LBDoor TB12.D.P
Single-beam miniature photoelectric sensor with fixed cable

Original operation instruction

General

Product information
There is no simpler way of installing a sensor: drill the hole, clip in the sensor and you’re done. What’s more, LBDoor TB12.D.P 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 LBDoor TB12.D.P suitable even for extremely cold regions with temperatures as low as -40°C.

Features
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 also available
- Version with test input

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

1 Safety instructions
The unit may only be installed and commissioned by trained and qualified personnel.
The unit may only be opened and repaired by the manufacturer.
This unit may only be operated from a protective low-voltage with safe electrical isolation.
Always consider the safety functions of your application as a whole, never just in relation to one individual component of the system.
The installer is responsible for carrying out a risk assessment and installing the detector and the system correctly.
Avoid touching any electronic components.

2 Electrical connection – Indicators / operating means

Electrical connection
Transmitter / black cable

Receiver / grey cable

<table>
<thead>
<tr>
<th>NPN</th>
<th>PNP</th>
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<tbody>
<tr>
<td>U2</td>
<td>U2</td>
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<tr>
<td>10–30 VDC</td>
<td>10–30 VDC</td>
</tr>
<tr>
<td>brown</td>
<td>brown</td>
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</tbody>
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Test- or black input

0V blue

Indicators / operating means

Back of receiver

Signal display (red)
General specifications

- Detection range: 0 – 6 m
- Light source: IRED
- Light type: Modulated infrared light, 880 nm
- Diameter of the light spot: Approx. 1300 mm at a distance of 6 m
- Angle of divergence: Emitter: +/- 8 ° Receiver: +/- 10 °
- Optical face: Frontal
- Ambient light limit: Halogen light 100 000 Lux; according to EN 60947-5-2:2007

Functional safety related parameters

- MTTF: 795 a
- Mission Time (T_m): 20 a
- Diagnostic Coverage (DC): 0 %

Indicators

- 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

Electrical specifications

- Operating voltage $U_B$: 10 – 30 V DC
- No-load supply current $I_0$:
  - Emitter: ≤ 20 mA
  - Receiver: ≤ 10 mA

Input

- Test input: Threshold < 1.4 V (emitter deactivation)

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 $U_d$: ≤ 1.5 V DC
- Switching frequency $f$: 62.5 Hz
- Response time: 8 ms

Ambient conditions

- Ambient temperature: -40 – 60 °C (-40 – 140 °F), fixed mounted
- -20 – 60 °C (-4 – 140 °F), movable mounted
- Storage temperature: -40 – 70 °C (-40 – 158 °F)
- Relative humidity: 90 %, non-condensing

Mechanical specifications

- Degree of protection: IP67
- Connection: 0.15 / 7 m PVC connection cable with 3-pin JST connector
- Material: PC, black
- Optical face: Plastic pane
- Weight: Approx. 100 g per device

Approval

- CCC approval: CCC approval / marking not required for products rated ≤ 36 V

Curves / Diagrams

Characteristic response curve

Relative received light strength

- Stability control
5 **Operating 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.

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6 **Function**

The series LBDoor TB12.D.P light 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 light beam sensor detects persons and objects independently of movement and surface structure for as long as the object breaks the detection beam.

### Output (black wire of receiver)

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</thead>
<tbody>
<tr>
<td>Unpowered</td>
<td>open</td>
<td>open</td>
<td>open</td>
<td>open</td>
<td>off</td>
</tr>
<tr>
<td>Not aligned</td>
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<td>0V</td>
<td>open</td>
<td>open</td>
<td>off</td>
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<td>Idle (ok)</td>
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<td>open</td>
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<td>open</td>
<td>ON</td>
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<tr>
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<td>off</td>
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<tr>
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<td>0V</td>
<td>open</td>
<td>U&lt;b&gt;0&lt;/b&gt;</td>
<td>off</td>
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7 **EU Declaration of Conformity**

![CE mark] See attachment

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8 **WEEE**

Devices with this symbol must be treated separately during disposal. This must be done in accordance with the laws of the respective countries for environmentally sound disposal, processing and recycling of electrical and electronic equipment.

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9 **Contact**

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Made in Vietnam