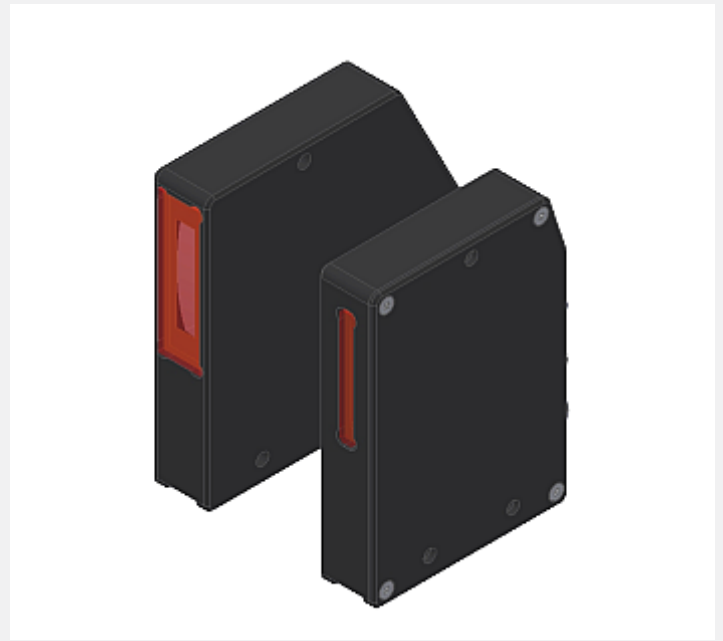


# L-LAS Series

## ▶ L-LAS-TB-28-CL

- Line laser <0.4 mW, wave length 670 nm, laser class 1
- Visible laser line, light curtain 35 mm
- Measuring range typ. 28 mm
- Resolution typ. 2 µm
- Working distance up to 2000 mm
- Integrated interference filter
- CCD line detector with 2048 pixel, 16384 subpixel (8-fold)
- RS232 and Windows® user interface
- 2 digital inputs, 2 digital outputs
- Analog output 0 ...+10V, in case of -4/20 additionally 4 ... 20mA
- Switching state indication via 4 LEDs (2x red/grn, 2x yel/grn)
- Sturdy aluminum housing, for use in industry
- Scratch-resistant optics cover made of glass



## Design

### Product name:

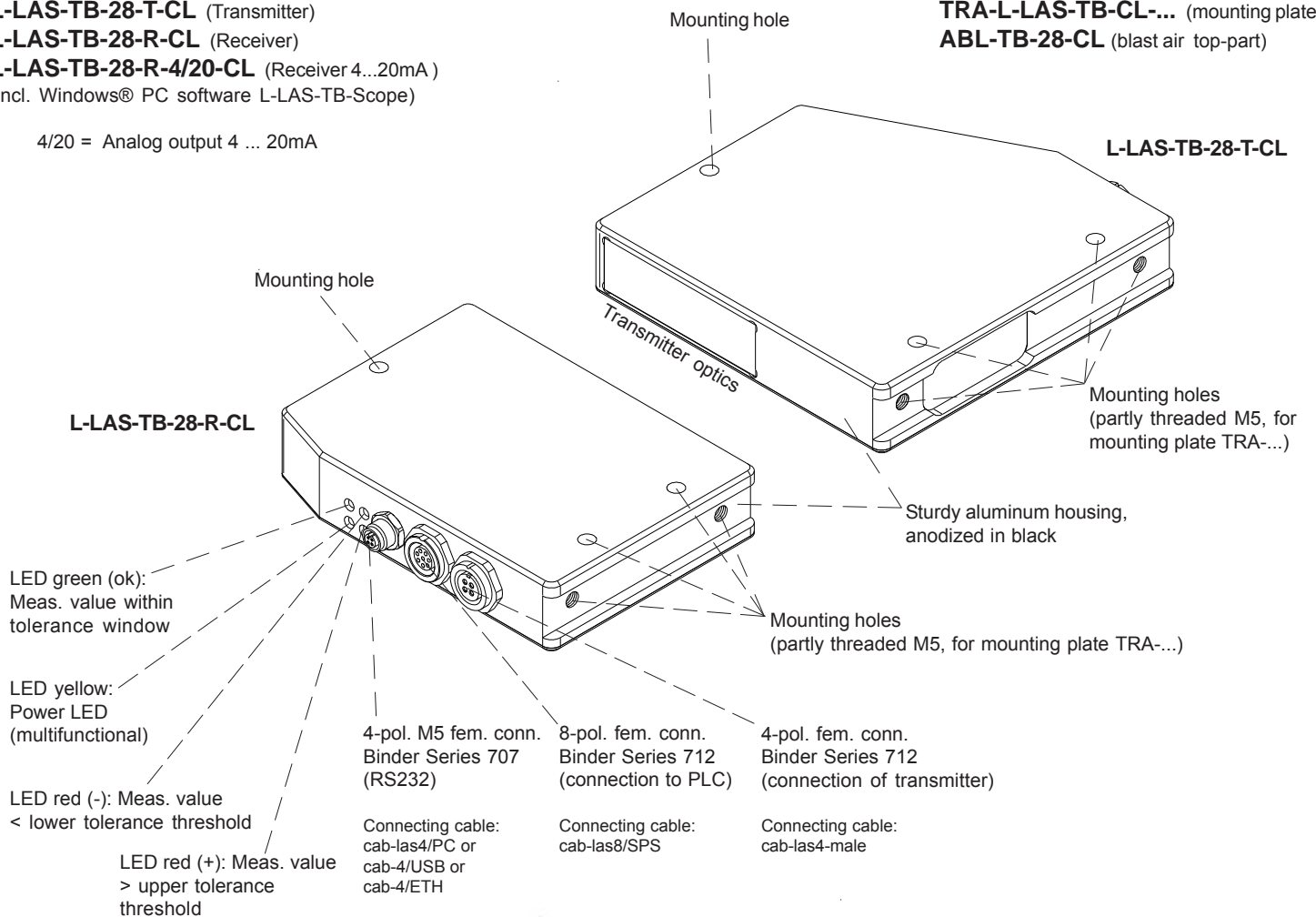
- L-LAS-TB-28-T-CL** (Transmitter)
- L-LAS-TB-28-R-CL** (Receiver)
- L-LAS-TB-28-R-4/20-CL** (Receiver 4...20mA)  
(incl. Windows® PC software L-LAS-TB-Scope)

4/20 = Analog output 4 ... 20mA

### Accessories:

 (cf. pages 8/9)

- TRA-L-LAS-TB-CL-...** (mounting plate)
- ABL-TB-28-CL** (blast air top-part)





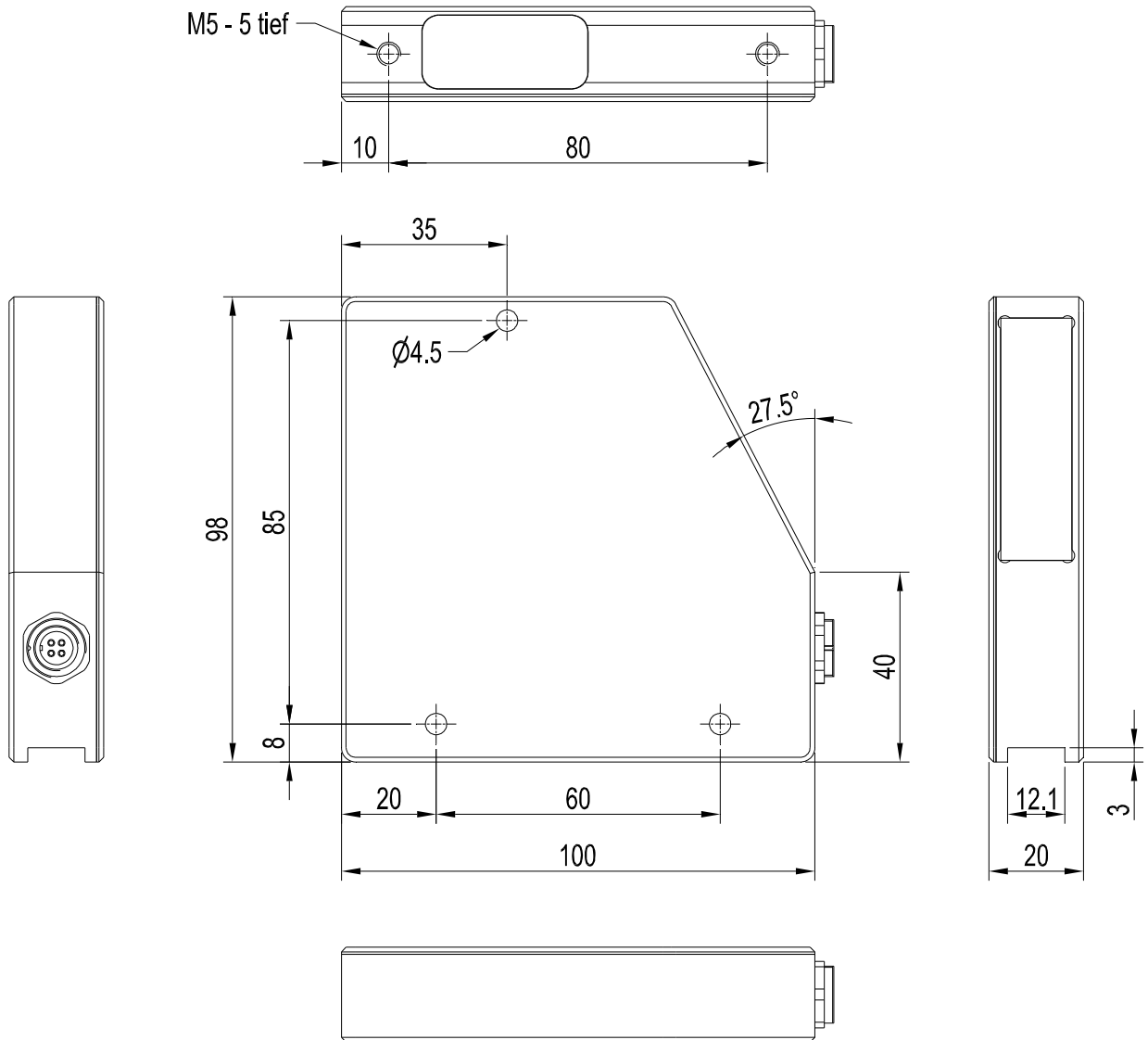
**Technical Data**

Model	L-LAS-TB-28-T-CL L-LAS-TB-28-R-CL	L-LAS-TB-28-T-CL L-LAS-TB-28-R-4/20-CL
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. 28 mm	
Resolution	typ. 2 µm	
Reproducibility	typ. ± 2 µm	
Linearity	typ. 0.08% FSR (full scale range)	
Optical filter	Interference filter	
Analog output (1x or 2x)	1x voltage output (0 ... +10V)	1x current output (4 ... 20mA) 1x voltage output (0 ... +10V)
Digital outputs (2x) (OUT0, OUT1)	OUT0: (-) Measuring value < lower tolerance threshold OUT1: (+) Measuring value > upper tolerance threshold 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. 125 mm x 98 mm x 20 mm (without flange connectors) receiver: LxWxH approx. 70 mm x 98 mm x 20 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. 200 Hz Double Speed mode (half resolution): max. 400 Hz Quad Speed mode (quarter resolution): max. 800 Hz can be switched 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-28-T-CL  
(Transmitter)

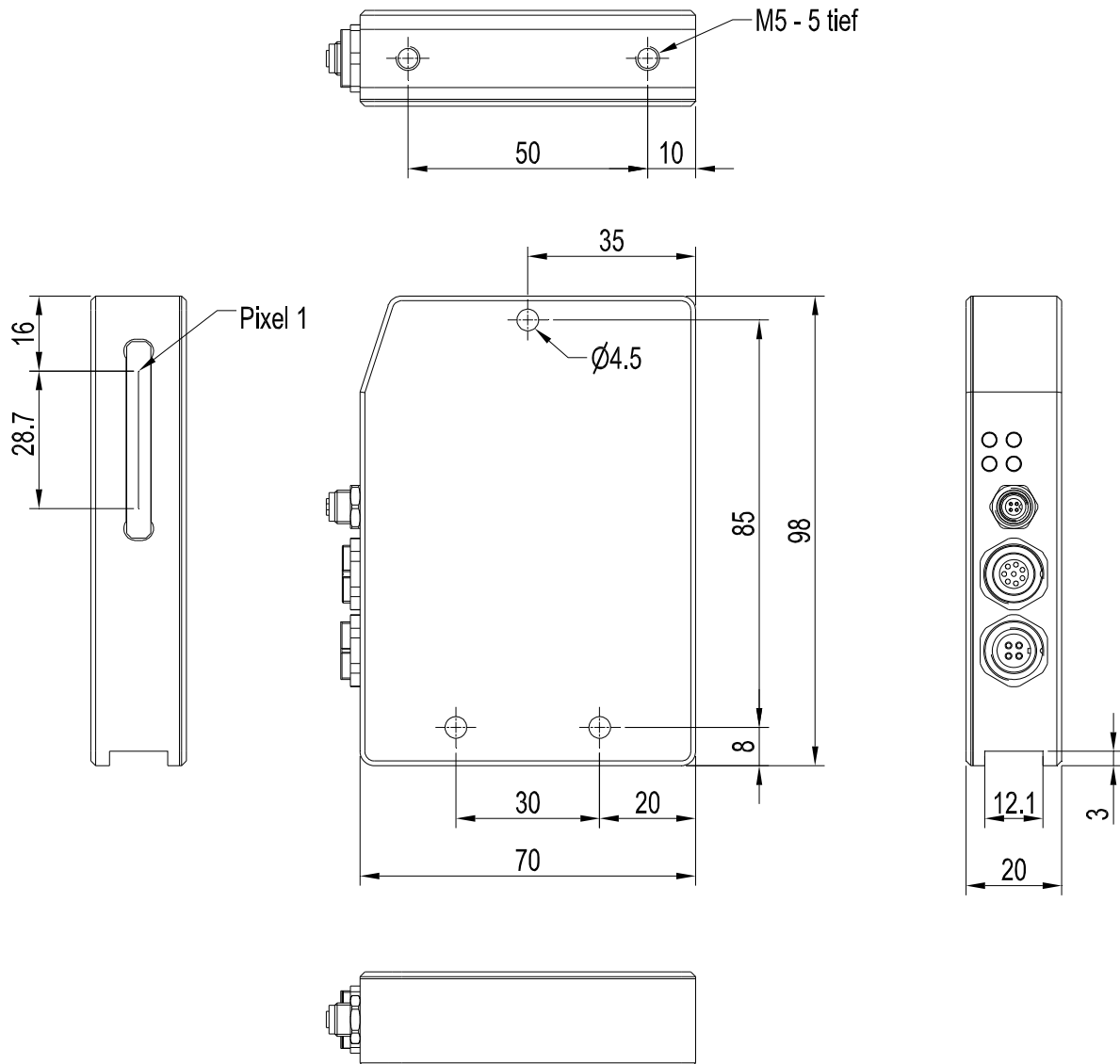


All dimensions in mm



Dimensions

L-LAS-TB-28-R-CL or  
L-LAS-TB-28-R-4/20-CL  
(Receiver)



All dimensions in mm



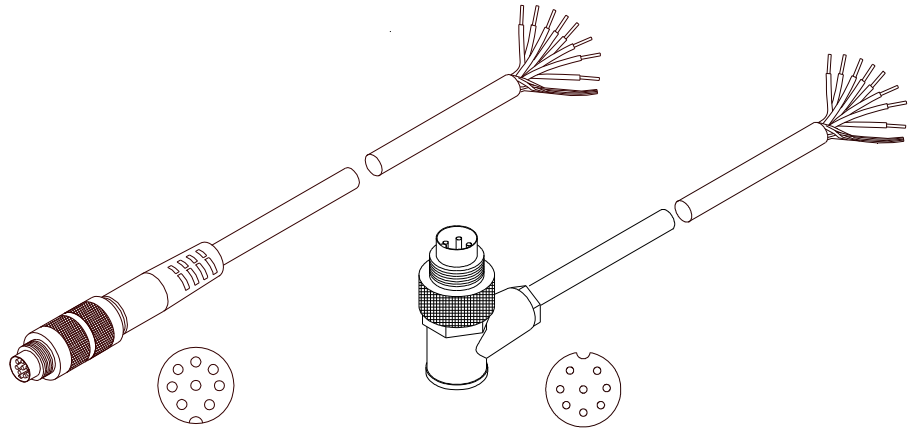
**Connector Assignment**

**Connection 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	GND (0V)
<b>or with type -4/20:</b>		
<b>ANA (current 4 ... 20mA)</b>		
8	red	ANA (voltage 0 ... +10V)

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 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:**

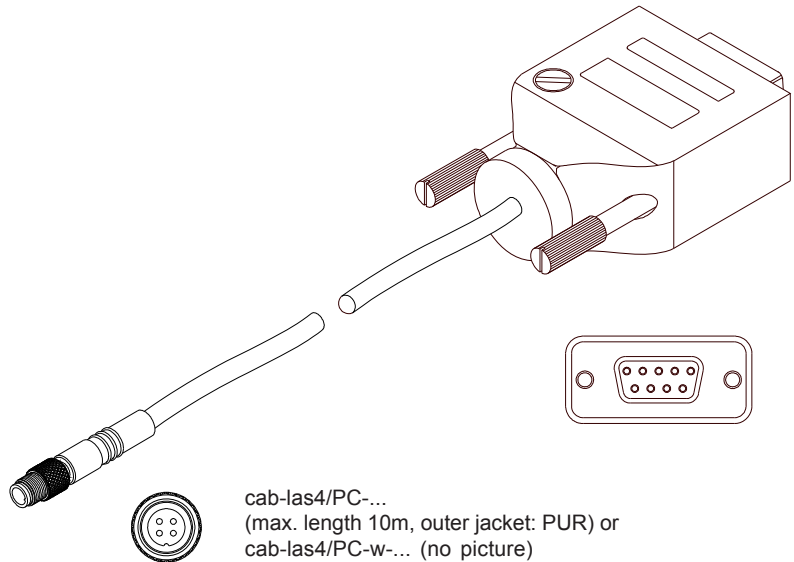
Connecting cable (incl. driver software):  
 cab-4/USB-(length)  
 cab-4/USB-w-(length) (angle type 90°)  
 (standard length 2m)

**alternative:**

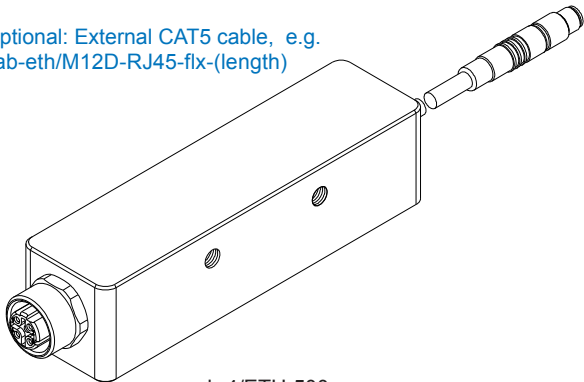
**Connection to local network via Ethernet bus:**

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

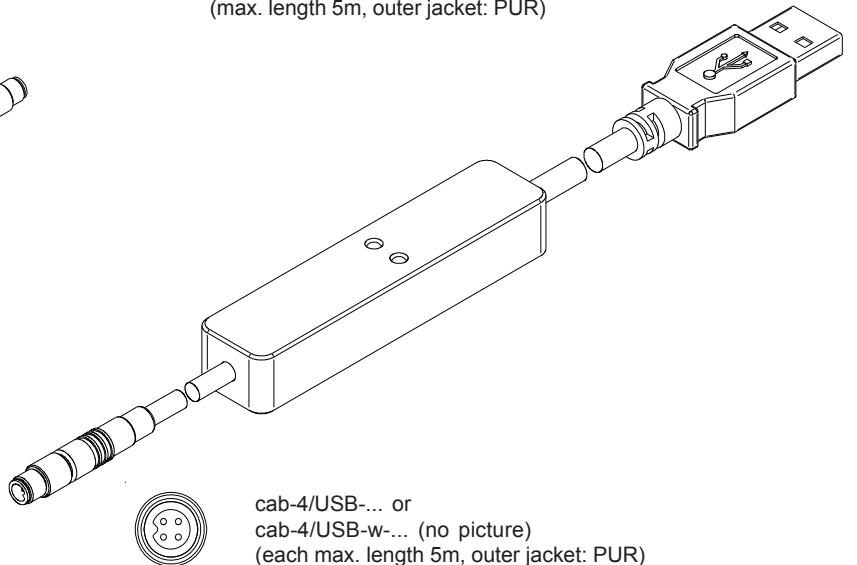
Optional: External CAT5 cable, e.g.  
 cab-eth/M12D-RJ45-flx-(length)



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)  
 Adapter 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)



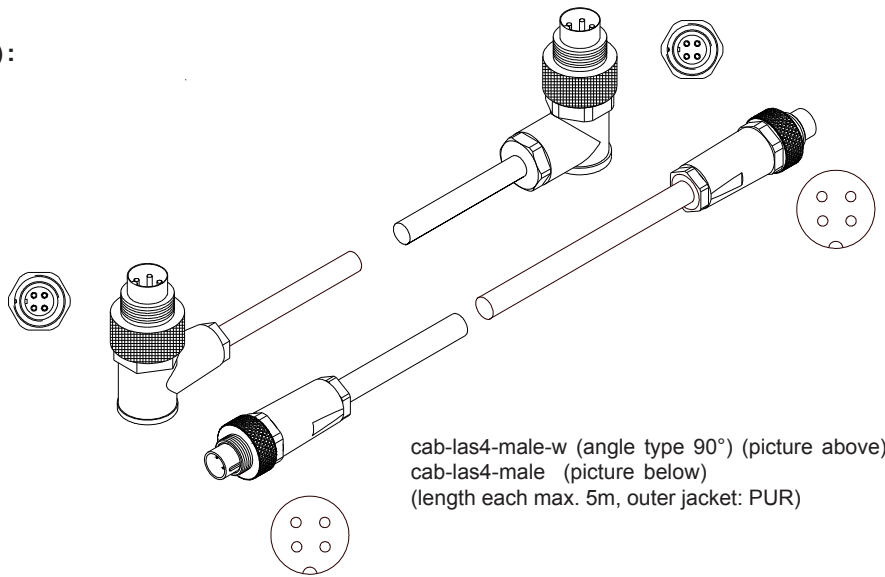
**Connector Assignment**

Connection L-LAS-TB-...-T-CL with  
L-LAS-TB-...-R-CL (or L-LAS-TB-...-R-4/20-CL):  
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)



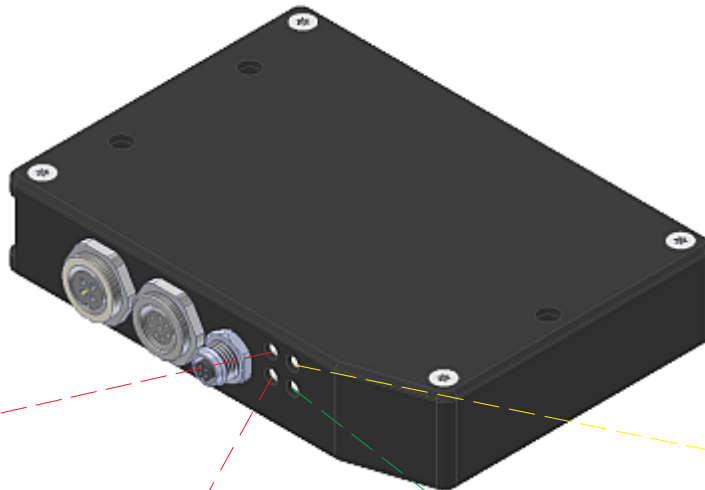
cab-las4-male-w (angle type 90°) (picture above) or  
cab-las4-male (picture below)  
(length each max. 5m, outer jacket: PUR)

**LED Display**

L-LAS-TB-28-R-CL:  
(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 Information**

The laser line sensors of L-LAS-TB 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 line sensors of L-LAS-TB series are supplied with an information label „CLASS 1 LASER PRODUCT“.



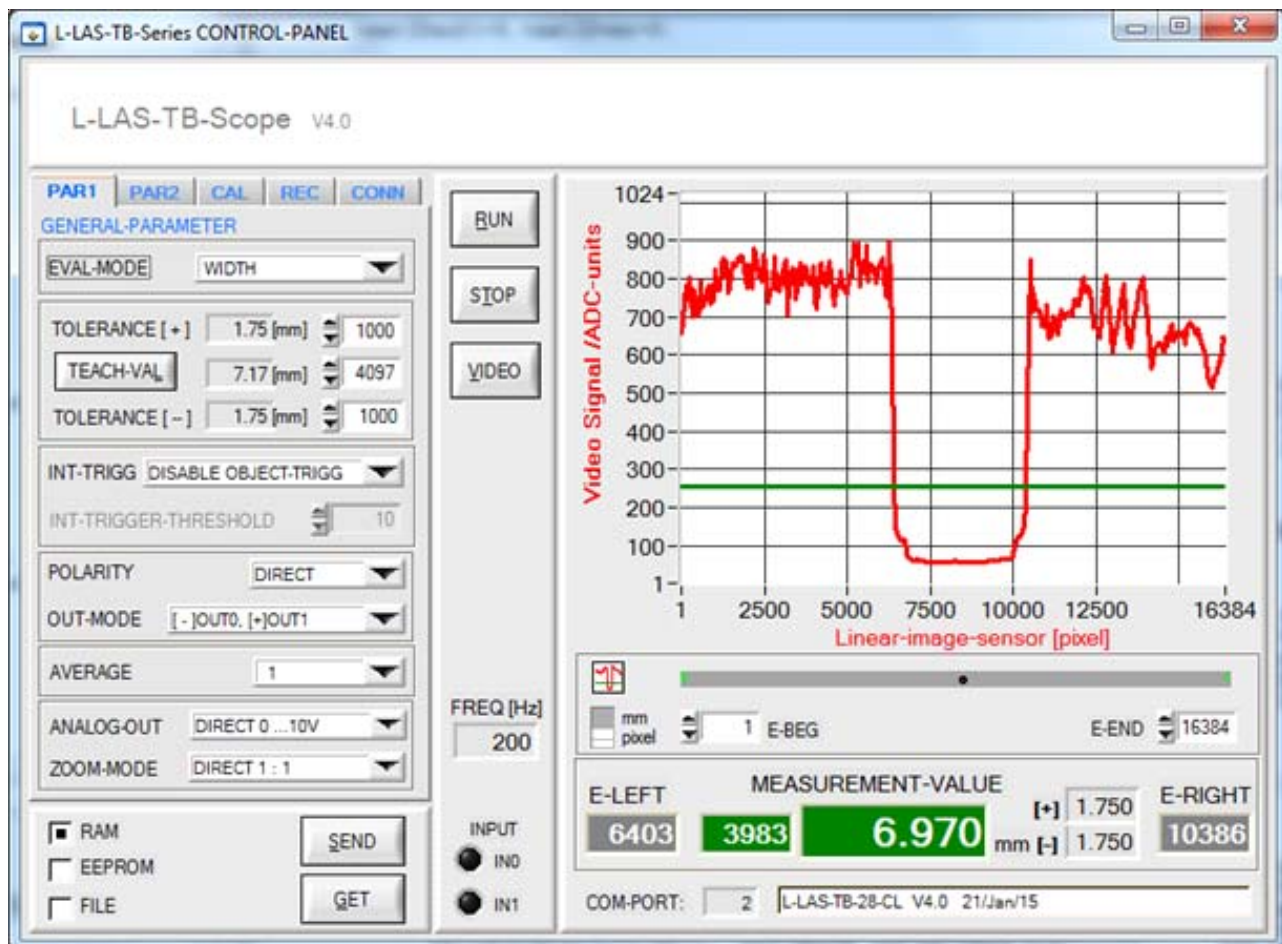


## Parameterization

### Windows® software L-LAS-TB-Scope:

The L-LAS-TB sensor can be easily parameterised with the Windows® user interface. For this purpose the sensor is connected to the PC with the serial interface cable cab-las4/PC. 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.



## Accessories

### Mounting plate for L-LAS-TB-28-T-CL and L-LAS-TB-28-R-CL (respectively L-LAS-TB-28-R-4/20-CL):

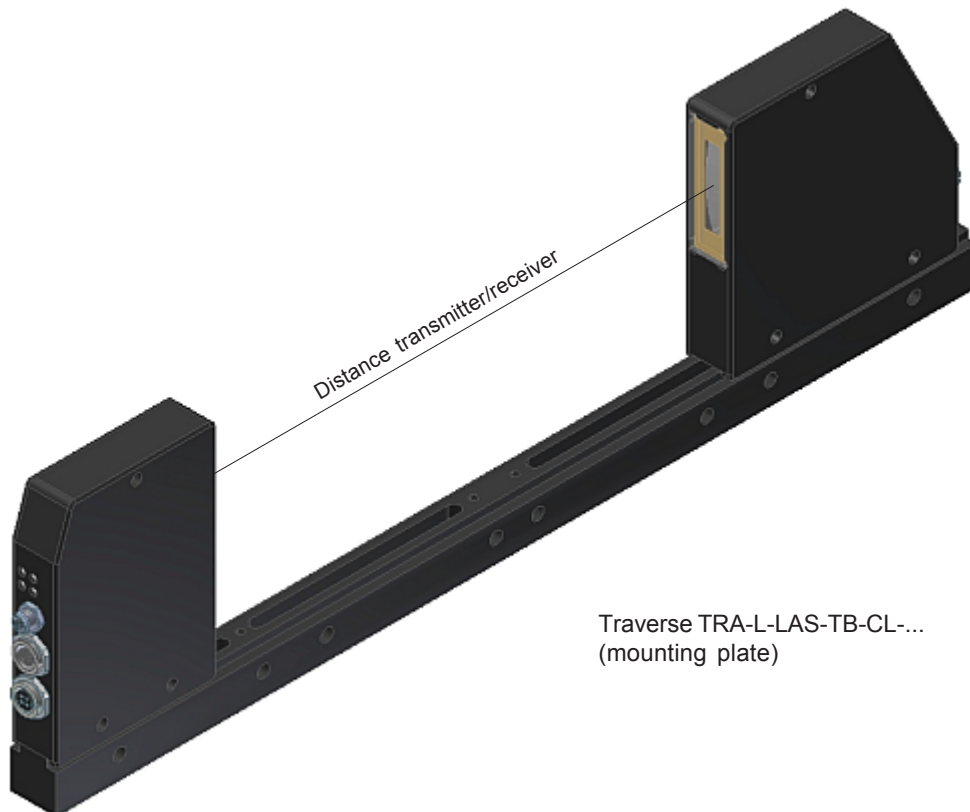
(please order separately)

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

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

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

(Aluminium housing, anodized in black)



Traverse TRA-L-LAS-TB-CL-...  
(mounting plate)

Max. distance T/R in case of use of mounting plate:	TRA-L-LAS-TB-CL-400	TRA-L-LAS-TB-CL-600	TRA-L-LAS-TB-CL-800
<b>L-LAS-TB-28-T-CL</b> <b>L-LAS-TB-28-R-CL</b>	max. distance T/R: 222 mm	max. distance T/R: 422 mm	max. distance T/R: 622 mm
<b>L-LAS-TB-50-T-CL</b> <b>L-LAS-TB-50-R-CL</b>	max. distance T/R: 205 mm	max. distance T/R: 405 mm	max. distance T/R: 605 mm
<b>L-LAS-TB-75-T-CL</b> <b>L-LAS-TB-75-R-CL</b>	max. distance T/R: 200 mm	max. distance T/R: 400 mm	max. distance T/R: 600 mm
<b>L-LAS-TB-100-T-CL</b> <b>L-LAS-TB-100-R-CL</b>	max. distance T/R: 160 mm	max. distance T/R: 360 mm	max. distance T/R: 560 mm





Accessories

**Blast air top part:**

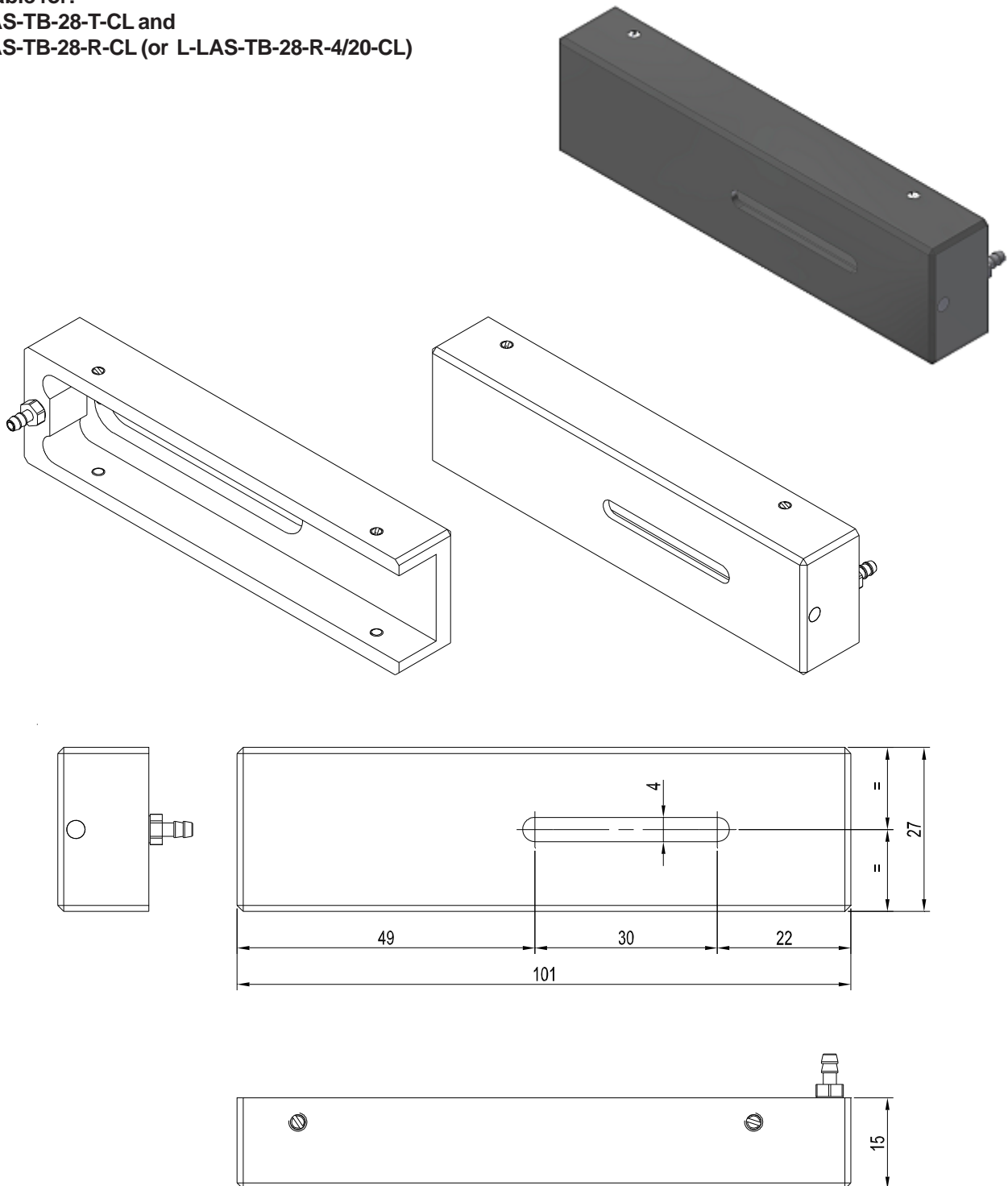
**ABL-TB-28-CL**

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

suitable for:

L-LAS-TB-28-T-CL and

L-LAS-TB-28-R-CL (or L-LAS-TB-28-R-4/20-CL)



All dimensions in mm