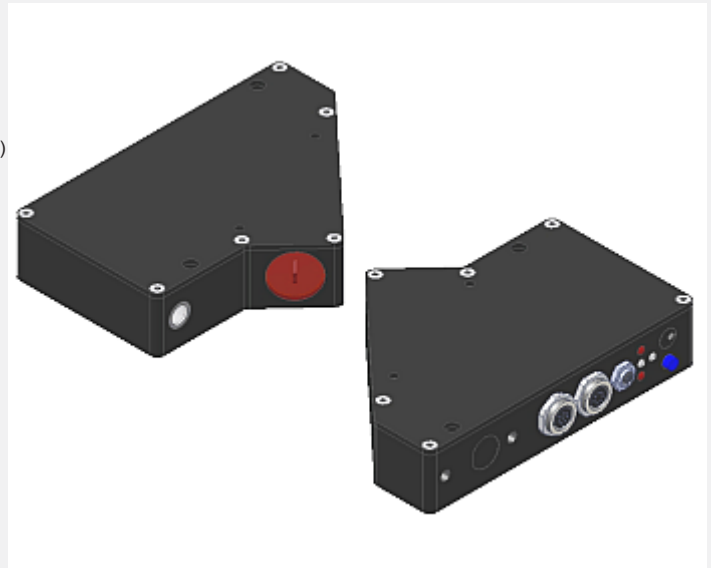


# L-LAS Series

## ▶ L-LAS-LT-55-RA-HS-MA/-SL (High Speed, Master/Slave)

- Operates in an angle of total reflection (thickness/distance measuring)
- Suitable for high-glossy objects (e.g. glass)
- Line laser <math><1\text{ mW}</math>, wave length 670 nm, laser class 2
- Visible red laser line, typ. 0.2 mm x 3 mm
- Measuring range Master, Slave: each typ. 8 mm
- Start of measuring range Master/Slave: each at typ. 51 mm
- Resolution Master, Slave: each typ. 5  $\mu\text{m}$
- Integrated interference filter and red light filter
- CCD line detector with 512 pixel, 2048 pixel
- External teach button and potentiometer for tolerance setting
- RS232 interface (USB or Ethernet adaptor available)
- Windows® user interface
- 2 digital inputs, 3 digital outputs
- 1 analog output (voltage 0...+10V, optional current 4...20mA)
- Scan frequency max. 600 Hz
- Switching state indication via 4 LEDs (1x grn, 2x red, 1x yel)
- Optics cover made of scratch-resistant glass



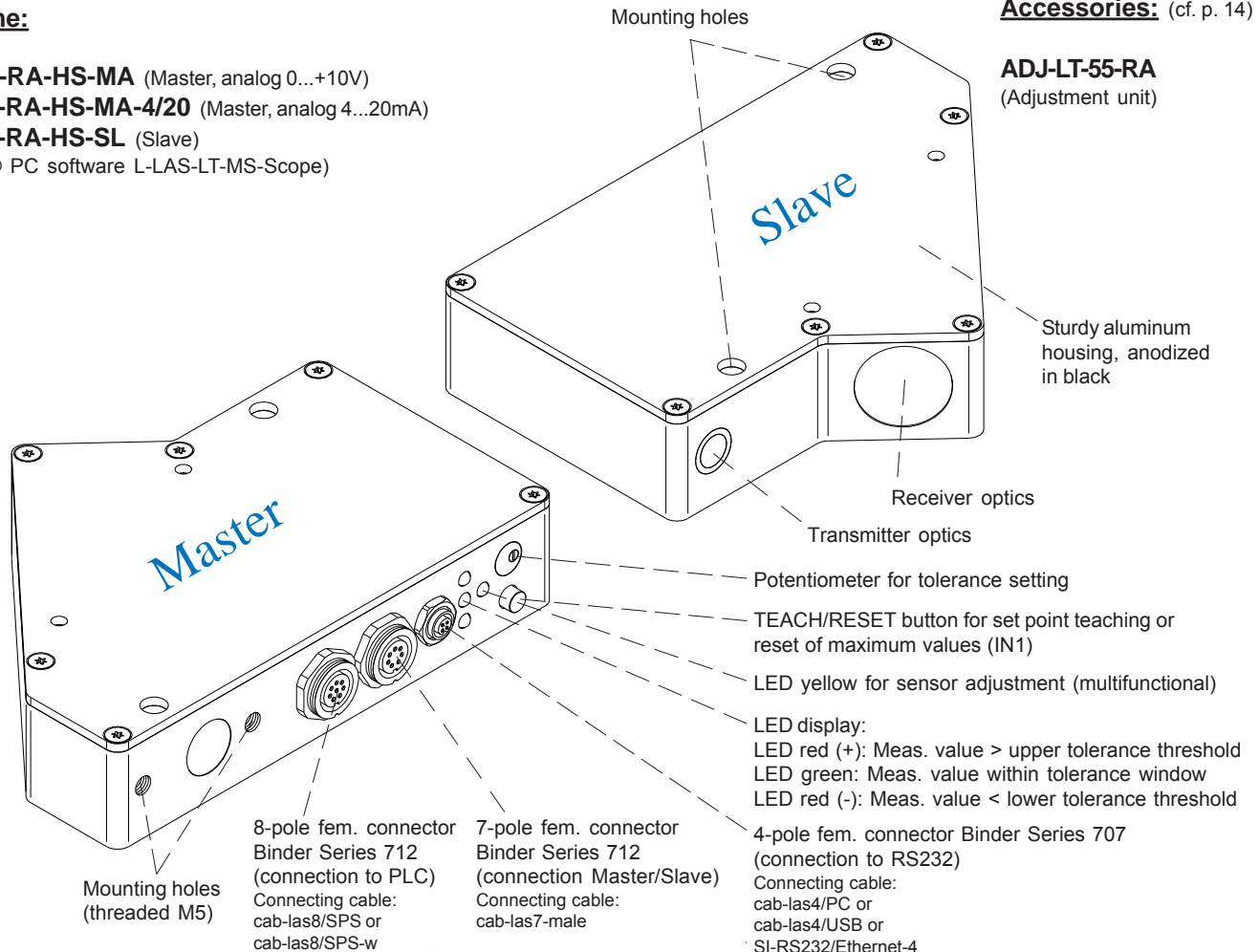
## Design

### Product name:

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

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

#### ADJ-LT-55-RA (Adjustment unit)





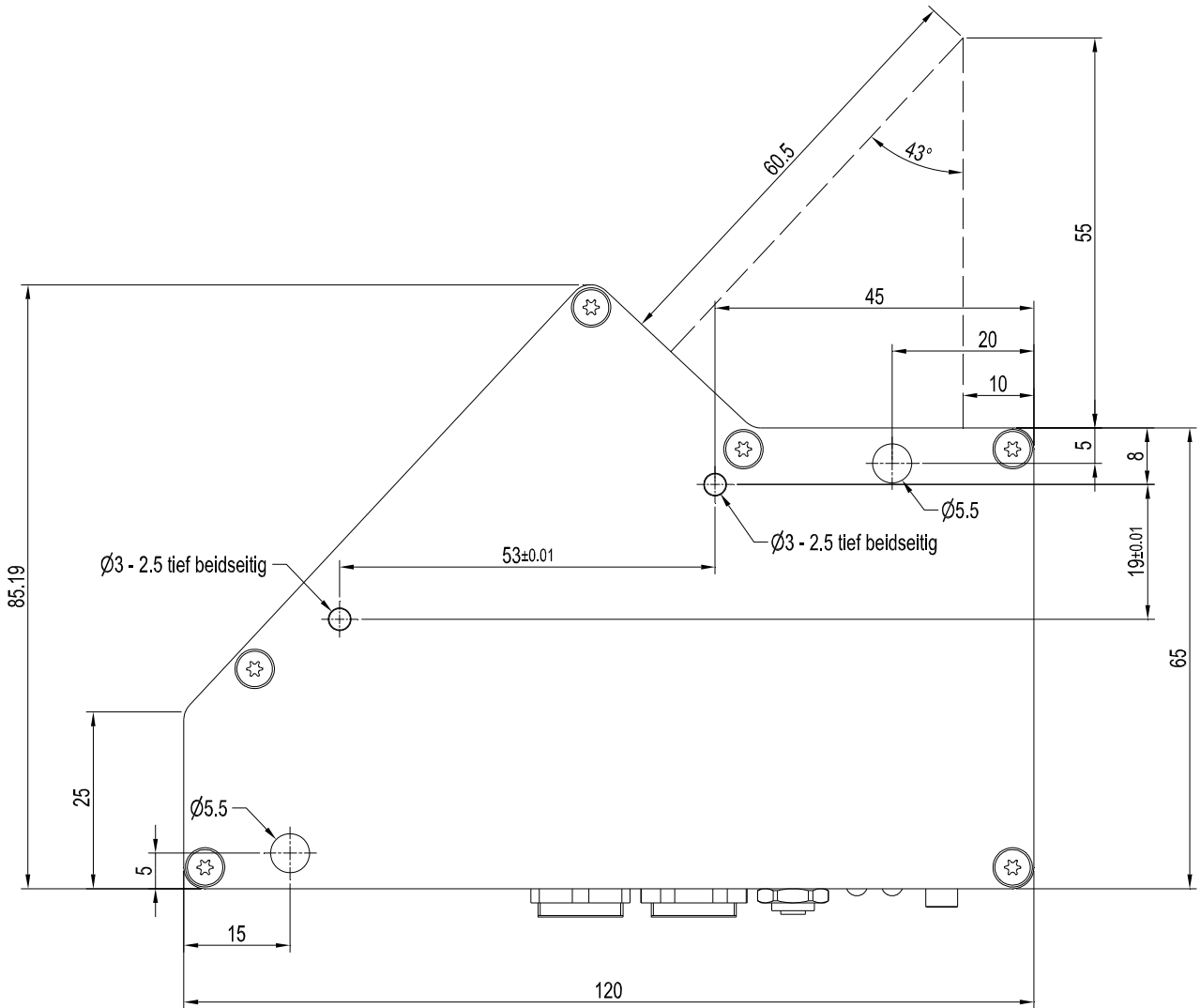
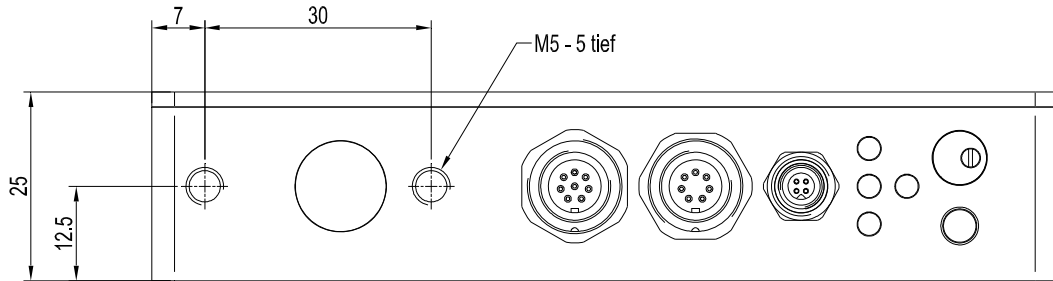
**Technical Data**

| Model  | L-LAS-LT-55-RA-HS-MA<br>L-LAS-LT-55-RA-HS-SL  | L-LAS-LT-55-RA-HS-MA-4/20<br>L-LAS-LT-55-RA-HS-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.   |   |
| Angle of total reflection                          | Angle of inclination of the sensor: 21.5° (please cf. mounting hints)   |   |
| Measuring range                                    | MA and SL: each typ. 8 mm   |   |
| Start of measuring range<br>End of measuring range | MA and SL: each typ. 51 mm (measured from housing edge, cf. picture beam path)<br>MA and SL: each typ. 59 mm (measured from housing edge, cf. picture beam path)  |   |
| Resolution   | MA and SL: each typ. 5 µm (i.e. 2x 5 µm)  |   |
| Reproducibility                                    | MA and SL: each typ. ± 5 µm (i.e. 2x ± 5 µm)  |   |
| Linearity  | MA and SL: each 0.2% FSR (full scale range) (i.e. 2x 0.2%)  |   |
| 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..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-RA-HS-MA: 8-pole circular fem. connector type Binder 712 (PLC/Power)<br>4-pole circular fem. connector type Binder 707 (PC/RS232)<br>7-pole circular fem. connector type Binder 712 (connection Master/Slave)<br>L-LAS-LT-55-RA-HS-SL: 8-pole circular fem. connector type Binder 712 (Power)<br>7-pole circular fem. connector type Binder 712 (connection Master/Slave) |   |
| Connecting cables                                  | connection to PC (Master): 1x cab-las4/PC (-w) or cab-las4/USB (-w) or SI-RS232/Ethernet-4<br>connection to PLC (each Master and Slave): 2x cab-las8/SPS or cab-las8/SPS-w<br>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<br>LED green : Measuring value within tolerance window<br>LED red (-) : Measuring value < lower tolerance threshold<br>LED yellow : for sensor adjustment (multifunctional)   |   |
| EMC test acc. to                                   | DIN EN 60947-5-2  |   |
| Scan frequency                                     | max. 600 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-RA-HS-MA  
 L-LAS-LT-55-RA-HS-MA-4/20  
 L-LAS-LT-55-RA-HS-SL

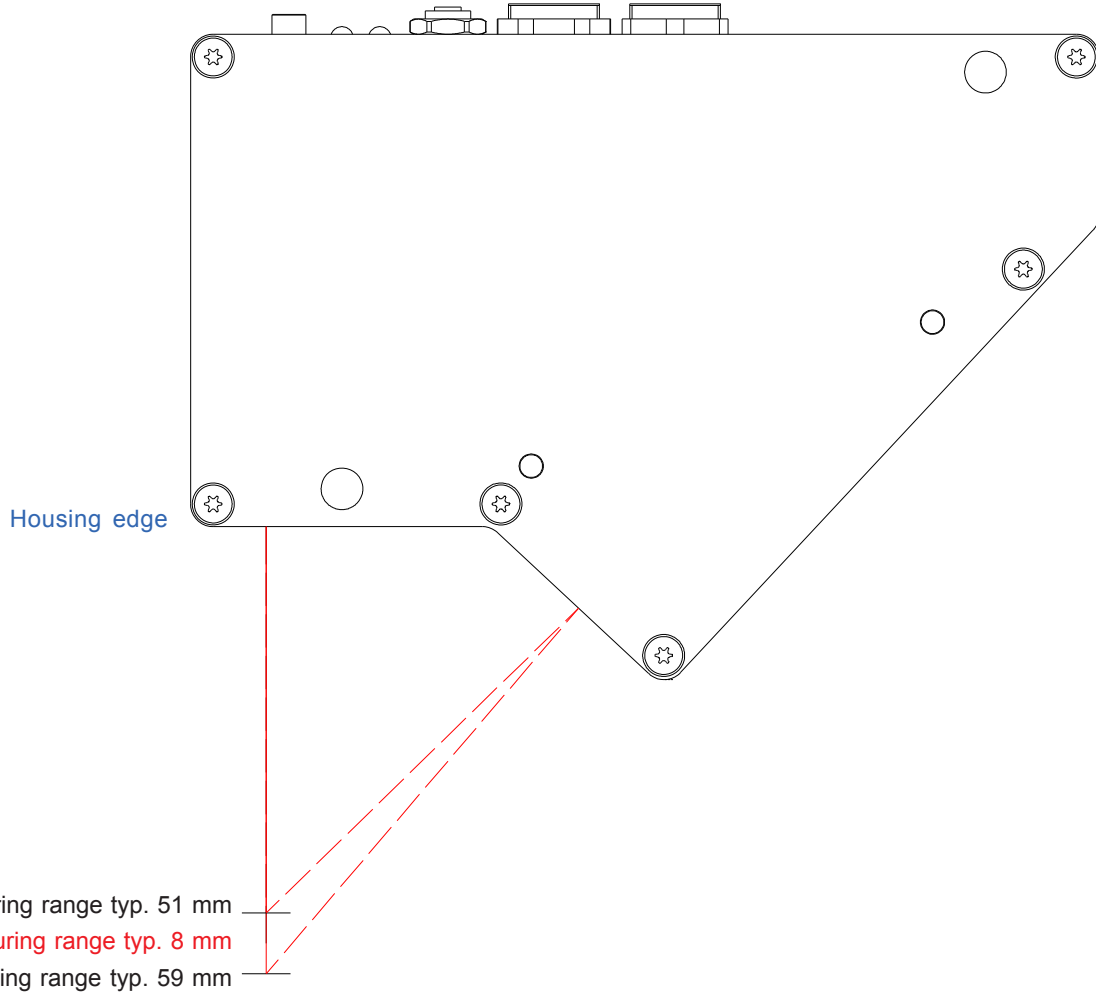


All dimensions in mm



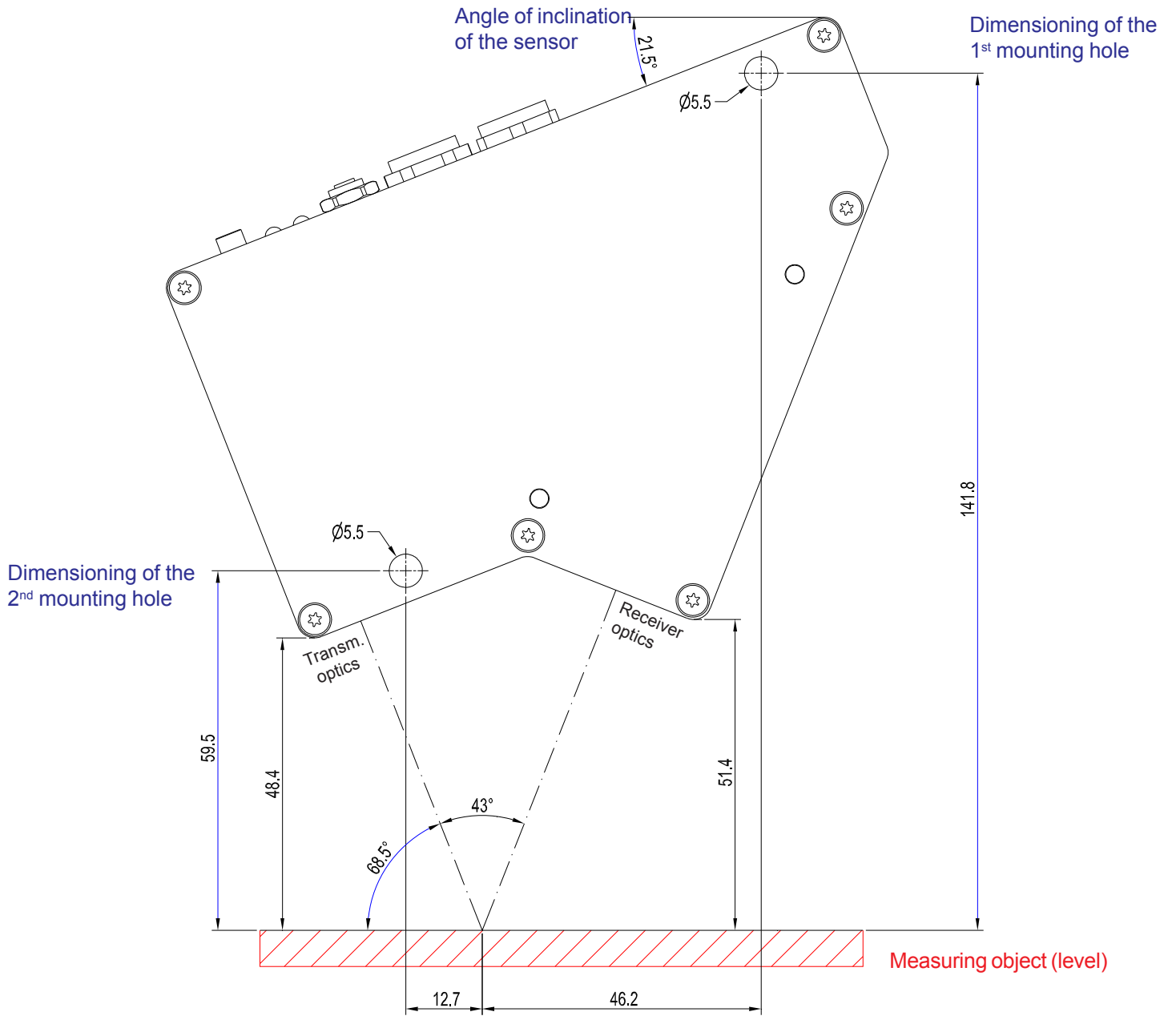
Beam Path

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



**Mounting Hints**

Laser line sensors of type L-LAS-LT-...-RA work at high glossy (mirroring) measuring objects in an angle of total reflection. Please pay attention to the following hints for mounting the L-LAS-LT-55-RA sensor:



All dimensions in mm



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

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

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

**1x L-LAS-LT-55-RA-HS-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-las4/USB-...** (Connecting cable to PC via USB interface, necessary for Master only)

alternative: **1x SI-RS232/Ethernet-4-...** (Connecting cable to PC via Ethernet interface, for Master only)

#### High speed version with analog current output 4...20mA:

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

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

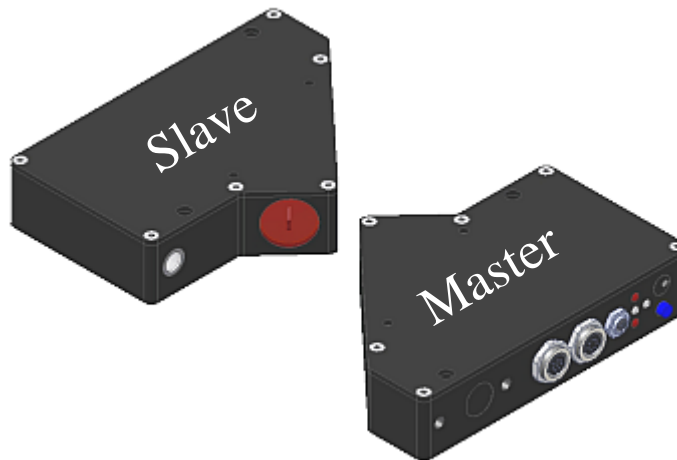
**1x cab-las7-male-...** (Connecting cable, connection of Master to Slave)

**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-las4/USB-...** (Connecting cable to PC via USB interface, necessary for Master only)

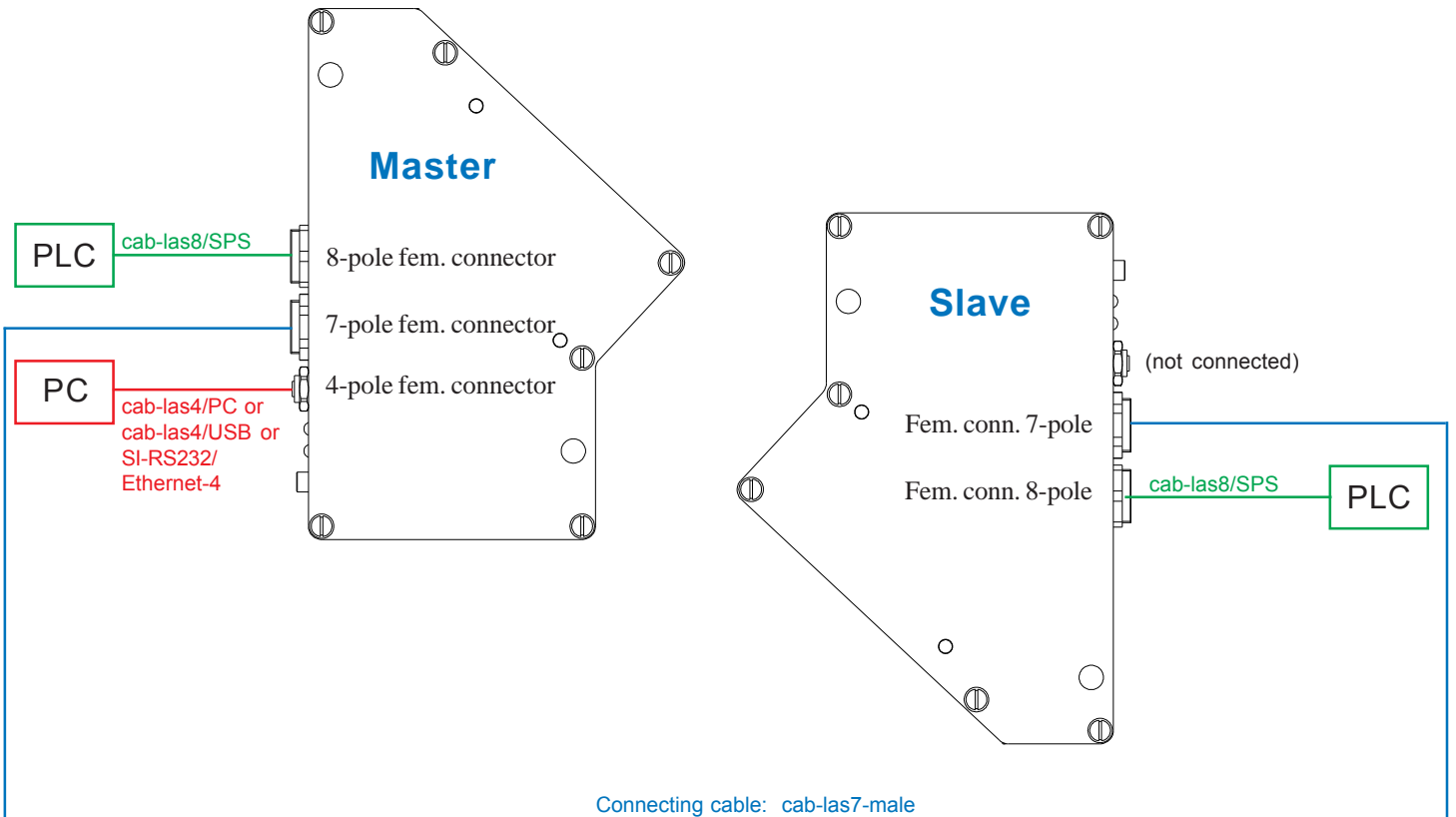
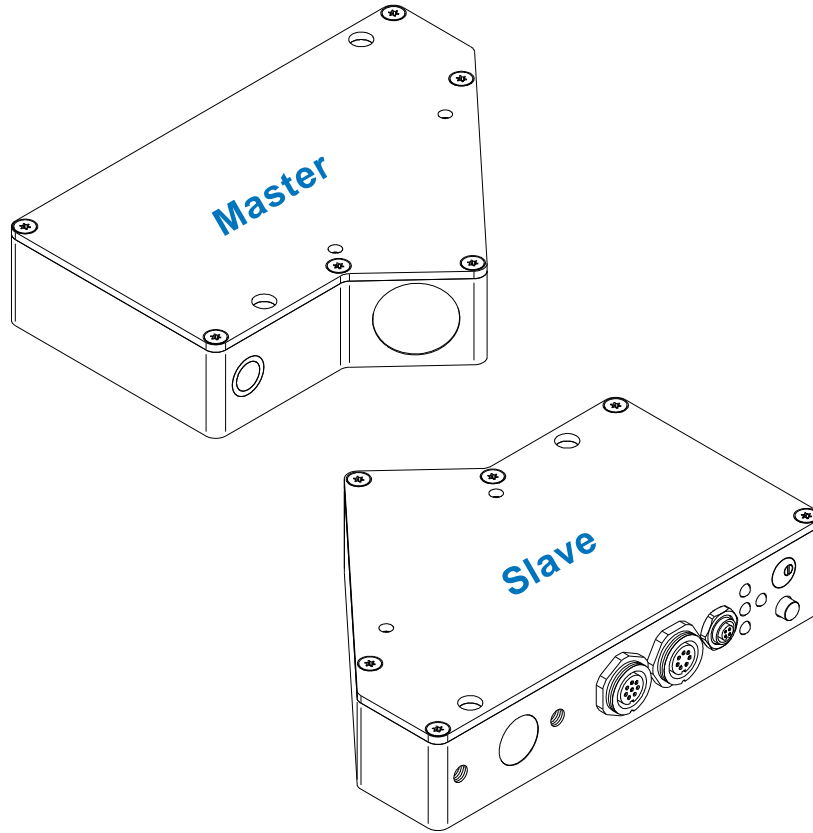
alternative: **1x SI-RS232/Ethernet-4-...** (Connecting cable to PC via Ethernet interface, for Master only)



Connection Scheme

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

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





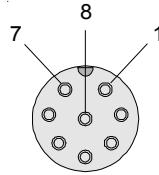
## Connector Assignment

### 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

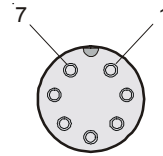
| Pin: | Color: | Assignment:  |
|------|--------|--|
| 1    | white  | GND (0V)   |
| 2    | brown  | +24VDC ( $\pm 10\%$ )                                      |
| 3    | green  | IN0 (EXT TRIGGER)  |
| 4    | yellow | IN1 (TEACH/RESET)  |
| 5    | grey   | OUT0 (-)   |
| 6    | pink   | OUT1 (+)   |
| 7    | blue   | OUT2 (OK)  |
| 8    | red    | ANA (voltage 0 ... +10V)<br>(optional: current 4 ... 20mA) |



#### 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-las8/SPS-(length) or  
cab-las8/SPS-w-(length) (right-angle type)  
(standard length 2m)

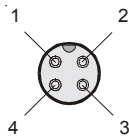
#### Connecting cable:

cab-las7-male-(length)  
cab-las7-male-w-(length) (right-angle type) VAR. 1  
cab-las7-male-w-(length) (right-angle type) VAR. 2  
cab-las7-male-w-(length) (right-angle type) 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    | Rx0               |
| 4    | Tx0               |



#### Connection via RS232 interface at the PC:

##### Connecting cable:

cab-las4/PC-(length)  
cab-las4/PC-w-(length) (right-angle type)  
(standard length 2m)

#### **alternative:**

#### Connection via USB interface at the PC:

##### Connecting cable (incl. driver software):

cab-las4/USB-(length)  
cab-las4/USB-w-(length) (right-angle type)  
(standard length 2m)

#### **alternative:**

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

##### Adapter (based on Lantronix XPortModul):

SI-RS232/Ethernet-4-(length)  
(standard length 2m)







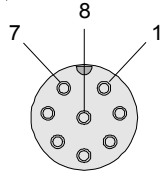
## Connector Assignment

### 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              |

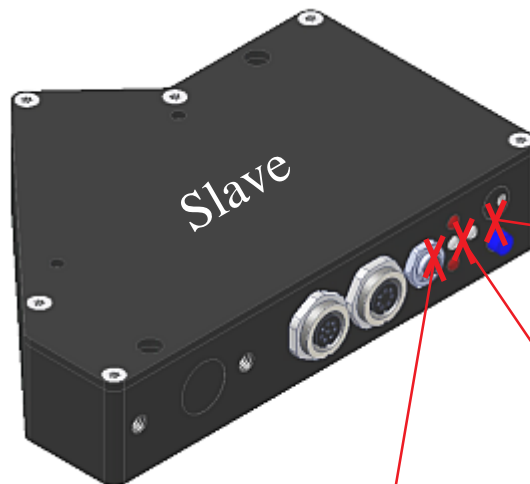


#### Connecting cable:

cab-las8/SPS-(length) or

cab-las8/SPS-w-(length) (right-angle type)

(standard length 2m)



Potentiometer and teach button at the Slave are inactive.

LED display at the Slave is inactive.

**Attention:**  
4-pole connector at the Slave is inactive. Please use the RS232/USB interface at the Master!

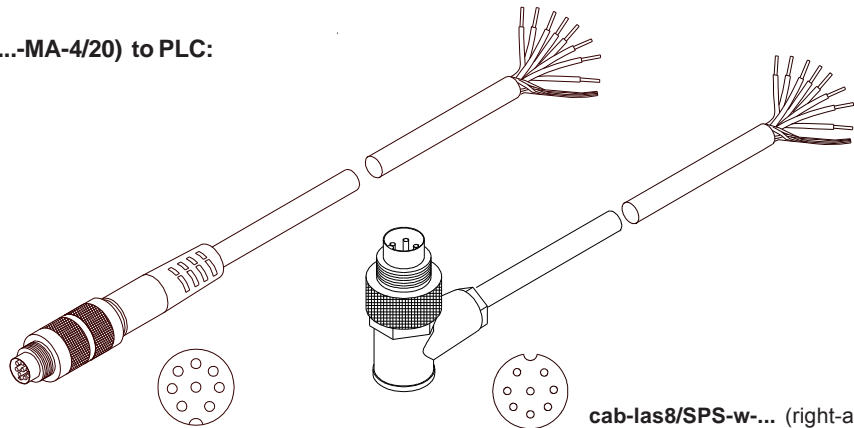


**Connecting Cables**

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)**  
 (standard length: 2m)



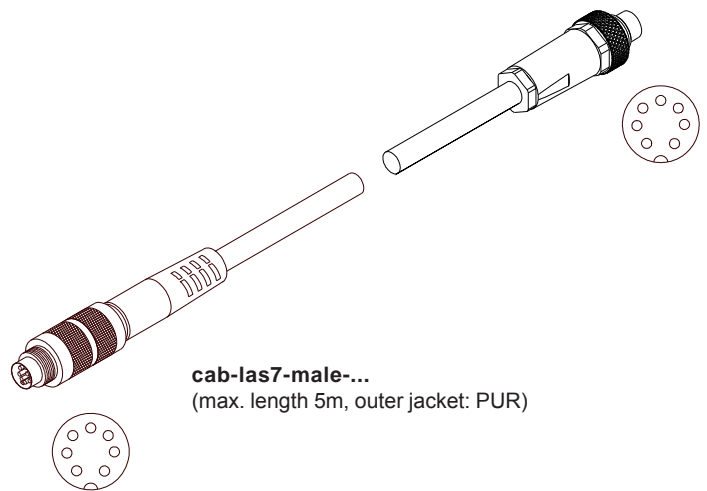
**cab-las8/SPS-...**  
 (max. length 25m, outer jacket: PUR)

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

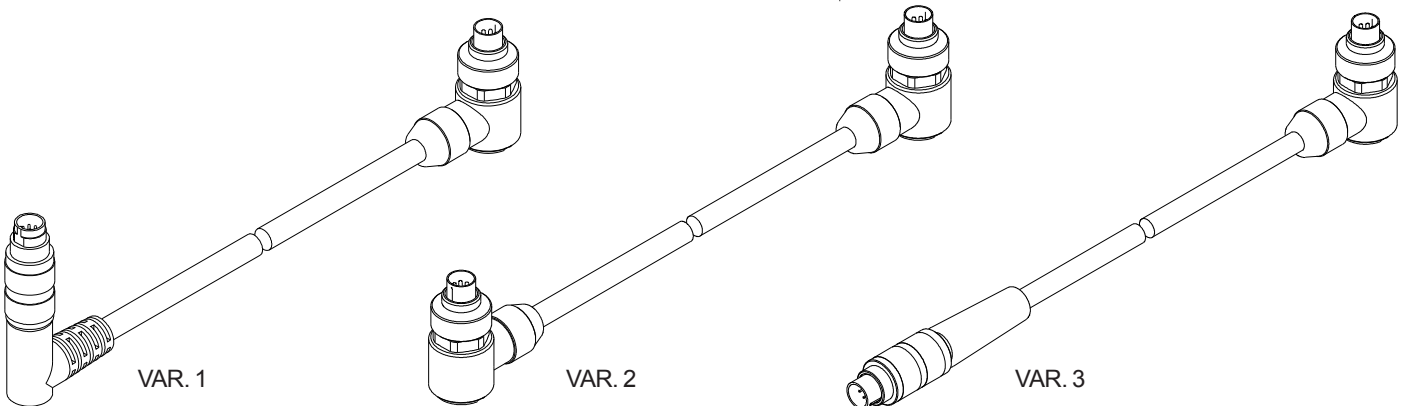
Connection L-LAS-LT-...-MA to L-LAS-LT-...-SL:  
 Connection L-LAS-LT-...-MA-4/20 to L-LAS-LT-...-SL:

Available connecting cables:

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



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



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

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

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

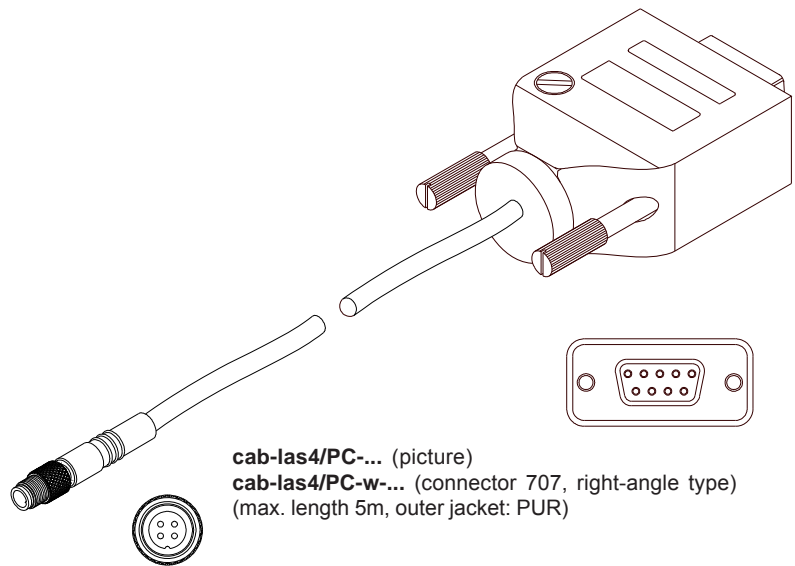


## Connecting Cables

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)**  
 (standard length: 2m)

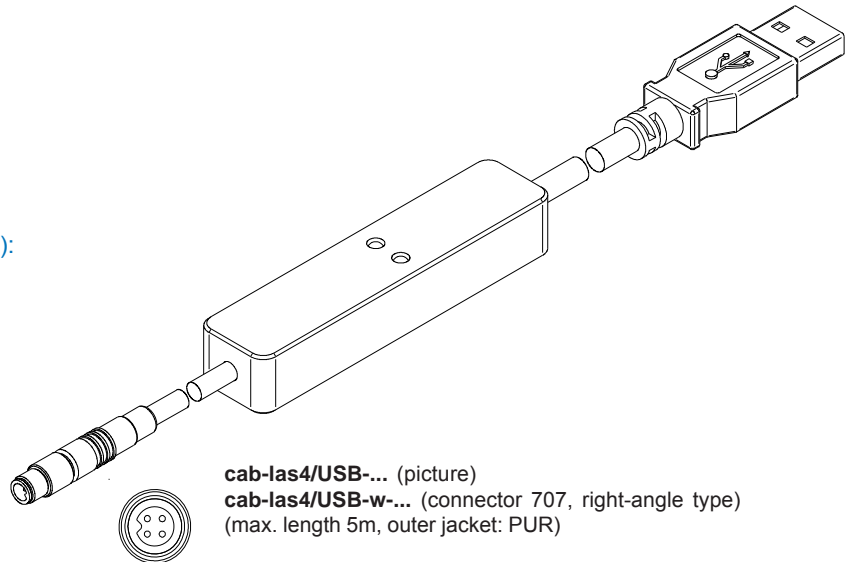


**cab-las4/PC-...** (picture)  
**cab-las4/PC-w-...** (connector 707, right-angle type)  
 (max. length 5m, outer jacket: PUR)

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

Available connecting cables (incl. driver software):

**cab-las4/USB-(length)** or  
**cab-las4/USB-w-(length)**  
 (standard length: 2m)



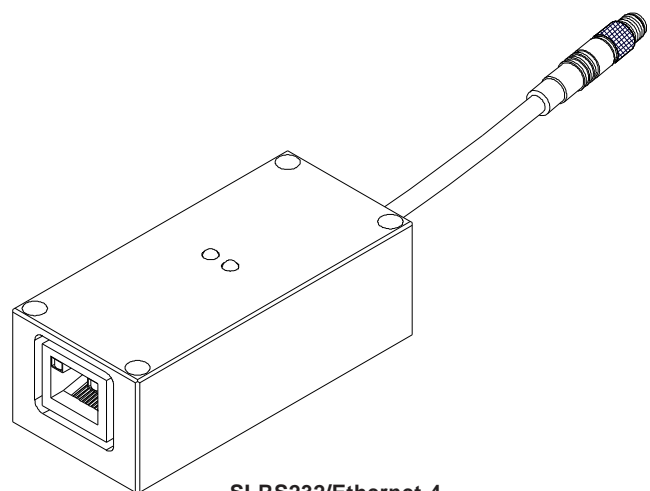
**cab-las4/USB-...** (picture)  
**cab-las4/USB-w-...** (connector 707, right-angle type)  
 (max. length 5m, outer jacket: PUR)

**Alternativee:**

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

Adapter (based on Lantronix XPortModul):

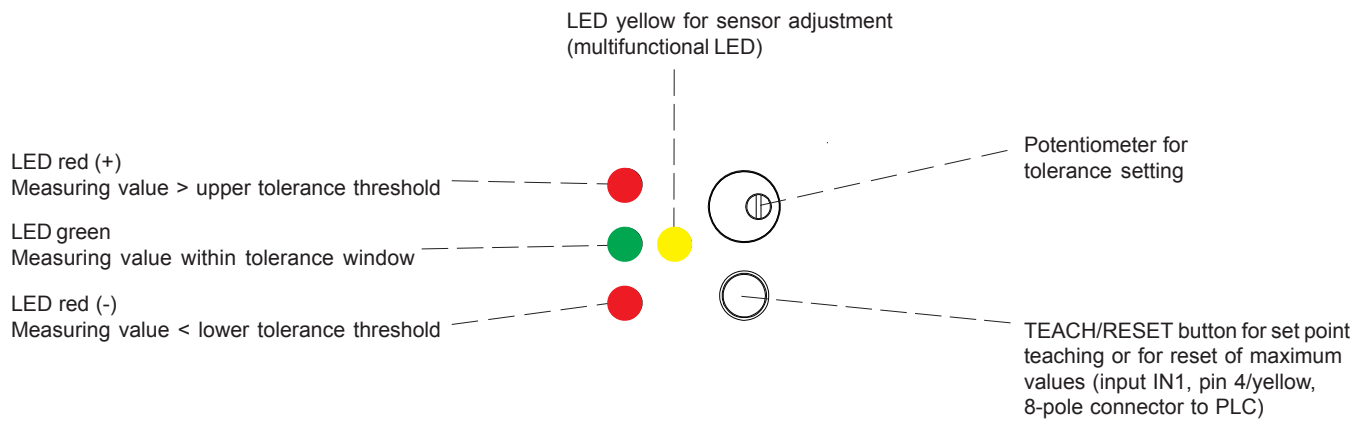
**SI-RS232/Ethernet-4-(length)**  
 (standard length: 2m)



**SI-RS232/Ethernet-4-...**  
 (available lengths: 0,5m, 1m, or 2m,  
 outer jacket: PUR)



**LED Display**



LED display is only active at the Master:

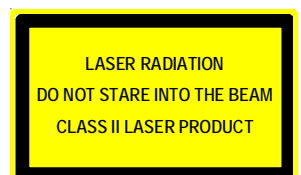
L-LAS-LT-55-RA-HS-MA  
L-LAS-LT-55-RA-HS-MA-4/20



**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.

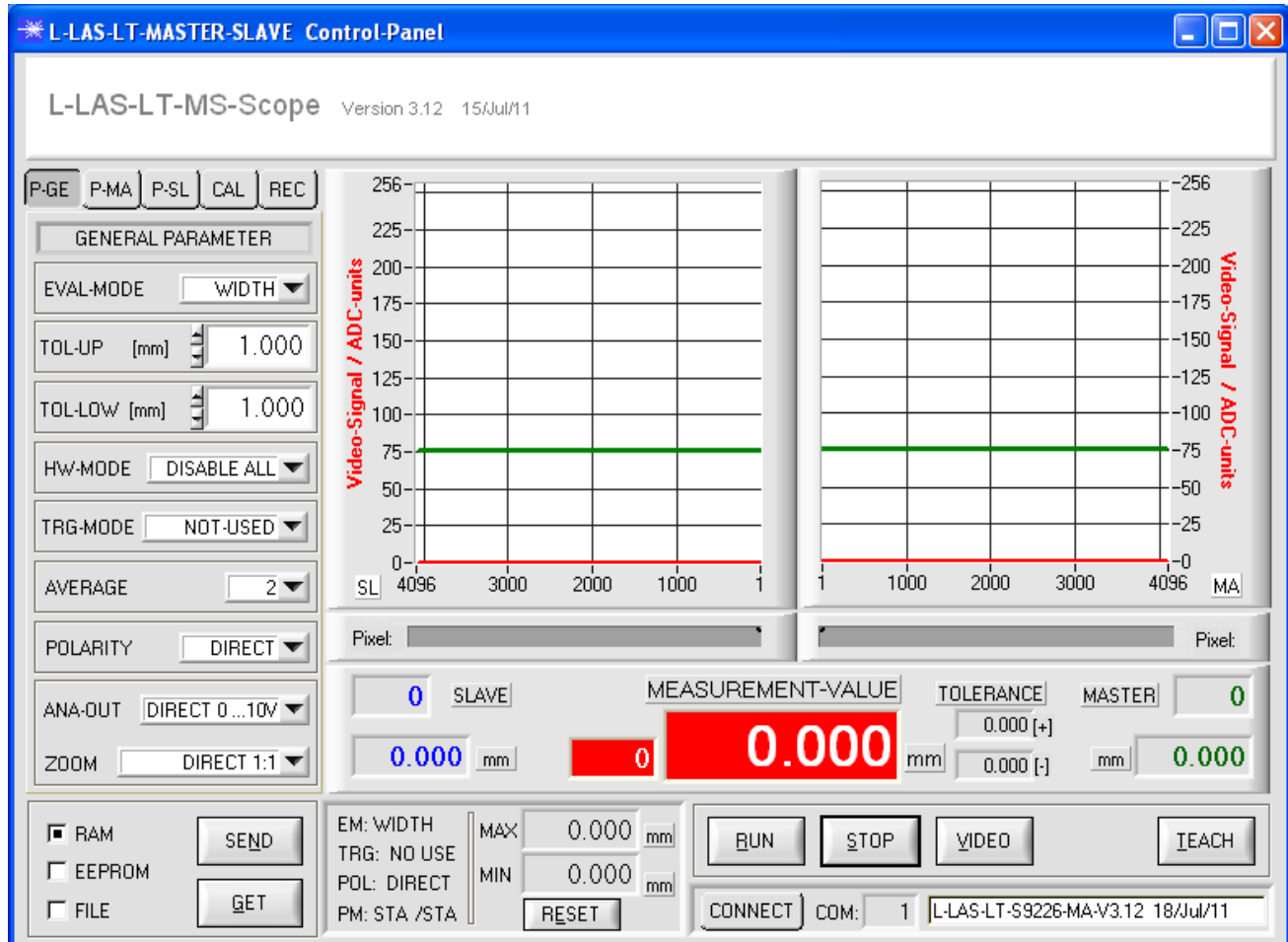
The laser line sensors of L-LAS-LT Series are supplied with a laser warning label.





**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:**

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.

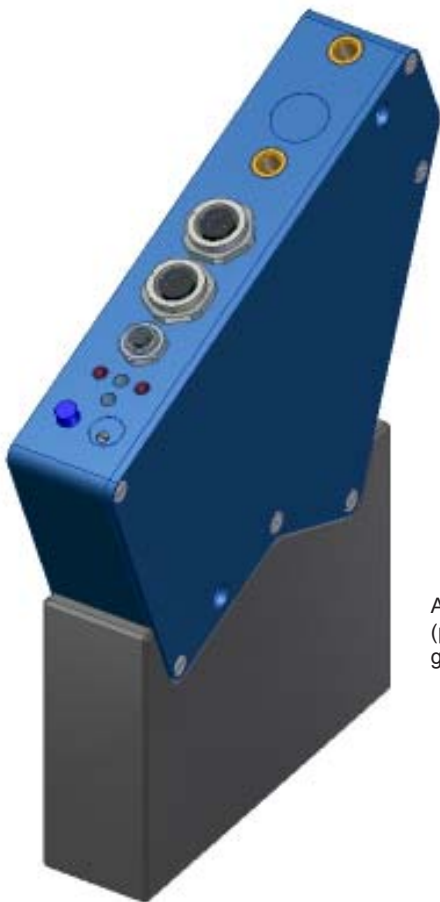


Accessories

**Adjustment unit  
ADJ-LT-55-RA**

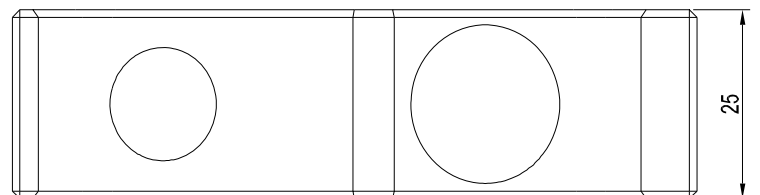
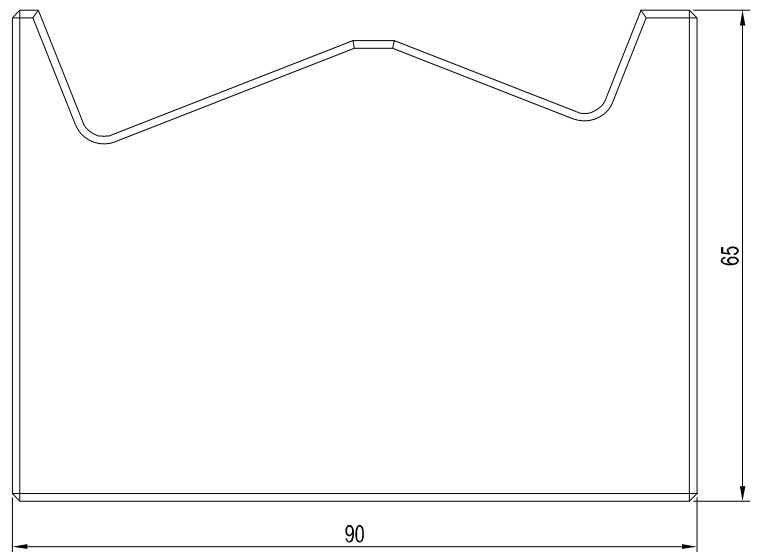
(please order separately)

for optimal fixation of a Master/Slave laser line sensor  
L-LAS-LT-55-RA-MA (-4/20) and L-LAS-LT-55-RA-SL or  
L-LAS-LT-55-RA-HS-MA (-4/20) and L-LAS-LT-55-RA-HS-SL



L-LAS-LT-55-RA

ADJ-LT-55-RA  
(plastic housing,  
grey)



All dimensions in mm