

One-way laser light barrier LS02 M18/M12



Type 0072-05

Characteristics:

- Short response time
- Choice of response to light and dark signal
- Suppression of interfering light
- Sender can be focussed
- Long range
- M18 sensor housing / M12 sensor connector
- Solid construction
- Watertight (IP65)
- Accepts wide range of operating voltage

Short description

The light barrier **LS02** requires a supply voltage of 12 ... 24V_{DC} and has a protection against reverse polarity. Due to its small dimensions (M18 sensor housing) and solid construction it can be used practically everywhere. The connector is a 4-pole M12 sensor type. As light source (sender) the **LS02** uses a visible laser light. Therefore it will be simple to align the sender. The laser's 455kHz modulation substantially increases the ability to suppress interfering light. The range exceeds 50m at a transmitter power classified as laser class 2. Higher range of transmission is available upon request (higher output power).

Two short-circuit protected PNP outputs are provided, permitting a choice of response to light and dark signal (up to 200mA) at the same time. Due to the use of laser light and the very short response time, the **LS02** can be used for data transmission, time measurement, positioning etc. The receiver has two built-in LED indicators (red and green) to attend visually the output state.

Technical data Sender

One-way laser light barrier LS02	Sender			
Operating voltage	12	-	24 ±10%	V _{DC}
Max. operating current	40 ¹⁾		35 ¹⁾	mA
Typical laser turn-on delay (Disable pos. edge)	920		900	µs
Typical jitter of laser's turn-on delay	15		12	µs
Typical laser turn-off delay (Disable neg. edge)	65		77	µs
Typical jitter of laser's turn-off delay	3		2	µs
Optical power	≤ 1 ²⁾			mW
Laser class	2 ²⁾			-
Wavelength	635 ... 680			nm
Typical beam size at output	5x2			mm
Focus range	10 - infinite			mm
Typical modulation frequency	455			kHz
Weight	42			g

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

1) Laser on (Laser Disable = V_{cc} or open)

2) Standard version; extended range available on request.

Technical data Receiver

One-way laser light barrier LS02	receiver values		unit
Operating voltage	12	- 24 ±10%	V _{DC}
Max. operating current ¹⁾	16	12	mA
Load approx. 100mA ³⁾ :			
Typical rise time, t _{rise}	2	1	µs
Typical fall time, t _{fall}	6	10	µs
Typical response delay (rising edge)	11	10	µs
Typical release delay (falling edge)	14	18	µs
Dropout voltage at output	1.2	0.9	V
Load approx. 200mA ⁴⁾ :			
Typical rise time, t _{rise}	3	1	µs
Typical fall time, t _{fall}	4	6	µs
Typical response delay (rising edge)	11	10	µs
Typical release delay (falling edge)	11	15	µs
Dropout voltage at output	1.7	1.3	V
Typical jitter of response delay (rising edge)	1	1	µs
Typical jitter of release delay (falling edge)	3	2	µs
Max. PNP output load ²⁾	200		mA
Weight	32		g

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

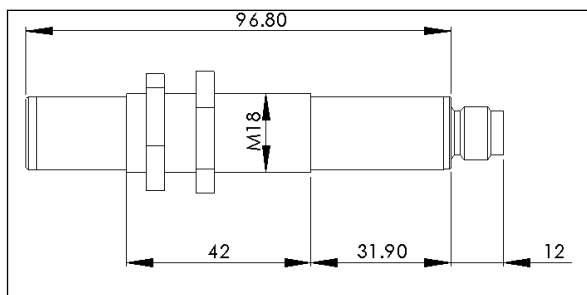
- 1) without output load
- 2) Output is short-circuit protected
- 3) 110Ω load at 10.8V_{DC} supply voltage; 250Ω load at 26.4V_{DC} supply voltage
- 4) 54Ω load at 10.8V_{DC} supply voltage; 150Ω last at 26.4V_{DC} supply voltage

Technical data System

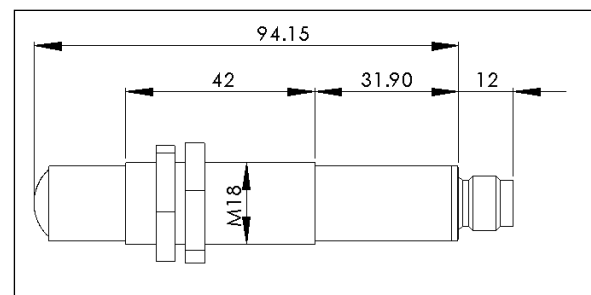
One-way laser light barrier LS02		
Operating temperature	-20 ... +40	°C
Storage temperature	-40 ... +85	°C

Dimensions Type 0072-05

Sender:
Alu anodized/Polyamid



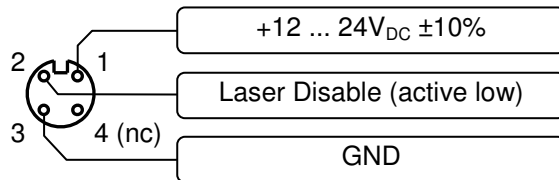
Receiver:
PVC/Polyamid



Connector: Sensor connectors series 713 (M12x1), male receptacle, 4-pole, transparent (matching female cable connectors available on request)

Wiring diagram Type 0072-05

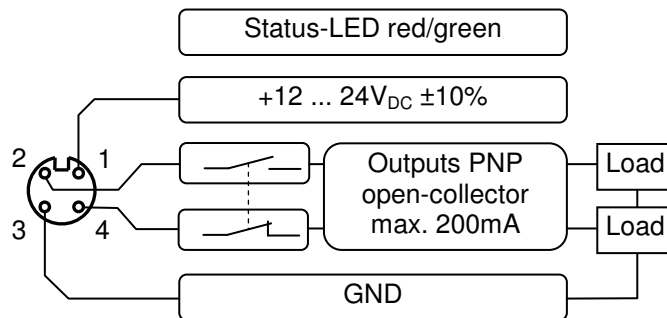
LS02 Sender:



Laser Disable = > 10V _{DC} :	Laser ON
Laser Disable = < 2V _{DC} :	Laser OFF
Laser Disable = open:	Laser ON

Rear view (Pin #4 not connected)

LS02 Receiver:



Operation indicator: LEDs are placed inside the transparent connector. If neither red nor green light is on, a failure or missing power is indicated.

Laser detection: PNP output #4 switched on, max. 200mA; PNP output #2 switched off, 0mA; LED: **green** on

No laser detection: PNP output #4 switched off, 0mA; PNP output #2 switched on, max. 200mA; LED: **red** on

Rear view