

# D-LAS Series

## ► D-LAS-24/90

- Optics cover made of glass
- Measuring range up to 16 mm
- Analog output 0V...+10V
- Switching output (npn- and pnp compatible)
- Switching state indication by means of yellow-green LED
- Dirt accumulation indication by means of red LED
- Gain adjustable via 3- revolutions potentiometer
- Sturdy aluminum housing



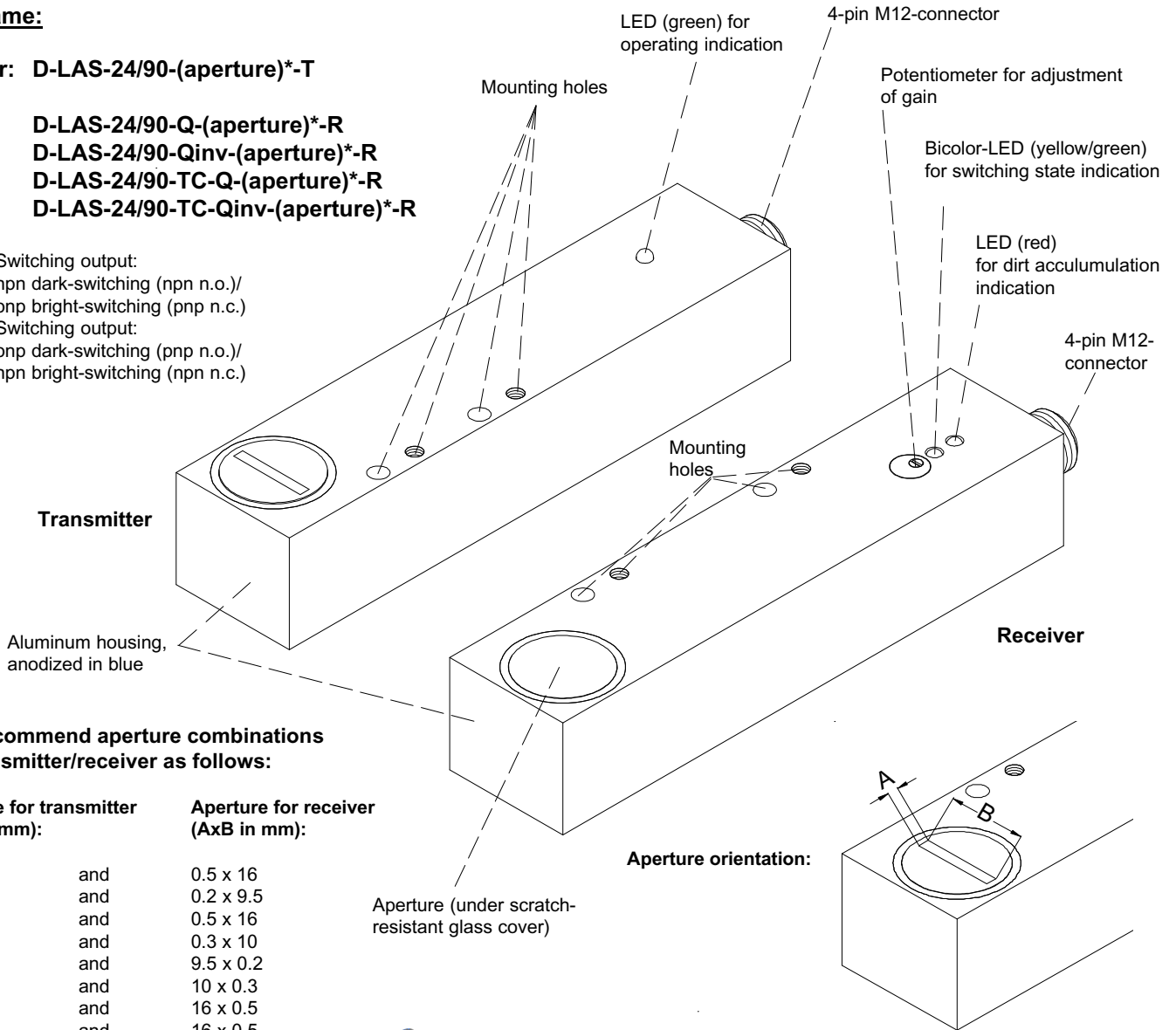
## Design

**Product name:**

**Transmitter: D-LAS-24/90-(aperture)\*-T**

**Receiver: D-LAS-24/90-Q(aperture)\*-R  
D-LAS-24/90-Qinv(aperture)\*-R  
D-LAS-24/90-TC-Q(aperture)\*-R  
D-LAS-24/90-TC-Qinv(aperture)\*-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.)



**\*We recommend aperture combinations for transmitter/receiver as follows:**

Aperture for transmitter (AxB in mm):		Aperture for receiver (AxB in mm):	
1 x 16	and	0.5 x 16	
1.5 x 9.5	and	0.2 x 9.5	
2 x 16	and	0.5 x 16	
2 x 10	and	0.3 x 10	
9.5 x 1.5	and	9.5 x 0.2	
10 x 2	and	10 x 0.3	
16 x 1	and	16 x 0.5	
16 x 2	and	16 x 0.5	



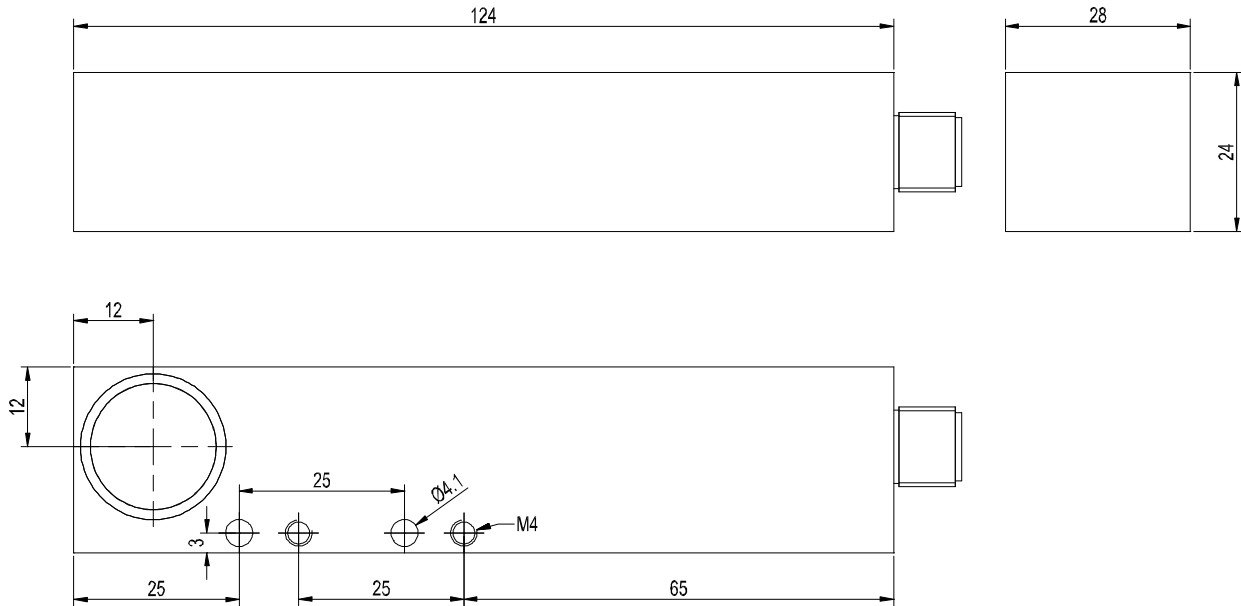
**Technical Data**

Model	D-LAS-24/90-...
Laser	Solid state laser, 670 nm, DC-operation, 1 mW max. optical output, laser class 2 acc. to DIN EN 60825. The use of these laser transmitters therefore requires no additional protective measures.
Max. range	typ. 5 m (depends on the aperture used)
Min. detectable object	With aperture size up to 10 mm: Analog typ. 1% of aperture size, digital typ. 0.5% of aperture size, with aperture size 16 mm: Analog typ. 0.5% of aperture size, digital typ. 0.2% of aperture size
Reproducibility	With aperture size up to 10 mm: Analog typ. 1% of aperture size, digital typ. 0.5% of aperture size, with aperture size 16 mm: Analog typ. 0.5% of aperture size, digital typ. 0.2% of aperture size, with threshold correction "TC": typ. 0.1% of aperture size
Optical filter	Interference filter + polarisation filter
Threshold correction	with type "TC"
Voltage supply	+12VDC ... +32VDC, protected against polarity reversal, overload protected
Operation	Pulsating light operation
Ambient light	up to 5000 Lux (depends on the aperture used)
Sensitivity	Switching threshold lies at 50% ( 5V), with-type"TC" at 97%
Gain (analog signal)	adjustable via integrated potentiometer (3 revolutions)
Current consumption	Transmitter: typ. 60 mA      Receiver: typ. 30 mA
Aperture size (mm)	Transmitter: 16x2, 16x1, 10x2, 9.5x1.5      Receiver: 16x0.5, 10x0.3, 9.5x0.2
Current control input I-CONTROL	0V...+5V: laser power decreases linearly with increasing voltage (max. modulation frequency: 2 kHz)      +5V..+32V: laser OFF
Analog output	0V...+10V (typ. 100 kHz band width)
Enclosure rating	IP67
Operating temperature range	-20°C ... +50°C
Storage temperature range	-20°C ... +85°C
Housing material	Aluminum, anodized in blue
Housing dimensions	Transmitter respectively receiver: approx. 124 mm x 28 mm x 24 mm
Type of connector	M12, 4-pin
Max. switching current	100 mA, short-circuit protected
EMC test acc. to	IEC - 801...
Switching state indication	via integrated yellow/green LED (receiver housing)
Dirt accumulation indication	via integrated red LED (receiver housing)
Operating indication	via integrated green LED (transmitter housing)
Switching frequency	typ. 25 kHz
Linearity	depends on the aperture: with 16mm-aperture: typ. 2%, with 10mm-aperture: typ. 1%, with 5mm-aperture: typ. 0.3%

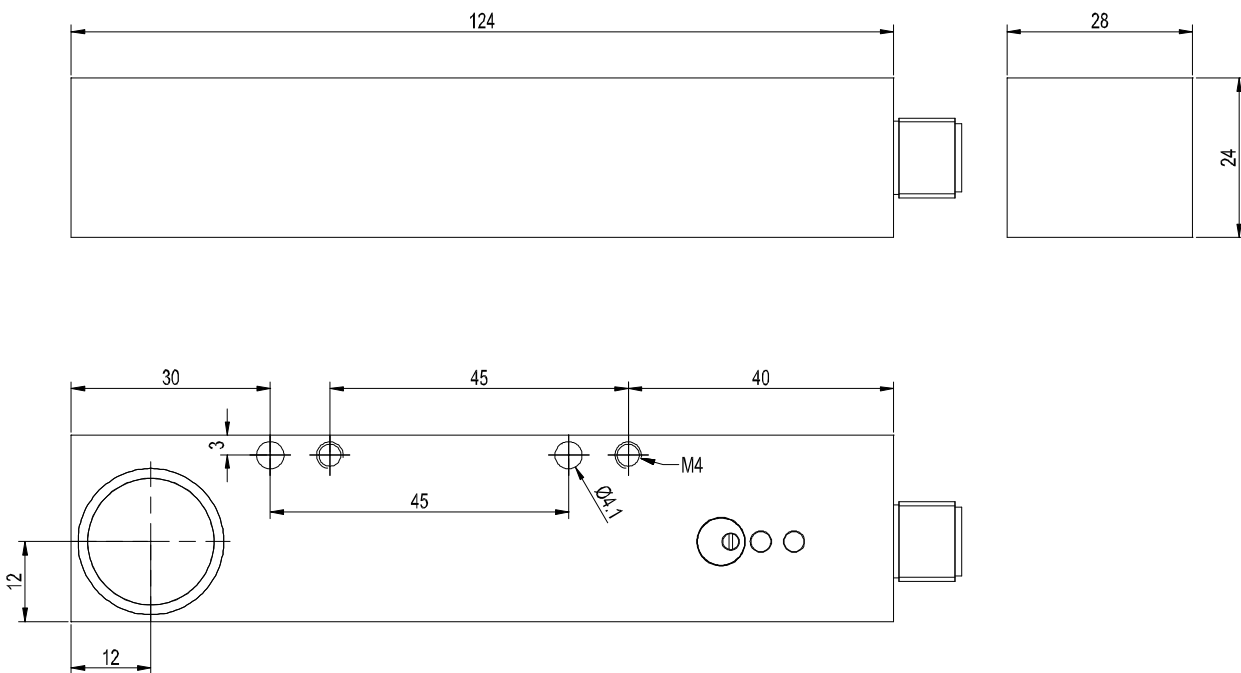


Dimensions

D-LAS-24/90-...-T (transmitter):



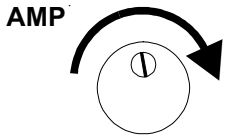
D-LAS-24/90-...-R (receiver):



(All dimensions in mm)

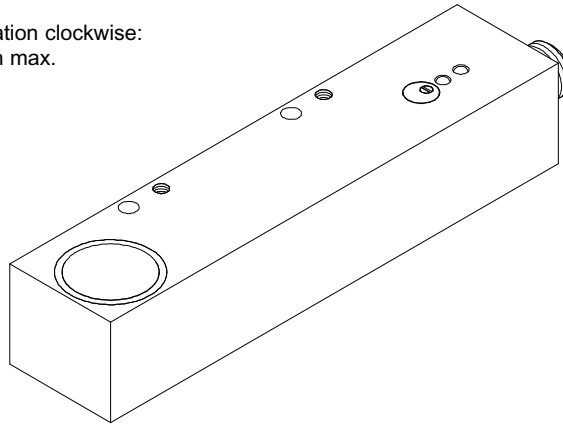
**Setting**

**Adjustment of potentiometer (gain factor):**



Rotation clockwise:  
Gain max.

**Receiver  
D-LAS-24/90-R**



**Switching state indication (Bi-Color-LED):**



**LED yellow:**  
Analog voltage < switching threshold  
(Crossing the threshold from a higher level to a lower level causes a change of the switching state at the digital output --> LED is switching from green to yellow)



**LED green:**  
Analog voltage > switching threshold

**Dirt accumulation indication:**

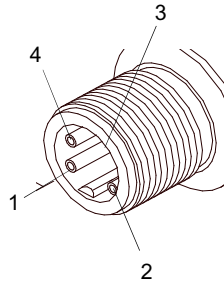


**LED red:**  
Sensor dirty

**Connector Assignment**

**Transmitter D-LAS-24/90-...-T**  
(4-pin M12-connector, shielded)

Pin No.:	Color:	Assignment:
1	brn	+12VDC...+32VDC
2	wht	I-CONTROL (0...+32V)
3	blu	GND (0V)
4	blk	GND (0V)
Shield		Housing



**Available connecting cables:**

<b>cab-M12/4-g-2-shd</b>	Length: 2m	PUR-jacket	shielded
<b>cab-M12/4-g-5-shd</b>	Length: 5m	PUR-jacket	shielded
<b>cab-M12/4-w-2-shd</b>	Length: 2m	PUR-jacket	angle type, shielded
<b>cab-M12/4-w-5-shd</b>	Length: 5m	PUR-jacket	angle type, shielded

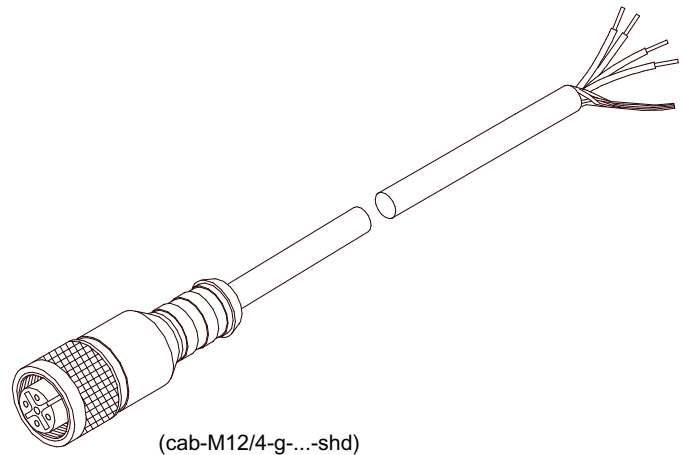
**Receiver D-LAS-24/90-...-R**  
(4-pin M12-connector, shielded)

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

Pin No.:	Color:	Assignment:
1	brn	+12VDC...+32VDC
2	wht	ANALOG (0V...+10V)
3	blu	GND (0V)
4	blk	OUTPUT
Shield		Housing

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

Pin No.:	Color:	Assignment:
1	brn	+12VDC...+32VDC
2	wht	ANALOG (0V...+10V)
3	blu	GND (0V)
4	blk	OUTPUT INV
Shield		Housing



(cab-M12/4-g-...-shd)

**Laser Warning**

The transmitters of the laser one-way light barriers of D-LAS Series comply with laser class 2 according to EN 60825. The use of these laser transmitters therefore requires no additional protective measures.

The transmitters of the D-LAS Series are supplied with a laser warning label.

