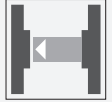


## Thru-beam sensor

BB10-P-F1-6118/35/59/103/115e



- Single-beam miniature photoelectric sensor, ideal for installing in frames or contours
- Integrated circuit
- Plug-in style housing for 13 mm hole
- Narrow opening angle, suitable for mounting in pairs
- Dark on version
- Version with test input

Miniature photoelectric sensor with plug-in style housing for mounting in 13 mm hole



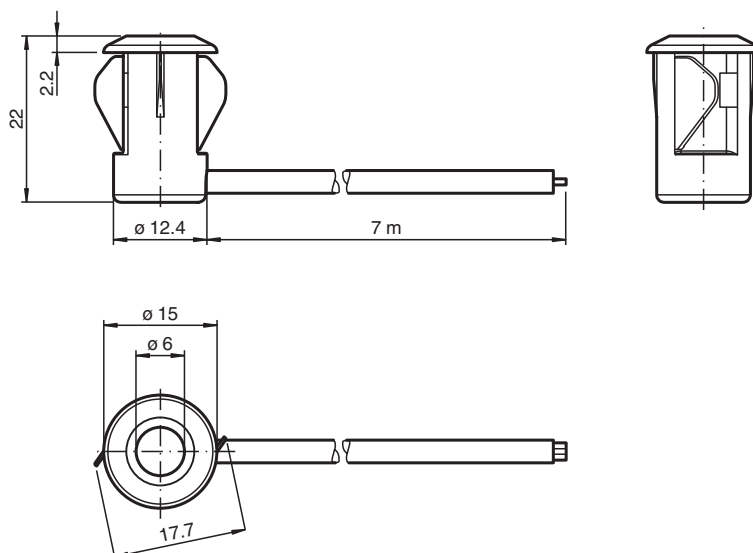
### Function

There is no simpler way of installing a sensor: drill the hole, clip in the sensor and you're done. What's more, the BB10 plug-in sensors for doors and turnstiles offer top performance at an extremely attractive price. The switching mechanism is integrated in the compact, self-contained and temperature-stable housing, making the BB10 suitable even for extremely cold regions with temperatures as low as -40°C.

### Application

- Monitoring function for turnstiles
- Activation function for restarting escalators
- Monitoring of industrial gates
- Person detection for automatic doors and gates

### Dimensions



Release date: 2023-05-09 Date of issue: 2023-05-09 Filename: 817301\_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

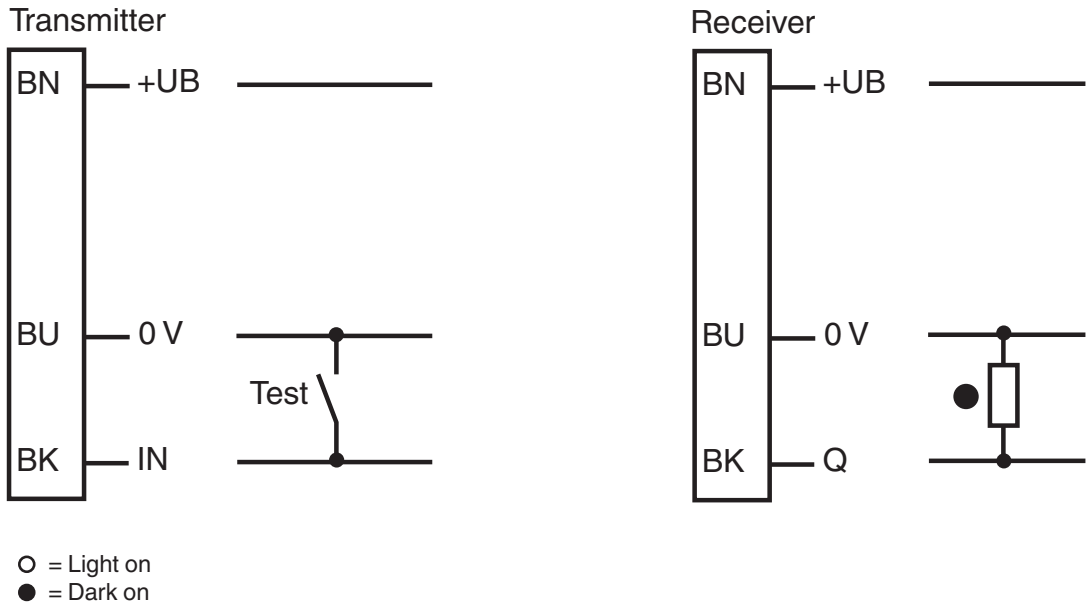
Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

 **PEPPERL+FUCHS**

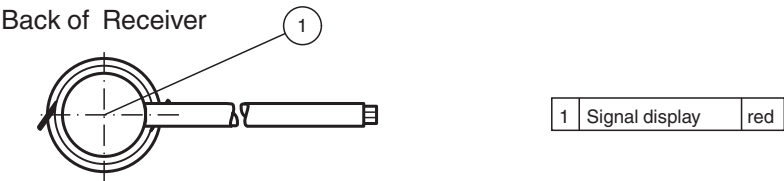
## Technical Data

|                                      |                |                                                                                                                                            |
|--------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| System components                    |                |                                                                                                                                            |
| Emitter                              |                | BB10-T-F1-6118/115e                                                                                                                        |
| Receiver                             |                | BB10-R-F1/35/59/103/115e                                                                                                                   |
| General specifications               |                |                                                                                                                                            |
| Effective detection range            |                | 0 ... 2 m                                                                                                                                  |
| Threshold detection range            |                | 2.5 m                                                                                                                                      |
| Light source                         |                | IRED                                                                                                                                       |
| Light type                           |                | modulated infrared light , 880 nm                                                                                                          |
| Diameter of the light spot           |                | approx. 250 mm at a distance of 2 m                                                                                                        |
| Opening angle                        |                | Emitter: +/- 3 ° Receiver: +/- 10 ° at max. sensing range ; typical                                                                        |
| Optical face                         |                | frontal                                                                                                                                    |
| Ambient light limit                  |                | halogen light 100000 Lux ; according to EN 60947-5-2:2007                                                                                  |
| Accessories provided                 |                | none                                                                                                                                       |
| Functional safety related parameters |                |                                                                                                                                            |
| MTTF <sub>d</sub>                    |                | 795 a                                                                                                                                      |
| Mission Time (T <sub>M</sub> )       |                | 20 a                                                                                                                                       |
| Diagnostic Coverage (DC)             |                | 0 %                                                                                                                                        |
| Indicators/operating means           |                |                                                                                                                                            |
| Function indicator                   |                | LED red: lights up when receiving the light beam ; flashes when falling short of the operating reserve; OFF when light beam is interrupted |
| Electrical specifications            |                |                                                                                                                                            |
| Operating voltage                    | U <sub>B</sub> | 10 ... 30 V DC                                                                                                                             |
| No-load supply current               | I <sub>0</sub> | Emitter: ≤ 20 mA<br>Receiver: ≤ 10 mA                                                                                                      |
| Input                                |                |                                                                                                                                            |
| Test input                           |                | emitter deactivation at 0 V                                                                                                                |
| Output                               |                |                                                                                                                                            |
| Switching type                       |                | dark-on                                                                                                                                    |
| Signal output                        |                | 1 PNP output, short-circuit protected, reverse polarity protected, open collector                                                          |
| Switching voltage                    |                | max. 30 V DC                                                                                                                               |
| Switching current                    |                | max. 100 mA                                                                                                                                |
| Voltage drop                         | U <sub>d</sub> | ≤ 1.5 V DC                                                                                                                                 |
| Switching frequency                  | f              | 100 Hz                                                                                                                                     |
| Response time                        |                | 5 ms                                                                                                                                       |
| Conformity                           |                |                                                                                                                                            |
| Product standard                     |                | EN 60947-5-2                                                                                                                               |
| Approvals and certificates           |                |                                                                                                                                            |
| CCC approval                         |                | CCC approval / marking not required for products rated ≤36 V                                                                               |
| Ambient conditions                   |                |                                                                                                                                            |
| Ambient temperature                  |                | -40 ... 60 °C (-40 ... 140 °F) , fixed<br>-20 ... 60 °C (-4 ... 140 °F) , movable                                                          |
| Storage temperature                  |                | -40 ... 70 °C (-40 ... 158 °F)                                                                                                             |
| Relative humidity                    |                | 90 % , noncondensing                                                                                                                       |
| Mechanical specifications            |                |                                                                                                                                            |
| Degree of protection                 |                | IP67                                                                                                                                       |
| Connection                           |                | 0.15 m cable with 3-pin JST connector Receiver: grey ; Emitter: black                                                                      |
| Material                             |                |                                                                                                                                            |
| Housing                              |                | PC , black                                                                                                                                 |
| Optical face                         |                | Plastic pane                                                                                                                               |
| Mass                                 |                | approx. 25 g per device                                                                                                                    |

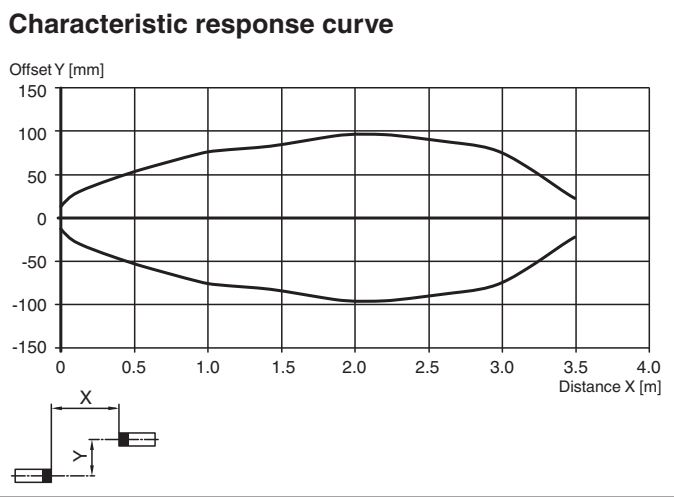
Connection Assignment



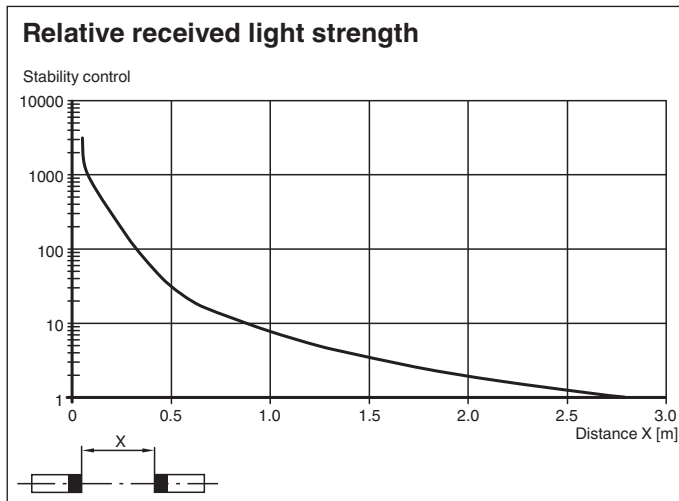
Assembly



Characteristic Curve



## Characteristic Curve



## Function Principle

The thru-beam sensor requires two devices for operation; an emitter and a receiver. The emitter and receiver must be optically aligned with one another in a single line. The infrared light emitted from the emitter is recorded by the receiver and evaluated. The sensor detects both people and objects for as long as an object interrupts the detection beam, regardless of movement and surface structure.

## Additional Information

### Function:

The Series BB10 thru-beam sensor requires a pair of devices for operation, comprising a light transmitter and a light receiver. The transmitter and receiver must be arranged in optical alignment with each other. The infrared light from the transmitter is detected by the receiver and evaluated.

### Static detection:

The thru-beam sensor detects persons and objects independently of movement and surface structure for as long as the object breaks the detection beam.

|                     |                       | Electronic output |
|---------------------|-----------------------|-------------------|
| Light detection /25 | Person in the beam    | Inactive          |
|                     | No person in the beam | Active            |
| Dark detection /59  | Person in the beam    | Active            |
|                     | No person in the beam | Inactive          |

### Installation:

Thanks to its small dimensions, the light beam can be fitted in a U-profile or behind a face panel.

| Sheet thickness<br>[mm] | Hole diameter [mm] |      |
|-------------------------|--------------------|------|
|                         | 13                 | 13.5 |
| 1                       | OK                 | X    |
| 2                       | OK                 | OK   |
| 3                       | OK                 | OK   |

X = Mounting not possible

OK = Mounting possible

### Installation of twin-beam arrangement:

A twin-beam version requires 2 transmitters and receivers.

When using thru-beam sensors with the same transmission frequency:

Ensure that the minimum beam distance is 20 cm and that the light source and receiver are arranged in a cross formation.

