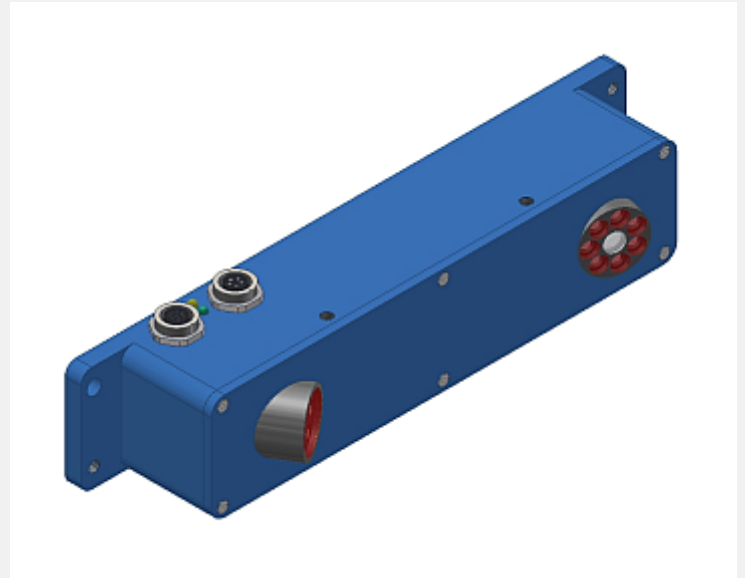


# LCC Series

## ► LCC-130

- 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
- Counting of imbricated copies at high conveying speed (100 000 copies/h)
- For use in overhead conveyor systems in combination with two initiators (position window)
- For use in compensating stackers
- Counting of laminated corrugated cardboard sheets
- Big working range (typ. 80 mm ... 160 mm)



## Design

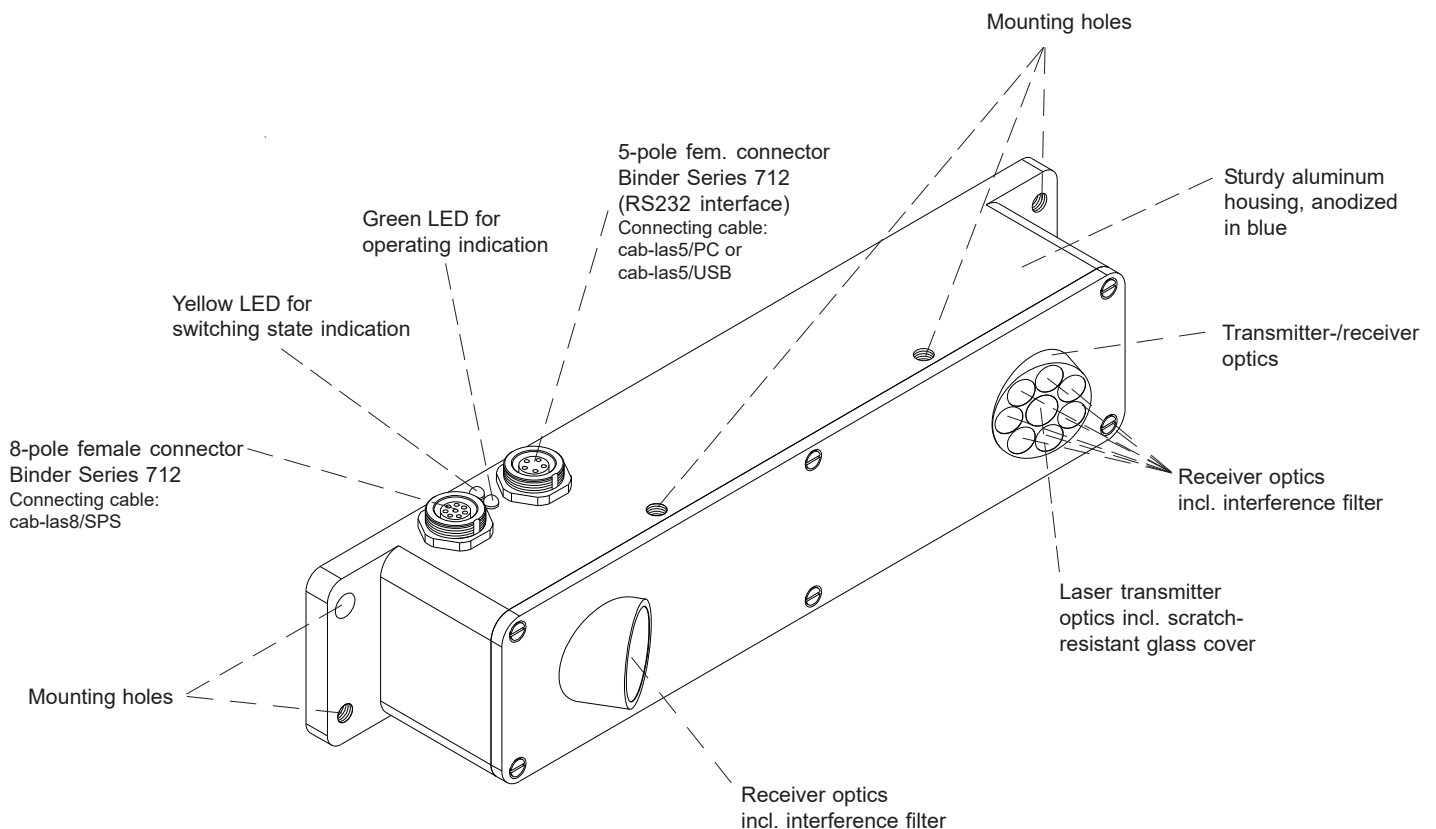
### Product name:

#### LCC-130

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


### Accessories: (cf. page 8)

INI-18 (approach switch)

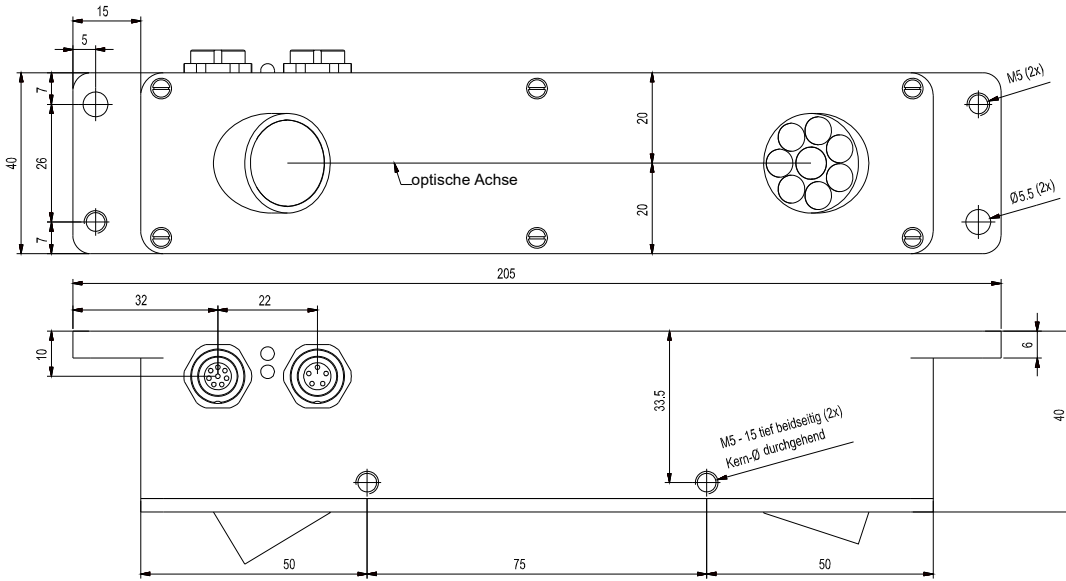




**Technical Data**

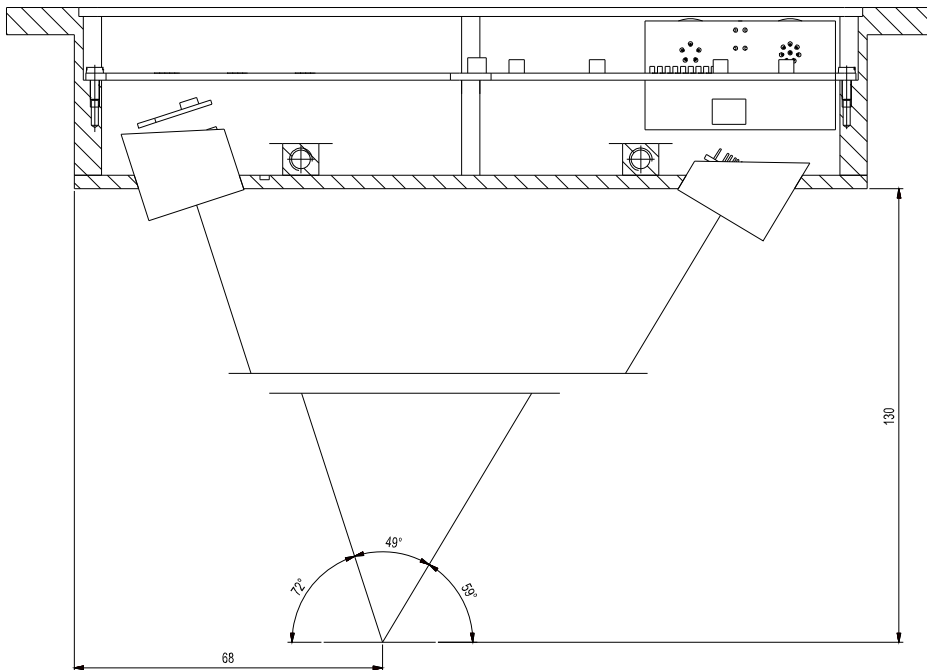
Model	LCC-130
Laser	Semi-conductor laser, 670 nm, AC operation, 1 mW max. opt. power, laser class 2 acc. to DIN EN 60825-1. The use of this laser sensor therefore requires no additional protective measures.
Optical filter	Red light filter RG630 and interference filter
Digital output	pnp bright-switching/npn dark-switching or pnp dark-switching/npn bright-switching (OUT0 and OUT1), adjustable 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-5/USB Connection to PLC: cab-las8/SPS or cab-las8/SPS-w
Modulation frequency	typ. 100 kHz
Max. product stream	typ. 500 000 copies/h
Min. height of object	typ. 0.1 mm
Output polarity	Bright-/dark-switching, can be adjusted under Windows® on PC
Working range	typ. 80 mm ... 160 mm

Dimensions



All dimensions in mm

Working Distance

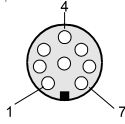


All dimensions in mm

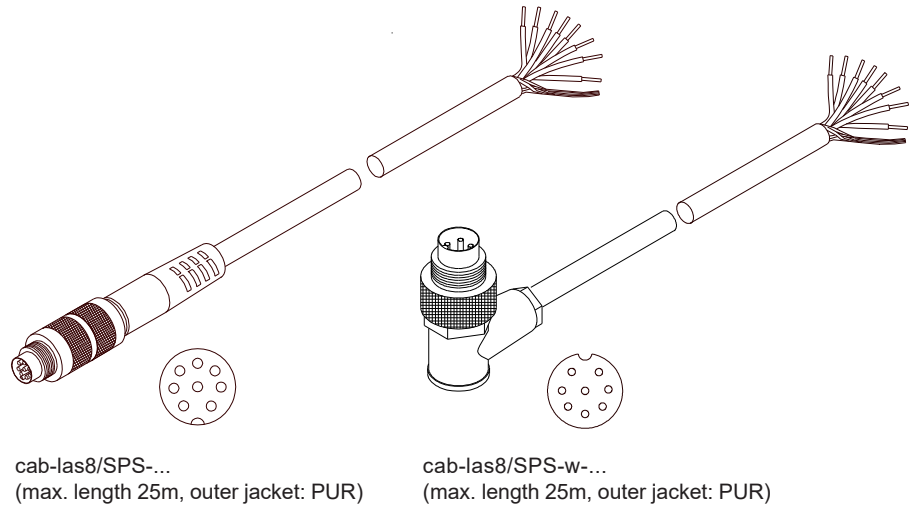
Connector Assignment

**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

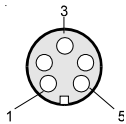


Connecting cable:  
cab-las8/SPS-(length) or  
cab-las8/SPS-w-(length) (angle type 90°)  
(standard length 2m)



**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



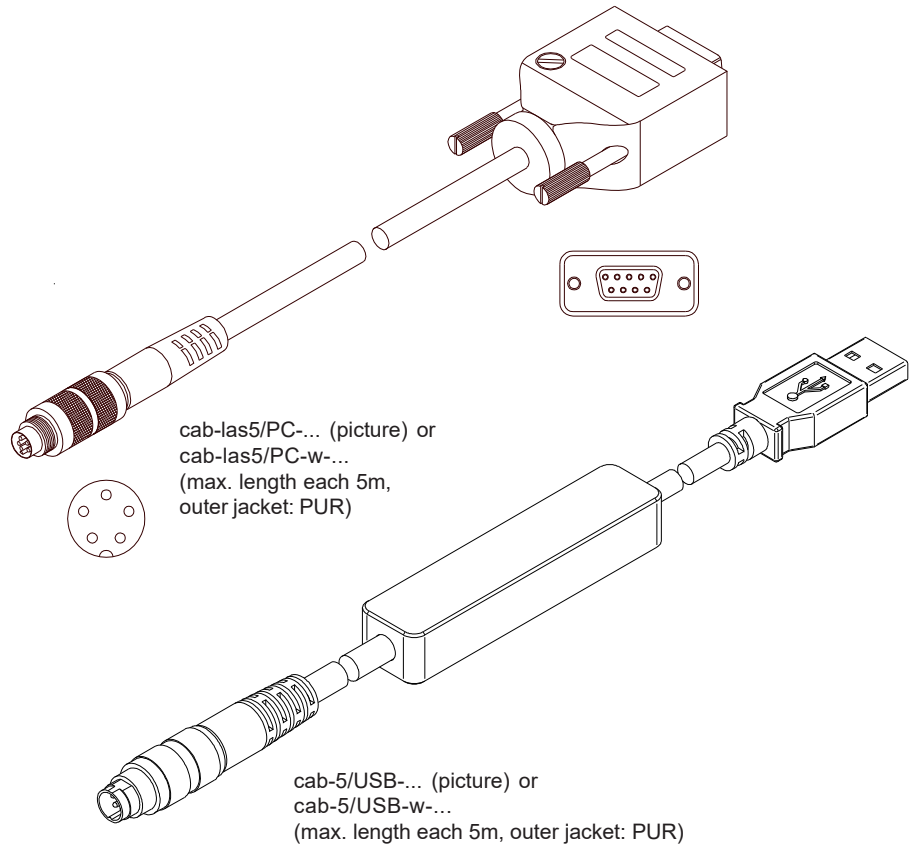
**Connection via RS232 interface at the PC:**

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:**

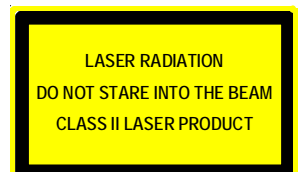
USB converter (incl. driver software):  
cab-5/USB-(length) or  
cab-5/USB-w-(length) (angle type 90°)  
(standard length 2m)




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.




**Functional 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.

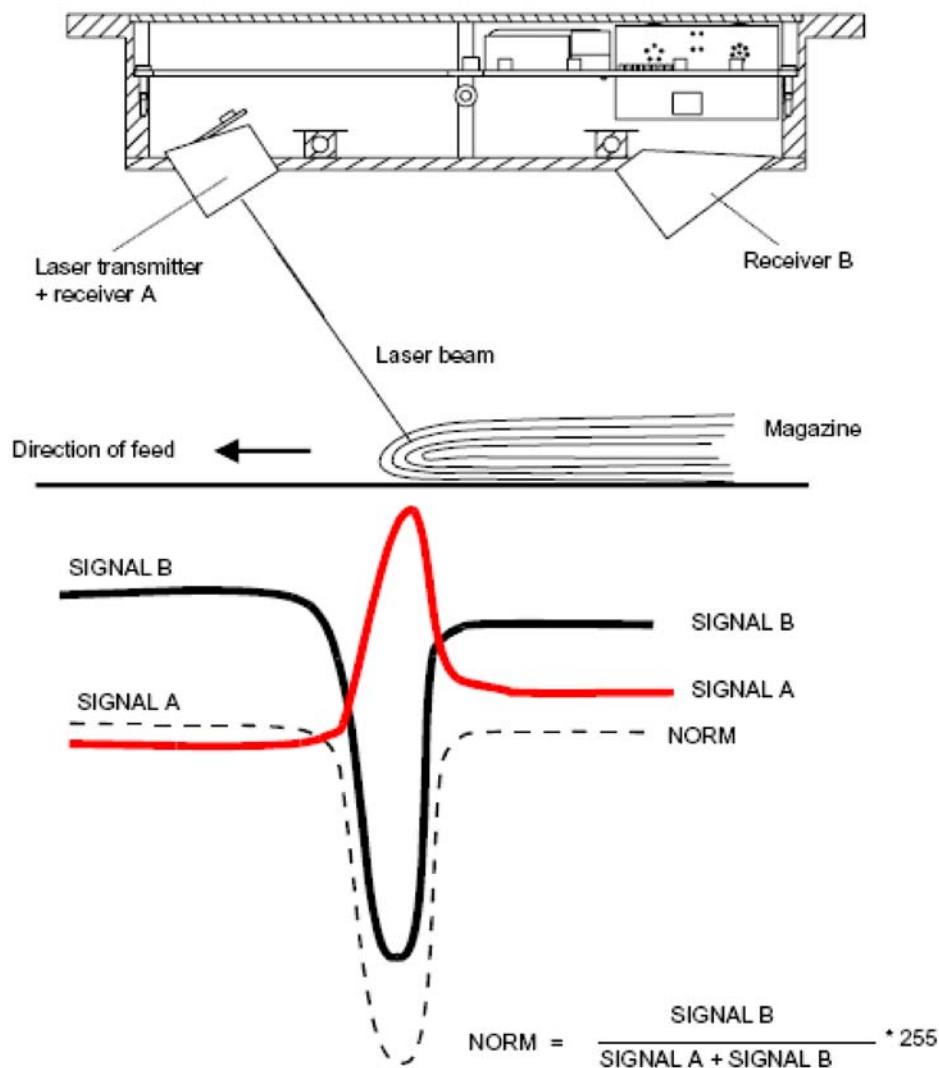
The sensor is characterised by a high scanning frequency and by its ability to automatically adjust itself to differently bright and dark, as well as slow and fast objects; with a minimally set output pulse length (adjustable via software) it reaches a copy rate of approx. 500,000 pieces/hour.

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 pic. 13, 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!



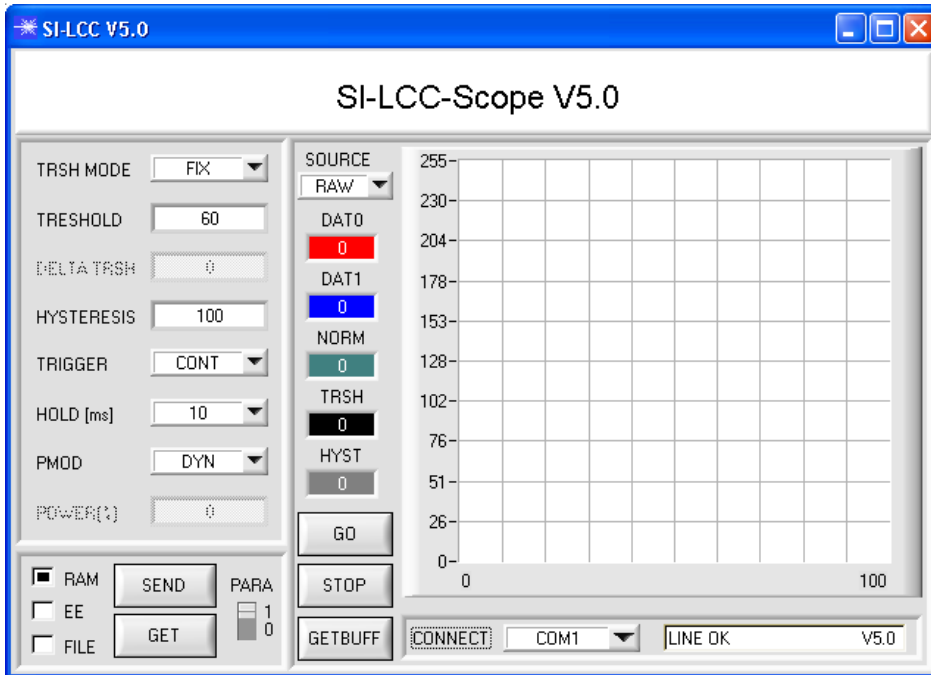


## Parameterization

### Windows® user interface:

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

The LCC-130 sensor can be easily parameterised with the Windows® user interface LCC-Scope. For this purpose the sensor is connected to the PC with the serial interface cable cab-las5/PC or the USB convertger cab-5/USB. When parameterisation is finished, the PC can be disconnected again.

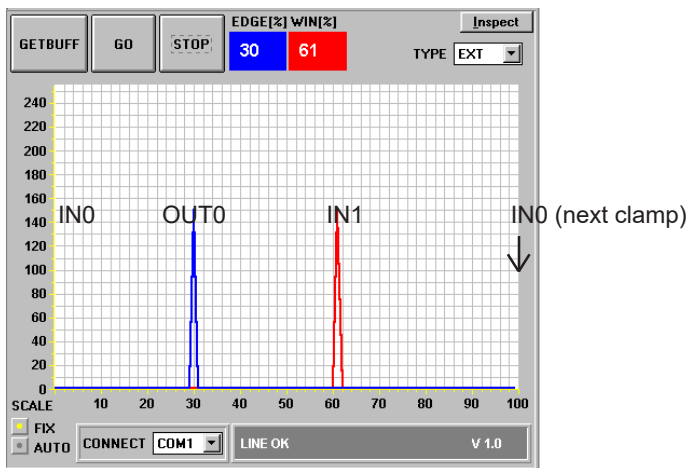
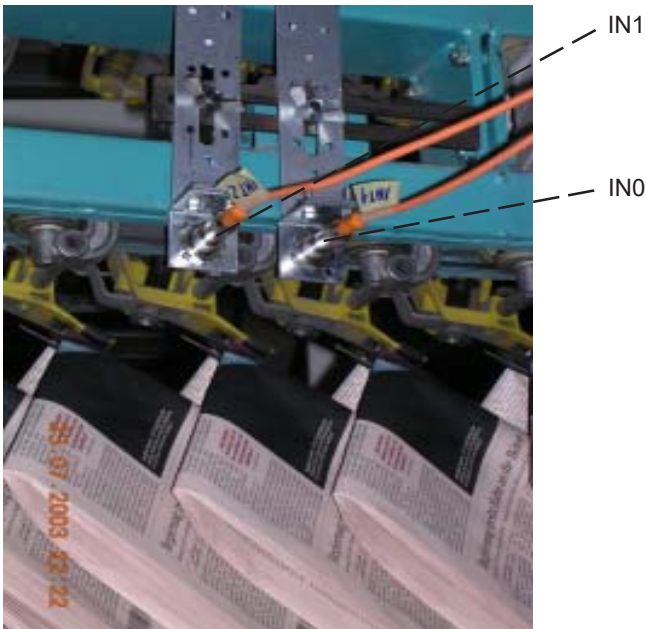
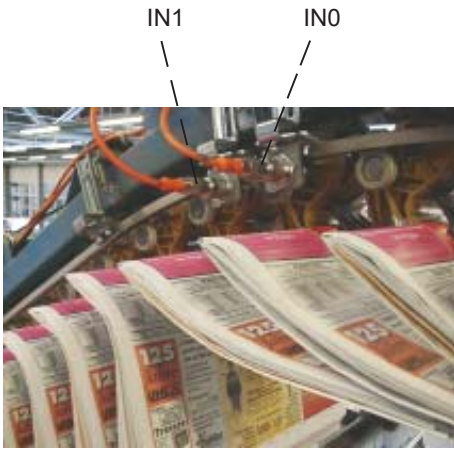






Mounting

Mounting the two initiators at overhead conveyors



The initiators are mounted in such a way that the position of the two sensors can be freely chosen. Care must be taken to ensure that both sensor 1 and sensor 2 detect every clamp.

Furthermore, the distance of the two sensors with respect to each other must be chosen in such a way that, with respect to time, the output signal of the laser sensor lies approximately in the middle of trigger signals IN0 and IN1.

The ADJEXT mode that can be activated in the SI-LCC V1.0 Windows® software, serves as a setting aid for this; the chart indicates the positions of IN0, OUT0, and IN1 (initiator 1, laser copy counter, initiator 2). Based on the assumption that IN0 to IN0 = 100%, IN0 to IN1 should be approx. 60%, whereas IN0 to OUT0 should lie at approx. 30%.



## Approach switch INI-18

Model	INI-18
Switching distance	typ. 8.0 mm
Mounting	not flush mounted
Voltage supply	+10 ... +30 VDC
Max. load	200 mA
Max. switching frequency	typ. 500 Hz
Ambient temperature	-25°C ... +70°C
Enclosure rating	IP67
Switching state indication	via LED in the M12-connector
Housing material	Brass, nickel-plated
Type of connector	4-pin M12-connector





**Application Example****Counting of corrugated cardboard boxes**

Corrugated cardboard boxes are counted by the LCC-130 laser copy counter. Because of different conveying speeds of the material, the height of the cardboard flow varies in a range of 100 mm. A sensor with a correspondingly large operating area is therefore required for counting the individual cardboard boxes.

