

## Laser Micrometer for very high accuracy diameter measurement



### General Description

Xactum Laser Sensors represent a quantum leap in laser micrometer technology. Digital Signal Processing (DSP) accuracies never before achieved are now available. No other laser micrometer on the market today is as advanced.

With the completely built in electronics, the Xactum laser sensors can be used as a stand alone smart laser micrometer. It can also be connected directly to a PC, PLC or NC via its internal RS 232, RS 485 and Ethernet serial interface. In either the RS 485 or Ethernet mode numerous sensors can be networked on a common line.

The patented autocalibration feature eliminates drift. As a result the Xactum laser sensor never requires re-calibration.

### Features

- Single axis gauge
- 150 mm measuring range
- Up to 0.6  $\mu\text{m}$  repeatability
- 1200 Hz scanning frequency
- Excellent linearity
- Permanent self calibration
- Separable transmitter and receiver
- 3 years guarantee
- Fully re-programmable
- Direct connection to PC, PLC and NC

### Typical Applications

- Ground or turned parts
- Metal tubes and bars
- Plastic extruded tubes
- Rolled or extruded profiles
- Hot rolled products

### Measurement Modes

**Free-Running:** it processes continuously groups of k Instant Values to compute the related Extreme Values.

**On-Command, Single-Shot:** after an external command, it processes only 1 group of k Instant Values to compute the related Extreme Values. The external command is a rising edge on a digital input or a command message via Ethernet.

**On-Command, Continuous:** during a time interval set by an external command, it processes all the measured Instant Values, to compute their Extreme Values. The measuring time is set by a logic high level on a digital input and / or by Start/Stop messages via Ethernet.

**Auto-Sync:** like On-Command, Single-Shot, but the measurement is automatically triggered by a valid measurement condition (1 part in the measuring field), after a programmable delay.

### Measurement Types with Standard Built-in Software

- **Only 1 part in the measuring field**, opaque or transparent
- **Measured dimensions:** X / Y diameter and X / Y center position

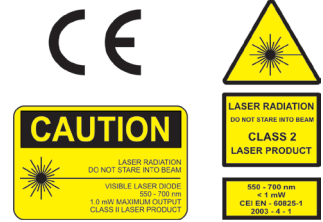
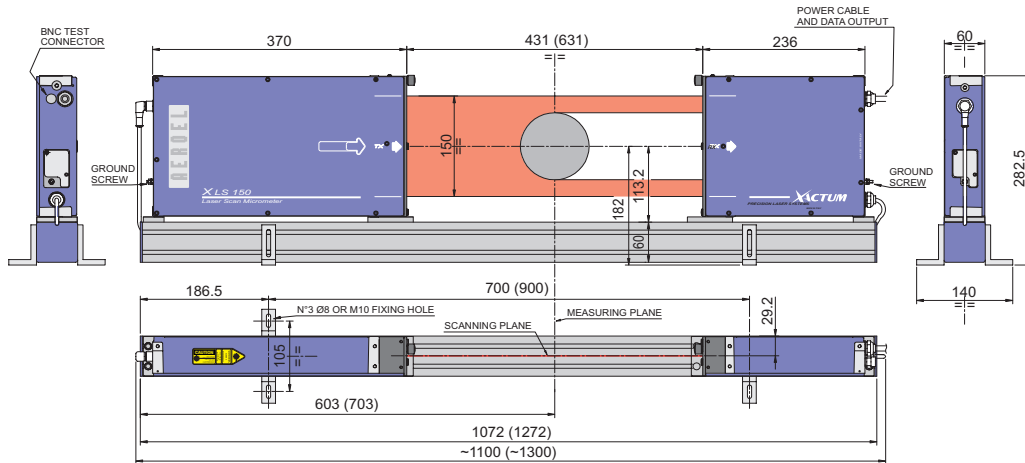
Note: other types of measures are possible by down loading dedicated software

### Measurement Processing

- **Instant Values:** simple average over n scans, programmable with  $n \geq 1$
- **Extreme Values:** Average, Max, Min and Range = (Max - Min) over k Instant Values, being  $k \geq 1$  programmable

### Input / Output

- 2 digital inputs / RS232 and RS485, max 115.2 kbaud / Ethernet 10 Base-T / ALS Binary Video



This product conforms to the following standards:  
21 CFR 1040.10 (USA) • CEI EN-60825-1; 2003-4-1 (EU)

Type of gauge		XLS150/200/A	XLS150/200/B	XLS150/1200/A	XLS150/1200/B
Measuring Field	(mm)	150			
Measurable Diameters	(mm)	0.8 ÷ 149			
Resolution (Selectable)	( $\mu\text{m}$ )	10 / 1 / 0.1 / 0.01			
Linearity (Centred Product)	( $\mu\text{m}$ )	$\pm 3$ <sup>(1)</sup>			
Linearity (in the Measuring Plane) <sup>(2)</sup>	( $\mu\text{m}$ )	$\pm 4$			
Side Linearity <sup>(3)</sup>	( $\mu\text{m}/\text{mm}$ )	$\pm 0.08$			
Repeatability (T=1s, $\pm 3$ Sigma)	( $\mu\text{m}$ )	$\pm 0.8$		$\pm 0.6$	
Single Shot Repeatability ( $\pm 3$ Sigma)	( $\mu\text{m}$ )	$\pm 5$		$\pm 8$	
Beam Spot Size (s,l) <sup>(4)</sup>	(mm)	0.5 x 4	0.5 x 0.3	0.5 x 4	0.5 x 0.3
Side Dither of the Scanning Plane	(mm)	$\pm 1.3$		$\pm 0.33$	
Scanning Frequency	(Hz)	200		1200	
Scanning Speed	(m/s)	376		564	
Gauge Thermal Coefficient <sup>(5)</sup>	( $\mu\text{m}/\text{mm}^\circ\text{C}$ )	-0.0062			
Power Supply		24 VDC; 0.3 A (1 A peak)			
Laser Source		VLD (Visible Laser Diode); $\lambda = 650 \text{ nm}$			
Dimensions <sup>(6)</sup>	(mm)	~1100 (1300) x 282.5 x 140			
Weight <sup>(6)</sup>	(kg)	15 (15.7)			
Operating Temperature Range	( $^\circ\text{C}$ )	0 ÷ 50			
Storage Temperature	( $^\circ\text{C}$ )	-20 ÷ +70			
Atmospheric Humidity		Max 85% (non-condensing)			
Altitude	(m)	0 ÷ 3000 over sea level			
Protection		IP65 (optical windows not included)			

Notes

Two standard models are available: the first with head separation 431 mm and the second with head separation 631 mm.

<sup>(1)</sup> For dia.  $\leq 70 \text{ mm}$ . For  $70 \leq \text{dia.} \leq 149 \text{ mm}$  the linearity is  $\pm 5 \mu\text{m}$ .

<sup>(2)</sup> Maximum error, when a master is moved in the measuring plane, checked with  $10 \text{ mm} \leq \text{dia.} \leq 140 \text{ mm}$ . The measuring plane is located halfway between transmitter and receiver.

<sup>(3)</sup> Maximum error, for a side displacement of the master out of the measuring plane.

<sup>(4)</sup> Elliptical spot: the smallest dimension is the thickness.

<sup>(5)</sup> Typical value. It states the measurement drift due to the room temperature change, when measuring a master with null coefficient of expansion (INVAR).

<sup>(6)</sup> The figures between brackets are related to the model with head separation 631 mm.

SPECIFICATIONS IN ALS MODE, CONNECTED TO A CE-10 OR IBU-10 EXTERNAL UNIT					
Type of ALS compatible gauge		ALS150/200/A	ALS150/200/B	ALS150/400/A	ALS150/400/B
Resolution (Selectable)	( $\mu\text{m}$ )	10 / 1			
Repeatability (T=1s, $\pm 3$ Sigma)	( $\mu\text{m}$ )	$\pm 1.5$		$\pm 1$	
Single Shot Repeatability ( $\pm 3$ Sigma)	( $\mu\text{m}$ )	not specified			
Scanning Frequency	(Hz)	200		400	
Scanning Speed	(m/s)	376			

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