

L-LAS Series

▶ L-LAS-TB-F-150/60-MO-MA /-SL + macro lens MO-J-... (Master/Slave)

- Line laser 670 nm, < 0.4 mW, class 1 laser product
- Visible red laser line, typ. 17 mm x 2 mm
- Different macro lenses are available (MO-J-...)
- Meas. range MA+SL each typ. 1 mm ... 8 mm (dep. on macro lens)
- Resolution MA+SL each typ. 0.125 µm ... 1 µm (dep. on macro lens)
- Reference dist. receiver/object: typ. 70 mm or 80 mm (dep. on macro lens)
- CCD line detector with 1024 pixel, 8192 subpixel (8-fold)
- External teach button and potentiometer for tolerance setting
- RS232 interface (USB or Ethernet adaptor is available)
- 2 digital inputs, 3 digital outputs
- 1 analog output 0 ... +10V (or optional 4 ... 20mA)
- Switching state indication by 4 LEDs (1x grn, 2x red, 1x yel)



Picture:
L-LAS-TB-F-150/60-MO-MA and
L-LAS-TB-F-150/60-MO-SL
each with macro lens MO-J-4x/20



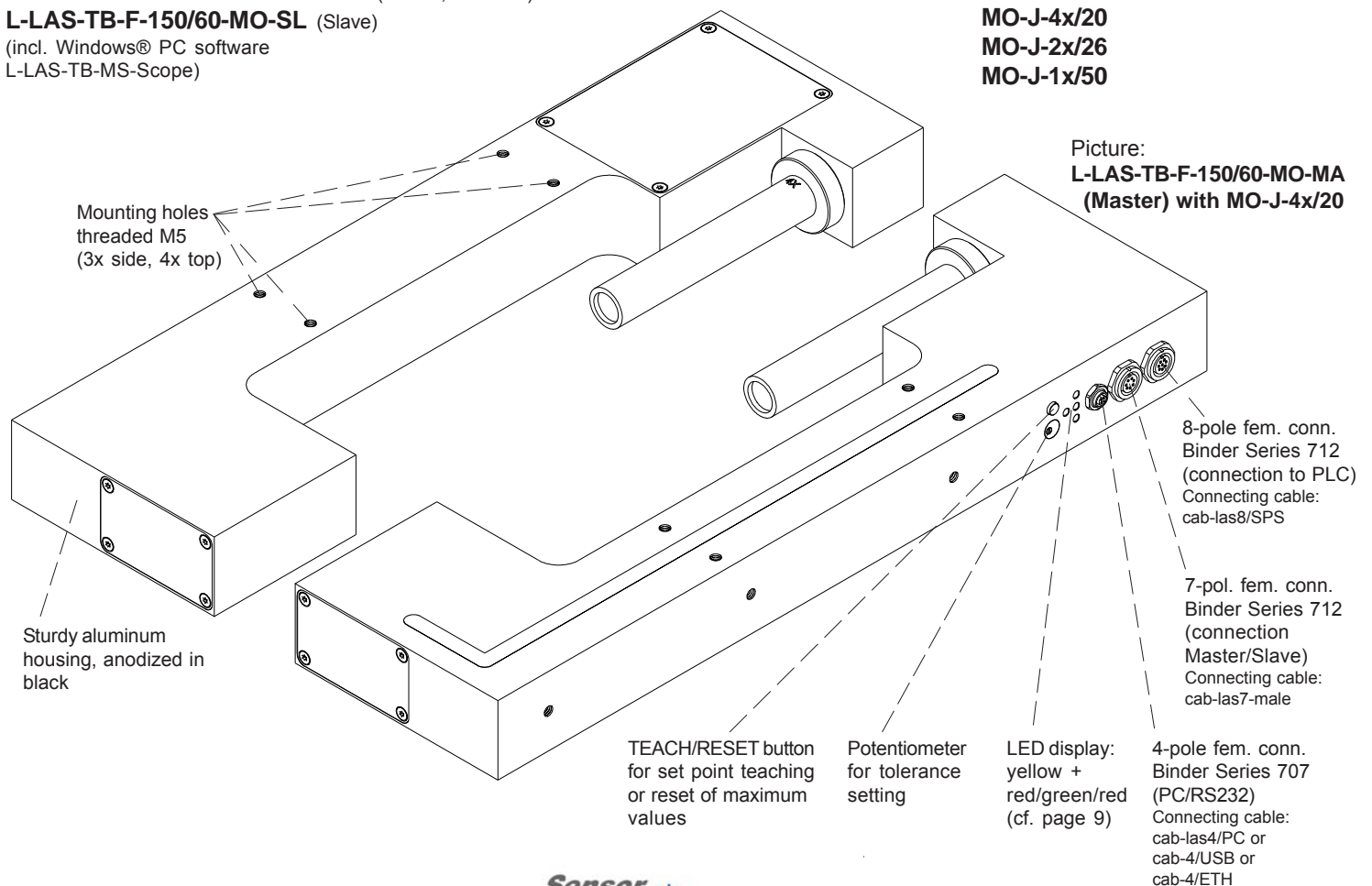
Design

Product name:

- L-LAS-TB-F-150/60-MO-MA** (Master, 0...+10V)
 - L-LAS-TB-F-150/60-MO-4/20-MA** (Master, 4...20mA)
 - L-LAS-TB-F-150/60-MO-SL** (Slave)
- (incl. Windows® PC software
L-LAS-TB-MS-Scope)

Picture:
L-LAS-TB-F-150/60-MO-SL
(Slave) with MO-J-4x/20

- Available macro lenses:**
(please order separately for MA and SL):
- MO-J-8x/9
 - MO-J-6x/13
 - MO-J-4x/20
 - MO-J-2x/26
 - MO-J-1x/50





Technical Data

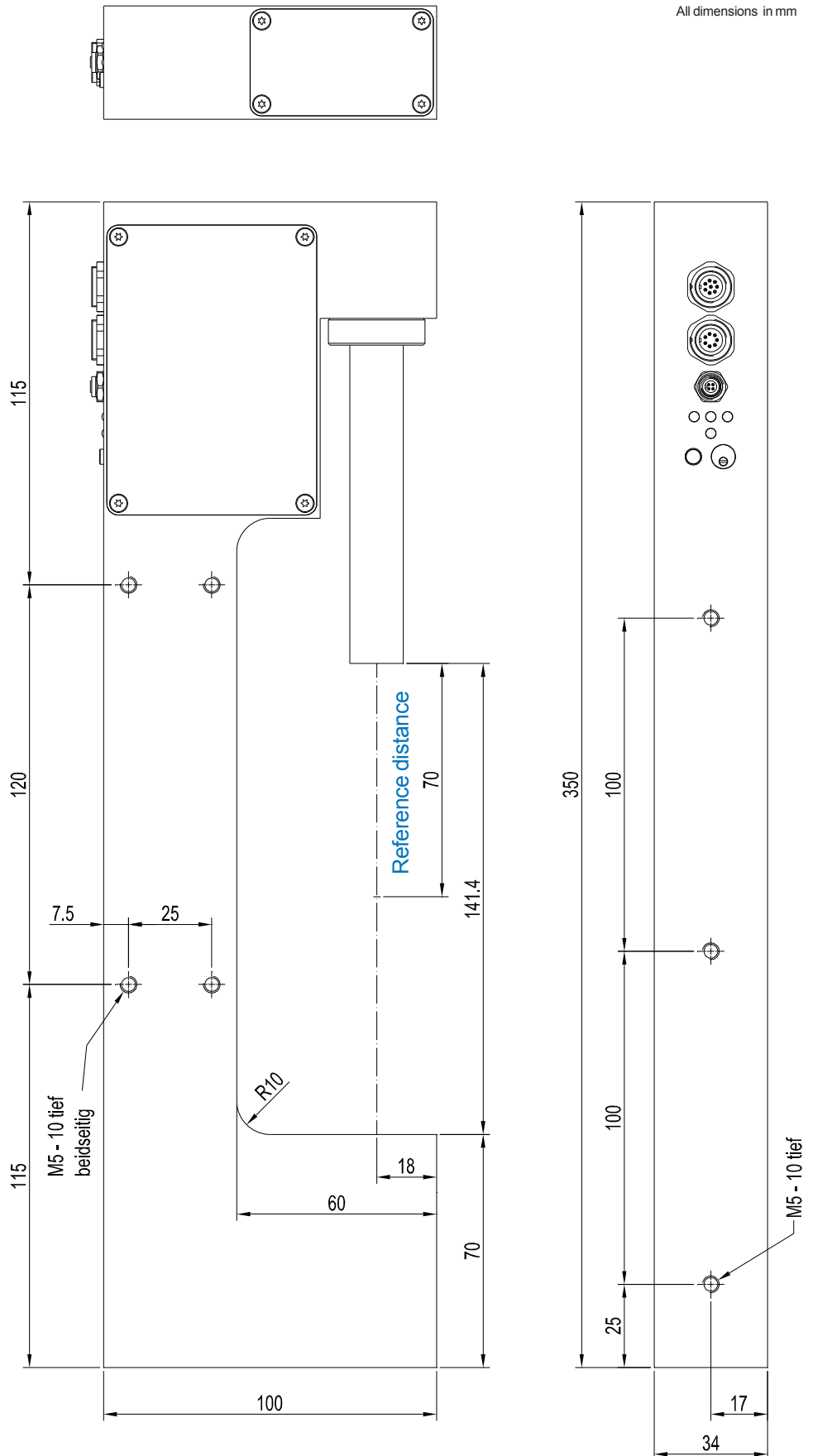
Type	L-LAS-TB-F-150/60-MO-MA L-LAS-TB-F-150/60-MO-SL	L-LAS-TB-F-150/60-MO-4/20-MA L-LAS-TB-F-150/60-MO-SL
Transmitter	Semi conductor laser, 670 nm, DC operation, 0.4 mW max. optical power, laser class 1 acc. to DIN EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.	
Receiver	CCD line detector with 1024 pixels, 8192 subpixels	
Available macro lenses	MO-J-8x/9, MO-J-6x/13, MO-J-4x/20, MO-J-2x/26, MO-J-1x/50	
Reference distance receiver/object depends on the macro lens used	with MO-J-8x/9, MO-J-6x/13, MO-J-4x/20 or MO-J-2x/26: each typ. 70 mm with MO-J-1x/50: typ. 80 mm	
Measuring range depends on the macro lens used	with MO-J-8x/9: MA and SL: each typ. 1 mm (i.e. 2x 1 mm) with MO-J-6x/13: MA and SL: each typ. 1.3 mm (i.e. 2x 1.3 mm) with MO-J-4x/20: MA and SL: each typ. 2 mm (i.e. 2x 2 mm) with MO-J-2x/26: MA and SL: each typ. 4 mm (i.e. 2x 4 mm) with MO-J-1x/50: MA and SL: each typ. 8 mm (i.e. 2x 8 mm)	
Resolution/reproducibility depends on the macro lens used	with MO-J-8x/9: MA and SL: each resolution typ. 0,125 µm, reproducibility typ. ± 0.125 µm with MO-J-6x/13: MA and SL: each resolution typ. 0.165 µm, reproducibility typ. ± 0.165 µm with MO-J-4x/20: MA and SL: each resolution typ. 0.25 µm, reproducibility typ. ± 0.25 µm with MO-J-2x/26: MA and SL: each resolution typ. 0.5 µm, reproducibility typ. ± 0.5 µm with MO-J-1x/50: MA and SL: each resolution typ. 1 µm, reproducibility typ. ± 1 µm	
Linearity	MA and SL: each typ. 0.2% full scale range (FSR)	
Analog output	voltage output: 0 ... +10V	current output: 4 ... 20mA
Digital outputs (OUT0, OUT1, OUT2)	adjustable under Windows®: 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.)	
Digital inputs (IN0, IN1)	IN0: External trigger IN1: Teach/Reset (double function) input voltage +Ub/0V, with protective circuit	
Voltage supply	+24VDC (± 10%)	
Sensitivity	by means of potentiometer TOL or under Windows® via PC	
Laser power correction	adjustable under Windows® via PC	
Current consumption	typ. 300 mA	
Enclosure rating	IP54	
Operating temperature range	-10°C ... +50°C	
Storage temperature range	-20°C ... +85°C	
Housing material	Aluminum, anodized in black	
Housing dimensions	LxWxH approx. 350 mm x 100 mm x 34 mm (without flange connectors)	
Type of connector	8-pole fem. connector type Binder 712 (PLC/Power), 4-pole fem. connector type Binder 707 (PC/RS232)	
Teach/Reset button	for norm 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	in analog/digital operation: max. 200 Hz	
Max. switching current	100 mA, short-circuit proof	
Interface	RS232, parameterisable under Windows®	
Connecting cable	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	

Dimensions

Dimensions
L-LAS-TB-F-150/60-MO-MA or
L-LAS-TB-F-150/60-MO-SL

incl. macro lens
MO-J-8x/9 or
MO-J-6x/13 or
MO-J-4x/20

All dimensions in mm

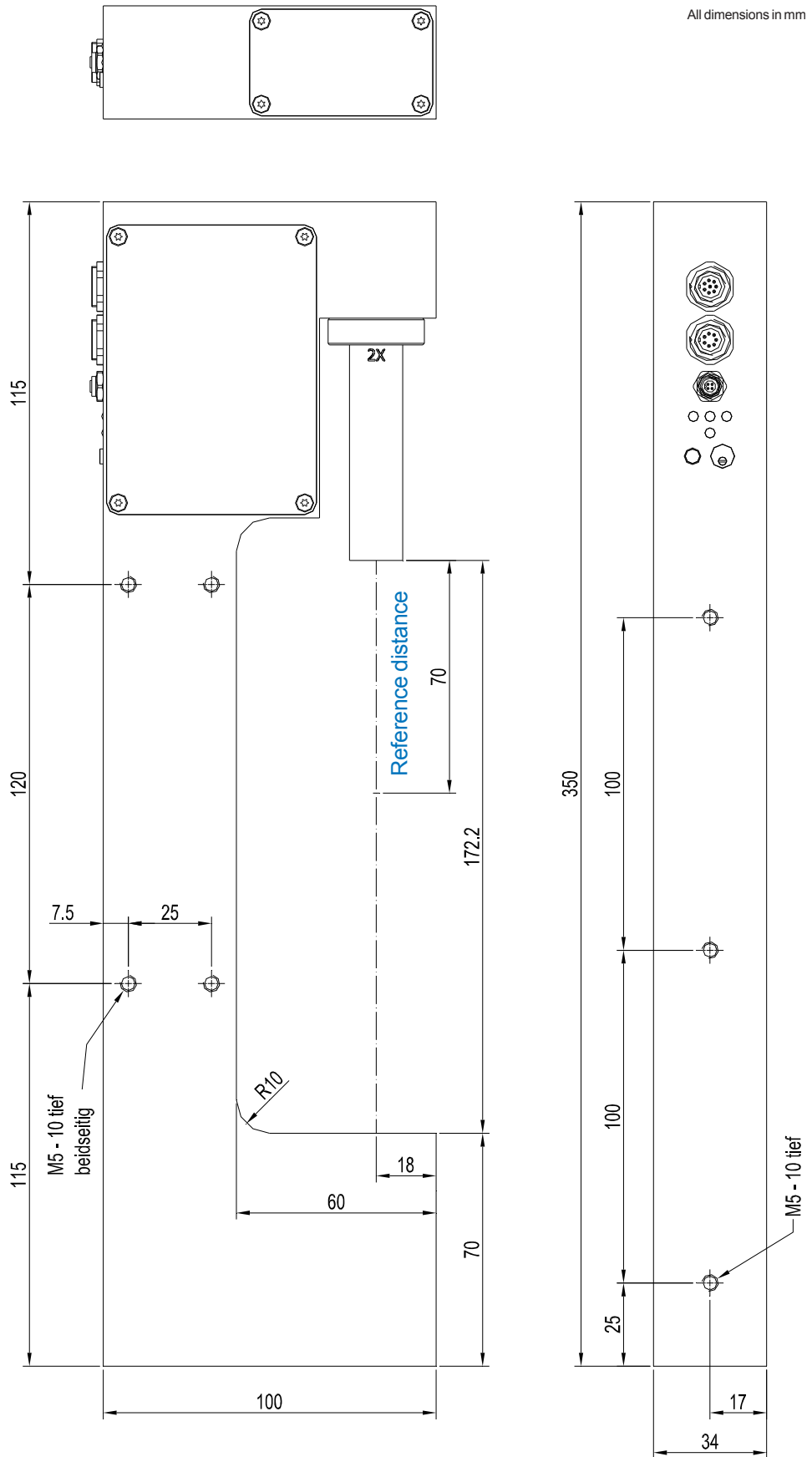


Dimensions

Dimensions
L-LAS-TB-F-150/60-MO-MA or
L-LAS-TB-F-150/60-MO-SL

incl. macro lens
MO-J-2x/26

All dimensions in mm

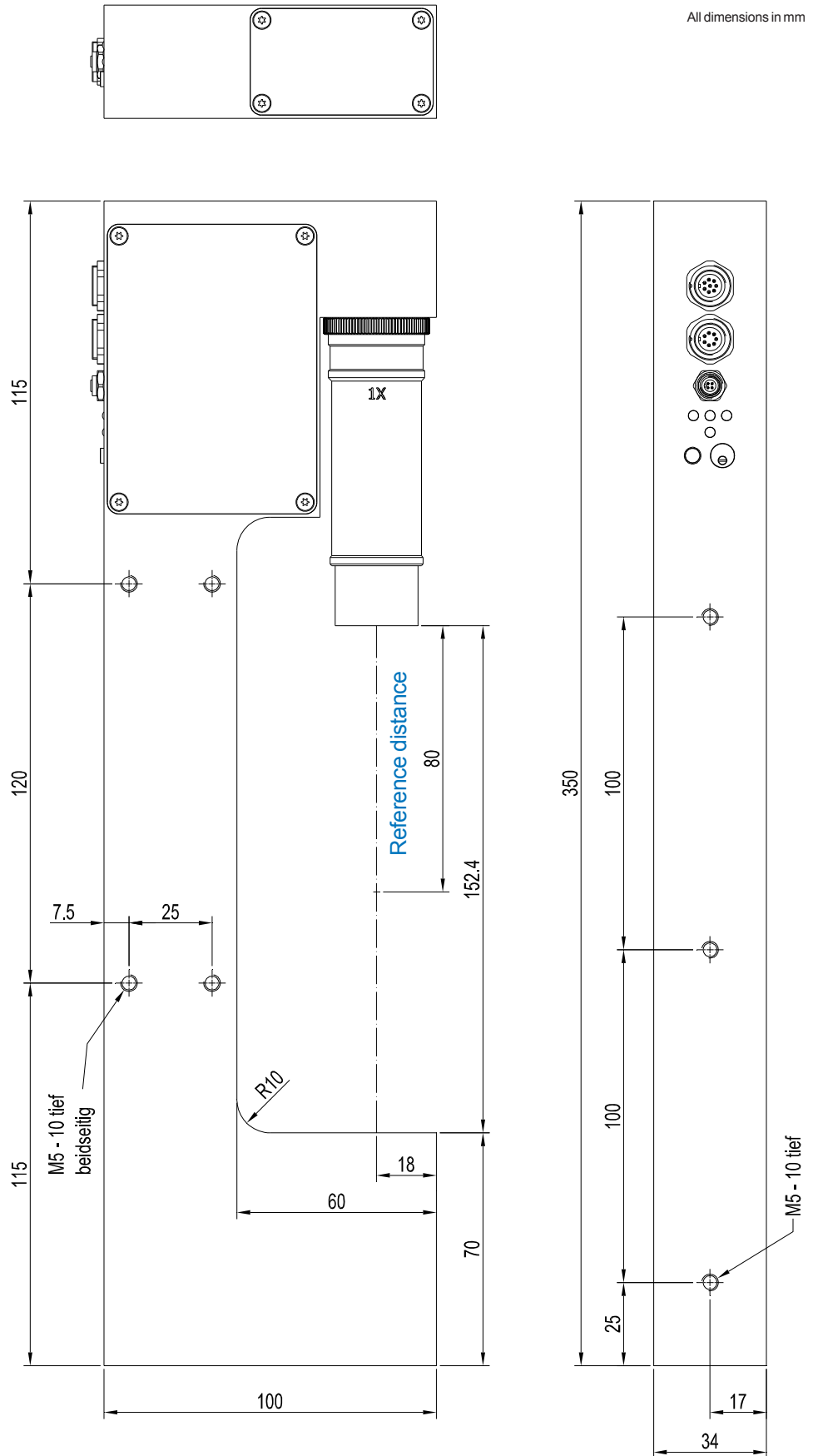


Dimensions

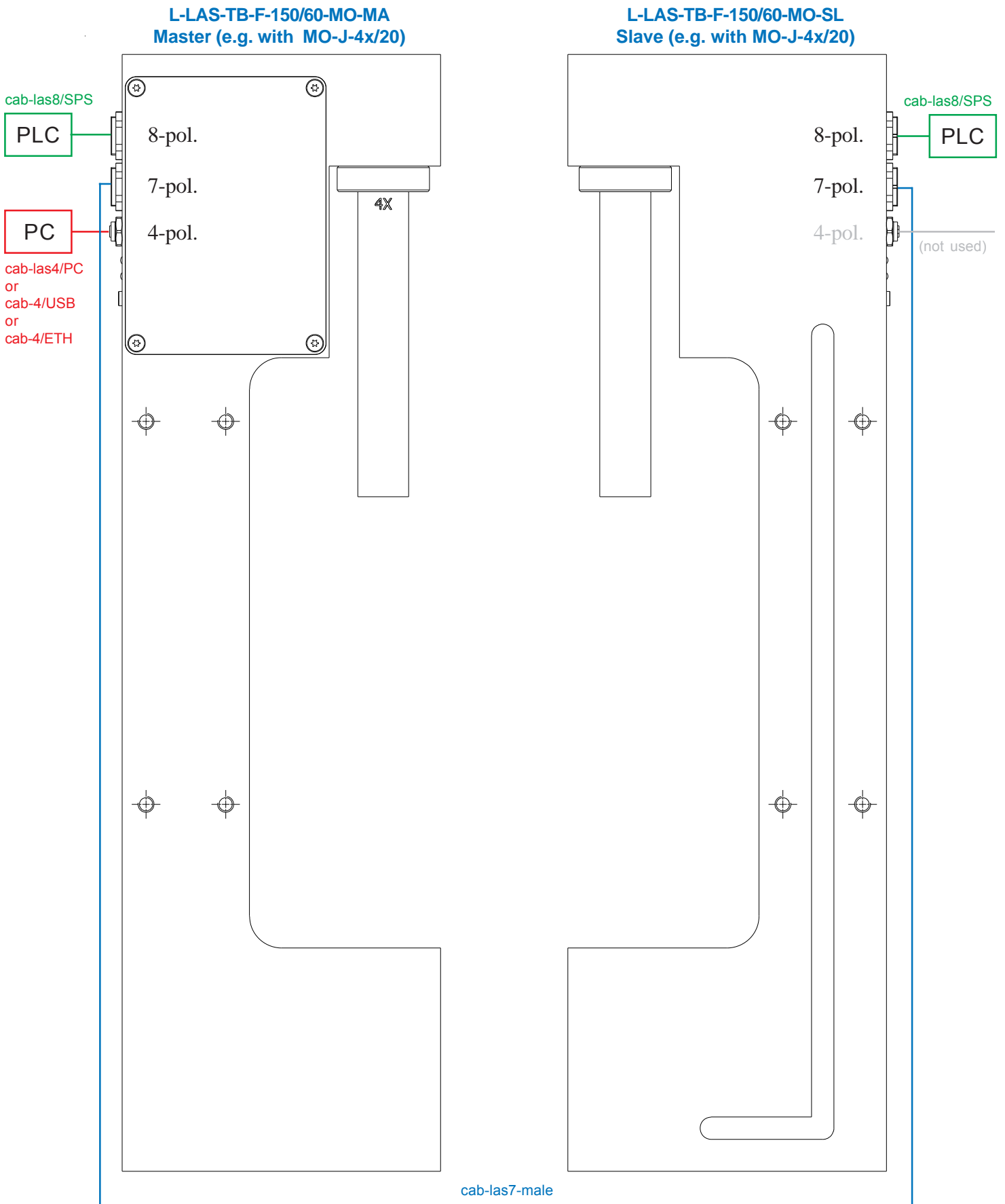
Dimensions
L-LAS-TB-F-150/60-MO-MA or
L-LAS-TB-F-150/60-MO-SL

incl. macro lens
MO-J-1x/50

All dimensions in mm



Connection Scheme



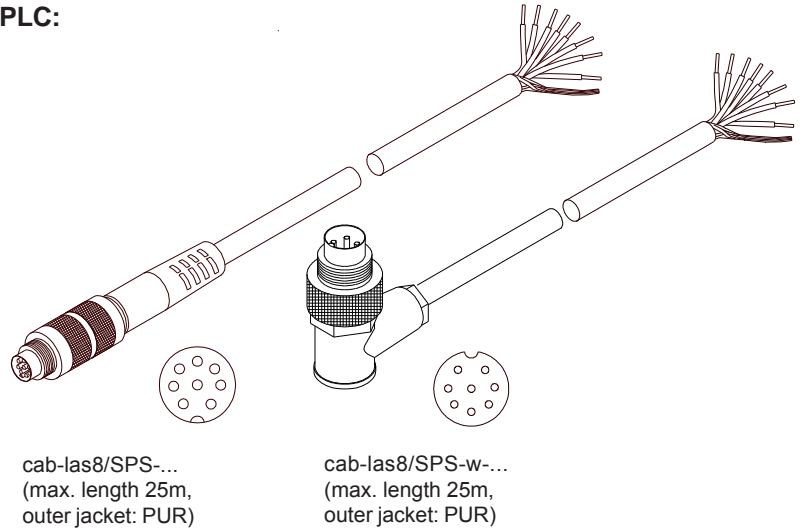


Connector Assignment

**Connection L-LAS-TB-F-150/60-MO-MA (Master) 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 (0 ... +10V) in case of version -4/20: ANA (4 ... 20mA)

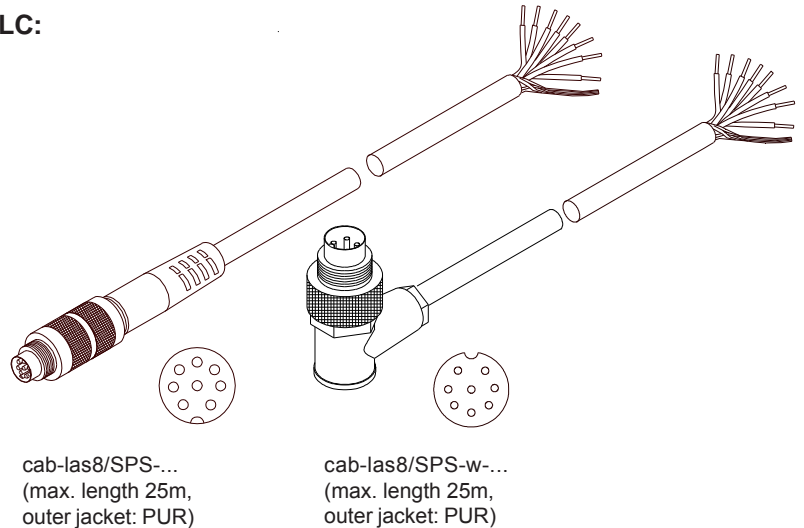
Connecting cable:
cab-las8/SPS-(length) or
cab-las8/SPS-w-(length) (angle type 90°)
(standard length 2m)



**Connection L-LAS-TB-F-150/60-MO-SL (Slave) to PLC:
8-pole fem. connector Binder Series 712**

Pin:	Color:	Assignment:
1	white	GND (0V)
2	brown	+24VDC (± 10%)
3	green	(not used)
4	yellow	(not used)
5	grey	(not used)
6	pink	(not used)
7	blue	(not used)
8	red	(not used)

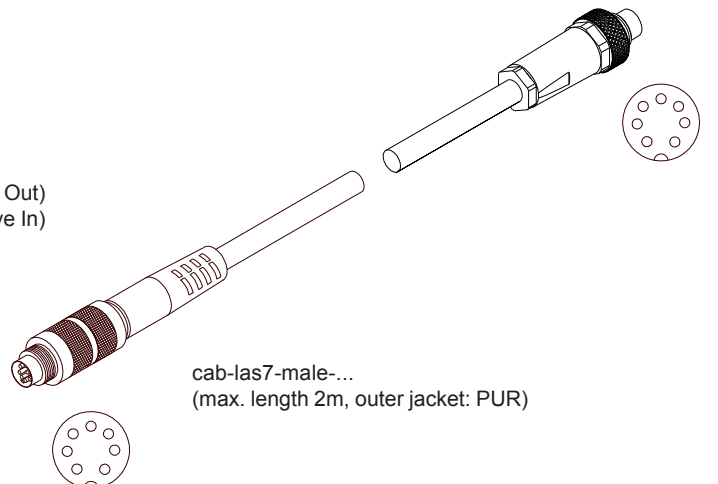
Connecting cable:
cab-las8/SPS-(length) or
cab-las8/SPS-w-(length) (angle type 90°)
(standard length 2m)



**Connection L-LAS-TB-F-150/60-MO-MA (Master) with L-LAS-TB-F-150/60-MO-SL (Slave)
(SPI data transfer):
2x 7-pol. fem. connector Binder Series 712**

Pin:	Assignment MASTER:	Pin:	Assignment SLAVE:
1	GND (0V)	1	GND (0V)
2	+3.3VDC (OUT)	2	+3.3VDC (IN)
3	SS\ (Slave Select)	3	SS\ (Slave Select)
4	MISO (Master In Slave Out)	4	MISO (Master In Slave Out)
5	MOSI (Master Out Slave In)	5	MOSI (Master Out Slave In)
6	CLK	6	CLK
7	+3.3VDC (IN)	7	+3.3VDC (OUT)

Connecting cable:
cab-las7-male-(length)
(standard length: 2m)





Anschlussbelegung

**Connection L-LAS-TB-F-150/60-MO-MA (Master) 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:

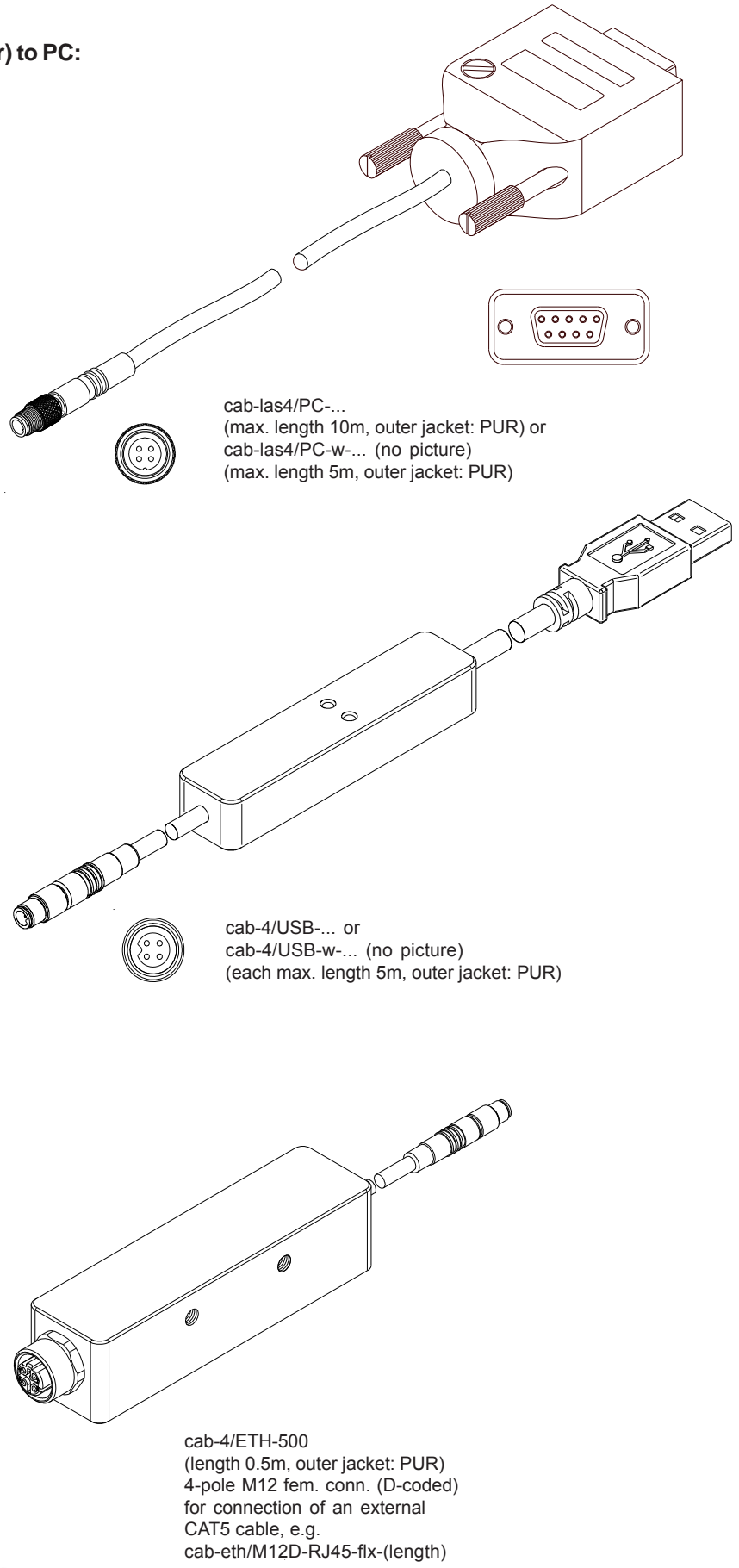
Connecting cable (incl. driver software):
 cab-4/USB-(length)
 cab-4/USB-w-(length) (angle type 90°)
 (standard length 2m)

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)



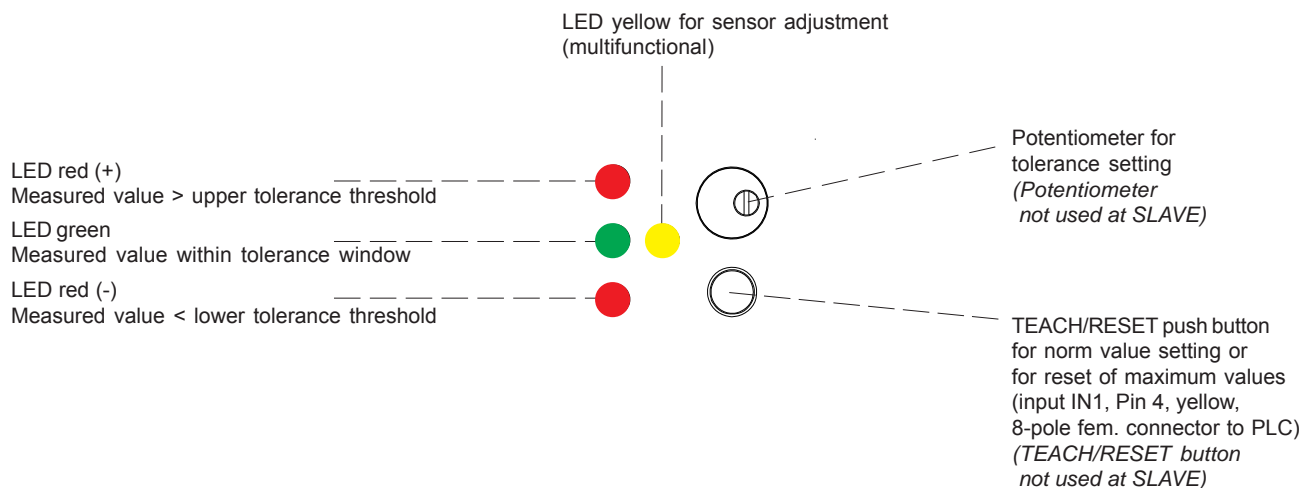
cab-las4/PC-...
 (max. length 10m, outer jacket: PUR) or
 cab-las4/PC-w-... (no picture)
 (max. length 5m, outer jacket: PUR)

cab-4/USB-... or
 cab-4/USB-w-... (no picture)
 (each 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)



LED Display



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“.



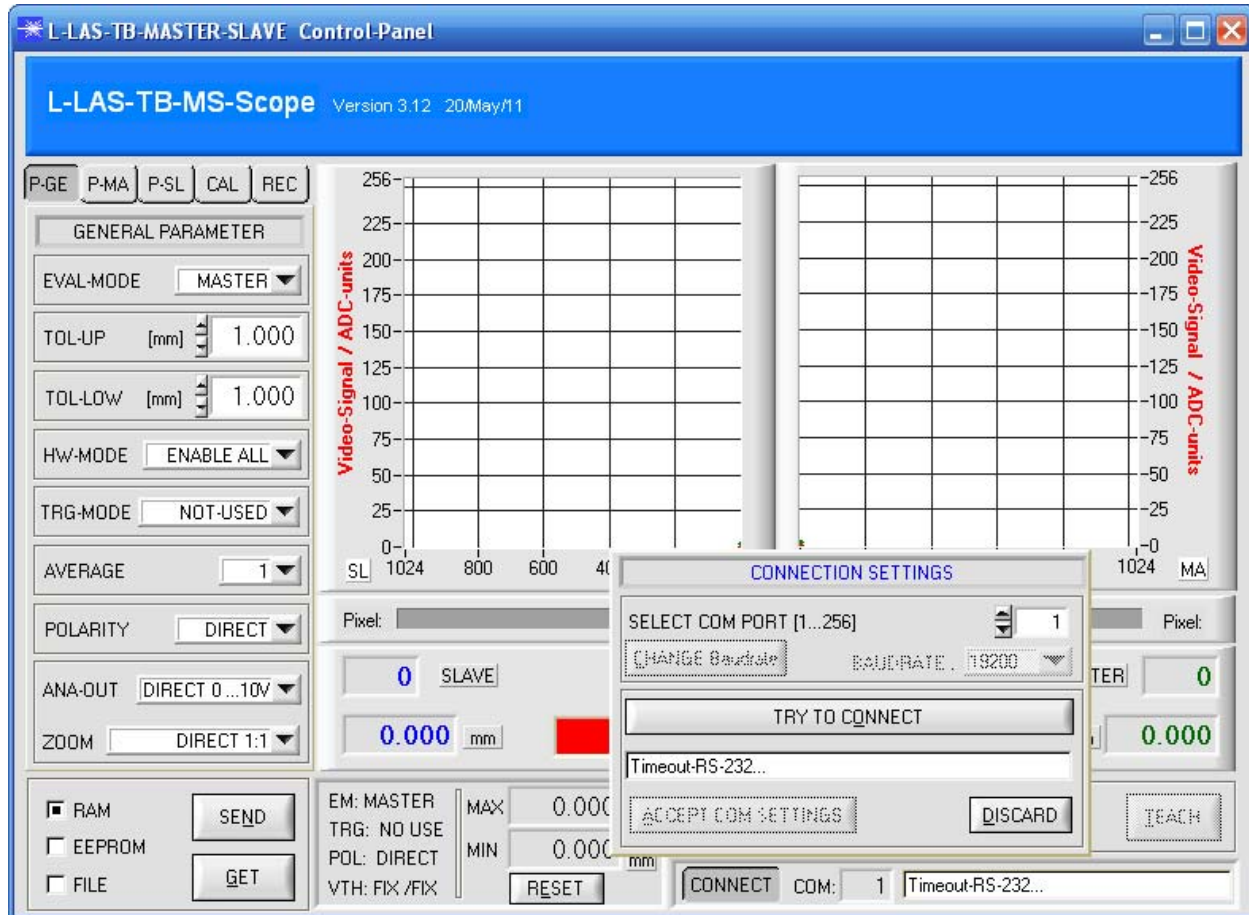


Parameterization

Windows® software L-LAS-TB-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. When parameterisation is finished, the PC can be disconnected again.

Windows® user interface:



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

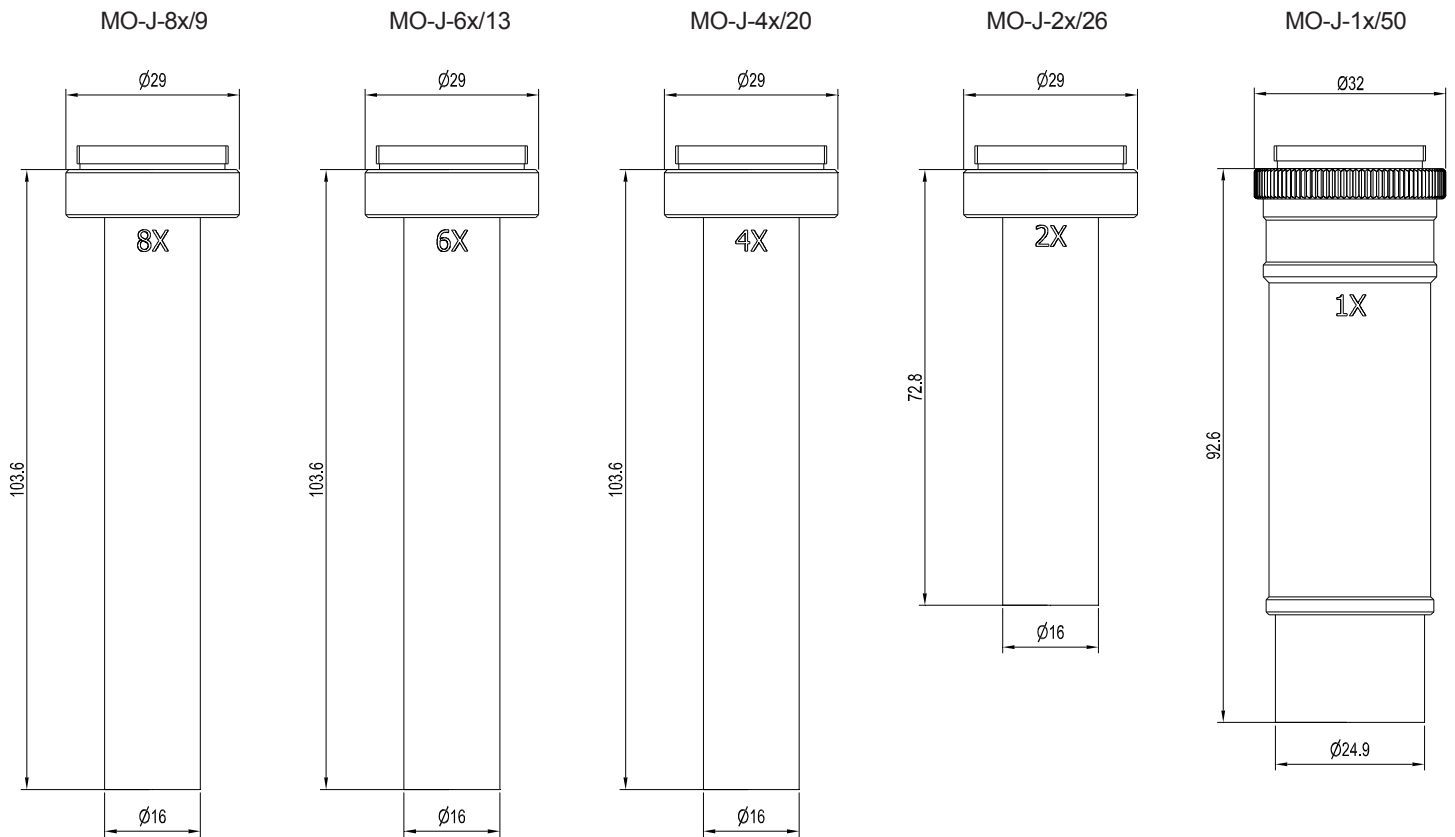
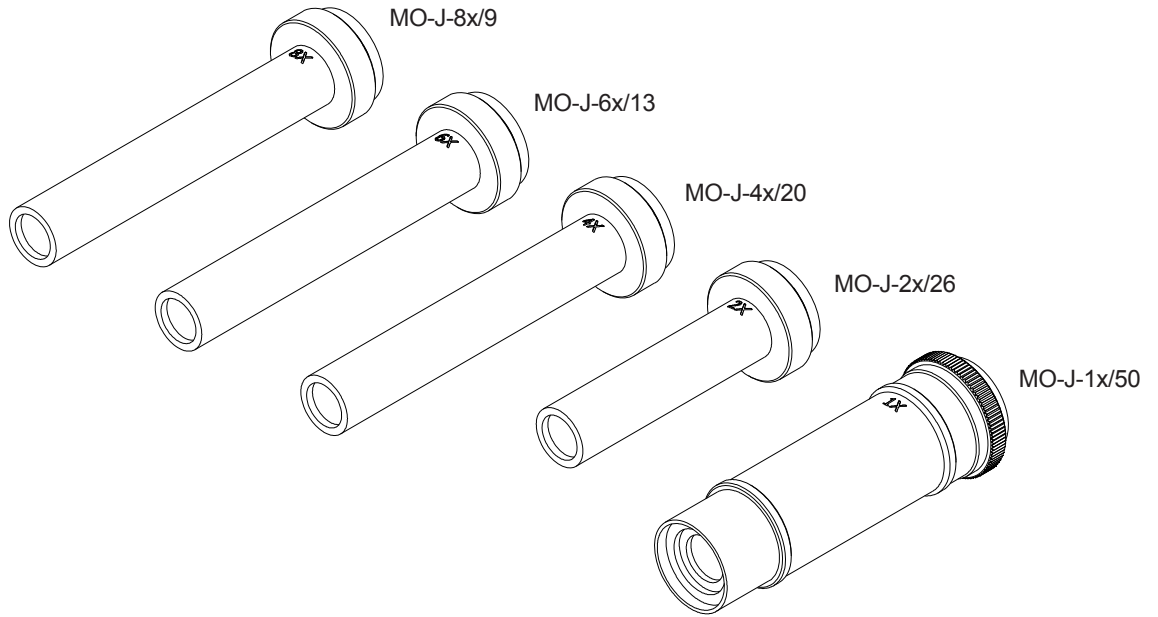
- Visualization of the measuring data in numerical and graphic display fields
- Setting of laser power for the respective laser transmitter
- Setting of polarity of digital outputs OUT0, OUT1, and OUT2
- Selection of a suitable evaluation mode
- Presetting of norm value and tolerance band width
- Storage of parameters in the RAM, EEPROM memory at the electronic control unit or in a configuration file at the PC hard disk.



Macro Lenses

Macro lenses for L-LAS-TB-F-150/60-MO-MA and L-LAS-TB-F-150/60-MO-SL line sensors:

- MO-J-8x/9
- MO-J-6x/13
- MO-J-4x/20
- MO-J-2x/26
- MO-J-1x/50

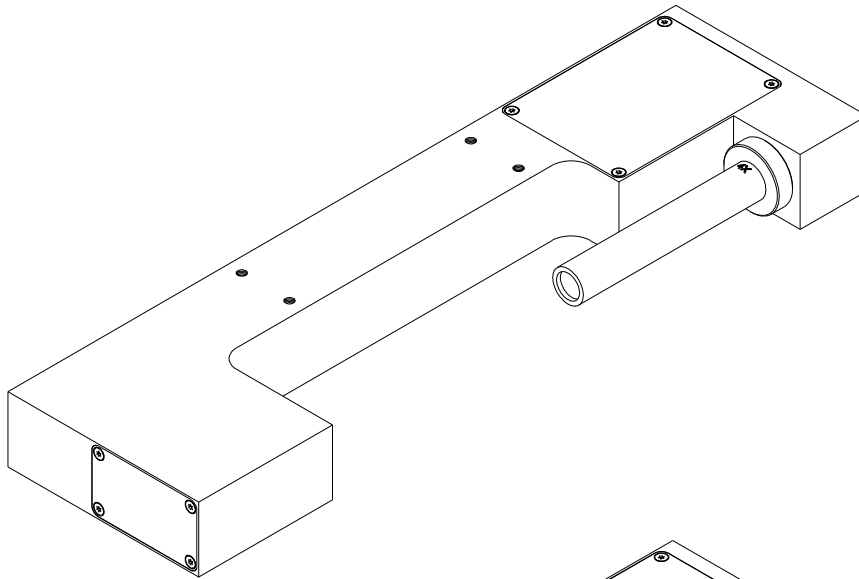


Alle Abmessungen in mm



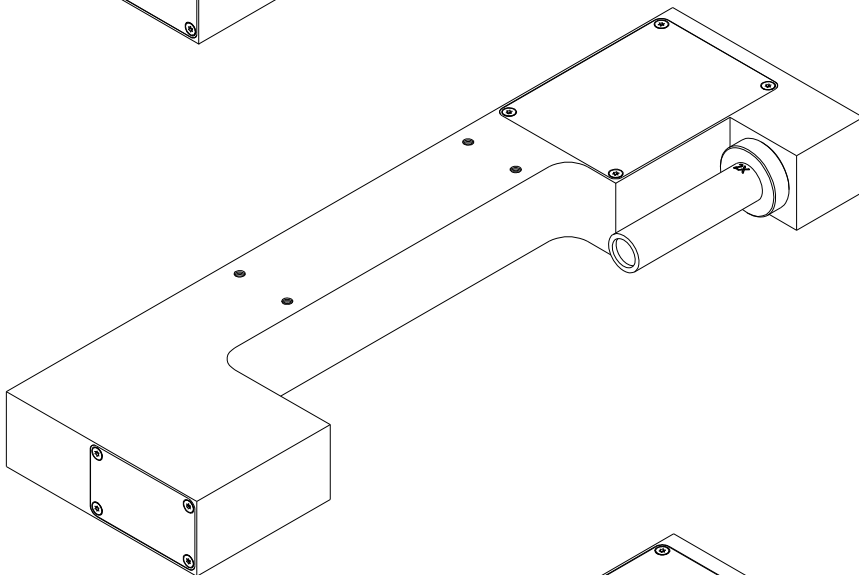
Product Overview

Overview: L-LAS-TB-F-150/60-MO-MA and L-LAS-TB-F-150/60-MO-SL with different macro lenses



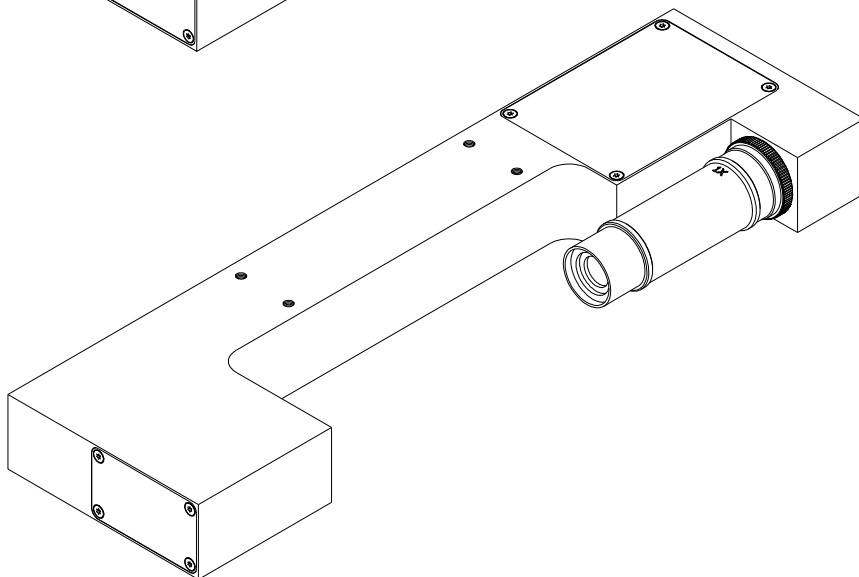
**L-LAS-TB-F-150/60-MO-MA respectively
L-LAS-TB-F-150/60-MO-SL**

**with MO-J-8x/9 or
with MO-J-6x/13 or
with MO-J-4x/20**



**L-LAS-TB-F-150/60-MO-MA respectively
L-LAS-TB-F-150/60-MO-SL**

with MO-J-2x/26



**L-LAS-TB-F-150/60-MO-MA respectively
L-LAS-TB-F-150/60-MO-SL**

with MO-J-1x/50