

LBHP6 Datasheet

Intelligent reflex light barrier



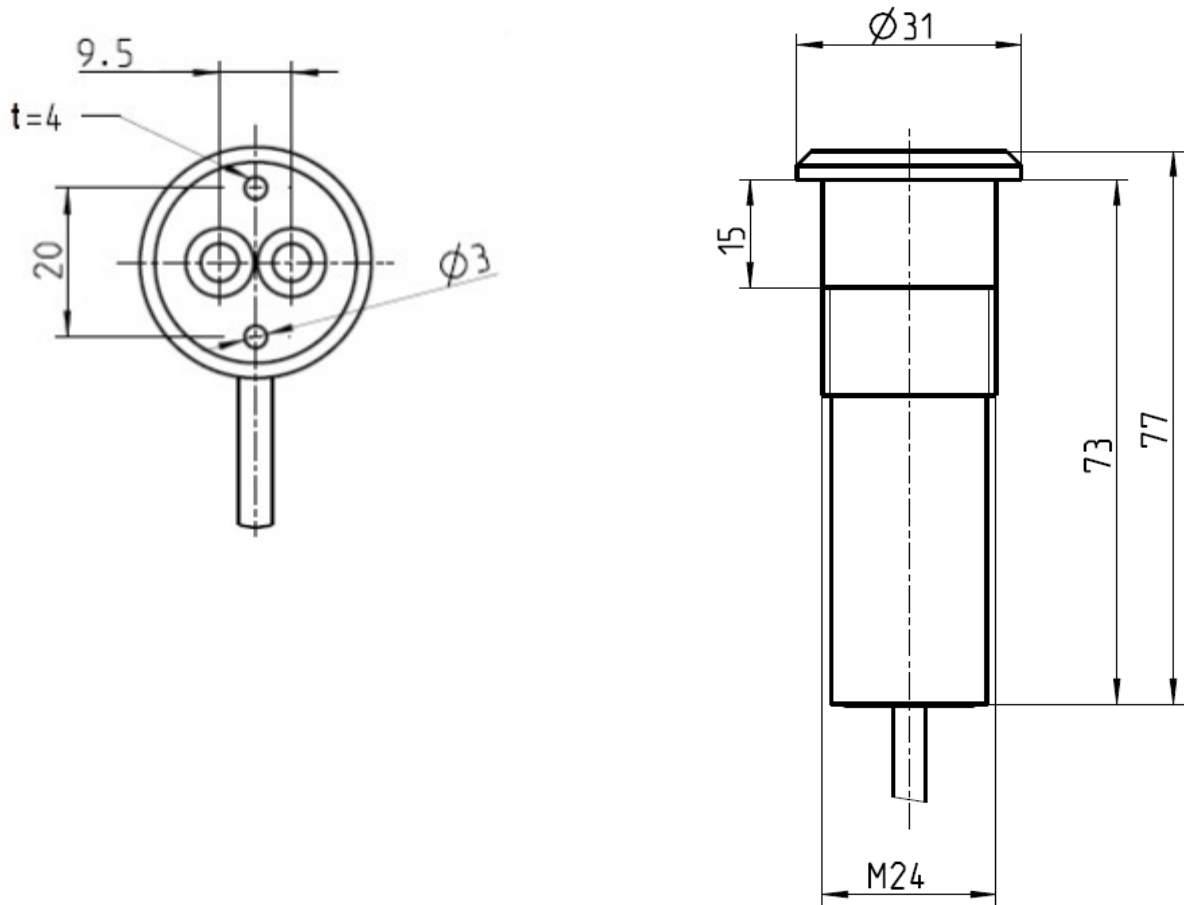
1 General Description

- IR-light barrier, for 100 – 200 mm adjustable operation distance
- Infrared transmitter / receiver
- Natural light blocking filter, largely independent of daylight influences
- Low side switch output driver
- Wireless configuration over infrared interface for factory calibration
- Operation temperature range between -40°C – +55°C (short-term +15°C)
- 24 V +/- 30% input voltage according to EN 50155
- Complies to EN 50155
- Complies to EN 45545-2

2 Applications, Intended Use

- Detection of human hands within a factory preset distance and output of a signal to control hand wash systems in rolling stock applications

3 Mechanical characteristics



| Technical data | |
|--|--|
| Diameter x Length | Ø 31 x 77mm |
| Distance / Diameter of tool attachment | 20mm / 3mm |
| Max. depth / Diameter of mounting hole | 14mm / 29mm |
| Housing material | Aluminium |
| Casting compound | Bectron casting compound PU 4534, polyurethane resin based |
| Colour of housing | Colourless anodised |
| Thread | M24 x 1.5; L=26mm |
| Weight | 135g±10g ¹ with cable, amp-plug, nut and washer |
| IP class | IP65 (excl. external connector interface) |

¹ incl. cable, standard connector housing, nut, washer and ferrite sleeve

| Screw nut | |
|----------------------------|---|
| Equivalent standard | ISO 8675 |
| Type of screw thread | M24x1.5 |
| Wrench size | 36mm |
| Property class | 70 |
| Min. - max. locking torque | The locking torque should be in the range of 10-15Nm, recommended is 12Nm. The values are valid only with supplied washer. |
| Weight | 58g \pm 5g |
| Materials | Stainless steel A2 |

| Flat washer | |
|------------------|-------------|
| Equivalent norms | DIN 125 |
| Outer diameter | 44mm |
| Inner diameter | 25mm |
| Width | 4mm |
| Weight | 5g \pm 1g |
| Materials | Polyamide |

4 Electrical characteristics

| Feature | Description |
|------------------------------|--|
| Power supply | 24 VDC \pm 30%, reverse-polarity protected |
| Interruption of power supply | $\leq 10\text{ms}$ (Class S2 acc. EN 50155) |
| Supply change over | 0.6 U _N <100ms (Class C1 acc. EN 50155) |
| Current consumption | Average 10mA (5mA inactive – 15mA active), peak 250mA w/o output load |
| Output | 24 VDC low side switch / 1A to ground Integrated overload protection |

| Pin Assignment | |
|----------------|---------------|
| 1 | +24V DC |
| 2 | Ground |
| 3 | signal output |
| 4 | n.c. |

| Cable | |
|-----------------------------------|--------------------------|
| Length | 200 mm |
| Diameter | 4.9 mm ± 0.5 mm |
| Conductor count and cross section | 3 x 0.75mm ² |
| Bending radius | $\geq 5 \times$ Diameter |
| Conductor material | Cu tin-plated |

| Plug AMP Mini Universal-MATE-N-LOK ² | |
|---|------------------------------|
| article no. | 172167-1 |
| plug gender | male |
| pin count | 4 |
| pin contact | AMP Mini-Mate-N-Lok 170364-1 |
| single conductor cross section | (0.3 - 0.89)mm ² |

| Plug AMP Mini Universal-MATE-N-LOK ² – Water proofed | |
|---|--|
| article no. | 794939-1 |
| plug gender | female |
| pin count | 4 |
| pin contact | crimp contact AMP Mini-Universal MATE-N-LOK 770988-1 |
| single conductor cross section | (0.3-0.89)mm ² |
| gasket | AMP Mini Universal Mate-N-Lok 794772-4 |
| conductor gasket | AMP Mini Universal Mate-N-Lok 794758-1 |
| blind pin | AMP Mini Universal Mate-N-Lok 794995-1 |

² Other connector types available

5 Environment characteristic

| Feature | Description |
|--------------------------------|--|
| Storage temperature | -40°C .. +85°C |
| Operating temperature | -40°C .. +55°C (Class OT2 acc. EN 50155) |
| Extended operating temperature | +70°C (Class ST1 acc. EN 50155) |
| Storage humidity | max. 95%, non-condensing |
| Operating humidity | max. 95%, non-condensing |
| Altitude range | max. 1400m (Class A1 acc. EN 50125-1) |
| Shock / Vibration | Category 1 Class B (acc. EN 61373) |

| Life cycle data | |
|-----------------|------------------------------------|
| Useful life | >10 years (Class L2 acc. EN 50155) |
| Warranty | 1 year |

6 Optical characteristic

| Properties | Description |
|------------|--|
| Range | 100-200mm \pm 15mm operation distance ³ |
| Filter | Natural light blocking filter |

6.1 Ambient light characteristics

The detection range of the LBHP6 is nearly constant at diffuse ambient light conditions. The LBHP6 should not be used on direct illumination with IR-active lights within a radiation angle of < 10°.

³ The detection range is a factory preset.

7 Standards

| Applied Standards | |
|-------------------|--|
| 2014/30/EU | EU directive electromagnetic compatibility |
| EN 50155 | Railway application - Electronic equipment used on rolling stock |
| EN 50121-3-2 | Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock - Apparatus |
| EN 50124-1 | Railway applications - Insulation coordination – Part 1: Basic requirements - Clearance and creepage distances |
| EN 50153 | Railway applications - Rolling stock - Protective provisions relating to electrical hazards |
| EN 45545-2 | Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components |
| EN 61373 | Railway applications - Rolling stock equipment - Shock and vibration tests |
| EN 60529 | Degrees of protection provided by enclosures (IP Code) |

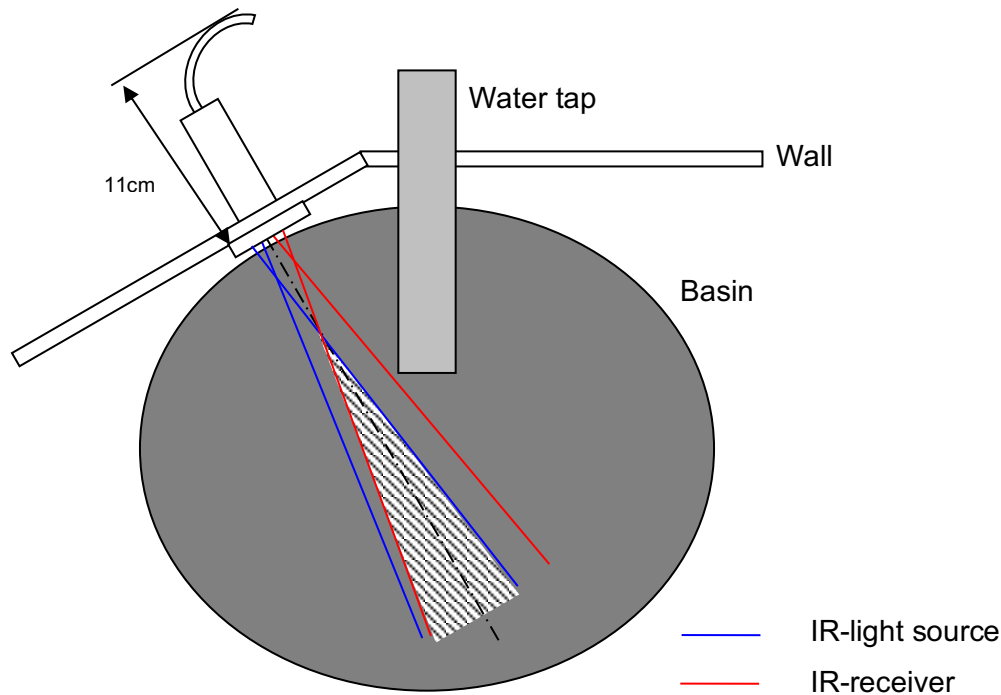
8 Installation

The tripping characteristic of the light barrier depends on its installation. The detection area of the sensor can contain the following situations:

- a) detection area outside of the water jet and outside of the hand washing position
 - b) detection area out of the water jet and within the hands washing position
- It is important that the sensor area of the light barrier is not adjusted to reflective surfaces such as stainless steel tanks, other metallic objects or water surfaces to address faulty activation
On strong reflective surfaces and curved surfaces in the longitudinal axis of the sensor the LBHP6 must be moved laterally and / or be tilted
 - The horizontal mounting position of the front sensor / emitter unit is recommended

- The tripping distance from the hand position is configured by factory default
- It is not recommended to set the detection area within the water jet above the basin

We recommend installation situation b.



9 Parameters

| Parameter | Range | Resolution | Typical value | Note |
|----------------|------------------|------------|---------------|---|
| Sensitivity | 10..90 % | 1% | / | detection range, additional pre selection far / near-options available |
| Start delay | 0..4 sec | 0.05 sec | 0.3 sec | Output signal delay after detection |
| Follow-up-time | 0..15 sec | 0.05 sec | 3.0 sec | activation time of output, after no object is detected |
| Uptime | 0..1600 sec | 0.05 sec | 10 sec | maximum activation time of the output signal of persistent detection of an object |
| Locking time | 0; 0.2..1600 sec | 0.05 sec | 1 sec | This is the time step after the expiration of the maximum runtime in which no new objects can be detected |
| Release time | 0..1600 sec | 0.05 sec | 0.5 sec | time after the locking time in which no new activation can take place |

10 Maintenance

The LBHP6 is free of regular maintenance.

11 Cleaning

- Neutral cleaning agent and warm water may be used for cleaning purpose
- Make sure that the cleaner not reacts with epoxy cast resin
- Do not use abrasive cleaning options
- Remove cleaning material after use
- The LED's should be free of cleaning residues

12 Accessory

- Mounting Tool
- Programming Adapter (IR → COM)
- Programming Software

13 Delivery, Packaging and Labelling

- The LBHP6 is pre-assembled with connector, nut and washer.
- The LBHP6 is packed in a bubble bag.
- The LBHP6 comes normally in quantities of 1 piece in a cardboard box.
- Other packaging units are possible on request.
- The LBHP6 is labelled with name, serial number and can be applied with customer related article number and technical values of the light barrier. Custom specific labelling is possible on request.

14 Contact

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