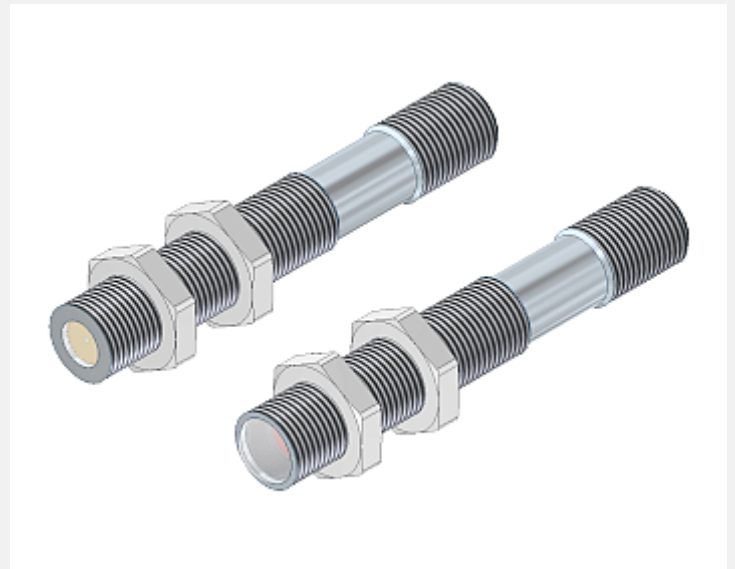


D-LAS Series

► D-LAS2-LC-...

- Visible laser beam (<math><0.4\text{ mW}</math>, 670 nm), **laser class 1**
- Transmitter with aperture \varnothing 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)



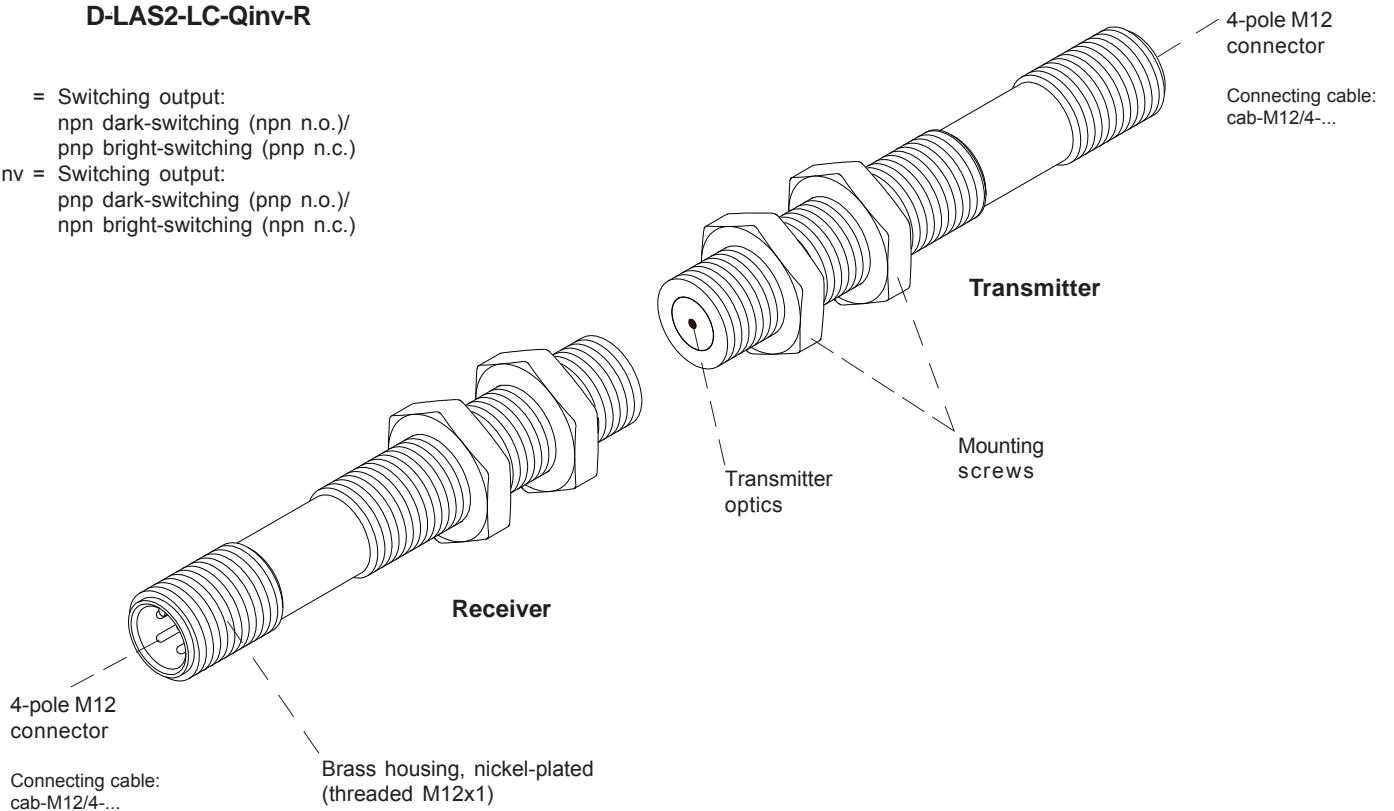
Design

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.)



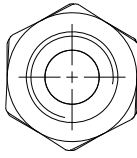


Technical Data

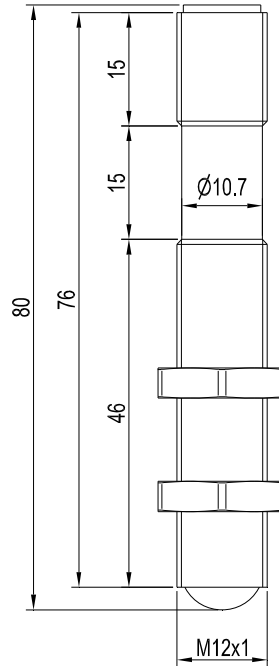
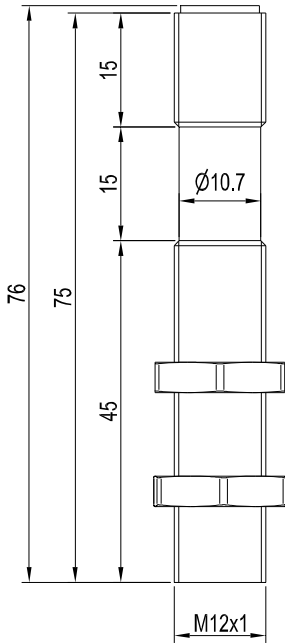
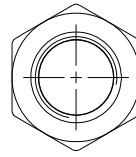
Type	D-LAS2-LC
Laser	Solid state laser, 670 nm, AC operation, <0.4 mW opt. power, laser class 1 acc. to DIN EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.
Working range	max. 10 m (distance transmitter/receiver)
Min. detectable object	Analog typ. 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“.

CLASS 1 Laser Product
IEC 60825-1: 2008-05
THIS LASER PRODUCT COMPLIES
WITH 21 CFR 1040 AS APPLICABLE



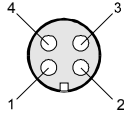
Connector Assignment

Receiver (4-pole M12 connector, shielded)

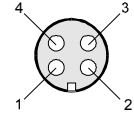
Transmitter (4-pole M12 connector, shielded)

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

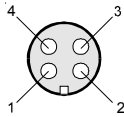


Pin No.:	Color:	Assignment:
1	brn	+24VDC (± 10%)
2	wht	I-CONTROL (0...+24V)
3	blu	GND (0V)
4	blk	Shield - Housing



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

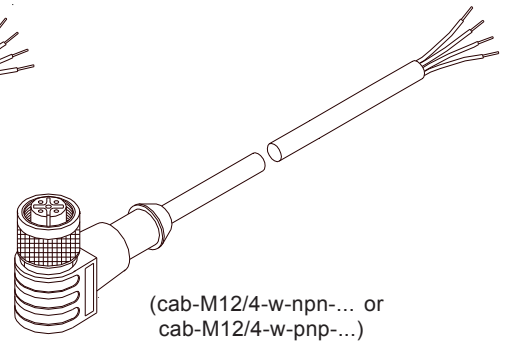
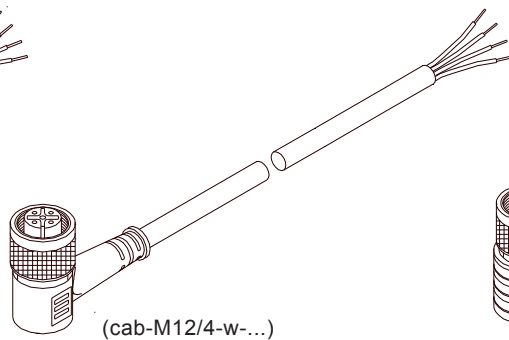
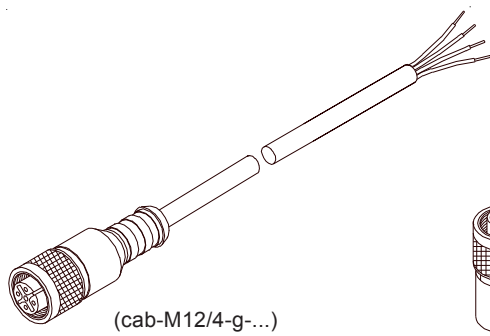
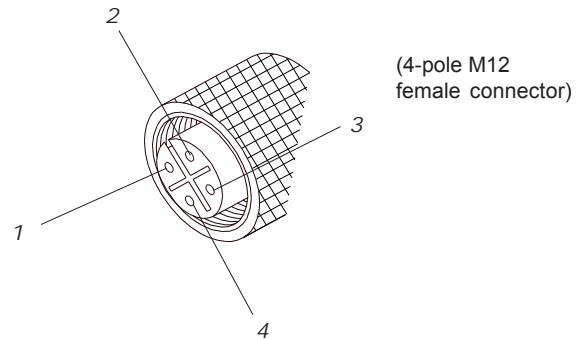
Pin No.:	Color:	Assignment:
1	brn	+24VDC (± 10%)
2	wht	ANALOG (0V...+10V)
3	blu	GND (0V)
4	blk	OUTPUT INV



Connecting Cables

Available connecting cables:

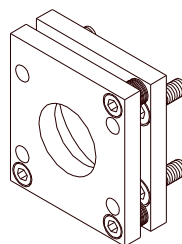
cab-M12/4-g-2m	Length: 2m	Outer jacket: PUR	
cab-M12/4-g-5m	Length: 5m	Outer jacket: PUR	
cab-M12/4-w-2m	Length: 2m	Outer jacket: PUR	angle type
cab-M12/4-w-5m	Length: 5m	Outer jacket: PUR	angle type
cab-M12/4-w-npn-2m	Length: 2m	Outer jacket: PUR	angle type, with LED
cab-M12/4-w-npn-5m	Length: 5m	Outer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



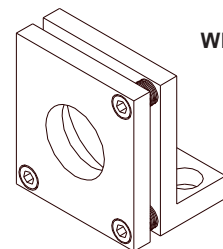
Mounting

Mounting accessories (please order separately):

Mounting flange FL-12
Mounting flange WFL-12



FL-12



WFL-12

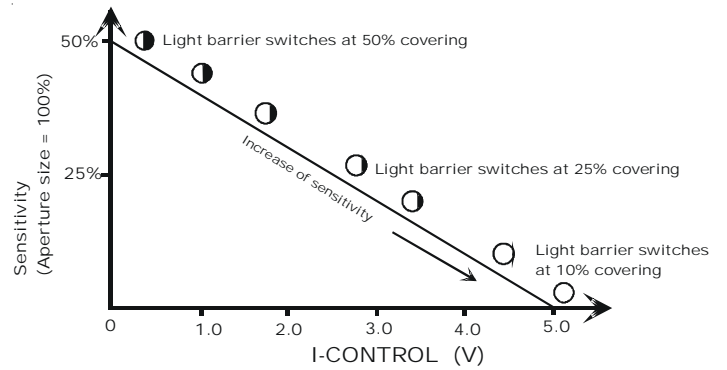
Characteristics

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).

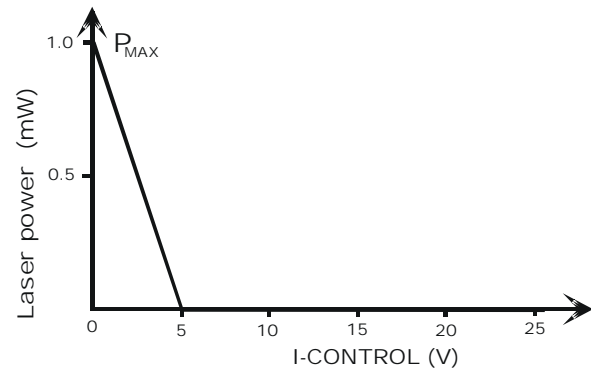
The current control input therefore can also be used as a test input for switching the laser light barrier on or off (0V = ON, +5V or +24V = OFF).



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

