

# INFORMATION

LASER FOR THE FUTURE



## LASE 2000T-Scanner

Optical 2D- / Profile Scanner using  
Laser Triangulation

**LASE**  
Industrielle Lasertechnik GmbH



### Short description:

The LASE 2000T sensor is an optical measuring device for non-contact precision measurement in two dimensions. The measurement is performed by oscillating the triangulation plane over  $10^\circ$  or  $50^\circ$ . A fine collimated or focused laser beam is diffusely reflected from the surface of almost any kind of material or fluid, and a CCD-camera records the image through an objective. This makes it possible for a Digital Signal Processor to calculate the (radial) distance from the centre of the mirror axis to the object surface, as well as keeping track of the angular reference position.

### General characteristics:

The LASE 2000T-series consists of two dimensional scanners which work according to the triangulation principle.

This method ensures highest accuracy.

The range on natural surfaces amounts to max. 2.400 mm.

The LASE 2000T series is designed to give a high measuring accuracy where the precision demands are below 1 mm.

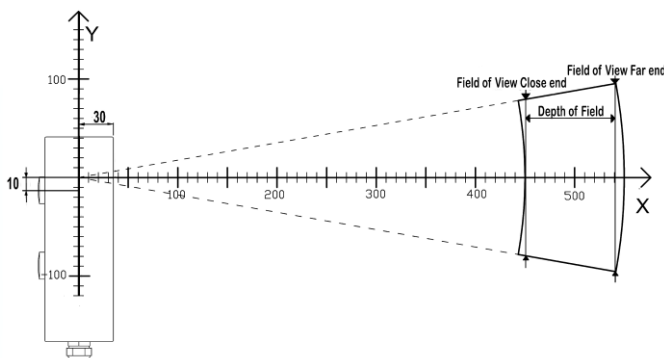
- Contact-less 2D-/Profile Scan measurement
- Measuring range up to max. 1.300 mm
- High precision in  $\mu\text{m}$ -area
- High measuring rate
- Digital and analog interface
- Simple installation in variable installation position
- Durable design

The LASE 2000T measuring system is a compact unit where optics, CCD-camera, and digital signal processing electronics all are integrated in the sensor housing. The schematic drawing shows the scanner seen from the side with an angle from  $\pm 10^\circ$ .

The intern measuring frequency is 2 kHz (6kHz is an option). The measured data are used as serial data stream (RS232 or RS 422). for further processing with a windows pc.

The scanner is delivered with a CD-ROM containing a Windows test/demo program. The PC program receives output data from the scanner over the RS232 interface and COM port and presents the measured distance to the object. If the scanner is ordered with software support measuring data can be called on by the application program. The software either converts polar coordinates of a measurement point to orthogonal X, Y-coordinates or presents a table of X, Y-values for each sweep from one side to the other. The user can in the application program specify the size of the Y-increment and thus the length of the output table containing the profile data.

The LASE 2000T scanner is developed for the need of 2D-/profile-measurement in any kind of industrial application. The ruggedly constructed scanner is designed to give a very reliable measuring performance with good measuring accuracy. With output data in the software-converted form, the Y-coordinates can be used for width measurement with a resolution dependent of the user chosen scan arch. By combining the X-coordinates of the profile data from two scanners, width data can be computed and presented in connection with the edge profiles measured from both sides of the object.



## Technical Data LASE 2000T:

Modell	LASE 2000T-250	LASE 2000T-325	LASE 2000T-450	LASE 2000T-750	LASE 2000T-505	LASE 2000T-1155	LASE 2000T-1950	LASE 2000T-1350
Measurement range	100 mm	200 mm	500 mm	700 mm	100 mm	300 mm	900 mm	1300 mm
Radial/polar distance from mirror axis	200 - 300 mm	250 - 450 mm	200 - 700 mm	400 - 1.100 mm	450 - 550 mm	1.000 - 1.300 mm	1.500 - 2.400 mm	700 - 2.000 mm
Standard 10° scan arch	± 5°	± 5°	± 5°	± 5°	± 5°	± 5°	± 5°	± 5°
Dept of Field (X)	98 mm	248 mm	497 mm	695 mm	98 mm	295 mm	890 mm	1292 mm
Field of View close end (Y)	35 mm	35 mm	35 mm	70mm	79 mm	175 mm	262 mm	123 mm
Field of View dar end (Y)	52 mm	78 mm	121 mm	191 mm	95 mm	226 mm	418 mm	348 mm
Maximum 50° scan arch	± 25°	± 25°	± 25°	± 25°	± 25°	± 25°	± 25°	± 25°
Dept of Field (X)	72 mm	207 mm	434 mm	597 mm	48 mm	178 mm	675 mm	1113 mm
Field of View close end (Y)	186 mm	186 mm	186 mm	372 mm	419 mm	932 mm	1398 mm	652 mm
Field of View dar end (Y)	253 mm	379 mm	591 mm	928 mm	464 mm	1098 mm	2028 mm	1688 mm
Scan Rate (from on side to other 2 or 6 kHz)	300 or 600/min 1800, 900 or 450/min	300 or 600/min 1800, 900 or 450/min	300 or 600/min 1800, 900 or 450/min	300 or 600/min 1800, 900 or 450/min	300 or 600/min 1800, 900 or 450/min	300 or 600/min 1800, 900 or 450/min	300 or 600/min 1800, 900 or 450/min	300 or 600/min 1800, 900 or 450/min
Radial/ Polar Resolution	30 µm	50 µm	100 µm	200 µm	50 µm	200 µm	600 µm	800 µm
Radial/Polar Reproducibility	± 30 µm	± 50 µm	± 100 µm	± 200 µm	± 50 µm	± 200 µm	± 600 µm	± 800 µm
Radial / Polar Linearity	± 100 µm	± 200 µm	± 200 µm	± 400 µm	± 100 µm	± 500 µm	± 1,2 mm	± 1,6 mm
Updating Frequency	2 or 6 kHz	2 or 6 kHz	2 or 6 kHz	2 or 6 kHz	2 or 6 kHz	2 or 6 kHz	2 or 6 kHz	2 or 6 kHz
Temperature deviation	± 0,03 % of FS	± 0,03 % of FS	± 0,03 % of FS	± 0,03 % of FS	± 0,03 % of FS	± 0,03 % of FS	± 0,03 % of FS	± 0,03 % of FS
Size of Spot	Ø 1 mm	Ø 2 mm	Ø 3 mm	Ø 3 mm	Ø 1 mm	Ø 4 mm	Ø 5 mm	Ø 5 mm
Lightsource (visibel)	655 nm	655 nm	655 nm	655 nm	655 nm	655 nm	655 nm	655 nm
Laser Protection Class: 2 kHz / 6 kHz	IEC 2	IEC 2	IEC 2 / 3R	IEC 2 / 3R	IEC 2 oder 3R	IEC 3R oder 3B	IEC 3R oder 3B	IEC 3R oder 3B
Serial Output 2 kHz / 6 kHz	RS 232 / 422	RS 232 / 422	RS 232 / 422	RS 232 / 422	RS 232 / 422	RS 232 / 422	RS 232 / 422	RS 232 / 422
Baud rate 2 kHz / 6 kHz	115200 / 230400	115200 / 230400	115200 / 230400	115200 / 230400	115200 / 230400	115200 / 230400	115200 / 230400	115200 / 203400
Supply Voltage	22 - 36 VDC	22 - 36 VDC	22 - 36 VDC	22 - 36 VDC	22 - 36 VDC	22 - 36 VDC	22 - 36 VDC	22 - 36 VDC
Power Consumption, max.	Max. 12 W	Max. 12 W	Max. 12 W	Max. 12 W	Max. 12 W	Max. 12 W	Max. 12 W	Max. 12 W
Opertaing Temperature	0 bis +45 °C	0 bis +45 °C	0 bis +45 °C	0 bis +45 °C	0 bis +45 °C	0 bis +45 °C	0 bis +45 °C	0 bis +45 °C
Degree of protection	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65
Dimensions (mm)	310x190x64	310x190x64	310x190x64	310x190x64	310x190x64	310x190x64	310x190x64	310x190x64
Weight (exkl. Kabel)	4.2 kg	4.2 kg	4.2 kg	4.2 kg	4.2 kg	4.2 kg	4.2 kg	4.2 kg

\*)Resolution, accuracy and linearity valid for static measurement on white paper.  
Slight tolerances are possible on other surfaces. FS= Full Scale

### Scope of delivery LASE 2000T series:

Sensor, User manual, Demo-programm, Windows-DLL

### Special models:

All models are available as **HT-** and **VHT-**Versions  
(for measurements on hot surfaces up to **1000°C / 1500 °C**)  
The standard version is useable only for a surface  
temperature of approx. 450 °C

### Optional accessories:

Cooling housing, alignment support

