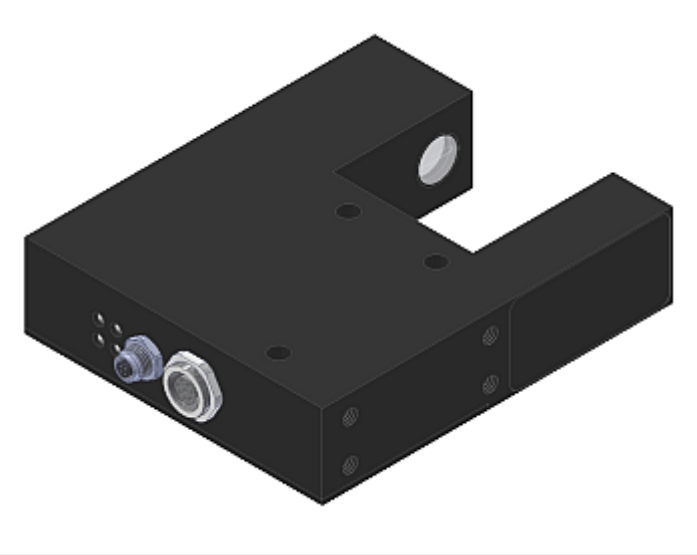
L-LAS Series

L-LAS-TB-F-(6)-40/40-AL



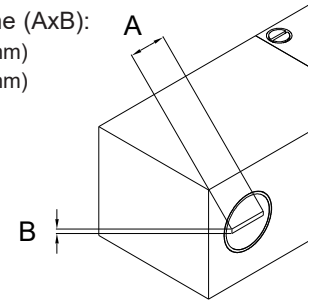
- Line laser <0.4 mW, wave length 670 nm, laser class 1
- Visible laser line, typ. 6 mm x 1 mm
- Measuring range typ. 6.4 mm
- Resolution up to 2 µm (depends on selected scan frequency)
- Transmitter/receiver distance 40 mm (fork width)
- Integrated interference filter
- CCD line detector with 512 pixel, 4096 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 (2 kHz or 4 kHz)
- Switching state indication via 4 two-color LEDs (2x red/grn, 2x yel/grn)
- Sturdy aluminum housing, anodized in black
- Scratch-resistant optics cover made of glass

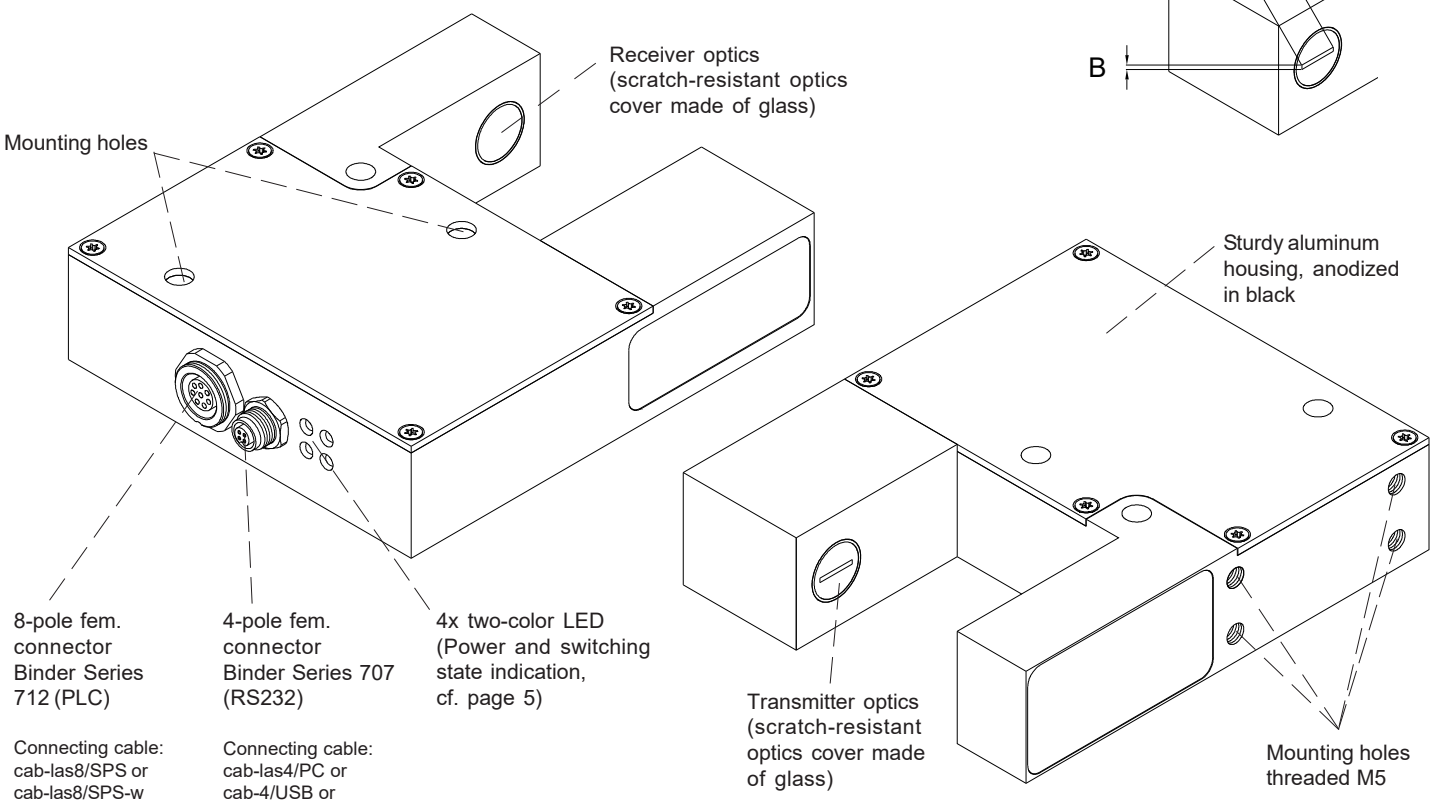
Design

Product name:

L-LAS-TB-F-6x1-40/40-AL
L-LAS-TB-F-1x6-40/40-AL
(incl. Windows® PC software
L-LAS-TB-Scope as of V5.0)

Position of laser line (AxB):
6x1 (A=6mm, B=1mm)
1x6 (A=1mm, B=6mm)

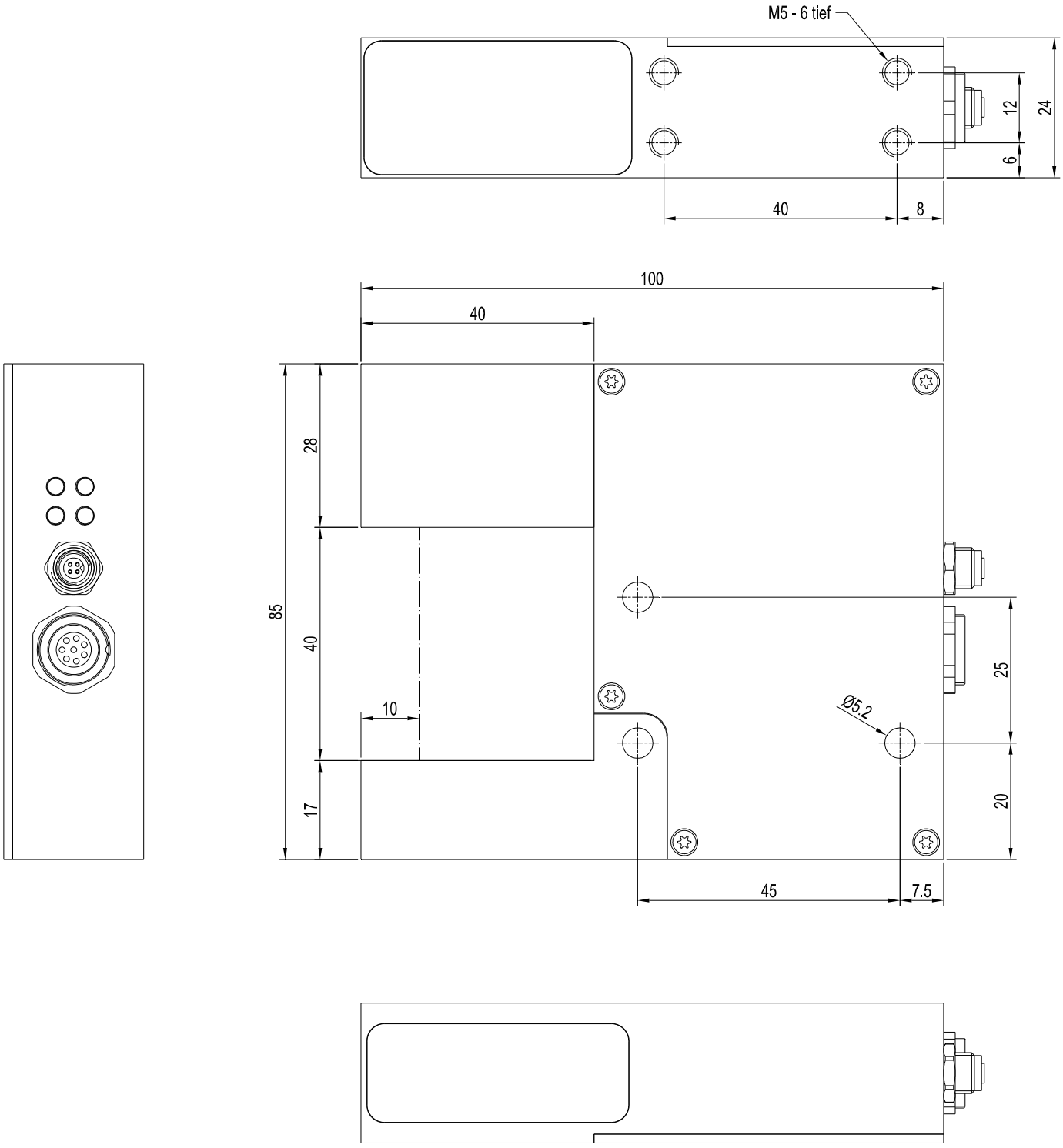




Technical Data

Model	**L-LAS-TB-F-6x1-40/40-AL** **L-LAS-TB-F-1x6-40/40-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: 40 mm (= fork width)
Measuring range	typ. 6.4 mm
Resolution	typ. 2 µm (Normal Speed mode), typ. 4 µm (Fast Speed mode)
Reproducibility	typ. ± 2 µm (Normal Speed mode), typ. ± 4 µm (Fast Speed mode)
Linearity	typ. 0.1% FSR (full scale range)
Optical filter	Interference filter
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	adjustable 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	LxWxH approx. 100 mm x 85 mm x 24 mm (without flange connectors)
Connectors	8-pole circular female connector type Binder 712 (PLC/Power) 4-pole M5 circular female connector type Binder 707 (RS232/PC)
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 CE
Scan frequency	Normal Speed mode (high resolution): max. 2 kHz Fast Speed mode (half resolution): max. 4 kHz 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
Output polarity	bright/dark switching, can be switched under Windows®

Dimensions



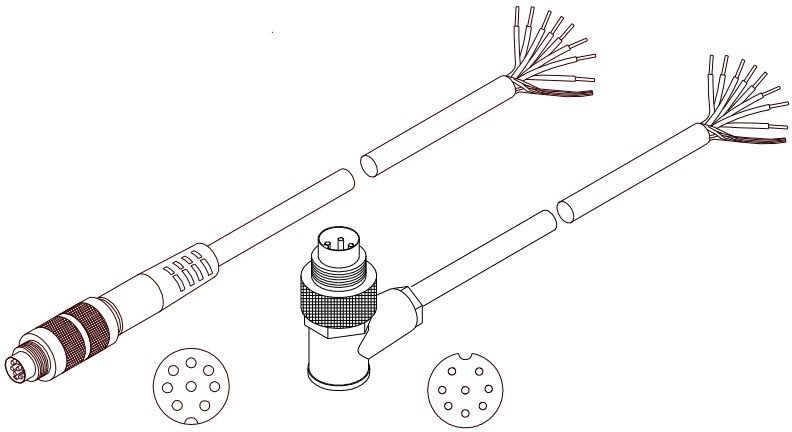
All dimensions in mm

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	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 to PC:
4-pole fem. connector Binder Series 707

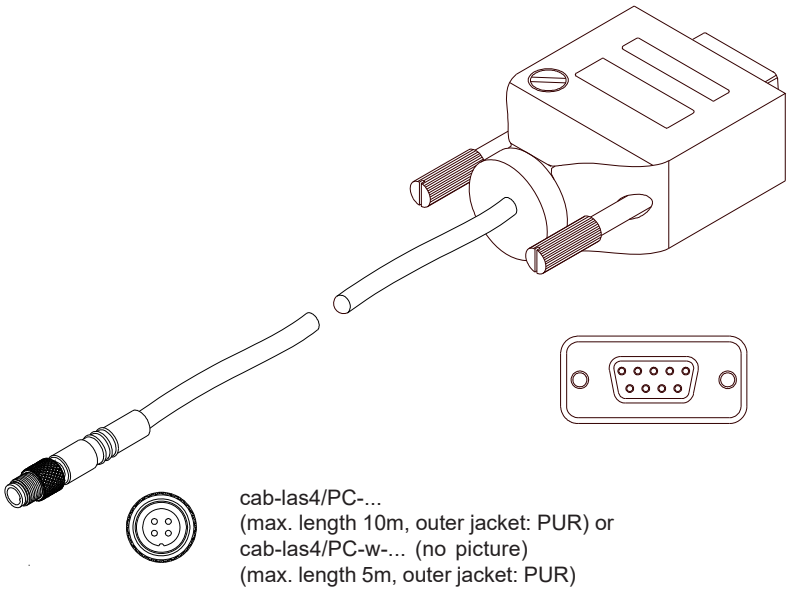
Pin:	Assignment:
1	+24VDC (+Ub, OUT)
2	GND (0V)
3	RxD
4	TxD

Connection via RS232 interface at the PC:
Connecting cable:
cab-las4/PC-(length)
cab-las4/PC-w-(length) (angle type 90°)
(standard length 2m)

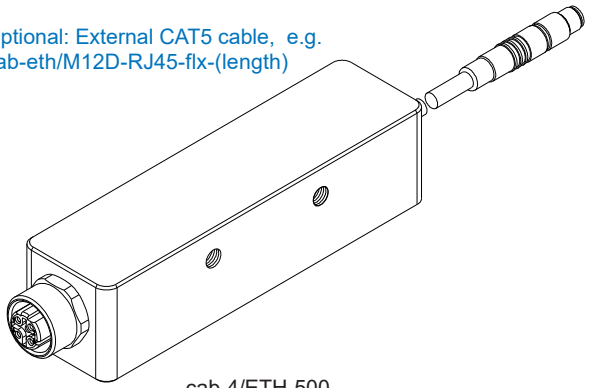
alternative:
Connection via USB interface at the PC:
USB converter (incl. driver software):
cab-4/USB-(length)
cab-4/USB-w-(length) (angle type 90°)
(standard length 2m)

alternative:
Connection to local network via Ethernet bus:
Ethernet converter (incl. software „SensorFinder“):
cab-4/ETH-500
(standard length 0.5m)

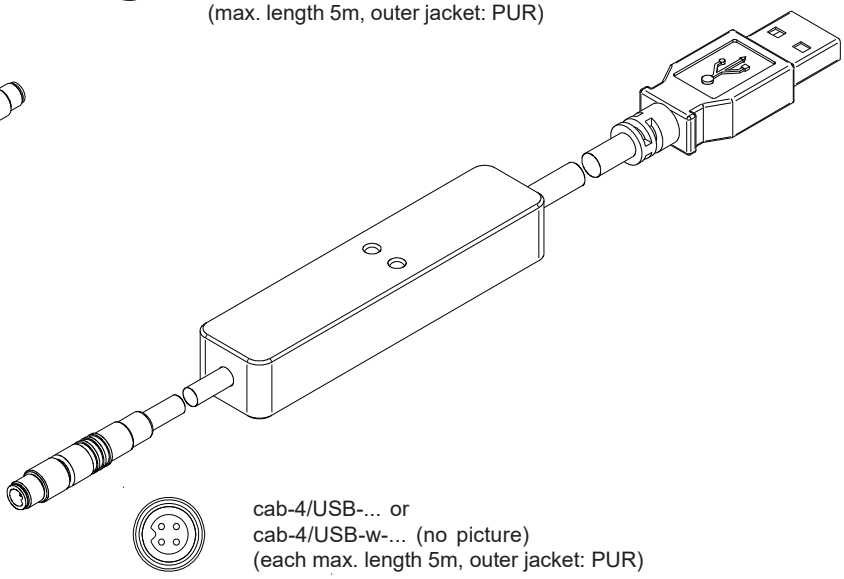
Optional: External CAT5 cable, e.g.
cab-eth/M12D-RJ45-flx-(length)



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)



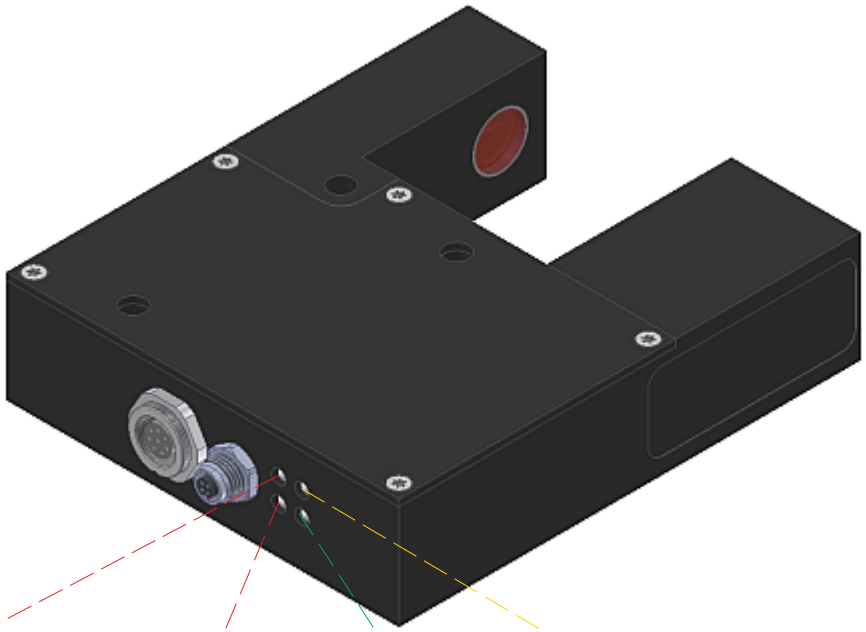
cab-4/USB-... or
cab-4/USB-w-... (no picture)
(each max. length 5m, outer jacket: PUR)

LED Display

LED display:

(ok) ● ● (-)

Power ● ● (+)



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

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

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“.

CLASS 1 Laser Product

DIN EN 60825-1: 2008-05

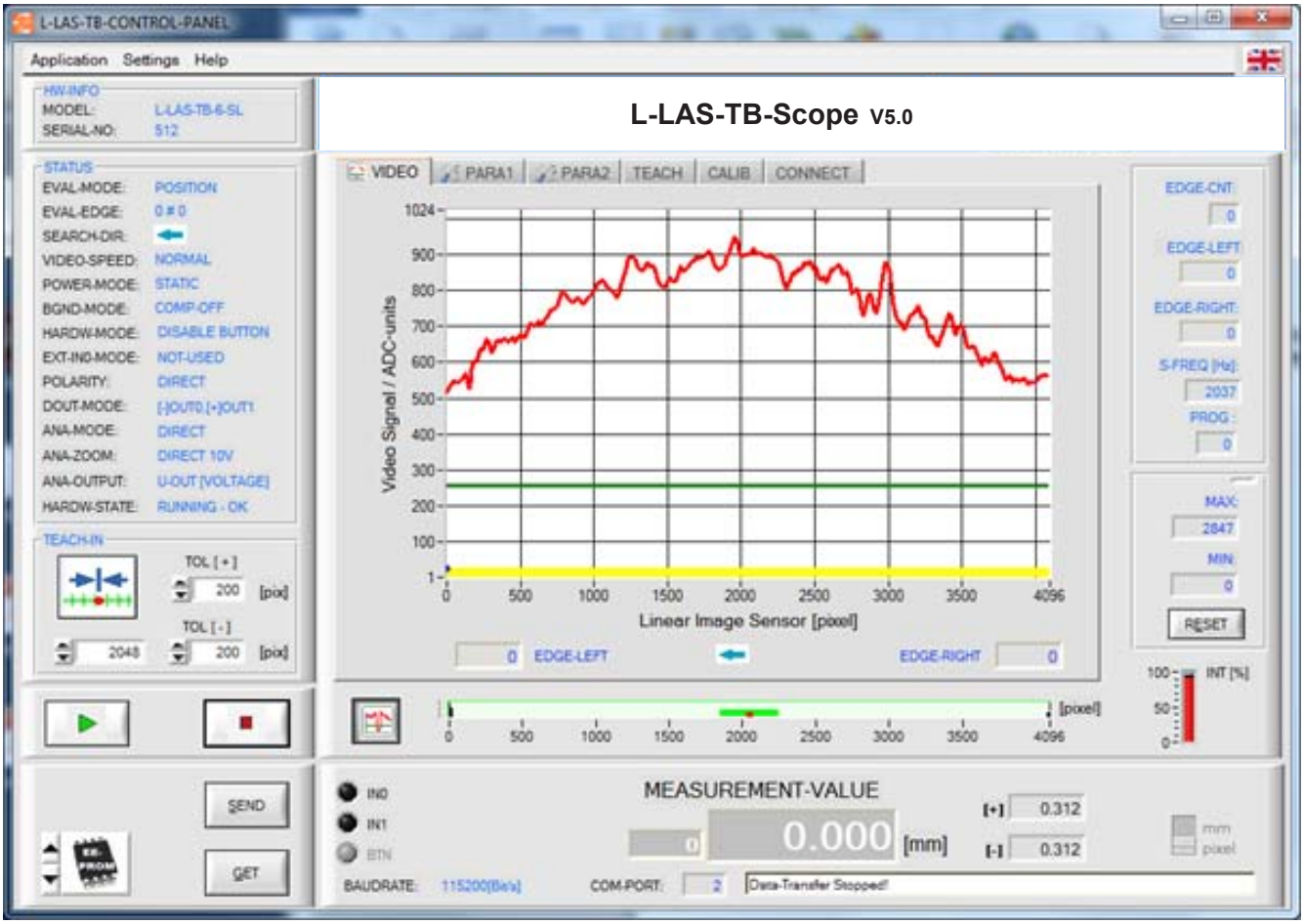
Parameterization

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.