Max. laser power | 0.001 W         |
| Pulse duration   | 4.6 µs          |

### Electrical data

|                    |                                                         |
|--------------------|---------------------------------------------------------|
| Protective circuit | Polarity reversal protection<br>Short circuit protected |
|--------------------|---------------------------------------------------------|

### Performance data

|                               |                                        |
|-------------------------------|----------------------------------------|
| Supply voltage U <sub>B</sub> | 10 ... 36 V, DC, Incl. residual ripple |
| Residual ripple               | 0 ... 20 %, From U <sub>B</sub>        |
| Open-circuit current          | 0 ... 10 mA                            |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |                          |
|-------------------------|--------------------------|
| Type                    | Digital switching output |
| Voltage type            | DC                       |
| Switching current, max. | 200 mA                   |

### Switching output 1

|                     |                     |
|---------------------|---------------------|
| Assignment          | Connection 1, pin 2 |
| Switching element   | Transistor, PNP     |
| Switching principle | Light switching     |

### Time behavior

|                     |          |
|---------------------|----------|
| Switching frequency | 5,000 Hz |
| Response time       | 0.1 ms   |
| Readiness delay     | 20 ms    |

### Connection

|                       |                              |
|-----------------------|------------------------------|
| Number of connections | 1 Piece(s)                   |
| Connection 1          |                              |
| Function              | Signal OUT<br>Voltage supply |
| Type of connection    | Connector                    |
| Thread size           | M12                          |
| Type                  | Male                         |
| Material              | Metal                        |
| No. of pins           | 4 -pin                       |
| Encoding              | A-coded                      |

### Mechanical data

|                         |                 |
|-------------------------|-----------------|
| Dimension (Ø x L)       | 12 mm x 60 mm   |
| Thread size             | M12 x 1 mm      |
| Housing material        | Stainless steel |
| Stainless steel housing | V2A             |
| Lens cover material     | Glass           |
| Net weight              | 32 g            |
| Housing color           | Silver          |

### Operation and display

|                                     |                        |
|-------------------------------------|------------------------|
| Type of display                     | LED                    |
| Number of LEDs                      | 2 Piece(s)             |
| Operational controls                | 270° potentiometer     |
| Function of the operational control | Sensitivity adjustment |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -10 ... 50 °C |
|--------------------------------|---------------|

### Certifications

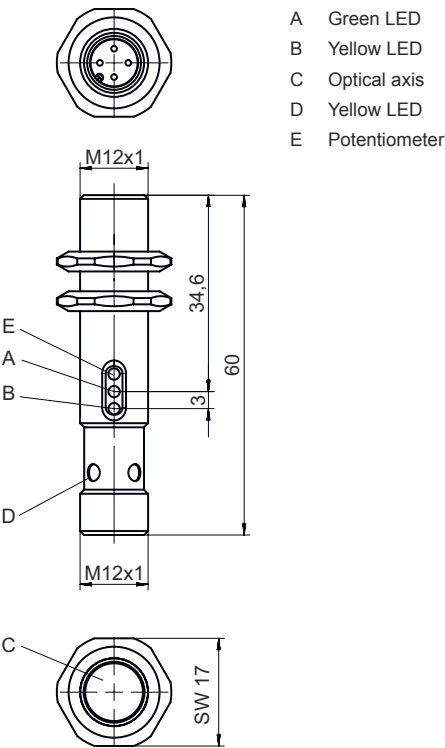
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Approvals            | c UL US       |
| Standards applied    | IEC 60947-5-2 |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270901 |
| ECLASS 8.0            | 27270901 |
| ECLASS 9.0            | 27270901 |
| ECLASS 10.0           | 27270901 |
| ECLASS 11.0           | 27270901 |
| ECLASS 12.0           | 27270901 |
| ECLASS 13.0           | 27270901 |
| ECLASS 14.0           | 27270901 |
| ECLASS 15.0           | 27270901 |
| ETIM 5.0              | EC002716 |
| ETIM 6.0              | EC002716 |
| ETIM 7.0              | EC002716 |
| ETIM 8.0              | EC002716 |
| ETIM 9.0              | EC002716 |
| ETIM 10.0             | EC002716 |

Dimensioned drawings

All dimensions in millimeters

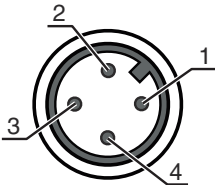


Electrical connection

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   | OUT 1          |
| 3   | GND            |
| 4   | n.c.           |



Operation and display

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

## Suitable transmitters

|                                                                                  | Part no. | Designation     | Operating range<br>Operating range<br>limit | Description                                                                                                                                                                                                |
|----------------------------------------------------------------------------------|----------|-----------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50140160 | LS412BL2/DX-M12 | 0 ... 50 m<br>0 ... 50 m                    | Special version: Deactivation input<br>Operating range limit: 0 ... 50 m<br>Light source: Laser, Red<br>Supply voltage: DC<br>Deactivation inputs: 1 Piece(s)<br>Connection: Connector, M12, Metal, 4 -pin |

## Part number code

Part designation: **AAA412BGG.H/ii-K**

|                |                                                                                                                                                                                                                                                                                                                                         |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA412B</b> | <b>Operating principle / construction</b><br>LS412B: Throughbeam photoelectric sensor transmitter<br>LE412B: Throughbeam photoelectric sensor receiver<br>ET412B: Energetic diffuse reflection sensor<br>PRK412B: Retro-reflective photoelectric sensor with polarization filter                                                        |
| <b>GG</b>      | <b>Light source</b><br>n/a: LED<br>L2: laser class 2                                                                                                                                                                                                                                                                                    |
| <b>H</b>       | <b>Operating range adjustment</b><br>1: 270° potentiometer                                                                                                                                                                                                                                                                              |
| <b>ii</b>      | <b>Switching output / function / OUT1OUT2 (OUT1 = pin 2, OUT2 = pin 4)</b><br>2: NPN transistor output, light switching<br>N: NPN transistor output, dark switching<br>4: PNP transistor output, light switching<br>P: PNP transistor output, dark switching<br>D: Deactivation input (deactivation with low signal)<br>X: pin not used |
| <b>K</b>       | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm, 3-wire<br>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.

## Notes



### ATTENTION! LASER RADIATION – CLASS 2 LASER PRODUCT



#### Do not stare into beam!

The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 2** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007.

- ⚠ Never look directly into the laser beam or in the direction of reflected laser beams! If you look into the beam path over a longer time period, there is a risk of injury to the retina.
- ⚠ Do not point the laser beam of the device at persons!
- ⚠ Interrupt the laser beam using a non-transparent, non-reflective object if the laser beam is accidentally directed towards a person.
- ⚠ When mounting and aligning the device, avoid reflections of the laser beam off reflective surfaces!
- ⚠ CAUTION! The use of operating and adjusting devices other than those specified here or the carrying out of differing procedures may lead to dangerous exposure to radiation!
- ⚠ Observe the applicable statutory and local laser protection regulations.
- ⚠ The device must not be tampered with and must not be changed in any way.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

## 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<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC  |
|  | 50130690 | KD U-M12-4W-V1-050 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC |

### Mounting technology - Mounting brackets

|  | Part no. | Designation | Article          | Description                                                                                                                                                                                                                  |
|--|----------|-------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50113549 | BT D12M.5   | Mounting bracket | Diameter, inner: 12 mm<br>Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>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.