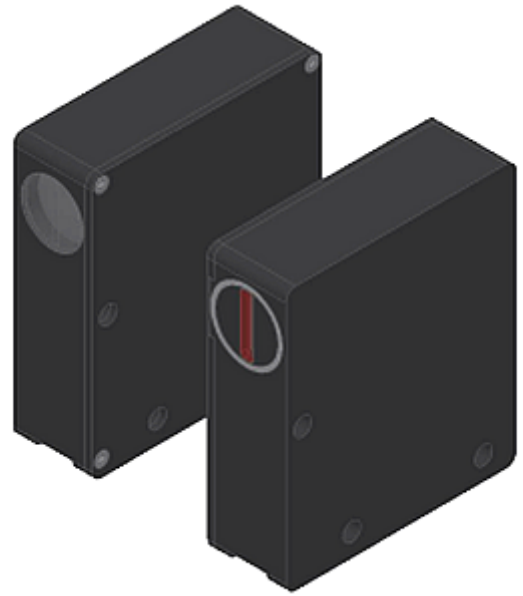


L-LAS Series

► **L-LAS-TB-16x1-...-AL (-T/-R)**
L-LAS-TB-1x16-...-AL (-T/-R)

- Line laser <0.4 mW, wave length 670 nm, laser class 1
- Visible laser line, typ. 16 mm x 1 mm
- Measuring range typ. 16 mm
- Resolution up to 8 µm (depends on selected scan frequency)
- Working distance up to 2000 mm
- Integrated interference filter
- CCD line detector with 256 pixel, 2048 subpixel (8-fold)
- RS232 interface (USB or Ethernet converter is available)
- 2 digital inputs, 3 digital outputs (HIGH/LOW/GO)
- Analog output adjustable via software (0 ... +10V or 4 ... 20mA)
- Max. scan frequency selectable via software (3.3 kHz or 5 kHz)
- Multi-edge evaluation of the video signal
- Switching state indication via 4 two-color LEDs (2x red/grn, 2x yell/grn)



Design

Product name:

L-LAS-TB-16x1-T-AL (Transmitter)
L-LAS-TB-16x1-R-AL (Receiver)
 or
L-LAS-TB-1x16-T-AL (Transmitter)
L-LAS-TB-1x16-R-AL (Receiver)
 (Receiver incl. Windows® PC software
 L-LAS-TB-Scope as of V5.0)

Accessories: (cf. pages 8/9)

TRA-L-LAS-TB-CL-L... (mounting plate)
ABL-TB-16-CL (blast air top-part)

Sturdy aluminum
 housing,
 anodized in black

Transmitter optics
 (scratch-resistant
 optics cover made of
 glass)

Mounting holes

8-pole fem. connector
 Binder Series 712
 (connection to PLC)

Connecting cable:
 cab-las8/SPS

4-pol. M5 fem.
 connector
 Binder Series 707
 (RS232)

Connecting cable:
 cab-las4/PC or
 cab-4/USB or
 cab-4/ETH

LED red (+):
 Measuring value > upper
 tolerance threshold

LED red (-):
 Measuring value < lower
 tolerance threshold

LED yellow:
 Power LED
 (multifunctional)

LED green (ok):
 Measuring value within
 tolerance band

4-pole fem. connector
 Binder Series 712
 (connection transmitter/receiver)

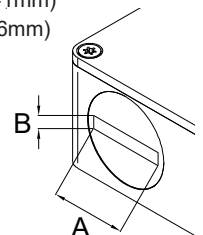
Connecting cable:
 cab-las-4-male

Receiver

Transmitter

Mounting holes
 (threaded M5, for fixation
 onto mounting plate
 TRA-L-LAS-TB-CL-L...)

Position of the laser line (AxB):
16x1 (A=16 mm, B=1mm)
1x16 (A=1mm, B=16mm)



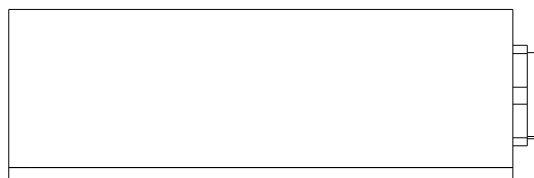
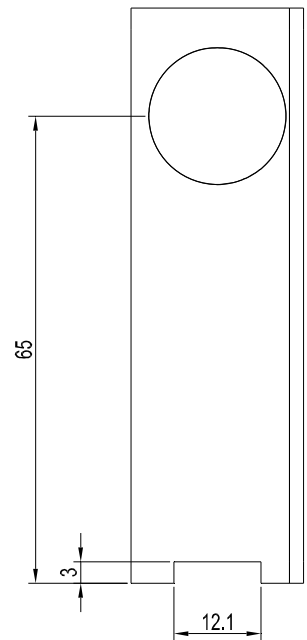
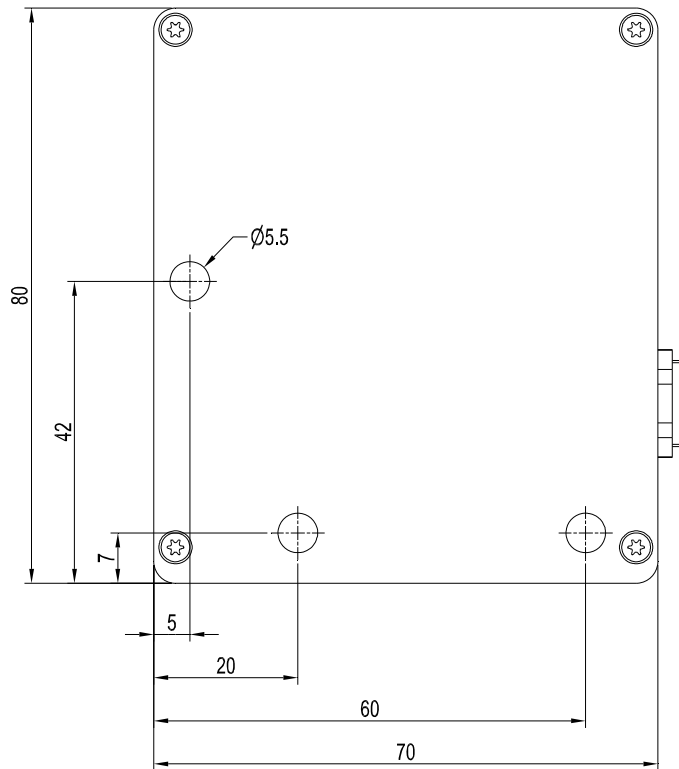
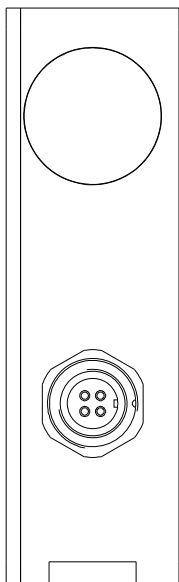
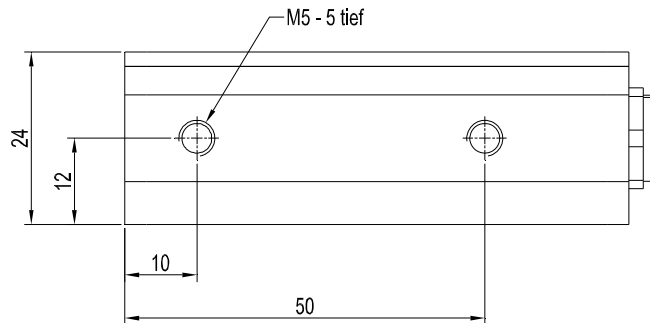


Technical Data

Model	L-LAS-TB-16x1-T-AL, -R-AL L-LAS-TB-1x16-T-AL, -R-AL
Laser	Semiconductor 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.
Working distance	distance transmitter/receiver: up to 2000 mm
Measuring range	typ. 16 mm
Resolution	typ. 8 µm (Normal Speed mode), typ. 16 µm (Fast Speed mode)
Reproducibility	typ. ± 8 µm (Normal Speed mode), typ. ± 16 µm (Fast Speed mode)
Linearity	typ. 0.2% FSR (full scale range)
Optical filter	Interference filter RG645
Analog output (1x)	voltage output 0 ... +10V or current output 4 ... 20mA (adjustable under Windows® via PC)
Digital outputs (3x) (OUT0, OUT1, OUT2)	OUT0: (-) Measuring value < lower tolerance threshold OUT1: (+) Measuring value > upper tolerance threshold OUT2: (ok) Measuring value within tolerance window pnp bright-switching/npn dark-switching or pnp dark-switching/npn bright-switching, adjustable under Windows®, 100 mA, short-circuit proof
Digital inputs (2x) (IN0, IN1)	IN0: Extern trigger, IN1: Teach/Reset (double function) input voltage +Ub/0V, with protective circuit
Voltage supply	+24VDC (± 10%)
Sensitivity setting	under Windows® via PC
Laser power correction	adjustable under Windows® via PC
Current consumption	typ. 200 mA
Enclosure rating	electronics: IP54, optics: IP67
Operating temperature range	-10°C ... +50°C
Storage temperature range	-20°C ... +85°C
Housing material	aluminum, anodized in black
Housing dimensions	Transmitter: LxWxH approx. 80 mm x 70 mm x 24 mm (without flange connectors) Receiver: LxWxH approx. 80 mm x 70 mm x 24 mm (without flange connectors)
Connectors receiver	8-pole circular female connector type Binder 712 (PLC/Power) 4-pole M5 circular female connector type Binder 707 (RS232/PC) 4-pole circular female connector type Binder 712 (connection to transmitter)
Connector transmitter	4-pole circular female connector type Binder 712 (connection to receiver)
LED display	LED red (+): measuring value > upper tolerance threshold LED green (ok): measuring value within tolerance window LED red (-): measuring value < lower tolerance threshold LED yellow: multifunctional
EMC test acc. to	DIN EN 60947-5-2
Scan frequency	Normal Speed mode (high resolution): max. 3.3 kHz Fast Speed mode (half resolution): max. 5 kHz adjustable under Windows®
Max. switching current	100 mA, short-circuit proof
Interface	RS232, parameterisable under Windows®
Connecting cables	Connection to PC: cab-las4/PC or cab-4/USB or cab-4/ETH Connection to PLC: cab-las8/SPS or cab-las8/SPS-w Connecting cable transmitter/receiver: cab-las4-male
Output polarity	Bright/dark switching, can be switched under Windows®

Dimensions

L-LAS-TB-16x1-T-AL
 L-LAS-TB-1x16-T-AL
 (Transmitter)

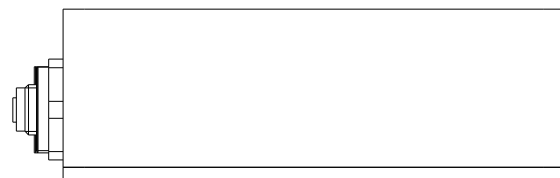
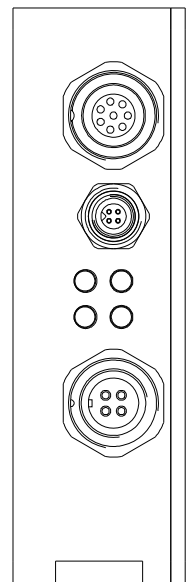
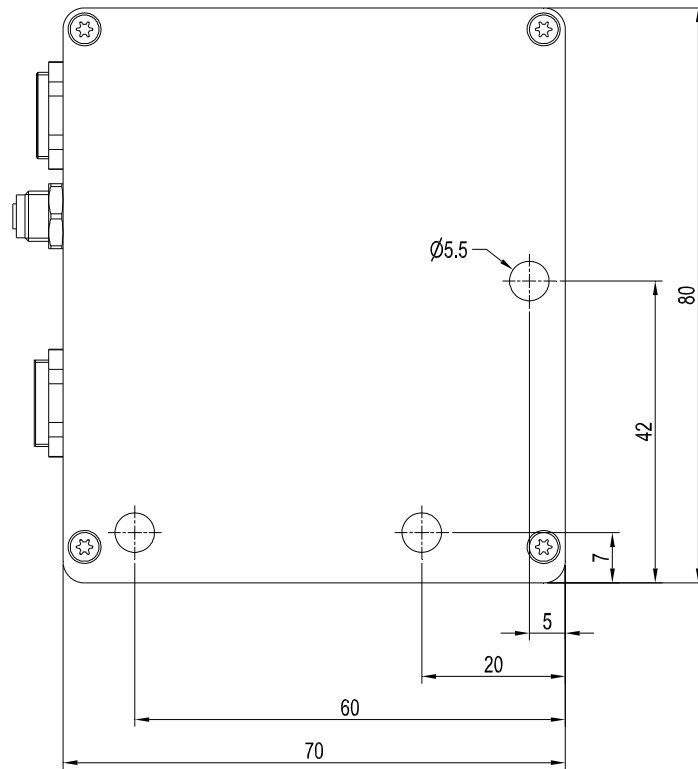
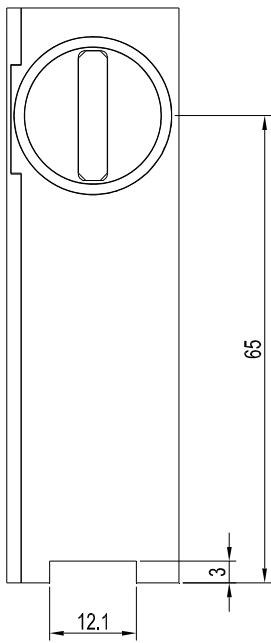
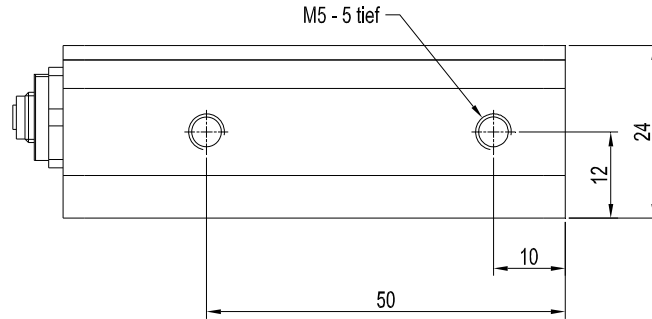


All dimensions in mm



Dimensions

L-LAS-TB-16x1-R-AL (Picture)
 L-LAS-TB-1x16-R-AL
 (Receiver)



All dimensions in mm

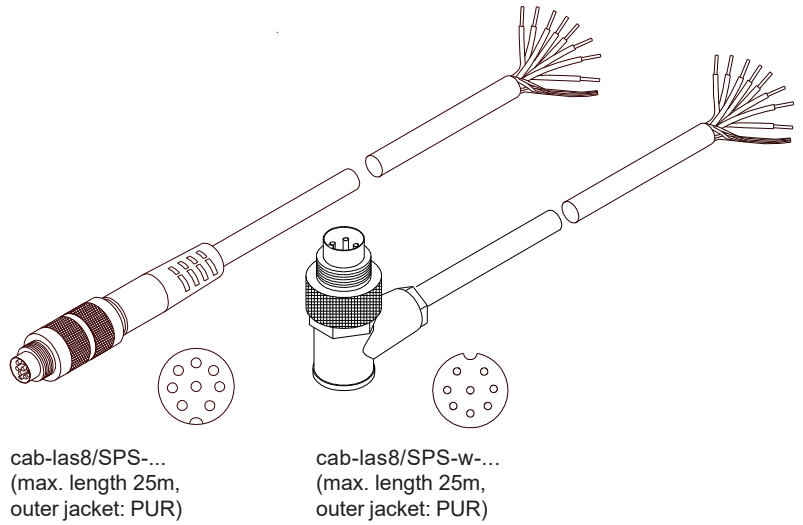


Connector Assignment

**Connection L-LAS-TB-...-R-AL (Receiver) to PLC:
8-pole fem. connector Binder Series 712**

Pin:	Color:	Assignment:
1	white	GND (0V)
2	brown	+24VDC (± 10%)
3	green	IN0 (EXT TRIGGER)
4	yellow	IN1 (TEACH / RESET)
5	grey	OUT0 (-)
6	pink	OUT1 (+)
7	blue	OUT2 (ok)
8	red	ANA (voltage 0...+10V or current 4...20mA)

Connecting cable:
cab-las8/SPS-(length) or
cab-las8/SPS-w-(length) (angle type 90°)
(standard length 2m)



cab-las8/SPS-...
(max. length 25m,
outer jacket: PUR)

cab-las8/SPS-w-...
(max. length 25m,
outer jacket: PUR)

**Connection L-LAS-TB-...-R-AL (Receiver) to PC:
4-pole fem. connector Binder Series 707**

Pin:	Assignment:
1	+24VDC (+Ub, OUT)
2	GND (0V)
3	RxD
4	TxD

Connection via RS232 interface at the PC:

Connecting cable:
cab-las4/PC-(length)
cab-las4/PC-w-(length) (angle type 90°)
(standard length 2m)

alternative:

Connection via USB interface at the PC:

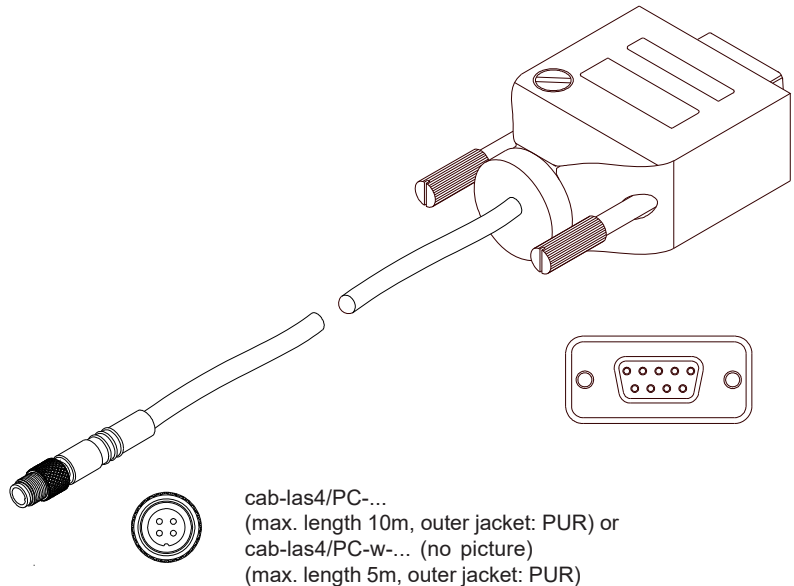
USB converter (incl. driver software):
cab-4/USB-(length)
cab-4/USB-w-(length) (angle type 90°)
(standard length 2m)

alternative:

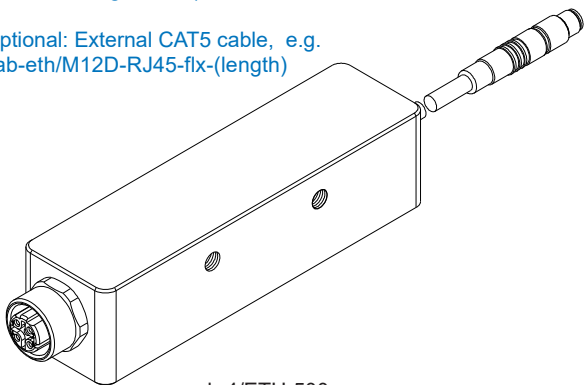
Connection to local network via Ethernet bus:

Ethernet converter (incl. software „SensorFinder“):
cab-4/ETH-500
(standard length 0.5m)

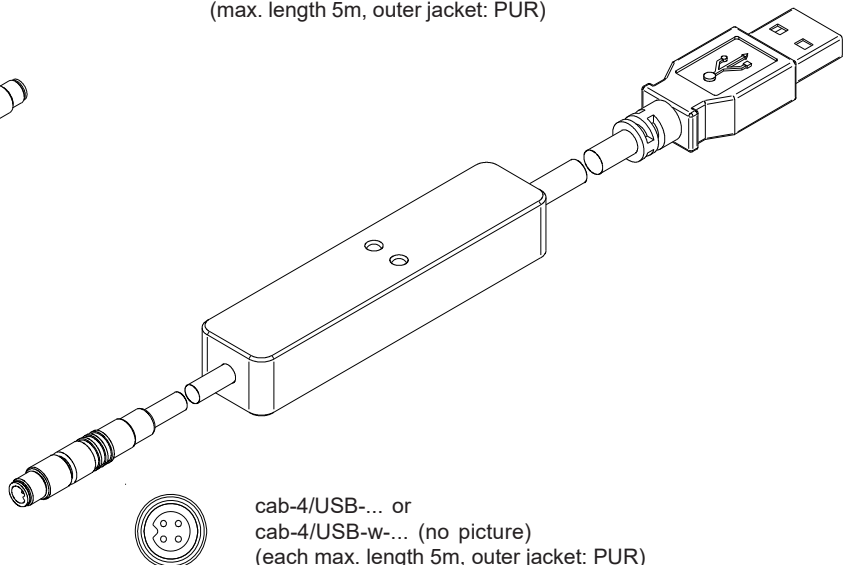
Optional: External CAT5 cable, e.g.
cab-eth/M12D-RJ45-flx-(length)



cab-las4/PC-...
(max. length 10m, outer jacket: PUR) or
cab-las4/PC-w-... (no picture)
(max. length 5m, outer jacket: PUR)



cab-4/ETH-500
(length 0.5m, outer jacket: PUR)
4-pole M12 fem. conn. (D-coded)
for connection of an external
CAT5 cable, e.g.
cab-eth/M12D-RJ45-flx-(length)



cab-4/USB-... or
cab-4/USB-w-... (no picture)
(each max. length 5m, outer jacket: PUR)

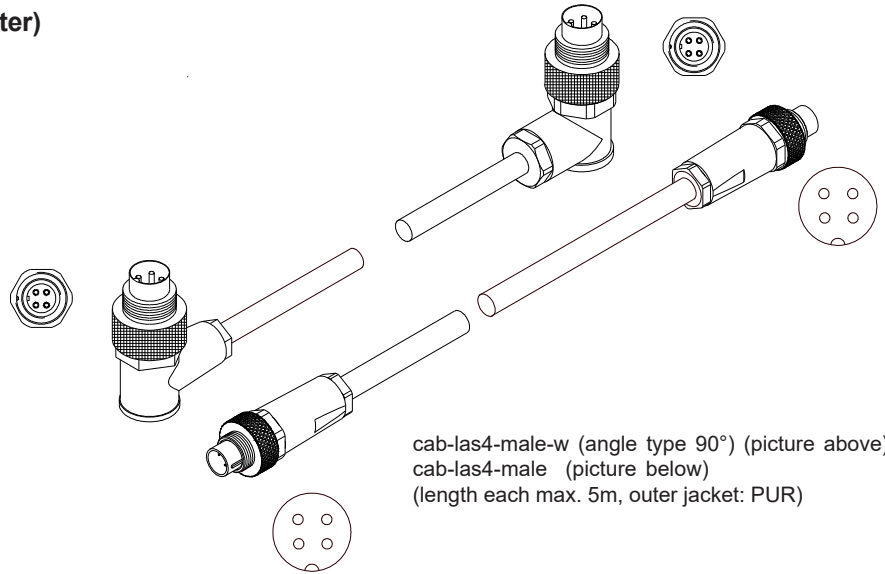
Connector Assignment

Connection L-LAS-TB-...-T-AL (Transmitter)
with L-LAS-TB-...-R-AL (Receiver)
4-pole female connector Binder Series 712

Pin: Assignment:

- 1 +5VDC
- 2 0V (GND)
- 3 I-CONTROL (0V ... +5V)
- 4 not connected

Connecting cable:
cab-las4-male-(length)
cab-las4-male-w-(length) (angle type 90°)
(standard length 2m)



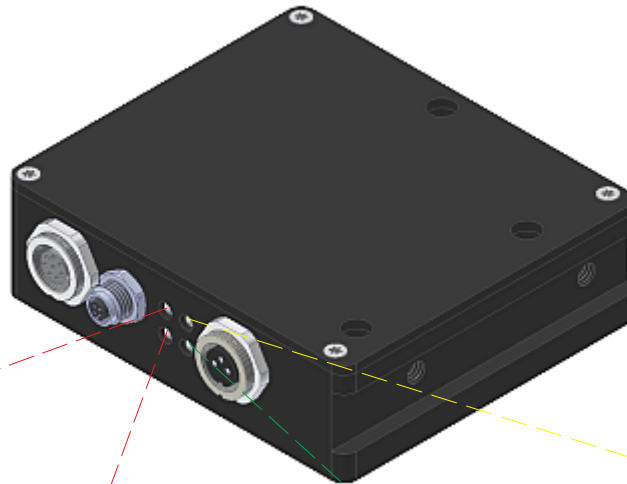
cab-las4-male-w (angle type 90°) (picture above) or
cab-las4-male (picture below)
(length each max. 5m, outer jacket: PUR)

LED Display

L-LAS-TB-16-R-AL:
(Receiver)

LED display:

- (+) ● ● Power
- (-) ● ● (ok)



LED red (+): ●
Measuring value
> upper tolerance threshold
(OUT1)

LED red (-): ●
Measuring value
< lower tolerance threshold
(OUT0)

LED green (ok): ●
Measuring value within
tolerance window

LED yellow: ●
Power LED
(multifunctional)

Laser Warning

The laser transmitter of L-LAS-TB Series comply with laser class 1 according to EN 60825-1. The accessible laser radiation is harmless under reasonably foreseeable conditions. The reasonably foreseeable conditions are kept during correct operation. The use of these laser transmitters therefore requires no additional protective measures.

The laser line sensors of L-LAS-TB Series are supplied with a laser warning label type „CLASS 1 LASER PRODUCT“.

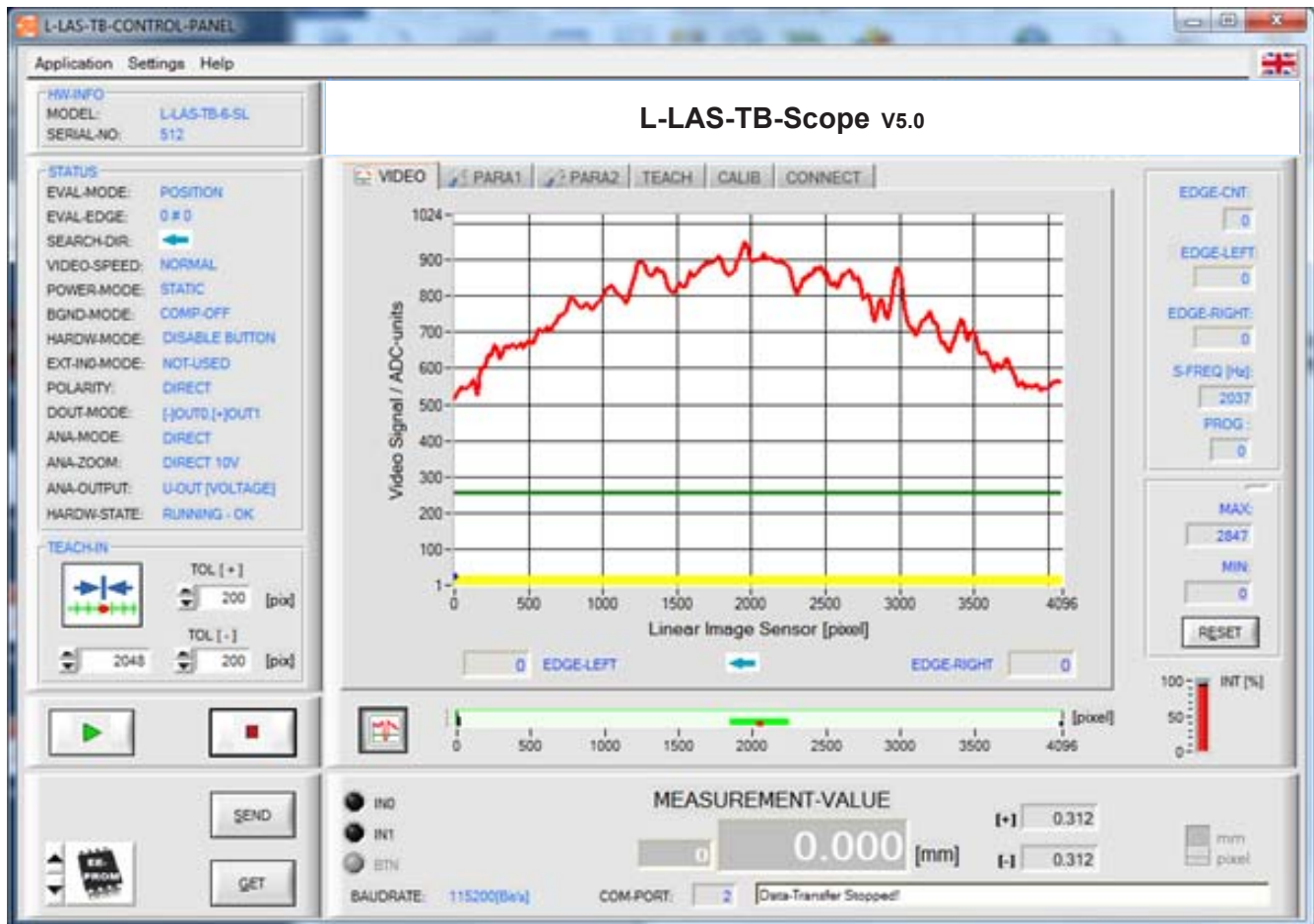




Parameterization
Windows® user interface:

(The current software version is available for download on our website.)

The L-LAS-TB-...-AL sensor can be easily parameterised with the Windows® user interface L-LAS-TB-Scope (as of V5.0). For this purpose the sensor is connected to the PC with the serial interface cable cab-las4/PC (or cab-4/USB or cab-4/ETH). When parameterisation is finished, the PC can be disconnected again.

Windows® user interface:

With the help of the L-LAS-TB-Scope software the following settings can be made at the sensor:

- Setting of laser power and type of automatic power correction
- Polarity of digital outputs
- Different evaluation modes
- Start of the teach process by software button
- Setting of tolerance ranges for monitoring the measured value
- Selection of scan frequency

Furthermore, various numerical and graphical measured quantities can be visualized with the L-LAS-TB-Scope software. For example, the raw data of the CCD line sensor can be displayed graphically and numerically.



Mounting

Mounting plate for L-LAS-TB-(16)-T-ACL and L-LAS-TB-(16)-R-AL:

(please order separately)

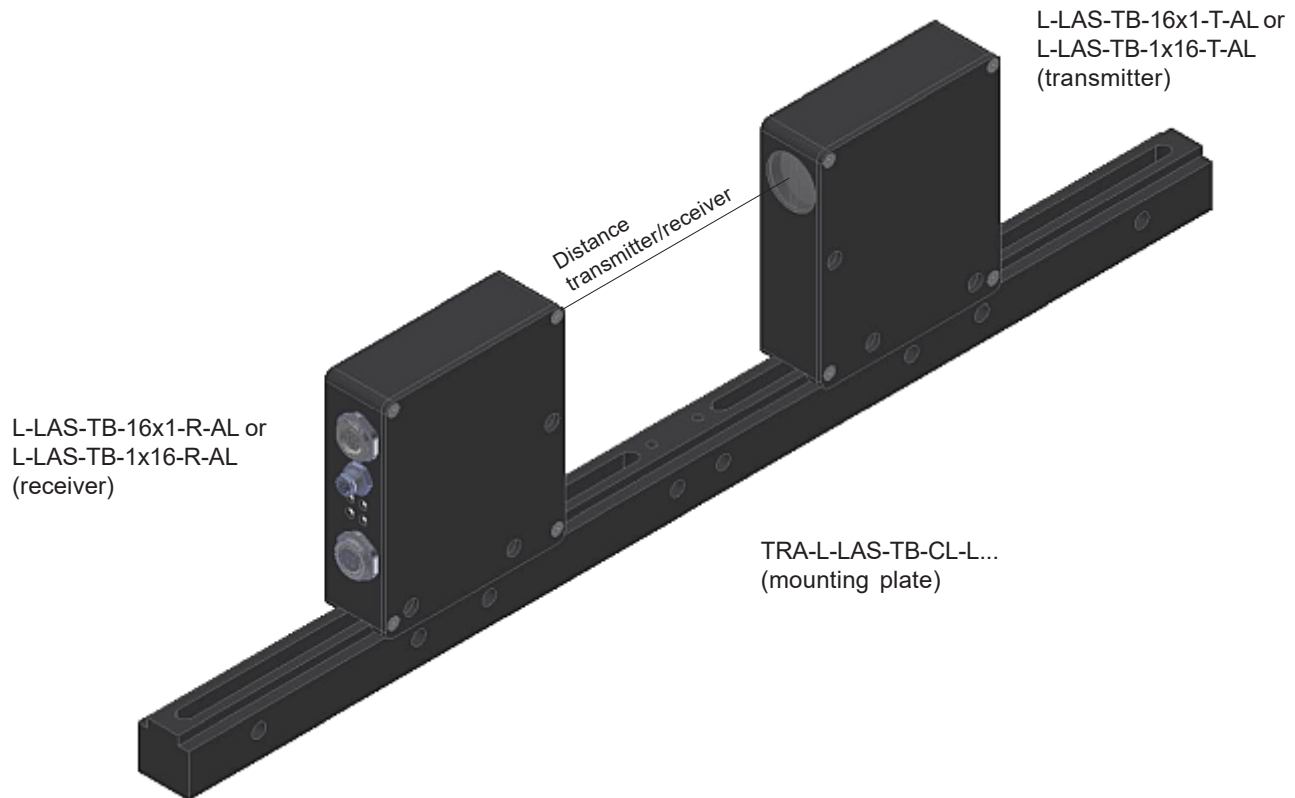
TRA-L-LAS-TB-CL-L200 (total length 200 mm, max. transmitter/receiver distance cf. chart below)

TRA-L-LAS-TB-CL-L400 (total length 400 mm, max. transmitter/receiver distance cf. chart below)

TRA-L-LAS-TB-CL-L600 (total length 600 mm, max. transmitter/receiver distance cf. chart below)

TRA-L-LAS-TB-CL-L800 (total length 800 mm, max. transmitter/receiver distance cf. chart below)

(Aluminum housing, anodized in black, also available in other lengths)



Max. distance T/R in case of use of mounting plate:	TRA-L-LAS-TB-CL-L200	TRA-L-LAS-TB-CL-L400	TRA-L-LAS-TB-CL-L600	TRA-L-LAS-TB-CL-L800
L-LAS-TB-6-T-AL L-LAS-TB-6-R-AL	max. distance T/R: 95 mm	max. distance T/R: 295 mm	max. distance T/R: 495 mm	max. distance T/R: 695 mm
L-LAS-TB-(16)-T-AL L-LAS-TB-(16)-R-AL	max. distance T/R: 60 mm	max. distance T/R: 260 mm	max. distance T/R: 460 mm	max. distance T/R: 660 mm
L-LAS-TB-28-T-AL L-LAS-TB-28-R-AL	----	max. distance T/R: 222 mm	max. distance T/R: 422 mm	max. distance T/R: 622 mm
L-LAS-TB-50-T-AL L-LAS-TB-50-R-AL	----	max. distance T/R: 205 mm	max. distance T/R: 405 mm	max. distance T/R: 605 mm
L-LAS-TB-75-T-AL L-LAS-TB-75-R-AL	----	max. distance T/R: 200 mm	max. distance T/R: 400 mm	max. distance T/R: 600 mm
L-LAS-TB-100-T-AL L-LAS-TB-100-R-AL	----	max. distance T/R: 160 mm	max. distance T/R: 360 mm	max. distance T/R: 560 mm



Accessories

Blast air top part:

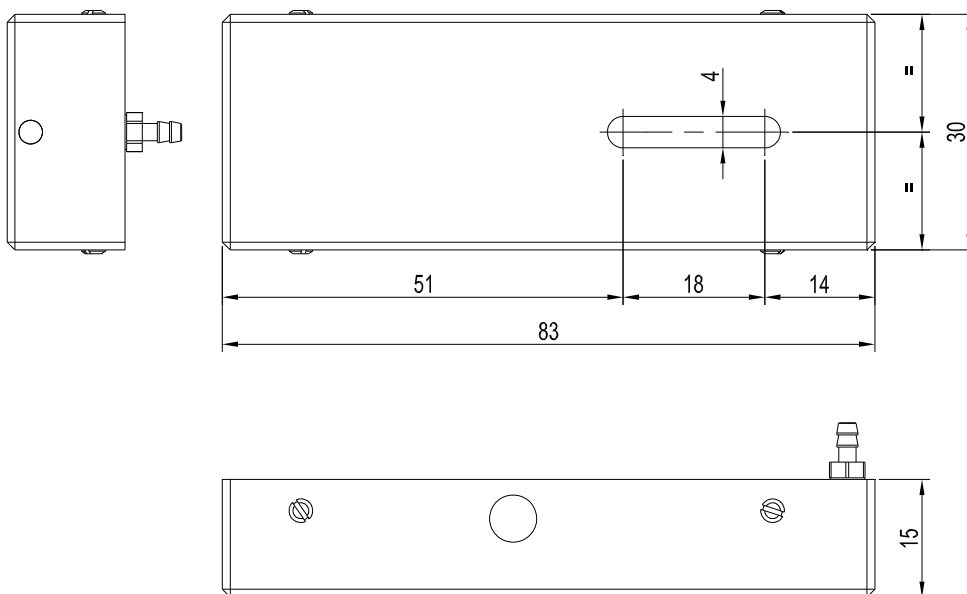
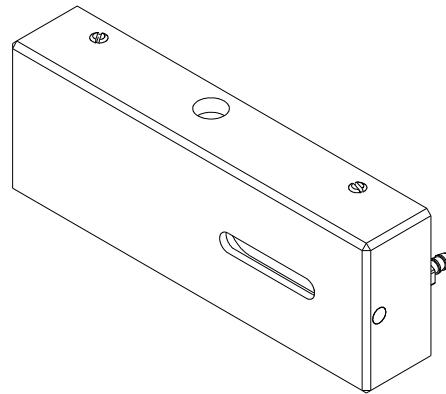
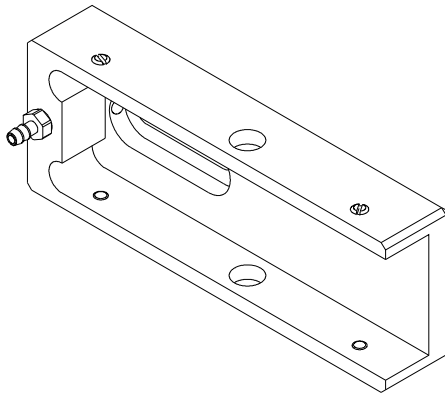
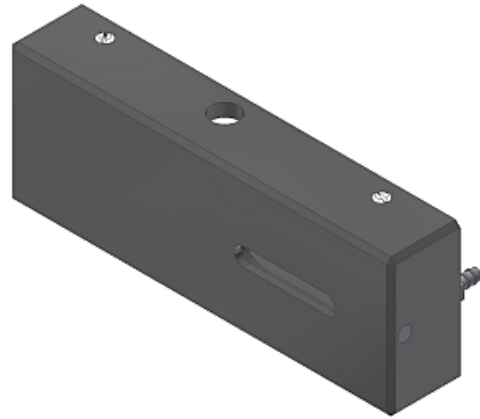
ABL-TB-16-CL

(Plastic housing, black, please order separately for each transmitter and receiver)

suitable for:

L-LAS-TB-16x1-T-AL and

L-LAS-TB-16x1-R-AL



All dimensions in mm