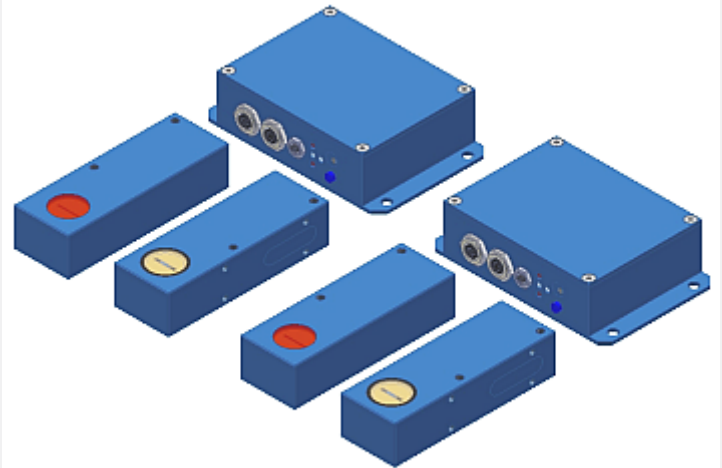


L-LAS Series

► L-LAS-TB-12-CON1-MA, /-SL L-LAS-TB/90-(12)-T, /-R (Master/Slave)

- Line laser 670 nm, < 0.4 mW, class 1 laser product
- Visible red laser line, typ. 15 mm x 2 mm
- Meas. range Master + Slave each typ. 12.8 mm (i.e. 2x 12.8 mm)
- Resolution Master + Slave each typ. 7 µm (i.e. 2x 7 µm)
- Transmitter/receiver distance max. 0.5 m
- Integrated interference filter
- CCD line detector with 512 pixel, 2048 subpixel
- External teach button and potentiometer for tolerance setting
- RS232 interface (USB or Ethernet adapter is available)
- 2 digital inputs, 3 digital outputs
- 1 analog output 0...+10V (optional: current output 4...20mA)
- Switching state indication via 4 LEDs (1x grn, 2x red, 1x yel)



Design

Product name:

- L-LAS-TB-12-CON1-MA** (Master, 0 ... +10V)
- L-LAS-TB-12-CON1-4/20-MA** (Master, 4 ... 20mA)
- L-LAS-TB-12-CON1-SL** (Slave)
- incl. Windows® PC software L-LAS-TB-MS-Scope
- L-LAS-TB/90-(AxB)*-T** (Transmitter)
- L-LAS-TB/90-(AxB)*-R** (Receiver)

***AxB** (Alignment of laser line):
12x1 (A=12mm, B=1mm)
1x12 (A=1mm, B=12mm)

L-LAS-TB/90-...-T
 (Transmitter frontend,
 picture: L-LAS-TB/90-12x1-T)

LED green for
 switching state
 indication

3-pole fem. conn.
 Binder Series 712
 (Connection to
 Master or Slave)
 Connecting cable:
 cab-las3-male

7-pole fem. conn.
 Binder Series 712
 (Connection to Master or Slave)
 Connecting cable:
 cab-las7-male

8-pole fem. conn.
 Binder Series 712
 (PLC)
 Connecting cable:
 cab-las8/SPS

7-pole fem. conn.
 Binder Series 712
 (Connection
 Master/Slave)
 Connecting cable:
 cab-las7-male

4-pole M5 fem. conn.
 Binder Series 707
 (PC/RS232)
 Connecting cable:
 cab-las4/PC or
 cab-las4/USB or
 SI-RS232/Ethernet-4

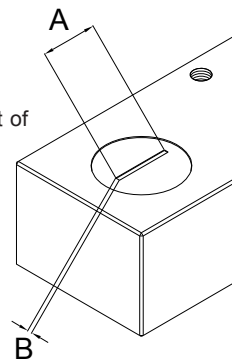
LED display
 (cf. page 10)

Potentiometer
 for tolerance
 setting

TEACH/RESET button
 for mean value setting

L-LAS-TB/90-...-R
 (Receiver frontend,
 picture: L-LAS-TB/90-12x1-R)

Sturdy aluminum
 housing,
 anodized in blue





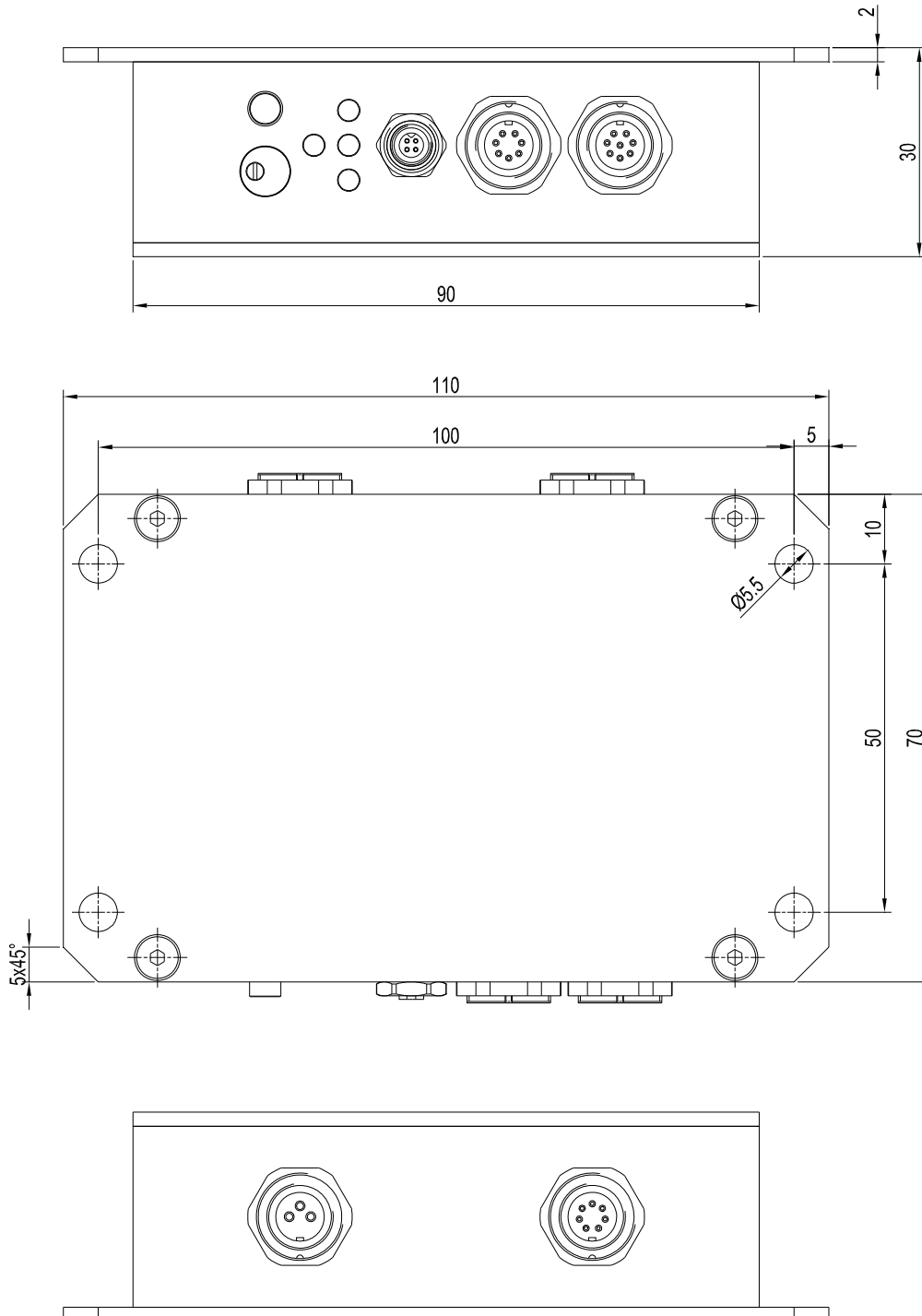
Technical Data

Model	L-LAS-TB-12-CON1-MA/SL L-LAS-TB/90-(12)-T/R	L-LAS-TB-12-CON1-4/20-MA/SL L-LAS-TB/90-(12)-T/R
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.	
Transmitter/receiver distance	max. 0.5 m	
Measuring range	MA und SL: each typ. 12.8 mm (i.e. 2x 12.8 mm)	
Resolution	MA und SL: each typ. 7 µm (i.e. 2x 7 µm)	
Reproducibility	MA und SL: each typ. ± 7 µm (i.e. 2x ± 7 µm)	
Linearity	typ. 0.1% of full scale range (FSR)	
Optical filter	Interference filter	
Analog output (ANA)	Voltage output 0 ... +10V	Current output 4 ... 20mA
Digital outputs (OUT0, OUT1, OUT2)	pnp bright-switching (pnp n.c.)/npn dark-switching (npn n.o.) or pnp dark-switching (pnp n.o.)/npn bright-switching (npn n.c.), 100 mA, short-circuit-proof	
Digital inputs (IN0, IN1)	IN0: External trigger, IN1: Teach/Reset (double function), Input voltage +Ub/0V, with protective circuit	
Voltage supply	+24VDC (± 10%)	
Sensitivity setting	by means of potentiometer TOL or 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 blue	
Housing dimensions (without flange connectors)	Electronic control unit L-LAS-TB-12-CON1-MA/SL: LxWxH approx. 110 mm x 70 mm x 30 mm Transmitter and receiver frontend L-LAS-TB/90-(12)-T: LxWxH approx. 100 mm x 34 mm x 24 mm	
Connectors L-LAS-TB-12-CON1-MA	8-pole female connector type Binder 712 (PLC/Power), 4-pole female connector type Binder 707 (PC/RS232) 7-pole female connector type Binder 712 (MA/SL connection)	
Connectors L-LAS-TB-12-CON1-SL	8-pole female connector type Binder 712 and 4-pole female connector type Binder 707: NOT CONNECTED! 7-pole female connector type Binder 712 (MA/SL connection)	
Connectors L-LAS-TB/90-(12)-T, /-R	L-LAS-TB/90-(12)-T: 3-pole fem. connector Binder 712, L-LAS-TB/90-(12)-R: 7-pole connector Binder 712	
Teach/Reset button	for set point value teaching and for reset of maximum values	
LED display	LED red (+) : Measured value > upper tolerance threshold LED green : Measured value within tolerance window LED red (-) : Measured value < lower tolerance threshold LED yellow: for sensor adjustment (multifunctional LED)	
EMC test acc. to	DIN EN 60947-5-2	
Scan frequency	max. 200 Hz	
Max. switching current	100 mA, kurzschlussfest	
Interface	RS232, parameterizable under Windows®	
Connecting cables	Connection L-LAS-TB-12-CON1-MA to PC: cab-las4/PC or cab-las4/PC-w or cab-las4/USB Connection L-LAS-TB-12-CON1-MA to PLC: cab-las8/SPS or cab-las8/SPS-w Connection L-LAS-TB-12-CON1-MA to L-LAS-TB-12-CON1-SL: cab-las7-male Connection L-LAS-TB/90-(12)-T or -R to L-LAS-TB-12-CON1: cab-las3-male or cab-las7-male	
Output polarity	Bright/dark switching, can be adjusted under Windows®	



Dimensions

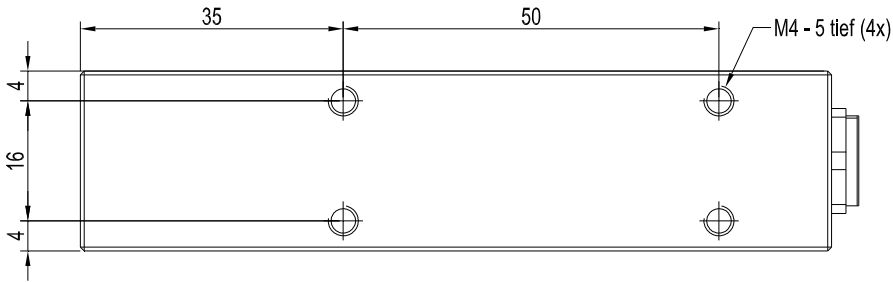
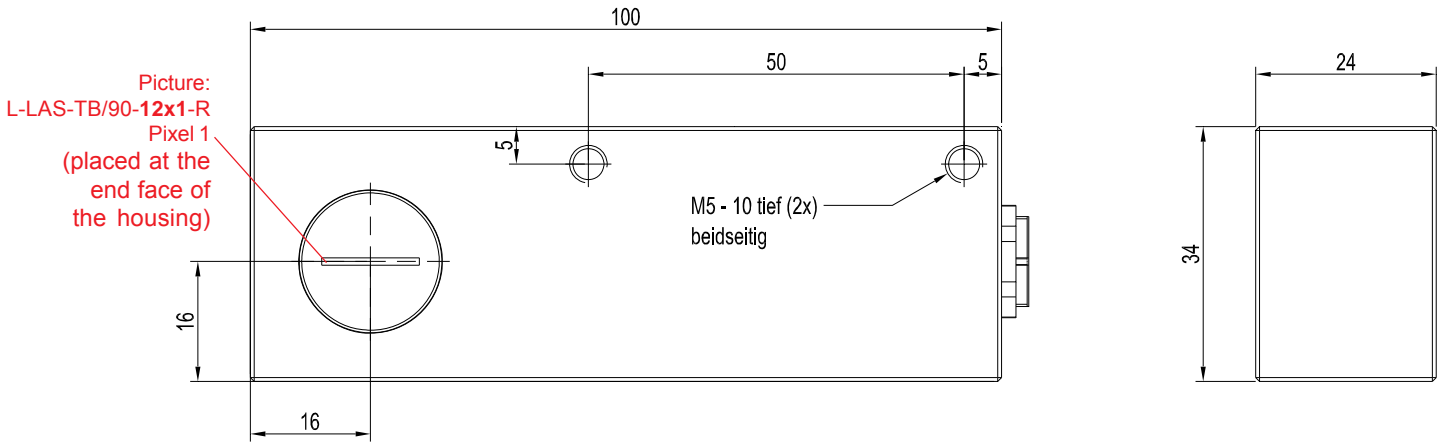
L-LAS-TB-12-CON1-MA
 L-LAS-TB-12-CON1-4/20-MA
 L-LAS-TB-12-CON1-SL



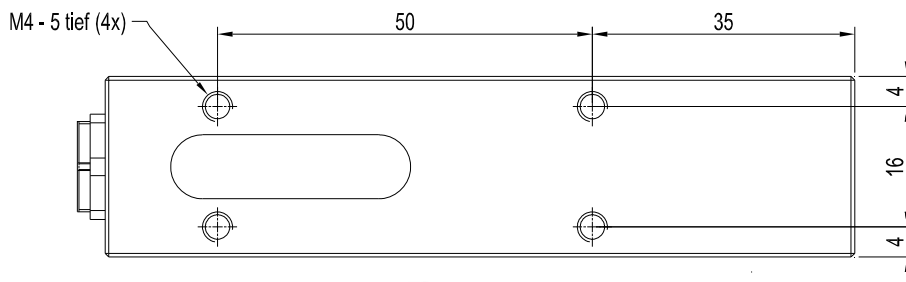
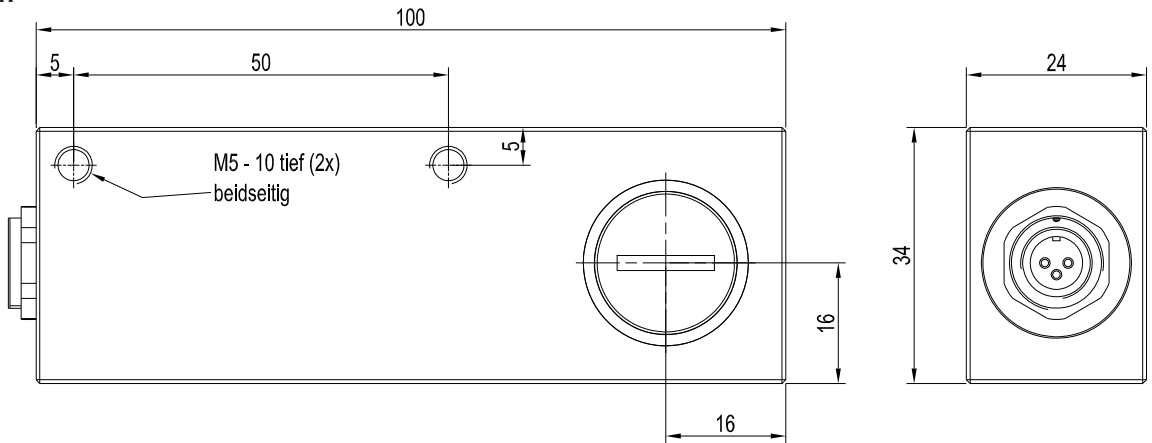
All dimensions in mm

Dimensions

L-LAS-TB/90-12x1-R:



L-LAS-TB/90-12x1-T:



All dimensions in mm



Components of a complete Master/Slave system L-LAS-TB-12-CON1-MS:

Version with laser line longitudinally (12x1), with analog voltage output 0...+10V:

- 1x **L-LAS-TB-12-CON1-MA** (Master, incl. Windows® software L-LAS-TB-MS-Scope)
- 1x **L-LAS-TB-12-CON1-SL** (Slave)
- 2x **L-LAS-TB/90-12x1-T** (Transmitter)
- 2x **L-LAS-TB/90-12x1-R** (Receiver)
- 3x **cab-las7-male-...** (Connecting cable, for connection transmitter to Master or to Slave as well as connection Master to Slave)
- 2x **cab-las3-male-...** (Connecting cable, for connection receiver to Master or to Slave)
- 2x **cab-las8/SPS-...** (Connecting cable to PLC, for both Master and Slave)
- 1x **cab-las4/PC-...** (Connecting cable to PC via RS232, for Master)
- alternative: 1x **cab-las4/USB-...** (Connecting cable to PC via USB, for Master)
- alternative: 1x **SI-RS232/Ethernet-4-...** (Connecting cable to PC via Ethernet, for Master)

Version with laser line longitudinally (12x1), with analog current output 4...20mA:

- 1x **L-LAS-TB-12-CON1-4/20-MA** (Master, incl. Windows® software L-LAS-TB-MS-Scope)
- 1x **L-LAS-TB-12-CON1-SL** (Slave)
- 2x **L-LAS-TB/90-12x1-T** (Transmitter)
- 2x **L-LAS-TB/90-12x1-R** (Receiver)
- 3x **cab-las7-male-...** (Connecting cable, for connection transmitter to Master or to Slave as well as connection Master to Slave)
- 2x **cab-las3-male-...** (Connecting cable, for connection receiver to Master or to Slave)
- 2x **cab-las8/SPS-...** (Connecting cable to PLC, for both Master and Slave)
- 1x **cab-las4/PC-...** (Connecting cable to PC via RS232, for Master)
- alternative: 1x **cab-las4/USB-...** (Connecting cable to PC via USB, for Master)
- alternative: 1x **SI-RS232/Ethernet-4-...** (Connecting cable to PC via Ethernet, for Master)

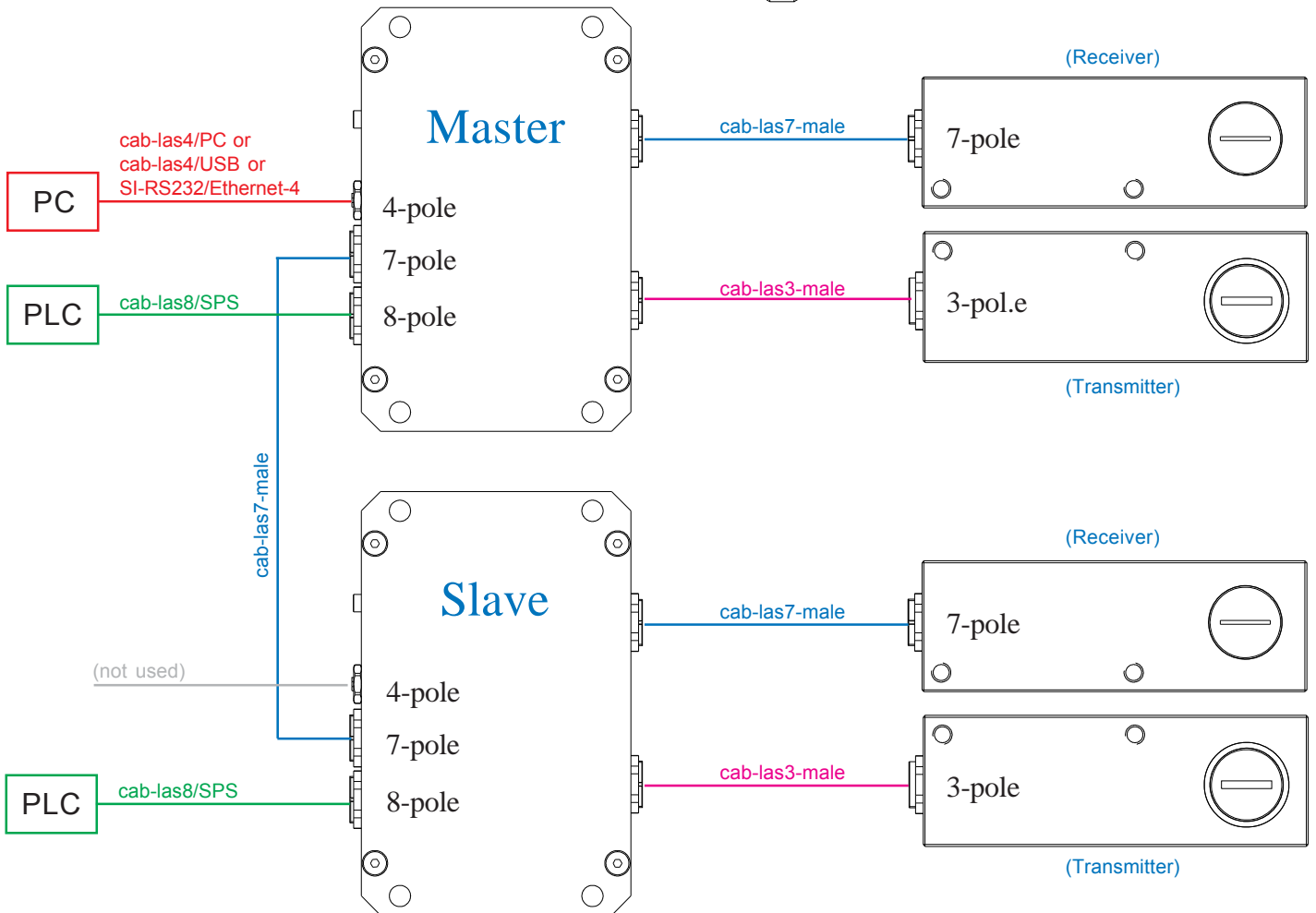
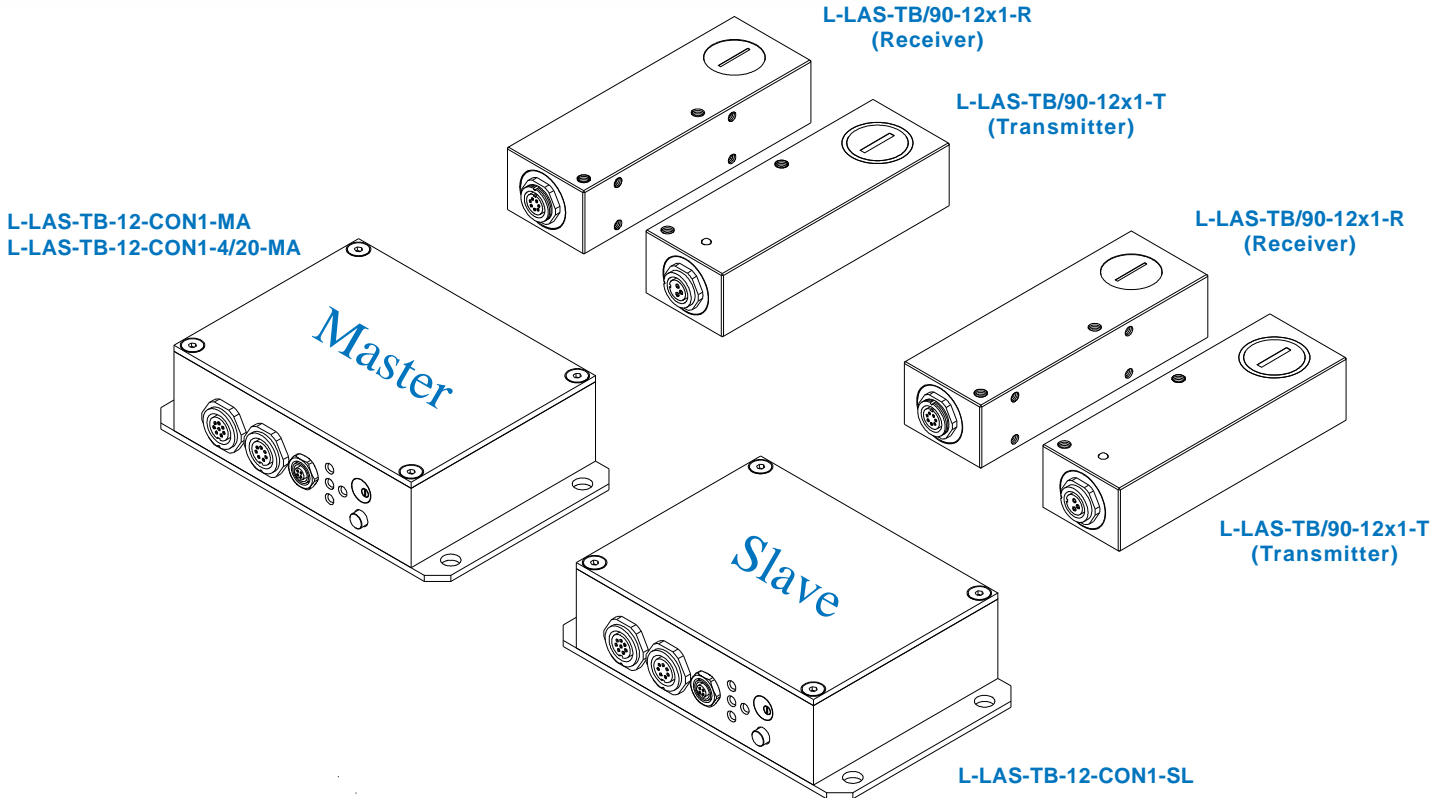
Version with laser line transversaly (1x12), with analog voltage output 0...+10V:

- 1x **L-LAS-TB-12-CON1-MA** (Master, incl. Windows® software L-LAS-TB-MS-Scope)
- 1x **L-LAS-TB-12-CON1-SL** (Slave)
- 2x **L-LAS-TB/90-1x12-T** (Transmitter)
- 2x **L-LAS-TB/90-1x12-R** (Receiver)
- 3x **cab-las7-male-...** (Connecting cable, for connection transmitter to Master or to Slave as well as connection Master to Slave)
- 2x **cab-las3-male-...** (Connecting cable, for connection receiver to Master or to Slave)
- 2x **cab-las8/SPS-...** (Connecting cable to PLC, for both Master and Slave)
- 1x **cab-las4/PC-...** (Connecting cable to PC via RS232, for Master)
- alternative: 1x **cab-las4/USB-...** (Connecting cable to PC via USB, for Master)
- alternative: 1x **SI-RS232/Ethernet-4-...** (Connecting cable to PC via Ethernet, for Master)

Version with laser line transversaly (1x12), with analog current output 4...20mA:

- 1x **L-LAS-TB-12-CON1-4/20-MA** (Master, incl. Windows® software L-LAS-TB-MS-Scope)
- 1x **L-LAS-TB-12-CON1-SL** (Slave)
- 2x **L-LAS-TB/90-1x12-T** (Transmitter)
- 2x **L-LAS-TB/90-1x12-R** (Receiver)
- 3x **cab-las7-male-...** (Connecting cable, for connection transmitter to Master or to Slave as well as connection Master to Slave)
- 2x **cab-las3-male-...** (Connecting cable, for connection receiver to Master or to Slave)
- 2x **cab-las8/SPS-...** (Connecting cable to PLC, for both Master and Slave)
- 1x **cab-las4/PC-...** (Connecting cable to PC via RS232, for Master)
- alternative: 1x **cab-las4/USB-...** (Connecting cable to PC via USB, for Master)
- alternative: 1x **SI-RS232/Ethernet-4-...** (Connecting cable to PC via Ethernet, for Master)

Connecting Diagram



Connector Assignment

Connection L-LAS-TB-12-CON1-MA to PLC:
8-pole fem. connector Binder Series 712

Pin:	(Color of wire:)	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 (0 ... +10V)
		in case of version -4/20:
		ANA (4 ... 20mA)

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

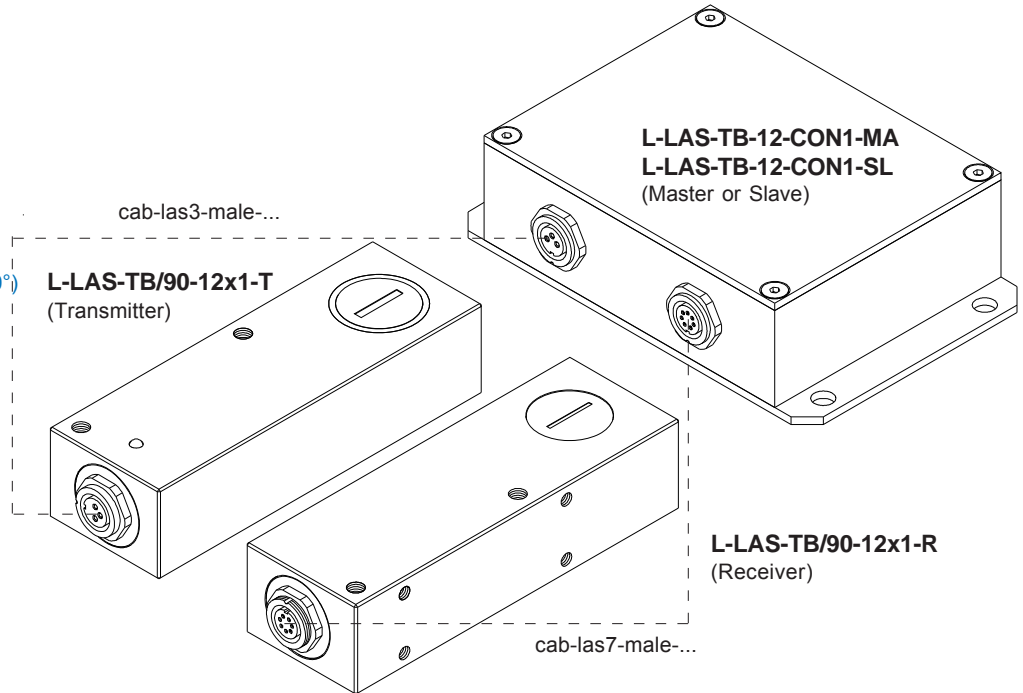
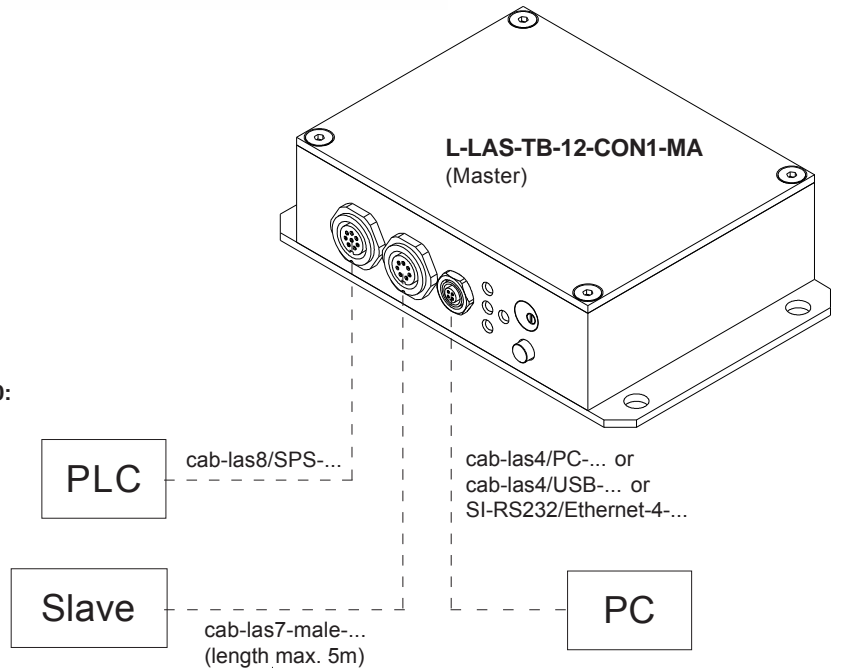
Connection L-LAS-TB-12-CON1-MA to PC:
4-pole fem. connector Binder Series 707

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

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

alternatively:
Connection via
USB interface
or
connection to
local network via
Ethernet bus

Connecting cables:
cf. page 8



Connection transmitter L-LAS-TB/90-(12)-T to L-LAS-TB-12-CON1-MA or to L-LAS-TB-12-CON1-SL:
3-pole fem. connectors Binder Series 712

Pin:	Assignment:
1	+5VDC
2	GND (0V)
3	I-CONTROL (0V ... +5V)

Connecting cable:
cab-las3-male-(length)
cab-las3-male-w-(length) (angle type, 90°)
(standard length 2m)

Connection receiver L-LAS-TB/90-(12)-R to L-LAS-TB-12-CON1-MA or to L-LAS-TB-12-CON1-SL:
7-pole fem. connectors Binder Series 712

Pin:	Assignment:
1	GND (0V)
2	+6.9VDC
3	START
4	CLOCK
5	GAIN
6	GND (0V)
7	VIDEO

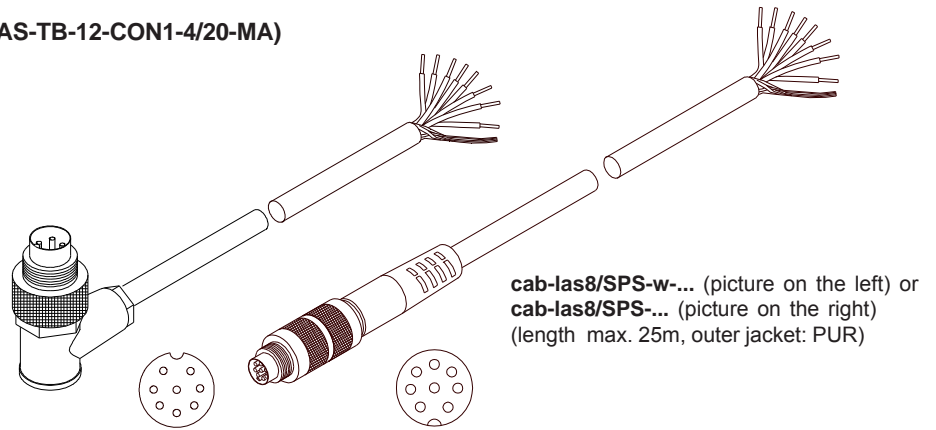
Connecting cable:
cab-las7-male-(length)
cab-las7-male-w-(length) (angle type, 90°)
(standard length 2m)



Connecting Cables

Connection L-LAS-TB-12-CON1-MA (or L-LAS-TB-12-CON1-4/20-MA) to PLC:

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



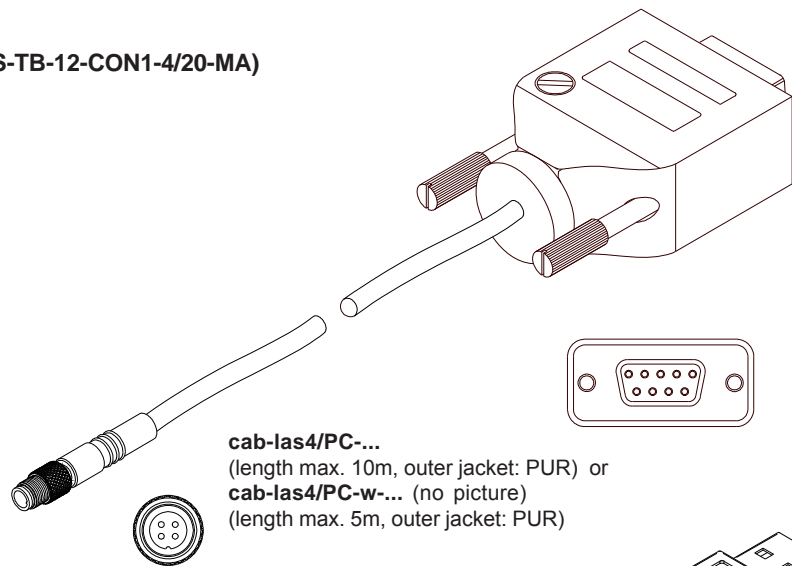
cab-las8/SPS-w... (picture on the left) or
cab-las8/SPS... (picture on the right)
 (length max. 25m, outer jacket: PUR)

Connection L-LAS-TB-12-CON1-MA (or L-LAS-TB-12-CON1-4/20-MA) to PC via RS232 interface:

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

alternative:
 to PC via USB interface:

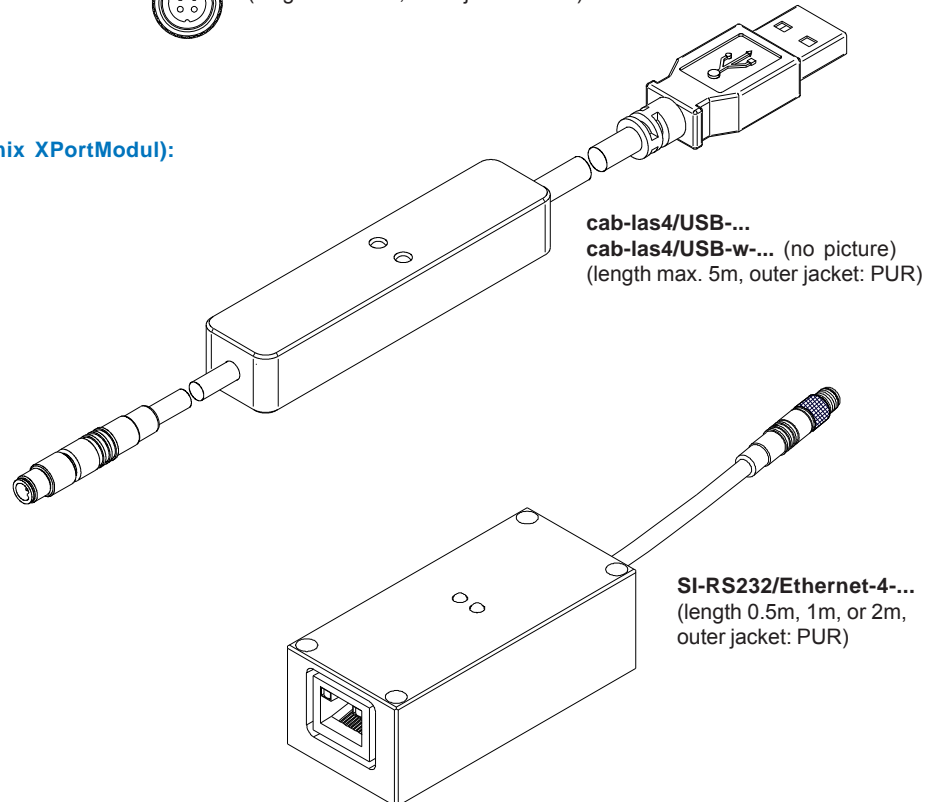
Connecting cable (incl. driver software):
 cab-las4/USB-(length)
 cab-las4/USB-w-(length) (angle type, 90°)
 (standard length: 2m)



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

alternative:
 to local network via Ethernet bus:

Connecting cable/adaptor (based on Lantronix XPortModul):
 SI-RS232/Ethernet-4-(length)
 (standard length 2m)



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

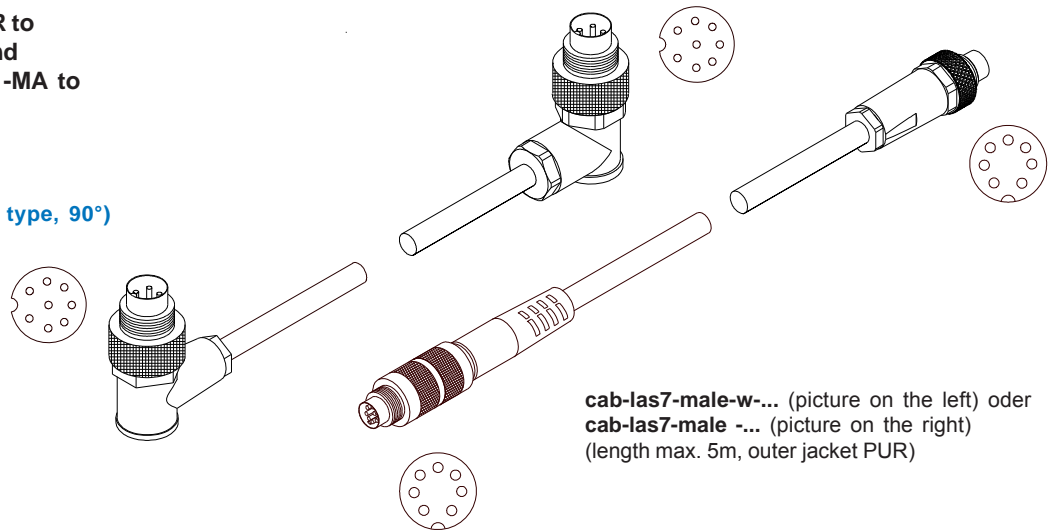
SI-RS232/Ethernet-4...
 (length 0.5m, 1m, or 2m,
 outer jacket: PUR)



Connecting Cables

Connection L-LAS-TB/90-(12)-R to
L-LAS-TB-12-CON1-MA, /-SL and
connection L-LAS-TB-12-CON1-MA to
L-LAS-TB-12-CON1-SL:

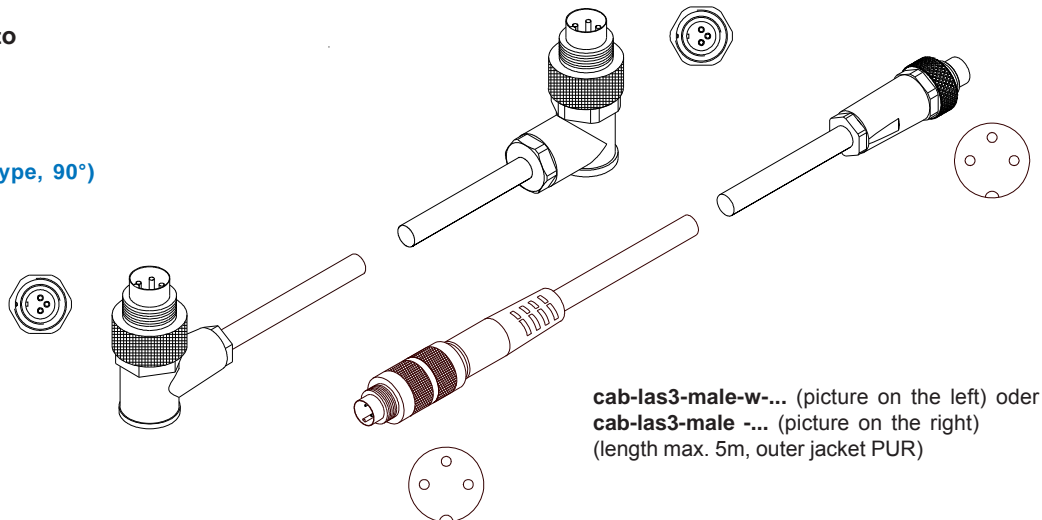
Connecting cable:
cab-las7-male-(length) or
cab-las7-male-w-(length) (angle type, 90°)
(standard length: 2m)



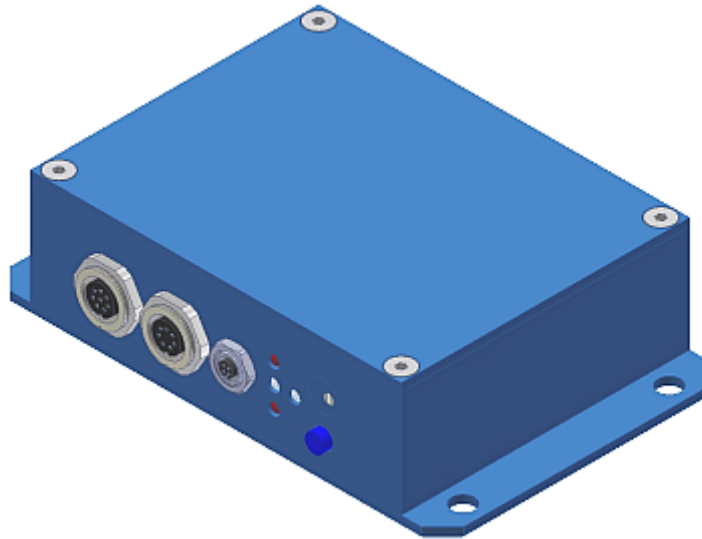
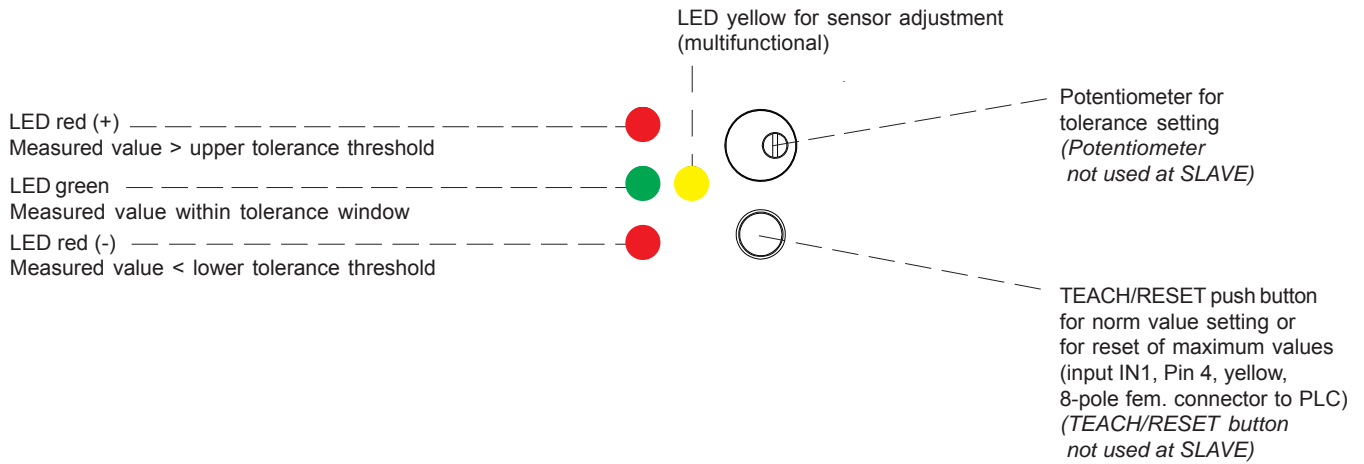
cab-las7-male-w-... (picture on the left) oder
cab-las7-male -... (picture on the right)
(length max. 5m, outer jacket PUR)

Connection L-LAS-TB/90-(12)-T to
L-LAS-TB-12-CON1-MA, /-SL:

Connecting cable:
cab-las3-male-(length) or
cab-las3-male-w-(length) (angle type, 90°)
(standard length: 2m)



cab-las3-male-w-... (picture on the left) oder
cab-las3-male -... (picture on the right)
(length max. 5m, outer jacket PUR)



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.

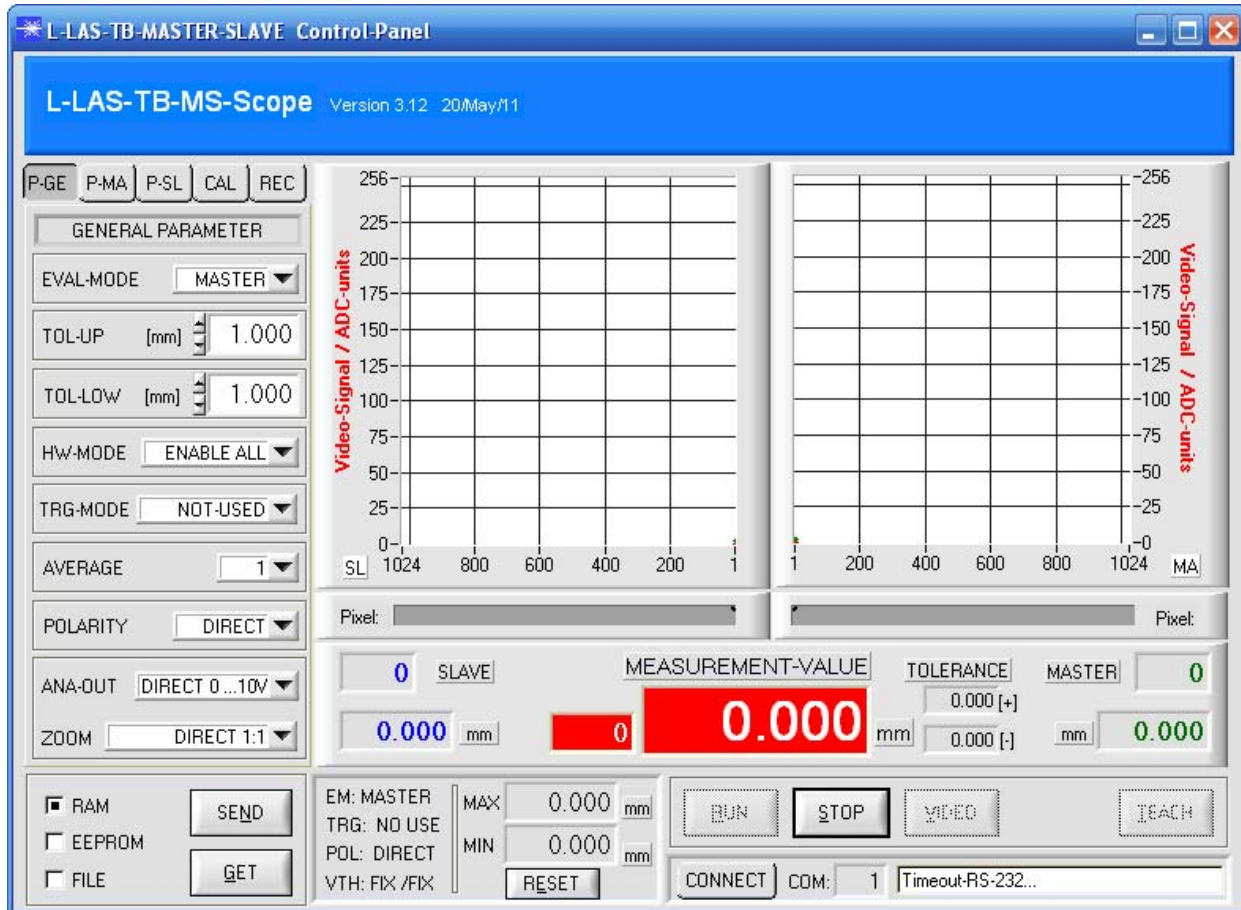
The laser line sensors of L-LAS-TB Series are supplied with a laser warning label type „CLASS 1 LASER PRODUCT“.





Parameterization
Windows® software L-LAS-TB-MS-Scope:

The L-LAS-TB-...-MS 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 (or with the USB interface cable cab-las4/USB). When parameterisation is finished, the PC can be disconnected again.

Windows® user interface:

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

- Visualization of the measuring data in numerical and graphic form
- Setting of laser power for the respective laser transmitter
- Polarity adjustment of digital outputs OUT0, OUT1, and OUT2
- Different evaluation modes to choose from
- Setting of norm value and tolerance band width
- Storage of parameters in the RAM, EEPROM store at the electronic control unit or to a configuration file at the hard disk of the PC