

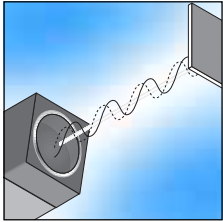
# L'A'S 100

Optical Distance Measuring Systems  
**Measuring with foresight ...**



# Distance Measuring: With Laser Beams –

Light waves – fast as lightning and guaranteed wear-free.  
accurate and without a cable.



The principle is "simple": A laser carrier beam is modulated with a measuring signal.

Especially in conveyor and storage engineering where long distances must be covered, the use of contactless and wear-free operating measurement systems is being intensified as a

result of their advantages in handling. With the newly developed L/A'S 100 Distance Measuring Unit, distances up to 100 m are measured absolutely and with millimetre accuracy.

Thanks to laser light and measurement of the phase shift between transmitter and receiver, only a reflector is necessary at the measured point; troublesome cable connections can therefore be eliminated.

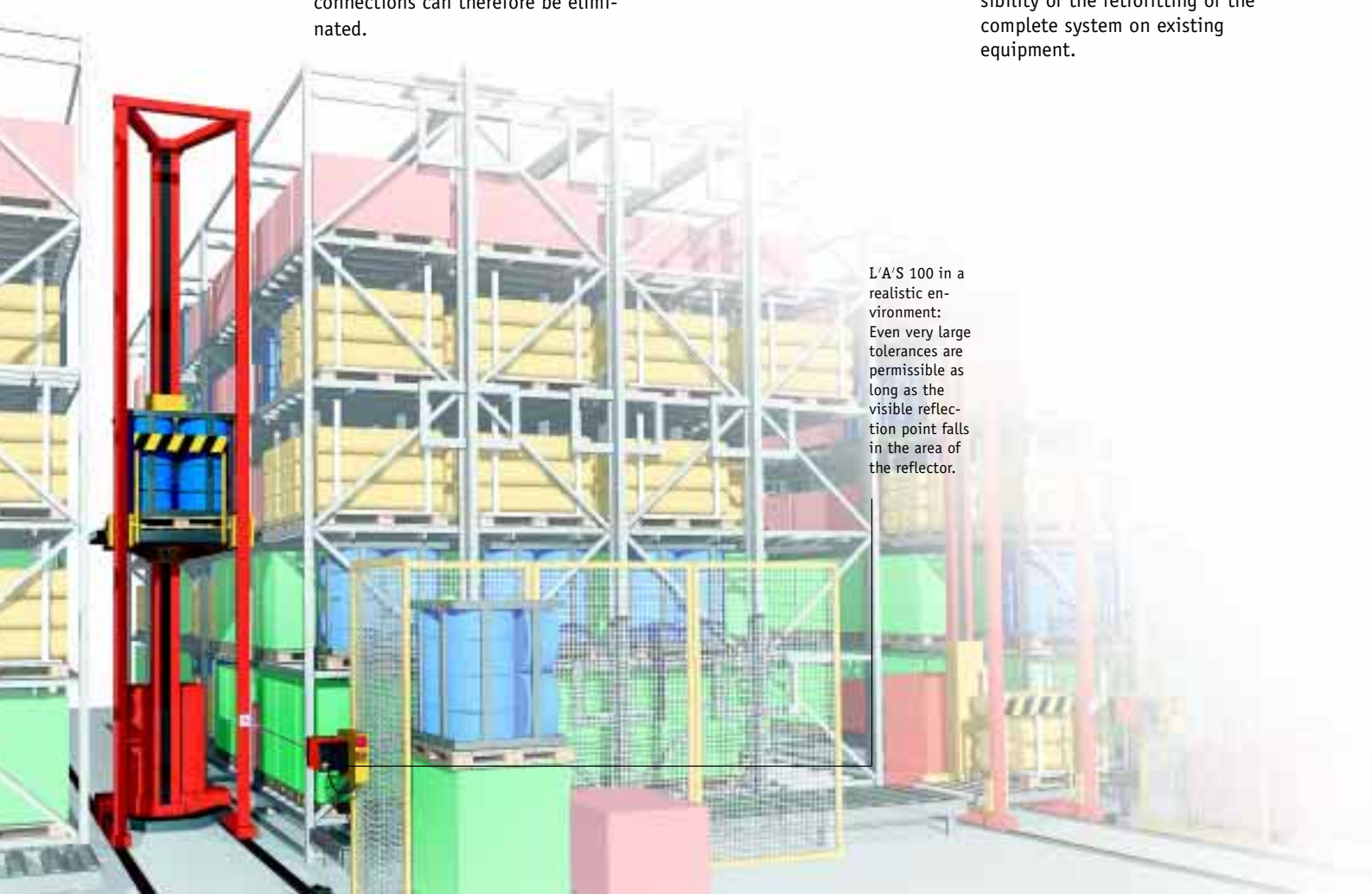
The actual measuring instrument consists of a laser diode that emits light as the transmitter and of a PIN photo diode that detects the radiation returned (at the receiver). The emitted light is modulated with a signal in the form of a sine wave. For the determination of the measured distance, the phase difference between the emitted and the reflected light received is computed.

To achieve maximum precision, coarse and fine signals are processed. From the final arithmetic value, the exact position determination is produced as the result. For further processing, several options are available. The data can be displayed directly via a position

indicator or, via a bus system such as SSI, interbus or profibus, transferred to the control.

Distances measurements up to 100 m are possible with a resolution of 1 mm and a repeatability of  $\pm 2$  mm. With its minimal transmitted power of  $\leq 1$  mW, the laser fulfils the requirement of laser class 2 and is therefore not dangerous for the human eye. As a result of the 635 nm wave-length, the bright red light simplifies the alignment and significantly reduces installation time. The likewise uncritical interference behaviour in relation to other optical systems – data transmission, for example – and the minimum mounting effort also opens in an ideal manner the possibility of the retrofitting of the complete system on existing equipment.

L/A'S 100 in a realistic environment: Even very large tolerances are permissible as long as the visible reflection point falls in the area of the reflector.





A classic application: High shelf storage with small repeated partitioning. Precision and repeatability are required here.

The essential advantage of optical systems for distance measurement becomes clear for applications that do not permit direct mounting on the existing mechanism.

For example, coarse tolerances can prevent the usage of sensors on cranes or conveyor equipment whereas the favourable characteristics of the LAS-system provide an ideal and simple solution. Also for the variable positioning of storage goods, optical systems are used, as the accompanying paper storage example shows.

For applications in high shelf systems, long travel distances must be recorded. By means of distance measuring with the LAS-system, long and problematic cable routings are eliminated in an efficient manner.



Dadd: Holzverarbeitung / Mannesmann Dematic: Papierlager / Bibo: Hochregallager

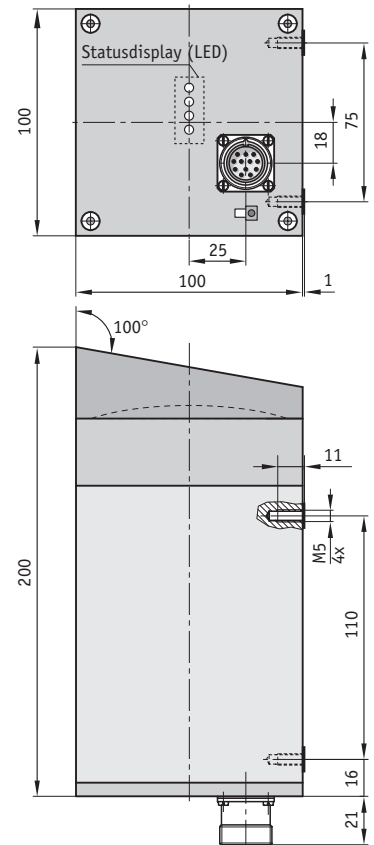
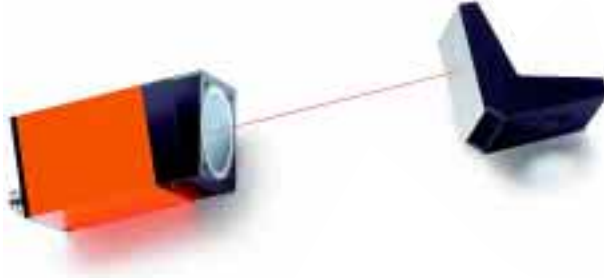
Even outdoors use can be very simply and reliably implemented while observing of the appropriate handling criteria.

Laser installation on the underside of a crane. Easily recognisable is an additional weather covering to protect the optics.



# Laser Measuring Unit L'A'S 100

The distance measuring unit based on a laser makes possible the absolute, contactless and wear-free measurement of distances up to 100 m.



## Features:

- no referencing necessary (when switched on, the correct value is immediately available)
- simple handling and mounting
- self-adhesive reflector foil for the measured object
- no routing or cable guides necessary
- fast measurement results

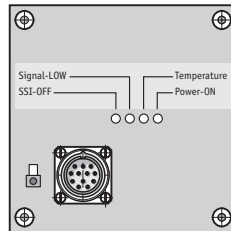
Feature	Technical Data		Additional information
Interface	SSI	A	RS422
	PB		Profibus
			standard
			other interfaces on request
Switching output	I	B	integrated
	S		separate (for SSI-versions only)
			standard, included in 12-pin connector
			switching output as separate 7-pin connector
Type of mounting	M1	C	see drawing for attachments
Measuring range			0.3 – 100 m
Data word encoding			binary (Interbus, Profibus)
			Gray (SSI can be re-programmed to binary)
Operating voltage			24 VDC ± 20 %
Power consumption			< 6 W
Light transmitter			laser diode, service life ≤ 100000 h (25 °C)
			wavelength 635 nm (red light), max. laser power ≤ 1 mW
Laser protection class			2
Light receiver			PIN photo diode
Programming			via RS485 interface
			(ASCII protocol)
Data width			32 Bit (24 Bit for SSI)
Data refresh rate			max. 250 measuring values per second
Resolution			1 mm
Repeat accuracy			± 2 mm
Temperature			storage temperature -40 °C ... +70 °C
			operating temperature -10 °C ... +50 °C; option -30 °C ... +50 °C
Protection class			IP 65
			condensation not permitted
Objects to be measured			surface coated with reflective foil
Reflecting foil			reflecting foil 220 x 220 mm self-adhesive
			included in delivered items, option: larger dimensions
Accessory	81195		SSI connector
	81560		Profibus connector
	77087		switching output connector
	81466		additional reflective foil
			12 pins, refer to appendix
			12 pins, refer to appendix
			7 pins, refer to appendix
			220 x 220 mm

Your ordering data: LAS 100 -  -  -

# Appendix / Pin outs

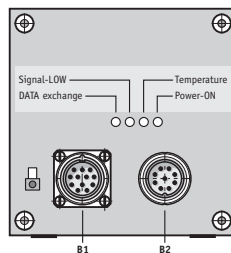
## L'A/S 100

A) Connection type SSI



PIN	Assignment	Meaning
1	Data -	to magnetic display or PLC
2	Data +	to magnetic display or PLC
3	Cycle -	from magnetic display or PLC
4	Cycle +	from magnetic display or PLC
5	+24 V ( $\pm 20\%$ )	
6	GND	RS485 service interface
7	DÜA	RS485 service interface
8	DÜB	RS485 service interface
9	0 V	
10	SW1	switching output
11	N.C.	
12	N.C.	

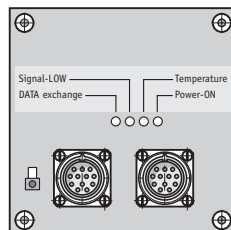
B) Connection type SSI plus separate switching output



PIN out B1 equal to A), PIN out B2 according to table		
1	0 V	
3	SW1	switching output
2, 4-7	N.C.	

## L'A/S 100

Connection type Profibus



PIN	Assignment	Meaning
1	DGND (2M)	only for termination
2	RXD/TXD-N	A line
3	N.C.	
4	RXD/TXD-P	B line
5	N.C.	
6	VP (2P5)	+5 V (only for termination)
7	+24 V ( $\pm 20\%$ )	
8	0 V	
9	GND	RS485 service interface
10	DÜA	RS485 service interface
11	DÜB	RS485 service interface
12	RTS	Transmit request (only for the use of a repeater)

### Handling Instructions:

- A reflective foil must always be attached to the measured object.
- The lens and reflector must be protected from condensation and soiling.
- The influence on the measured results by ambient temperature, atmospheric pressure or humidity is, as a rule, below the resolution of 1 mm and can, therefore, be ignored.
- An interruption of the laser beam always leads to a measurement error.
- The reflected light point must strike the reflecting foil over the complete travel/measured distance.
- If the SSI- or Profibus connectors (> accessory) are used, a shielded cable must be taken with an outside diameter between 7.5 mm and 8.5 mm.
- **Attention:** Take care, that the supply voltage on the L'A/S 100 **does not fall below** the lower tolerance limit of supply voltage. The cross sections of the supply cables must be dimensioned accordingly (Important, e.g. for bus operation where several L'A/S 100 are interconnected and supplied jointly).



# Spirit of Enterprise, Innovation

Technical expertise and know how - from practice to application.  
and Salient Products.

From the beginning precision has been SIKO's motto: Dr.-Ing. Günther Wandres founded the company in 1963, producing in the beginning handwheels with integral analogue indicators. In 1977 the development of a digital indicator replacing indicators with scale and pointer was a milestone in the company's history: SIKO became the world leading manufacturer of mechanical position indicators – a position unrivalled up today.

Having successfully launched optoelectronic measuring systems, too, the era of magnetic measuring technology started at SIKO in 1992. The products of the MAGLINE Series are today still setting new standards for contactless measuring systems.

The consequent further development of the idea of measuring distances without contact has led to an additional SIKO measuring system without cable: The L/A/S 100. Based on laser technology, the industry now has a product available that is primarily designed for the measuring of long distances in the areas of material flow, conveyor equipment and logistics.

L/A/S 100

But development work in other SIKO products lines was continued as well so that SIKO is offering today the widest range of products and proven solutions for a variety of distance and angle measuring applications.

Motivation, especially motivation of its employees, is one of the secrets of SIKO's success. The company is situated at the rim of the Black Forest, in the three-country-edge of Germany-France Switzerland.

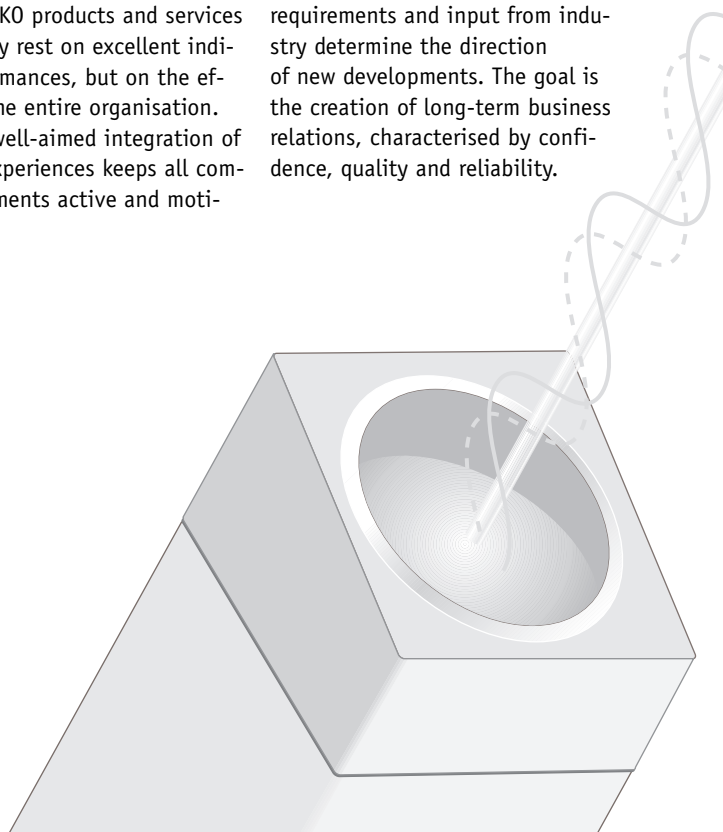


In this favorable environment, more than 100 employees are developing, producing and selling SIKO products. Quality of SIKO products and services does not only rest on excellent individual performances, but on the efficiency of the entire organisation. Steady and well-aimed integration of successful experiences keeps all company departments active and motivated.

With a worldwide network of 26 agencies, SIKO products are available all over the world. Apart from the magnetic length measuring systems for distance and angle measurement, the SIKO product range comprises mechanical position indicators, electronic rotary encoders, geared potentiometers, displays and controls.

More than 35 years experience in the field of distance and angle measurement, combined with their

own research & development programmes are the foundation of the company success. Customers' requirements and input from industry determine the direction of new developments. The goal is the creation of long-term business relations, characterised by confidence, quality and reliability.



# Fax inquiry

For immediate information

0 76 61 / 3 94 - 3 88

To receive more information, simply mark the appropriate item(s) in the list below and fax this page to us.

- Technical advice on the L'A'S system
- Brochures on alternative magnetic measuring systems
- Visit of a SIKO sales representative
- Pricelist for SIKO products
- Catalogue with brochures on the complete SIKO product range

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From:

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