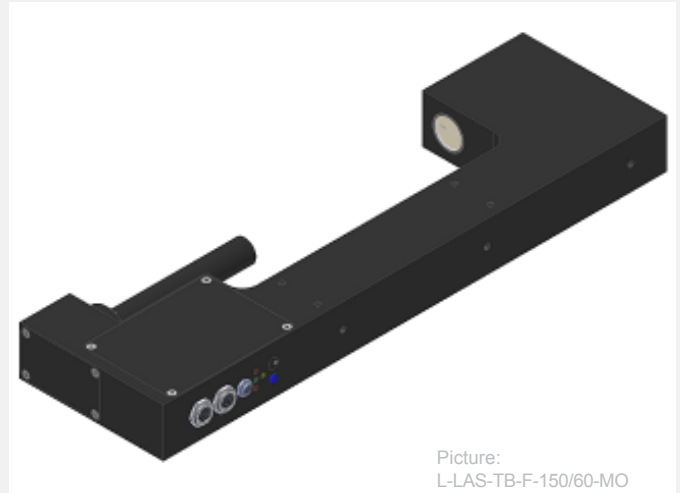


# L-LAS Series

## ▶ L-LAS-TB-F-150/60-MO + macro lens L-LAS-TB-F-150/60-MO-4/20 + macro lens

- Line laser <math><0.4\text{ mW}</math>, wave length 670 nm, laser class 1
- Visible laser line (red light 670 nm), typ. 17 mm x 2 mm
- Different macro lenses are available
- Reference distance receiver/object: typ. 70 mm or 80 mm
- Meas. range approx. 1 mm ... 8 mm (depends on macro lens)
- Resolution typ. 0.125  $\mu\text{m}$  ... 1.0  $\mu\text{m}$  (depends 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  
with macro lens MO-J-4x/20



## Design

### Product name:

**L-LAS-TB-F-150/60-MO**  
**L-LAS-TB-F-150/60-MO-4/20**

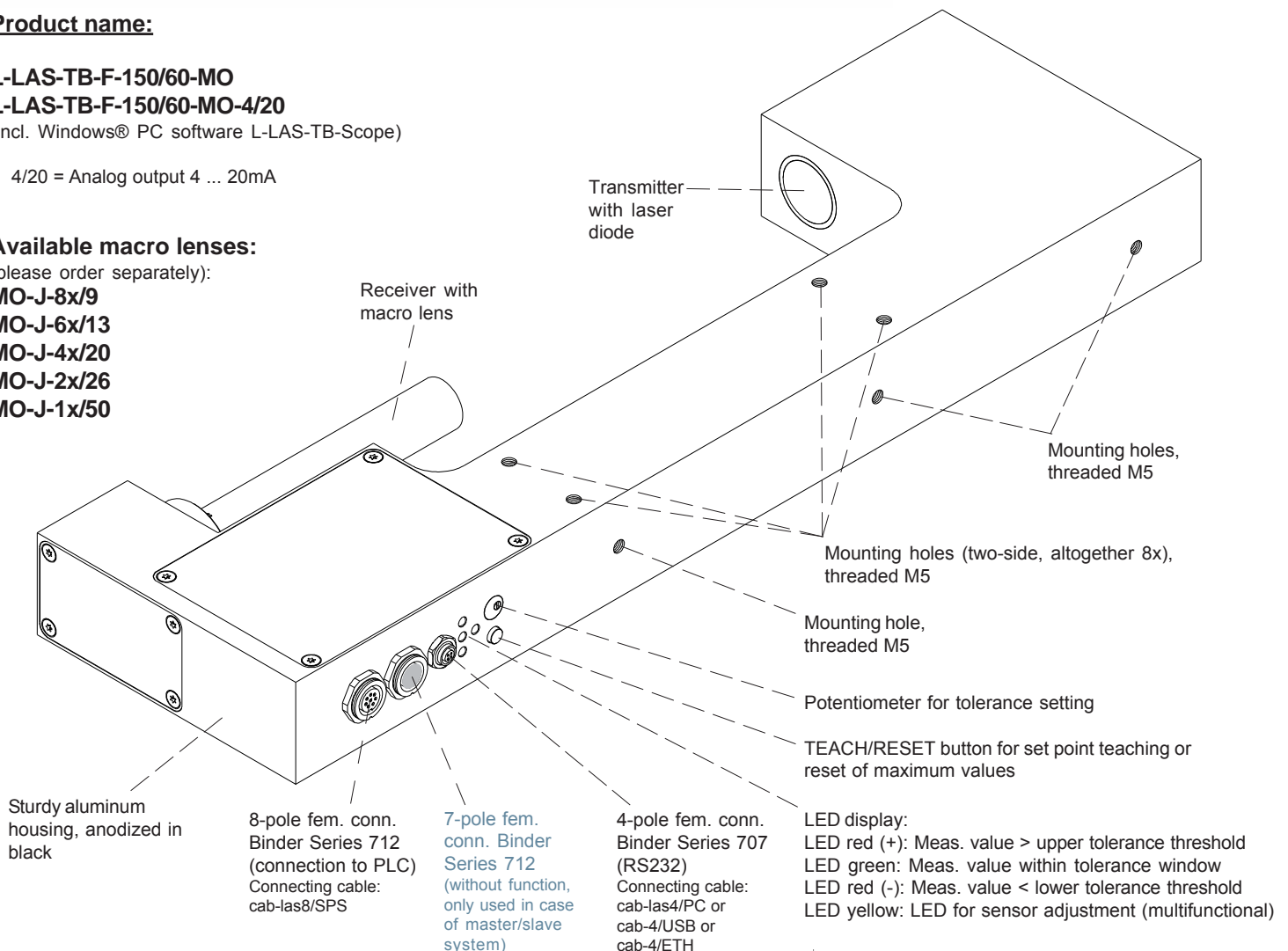
(incl. Windows® PC software L-LAS-TB-Scope)

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

### Available macro lenses:

(please order separately):

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





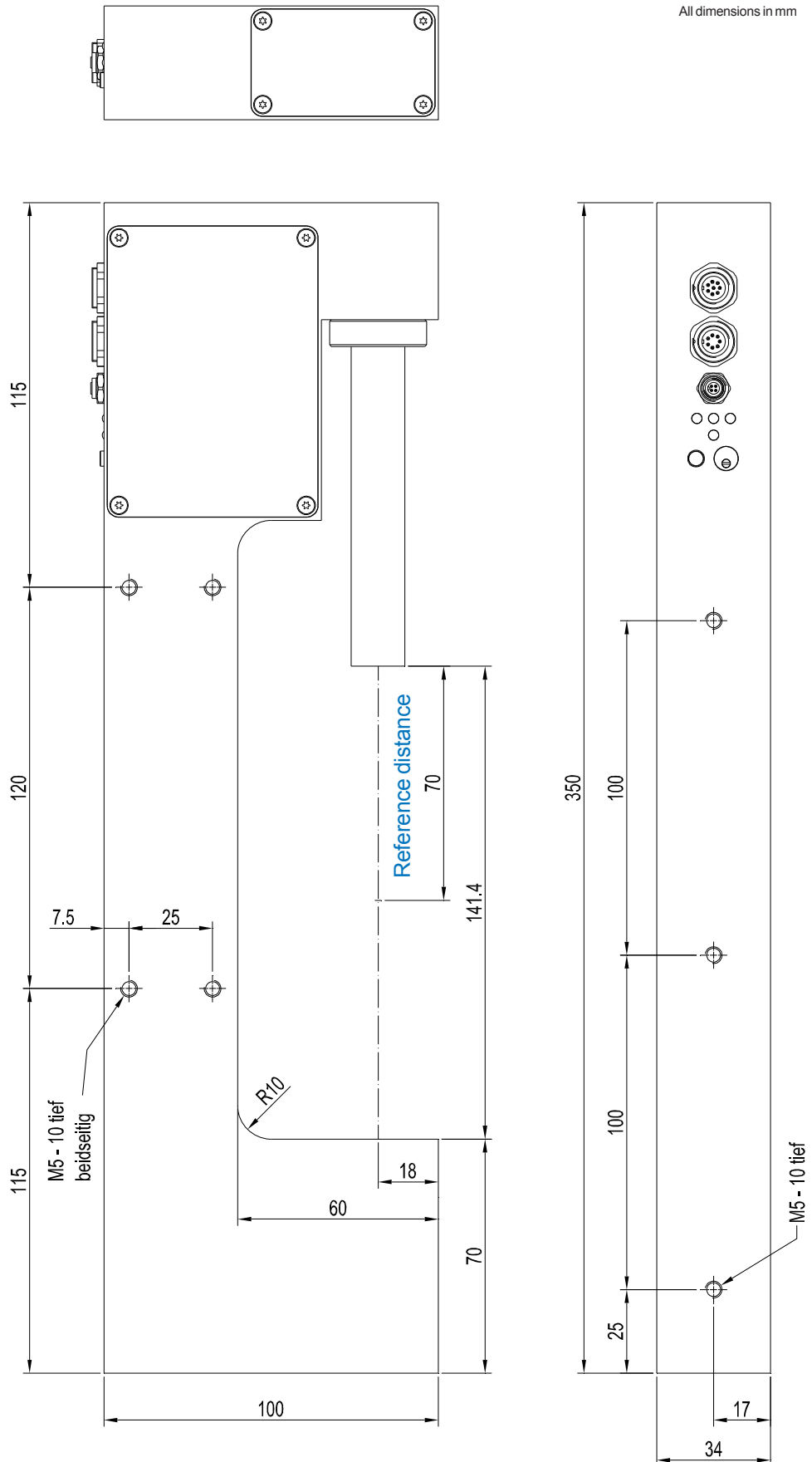
**Technical Data**

Type	L-LAS-TB-F-150/60-MO	L-LAS-TB-F-150/60-MO-4/20
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: typ. 1 mm with MO-J-6x/13: typ. 1.3 mm with MO-J-4x/20: typ. 2 mm with MO-J-2x/26: typ. 4 mm with MO-J-1x/50: typ. 8 mm	
Resolution/reproducibility depends on the macro lens used	with MO-J-8x/9: resolution typ. 0,125 µm, reproducibility typ. ± 0,125 µm with MO-J-6x/13: resolution typ. 0,165 µm, reproducibility typ. ± 0,165 µm with MO-J-4x/20: resolution typ. 0,25 µm, reproducibility typ. ± 0,25 µm with MO-J-2x/26: resolution typ. 0,5 µm, reproducibility typ. ± 0,5 µm with MO-J-1x/50: resolution typ. 1 µm, reproducibility typ. ± 1 µm	
Linearity	typ. 0.2% FSR (full scale range)	
Analog output	voltage output: 0 ... +10V	current output: 4 ... 20mA
Digital outputs (OUT0, OUT1, OUT2)	adjustable under Windows®: pnp bright-switching (pnp n.c.)/nnp dark-switching (nnp n.o.) or pnp dark-switching (pnp n.o.)/nnp bright-switching (nnp 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 setting	adjustable under Windows® via PC	
Laser power correction	adjustable under Windows® via PC	
Current consumption	typ. 200 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 button	Teach button on the housing for norm value teaching	
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: LED for sensor adjustment (multifunctional)	
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  
 incl. macro lens  
 MO-J-8x/9 or  
 MO-J-6x/13 or  
 MO-J-4x/20

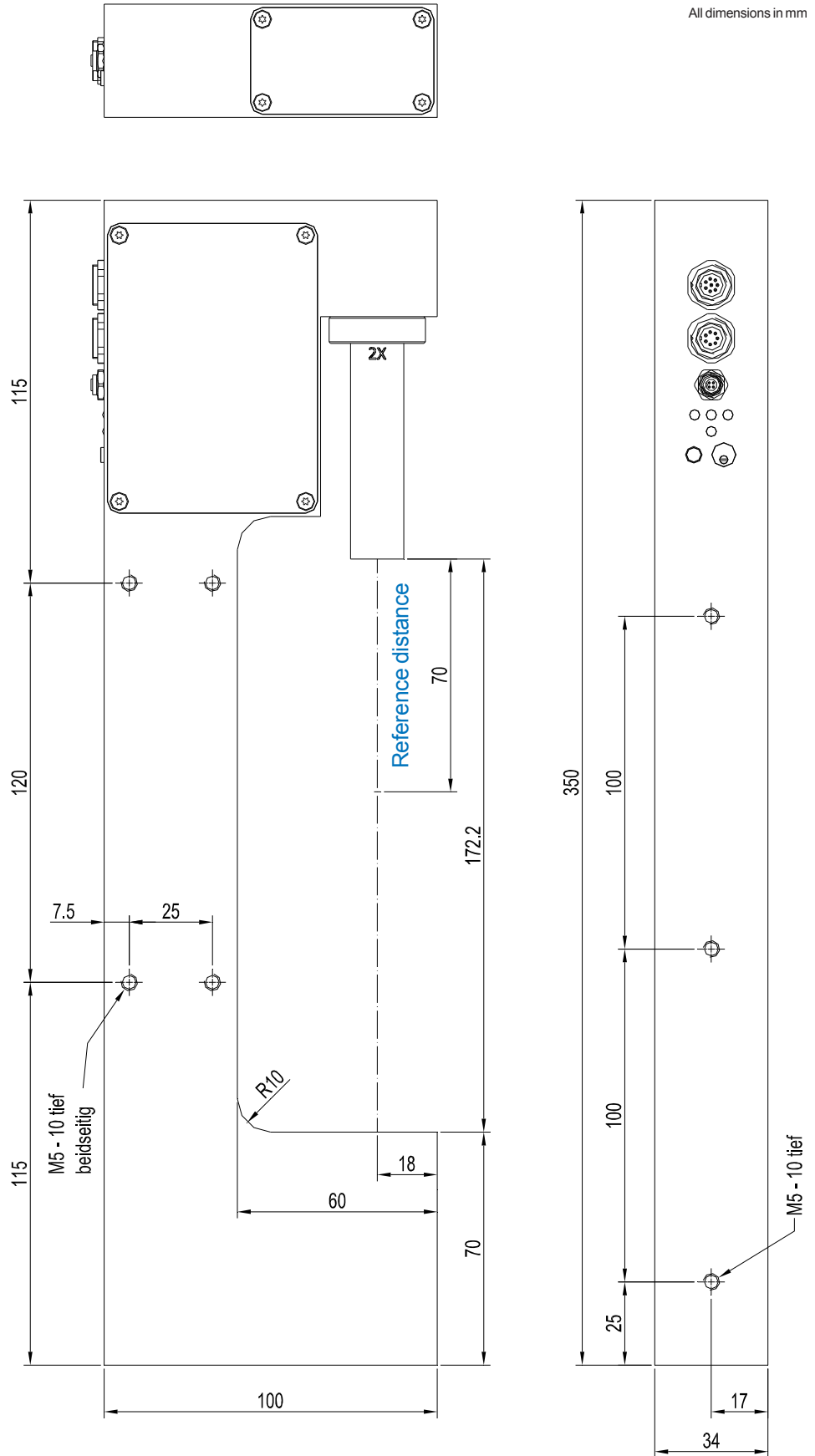
All dimensions in mm



Dimensions

Dimensions  
L-LAS-TB-F-150/60-MO  
incl. macro lens  
MO-J-2x/26

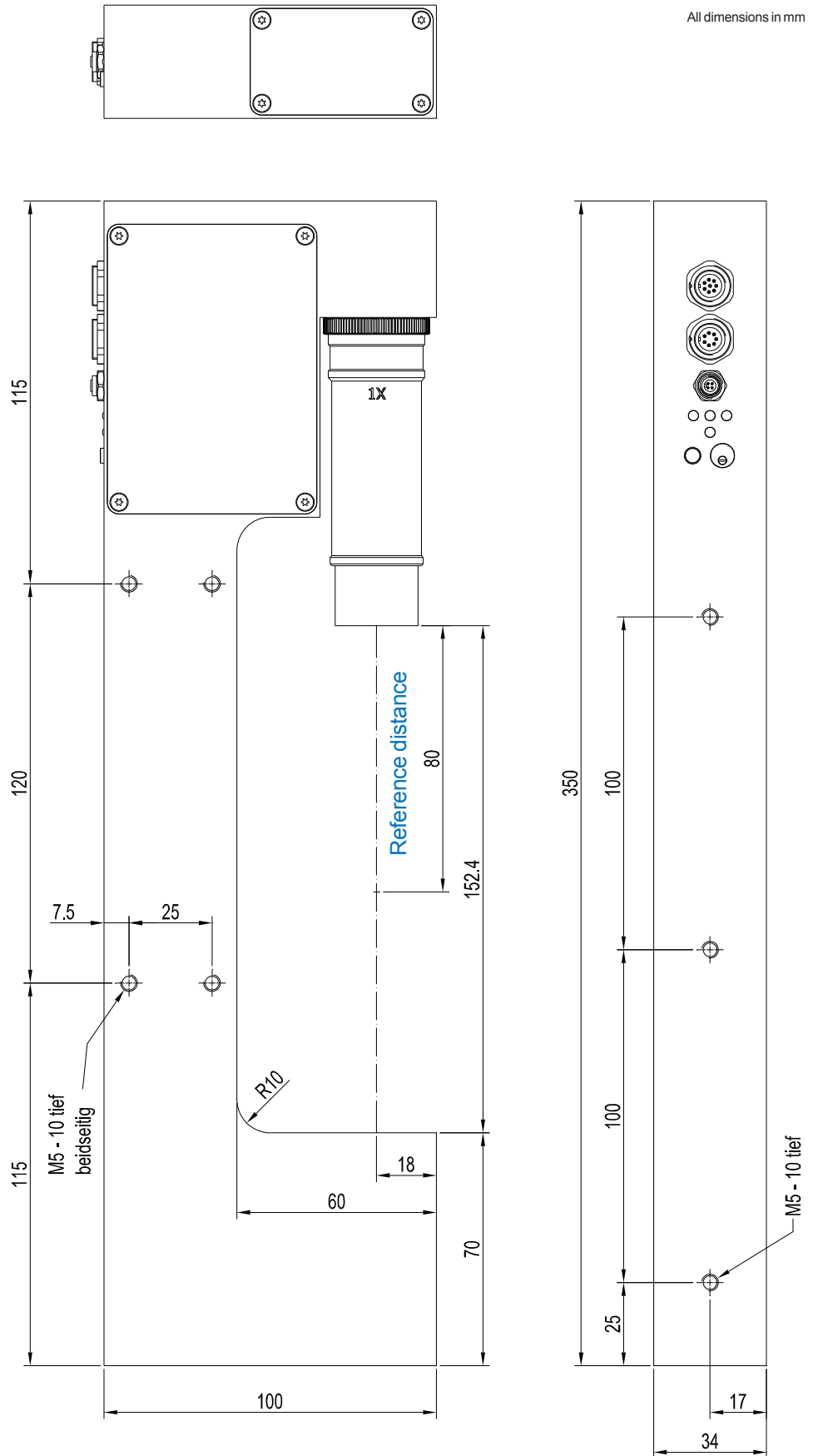
All dimensions in mm



Dimensions

Dimensions  
L-LAS-TB-F-150/60-MO  
incl. macro lens  
MO-J-1x/50

All dimensions in mm





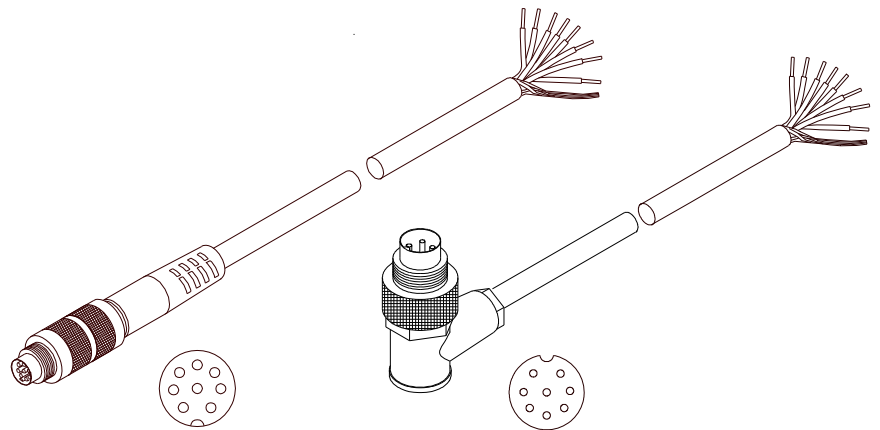
**Connector Assignment**

**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 (0 ... +10V)
<b>in case of version -4/20:</b>		
<b>ANA (4 ... 20mA)</b>		



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

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

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

**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)

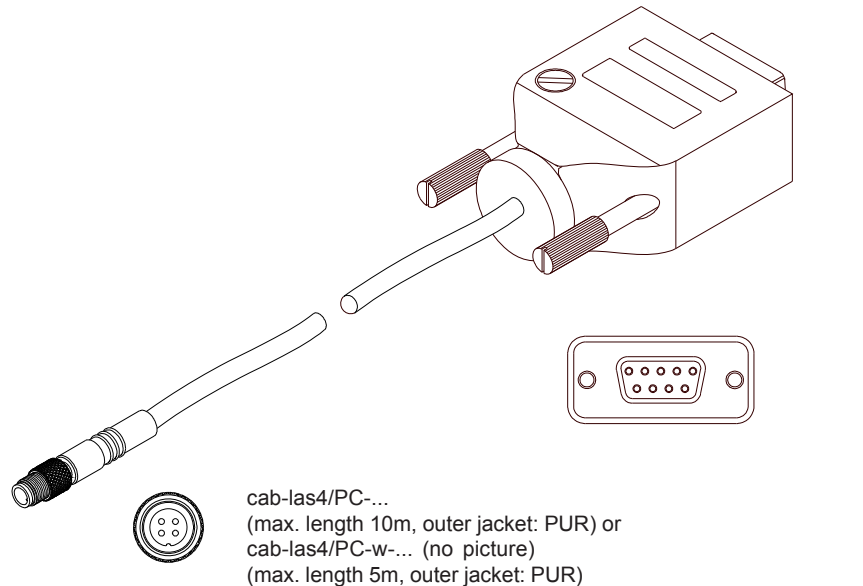
**alternative:**

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

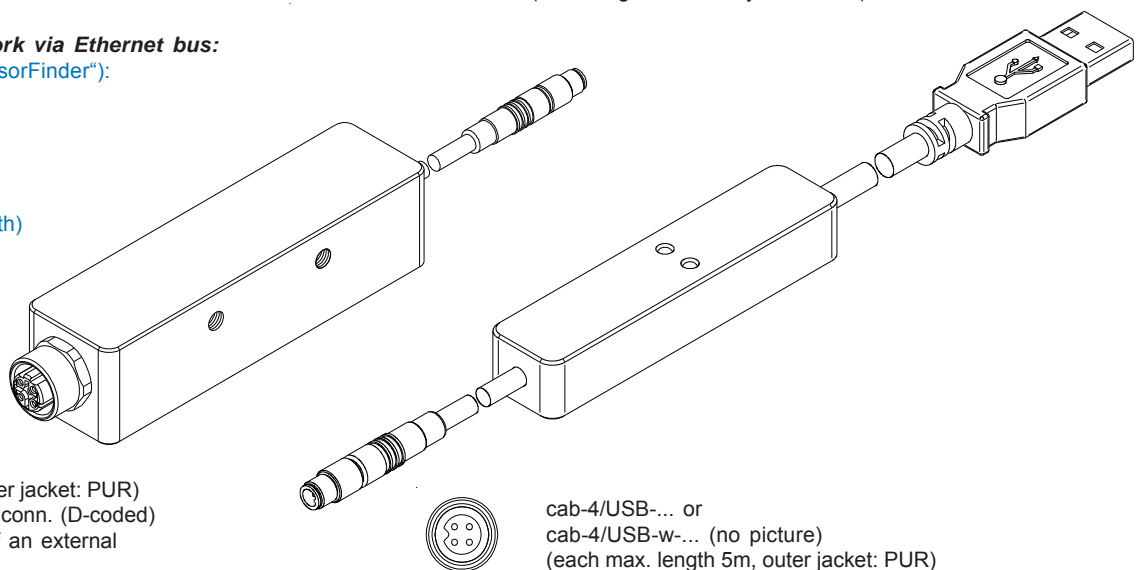
Adapter (incl. software „SensorFinder“):  
cab-4/ETH-500  
(standard length 0.5m)

**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)

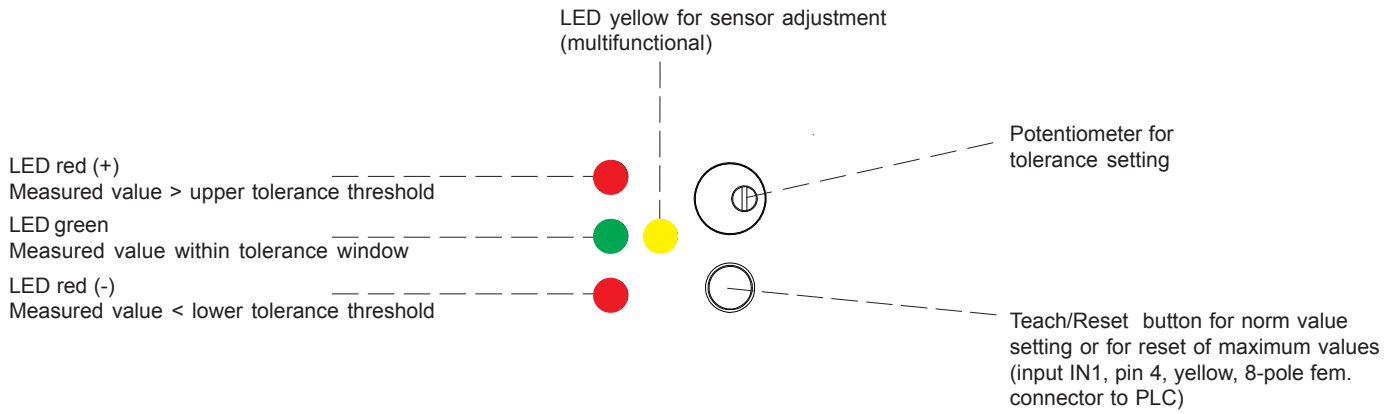


cab-4/ETH-500  
(length 0.5m, outer jacket: PUR)  
4-pole M12 fem. conn. (D-coded)  
for connection of an external  
CAT5 cable, e.g.  
cab-eth/M12D-RJ45-flx-(length)

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



**LED Display**



**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“.







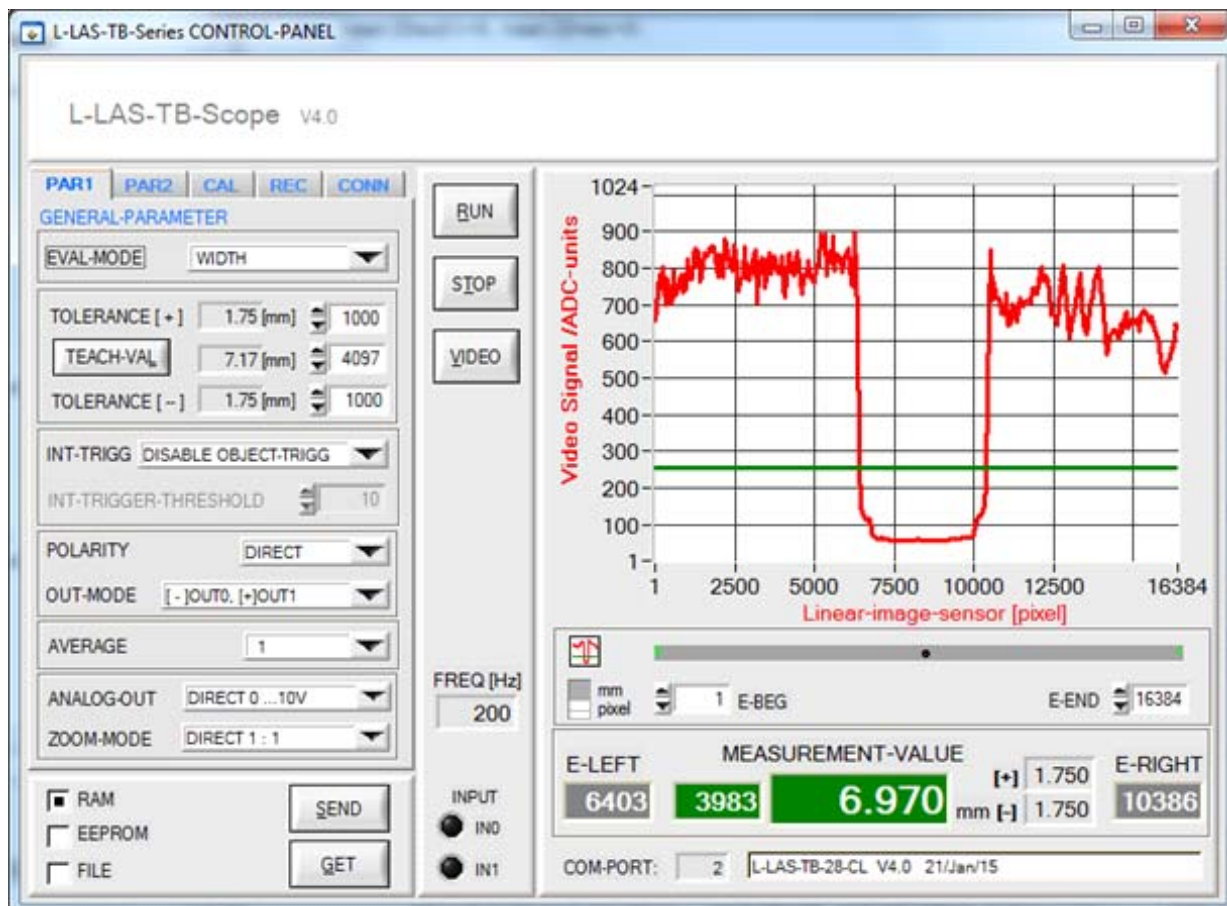
## Parameterization

### 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 (or with the USB interface cable cab-4/USB or the Ethernet adapter cable 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

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.

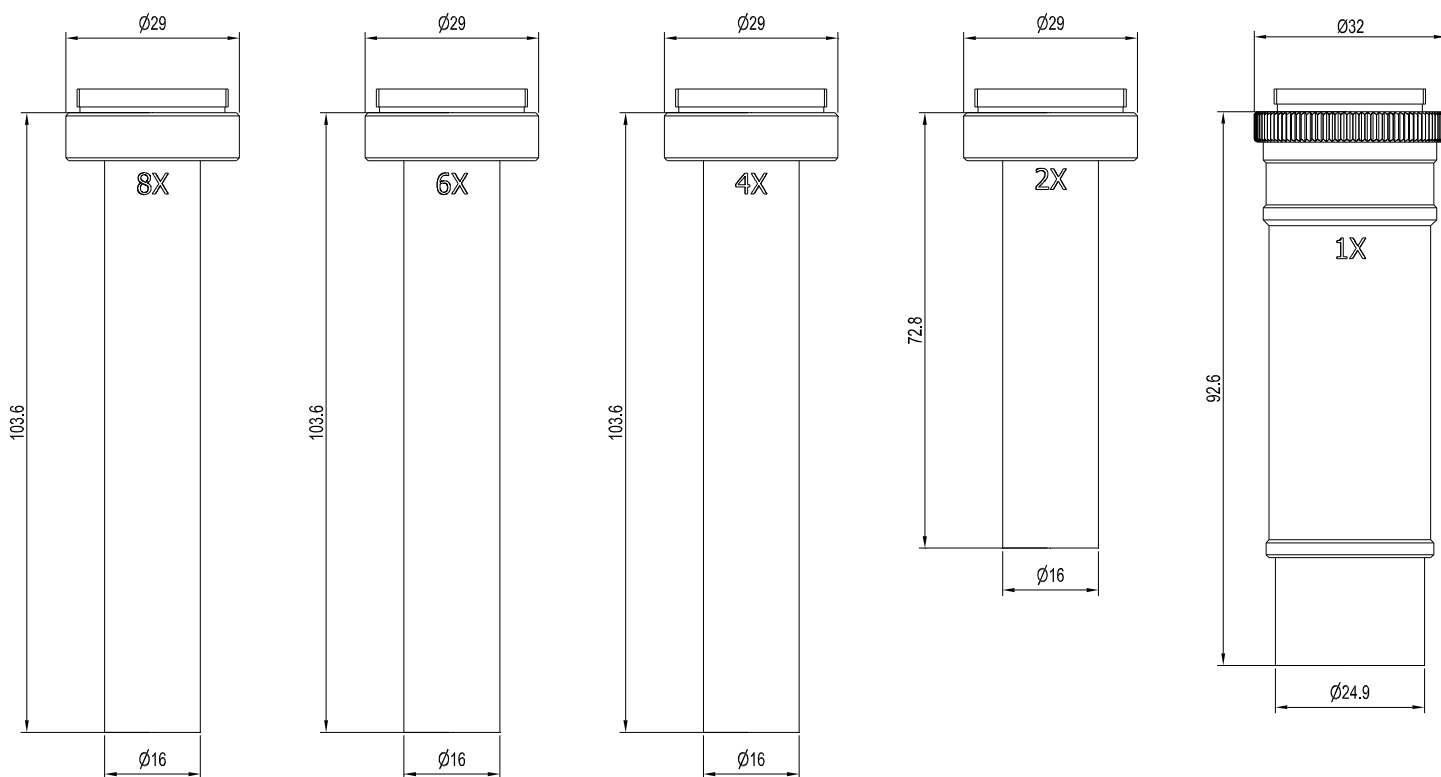
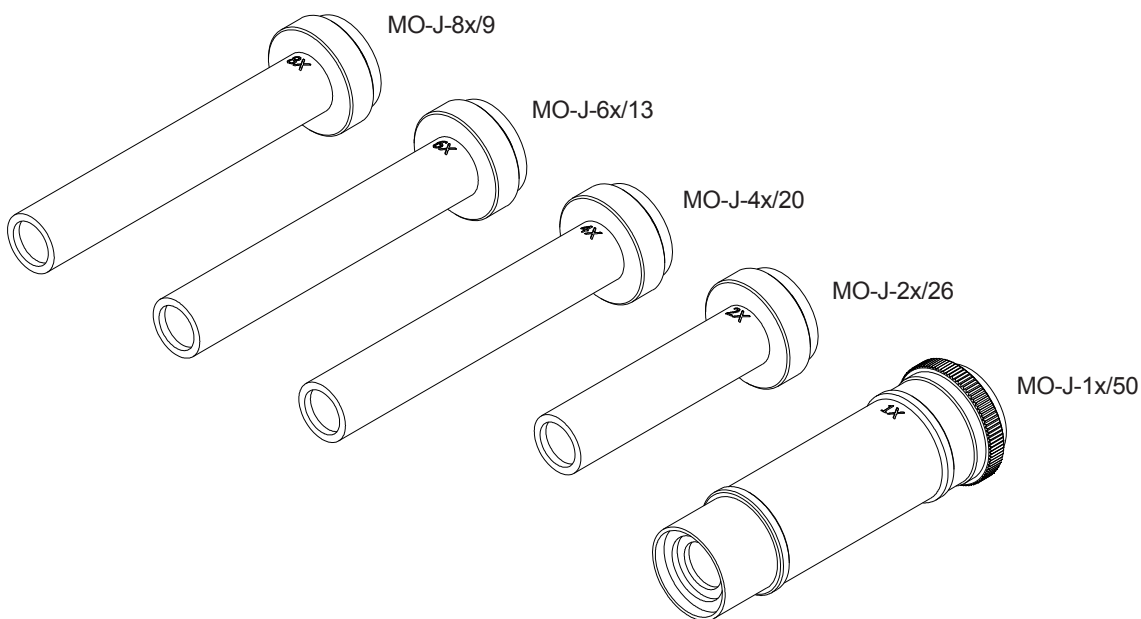




Macro Lenses

**Macro lenses for L-LAS-TB-F-150/60-MO line sensors:**

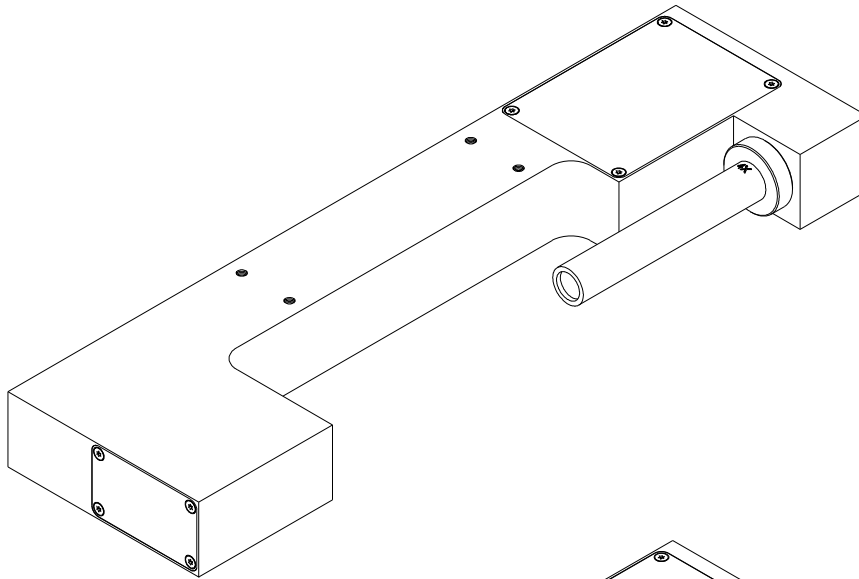
- MO-J-8x/9
- MO-J-6x/13
- MO-J-4x/20
- MO-J-2x/26
- MO-J-1x/50



All dimensions in mm

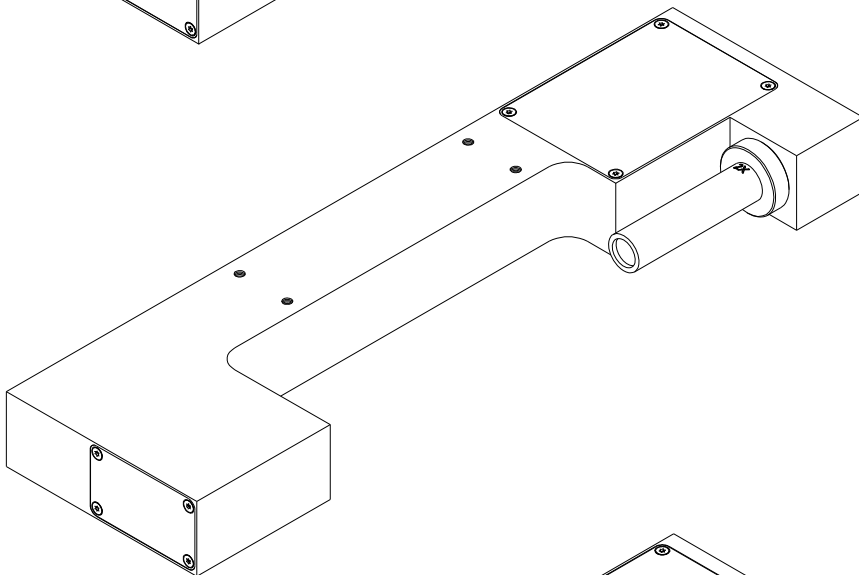


**Overview: L-LAS-TB-F-150/60-MO with different macro lenses**



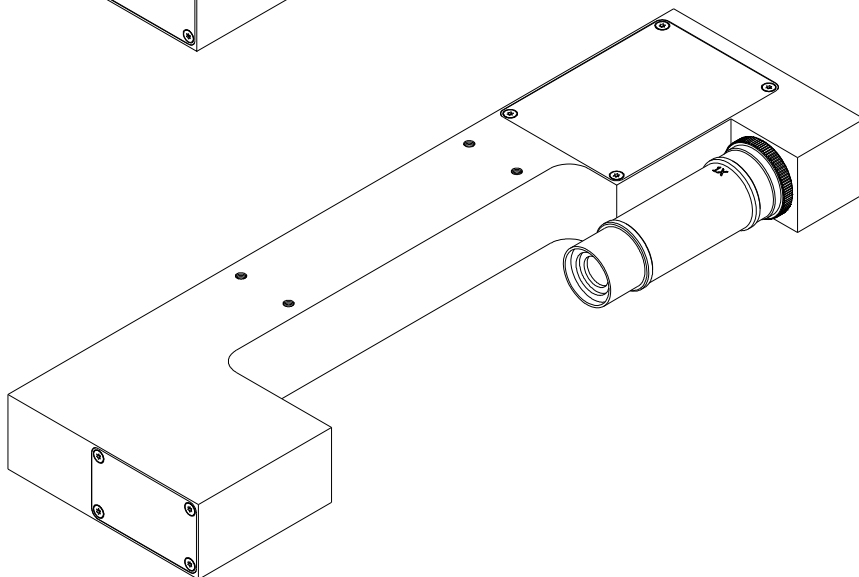
**L-LAS-TB-F-150/60-MO**

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



**L-LAS-TB-F-150/60-MO**

with MO-J-2x/26



**L-LAS-TB-F-150/60-MO**

with MO-J-1x/50