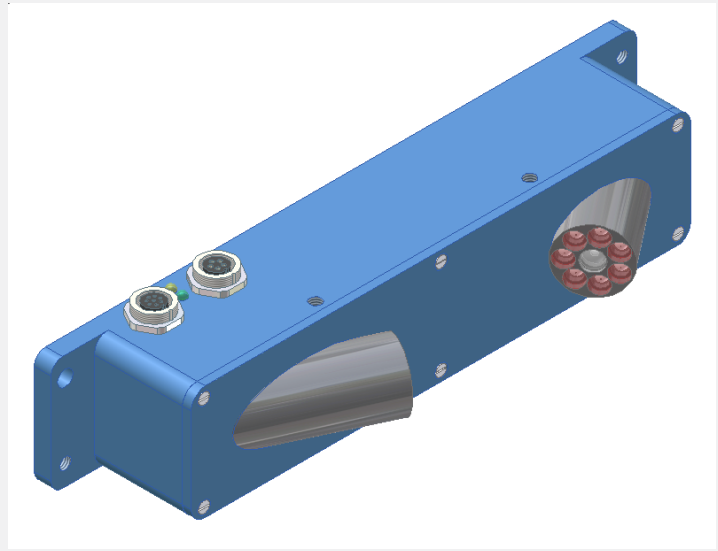


LCC Series

LCC-30

- Insensitive to outside light due to interference filter and modulated laser light
- Visible laser spot (red light 670 nm)
- Parameterisable via RS232
- RS232 interface and Windows® user interface
- Automatic adjustment to product
- Extern-trigger function
- Reliable counting of high-glossy laminated sheets
- Working range typ. 26...34 mm (with TB-30: typ. 29...31 mm)
- Extremely small light spot with stray light suppression (TB-30)



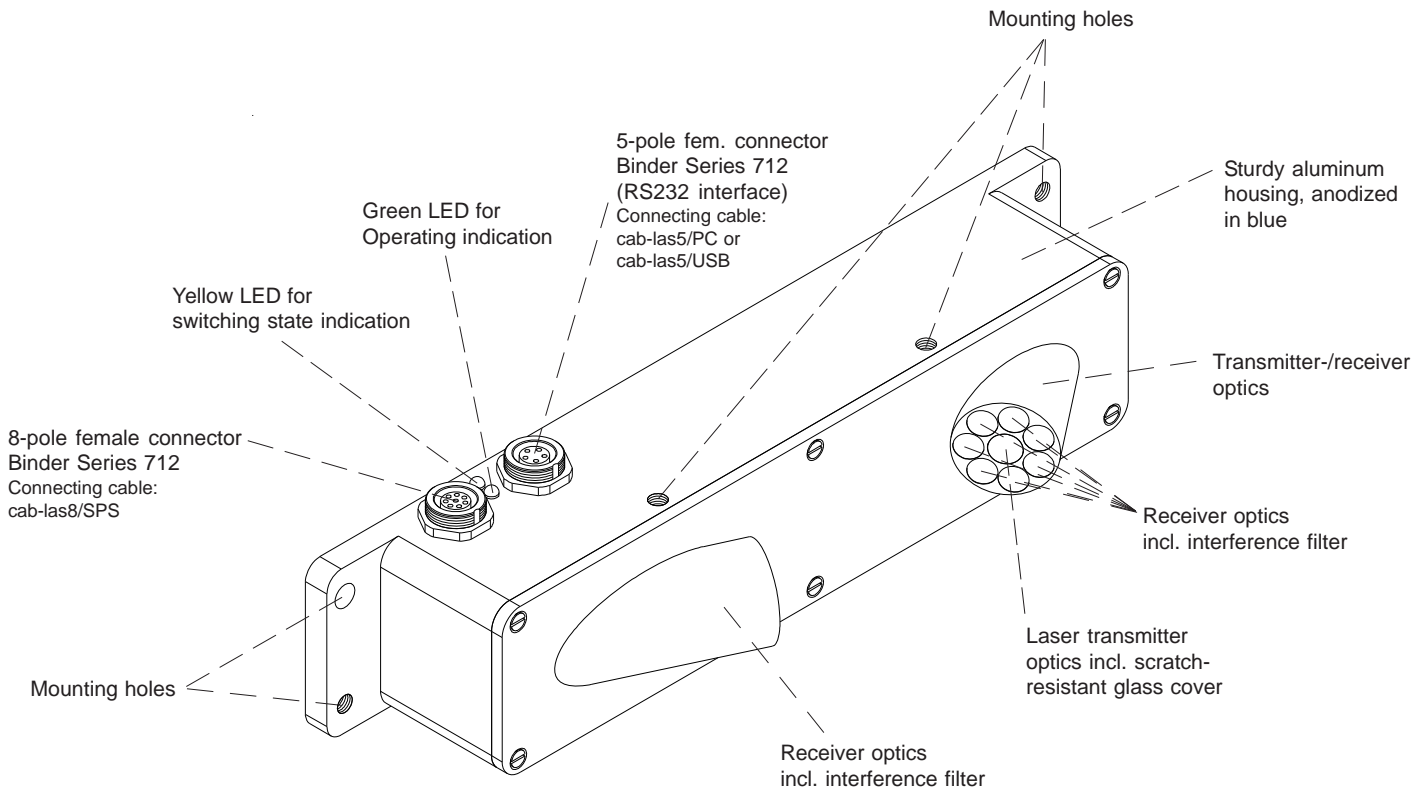
Design

Product name:

LCC-30
(incl. Windows® PC software SI-LCC-Scope)

Accessories:

TB-30 (attachment optics, cf. page 4)

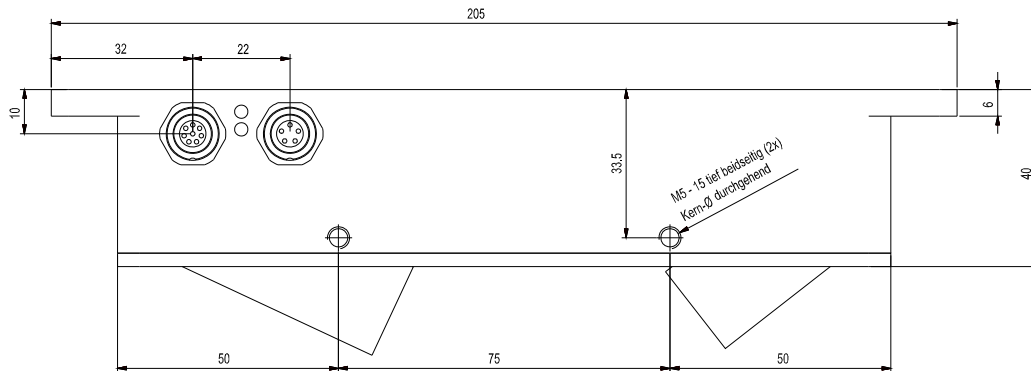
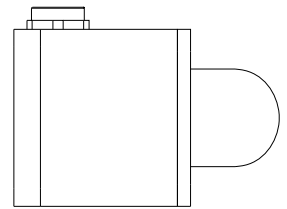
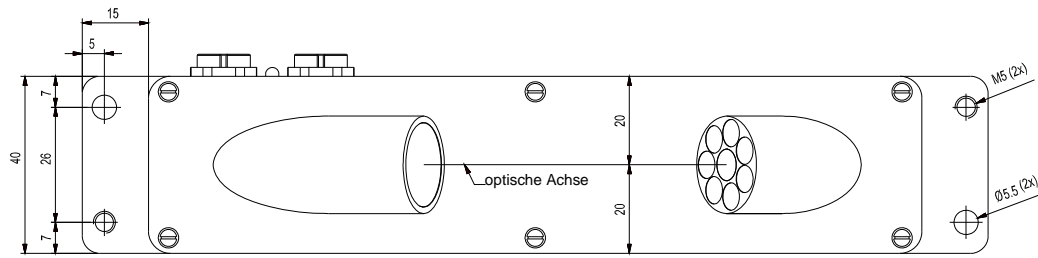




Technical Data

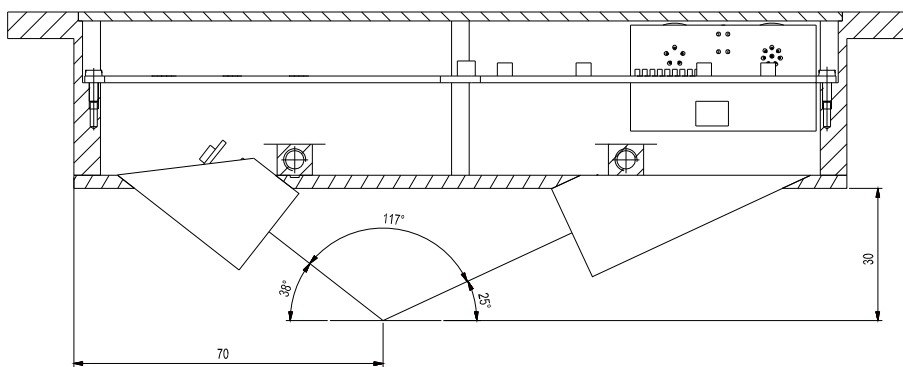
Model	LCC-30
Laser	Semi-conductor laser, 670 nm, AC operation, 1 mW max. opt. power, laser class 2 acc. to DIN EN 60825-1. The use of this laser sensor therefore requires no additional protective measures.
Working range	typ. 26 mm ... 34 mm (with tube TB-30: typ. 29 mm ... 31 mm)
Max. product stream	typ. 500 000 copies/h
Min. height of object	typ. 0.1 mm
Optical filter	Red light filter RG630 and interference filter
Digital output	OUT0 and OUT1, pnp bright-switching/npn dark-switching or pnp dark-switching/npn bright-switching, adjustable under Windows® on PC
Output polarity	Bright-/dark-switching, can be adjusted under Windows® on PC
Voltage supply	+24VDC (± 10%)
Sensitivity setting	adjustable under Windows® on PC
Laser power correction	adjustable under Windows® on PC
Current consumption	typ. 150 mA
Dead time	adjustable under Windows® on PC
Dead time mode	static or dynamic, adjustable under Windows® on PC
Enclosure rating	IP54
Operating temperature range	-20°C ... +50°C
Storage temperature range	-20°C ... +85°C
Housing material	Aluminum, anodized in blue
Housing dimensions	approx. 205 mm x 40 mm x 40 mm
Type of connector	8-pole female connector type Binder Series 712 5-pole female connector type Binder Series 712
EMC test acc. to	DIN EN 60947-5-2
Scan frequency	typ. 15 kHz (without averaging)
Switching state indication	Visualization by means of a yellow LED
Dynamic output (pulse lengthening)	adjustable under Windows® on PC
Max. switching current	100 mA, short-circuit protected
Interface	RS232, parameterizable under Windows®
Connecting cables	Connection to PC: cab-las5/PC or cab-las5/PC-w or cab-las5/USB or cab-las5/USB-w Connection to PLC: cab-las8/SPS or cab-las8/SPS
Modulation frequency	typ. 100 kHz

Dimensions



All dimensions in mm

Working Distance



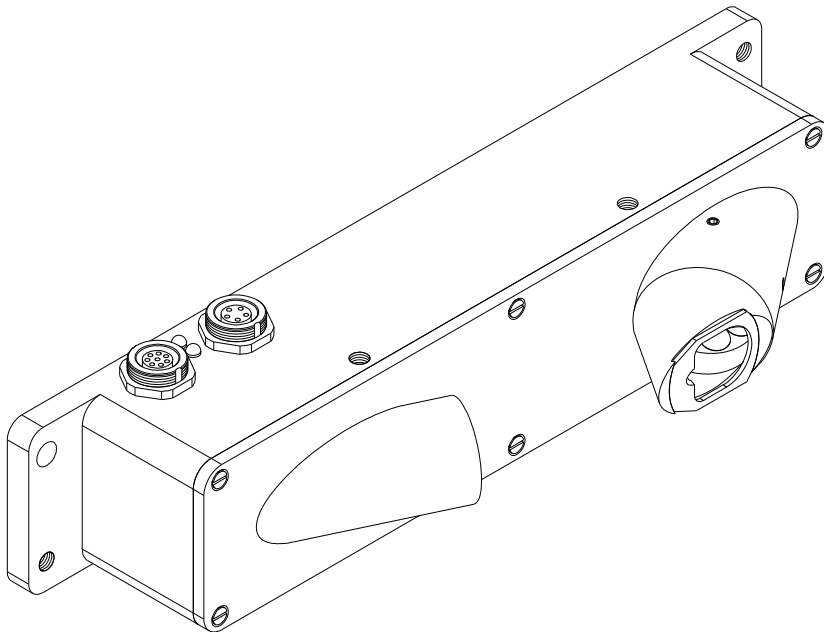
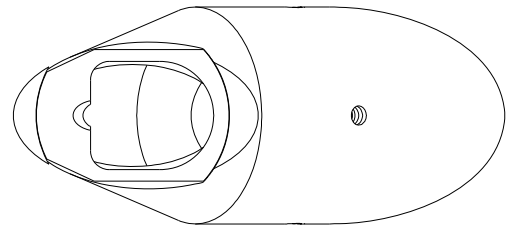
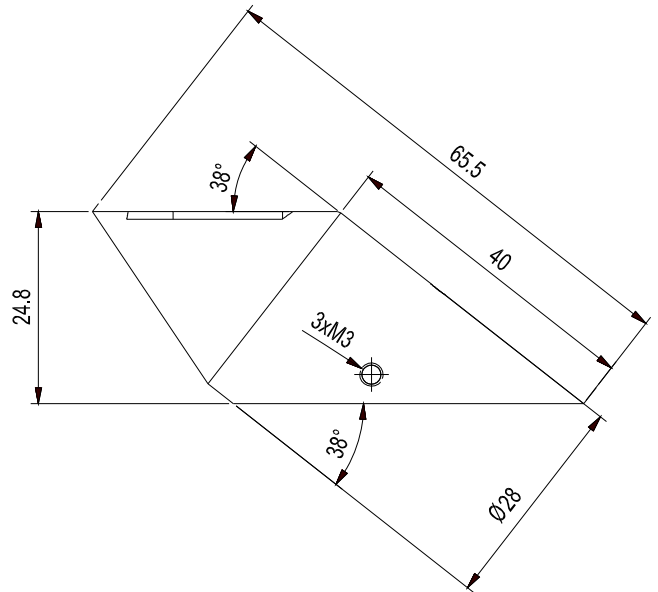
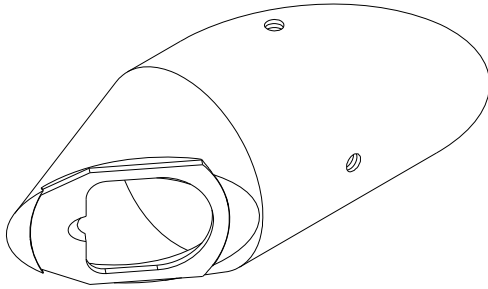
All dimensions in mm



Accessories

Tube TB-30
(for transmitter-/receiver optics)

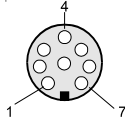
All dimensions in mm



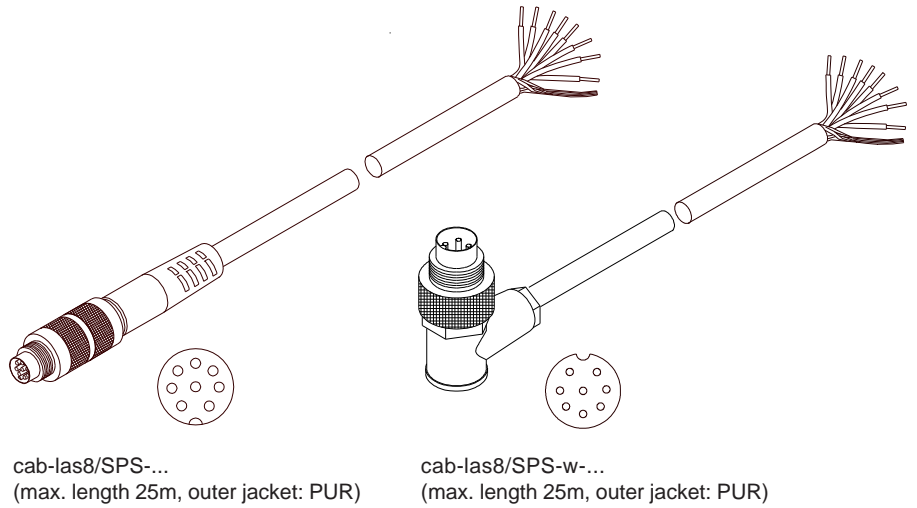
Connector Assignment

Connection to PLC:
8-pole fem. connector Binder 712

Pin:	Color:	Assignment:
1	white	GND (0V)
2	brown	+24VDC ($\pm 10\%$)
3	green	IN0
4	yellow	IN1
5	grey	OUT0
6	pink	OUT1
7	blue	not connected
8	red	not connected

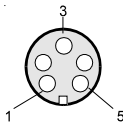


Connecting cable:
cab-las8/SPS-(length) or
cab-las8/SPS-w-(length) (angle type 90°)
(standard length 2m)



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



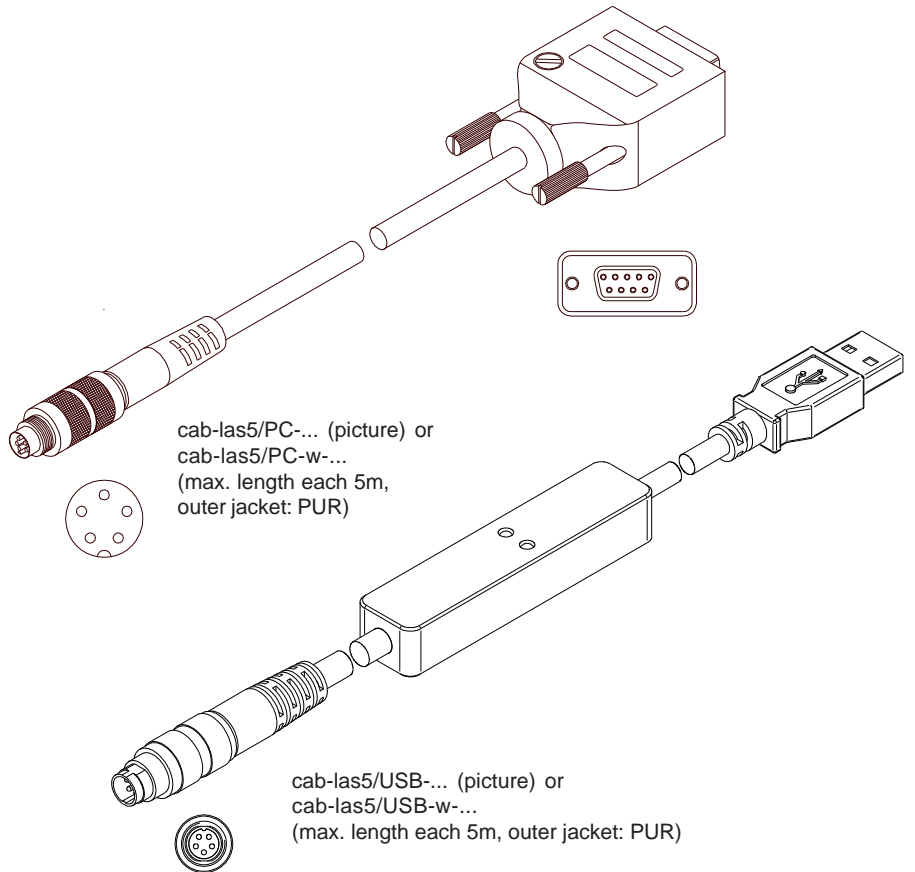
Connection via RS232 interface at the PC:

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

alternative:

Connection via USB interface at the PC:

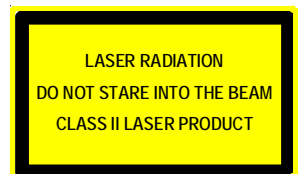
Connecting cable (incl. driver software):
cab-las5/USB-(length) or
cab-las5/USB-w-(length) (angle type 90°)
(standard length 2m)




Laser Warning

The laser copy counters of LCC Series comply with laser class 2 according to EN 60825. The use of these laser transmitters therefore requires no additional protective measures.

The laser copy counters of LCC Series are supplied with a laser warning label.




Measuring Principle

The Laser Copy Counter LCC-... primarily is designed for detecting and counting magazines or single sheets in imbricated arrangement. In its optimum operating range (e.g. 30 mm when LCC-30) sheet edges starting from 0.1 mm are reliably detected. In the sensor design great importance was attached not only to reliable operation, but also to ease of operation and installation.

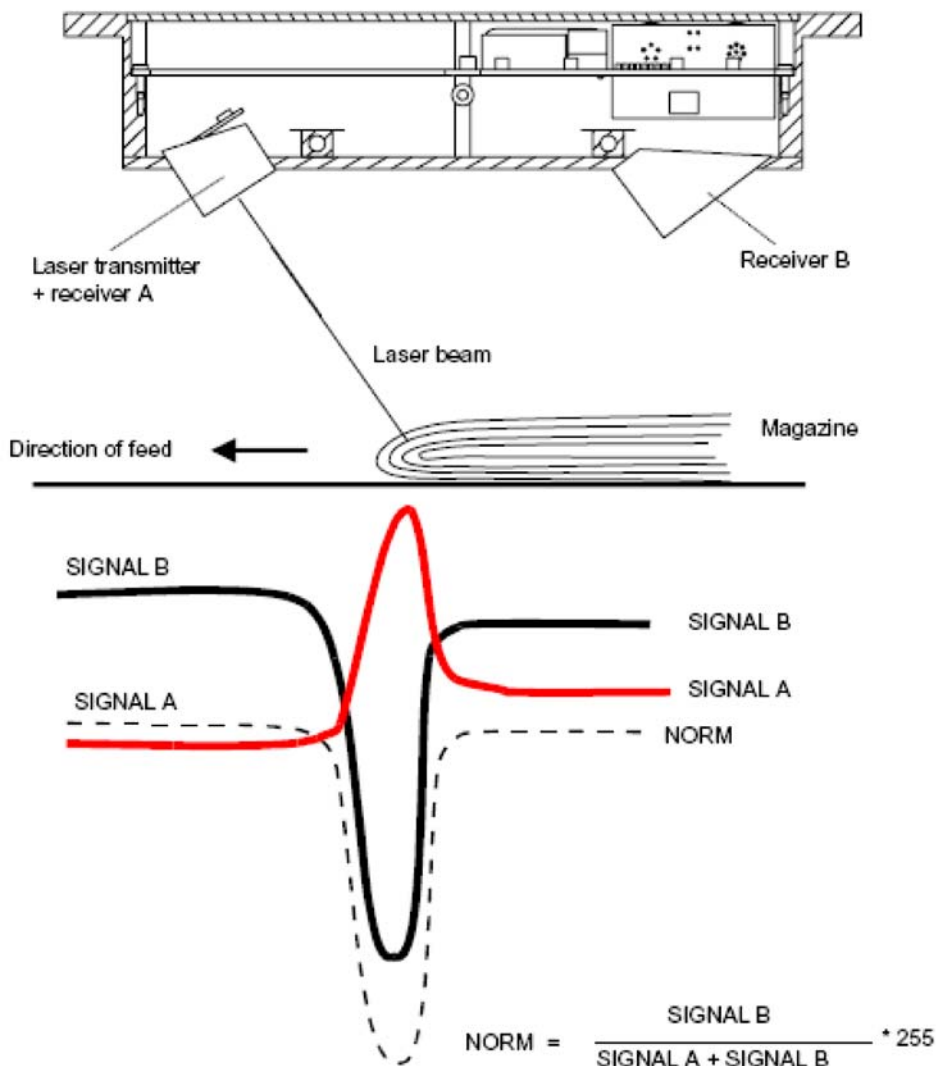
The sensor is characterised by a high scanning frequency and by its ability to automatically adjust itself to differently bright and dark, as well as slow and fast objects; with a minimally set output pulse length (adjustable via software) it reaches a copy rate of approx. 500,000 pieces/hour.

Furthermore the sensor can be used for almost all conceivable applications by selecting optimized software algorithms.

The user is provided with a Windows® user interface that displays the sensor signals in numerical and graphical form; it also allows a comfortable selection of different software algorithms and easy parameter input.

Functional principle of the LCC-... sensor:

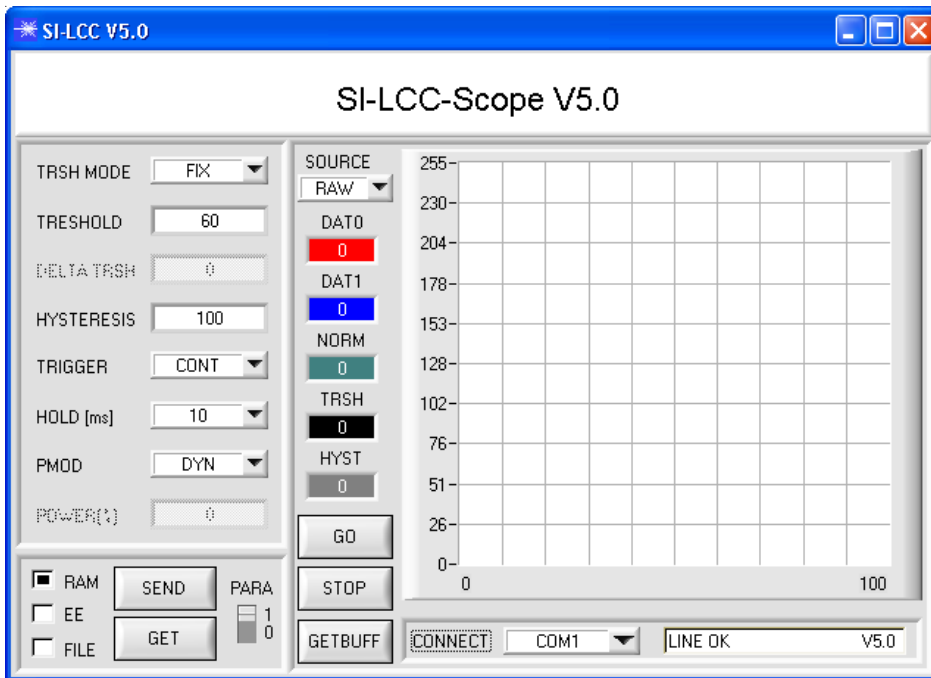
The LCC-... laser sensor comprises a laser transmitter (laser diode, $\lambda=670$ nm) and two receivers. As shown in the picture below, the laser beam is focussed at an angle onto the magazine opposite to the direction of feed. When an edge arrives, it blocks the beam path to receiver 2, whereas the signal at receiver 1 slightly increases due to the more favourable angle of impingement! The standardised (NORM) value of SIGNALS A and B is used as the starting signal for all the further algorithms of the Laser Copy Counter!




 Parameterization

Windows® software SI-LCC-Scope:

The LCC-... laser copy counter can be easily parameterised with the Windows® user interface. For this purpose the LCC-... system is connected to the PC with the serial interface cable cab-las5/PC. When parameterisation is finished, the PC can be disconnected again.



Windows® user interface


 Application Example

Edge detection of laminates

During the gluing process, very thin (110g paper) high-gloss laminates with strong color fluctuations (from extremely bright to extremely dark) must be positioned on corrugated cardboard material with highest accuracy. This task can be solved with the LCC-30 and a special mounted tube (TB-30).

