# ILEE® **ONE-WAY LASER LIGHT BARRIER LS02**

## CHARACTERISTICS

- Short response time
- Choice of response to light and dark signal
- Suppression of interfering light
- Long range
- Adjustable focal point of the transmitter [4)]
- Small dimensions
- Solid construction
- Watertight (IP67)
- CE-conformity

## APPLICATIONS

- Time measurement
- Data transmission
- Object detection

## TECHNICAL DATA TRANSMITTER

| One-way laser light barrier LS02 | Transmitter | | | Unit |
|---|---|---|---|---|
| Operating voltage | 12 | – | 24 ±10% | VDC |
| Max. operating current [1] | 12 | | 8 | mA |
| Typical laser Enable turn-on delay | 200 | | 175 | µs |
| Typical jitter of laser Enable turn-on delay | 12 | | 18 | µs |
| Typical laser Enable turn-off delay | 1.39 | | 1.40 | µs |
| Typical jitter of laser Enable turn-off delay | 30 | | 37 | µs |
| Optical power | ≤1 [2] | | | mW |
| Laser class | 2 [2] | | | – |
| Wavelength | 635 ... 680 | | | nm |
| Typical beam size at output | 5 x 2 | | | mm |
| Typical modulation frequency | 455 [3] | | | kHz |
| Weight | 36 | | | g |

*Unless noted, all data are valid at room temperature (21°C) and under normal operating conditions*

*[1] Laser on (Laser Enable = $V_{cc}$)*

*[2] Standard version; a higher range of transmission is available on request, measured average of optical power, laser window fitted*

*[3] Pulsed, modulation hub 100%*

*[4] Focal adjustment tool optional (Art.-No 0006-34-92-01)*

## TECHNICAL DATA RECEIVER

| One-way laser light barrier LS02 PNP [1] | Receiver mode 1 [5] | | Receiver mode 2 [5] | | Unit |
|---|---|---|---|---|---|
| Operating voltage | 12 – 24 ±10% | | 12 – 24 ±10% | | VDC |
| Max. operating current [2] | 13 | 19 | 16 | 19 | mA |
| Load (open collector) approx. | 100 [3] | | | | mA |
| Typical edge steepness, $t_{rise}$ | 47 | 29 | 46 | 29 | µs |
| Typical edge steepness, $t_{fall}$ | 2.1 | 3.2 | 2.1 | 3.2 | µs |
| Typical response time of rising edge | 8 | 8 | 9 | 9 | µs |
| Typical fall time of decreasing edge | 16 | 16 | 13 | 14 | µs |
| Voltage drop at output | 1.25 | 1.25 | 1.25 | 1.25 | V |
| Load (open collector) approx. | 200 [4] | | | | mA |
| Typical edge steepness, $t_{rise}$ | 45 | 30 | 46 | 29 | µs |
| Typical edge steepness, $t_{fall}$ | 1.2 | 1.7 | 1.2 | 1.7 | µs |
| Typical response time of rising edge | 7 | 8 | 8 | 10 | µs |
| Typical fall time of decreasing edge | 16 | 15 | 13 | 13 | µs |
| Voltage drop at output | 1.65 | 1.7 | 1.7 | 1.7 | V |
| Typical jitter delayed response | 0.79 | 0.92 | 0.79 | 0.47 | µs |
| Typical jitter release delay | 0.71 | 0.81 | 1.07 | 1.09 | µs |
| Max. PNP output load [6] | 200 | | | | mA |
| Weight | 30 | | | | g |

*Unless otherwise noted, all data are valid at room temperature (21°C) and normal operating conditions*

*[1] The required type configuration of the output has to be declared during order. Once set. it can not be changed later.*

*[2] without load*

*[3] 100Ω load at 12VDC supply voltage; 200Ω load at 24VDC supply voltage*

*[4] 50Ω load at 12VDC supply voltage; 100Ω load at 24VDC supply voltage*

*[5] Mode 1=detection of laser light ≥output high; mode 2=detection of laser light ≥output low*

*[6] Output is short-circuit protected*

| TECHNICAL DATA RECEIVER | | | | | |
|---|---|---|---|---|---|
| **One-way laser light barrier LS02 NPN** [1] | **Receiver mode 1** [5] | | **Receiver mode 2** [5] | | **Unit** |
| Operating voltage | 12 – 24 ±10% | | 12 – 24 ±10% | | VDC |
| Max. operating current [2] | 11 | 12 | 14 | 12 | mA |
| Load (open collector) approx. | 100 [3] | | | | mA |
| Typical edge steepness, $t_{rise}$ | 108 | 162 | 107 | 161 | µs |
| Typical edge steepness, $t_{fall}$ | 20 | 28 | 20 | 28 | µs |
| Typical response time of rising edge | 11 | 12 | 15 | 17 | µs |
| Typical fall time of decreasing edge | 12 | 11 | 10 | 8 | µs |
| Voltage drop at output | 1.5 | 1.65 | 1.5 | 1.6 | V |
| Load (open collector) approx. | 200 [4] | | | | mA |
| Typical edge steepness, $t_{rise}$ | 87 | 135 | 85 | 133 | µs |
| Typical edge steepness, $t_{fall}$ | 20 | 29 | 20 | 28 | µs |
| Typical response time of rising edge | 11 | 11 | 16 | 17 | µs |
| Typical fall time of decreasing edge | 11 | 11 | 7 | 7 | µs |
| Voltage drop at output | 2.0 | 2.1 | 1.9 | 2.1 | V |
| Typical jitter delayed response | 1.03 | 0.68 | 0.94 | 1.3 | µs |
| Typical jitter release delay | 1.09 | 1.04 | 0.55 | 0.56 | µs |
| Max. NPN output load [6] | 200 | | | | mA |
| Weight | 30 g | | | | |

*Unless noted, all data are valid at room temperature (21°C) and normal operating conditions*

*[1] The required type configuration of the output has to be declared during order. Once set. it can not be changed later.*

*[2] without load*

*[3] 100Ω load at 12VDC supply voltage; 200Ω load at 24VDC supply voltage*

*[4] 50Ω load at 12VDC supply voltage; 100Ω load at 24VDC supply voltage*

*[5] Mode 1=detection of laser light ≥output high; mode 2=detection of laser light ≥output low*

*[6] Output is short-circuit protected*

| TECHNICAL DATA RECEIVER | | | | | |
|---|---|---|---|---|---|
| **One-way laser light barrier LS02 type Bypass [1]** | **Receiver mode 1 [5]** | | **Receiver mode 2 [5]** | | **Unit** |
| Max. operating current [2] | 10 | 11 | 12 | 11 | mA |
| Load (open collector) approx. | 0.8 [3] | | | | mA |
| Typical edge steepness, $t_{rise}$ | – | 2.6 | – | 2.6 | µs |
| Typical edge steepness, $t_{fall}$ | – | 12 | – | 12 | µs |
| Typical response time of rising edge | – | 10 | – | 10 | µs |
| Typical fall time of decreasing edge | – | 8 | – | 9 | µs |
| Voltage drop at output | – | 0.6 | – | 0.6 | V |
| Load (open collector) approx. | 20[4] | | | | mA |
| Typical edge steepness, $t_{rise}$ | – | 66 | – | 66 | µs |
| Typical edge steepness, $t_{fall}$ | – | 12 | – | 12 | µs |
| Typical response time of rising edge | – | 12 | – | 9 | µs |
| Typical fall time of decreasing edge | – | 7.5 | – | 8 | µs |
| Voltage drop at output | – | 0.6 | – | 0.6 | V |
| Typical jitter delayed response | – | 0.43 | – | 0.86 | µs |
| Typical jitter release delay | – | 0.81 | – | 0.38 | µs |
| Max. output load [6]) | 180 | | | | mA |
| Weight | 30 | | | | g |

*Unless noted, all data are valid at room temperature (21°C) and normal operating conditions*

*[1] The required type configuration of the output has to be declared during order. Once set. it can not be changed later.*

*[2] without load*

*[3] 5.6Ω load at 5VDC supply voltage at open-collector output*

*[4] 200Ω load at 5VDC supply voltage at open-collector output*

*[5] Mode 1=detection of laser light ≥output high; mode 2=detection of laser light ≥output low*

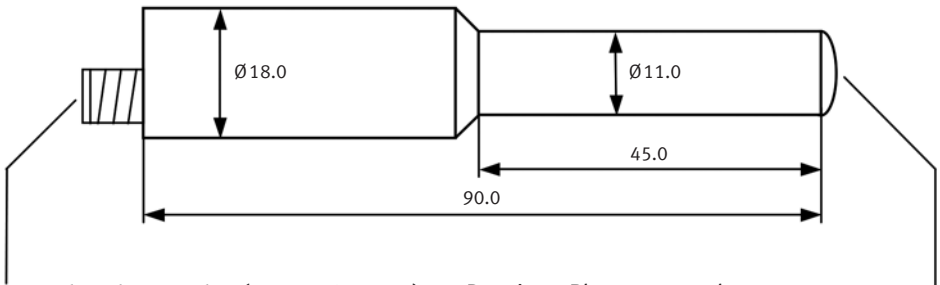
*[6] Output is short-circuit protected*

| TECHNICAL DATA SYSTEM | | |
|---|---|---|
| **One-way laser light barrier LS02** | | |
| Operating temperature | –20...+40 | °C |
| Storage temperature | –40...+85 | °C |

## DIMENSIONS TYPE 0072-13

Transmitter and receiver have the same dimensions:

Material:
Aluminium anodised

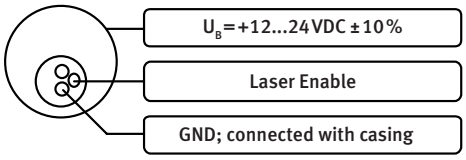



Coupler-plug 3 poles (type series 768)
(Suitable jack on request)

Receiver: Plano-convex lens
Transmitter: Protection glass removable

## CONNECTION DIAGRAM TYPE 0072-13

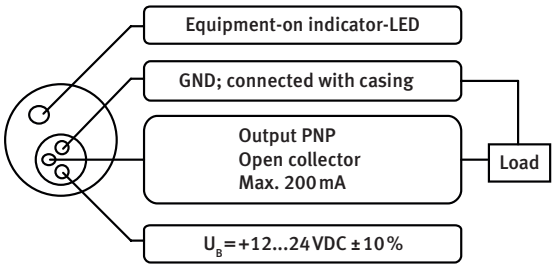
LS02 Transmitter:




| | |
|---|---|
| Laser Enable = 3...24 VDC: | Laser ON |
| Laser Enable = 0 VDC: | Laser OFF |
| Laser Enable = NC: | Laser OFF |

Rear-view

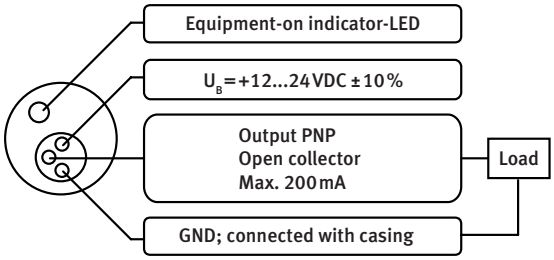
LS02 Receiver operating mode 1: PNP-Configuration




| | |
|---|---|
| Laser detection: | PNP output switched, max. 200 mA; LED: Green |
| No Laser detection: | PNP output locked, 0 mA; LED: Orange |

Rear-view

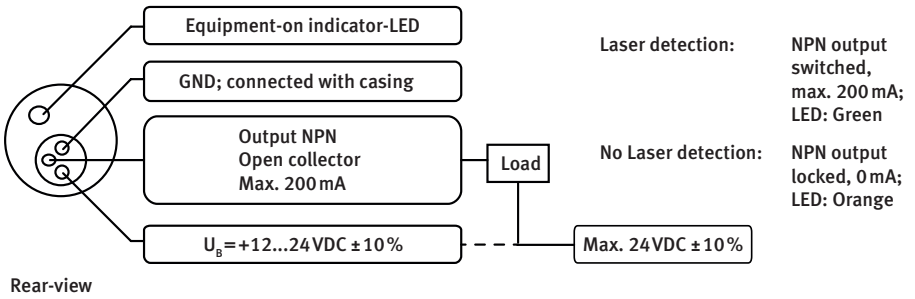
LS02 Receiver operating mode 2: PNP-Configuration




| | |
|---|---|
| Laser detection: | PNP output locked, 0 mA; LED: Green |
| No Laser detection: | PNP output switched, max. 200 mA; LED: Orange |

Rear-view

LS02 Receiver operating mode 1: NPN-Configuration

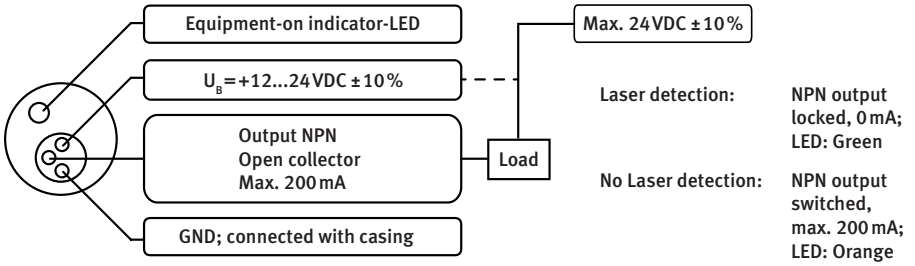



Laser detection: NPN output switched, max. 200 mA; LED: Green

No Laser detection: NPN output locked, 0 mA; LED: Orange

Rear-view

LS02 Receiver operating mode 2: NPN-Configuration

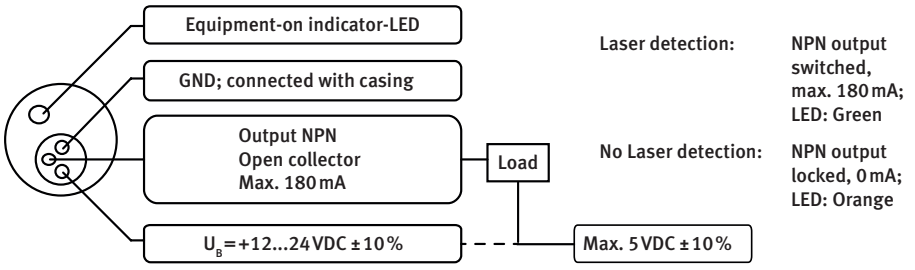



Laser detection: NPN output locked, 0 mA; LED: Green

No Laser detection: NPN output switched, max. 200 mA; LED: Orange

Rear-view

LS02 Receiver operating mode 1: Bypass-Configuration

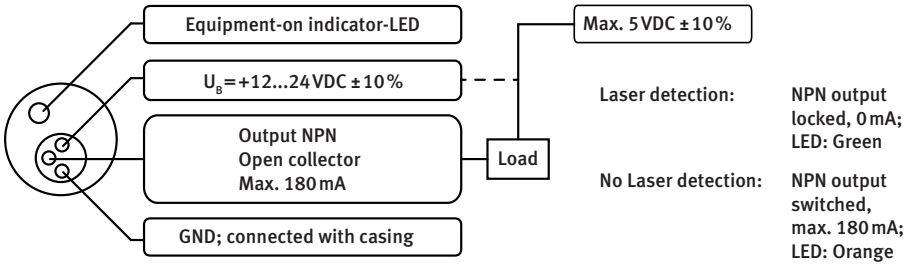



Laser detection: NPN output switched, max. 180 mA; LED: Green

No Laser detection: NPN output locked, 0 mA; LED: Orange

Rear-view

LS02 Receiver operating mode 1: Bypass-Configuration




Laser detection: NPN output locked, 0 mA; LED: Green

No Laser detection: NPN output switched, max. 180 mA; LED: Orange

Rear-view

Laser beams can cause damage to your eyes.
The user is responsible to observe the local safety regulations.

*Mistakes and technical changes reserved.*



**D-A-CH**
Laser 2000 GmbH
82234 Wessling
Tel. +49 8153 405-0
info@laser2000.de
www.laser2000.de

**FRANCE**
Laser 2000 SAS
33600 Pessac
Tel. +33 5 57 10 92 80
info@laser2000.fr
www.laser2000.fr

**IBERIA**
Laser 2000 SAS
28034 Madrid
Tel. +34 617 308 236
info@laser2000.es
www.laser2000.es

**NORDICS**
Laser 2000 GmbH
11251 Stockholm
Tel. +46 8 555 36 235
info@laser2000.se
www.laser2000.se