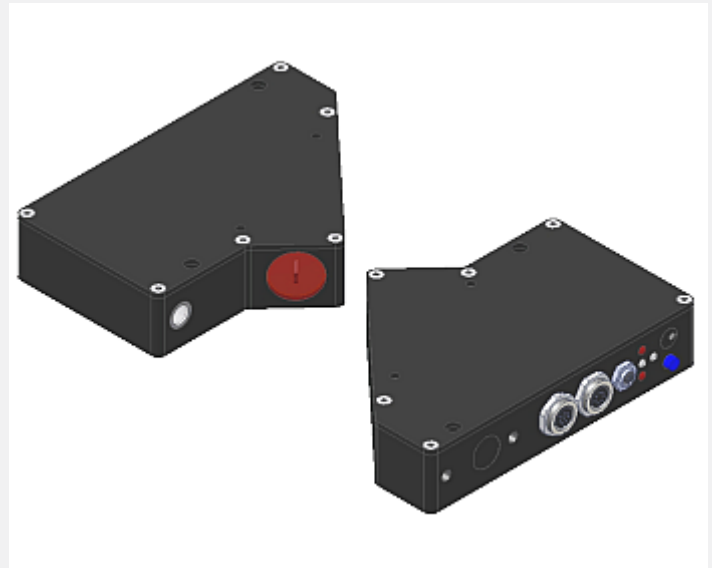


# L-LAS Series

## ▶ L-LAS-LT-55-MA/-SL (Master/Slave)

- Line laser <1 mW, wave length 670 nm, laser class 2
- Visible red laser line, typ. 0.2 mm x 3 mm
- Measuring range Master, Slave: each typ. 10 mm
- Start of measuring range Master/Slave: each at typ. 50 mm
- Resolution Master, Slave: each typ. 3 µm
- Integrated interference filter and red light filter
- CCD line detector with 1024 pixel, 4096 pixel
- External teach button and potentiometer for tolerance setting
- RS232 interface (USB or Ethernet converter available)
- Windows® user interface
- 2 digital inputs, 3 digital outputs
- 1 analog output (voltage 0...+10V, optional current 4...20mA)
- Scan frequency max. 200 Hz
- Switching state indication via 4 LEDs (1x grn, 2x red, 1x yel)
- Optics cover made of scratch-resistant glass



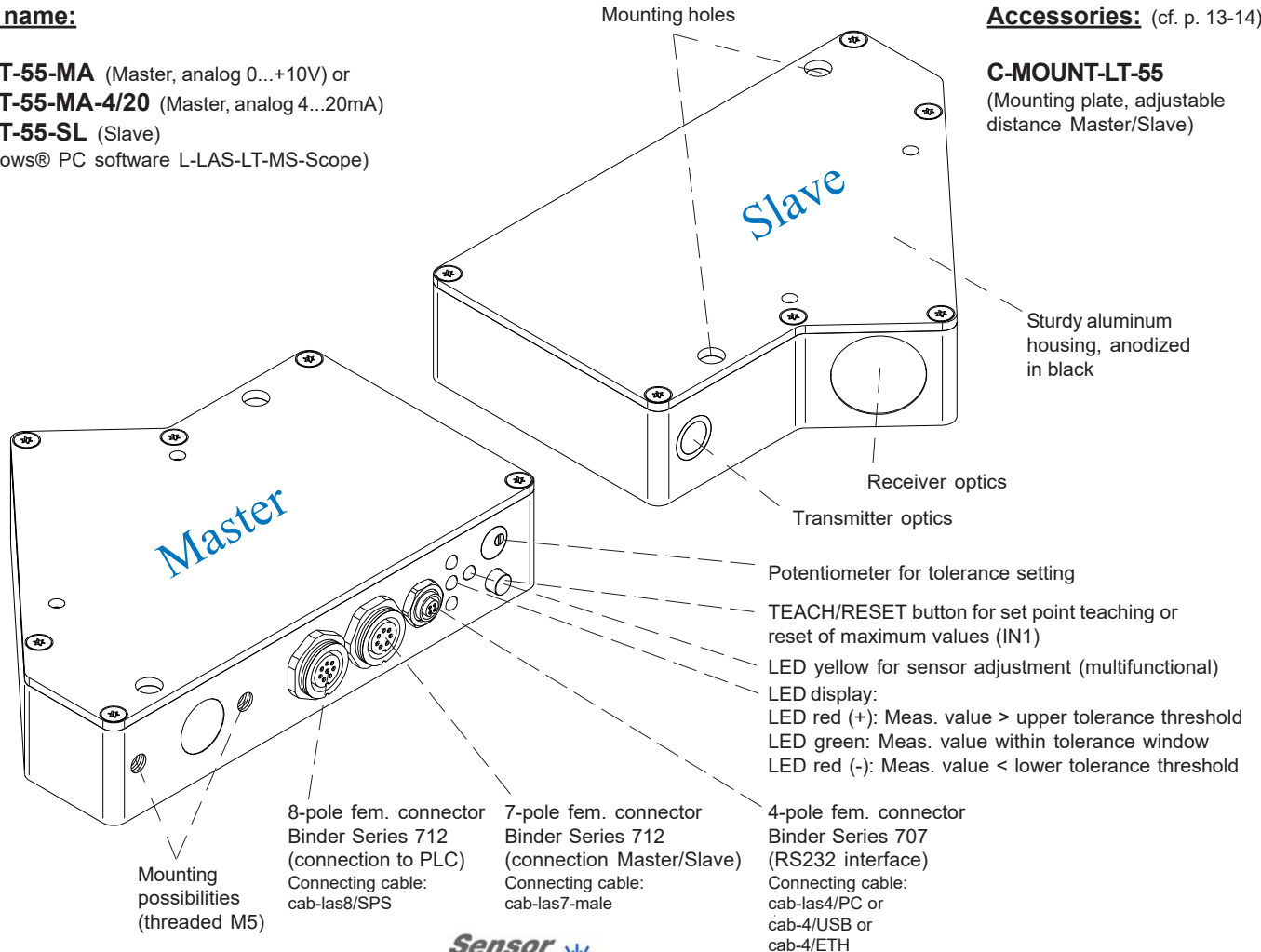
### Design

#### Product name:

- L-LAS-LT-55-MA** (Master, analog 0...+10V) or
- L-LAS-LT-55-MA-4/20** (Master, analog 4...20mA)
- L-LAS-LT-55-SL** (Slave)
- (incl. Windows® PC software L-LAS-LT-MS-Scope)

#### Accessories: (cf. p. 13-14)

- C-MOUNT-LT-55**  
(Mounting plate, adjustable distance Master/Slave)



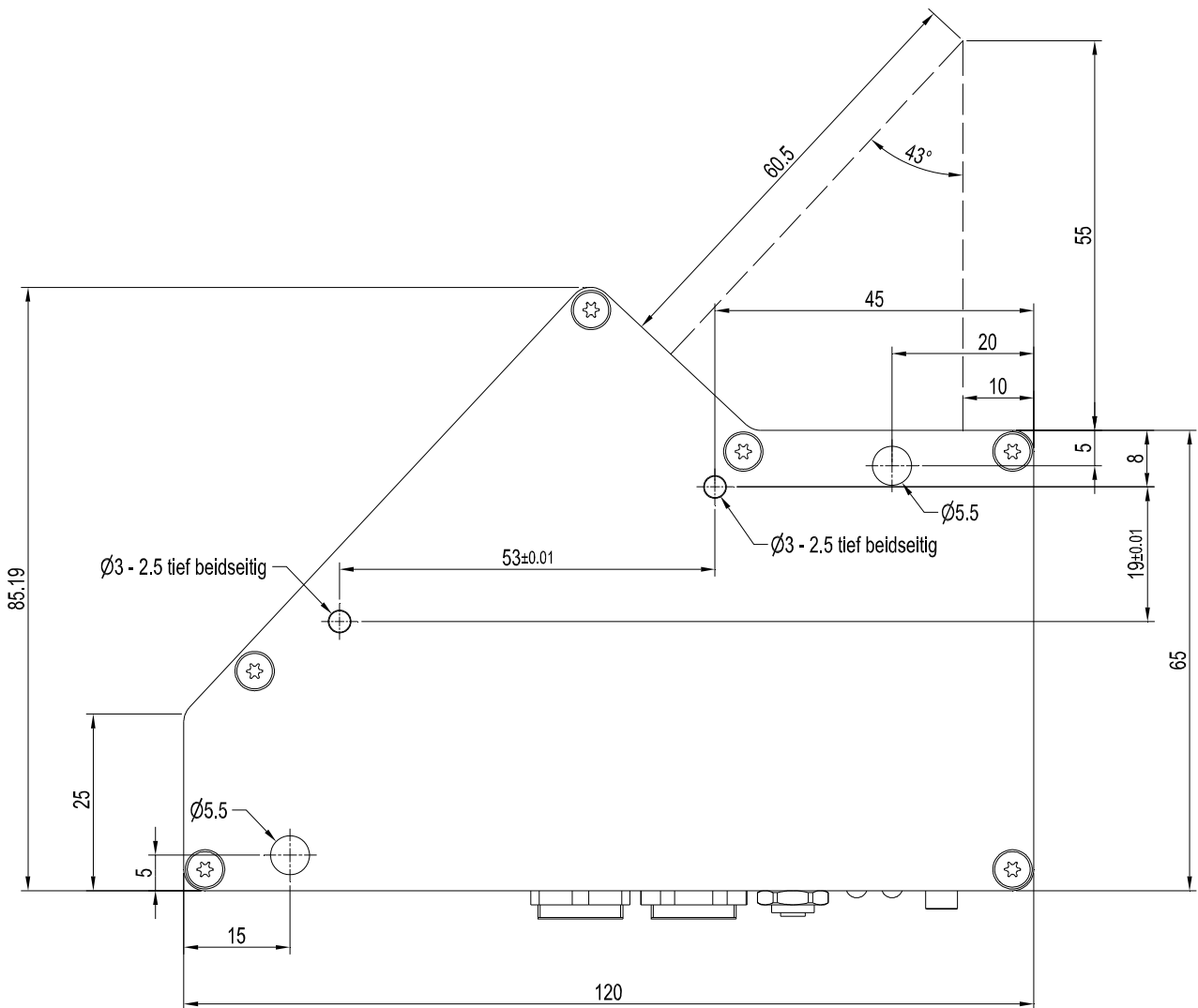
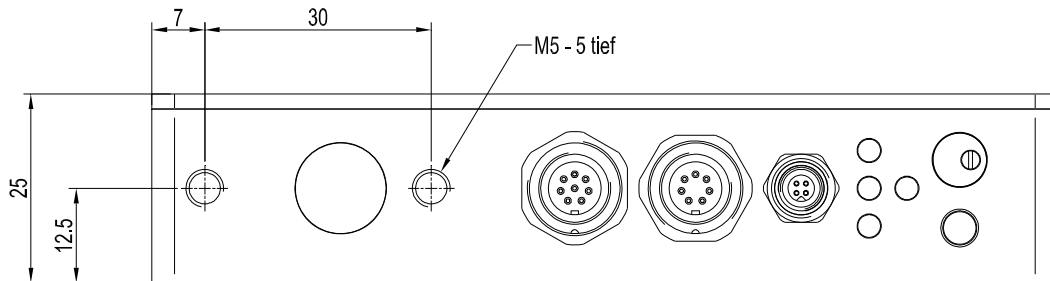


**Technical Data**

Model	L-LAS-LT-55-MA L-LAS-LT-55-SL	L-LAS-LT-55-MA-4/20 L-LAS-LT-55-SL
Light source	Semi-conductor laser, 670 nm, DC operation, 1 mW max. opt. power, laser class 2 acc. to DIN EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.	
Measuring range	MA and SL: each typ. 10 mm	
Start of measuring range	MA and SL: each typ. 50 mm (measured from housing edge, cf. picture beam path)	
End of measuring range	MA and SL: each typ. 60 mm (measured from housing edge, cf. picture beam path)	
Resolution	MA and SL: each typ. 3 µm (i.e. 2x 3 µm)	
Reproducibility	MA and SL: each typ. ± 3 µm (i.e. 2x ± 3 µm)	
Linearity	MA and SL: each 0.15% FSR (full scale range) (i.e. 2x 0.15%)	
Laser line geometry	typ. 0.2 mm x 3 mm	
Optical filter	Interference filter, red light filter	
Analog output (1x)	voltage output (0 ... +10V)	current output (4 ... 20mA)
Digital outputs (3x) (OUT0, OUT1, OUT2)	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: External trigger, IN1: Teach/Reset (double function) input voltage +Ub/0V, with protective circuit	
Voltage supply	+24VDC (± 10%)	
Sensitivity setting	adjustable via 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	
Temperature stability	0.01% of measuring range/°C	
Temperature ranges	operating temperature range: -10°C ... +50°C, storage temperature range: -20°C ... +85°C	
Housing material	aluminium, anodized in black	
Housing dimensions	each Master and Slave: LxWxH approx. 120 mm x 85.19 mm x 25 mm (without flange connectors)	
Type of connector	L-LAS-LT-55-MA: 8-pole circular fem. connector type Binder 712 (PLC/Power) 4-pole circular fem. connector type Binder 707 (PC/RS232) 7-pole circular fem. connector type Binder 712 (connection Master/Slave) L-LAS-LT-55-SL: 8-pole circular fem. connector type Binder 712 (Power) 7-pole circular fem. connector type Binder 712 (connection Master/Slave)	
Connecting cables	connection to PC (Master): 1x cab-las4/PC (-w) or cab-4/USB (-w) or cab-4/ETH connection to PLC (each Master and Slave): 2x cab-las8/SPS or cab-las8/SPS-w connection Master with Slave: 1x cab-las7-male or cab-las7-male-w	
Teach/Reset button	for set point teaching or for reset of maximum values via input IN1	
LED display	LED red (+) : Measuring value > upper tolerance threshold LED green : Measuring value within tolerance window LED red (-) : Measuring value < lower tolerance threshold LED yellow : for sensor adjustment (multifunctional)	
EMC test acc. to	DIN EN 60947-5-2	
Scan frequency	max. 200 Hz	
Max. switching current	100 mA, short-circuit proof	
Interface	RS232, parameterisable under Windows®	
Output polarity	bright-/dark-switching, can be switched under Windows®	

Dimensions

L-LAS-LT-55-MA  
 L-LAS-LT-55-MA-4/20  
 L-LAS-LT-55-SL

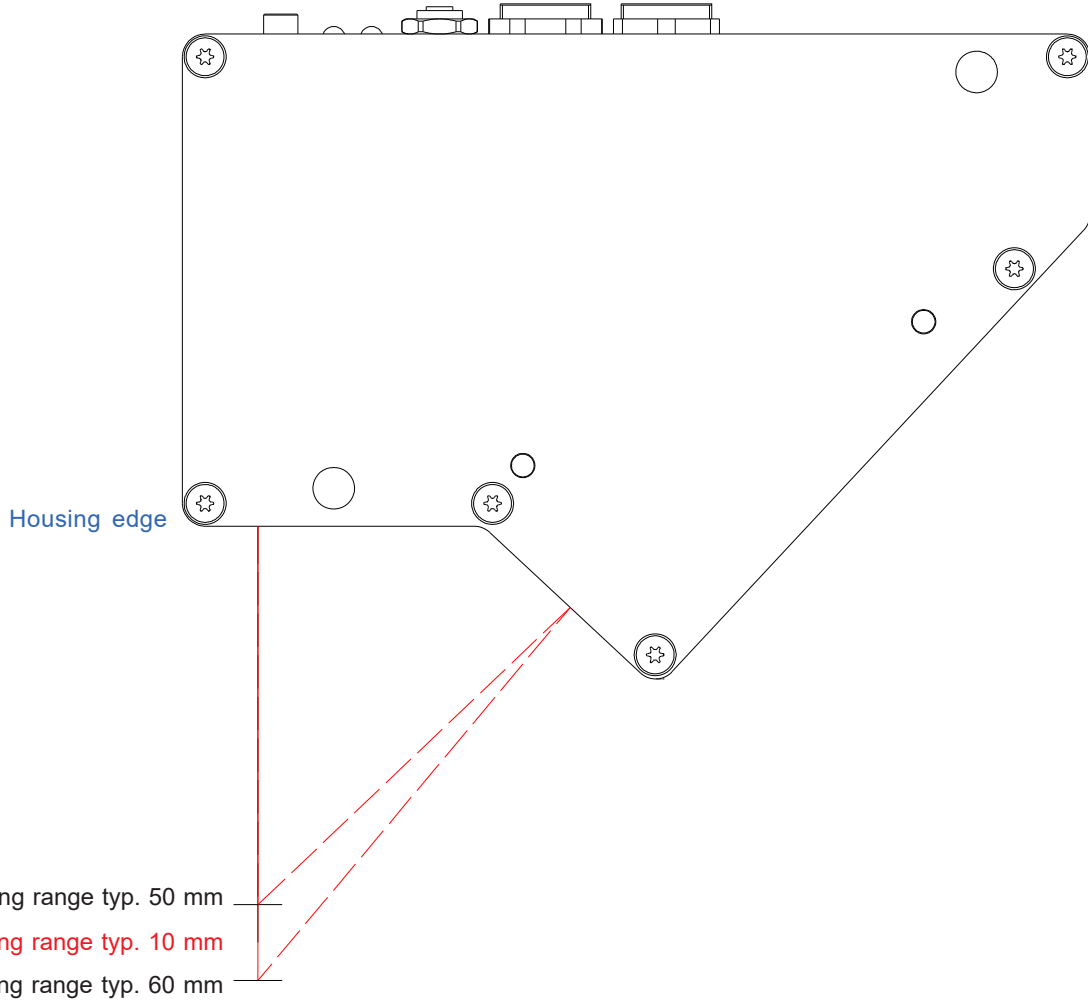


All dimensions in mm



Beam Path

L-LAS-LT-55-MA  
L-LAS-LT-55-MA-4/20  
L-LAS-LT-55-SL



Start of measuring range typ. 50 mm

Measuring range typ. 10 mm

End of measuring range typ. 60 mm



### Components of a complete Master/Slave system L-LAS-LT-55-MS:

#### Standard version with analog voltage output 0...+10V:

**1x L-LAS-LT-55-MA** (Master, incl. Windows® software L-LAS-LT-MS-Scope)

**1x L-LAS-LT-55-SL** (Slave)

**1x cab-las7-male-...** (Connecting cable, connection of Master to Slave)

**2x cab-las8/SPS-...** (Connecting cable to PLC, necessary for each Master and Slave)

**1x cab-las4/PC-...** (Connecting cable to PC via RS232 interface, necessary for Master only)

alternative: **1x cab-4/USB-...** (Connecting cable to PC via USB interface, necessary for Master only)

alternative: **1x cab-4/ETH-500** (Connecting cable to PC via Ethernet interface, for Master only)

#### Standard version with analog current output 4...20mA:

**1x L-LAS-LT-55-MA-4/20** (Master, incl. Windows® software L-LAS-LT-MS-Scope)

**1x L-LAS-LT-55-SL** (Slave)

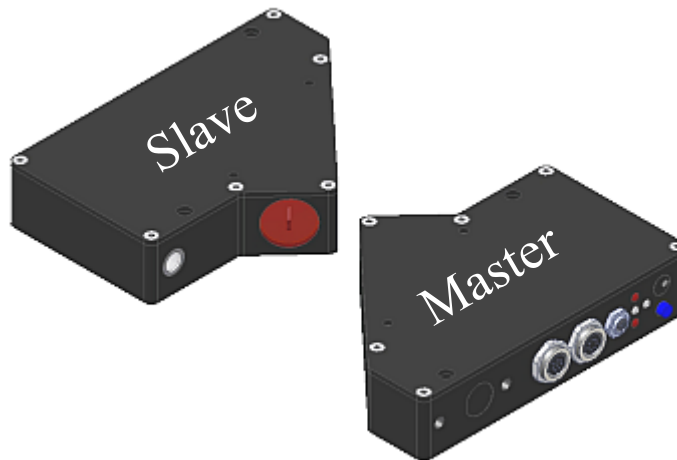
**1x cab-las7-male-...** (Connecting cable, connection of Master to Slave)

**2x cab-las8/SPS-...** (Connecting cable to PLC, necessary for each Master and Slave)

**1x cab-las4/PC-...** (Connecting cable to PC via RS232 interface, necessary for Master only)

alternative: **1x cab-4/USB-...** (Connecting cable to PC via USB interface, necessary for Master only)

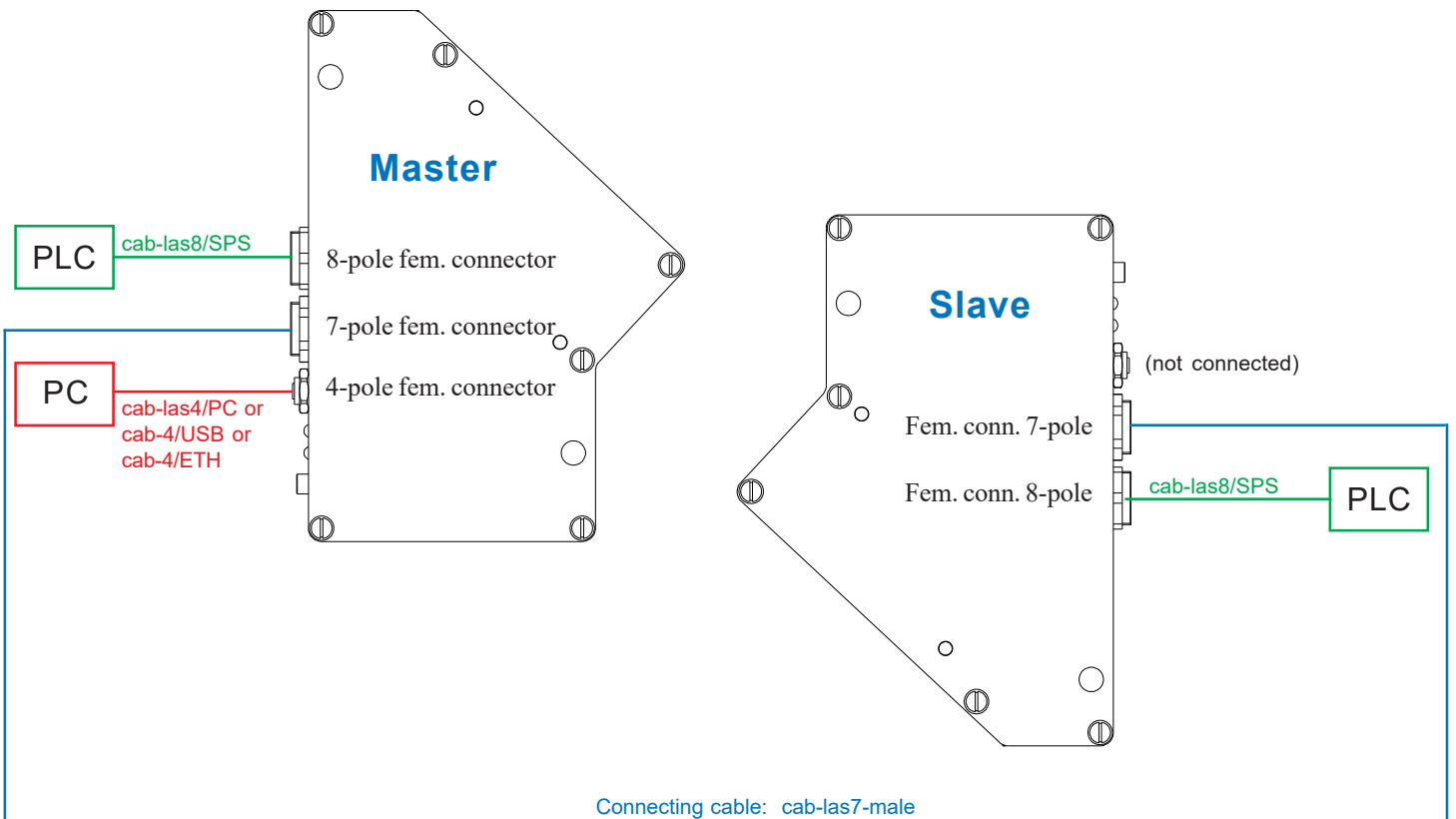
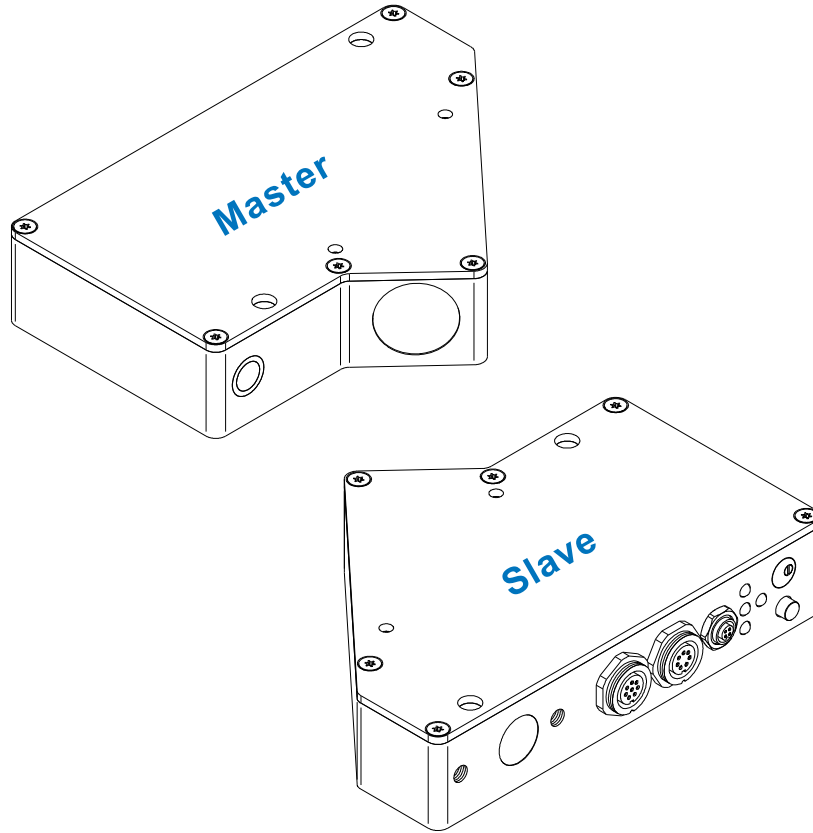
alternative: **1x cab-4/ETH-500** (Connecting cable to PC via Ethernet interface, for Master only)



Connection Scheme

**Connection scheme for a L-LAS-LT-... MS system**

(by way of example L-LAS-LT-55-MS)





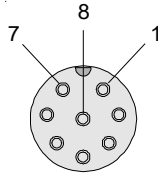
## Connector Assignment

### Connector assignment of Master L-LAS-LT-...-MA or L-LAS-LT-...-MA -4/20:

#### Connection to PLC/Power:

##### 8-pole fem. connector Binder Series 712

Pin:	Color:	Assignment:
1	white	GND (0V)
2	brown	+24VDC ( $\pm 10\%$ )
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) (optional: current 4 ... 20mA)

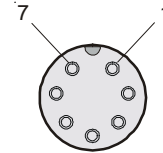


Connecting cable:  
 cab-las8/SPS-(length) or  
 cab-las8/SPS-w-(length) (angle type 90°)  
 (standard length 2m)

#### Connection Master/Slave (SPI):

##### 7-pole fem. connector Binder Series 712

Pin:	Assignment:
1	GND (0V)
2	+3.3VDC
3	SS
4	MISO
5	MOSI
6	SCLK
7	+3.3VDC

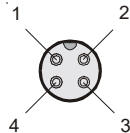


Connecting cable:  
 cab-las7-male-(length)  
 cab-las7-male-w-(length) (angle type 90°) VAR. 1 / VAR.2 / VAR.3  
 (standard length 1m)

#### 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)





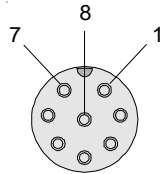
## Connector Assignment

### Connector assignment of Slave L-LAS-LT-...-SL:

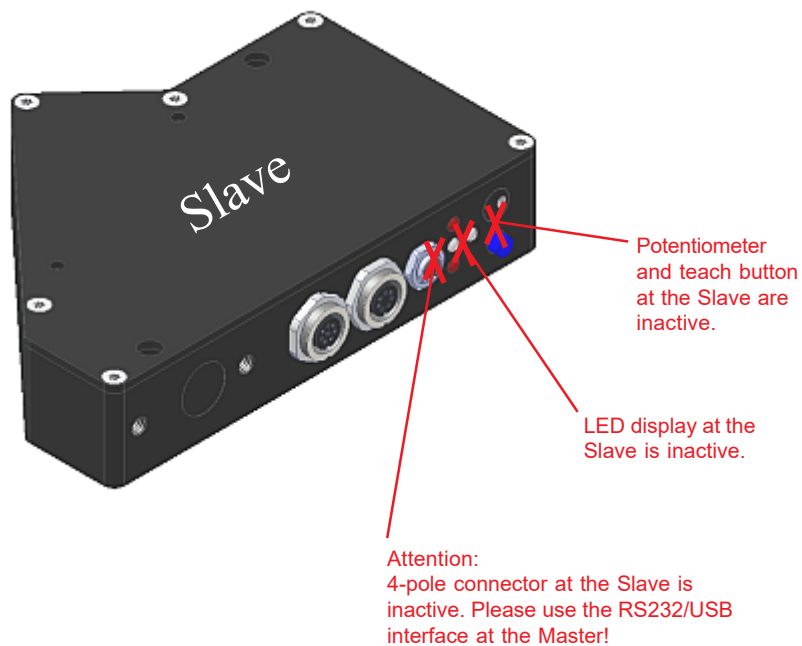
#### Connection to Power:

8-pole fem. connector Binder Series 712

Pin:	Color:	Assignment:
1	white	GND (0V)
2	brown	+24VDC ( $\pm 10\%$ )
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)







**Connecting Cables**

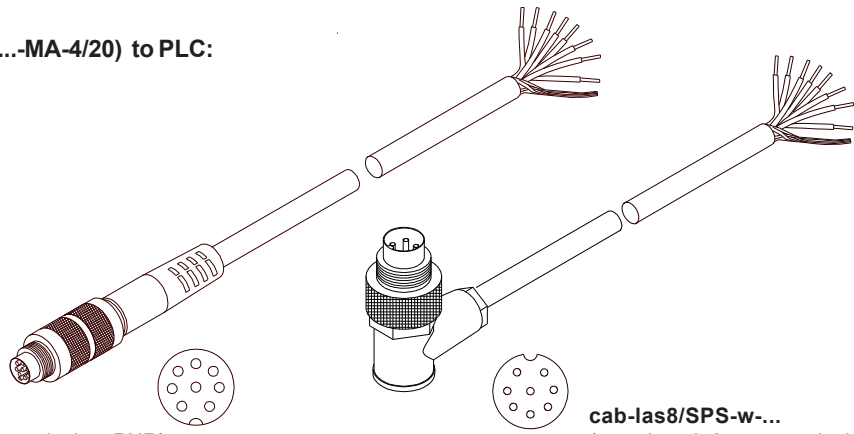
Connection L-LAS-LT-...-MA (or L-LAS-LT-...-MA-4/20) to PLC:  
 Connection L-LAS-LT-...-SL to PLC:

Available connecting cables:

**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)

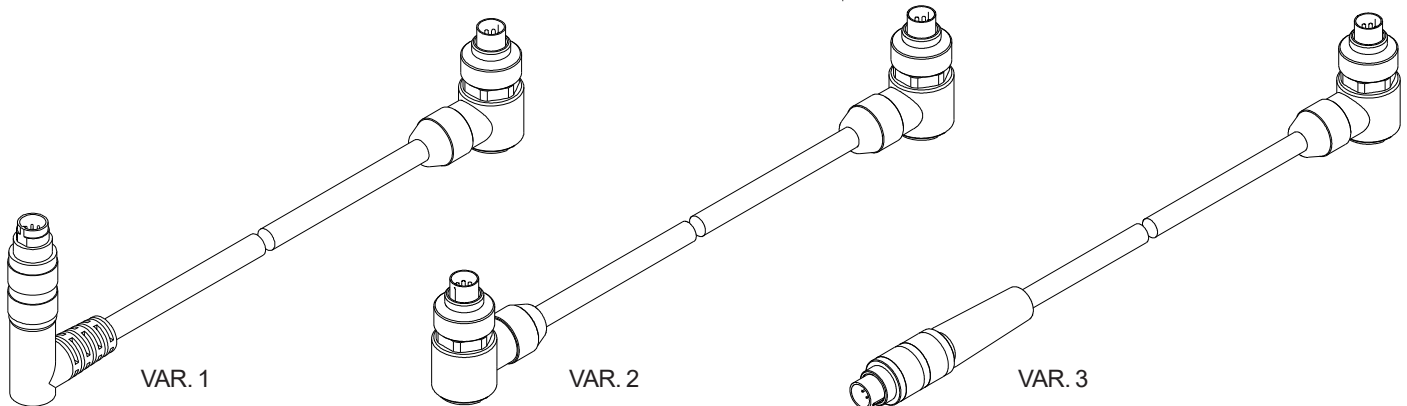
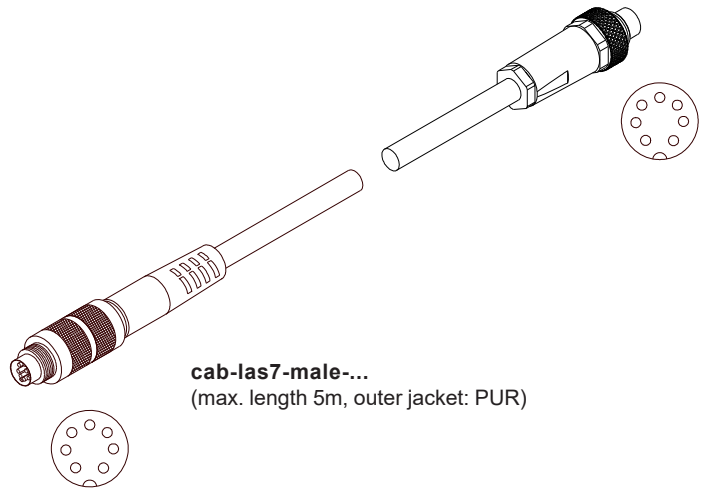


Connection L-LAS-LT-...-MA to L-LAS-LT-...-SL:  
 Connection L-LAS-LT-...-MA-4/20 to L-LAS-LT-...-SL:

Available connecting cables:

**cab-las7-male-(length)**  
**cab-las7-male-w-(length) VAR. 1** (angle type 90°)  
**cab-las7-male-w-(length) VAR. 2** (angle type 90°)  
**cab-las7-male-w-(length) VAR. 3** (angle type 90°)  
 (standard length: 1m)

**cab-las7-male-...**  
 (max. length 5m, outer jacket: PUR)



**cab-las7-male-w-... VAR. 1**  
 (max. length 5m, outer jacket: PUR)

**cab-las7-male-w-... VAR. 2**  
 (max. length 5m, outer jacket: PUR)

**cab-las7-male-w-... VAR. 3**  
 (max. length 5m, outer jacket: PUR)

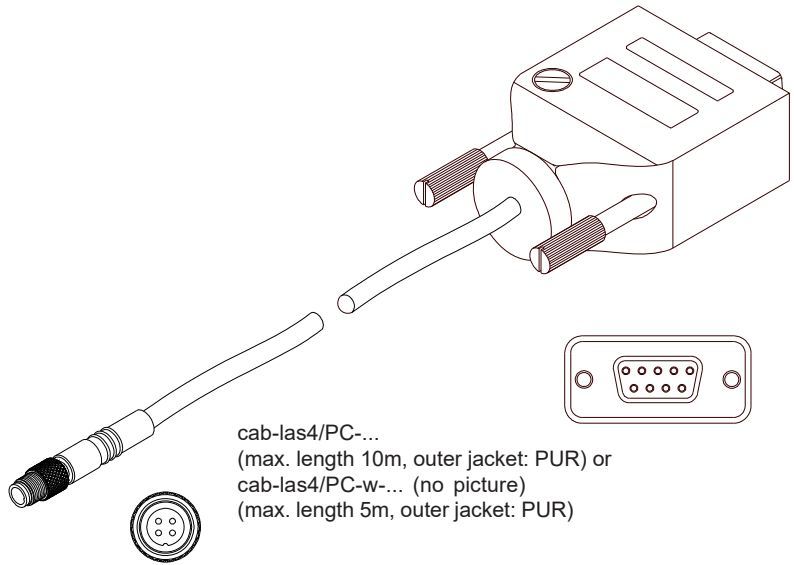


**Connecting Cables**

**Connection L-LAS-LT-...-MA to PC**  
**Connection L-LAS-LT-...-MA-4/20 to PC:**  
**via RS232 interface**

Available connecting cables:

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

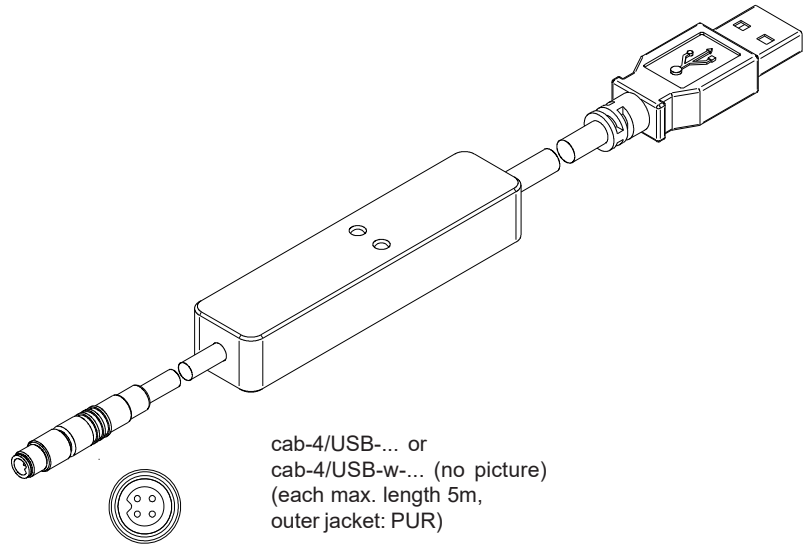


cab-las4/PC-...  
 (max. length 10m, outer jacket: PUR) or  
 cab-las4/PC-w-... (no picture)  
 (max. length 5m, outer jacket: PUR)

**Alternative:**  
**Connection L-LAS-LT-...-MA to PC**  
**Connection L-LAS-LT-...-MA-4/20 to PC:**  
**via USB interface**

USB converter (incl. driver software):

**cab-4/USB-(length) or**  
**cab-4/USB-w-(length)** (angle type 90°)  
 (standard length: 2m)



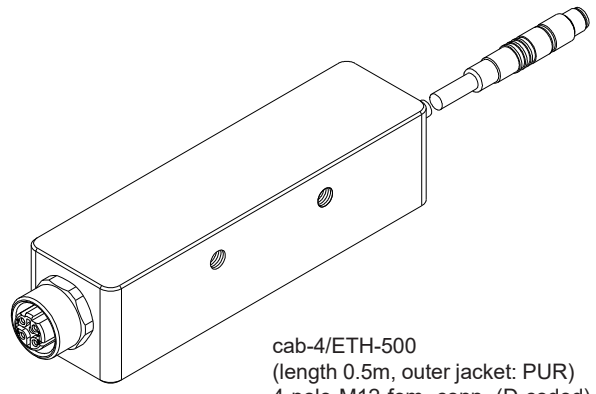
cab-4/USB-... or  
 cab-4/USB-w-... (no picture)  
 (each max. length 5m,  
 outer jacket: PUR)

**Alternative:**  
**Connection L-LAS-LT-...-MA to a local network:**  
**Connection L-LAS-LT-...-MA-4/20 to a local network:**  
**via Ethernet bus**

ETHERNET converter  
 (incl. Windows® software „SensorFinder“):

**cab-4/ETH-500**  
 (standard length: 0.5m)

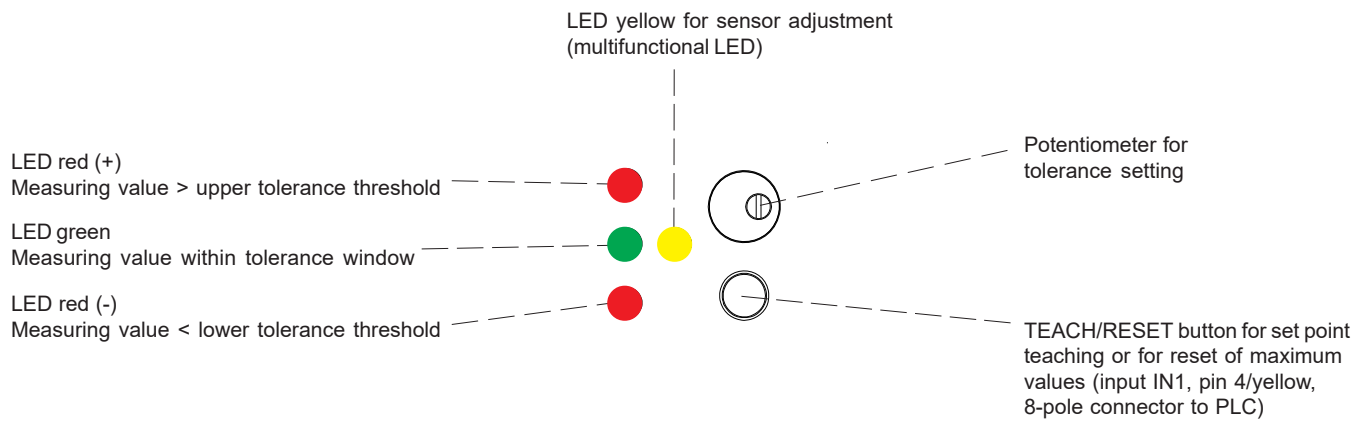
Also available (as an option):  
 External CAT5 cable, e.g.  
 cab-eth/M12D-RJ45-flx-(length)



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



LED display is only active at the Master:

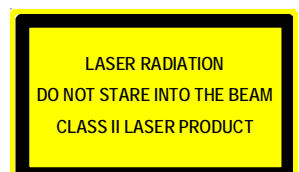
L-LAS-LT-55-MA  
L-LAS-LT-55-MA-4/20



Laser Warning

The laser line sensors of L-LAS-LT Series comply with laser class 2 according to EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.

The laser line sensors of L-LAS-LT Series are supplied with a laser warning label.



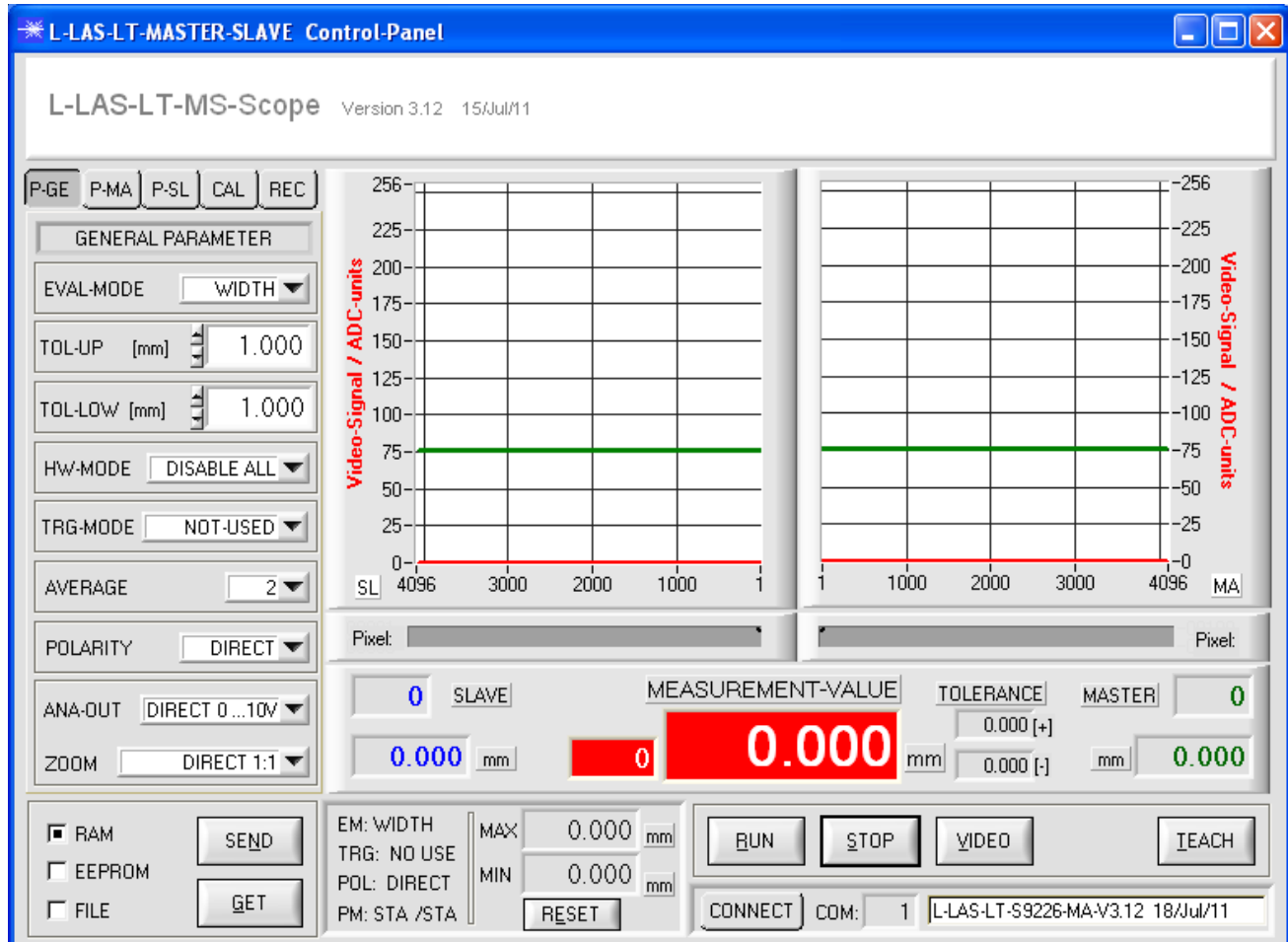


## Parameterization

### Windows® software L-LAS-LT-MS-Scope:

The L-LAS-LT...-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 USB cable cab-las4/USB or with Ethernet adapter SI-RS232/Ethernet-4). When parameterisation is finished, the PC can be disconnected again.

### Windows® user interface:



In the case of line sensors with 512, 256, or 128 pixels the parameters related to the pixels will be adapted correspondingly!

With the help of the L-LAS-LT-MS-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-LT-MS-Scope software. For example, the raw data of the CCD line sensor can be displayed graphically and numerically.



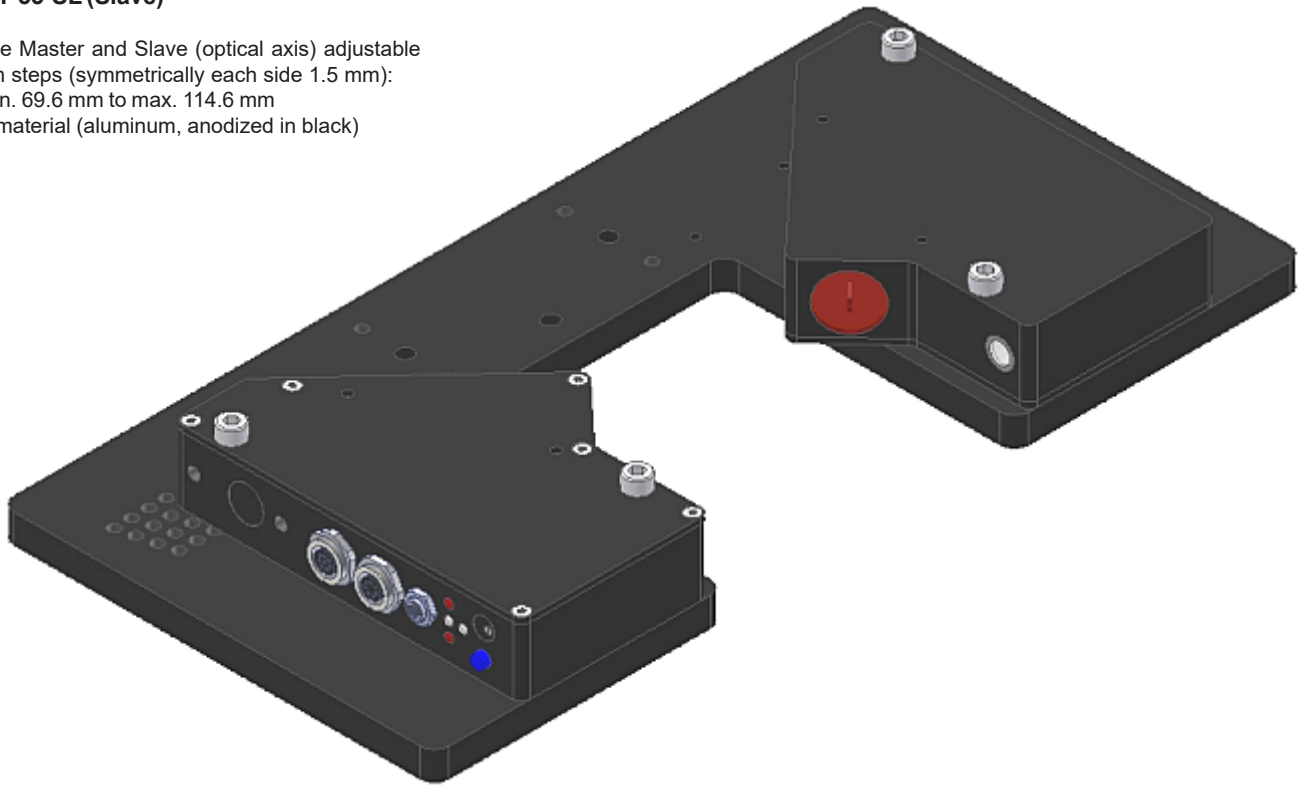
## Mounting

### Mounting plate C-MOUNT-LT-55

(please order separately)

suitable for Master/Slave line sensor  
L-LAS-LT-55-MA (Master) and  
L-LAS-LT-55-SL (Slave)

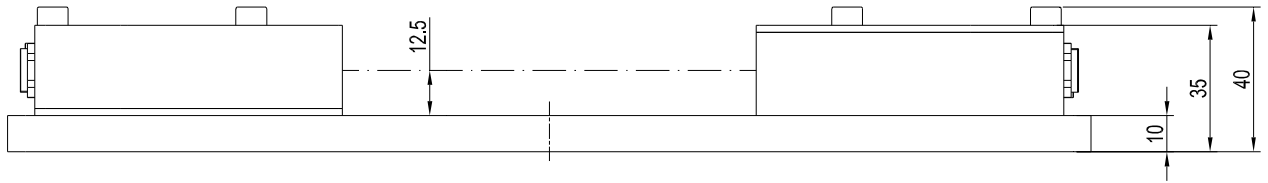
- Distance Master and Slave (optical axis) adjustable in 3 mm steps (symmetrically each side 1.5 mm): from min. 69.6 mm to max. 114.6 mm
- Sturdy material (aluminum, anodized in black)



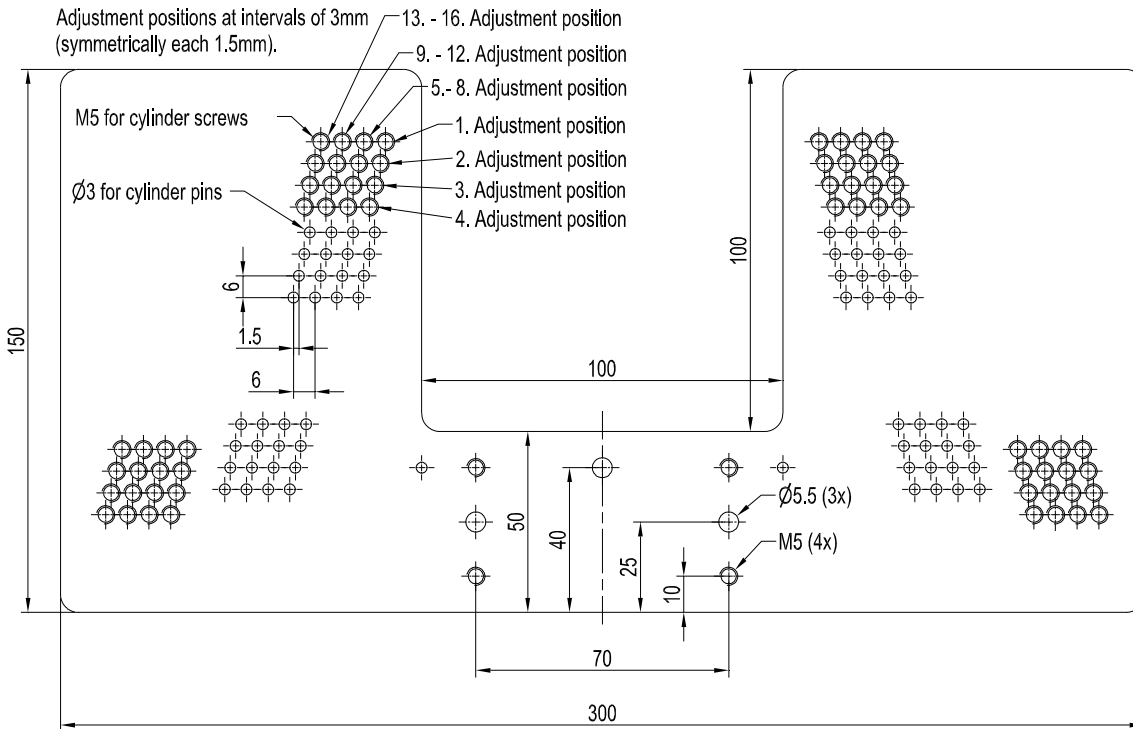
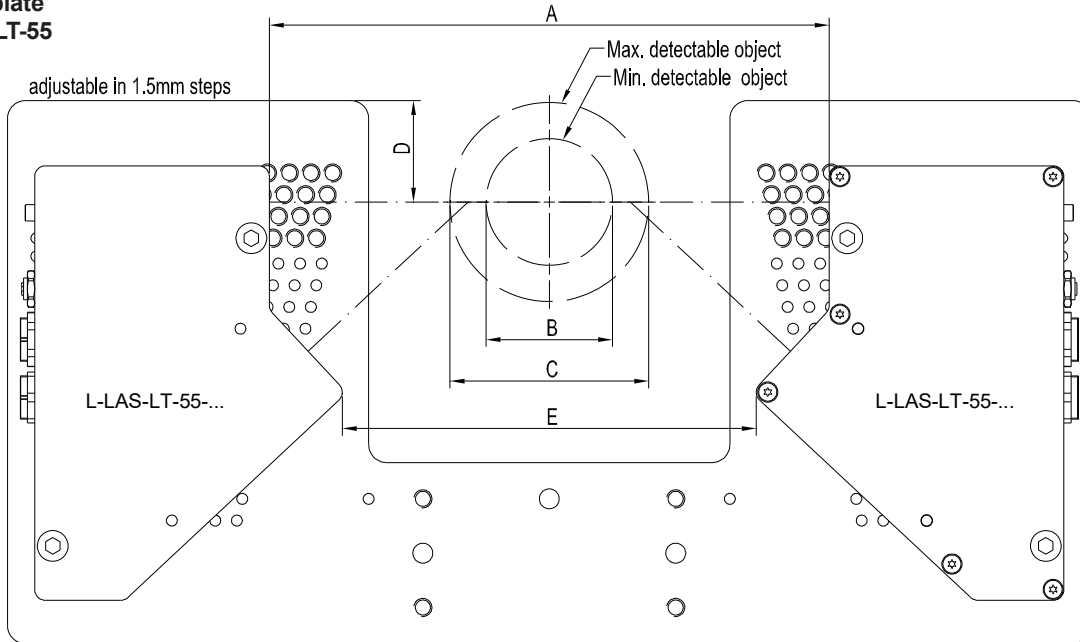
**Adjustment positions (cf. drawing on the next page):**  
E = Distance Master/Slave (optical axis) in mm

Adjustment position	A	B	C	D	E
1.	110	0	10	10	69.6
2.	113	0	13	16	72.6
3.	116	0	16	22	75.6
4.	119	0	19	28	78.6
5.	122	2	22	10	81.6
6.	125	5	25	16	84.6
7.	128	8	28	22	87.6
8.	131	11	31	28	90.6
9.	134	14	34	10	93.6
10.	137	17	37	16	96.6
11.	140	20	40	22	99.6
12.	143	23	43	28	102.6
13.	146	26	46	10	105.6
14.	149	29	49	16	108.6
15.	152	32	52	22	111.6
16.	155	35	55	28	114.6

Mounting



Mounting plate  
C-MOUNT-LT-55



(All dimensions in mm)