

# D-LAS Series

## ► D-LAS-60-ED-16x4-AC

(Glass Pane Detection)

- Insensitive to outside light (alternating light operation, 100 kHz)
- Sensitivity setting via 5-step-switch
- Adjustment of gain factor via 3-revolution-potentiometer
- Receiving signal level indication by means of 3 LEDs
- Switching state indication by means of a super-bright yellow LED
- Dirt accumulation indication by means of a red LED
- High-sensitive (starting from 0.5 mm strength of glass)
- Big transmitter/receiver distance (12 m)
- Big detecting range (laser spot 16 mm x 4 mm)
- Big receiver optics (easy adjustment of transmitter and receiver optics)

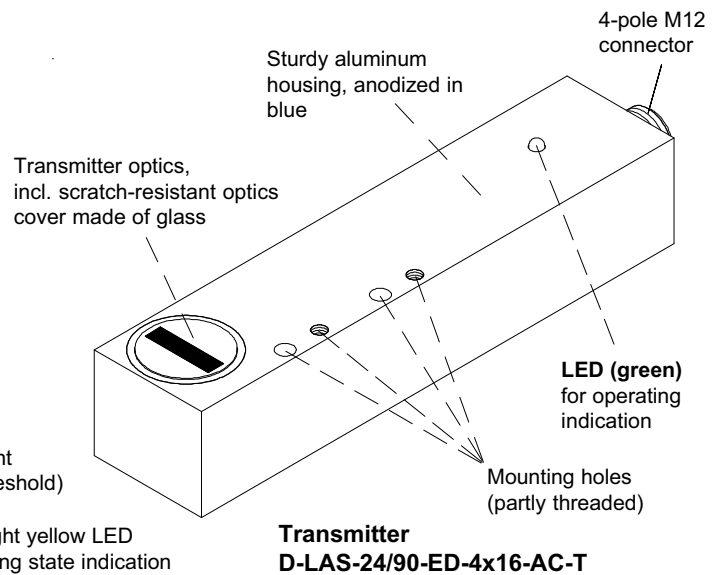
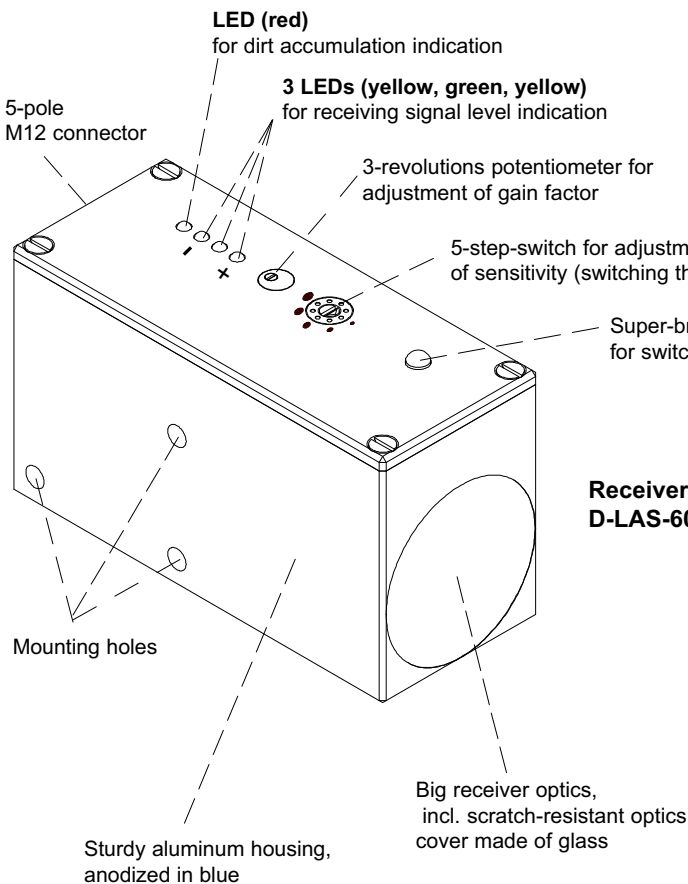


### Design

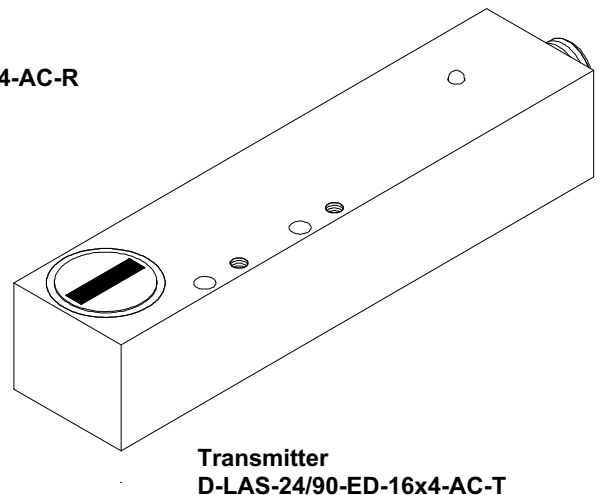
**Product name:**

**Transmitter:** D-LAS-24/90-ED-4x16-AC-T or  
D-LAS-24/90-ED-16x4-AC-T

**Receiver:** D-LAS-60-ED-16x4-AC-R



**Receiver**  
D-LAS-60-ED-16x4-AC-R



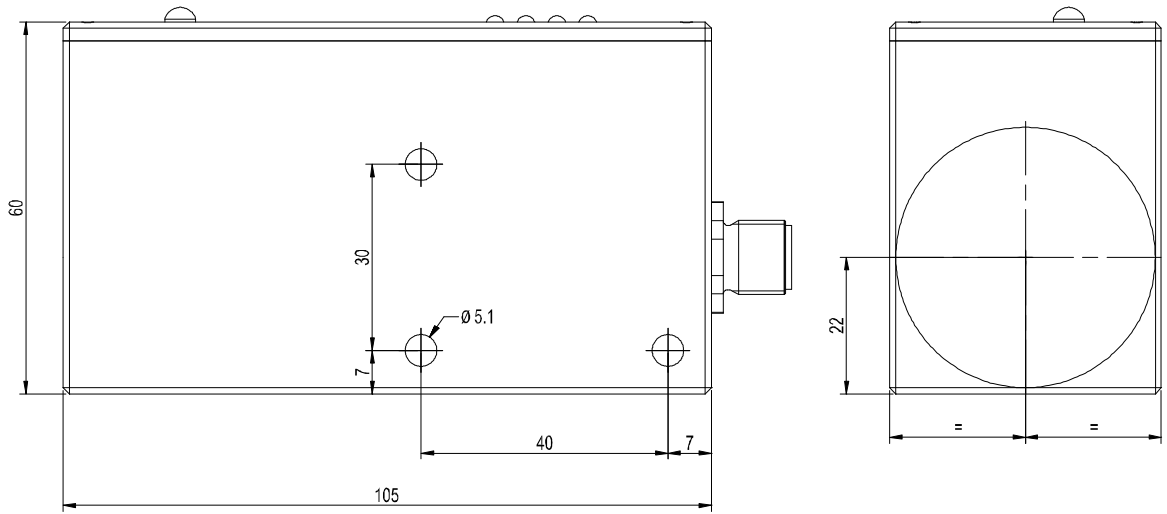


**Technical Data**

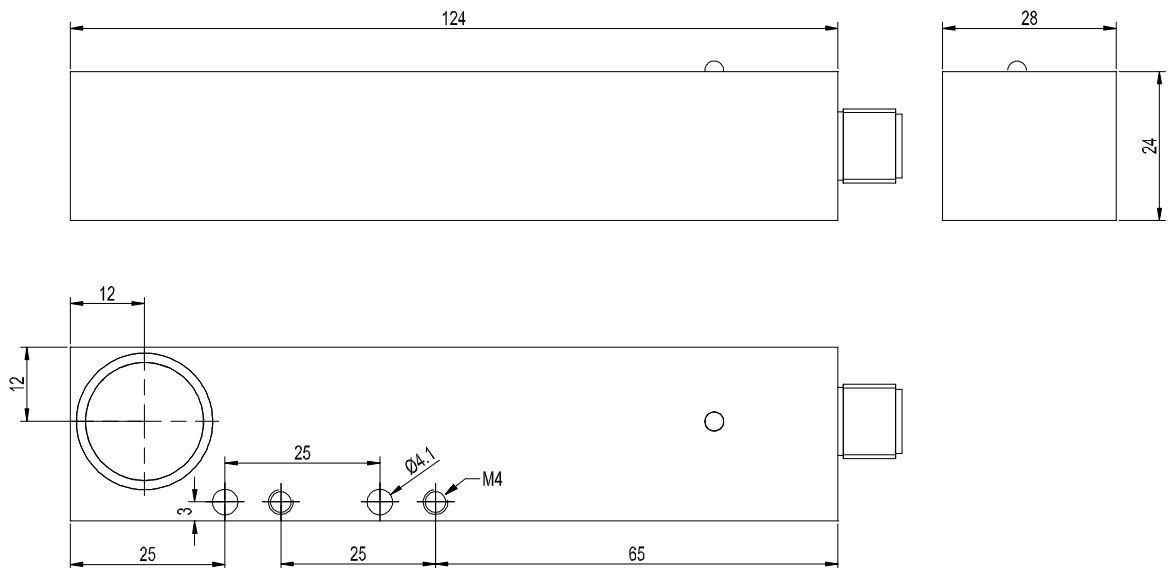
<b>Model</b>	<b>D-LAS-24/90-ED-4x16-AC-T or D-LAS-24/90-ED-16x4-AC-T (transmitter) D-LAS-60-ED-16x4-AC-R (receiver)</b>
Laser	Solid state laser, 670 nm, DC-operation, 1 mW max. opt. power, laser class 2 acc. to DIN EN 60825. The use of these laser transmitters therefore requires no additional protective measures.
Max. range	typ. 12 m
Min. detectable strength of glass	0.5 mm
Beam dimensions at transmitter output	typ. 16 mm x 4 mm
Optical filter	Red light filter RG630
Beam divergency	typ. 1 mrad
Voltage supply	+12VDC ... +32VDC, reversed-polarity protected, overcurrent protected
Pulsating light/ Direct light operation	Pulsating light (100 kHz)
Ambient light	Up to 5000 Lux
Sensitivity setting (switching threshold)	Adjustable by means of an integrated 5-step-switch (step 1: 93%, step 2: 90%, step 3: 87%, step 4: 83%, step 5: 80%)
Gain factor (analog signal)	Adjustable by means of an integrated potentiometer (3 revolutions)
Current consumption	Transmitter: typ. 60 mA      Receiver: typ. 70 mA
Switching frequency	typ. 1 kHz
Switching outputs	Pin 2 (white): Analog output (0 ... +10V) Pin 4 (black): Output Q <sub>inv</sub> (npn bright-switching, pnp dark-switching) Pin 5 (grey): Output dirt accumulation
Enclosure rating	IP67
Operating temperature range	-20°C ... +50°C
Storage temperature range	-20°C ... +85°C
Housing	Aluminum, anodized in blue
Housing dimensions (LxWxH)	Transmitter: approx. 124 mm x 28 mm x 24 mm (without M12 connector) Receiver: approx. 105 mm x 60 mm x 44 mm (without M12 connector)
Connector type	Transmitter: M12, 4-pin (stainless steel plug) Receiver: M12, 5-pin (stainless steel plug)
Max. switching current	100 mA, short-circuit-proof
EMC test acc. to	IEC - 801...
Switching state indication	By means of an integrated super-bright yellow LED (at receiver housing)
Receiving signal level indication	3 LEDs: yellow/green/yellow
Dirt accumulation indication	By means of a red LED ( at receiver housing)
Operating indication	By means of a green LED (at transmitter housing)

Dimensions

D-LAS-60-ED-16x4-AC-R  
(receiver):



D-LAS-24/90-ED-4x16-T-AC or  
D-LAS-24/90-ED-16x4-T-AC  
(transmitter):

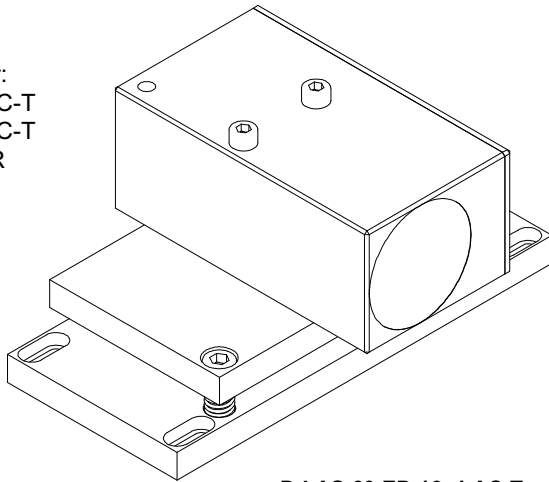


All dimensions in mm

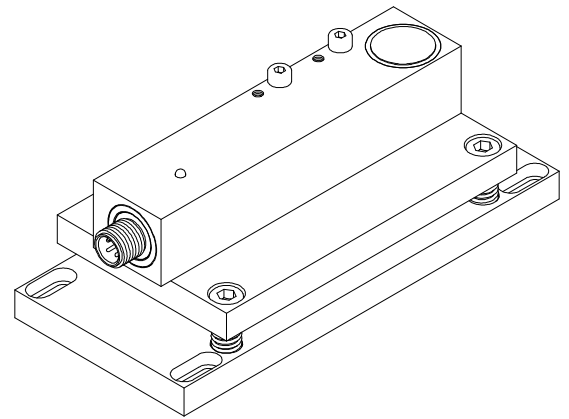
**Mounting**

**MOUNT-D-LAS-60**  
(please order separately)

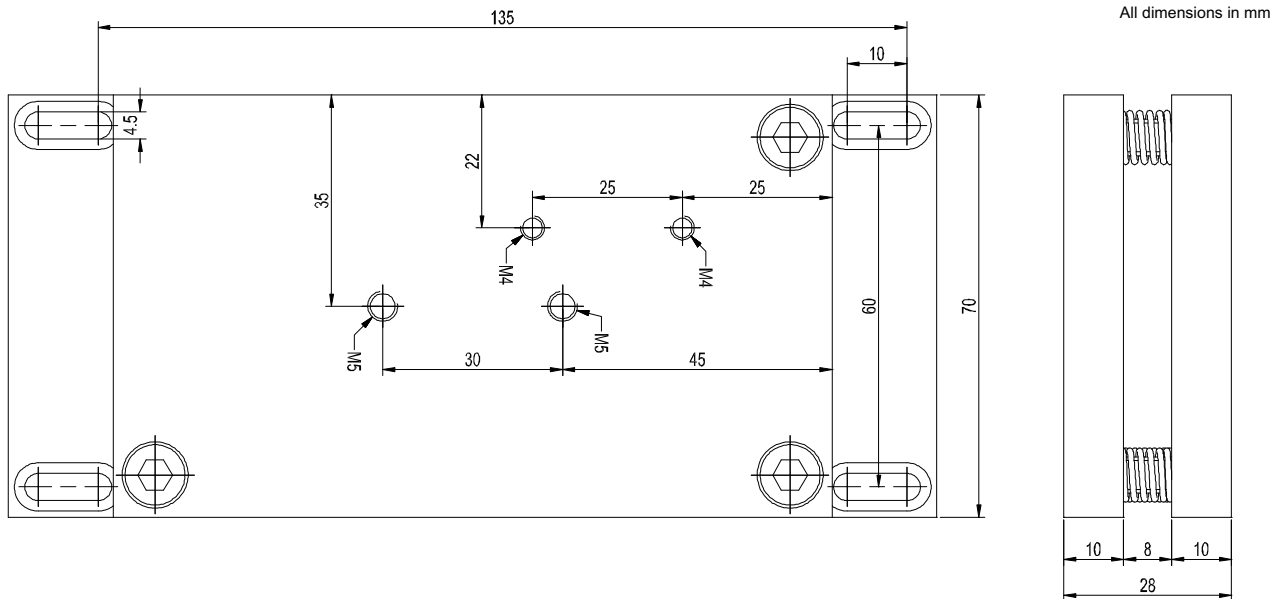
Mounting unit suitable for:  
D-LAS-24/90-ED-4x16-AC-T  
D-LAS-24/90-ED-16x4-AC-T  
D-LAS-60-ED-16x4-AC-R



**D-LAS-60-ED-16x4-AC-T**  
mounted on MOUNT-D-LAS-60



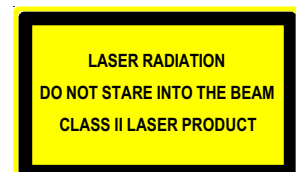
**D-LAS-24/90-ED-...-AC-T**  
mounted on MOUNT-D-LAS-60



**Laser Warning**

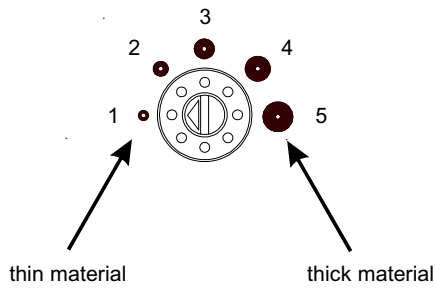
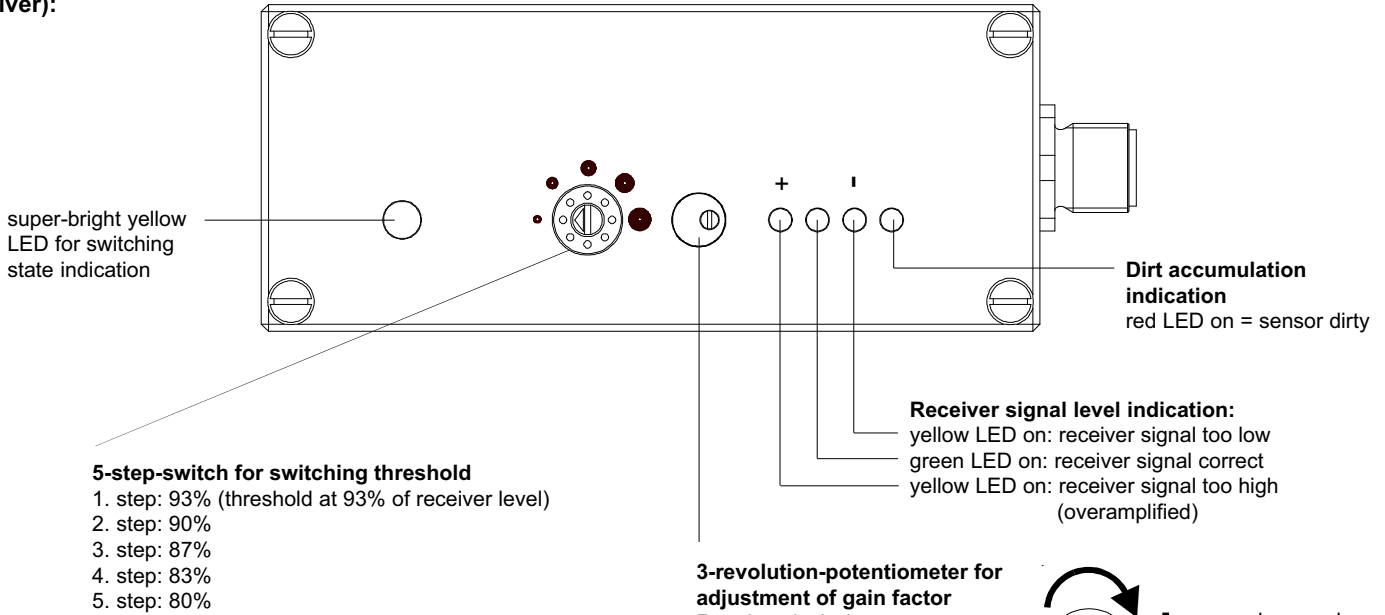
The transmitters of the laser one-way light barriers of D-LAS Series comply with laser class 2 according to EN 60825. The use of these laser transmitters therefore requires no additional protective measures.

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



Setting

D-LAS-60-ED-16x4-AC-R  
(receiver):



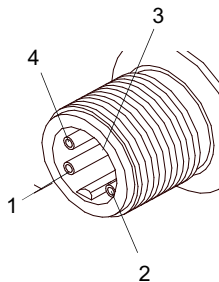
**Adjustment of the laser light barrier:**

After mounting of transmitter and receiver units, the laser beam can be aligned to the receiver optics by means of the mounting flanges (on-period conditions!). Then, the gain factor of the receiver can be set by means of the potentiometer, the optimal gain is indicated via the green LED.

Connector Assignment

D-LAS-24/90-ED-4x16-AC-T  
 D-LAS-24/90-ED-16x4-AC-T  
 (transmitter):

Pin-No.:	(Color)	Assignment:
1	(brown)	+Ub (+12 ... +30VDC)
2	(white)	n.c.
3	(blue)	0V (GND)
4	(black)	n.c.
Shield		Housing



**Connecting cable for transmitter:**  
**cab-M12/4-g-2-shd**  
 (Cable shielded, PUR-sheath, length 2m, 4-pole M12 female connector)

D-LAS-60-ED-16x4-AC-R  
 (receiver):

Pin-No.:	(color)	Assignment:
1	(brown)	+Ub (+12 ... +30VDC)
2	(white)	ANALOG (0V ... +10V)
3	(blue)	0V (GND)
4	(black)	Output INV „Qinv“
5	(grey)	Output DIRT ACCUMULATION

**Connecting cable for receiver:**  
**cab-M12/5-g-2**  
 (PUR-sheath, length 2m, 5-pole M12 female connector)



### High-precision triggering on thin glass panes starting from a thickness of 0.5 mm

In various glass handling plants, glass panes up to a height or width of several meters have to be positioned with highest accuracy (in the 0.1 mm range).

The problem is aggravated by the fact that the glass pane may have a thickness of 0.5 mm. With hardened glass, bending of several millimeters must also be taken into consideration. Moreover, when vibrations occur at the facilities the laser spot must not leave the receiver optics input area.

For safe detection of the glass pane, a correspondingly large detection area (9.5 mm x 4 mm laser light band) must be available on the one hand, and on the other hand it must be possible to set a correspondingly high sensitivity.

In this case, sensitivity setting is effected in 5 steps by step switches; a potentiometer is used to set the proper gain (3 LEDs as setting aid: 1 x green, 2 x yellow). One digital signal (bright-, dark-switching), one analog signal (0V ... +10V), and one signal for dirt accumulation are provided at the output. The operating frequency is 1 kHz.

