

# LASER Series 2000

Efficient diameter gauges for cable production lines



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With the gauge heads of the LASER Series 2000, SIKORA offers high-quality laser technology for efficient diameter measurement, meeting the increasing demands of the cable sector in regard to quality and productivity. High precision, reliability and continuous functionality are the outstanding features of the dual and triple-axis gauge heads for a product range of 0.05 to 300 mm. Due to their functional design, the systems can easily be integrated into any production line.

## Non-contact measuring technology

SIKORA measuring systems are known worldwide for their unique non-contact and non-destructive measuring principle. The innovative technology is based on CCD line sensors and laser light sources in combination with powerful signal processors. The outer diameter is calculated by an intelligent diffraction analysis directly from the shadow image. Extremely short exposure times ensure a high single value precision at all line speeds – even at a high vibrating frequency of the measuring object.

## Functional design in perfection

Interesting is the design of the LASER Series 2000 devices. The smaller gauge heads are equipped with a unique and proven

multi-slot protection. The gauge heads starting at 30 mm as well as all triple-axis devices are open at the bottom, which prevents water and dirt from falling into the gauge head.

A special feature of the larger models and 3-axis measuring heads is the swiveling gauge head design, allowing the head to be moved up and out of the production area. The measuring heads are free from wearing parts, retain their high precision during the entire period of operation and do not require any calibration or routine maintenance.

Technology that excites: LASER LUMP 2000 T unifies diameter measurement and high-speed lump detection

The LASER Series 2000 T devices are now also available with the new feature of high-speed lump detection as LASER LUMP 2000 T. They combine precision of the diameter measurement with a fast and reliable detection of lumps and neckdowns for a perfect quality control. Their usage is especially suited for automotive and installation areas. As a result, the user receives a two-in-one system, which reduces investment costs and leaves more space in the line as only one gauge head has to be installed. Currently, LASER LUMP 2010 T and LASER LUMP 2025 T are available.\*

\*For further information, please refer to the product flyer LASER LUMP 2000 T.



## Specific gauge heads for every application

### LASER Series 2000 XY

With the LASER Series 2000 XY, SIKORA offers efficient gauge heads for a precise diameter measurement in two planes. Innovative regarding the laser and the CCD sensor – the diameter measurement based on diffraction analysis sets highlights. This technology does neither require rotating mirrors nor optical components, is absolutely maintenance-free, does not require any calibration and offers the highest precision during the operation.

### LASER Series 2000 T

The LASER Series 2000 T models are 3-axis gauge heads for precise diameter and ovality measurement that leave nothing to be desired. The focus of the 3-axis gauge heads is on defining the ovality of a product. An oval is defined by five tangents, and therefore, by using three measuring axes (six tangents on the oval) not only the min/max value of the oval, but also the orientation of the oval is defined.

### LASER Series 2000 F/R (Flat/Round cables)

For the reliable online acquisition of double, triple or multi-wire flat cables as well as for round conductors, the LASER Series 2000 F/R offers an exact measurement of the width and the height of the measuring object – even if the product turns up to  $\pm 15$  degrees during production.

### LASER Series 2000 S/R (Sector/Round cables)

The LASER Series 2000 S/R is most suitable for the precise measurement of the height of straight sector conductors, which may be solid or stranded. Even if the conductor turns  $\pm 15$  degrees, the height will be defined accurately. The gauge head ensures precise diameter and ovality measurements for round cables.

### Availability

The measuring heads are free from wearing parts, have a nearly unlimited lifetime and even after years of operation, the devices measure as precisely as on the first day. The optical measuring principle, without any moving parts, ensures an availability of 99.8 %.

### Interfaces + Industry 4.0

The LASER Series 2000 gauges offer all kinds of interfaces such as RS485 and optionally Profibus-DP, Profinet IO, CANopen, EtherNet/IP, DeviceNet or OPC UA for a direct connection to a PC or the display and control devices REMOTE 6000 or ECOCONTROL 6000, 1000 or 600 and are therefore, designed for the use under the aspect of Industry 4.0.



The measuring values of the LASER Series 2000 are clearly displayed on the ECOCONTROL 600



Swivel gauge head function

### Outstanding features

- State-of-the-art CCD line sensor technique combined with pulse-driven laser light sources
- Extremely short exposure times for highest single value precision
- Complete processing of measured data in the measuring head, including statistic, standard deviation, trend and FFT analysis
- RS232 diagnosis interface
- Analog output or alternatively industrial fieldbus (e.g. Profinet IO, EtherNet/IP, Profibus-DP, CANopen, DeviceNet, OPC UA) (optional)
- Reliable SMD-technique, no moving parts
- No need for calibration
- Availability: 99.8 %

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Certified according to  
DIN EN ISO 9001

## Technical Data LASER Series 2000

Product Name	Product Diameter	Accuracy*	Repeatability	Dimensions
LASER 2005 XY	0.05 - 5 mm	± 0.25 µm	± 0.1 µm	140 x 140 x 63 mm
LASER 2010 XY	0.2 - 10 mm	± 0.5 µm	± 0.1 µm	140 x 140 x 62 mm
LASER 2030 XY	0.2 - 25 mm	± 1.0 µm	± 0.2 µm	468 x 285 x 37 mm
LASER 2050 XY	0.5 - 50 mm	± 2.5 µm	± 0.5 µm	468 x 285 x 37 mm
LASER 2100 XY	1.0 - 100 mm	± 5.0 µm	± 1.0 µm	714 x 633 x 55 mm
LASER 2200 XY	5.0 - 190 mm	± 10.0 µm	± 2.0 µm	714 x 633 x 55 mm
LASER 2300 XY	50 - 300 mm	± 20.0 µm	± 4.0 µm	920 x 920 x 133 mm
LASER 2010 T	0.2 - 10 mm	± 0.5 µm	± 0.1 µm	250 x 182 x 62.5 mm
LASER 2025 T	0.2 - 25 mm	± 1.0 µm	± 0.2 µm	360 x 290 x 38.5 mm
LASER 2050 T	0.5 - 50 mm	± 2.5 µm	± 0.5 µm	472 x 496 x 41 mm
LASER 2100 T	1.0 - 100 mm	± 5.0 µm	± 1.0 µm	635 x 621 x 53 mm
LASER 2030 F/R	0.2 - 25 mm (round)	± 1 µm (round)		481 x 305 x 36 mm
	0.5 - 20 mm (flat: width)	± 5 µm (flat)		
	0.25 - 10 mm (flat: thickness)			
LASER 2050 F/R	0.5 - 50 mm (round)	± 2.5 µm (round)		481 x 305 x 36 mm
	1.0 - 50 mm (flat: width)	± 10 µm (flat)		
	0.5 - 25 mm (flat: thickness)			
LASER 2050 S/R	1.0 - 35 mm (sector)	± 20 µm	± 4.0 µm	435 x 385 x 41 mm
	0.5 - 50 mm (round)	± 2.5 µm	± 0.5 µm	
LASER 2100 S/R	1.0 - 35 mm (sector)	± 20 µm	± 4.0 µm	635 x 621 x 93 mm
	1.0 - 100 mm (round)	± 5.0 µm	± 1.0 µm	

### Measuring Rate\*\*

500 measurements/sec/axis  
1,000 measurements/sec/axis for LASER 2050 T  
1,200 measurements/sec/axis for LASER 2005 XY

### Exposure Time

0.2 µs

### Interfaces

Serial interface RS485, setup and diagnosis interface RS232  
Optional: analog output or alternatively industrial fieldbus (e.g. Profinet IO, EtherNet/IP, Profibus-DP, CANopen, DeviceNet, OPC UA)

### Power Supply

100 - 240 V AC ± 10 %, 50/60 Hz, 30 VA

\* ± 0.01 % of the measured value

\*\* higher measuring rates on request

Technical data is subject to change

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