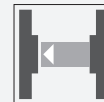




## Thru-beam sensor

BB10-P-F1/35/59/103/115-2,5m



- 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
- Various frequencies for avoiding mutual interference (cross-talk immunity)
- Dark on version

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



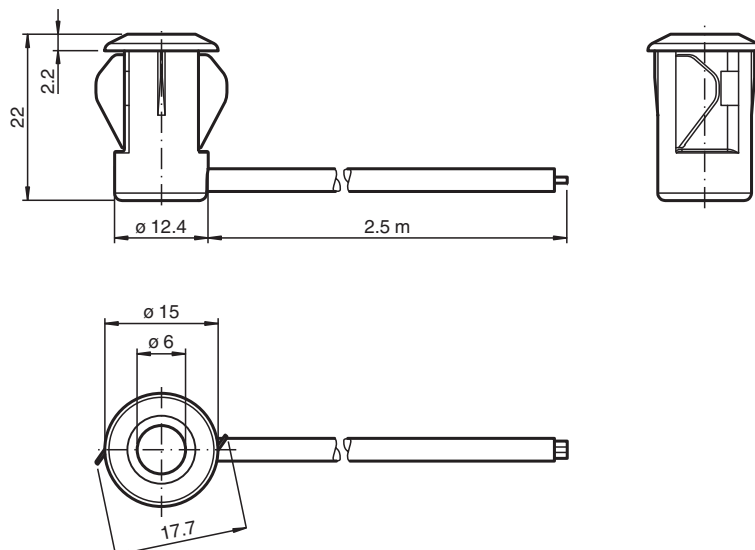
### Function

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



## Technical Data

|                                             |                |                                                                                                                                            |
|---------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System components</b>                    |                |                                                                                                                                            |
| Emitter                                     |                | BB10-T-F1/35/115-2,5m                                                                                                                      |
| Receiver                                    |                | BB10-R-F1/35/59/103/115-2,5m                                                                                                               |
| <b>General specifications</b>               |                |                                                                                                                                            |
| Effective detection range                   |                | 0 ... 3 m                                                                                                                                  |
| Threshold detection range                   |                | 4 m                                                                                                                                        |
| Light source                                |                | IRED                                                                                                                                       |
| Light type                                  |                | modulated infrared light , 880 nm                                                                                                          |
| Diameter of the light spot                  |                | approx. 350 mm at a distance of 3 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                                                                                       |
| <b>Functional safety related parameters</b> |                |                                                                                                                                            |
| MTTF <sub>d</sub>                           |                | 795 a                                                                                                                                      |
| Mission Time (T <sub>M</sub> )              |                | 20 a                                                                                                                                       |
| Diagnostic Coverage (DC)                    |                | 0 %                                                                                                                                        |
| <b>Indicators/operating means</b>           |                |                                                                                                                                            |
| Function indicator                          |                | LED red: lights up when receiving the light beam ; flashes when falling short of the stability control; OFF when light beam is interrupted |
| <b>Electrical specifications</b>            |                |                                                                                                                                            |
| 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                                                                                                      |
| <b>Output</b>                               |                |                                                                                                                                            |
| Switching type                              |                | dark-on                                                                                                                                    |

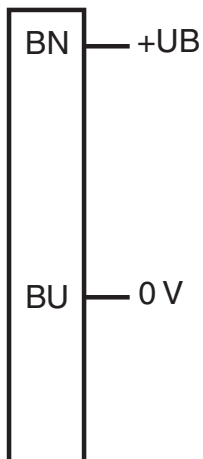
Release date: 2022-08-08 Date of issue: 2022-08-08 Filename: 70103180\_eng.pdf

## Technical Data

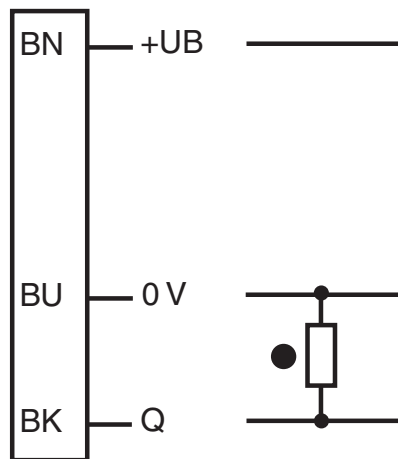
|                                   |       |                                                                                   |
|-----------------------------------|-------|-----------------------------------------------------------------------------------|
| Signal output                     |       | 1 PNP output, short-circuit protected, reverse polarity protected, open collector |
| Switching voltage                 |       | max. 30 V DC                                                                      |
| Switching current                 |       | max. 100 mA                                                                       |
| Voltage drop                      | $U_d$ | $\leq 1.5$ V DC                                                                   |
| Switching frequency               | $f$   | 100 Hz                                                                            |
| Response time                     |       | 5 ms                                                                              |
| <b>Conformity</b>                 |       |                                                                                   |
| Product standard                  |       | EN 60947-5-2                                                                      |
| <b>Approvals and certificates</b> |       |                                                                                   |
| EAC conformity                    |       | TR CU 020/2011                                                                    |
| CCC approval                      |       | CCC approval / marking not required for products rated $\leq 36$ V                |
| UN/ECE Regulation No. 10 (E1)     |       | Type-approval number: 036938                                                      |
| <b>Ambient conditions</b>         |       |                                                                                   |
| 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                                                              |
| <b>Mechanical specifications</b>  |       |                                                                                   |
| Degree of protection              |       | IP67                                                                              |
| Connection                        |       | fixed cable<br>Receiver: grey ; Emitter: black                                    |
| Material                          |       |                                                                                   |
| Housing                           |       | PC , black                                                                        |
| Optical face                      |       | Plastic pane                                                                      |
| Mass                              |       | approx. 34 g per device                                                           |
| Cable length                      |       | 2.5 m                                                                             |

## Connection Assignment

### Emitter



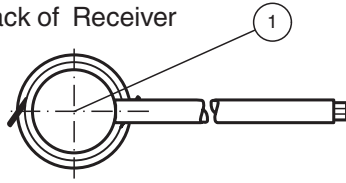
### Receiver



○ = Light on  
● = Dark on

## Assembly

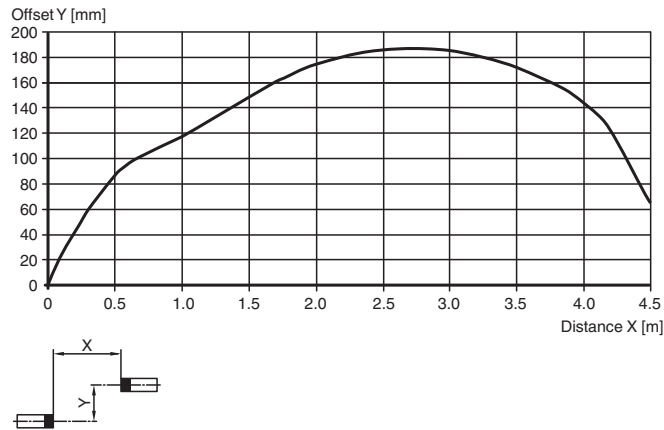
Back of Receiver



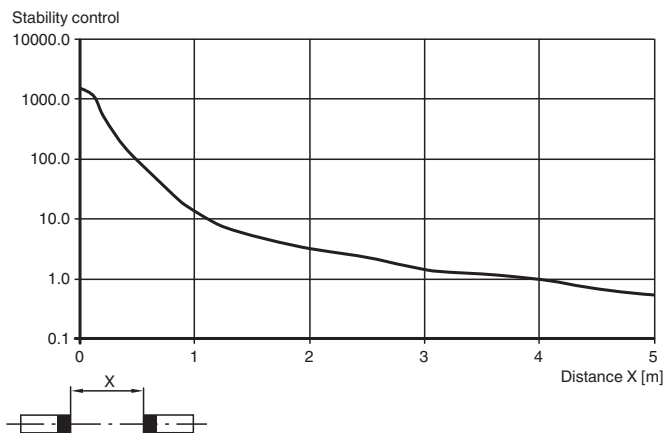
|   |                |     |
|---|----------------|-----|
| 1 | Signal display | red |
|---|----------------|-----|

## Characteristic Curve

**Characteristic response curve**



**Relative received light strength**



## Additional Information

### Static detection:

The sensor detects both people and objects for as long as an object interrupts the detection beam, regardless of movement and surface structure.

|              |                               | Electronic output |
|--------------|-------------------------------|-------------------|
| Light ON /25 | Person located within beam    | Inactive          |
|              | No people located within beam | Active            |
| Dark ON /59  | Person located within beam    | Active            |
|              | No people located within beam | Inactive          |

### Optics:

The relatively wide opening angles allow the sensors to be mounted quickly without any alignment issues. Function is maintained even if mounting profiles are slightly distorted.

### Mounting:

Thanks to its compact dimensions, the sensor fits in U profiles or behind any covers.

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

X = mounting not possible

OK = mounting possible

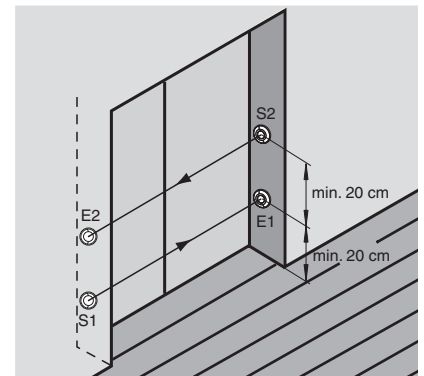
### Mounting for dual-beam protection:

For dual-beam versions, two light sources and receivers are required.

When using thru-beam sensors with two different transmission frequencies (F1 and F2), it is not necessary to observe a minimum beam distance between the thru-beam sensors.

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

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



## Function Principle

The thru-beam sensor requires two devices for operation; a light source and a light receiver. The light source and receiver must be optically aligned with one another in a single line. The infrared light emitted from the source 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.