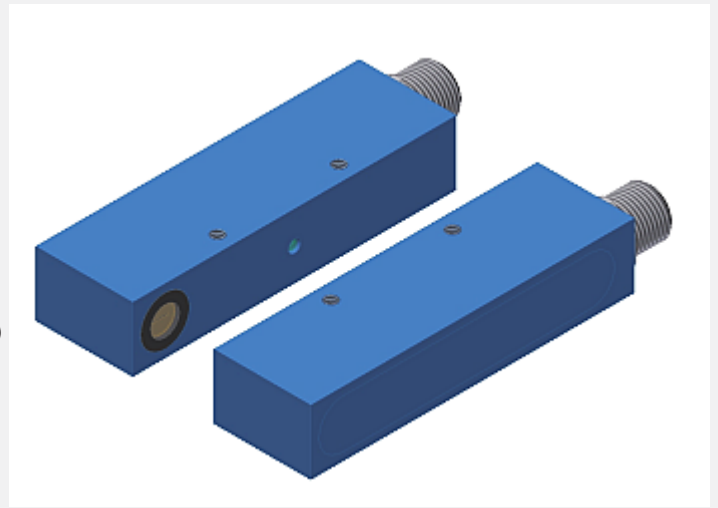


D-LAS Series

► D-LAS-16/90-...

- Collimated laser beam (<0.4 mW, 670 nm), **laser class 1**
- Measuring range up to 9.5 mm
- Switching state indication by means of a two-color LED (yel/grn)
- Dirt accumulation indication by means of a red LED
- Switching output (npn- and pnp-compatible)
- Analog output 0V...+10V
- Gain can be adjusted via 3-revolutions potentiometer
- Optics cover made of glass
- Sturdy aluminum housing, IP67



Design

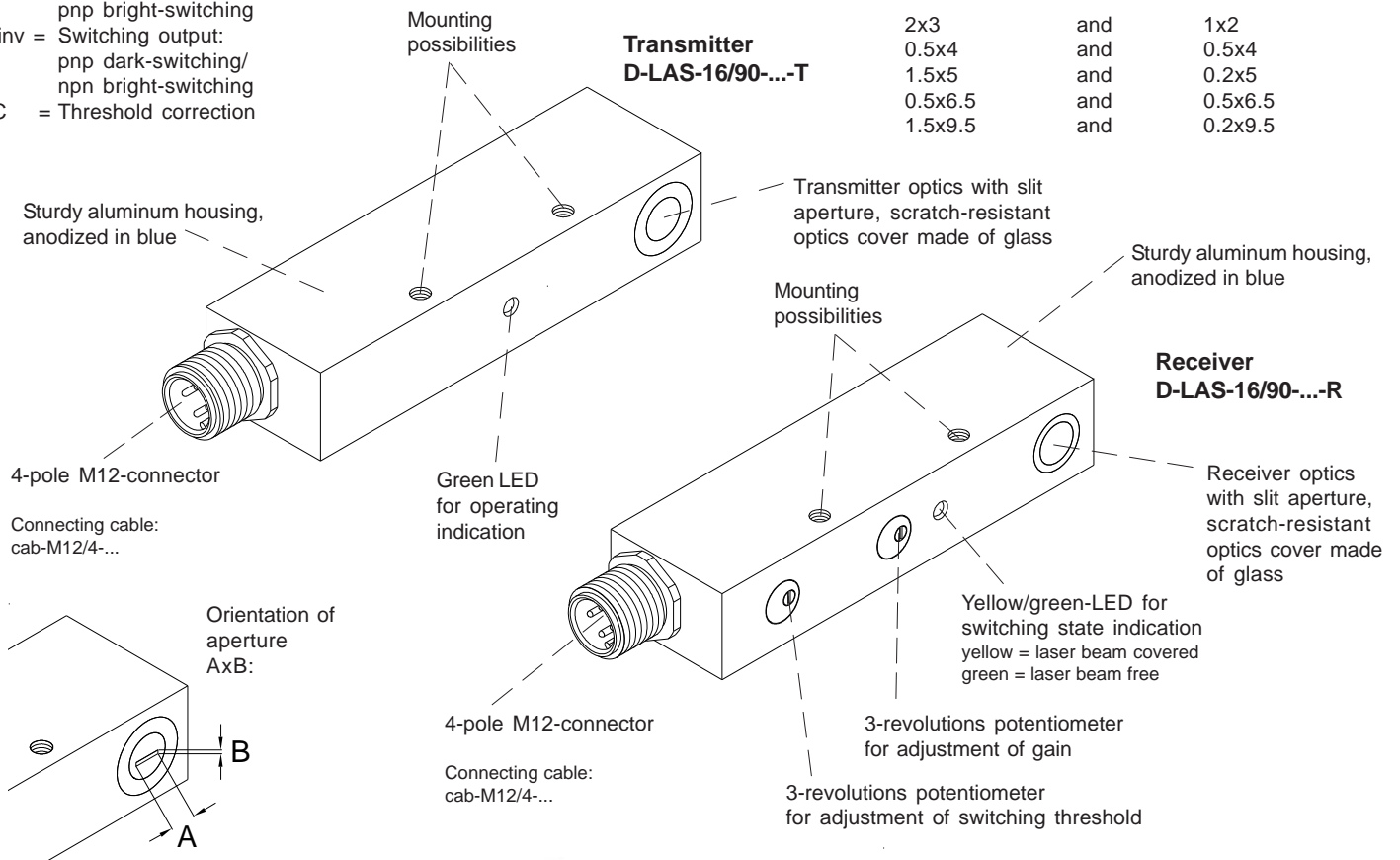
Product name:

Transmitter: D-LAS-16/90-(aperture)*-T
Receiver: D-LAS-16/90-Q-(aperture)*-R
 D-LAS-16/90-Qinv-(aperture)*-R
 D-LAS-16/90-TC-Q-(aperture)*-R
 D-LAS-16/90-TC-Qinv-(aperture)*-R

*Recommended aperture combinations for transmitter/receiver:


Aperture Transmitter (AxB in mm):		Aperture receiver (AxB in mm):	
3x2	and	2x1	
4x0.5	and	4x0.5	
5x1.5	and	5x0.2	
6.5x0.5	and	6.5x0.5	
9.5x1.5	and	9.5x0.2	
2x3	and	1x2	
0.5x4	and	0.5x4	
1.5x5	and	0.2x5	
0.5x6.5	and	0.5x6.5	
1.5x9.5	and	0.2x9.5	

- Q = Switching output:
nnp dark-switching/
pnp bright-switching
- Qinv = Switching output:
pnp dark-switching/
nnp bright-switching
- TC = Threshold correction





Technical Data

Type	D-LAS-16/90	
Laser	Solid state laser, 670 nm, DC operation, 0.4 mW max. opt. power, Laser class 1 acc. to DIN EN 60825-1. The use of these laser sensors therefore requires no additional protective measures.	
Reproducibility	typ. 1‰ of aperture size	
Optical filter	Interference filter + polarisation filter	
Voltage supply	+24VDC ($\pm 10\%$), protected against polarity reversal, overload protected	
Alternating current/ direct current supply	DC operation	
Ambient light	up to 5000 Lux	
Sensitivity setting (switching threshold)	adjustable by means of an integrated potentiometer (3 revolutions)	
Amplifier gain (analog signal)	adjustable by means of an integrated potentiometer (3 revolutions)	
Current consumption	typ. 90 mA	
Available aperture sizes (recommended aperture combinations for transmitter and receiver)	Aperture horizontal alongside of housing: Transmitter 3 mm x 2 mm + receiver 2 mm x 1 mm Transmitter 4 mm x 0.5 mm + receiver 4 mm x 0.5 mm Transmitter 5 mm x 1.5 mm + receiver 5 mm x 0.2 mm Transmitter 6.5 mm x 0.5 mm + receiver 6.5 mm x 0.5 mm Transmitter 9.5 mm x 1.5 mm + receiver 9.5 mm x 0.2 mm	Aperture vertical alongside of housing: Transmitter 2 mm x 3 mm + receiver 1 mm x 2 mm Transmitter 0.5 mm x 4 mm + receiver 0.5 mm x 4 mm Transmitter 1.5 mm x 5 mm + receiver 0.2 mm x 5 mm Transmitter 0.5 mm x 6.5 mm + receiver 0.5 mm x 6.5 mm Transmitter 1.5 mm x 6.5 mm + receiver 0.2 mm x 9.5 mm
Monitoring output (analog output)	0V ... +10V (typ. 100 kHz band width)	
Type of protection	IP67	
Operating temp. range	-20°C to +50°C	
Storage temperature range	-20°C to +85°C	
Housing material	Aluminum, anodized in blue	
Housing dimensions	Transmitter and receiver: approx. 80 mm x 24 mm x 16 mm	
Type of connector	Transmitter and receiver: 4-pole M12-connector	
Max. switching current	100 mA, short-circuit-proof	
EMC test acc. to	DIN EN 60947-5-2 	
Switching state indication	by means of an integrated yellow/green-LED (at receiver)	
Operation indication	by means of a green LED (at transmitter)	
Switching frequency	typ. 25 kHz	



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“.

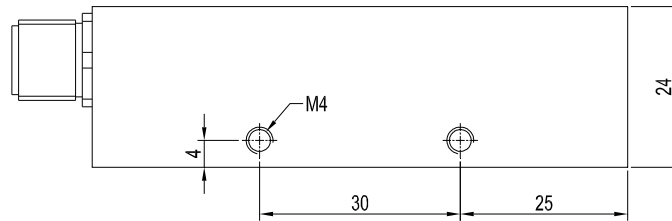
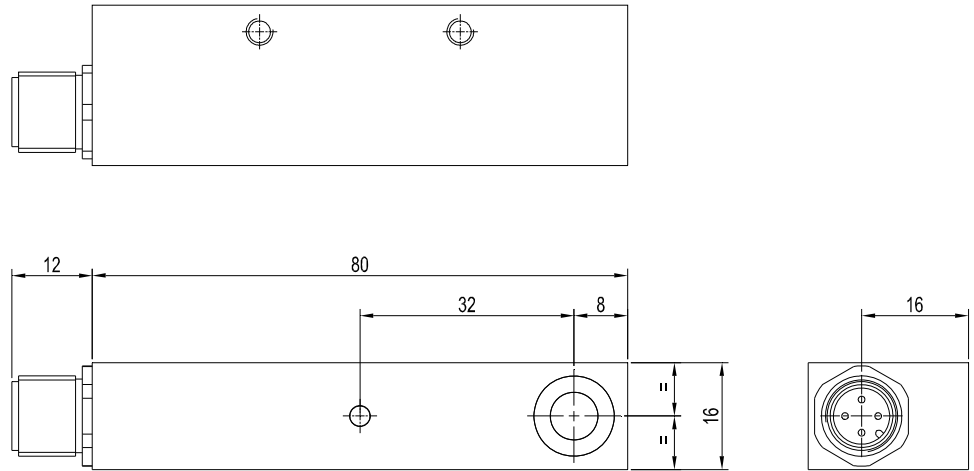
CLASS 1 Laser Product
IEC 60825-1: 2008-05
THIS LASER PRODUCT COMPLIES
WITH 21 CFR 1040 AS APPLICABLE



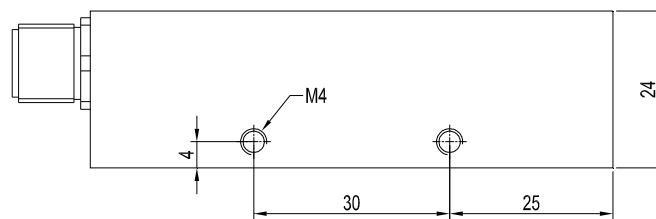
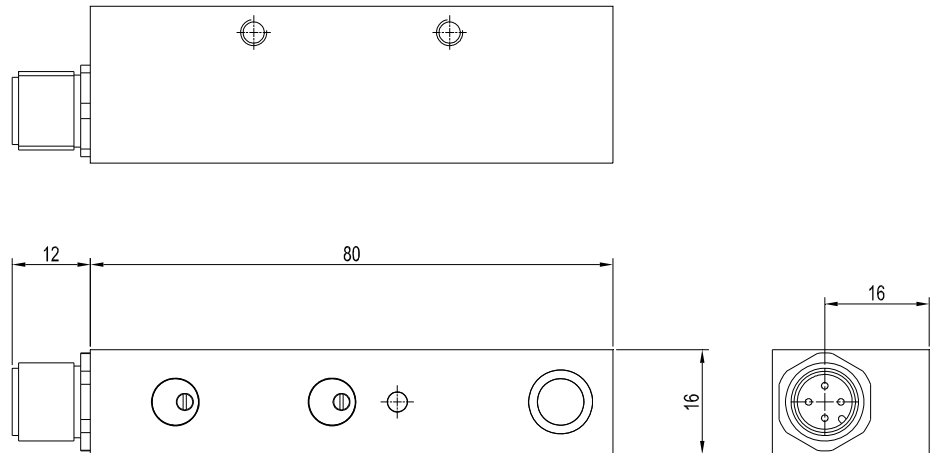


Dimensions

D-LAS-16/90-...-T (Transmitter):



D-LAS-16/90-...-R (Receiver):



All dimensions in mm

Connector Assignment

Connector assignment:

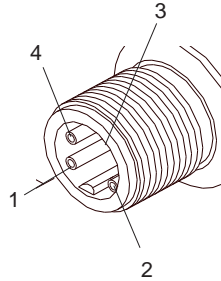
Receiver

(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
Shield		Housing

Connecting cable:
cab-M12/4-...



Transmitter

(4-pole M12-connector, shielded)

Pin-No.:	Color:	Assignment:
1	brn	+24VDC (± 10%)
2	wht	I-CONTROL (0...+5V)
3	blu	GND (0V)
4	blk	GND (0V)
Shield		Housing

Connecting cable:
cab-M12/4-...

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

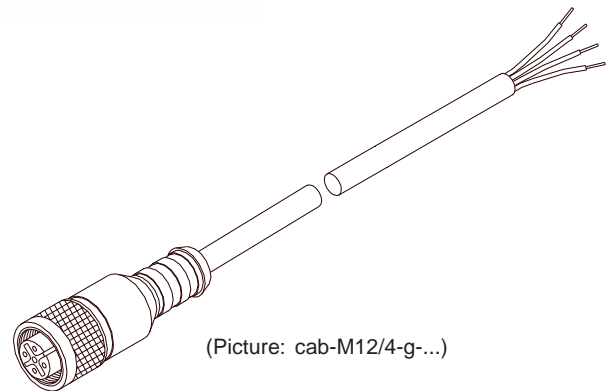
Pin-No.:	Color:	Assignment:
1	brn	+24VDC (± 10%)
2	wht	ANALOG (0V...+10V)
3	blu	GND (0V)
4	blk	OUTPUT INV
Shield		Housing

Connecting cable:
cab-M12/4-...

Connecting Cable

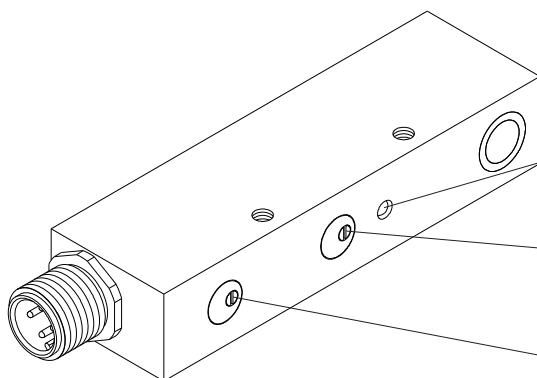
Available connecting cables:

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 90°)
cab-M12/4-w-5m	Length: 5m	Outer jacket: PUR (angle type 90°)

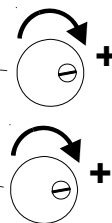


(Picture: cab-M12/4-g-...)

Settings



Two-color LED yellow/green: yellow = laser beam covered
green = laser beam free



3-revolutions pptentiometer for adjustment of gain
Rotation clockwise: Increase of analog signal

3-revolutions pptentiometer for adjustment of switching threshold
Rotation clockwise: Increase of sensitivity