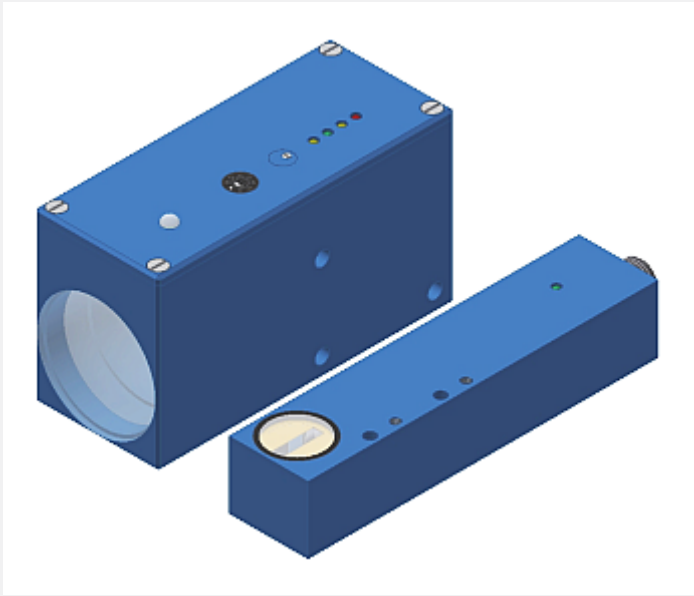
D-LAS Series

D-LAS-60-ED-16x4-AC-R
D-LAS-24/90-ED-(16)-AC-T

(Glass Pane Detection)

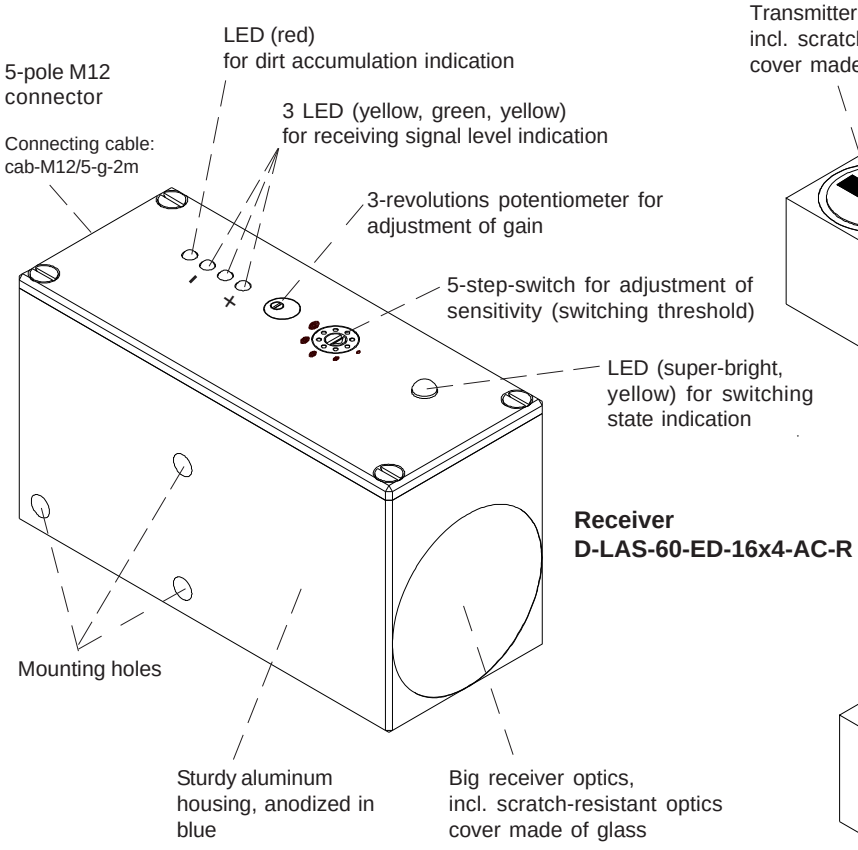


- Collimated laser beam (<0.4 mW, 670 nm), **laser class 1**
- Big detecting range (laser spot 16 mm x 4 mm)
- Big receiver optics (easy adjustment of transmitter and receiver optics)
- Big transmitter/receiver distance (max. 12 m)
- High-sensitive (starting from 0.5 mm strength of glass)
- Insensitive 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 LED (yel/grn/yel)
- Switching state indication by means of a super-bright yellow LED
- Dirt accumulation indication by means of a red LED

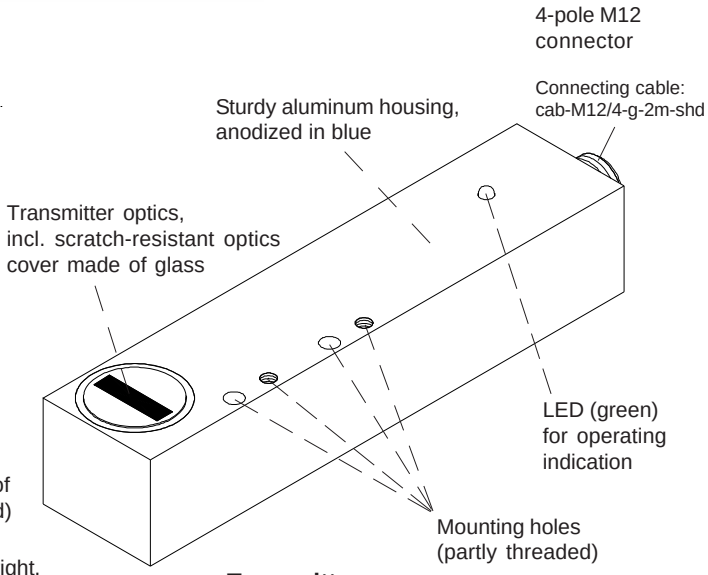
Design

Product name:

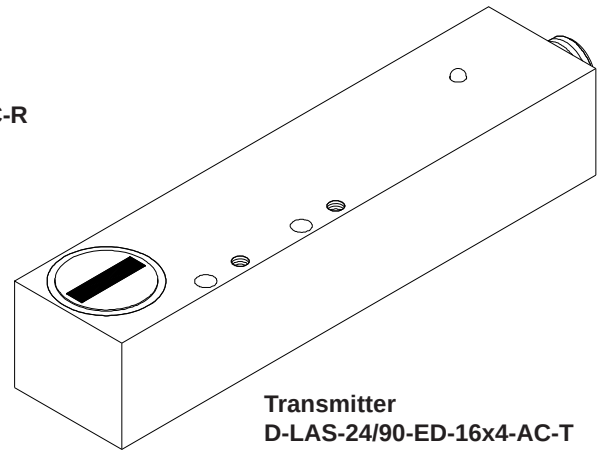
Receiver: **D-LAS-60-ED-16x4-AC-R**
Transmitter: **D-LAS-24/90-ED-4x16-AC-T** or
D-LAS-24/90-ED-16x4-AC-T



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



Transmitter
D-LAS-24/90-ED-4x16-AC-T



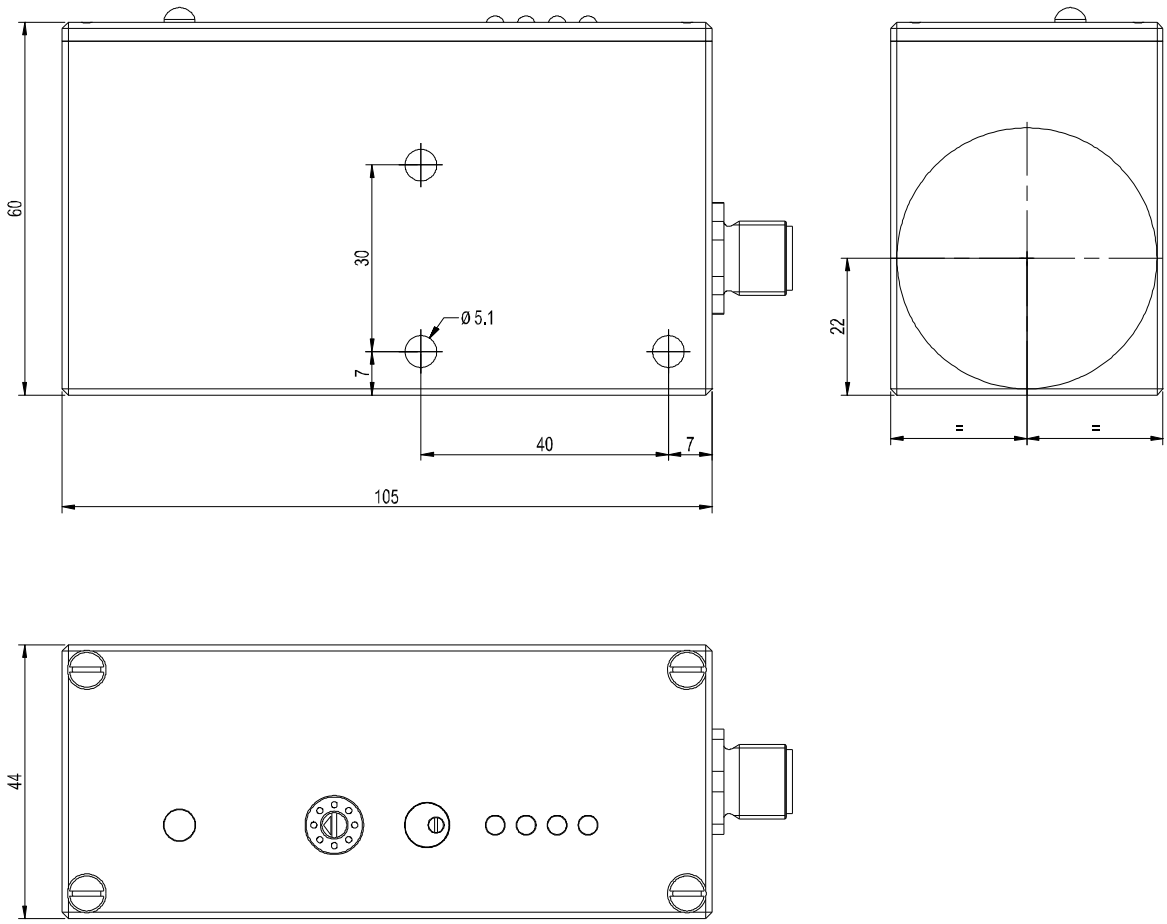
Transmitter
D-LAS-24/90-ED-16x4-AC-T

Technical Data

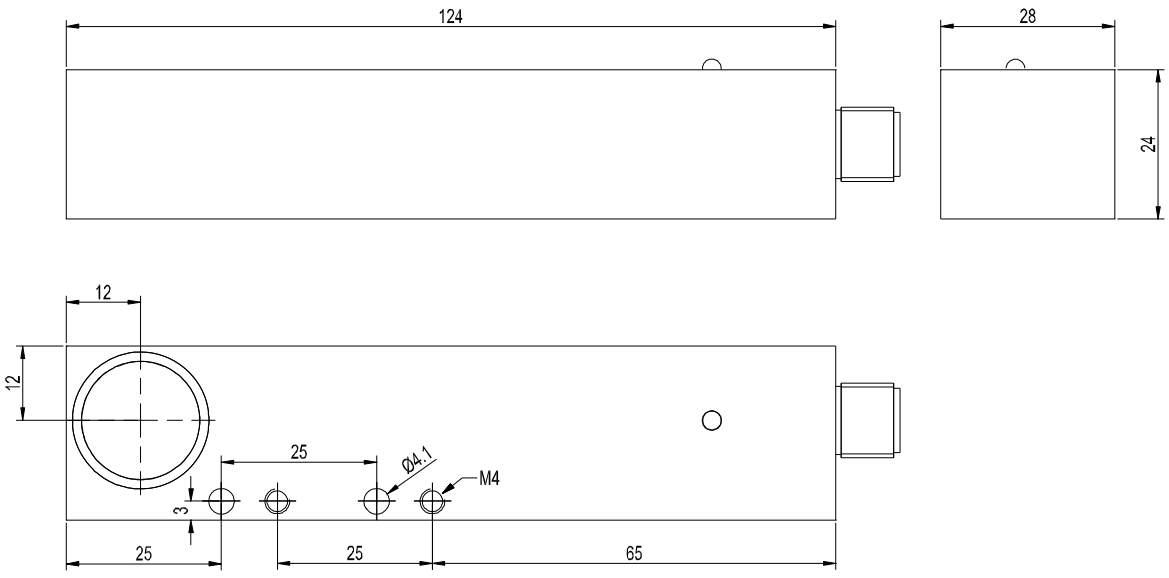
Type	D-LAS-60-ED-16x4-AC-R (receiver) D-LAS-24/90-ED-4x16-AC-T or D-LAS-24/90-ED-16x4-AC-T (transmitter)
Laser	Semiconductor laser, 670 nm, AC operation, 0.4 mW max. opt. power, laser class 1 acc. to DIN EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.
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	+24VDC (± 10%), protected against polarity reversal, overload protected
Alternating current/ direct current supply	AC operation (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%, tep 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 Qinv (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 44 mm x 60 mm (without M12 connector)
Connector type	Transmitter: 4-pole M12 connector (stainless steel pug) Receiver: 5-pole M12 connector (stainless steel plug)
Max. switching current	100 mA, short-circuit-proof
EMC test acc. to	DIN EN 60947-5-2 CE
Switching state indication	By means of a super-bright yellow LED (at receiver housing)
Dirt accumulation indication	By means of a red LED (at receiver housing)
Receiving signal level indication	By means of 3 LEDs: yellow/green/yellow (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):

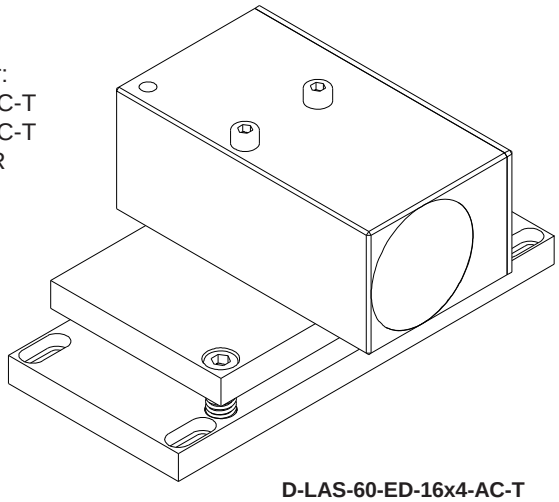


All dimensions in mm

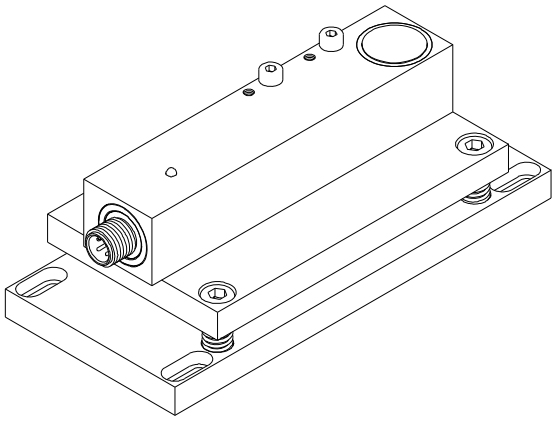
Mounting

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

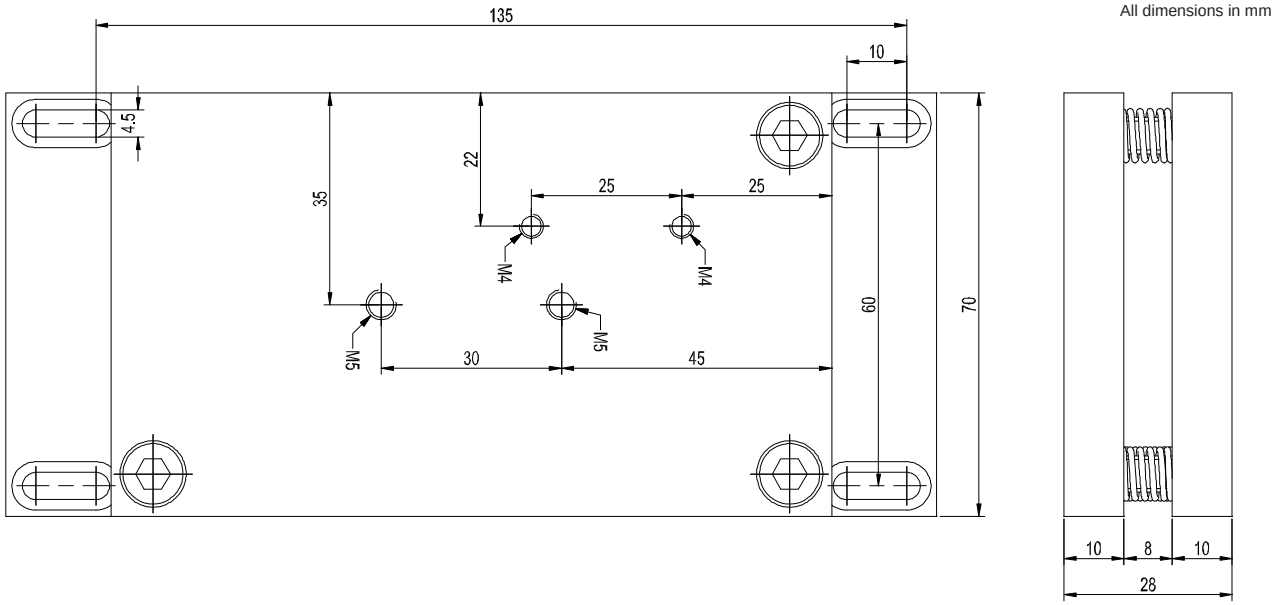


D-LAS-60-ED-16x4-AC-T mounted on MOUNT-D-LAS-60



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

All dimensions in mm



Laser Information

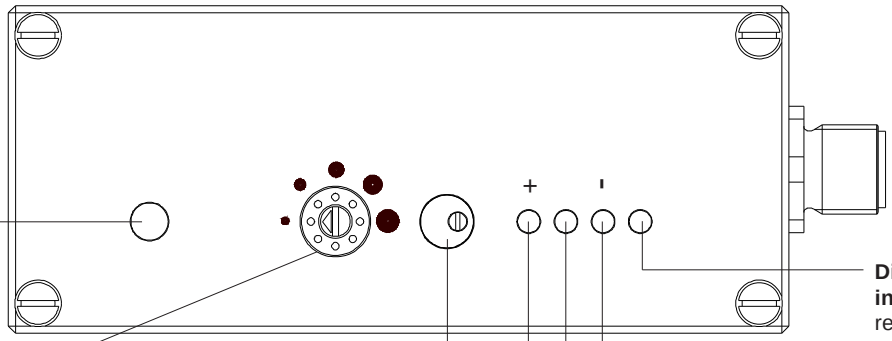
The laser transmitters of D-LAS series comply with laser class 1 according to EN 60825-1. Under reasonably foreseeable conditions a class 1 laser is safe. The reasonably foreseeable conditions are kept during specified normal operation. The use of these laser transmitters therefore requires no additional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

Setting

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



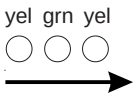
Super-bright yellow LED for switching state indication

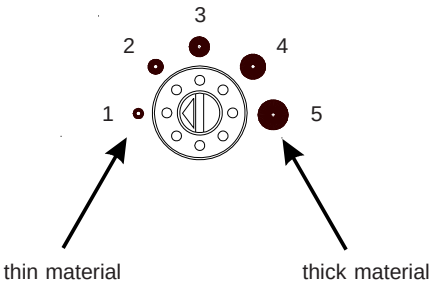
Dirt accumulation indication
red LED on = sensor dirty

Receiver signal level indication:
yellow LED on: receiver signal too low
green LED on: receiver signal correct
yellow LED on: receiver signal too high (overamplified)

5-step-switch for switching threshold
1. step: 93% (threshold at 93% of receiver level)
2. step: 90%
3. step: 87%
4. step: 83%
5. step: 80%

3-revolution-potentiometer for adjustment of gain factor
Rotation clockwise:
receiver level decreases
(decrease of gain)



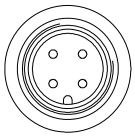


Adjustment of the laser light barrier:
After mounting of transmitter and receiver units, the laser beam can be aligned to the receiver optics by means of the mounting flanges (on-period conditions!). Then, the gain factor of the receiver can be set by means of the potentiometer, the optimal gain is indicated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

Connector Assignment

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

Pin-No.:	(Color)	Assignment:
1	(brown)	+24VDC (± 10%)
2	(white)	not connected
3	(blue)	0V (GND)
4	(black)	not connected
Shield		Housing



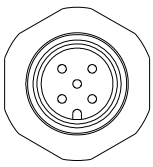
Connecting cable for transmitter:

cab-M12/4-g-2m-shd

(PUR-cable shielded, length 2 m, 4-pole M12 fem. connector)

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

Pin-No.:	(color)	Assignment:
1	(brown)	+24VDC (± 10%)
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-2m

(PUR-cable, length 2 m, 5-pole M12 fem. connector)

Application Example

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.