

# L-LAS Series

## ▶ L-LAS-LT-50-CL

- Line laser <math><0.4\text{ mW}</math>, wave length 670 nm, **laser class 1**
- Visible red laser line, typ. 0.3 mm x 3 mm
- Reference distance 50 mm
- Measuring range typ. 38 mm
- Start of measuring range at typ. 36 mm
- Resolution typ. 10  $\mu\text{m}$
- Interference filter and red light filter integrated
- CCD line detector with 512 pixel, 2048 subpixel
- RS232 interface (USB or Ethernet converter available)
- Windows® user interface
- 2 digital inputs, 2 digital outputs
- 1 analog output (0...+10V, optionally additional output 4...20mA)
- Scan frequency max. 500 Hz
- Switching state indication via 4 LEDs (2x red/grn, 2x yel/grn)
- Optics cover made of scratch-resistant glass

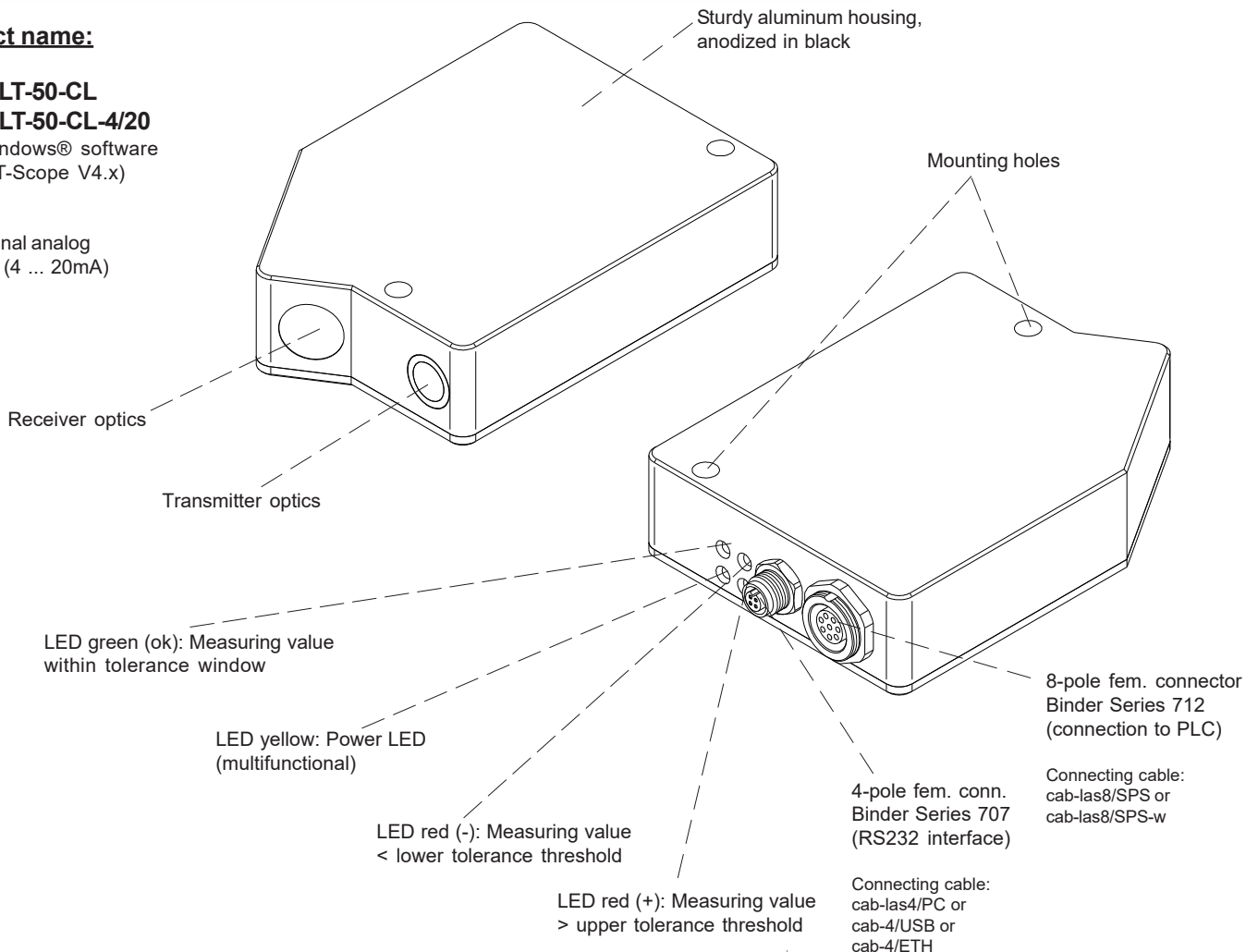


### Design

#### Product name:

**L-LAS-LT-50-CL**  
**L-LAS-LT-50-CL-4/20**  
 (incl. Windows® software  
 L-LAS-LT-Scope V4.x)

**4/20 =**  
 additional analog  
 output (4 ... 20mA)



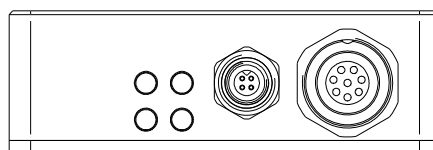
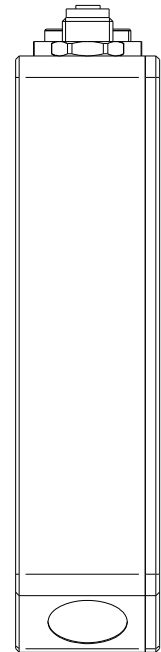
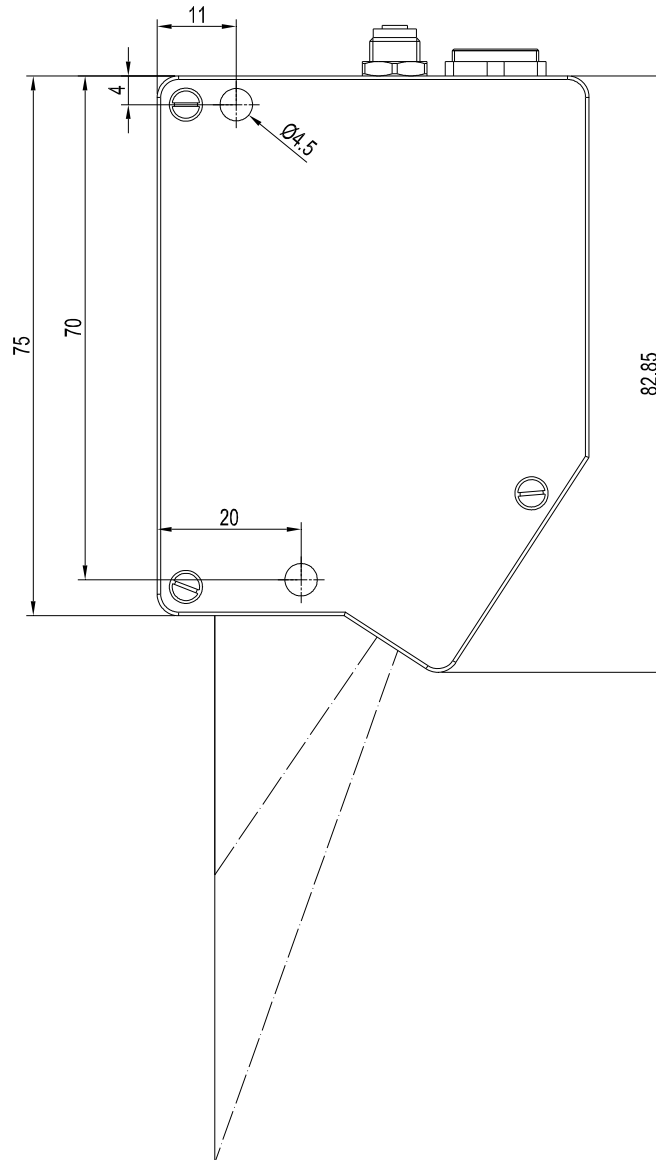
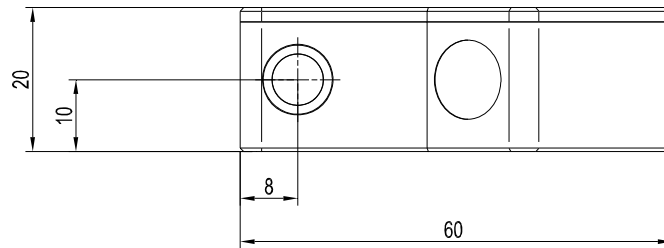


**Technical Data**

| Model                                | L-LAS-LT-50-CL  | L-LAS-LT-50-CL-4/20  |
|--------------------------------------|---|--|
| Light source                         | Solid state laser, 670 nm, AC operation, <0.4 mW opt. power, laser class 1 acc. to DIN EN 60825-1.<br>The use of these laser transmitters therefore requires no additional protective measures.   |  |
| Reference distance                   | 50 mm   |  |
| Measuring range                      | typ. 38 mm  |  |
| Start of measuring range             | typ. 36 mm (measured from housing edge, cf. picture beam path)  |  |
| End of measuring range               | typ. 74 mm (measured from housing edge, cf. picture beam path)  |  |
| Resolution                           | typ. 10 µm  |  |
| Reproducibility                      | typ. ± 10 µm  |  |
| Linearity                            | ≤ 0.25% of full scale output (FSO)  |  |
| Laser line geometry                  | typ. 0.3 mm x 3 mm  |  |
| Optical filter                       | Interference filter, red light filter RG630   |  |
| Analog output (ANA)                  | 1x voltage output (0 ... +10V)  | 1x voltage output (0 ... +10V)<br>1x current output (4 ... 20mA) |
| Digital outputs (OUT0, OUT1)         | OUT0: (-) Measuring value < lower tolerance threshold<br>OUT1: (+) Measuring value > upper tolerance threshold<br>pnp bright-switching/npn dark-switching or pnp dark-switching/npn bright-switching,<br>adjustable under Windows®, 100 mA, short-circuit proof   |  |
| Digital inputs (IN0, IN1)            | IN0: External trigger, IN1: Teach/Reset (double function)<br>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                     | Electronics: IP54, optics: IP67   |  |
| Temperature stability                | 0.01% of measuring range/°C   |  |
| Temperature ranges                   | Operating temperature range: -10°C ... +50°C<br>Storage temperature range: -20°C ... +85°C  |  |
| Housing material                     | Aluminum, anodized in black   |  |
| Housing dimensions                   | LxWxH approx. 82.85 mm x 60 mm x 20 mm (without flange connectors)  |  |
| Type of connector                    | 8-pole circular fem. connector type Binder 712 (PLC/Power)<br>4-pole circular fem. connector type Binder 707 (PC/RS232)   |  |
| Connecting cable                     | to PLC: cab-las8/SPS or cab-las8/SPS-w<br>to PC/RS232 interface: cab-las4/PC or cab-las4/PC-w<br>to PC/USB interface: cab-4/USB or cab-4/USB-w<br>to PC/Ethernet interface: cab-4/ETH   |  |
| LED indication<br>(4x two-color LED) | 2x two-color-LED red/green and 1x two-color-LED yellow/green for tolerance band monitoring:<br>red (+) = Measuring value > upper tolerance threshold<br>red (-) = Measuring value < lower tolerance threshold<br>green (ok) = Measuring value within tolerance window<br>1x two-color LED yellow/green (multifunctional): yellow = Power indication |  |
| EMC test acc. to                     | DIN EN 60947-5-2  |  |
| Measuring frequency                  | max. 500 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-50-CL  
L-LAS-LT-50-CL-4/20

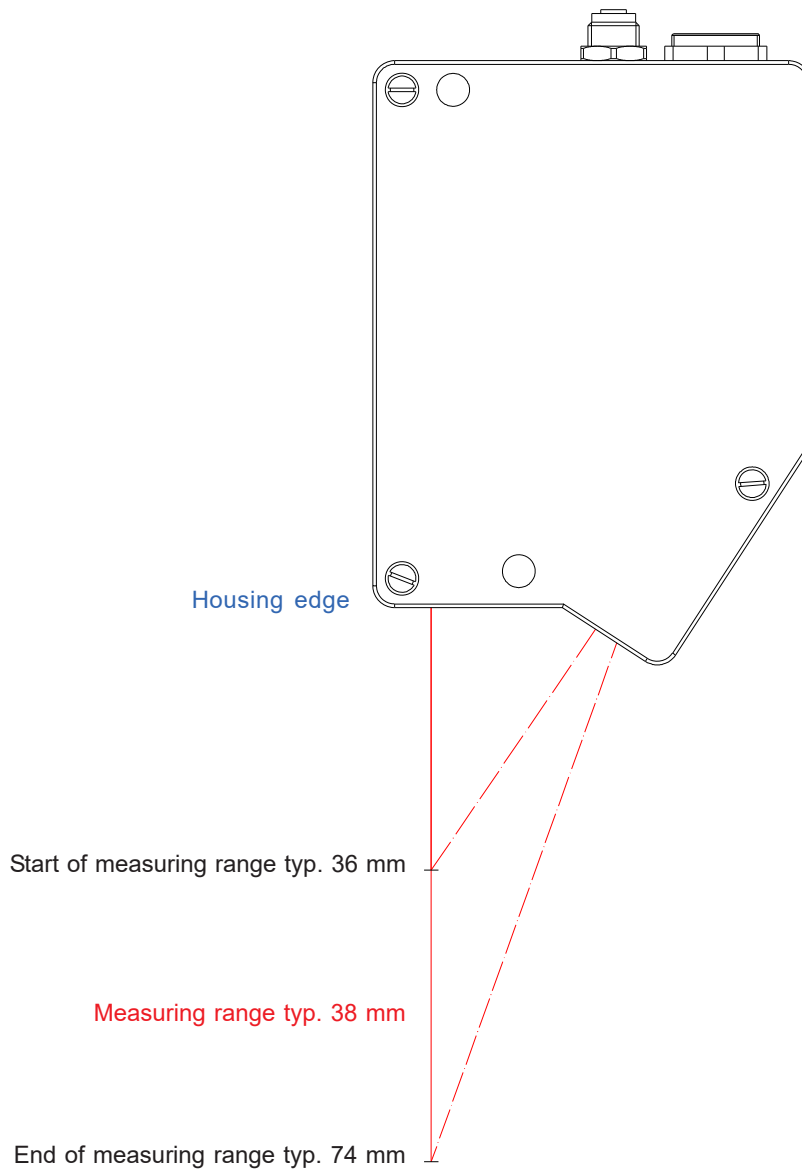


All dimensions in mm



Beam Path

L-LAS-LT-50-CL  
L-LAS-LT-50-CL-4/20



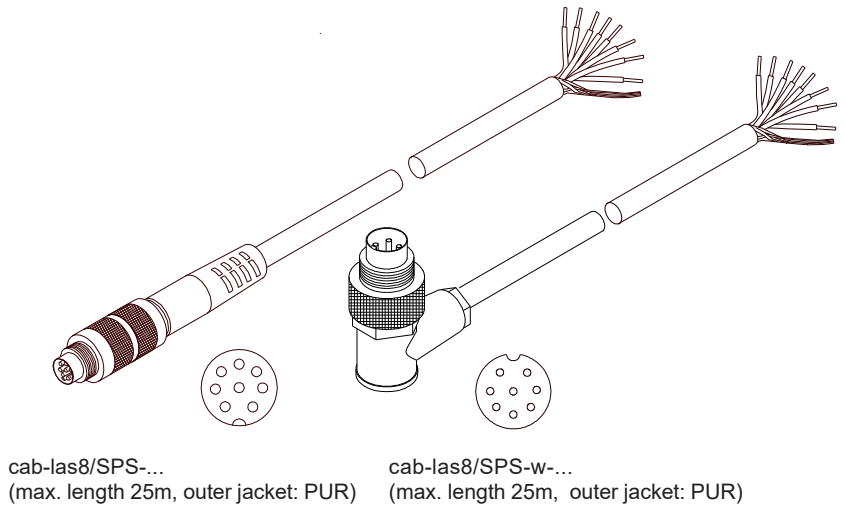


**Connector Assignment**

**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   | GND (0V) or<br><b>in case of -4/20: ANA (current 4 ... 20mA)</b> |
| 8    | red    | <b>ANA (voltage 0 ... +10V)</b>                                  |

Connecting cable:  
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 to PC:  
4-pole fem. connector Binder Series 707**

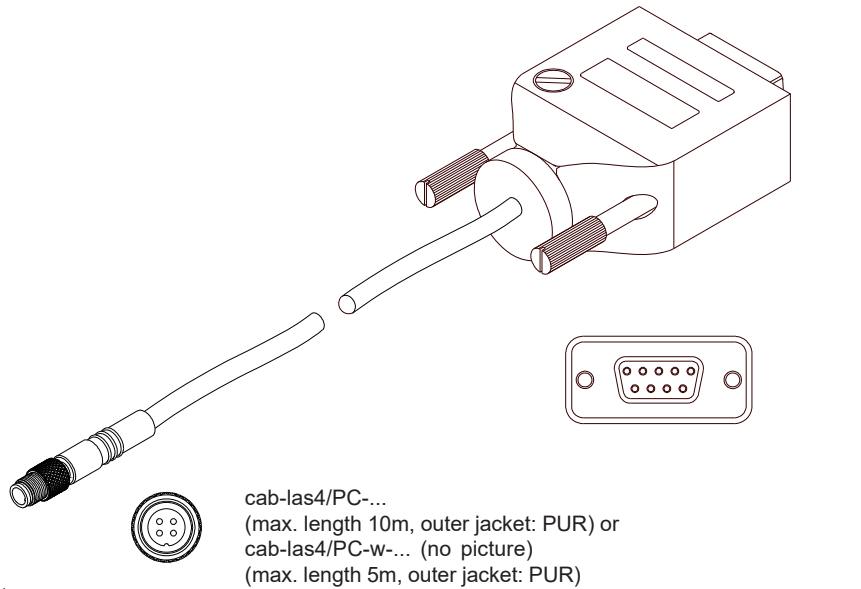
| Pin: | Assignment:       |
|------|-------------------|
| 1    | +24VDC (+Ub, OUT) |
| 2    | GND (0V)          |
| 3    | RxD               |
| 4    | TxD               |

**Connection via RS232 interface at the PC:**  
Connecting cable:  
cab-las4/PC-(length)  
cab-las4/PC-w-(length) (angle type 90°)  
(standard length 2m)

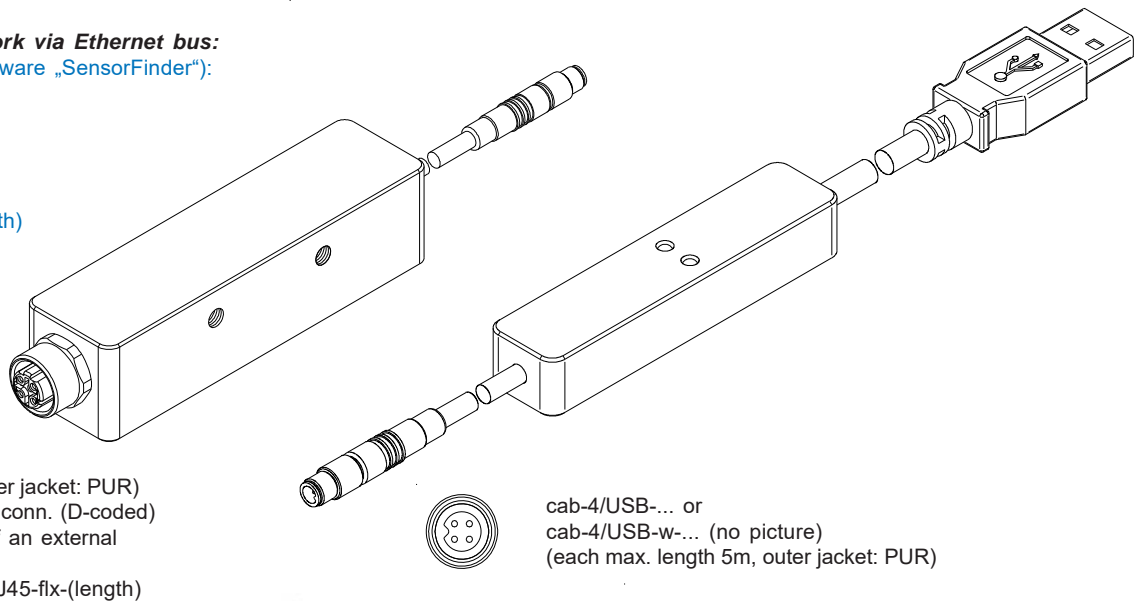
**alternative:**  
**Connection via USB interface at the PC:**  
USB converter (incl. driver software):  
cab-4/USB-(length)  
cab-4/USB-w-(length) (angle type 90°)  
(standard length 2m)

**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)



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)

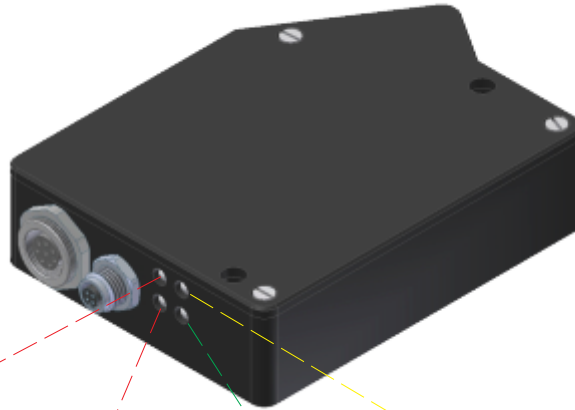


## LED Display

LED display:

(+) ● ● Power

(-) ● ● (ok)



**LED red (+):** ●  
Measuring value > upper tolerance threshold (OUT1)

**LED red (-):** ●  
Measuring value < lower tolerance threshold (OUT0)

**LED green (ok):** ●  
Measuring value within tolerance window

**LED yellow:** ●  
Power LED (multifunctional)



## Laser Information

The laser transmitters of the line sensors L-LAS-LT-50-CL and L-LAS-LT-50-CL-4/20 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 line sensors L-LAS-LT-50-CL and L-LAS-LT-50-CL-4/20 are supplied with an information label „CLASS 1 Laser Product“.

**CLASS 1 Laser Product**  
IEC 60825-1: 2008-05  
THIS LASER PRODUCT COMPLIES  
WITH 21 CFR 1040 AS APPLICABLE

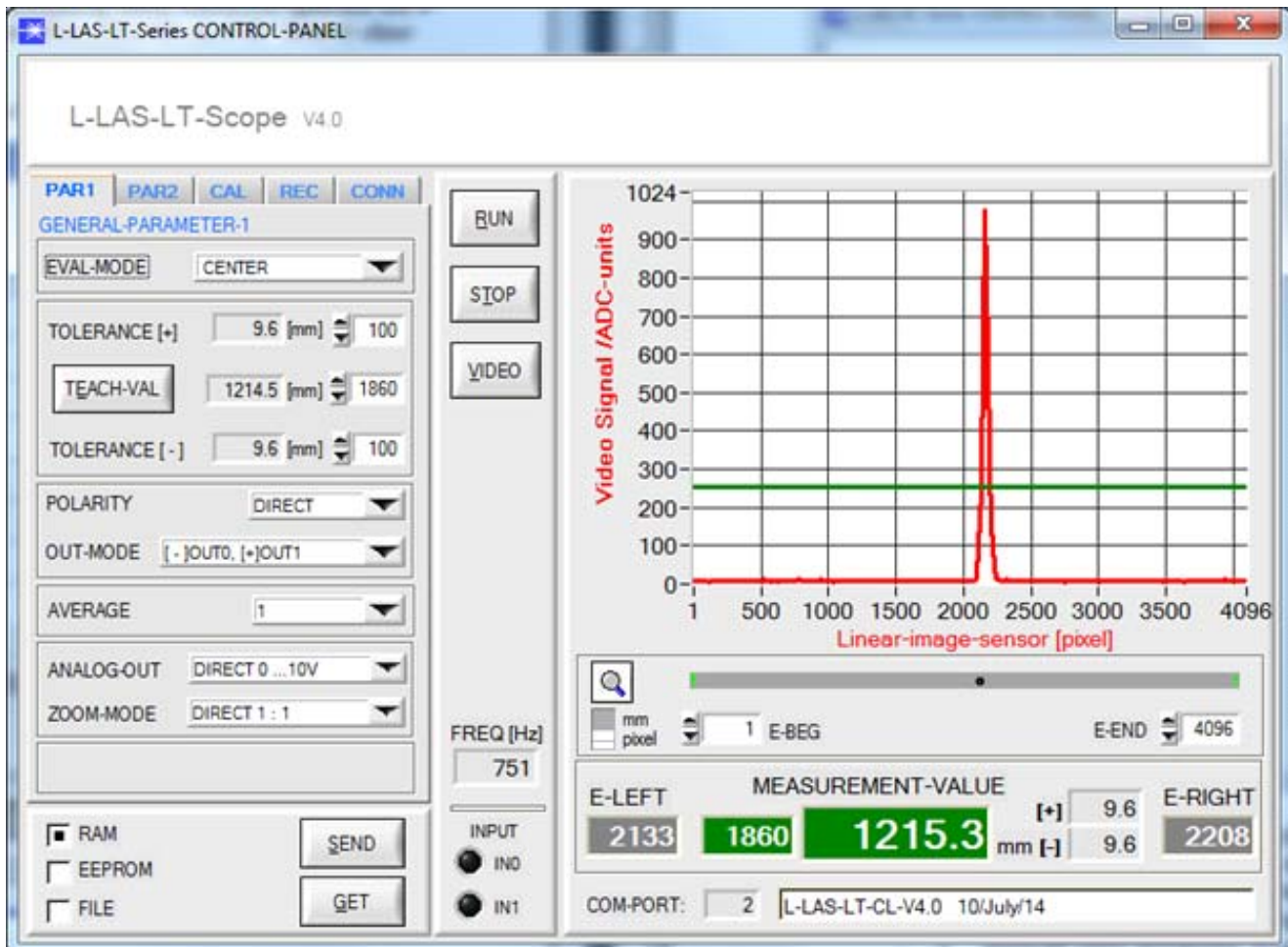




**Parameterization**
**Windows® software L-LAS-LT-Scope V4.x:**

(The current software version is available for download on our website.)

The L-LAS-LT sensor can easily be parameterised with the Windows® user interface. For this purpose the sensor is connected to the PC with the serial interface cable cab-las4/PC respectively by means of USB converter cab-4/USB or Ethernet converter cab-4/ETH. When parameterisation is finished, the PC can be disconnected again.

**Windows® user interface:**

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 software. For example, the raw data of the CCD line sensor can be displayed graphically and numerically.