



Preface

As already announced in issue 1/07, the main focus of development in 2007 is on the L-LAS series, where we are progressing at full steam and will be able to present several novelties in a short time.

Since our SI-COLO series also is accepted outstandingly well among our customers, we decided to expand the color sensor range with several types and to again intensively revise the software, and we think that the result is quite respectable. Both the new sensor types and the new software version now allow the realisation of applications that before were quite difficult to solve.

Development also went ahead in the field of gloss sensors, for example the software has been improved with respect to user friendliness and adaptation to on-site conditions. Furthermore, three additional gloss sensor types will be finished in a very short time.

The SI-JET2 series also has been extended with a new version that features separate transmitter and receiver front-ends. The following pages describe the changes in more detail, and we trust that you will find something of interest for you.

The editorial office



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SI:
MOTEK, Stuttgart
SPS/IPC/DRIVES, Nuremberg

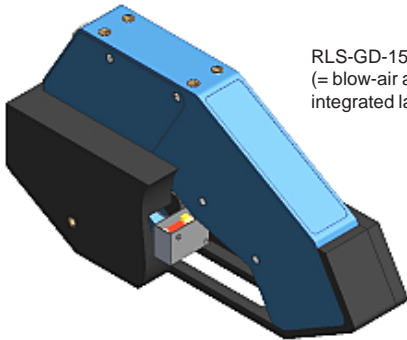
Distributors:
Go Automation, Basel
HI Industri, Herning
Automaatio, Helsinki
SMART Automation, Linz



RLS-GD Series Gloss Detection Sensors

Accessories for gloss detection sensor RLS-GD-15: Blow-air add-on GD-BL-15 (also available with integrated trigger sensor)

For the **RLS-GD-15** gloss sensor an optional blow-air add-on (**ABL-RLS-GD-15**) is now also available. This blow-air add-on furthermore is available with an integrated trigger sensor (**ABL-RLS-GD-15-TRIG**).



RLS-GD-15 with ABL-RLS-GD-15-TRIG
(= blow-air add-on ABL-RLS-GD-15 with
integrated laser sensor C-LAS-LT-35)

Software upgrade: RLS-GD-Scope V4.0

In combination with the new **RLS-GD-Scope V4.0 software** it is now possible to automatically detect and measure objects (e.g. boards for the furniture industry). Evaluation of the measurement data is performed immediately after data recording, and the edge areas (start, end) are not considered for averaging. This averaged gloss value is provided at the analog output until the next trigger event occurs. When the values leave the set tolerance range, an error message is provided at the switching outputs.

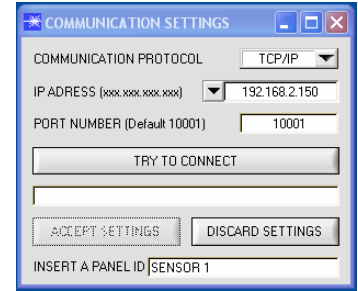
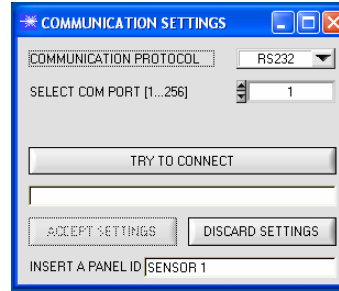
Everyday practice with the RLS-GD-15 showed that it is necessary to adapt the gloss sensor to the customer's laboratory equipment (e.g. Byk-Gardner, Hach-Lange, or Elcometer). For this purpose the RLS-GD-Scope V4.0 software now features a calibration table (cf. CALIBRATE TO OTHER SYSTEM). With the help of this table, the values calculated by the RLS-GD-15 gloss sensor are converted to the respective hand-held laboratory equipment.

The RLS-GD-15 and the respective employed hand-held laboratory equipment thus show the same value with the same sample.

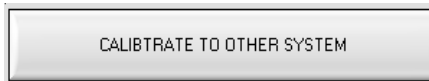
Immediately after a spraying system with integrated drying section, the gloss rate of the paint layer that was applied on boards should be measured. A distance sensor that is integrated in the gloss sensor detects the start and end of a board (trigger range). This trigger signal is sent to the gloss sensor, and an average gloss rate is determined over the calculated measuring range and is provided both at the analog output and the serial interface. This gloss rate each time is applied until the next trigger event occurs (cf. illustration p. 3).

With the **SI-TSD-100 Touch-Screen-Display** this value now also can be represented in numerical and graphical form (histogram). The operator may parameterise the display to perform averaging over several boards and thus to display a trend.

As a next step we are thinking about a data storage feature.

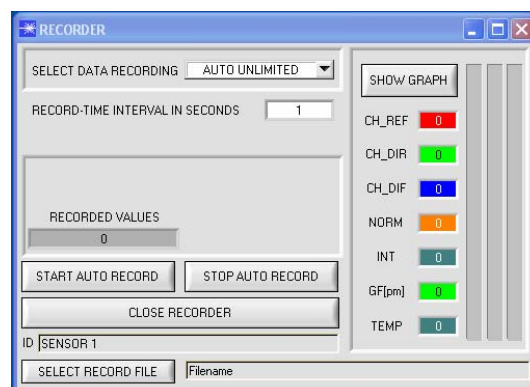
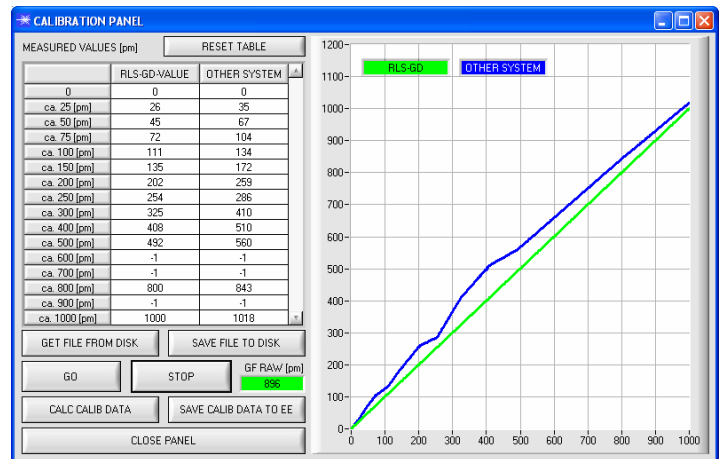


The software can be started several times, i.e. writing can be done simultaneously in parallel to several sensors, with every sensor having its own software window. In the INSERT A PANEL ID edit-box a software panel can be assigned to a certain sensor for identification. This ID is shown in the large gloss factor panel and in the recorder.



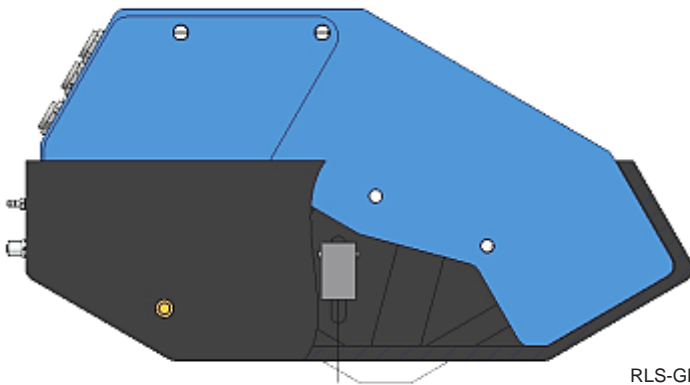
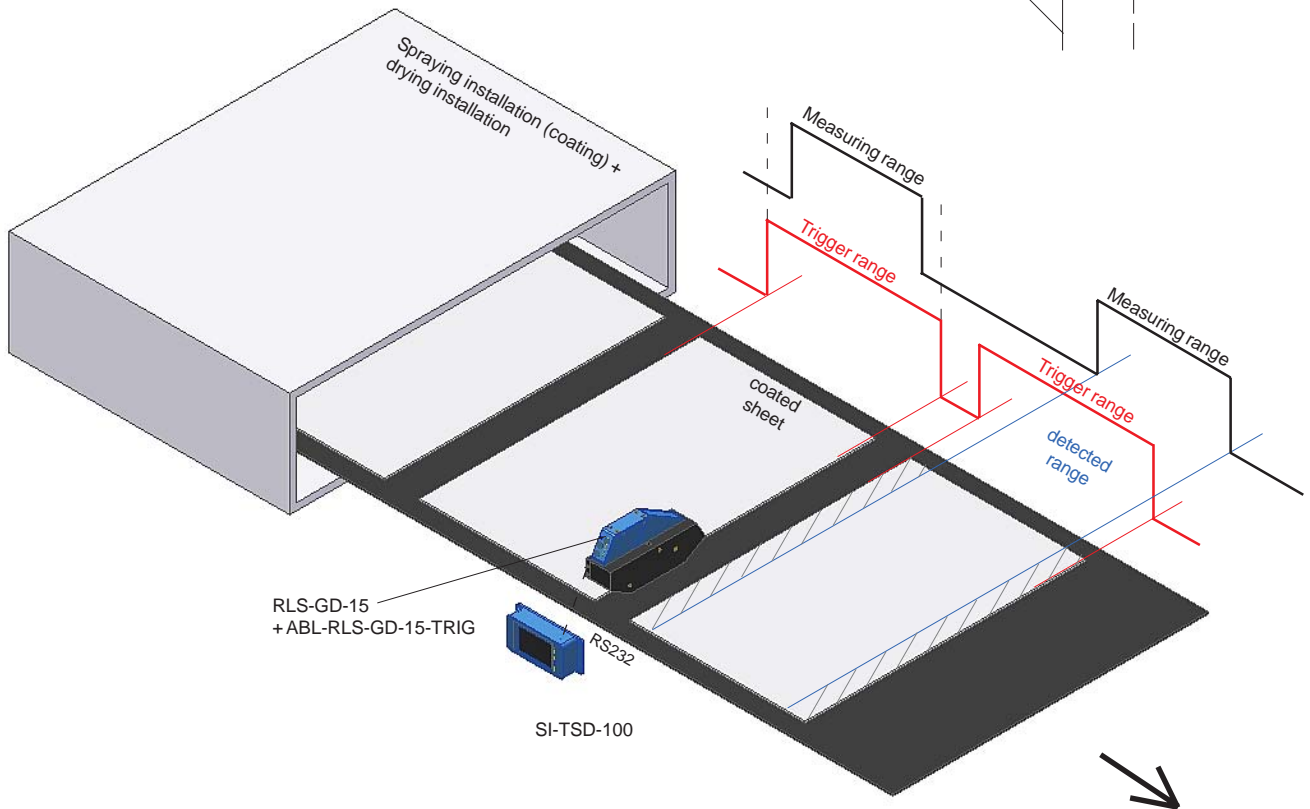
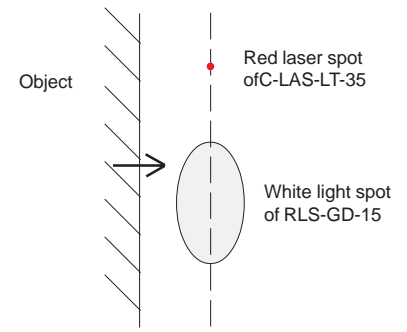
After successful calibration with a reference of 100, the sensor can be calibrated to another system. This is necessary, for example, if several systems of the same type should be exactly matched to each other, or the RLS-GD-15 should be matched to another system.

Calibration is activated with the parameter BIAS = ON. For performing calibration to another system, press the CALIBRATE TO OTHER SYSTEM button. The following panel will be displayed:



Data recorder function:
AUTO UNLIMITED

If you want to record an unlimited number of data, please select the AUTO UNLIMITED function under SELECT DATA RECORDING. Select the desired recording interval and press START AUTO RECORD.



RLS-GD-15 with blow-air add-on ABL-RLS-GD-15-TRIG incl. trigger sensor (= laser sensor C-LAS-LT-35)



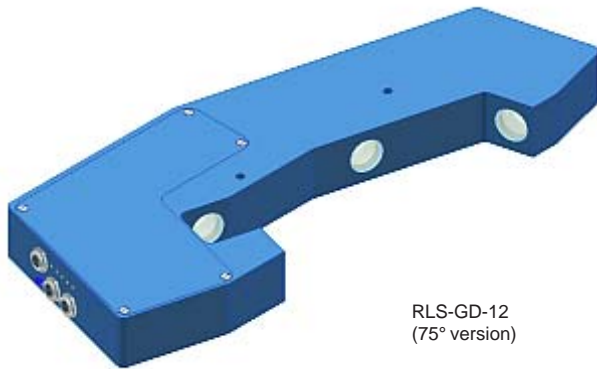
RLS-GD Series Gloss detection sensors

■ **New RLS-GD types: RLS-GD-12, RLS-GD-5**

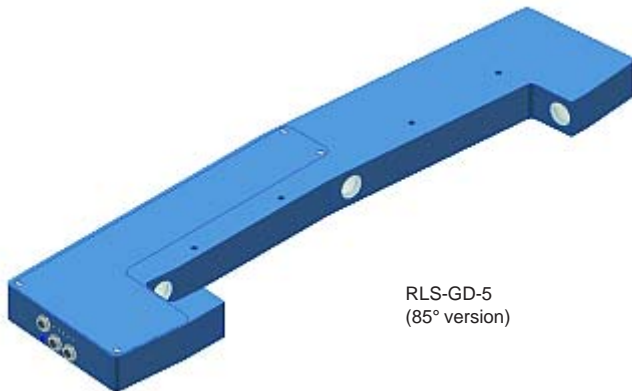
With the RLS-GD-12 and the RLS-GD-5 there now are two additional types of the RLS-GD series that are primarily intended for applications involving relatively dull surfaces.

The **RLS-GD-12** with its white-light beam at an angle of 75° to the vertical line is especially suitable for the paper industry where hand-held laboratory equipment operating at an angle of 75° from the normal line is primarily employed. In most of the other applications, dull or rough surfaces are measured at an angle of 85° from the vertical line, which is covered by the **RLS-GD-5**.

Development of the third type **RLS-GD-20** (20° version) is nearly finished.



RLS-GD-12
(75° version)



RLS-GD-5
(85° version)

■ **Mark detection with the RLS-MD-2-LWL**

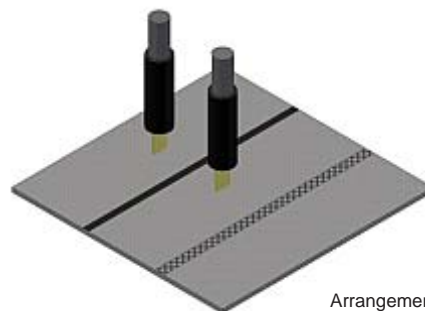
As already mentioned in the last SI News N°2 1/07, the **RLS-MD-2-LWL** was developed for the detection of marks (e.g. strips). The customer required a sensor system that is able to detect line markings on different backgrounds without the necessity of changing the sensor settings.

The RLS-MD-2-LWL features two optical-fibre connections, two white-light sources, and two receivers! The application uses the "STANDARD" evaluation mode of the RLS-GD-Scope V4.0 software.

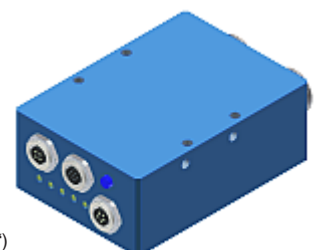
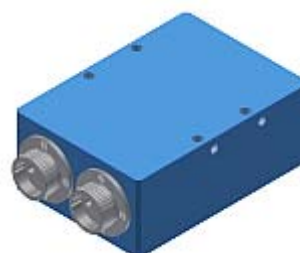
The two optical-fibre heads (reflected-light optical fibres, e.g. cross-section 6 mm x 1 mm, 67°) for example are arranged at a distance of approx. 10 mm from the surface, and the distance of the two optical-fibre heads from each other for example is 20 mm. With the RLS-GD-Scope V4.0 software the sensor is set to POWER "DYN", and a corresponding tolerance window is set. When a line marking now is under one of the two optical-fibre heads, the switching state at the sensor output changes because the preset tolerance range was exceeded.



Application example:
Detection of line markings on foam foil webs



Arrangement of optical-fibre heads at
foam foil webs with line markings



RLS-MD-2-LWL
(„Mark Detection“)



SI-COLO3 Series Color Sensors

Software upgrade: COLOR3-Scope V6.1

Compared to the COLOR3-Scope V5.0 (see SI News N°2 1/07) the existing algorithms again were considerably improved.

In addition to the FIRST HIT mode, the MIN DIST mode, and the COL4 mode, the **COLOR3-Scope V6.1 software** now also features the so-called BEST HIT mode. This mode allows the reliable detection of taught colors even in case of very similar color values. Similar to the FIRST HIT mode, this mode first searches the colors that fulfil the conditions in the color tolerance range (color circle CTO) and in the intensity range (ITO). If this search yields more than one color as a result, these colors are searched for the one color with the smallest distance (Minimal Distance) from the current value.

The newly introduced "COLOR GROUP" function also is quite useful and makes it possible to combine taught colors into individual groups. The switching outputs in this case provide the color groups.

The COLOR3-Scope V6.1 now also has an integrated "Program Loader" that allows the loading of software revisions via CD-ROM or e-mail.



Function element EVALUATION MODE of the COLOR3-Scope V6.1 software

No. CTT	COLOR GROUPS					ROWCOLOR
	X	Y	CTO	INT	ITO	
0	1	1	1	1	1	

GROUP PANEL

COLOR GROUPS: ON

GROUP	GRP
0	0
1	0
2	1
3	1
4	2
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0

RESET

CLOSE GROUP PANEL

Function element COLOR GROUPS of the COLOR3-Scope V6.1 software

COLOR GROUP:
It is possible to form color groups in evaluation modes FIRST HIT, BEST HIT, and MIN DIST. This means that in a special table the individual rows are assigned to a group.

In this example, COLOR GROUPS has been set to ON, i.e. group evaluation is activated.

Rows 0 and 1 have been assigned to group 0.

Rows 2 and 3 have been assigned to group 1, and row 4 to group 2.

A GRP display is shown under the C-No: display.

If, as in this example, row 3 is detected in the evaluation, this row and the corresponding group will be visualised.

The group number will be output through outputs OUT0 ... OUT3.

A maximum of 4 groups (group 0 to group 3) can be formed in evaluation mode DIRECT HI and LO.

A maximum of 15 groups (group 0 to group 14) can be formed in evaluation mode BINARY

SI-COLO4 Series Color Sensors

Software upgrade: COLOR4-Scope V6.1

The **Software COLOR4-Scope V6.1** is identical with the COLOR3-Scope V6.1 software. The only difference is that it features an additional fifth switching output.



Function element EVALUATION MODE of the COLOR4-Scope V6.1 software

SI-COLO4-...POL Color sensors with polarisation filter

The SI-COLO4 series now also includes color sensors with integrated polarisation filter: **SI-COLO4-200-DIL-POL**, **SI-COLO4-200-FCL-POL**, and **SI-COLO4-30-FCL-POL**. A polarisation filter performs linear polarisation of the white light, and on the receiver side another polarisation filter is positioned at an angle of 90° with respect to the transmitter-side polarisation filter. This prevents direct reflection (mirroring) from reaching the receiver. In combination with an external reflector this makes it possible, for example, to check differently tinted glass panes! In this case the glass pane is located between the color sensor and the reflector.



SI-COLO4-200-DIL-POL



SI-COLO4-200-FCL-POL



SI-COLO4-30-FCL-POL

The SI-COLO4-200-DIL-POL, SI-COLO4-200-FCL-POL, and SI-COLO4-30-FCL-POL color sensors also are excellently suited for checking highly reflecting surfaces such as they are found, for example, in car components (painted fuel filler flaps, external rear-view mirror housings, car doors).



L-LAS Series Laser Line Sensors

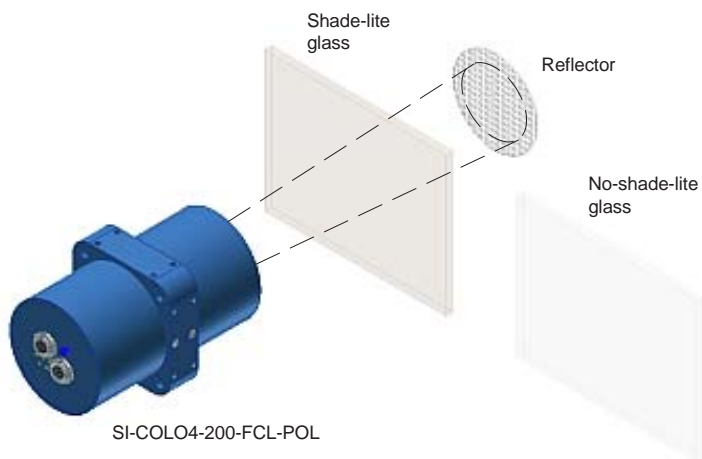
Split Master-/Slave systems with separate transmitter and receiver frontends

Bei den geteilten Laserzeilensensoren der L-LAS-TB Serie steht nun auch eine Master-/Slave-Elektronik zur Verfügung, die für die jeweiligen Frontends speziell angepasst wird.

Die **L-LAS-TB-12-CON1-MS** Elektronik kann dabei mit den Frontends **L-LAS-TB/90-(8)-T/-R** verbunden werden. An die **L-LAS-TB-50-CON1-MS** Elektronik werden die Frontends **L-LAS-TB-50-T-FE** (Sender) und **L-LAS-TB-50-R-FE** (Empfänger) angeschlossen.



Application example:
Color detection of lacquered plastic parts für car bumpers



Application example:
Control of different shade-lite glasses with the SI-COLO4-200-FCL-POL



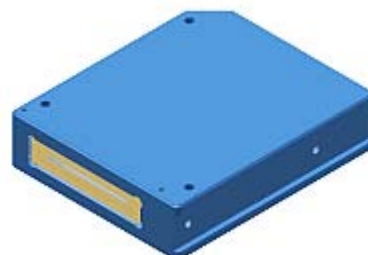
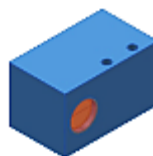
Arrangement of a color measuring system with SI-COLO4-200-FCL-POL



L-LAS-TB-12-CON1-MS or
L-LAS-TB-50-CON1-MS



L-LAS-TB/90-8x1-T (or L-LAS-TB/90-1x8-R)
L-LAS-TB/90-8x1-R (or L-LAS-TB/90-1x8-R)



L-LAS-TB-50-T-FE
L-LAS-TB-50-R-FE





SI-JET Series Spray Jet Control

Frontend with separate transmitter and receiver heads

Until now all the systems of the SI-JET2 series included a fork-shaped sensor housing. The three red-light beams here are arranged at a fixed distance from each other which, however, turned out to be a disadvantage in some applications, because in many cases the geometry of the existing spray jet could not be optimally covered with the three beams.

This is why we have now developed a system that can be flexibly aligned to the respective form of the spray jet:

SI-JET2-CON3 electronic unit, **R3-M-A2.0-(2.5)-5000-67°-3X** (3-fold) transmitter front-end, and **R3-M-A1.1-(1.5)-5000-67°-3X** (3-fold) receiver front-end.

Both the transmitter and receiver front-end feature an M18 housing, and the transmitter/receiver distance can be variably adjusted.



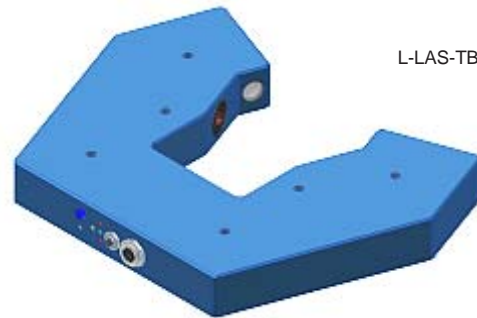
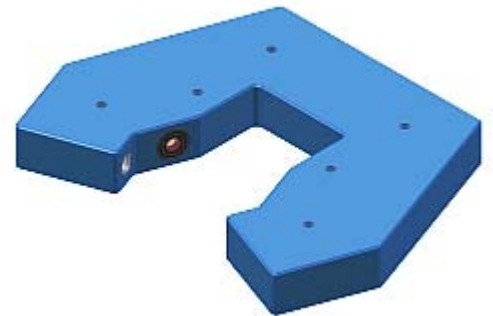
Arrangement of the SI-JET2-CON3 measuring system with 3-fold front-end on the transmitter and receiver side

L-LAS Series Laser Line Sensors

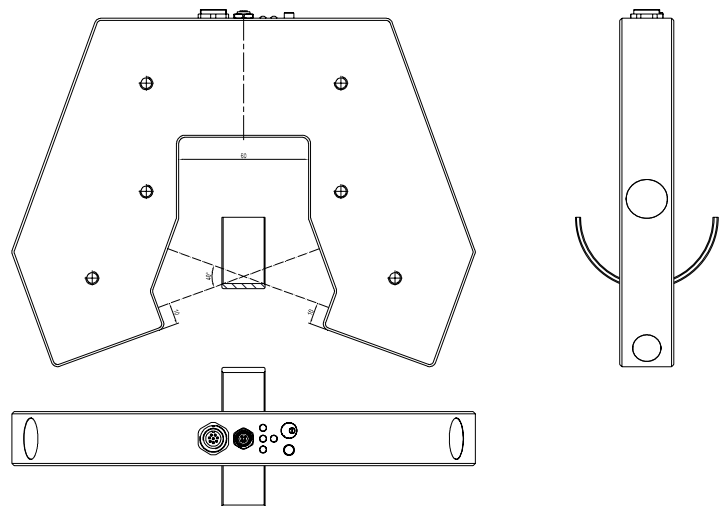
Running width measurement of slide bearing half-shells

The **L-LAS-TB-F-3x1-2X-RO** allows the measuring of the internal running width of slide bearing half-shells. Due to the two chamfered ends of the active width the running width cannot be sufficiently measured from only one angle.

This application rather requires measuring from two angles, which is enabled with the L-LAS-TB-3x1-2X-RO.



L-LAS-TB-F-3x1-2X-RO



Arrangement of the optics of the L-LAS-TB-F-3x1-2X-RO (application: measurement of slide bearing half-shells)



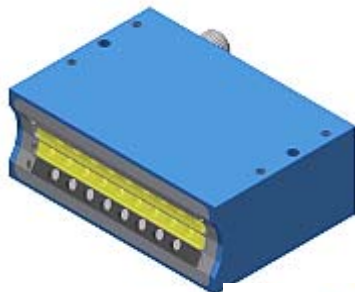
LUMI Series Luminescence Sensors

■ Detection of fluorescent marks in the production of slide bearing half-shells

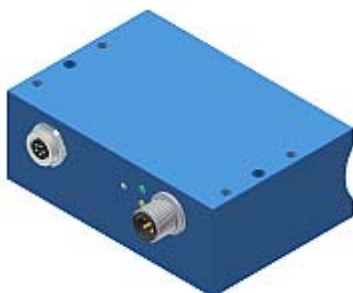
In the production of bimetal webs (the starting product for the production of slide bearing half-shells) defective sections are sprayed with fluorescent paint. After the subsequent cutting of the webs into individual strips, the intensity of this fluorescent mark may differ from strip to strip, depending on whether the strip runs exactly centrally through the fluorescent mark or rather in the edge area of the spray spot.

The task of the sensor is to guarantee reliable detection irrespective of the intensity of the fluorescent mark on the respective strip.

With the **LUMI-35/95-2X** even the smallest edge areas of the fluorescent mark can be reliably detected.



LUMI-35/95-2X



LCC Series Laserkantendetektoren

■ Chatter mark detection on bimetal webs in the production of slide bearing half-shells

On bimetal webs, defective sections on the hard side (steel side) are marked with fluorescent paint, whereas defective sections on the soft side (e.g. bronze or aluminium side) are knurled (applying of chatter marks).

These chatter marks also can be applied subsequently during processing in flat condition, if the required tolerance range is not observed after the respective processing step.

The chatter marks are applied in a line shape (crosswise to the running direction of the bimetal strip), and have a depth of several tenths of a millimetre. These depressions now make it possible to use an edge detector, and in this case a special version of the LCC is used, because averaging should be performed over several chatter marks.

The **LCC-40-CYL** solves this application without any problems.





Trade fair participation

New products presented at the SENSOR+TEST 2007



The following novelties were presented at the SENSOR+TEST in Nuremberg from 22-24 May 2007:



"Steam engines" demonstration model



"Steam engines" demonstration model



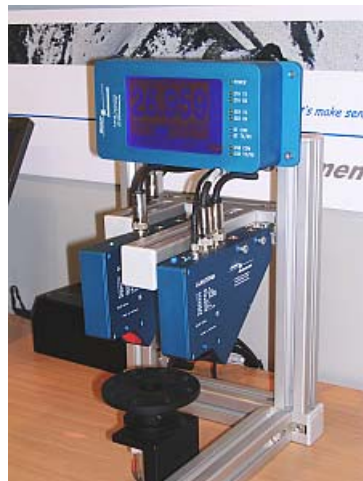
Laser line sensors of L-LAS-TB Series with SI-TSD-100 touch screen display



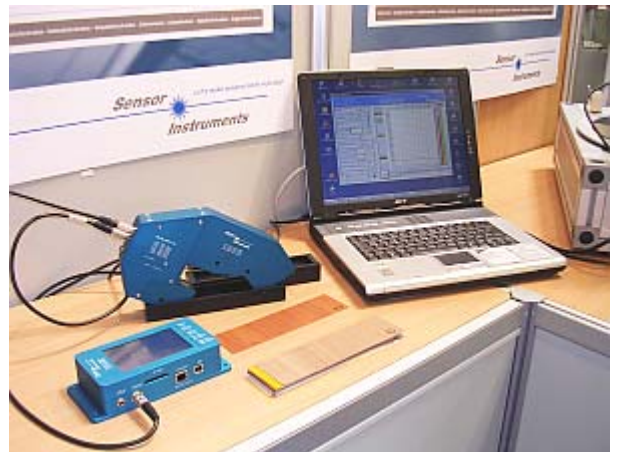
Laser line sensor L-LAS-TB-MS-8x1-200/40-BL with SI-TSD-100 display



Laser line sensor L-LAS-RL-150



Laser line sensor L-LAS-LT-37-MA/SL with SI-TSD-100 touch screen display



Gloss sensor RLS-GD-15 with SI-TSD-100 touch screen display



SI-Distributoren weltweit

■ New distribution partners: SI now also present in Thailand and Vietnam

Our world-wide distribution network continues to grow and has been extended with representations in **Thailand** and **Vietnam** a short time ago.

With the two companies

KATANYA GROUP
Samutprakarn (Thailand)

and

Lien Minh Hung Trading Service
Ho-Chi-Minh City (Vietnam)

we were able to win competent and committed distribution partners for our products and services.

We sincerely welcome our new distribution partners and look forward to a successful cooperation.

Activities

■ Participation in trade fairs 2007: Sensor Instruments

MOTEK, Stuttgart
24.-27.09.2007
www.motek-messe.de



SPS/IPC/DRIVES, Nuremberg
27.-29.11.2007
www.mesago.de/sps



■ Participation in trade fairs 2007: Sensor Instruments' Distributors

Rolf Muri AG

Go Automation Technology
Basel (CH)
04.-07.09.2007
www.go-automation.ch



ICS Industriens problemløser A/S

HI Industri
Herning (DK)
04.-07.09.2007
www.hi-industri.dk



Hemomatik OY

Automaatio
Helsinki (FI)
04.-06.09.2007
www.finnexpo.fi



Messtechnik Thomas Neulinger /
Sensotrade Peter Pölz

SMART Automation Austria
Design Center Linz (A)
03.10.-05.10.2007
www.smart-automation.at

