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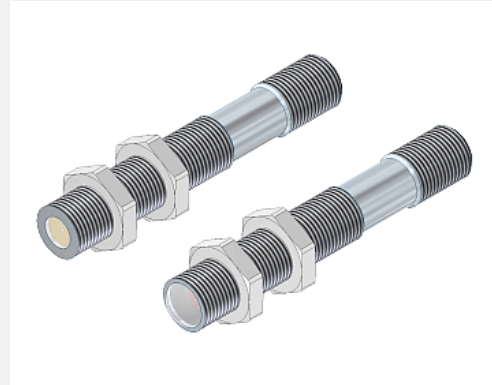
For technical support, sales, & distribution
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D-LAS Series

► D-LAS2-LC-...

- Visible laser beam (<0.4 mW, 670 nm), **laser class 1**
- Transmitter with aperture Ø 1 mm
- Receiver with collecting lens (plano-convex)
- Interference filter
- High reproducibility (in µm-range)
- Working range up to 10 m
- High switching frequency (typ. 25 kHz)
- Analog output (0V...+10V)
- Switching output (npn + pnp)
- Optics cover made of glass
- Sturdy housing made of brass, nickel-plated
- Compact design (M12)



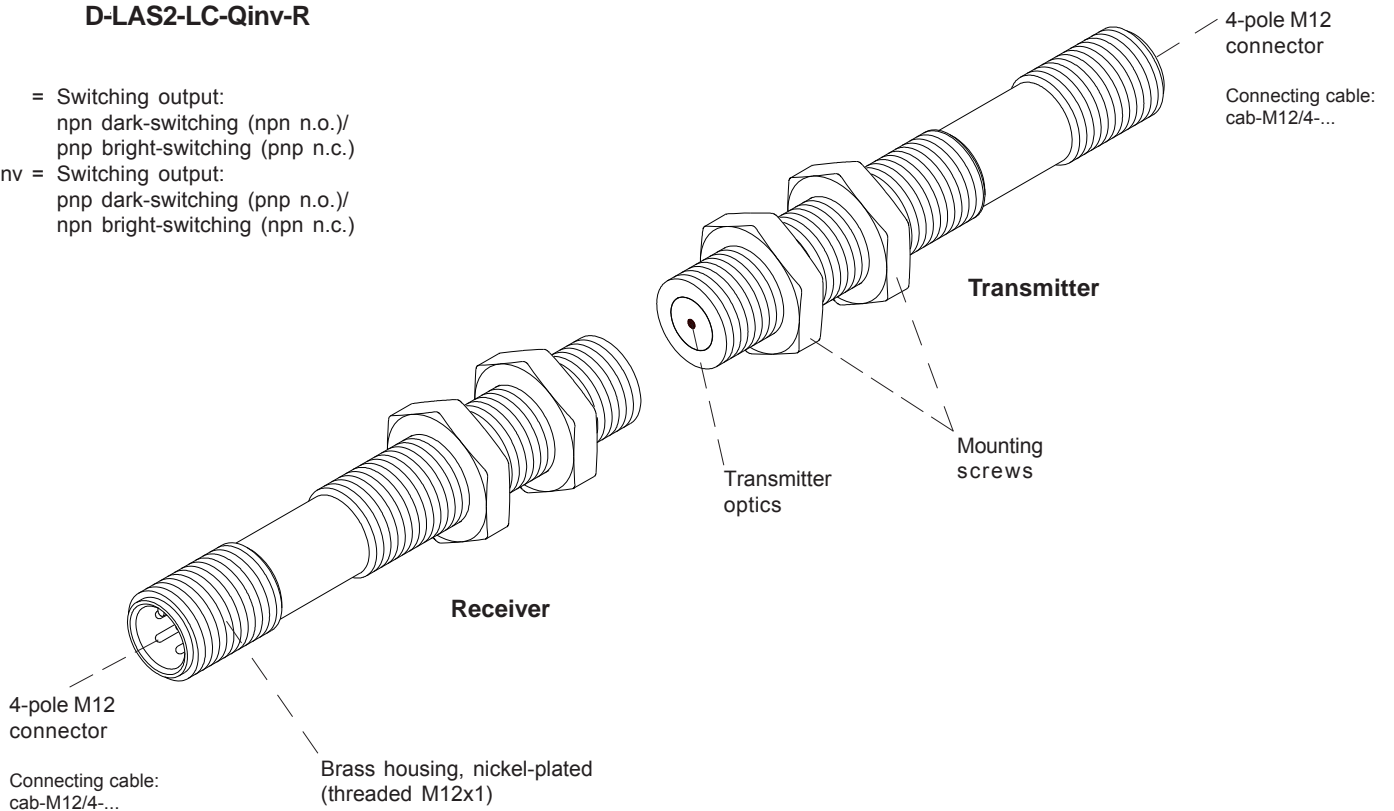
Design

Product name:

Transmitter: **D-LAS2-LC-T**

Receiver: **D-LAS2-LC-Q-R**
D-LAS2-LC-Qinv-R

- Q = Switching output:
npn dark-switching (npn n.o.)/
pnp bright-switching (pnp n.c.)
- Qinv = Switching output:
pnp dark-switching (pnp n.o.)/
npn bright-switching (npn n.c.)



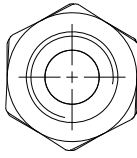


Technical Data

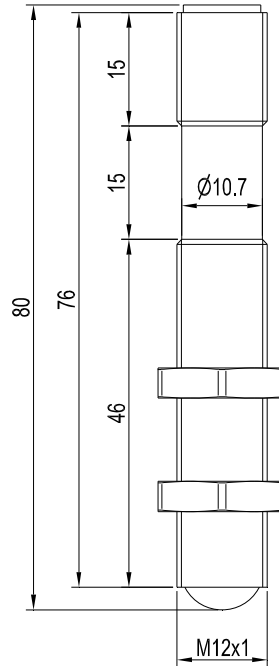
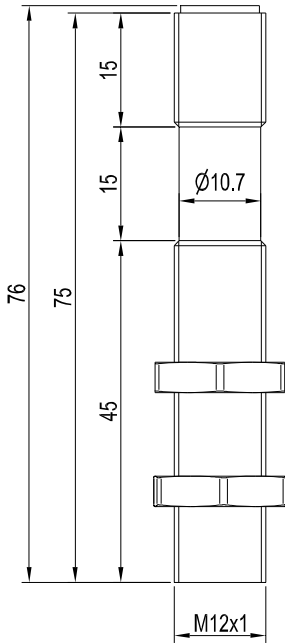
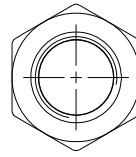
| Type | D-LAS2-LC |
|---|--|
| Laser | Solid state laser, 670 nm, AC operation, <0.4 mW opt. power, laser class 1 acc. to DIN EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures. |
| Working range | max. 10 m (distance transmitter/receiver) |
| Min. detectable object | Analog typ. 2% of aperture size, digital typ. 1% of aperture size |
| Reproducibility | Analog typ. 2% of aperture size, digital typ. 1% of aperture size |
| Optical filter | Interference filter |
| Threshold correction | --- |
| Voltage supply | +24VDC (± 10%), protected against polarity reversal, overload protected |
| Alternating current/ direct current supply | DC operation |
| Ambient light | up to 5000 Lux (depends on the aperture used) |
| Current consumption | Transmitter: typ. 50 mA Receiver: typ. 30 mA |
| Max. size of aperture | Ø 1.0 mm |
| Current control input I-CONTROL | 0V...+5V: Laser power decreases linearly with increasing voltage +5V...+24V: Laser OFF (max. modulation/frequency: 2 kHz) |
| Monitoring output | Analog output 0V...+10V (typ. 100 kHz band width) |
| Digital output | Q = npn dark-switching (npn n.o.) / pnp bright-switching (pnp n.c.) or Qinv = pnp dark-switching (pnp n.o.) / npn bright-switching (npn n.c.) |
| Type of protection | IP67 |
| Operating temperature range | -20°C up to +50°C |
| Storage temperature range | -20°C up to +85°C |
| Housing material | Brass, nickel-plated |
| Housing dimensions | Transmitter: M12x1, length approx. 76 mm Receiver: M12x1, length approx. 80 mm |
| Connector type | M12, 4-pole (V2A-plug) |
| Connecting cables available | cab-M12/4-g-... (length 2m or 5m) cab-M12/4-w-... (length 2m or 5m, angle type) cab-M12/4-w-npn-... (length 2m or 5m, angle type, with LED) cab-M12/4-w-pnp-... (length 2m or 5m, angle type, with LED) |
| Max. switching current | 100 mA, short-circuit-proof |
| EMC test acc. to | DIN EN 60947-5-2 CE |
| Switching frequency | typ. 25 kHz |

Dimensions

D-LAS2-LC-T
Transmitter



D-LAS2-LC-...-R
Receiver
(with collecting
lense)

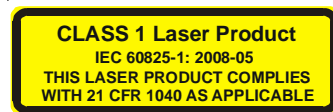


(All dimensions in mm)

Laser Information

The laser transmitters of D-LAS series comply with laser class 1 according to EN 60825-1. Under reasonably foreseeable conditions a class 1 laser is safe. The reasonably foreseeable conditions are kept during specified normal operation. The use of these laser transmitters therefore requires no additional protective measures.

The laser transmitters of D-LAS series are supplied with an information label „CLASS 1 Laser Product“.



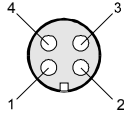
Connector Assignment

Receiver (4-pole M12 connector, shielded)

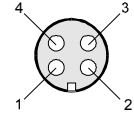
Transmitter (4-pole M12 connector, shielded)

Type Q (npn dark-switching / npn bright-switching):

| Pin No.: | Color: | assignment: |
|----------|--------|--------------------|
| 1 | brn | +24VDC (± 10%) |
| 2 | wht | ANALOG (0V...+10V) |
| 3 | blu | GND (0V) |
| 4 | blk | OUTPUT |

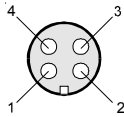


| Pin No.: | Color: | Assignment: |
|----------|--------|----------------------|
| 1 | brn | +24VDC (± 10%) |
| 2 | wht | I-CONTROL (0...+24V) |
| 3 | blu | GND (0V) |
| 4 | blk | Shield - Housing |



Type Qinv (pnp dark-switching / npn bright-switching):

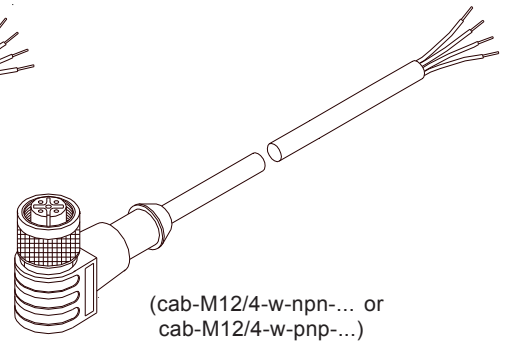
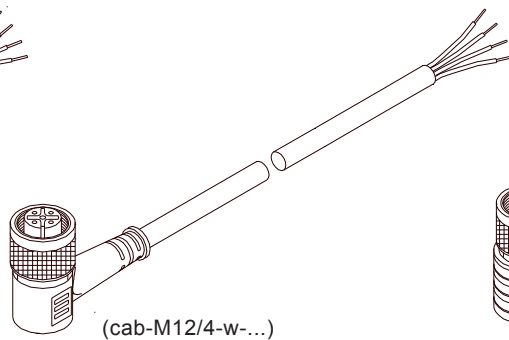
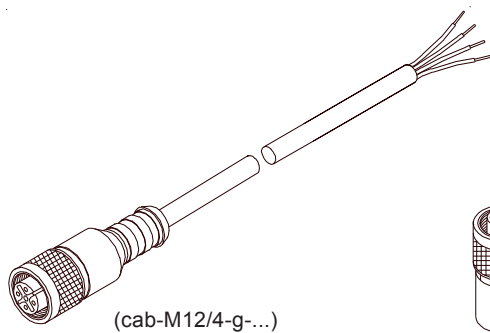
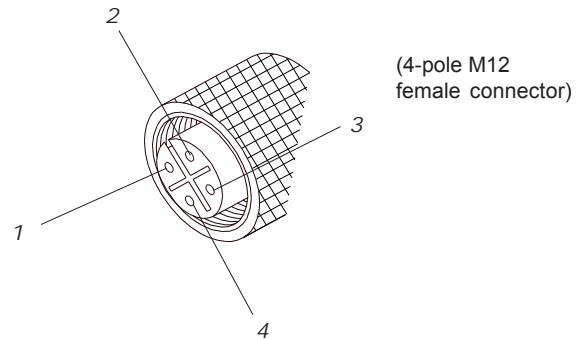
| Pin No.: | Color: | Assignment: |
|----------|--------|--------------------|
| 1 | brn | +24VDC (± 10%) |
| 2 | wht | ANALOG (0V...+10V) |
| 3 | blu | GND (0V) |
| 4 | blk | OUTPUT INV |



Connecting Cables

Available connecting cables:

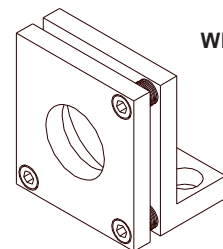
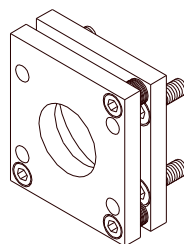
| | | | |
|---------------------------|------------|-------------------|----------------------|
| cab-M12/4-g-2m | Length: 2m | Outer jacket: PUR | |
| cab-M12/4-g-5m | Length: 5m | Outer jacket: PUR | |
| cab-M12/4-w-2m | Length: 2m | Outer jacket: PUR | angle type |
| cab-M12/4-w-5m | Length: 5m | Outer jacket: PUR | angle type |
| cab-M12/4-w-npn-2m | Length: 2m | Outer jacket: PUR | angle type, with LED |
| cab-M12/4-w-npn-5m | Length: 5m | Outer jacket: PUR | angle type, with LED |
| cab-M12/4-w-pnp-2m | Length: 2m | Outer jacket: PUR | angle type, with LED |
| cab-M12/4-w-pnp-5m | Length: 5m | Outer jacket: PUR | angle type, with LED |



Mounting

Mounting accessories (please order separately):

Mounting flange FL-12
Mounting flange WFL-12



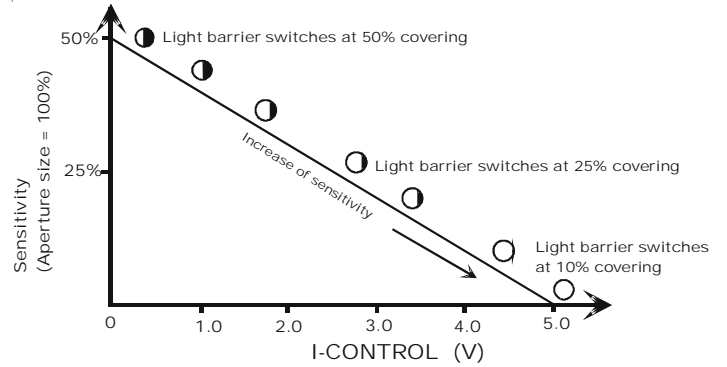
Characteristics

Adjustment of laser power

At the D-LAS2 transmitter the laser power can be adjusted with the current control input.

The voltage at the I-CONTROL current control input can be varied between 0V and +24V. The maximum laser power is reached at 0V; the laser power then decreases linearly with increasing voltage, and at +5V it reaches the 0 mW value (LASER OFF).

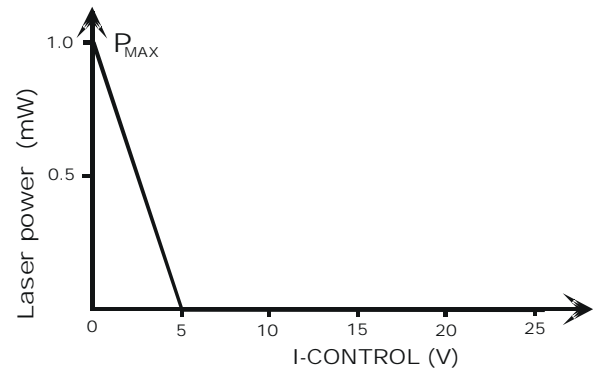
The current control input therefore can also be used as a test input for switching the laser light barrier on or off (0V = ON, +5V or +24V = OFF).



Adjustment of sensitivity

If a receiver with a fixed comparator threshold is used, the I-CONTROL input is used for setting the sensitivity.

Drawing at the right: Sensitivity increase in case of a receiver with fixed threshold (threshold set to a fixed value of 5V, which in case of an analog signal of 10V (with I-CONTROL = 0V) requires a 50% covering of the laser beam for a change of the switching state.



Monitoring Output

Dirt accumulation and cleaning

The monitor output of the receiver provides information on the dirt accumulation status of the laser light barrier. The lower the value of the analog signal (without measuring object in the beam path), the higher the dirt accumulation.

If possible, a dry cleaning method should be used for cleaning the glass covers and/or the glass lenses, preferably with a spectacles cleaning cloth, or a similar cloth.

The formation of drops on the glass cover or the glass lens might impair the measuring result (refraction of light at the convex drop surface). Drops should be removed with a dry cloth, preferably with a spectacles cleaning cloth, or a similar cloth.

Graphs

