

# L-LAS Series

## ▶ L-LAS-LT-110-HD2-ANA L-LAS-LT-110-HD2-ANA-4/20

- Visible red laser spot (typ. 0.3 mm in the focus)
- Class 2 laser product
- Measuring range typ. 85 mm
- Start of measuring range typ. 80 mm
- Resolution typ. 85 µm
- Integrated interference filter and red light filter
- Automatic laser power adjustment
- High dynamic range (detection of dark and bright objects)
- High reproducibility (typ. 0.2 mm, irrespective of color)
- CCD line detector with 512 pixel, 1024 subpixel
- RS232 interface (USB- oder Ethernetadapter optional)
- Windows® user interface
- 1 digital input
- 1 analog output (either 0 ... +10V or 4 ... 20 mA)
- Switching state indication via 2 LEDs (1x green, 1x yellow)
- Sturdy aluminum housing, industrial-strength
- Optics cover made of scratch-resistant glass

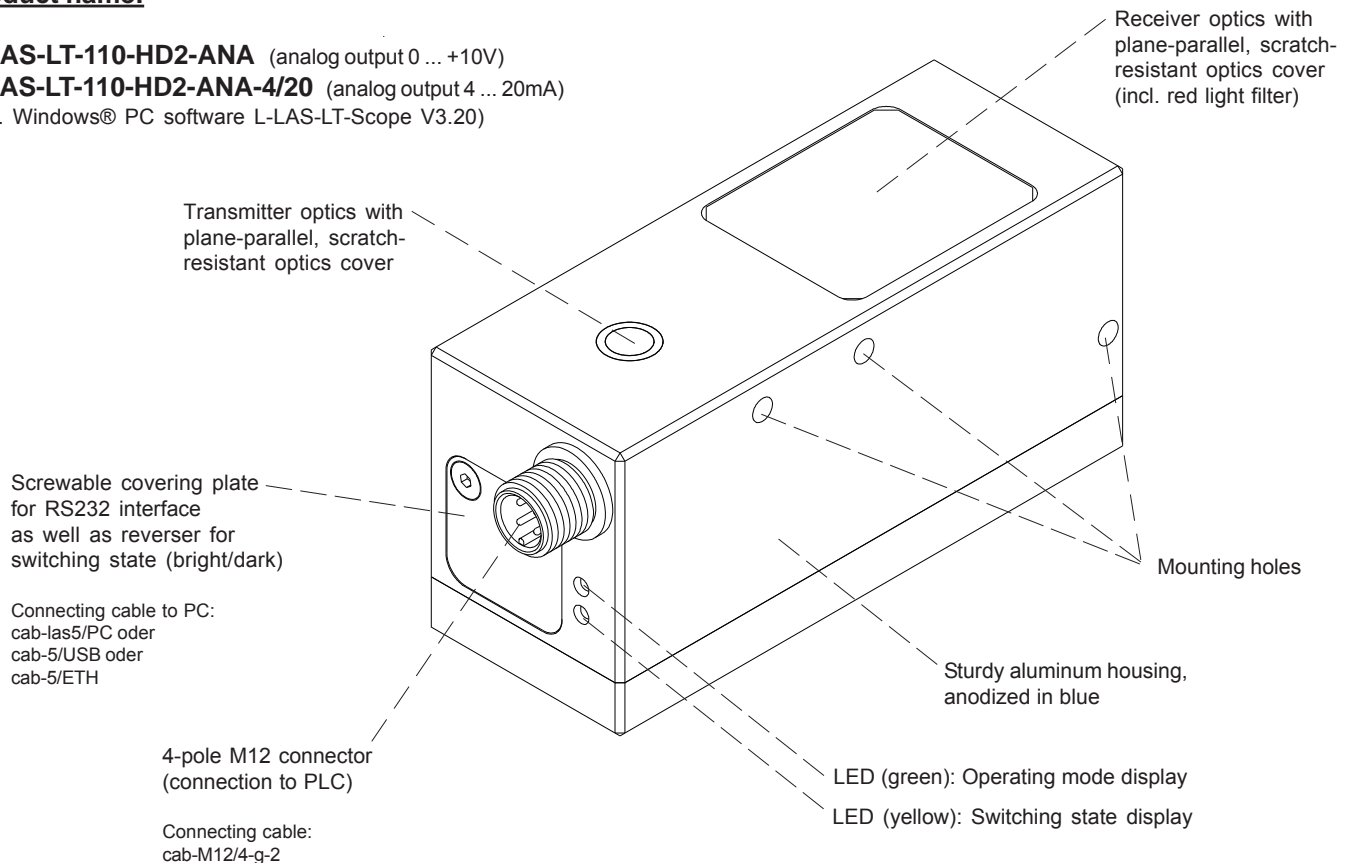


### Design

#### Product name:

**L-LAS-LT-110-HD2-ANA** (analog output 0 ... +10V)

**L-LAS-LT-110-HD2-ANA-4/20** (analog output 4 ... 20mA)  
(incl. Windows® PC software L-LAS-LT-Scope V3.20)

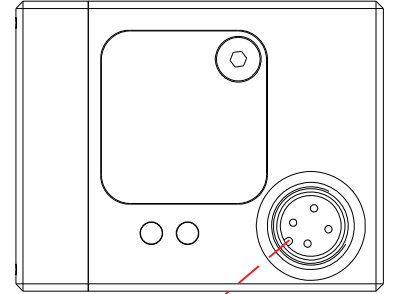
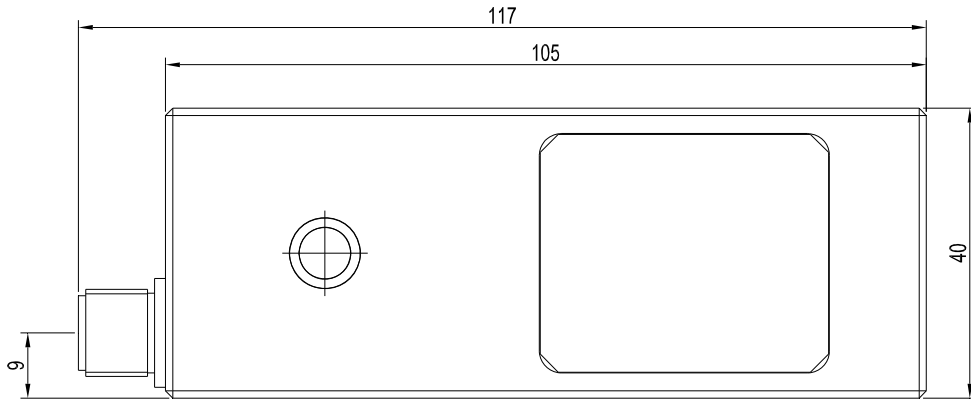




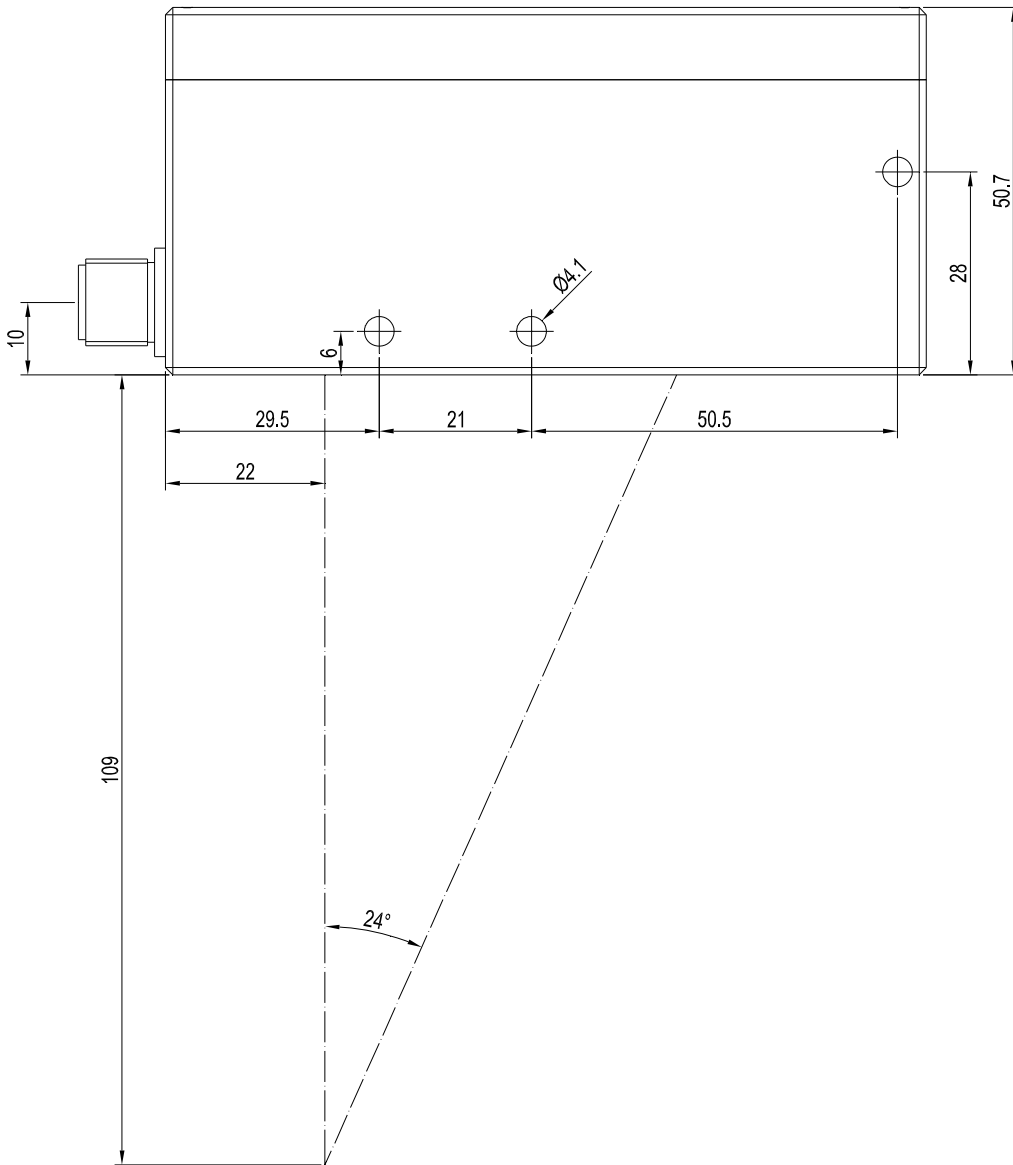
**Technical Data**

Model	L-LAS-LT-110-HD2-ANA	L-LAS-LT-110-HD2-ANA-4/20
Light source	Semiconductor laser, 670 nm, DC operation, 1 mW max. opt. power, laser class 2 acc. to DIN EN 60825-1. The use of these laser sensors therefore requires no additional protective measures.	
Measuring range	typ. 85 mm	
Start of measuring range	typ. 80 mm (measured from housing edge, cf. picture beam path)	
End of measuring range	typ. 165 mm (measured from housing edge, cf. picture beam path)	
Resolution / Reproducibility	typ. 85 µm / typ. ± 85 µm	
Linearity	0,6% FSR (full scale range)	
Laser line geometry	visible laser spot: typ. 0.3 mm in the focus (= 95 mm)	
Optical filters	Interference filter, red light filter	
Digital input (IN0)	IN0: External trigger, IN1: Teach/Reset (double function) Input voltage +Ub/0V, with protective circuit	
Analog output (ANA)	Analog voltage 0 ... +10V	Analog current 4 ... 20mA
Voltage supply	+24VDC (± 10%)	
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	
Operating temperature range	-10°C ... +50°C	
Storage temperature range	-20°C ... +85°C	
Housing material	Aluminum, anodized in blue	
Housing dimensions	LxWxH approx. 106 mm x 40 mm x 50.7 mm (without connector flanges)	
Connector type	4-pole M12 connector (PLC/Power) 5-pole circular fem. connector type Binder 712 (PC/RS232)	
Connecting cables	to PLC: cab-las8/SPS or cab-las8/SPS-w to PC/RS232 interface: cab-las5/PC or cab-las5/PC-w to PC/USB interface: or cab-5/USB or cab-5/USB-w to PC/Ethernet bus: cab-5/ETH	
LED display	LED green : Operating mode display (power) LED yellow : Switching state display	
EMC test acc. to	DIN EN 60947-5-2	
Scan frequency	typ. 600 Hz	
Max. switching current	100 mA, short-circuit proof	
Interface	RS232, parameterisable under Windows® via PC	
Output polarity	Bright/dark-switching, can be set under Windows® via PC or via slider at the housing	

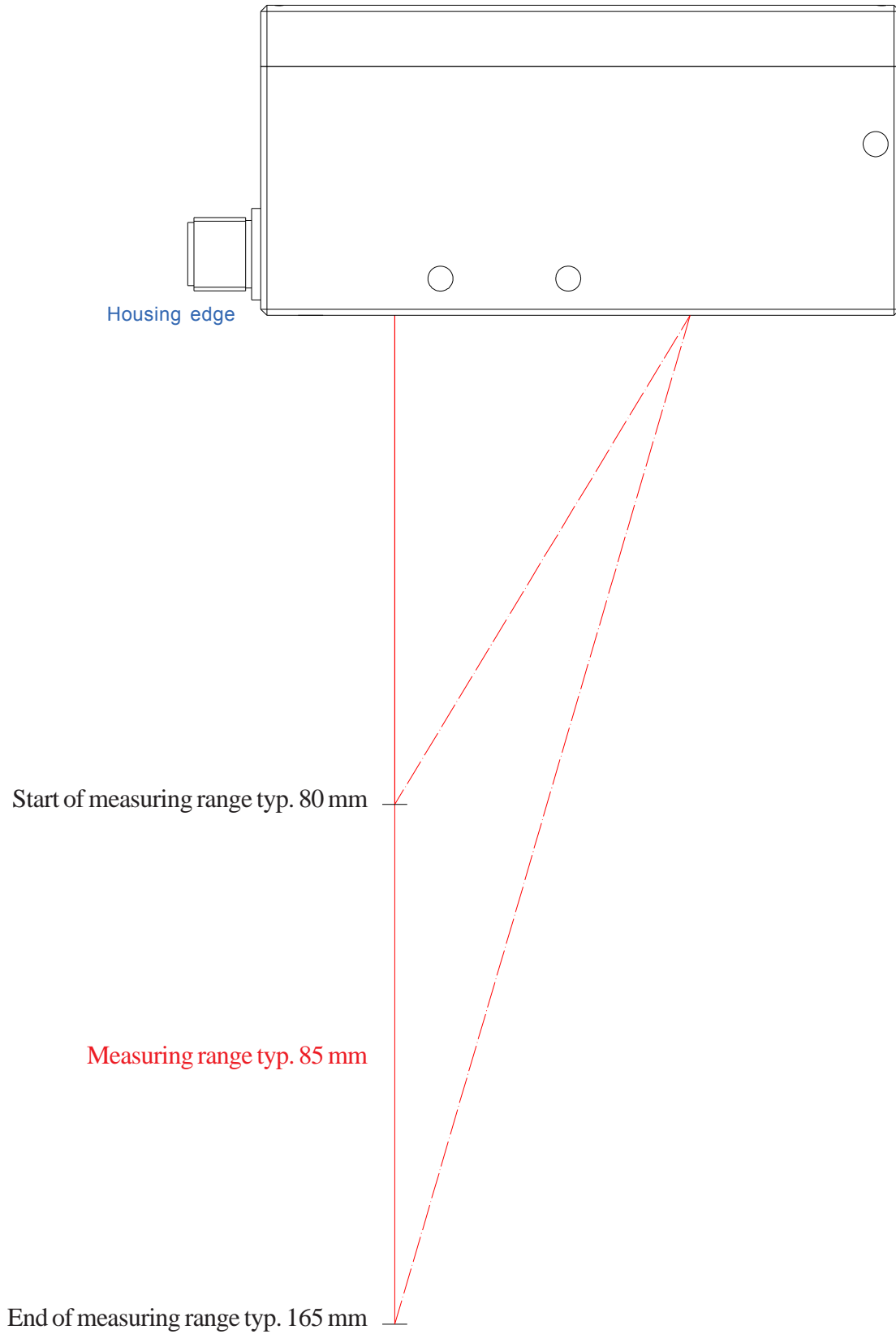
Dimensions



Position of nose



All dimensions in mm

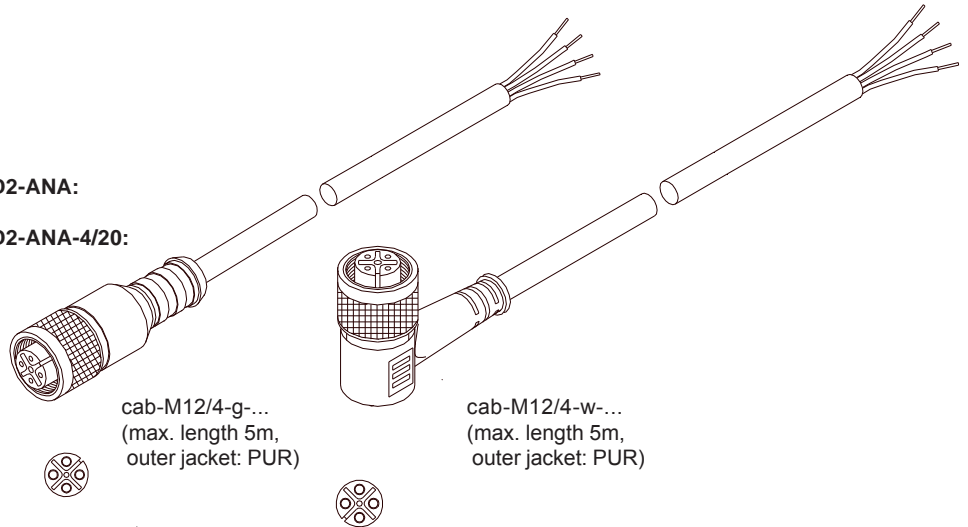


Connector Assignment

**Connection to PLC:  
4-pole M12 connector**

Pin:	Color:	Assignment:
1	brown	+24VDC (±10%)
2	white	IN0 (EXT TRIGGER)
3	blue	GND (0V)
4	black	<b>with type L-LAS-LT-110-HD2-ANA:</b> ANALOG voltage 0 ... +10V <b>with type L-LAS-LT-110-HD2-ANA-4/20:</b> ANALOG current 4 ... 20mA

Connecting cable:  
cab-M12/4-g-(length) or  
cab-M12/4-w-(length) (angle type 90°)  
(standard length 2m)



cab-M12/4-g-...  
(max. length 5m,  
outer jacket: PUR)

cab-M12/4-w-...  
(max. length 5m,  
outer jacket: PUR)

**Connection to PC:  
5-pole fem. connector Binder 712**

Pin:	Assignment:
1	GND (0V)
2	TxD
3	RxD
4	+24V (+Ub, OUT)
5	not connected

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

Connecting cable:  
cab-las5/PC-(length)  
cab-las5/PC-w-(length) (angle type 90°)  
(standard length 2m)

**alternative:**

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

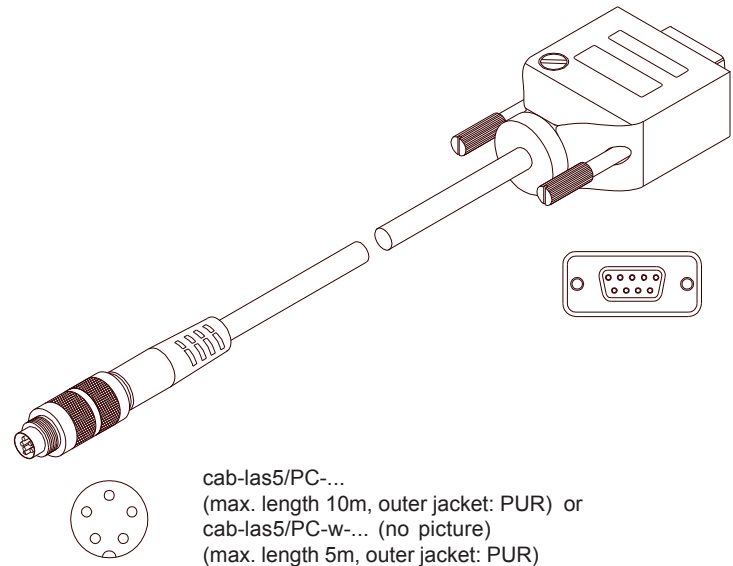
Connecting cable (incl. driver software):  
cab-4/USB-(length)  
cab-4/USB-w-(length) (angle type 90°)  
(standard length 2m)

**alternative:**

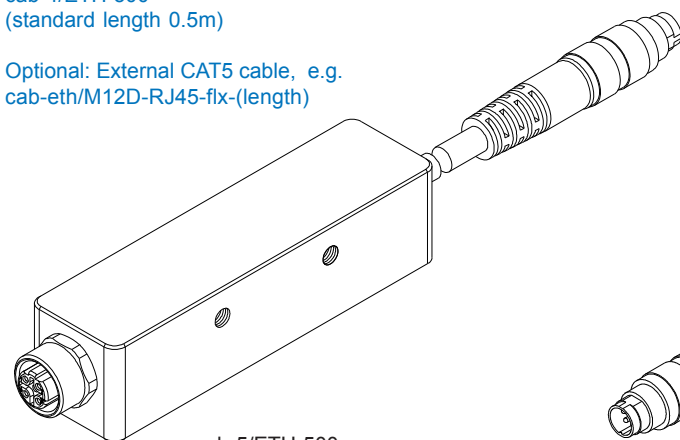
**Connection to local network via Ethernet bus:**

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

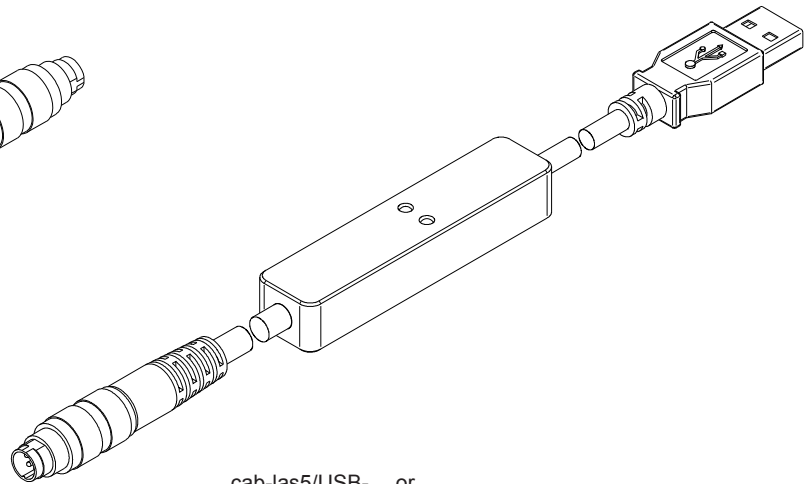
Optional: External CAT5 cable, e.g.  
cab-eth/M12D-RJ45-flx-(length)



cab-las5/PC-...  
(max. length 10m, outer jacket: PUR) or  
cab-las5/PC-w-... (no picture)  
(max. length 5m, outer jacket: PUR)



cab-5/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)



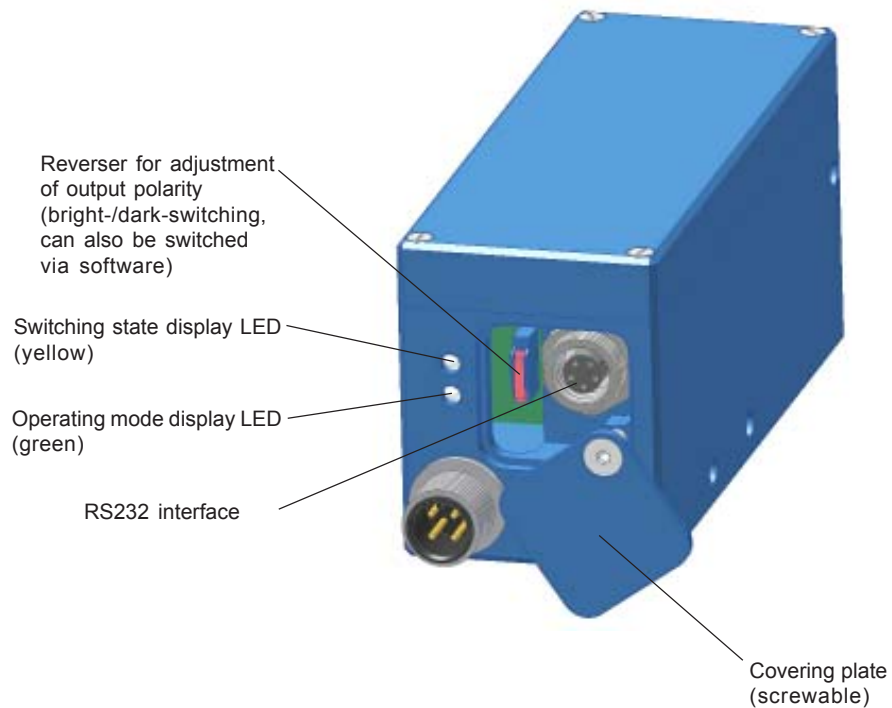
cab-las5/USB-... or  
cab-las5/USB-w-... (no picture)  
(each max. length 5m, outer jacket: PUR)



**Settings**

With the L-LAS-LT-110-HD2 parameter input is performed by means of software L-LAS-LT-Scope V3.20 (unter Windows®) through the serial RS232 interface (cf. page 7). The access to the RS232 interface is enabled by screwing off the covering plate.

Moreover, a slide switch under the covering plate is used for output polarity setting (alteration switch).




**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.



LASER RADIATION  
DO NOT STARE INTO THE BEAM  
CLASS II LASER PRODUCT



## Parameterization

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

The L-LAS-LT-110-HD2 laser line sensor can be easily parameterised with the Windows® user interface L-LAS-LT-Scope V3.20. For this purpose the sensor is connected to the PC with the serial interface cable cab-las5/PC (or with USB cable cab-las5/USB or with Ethernet adaptor SI-RS232/Ethernet-5). When parameterisation is finished, the PC can be disconnected again.

### Windows®-Bedienoberfläche:



With the help of the L-LAS-LT-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-Scope V3.20 software. For example, the raw data of the CCD line sensor can be displayed graphically and numerically.

**Application Example****Positioning to painted car body components**

The automobile industry often faces the task of positioning on already painted car body components (as a rule with a robot). For this purpose, the distance or the edge between robot and body component must be detected with an accuracy of only a few tenths. Because of the different paint finishes (from black to white), the dynamic range of the employed laser sensor has to meet highest demands.

By means of automatic laser power correction, the L-LAS-LT-110-HD2 laser reflex sensor adapts itself almost without any problems to the respective surface, which means that bright and dark objects can be detected with highest accuracy.

