

# **SUPER-MECLAB+.X**

## **Bench-top Laser Micrometer**



The SUPER-MECLAB+.X Bench Top Laser Micrometer is a high precision instrument for ultra-high accuracy diameter measurements. It is ideal for the off-line, manual measurements of a wide range of ground or turned parts with different shapes and sizes, such as:

- electric motor shafts
- ground or turned parts
- gage pins
- piston pins
- hydraulic components



**NO-VAR technology:**

no measuring drift due to changing room temperature



**Through-feed measurement:**

multi-diameter measurement simple and instantaneous

# System composition

The basic system consists of:

- XLS40 or XLS80 Xactum Intelligent Laser Sensor
- Flat granite baseplate with precision linear slide (400, 640 or 820 mm long)
- Embedded Aeroel PC with 10.4" LCD monitor
- Super-Meclab.X software pre-installed in the system
- NO-VAR option: compensation of measuring drift due to changing room temperature
- Power supplies, connecting cables, keyboard and mouse
- Calibration report (available on request)
- Ready for external monitor (not supplied)

## Optional fixtures and accessories



Universal V block in hardened steel or insulated material



Pair of centers to be mounted on the slide, at adjustable positions



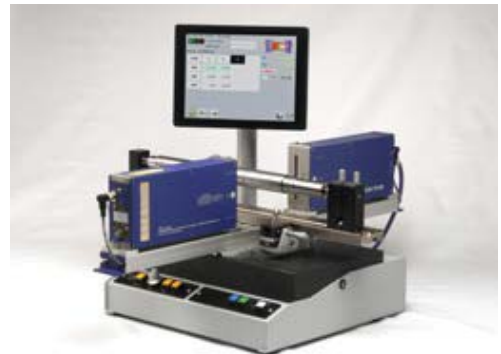
Pair of free rolls (various heights) to be mounted along the slide



Motor driven device to rotate the part, with friction driving wheel and stepper motor.



Magnetic scale to read the slide position, resolution 0.005 mm



Set of two pairs of hollow cones, to be used with dead centers



Pair of fixed V blocks (various heights) to be mounted along the slide



Device for the fine tuning of the slide position, with micrometric head, 0.5 mm/rev pitch, ± 6.5 mm range



Set of 4 calibration pins for XLS40 micrometer, with supporting V block.

## The Xactum Technology

The Xactum XLS40 and XLS80 Laser Micrometers are extremely accurate and repeatable measuring instruments.

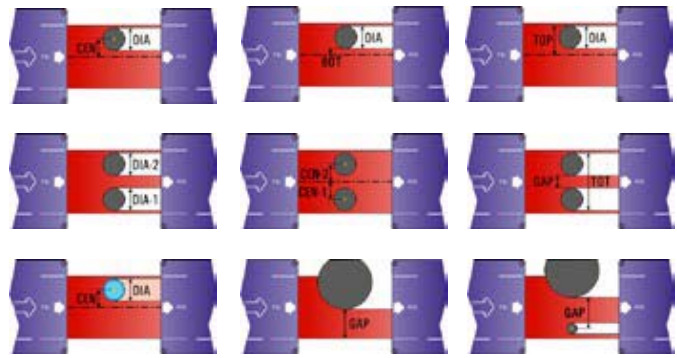
- Wide measuring field: 40 or 80 mm
- Excellent linearity:  $\pm 0.5 \mu\text{m}$  at best (\*)
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- Outstanding repeatability  $\pm 0.05 \mu\text{m}$  (\*)
- Permanent self-calibration
- NO-VAR technology: no measuring drift due to changing room temperature by programming the coefficient of thermal expansion of the part



# Gauging flexibility

## Multiple dimensions can be checked

The user can choose among several different types of measurements, each one corresponding to a pre-set combination of light/shadow segments. The parts being checked can be either **opaque or transparent** (glass logic) and can be also **round or sharp edged** (i.e. fluted tools).



# Available functions

The Super-Meclab.X software has been designed to be extremely user friendly and very flexible.

## 3 measuring modes

**Auto-start measurement mode**

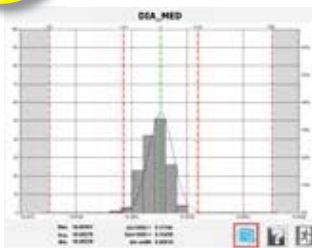
**Set-up of Measuring time and display resolution**

**Multiple measurements on the same part**

**Quick tolerance check**



## Multiple-point user re-mastering capability



**Zero-Set function**

**Part library for easy programming**

**Data recording, printing and exporting**

**On line statistics and charts**

**Digital oscilloscope**

**Help on line**

## No measuring drift due to changing room temperature!

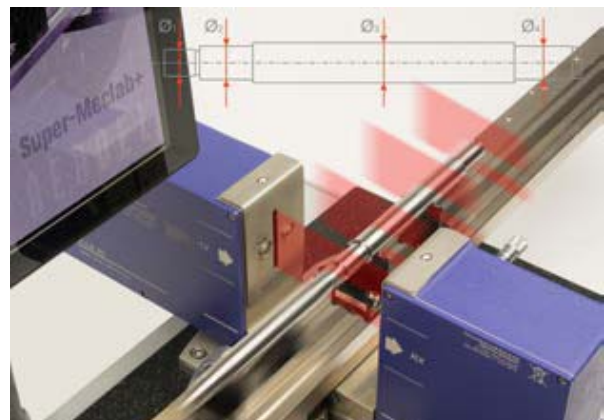
The **NO-VAR** (NO-VARiation) technology allows to get simply perfect diameter measurements even in non thermally controlled environments, automatically compensating the thermal expansion of any part.

## Automatic seeking of the “zero point”

A special guided procedure is available to reset the position reading at the part starting point.

## Through-feed measurement

Measures up to 9 diameters on the same piece, simply by moving the linear slide.



# Benefits

**No error due to the hysteresis (inversion error) which is typical of all dial indicator gauges (see QR-code video).**

**Contactless measurement:** no part damage or scratches.

**Objective and highly reproducible results:** no matter about the operator's skill.



**Extremely easy and quick to use:** reduces inspection time and improves measurement capability.

**Highly flexible:** different components and sizes can be measured without gauge re-mastering.

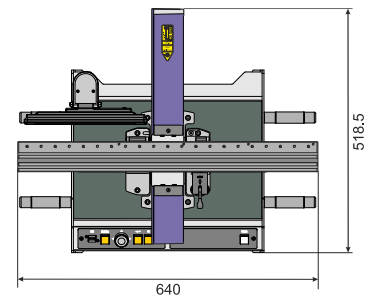
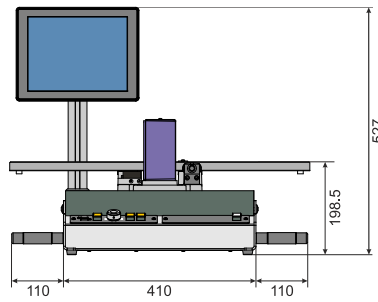
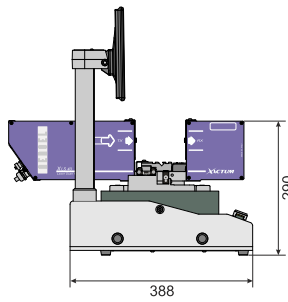
**Ultra accurate:** it measures to an accuracy that before you had only in a metrology room, using time consuming, expensive equipment and specialized personnel.

**Fine measuring spot:** you can measure details that would be otherwise impossible to detect.

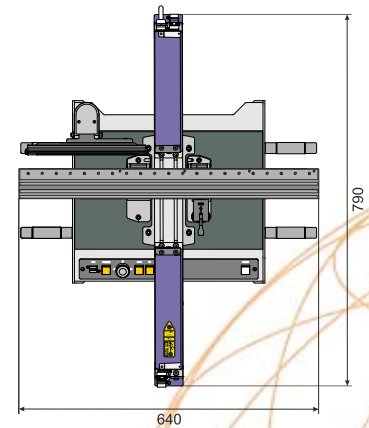
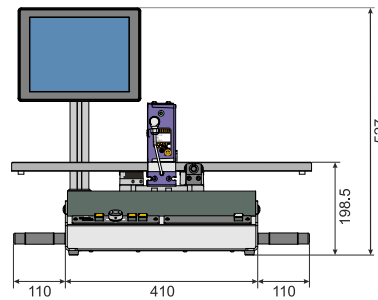
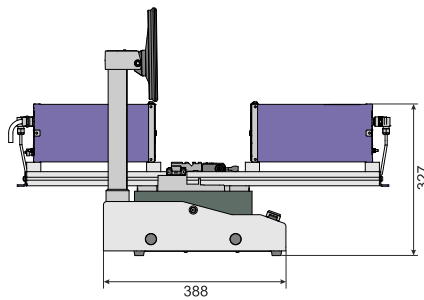
(\*) Values referred to XLS40/1500 Laser Sensor. The value is inclusive of the Aeroel's masters uncertainty ( $\pm 0.3 \mu\text{m}$ )

# Specifications

## SUPER-MECLAB+.X40



## SUPER-MECLAB+.X80



All dimensions are in mm - Removable handles

Type of gauge		XLS40/1500/B	XLS80/1500/B
Measuring Field	(mm)	40	80
Measurable Diameters	(mm)	0.06 - 38	0.75 - 78
Resolution (Selectable)	( $\mu\text{m}$ )	10 / 1 / 0.1 / 0.01	
Linearity (Centred Product)	( $\mu\text{m}$ )	$\pm 0.5$ <sup>(1)</sup>	$\pm 1$ <sup>(2)</sup>
Linearity (in the Measuring Plane) <sup>(3)</sup>	( $\mu\text{m}$ )	$\pm 0.5$	$\pm 1$
Repeatability (T=1s, $\pm 2\sigma$ )	( $\mu\text{m}$ )	$\pm 0.07$	$\pm 0.2$
Single Shot Repeatability ( $\pm 2\sigma$ )	( $\mu\text{m}$ )	$\pm 1.5$	$\pm 3.5$
Beam Spot Size (s,l) <sup>(4)</sup>	(mm)	0.06 x 0.1	0.4 x 0.2
Side Dither of the Scanning Plane	(mm)	$\pm 0.02$	$\pm 0.05$
Scanning Frequency	(Hz)	1500	
Scanning Speed	(m/s)	300	588
Gauge Thermal Coefficient <sup>(5)</sup>	( $\mu\text{m}/\text{m}^\circ\text{C}$ )	- 11.5	
Laser Source		VLD (Visible Laser Diode); $\lambda = 650 \text{ nm}$	
Power Supply		24 VDC; 50 W max	
System Dimensions <sup>(6)</sup>	(mm)	640 x 527 x 518.5	640 x 527 x 790
System Weight <sup>(6)</sup>	(kg)	46	49
Operating Temperature Range	( $^\circ\text{C}$ )	0 - 50	

### Note

For each model also is available the /A version with a larger spot width: 2 mm for XLS40/A and 3.5 mm for XLS80/A.

<sup>(1)</sup> For  $\varnothing \leq 25 \text{ mm}$ . For  $\varnothing > 25 \text{ mm}$  the linearity is  $\pm 0.75 \mu\text{m}$ . The value is inclusive of the Aeroel's masters uncertainty ( $\pm 0.3 \mu\text{m}$ )

<sup>(2)</sup> For  $\varnothing \leq 40 \text{ mm}$ . For  $\varnothing > 40 \text{ mm}$  the linearity is  $\pm 1.5 \mu\text{m}$ . The value is inclusive of the Aeroel's masters uncertainty ( $\pm 0.3 \mu\text{m}$ )

<sup>(3)</sup> Maximum error, when a master is moved in the measuring plane, checked with  $\varnothing=8 \text{ mm}$  (XLS40) or  $\varnothing=20 \text{ mm}$  (XLS80). The measuring plane is located halfway between transmitter and receiver.

<sup>(4)</sup> Elliptical spot: "s" is the thickness and "l" is the width.

<sup>(5)</sup> This is the measuring error due to a change in the ambient temperature when measuring a part with zero thermal expansion coefficient (INVAR). This is specified for gauges using a software PRESET for the NO-VAR option and when the rate of change of the ambient

temperature is lower than  $3^\circ/\text{h}$ . When the NO-VAR option is ENABLED, the gauge thermal expansion coefficient is programmable by the user.

<sup>(6)</sup> Referred to the laser sensor, the basement and the linear slide (640 mm)



Specifications subject to change without notice. For additional details and complete specifications please see the gauge data sheet.



[www.aeroel.it](http://www.aeroel.it)

Visit us in Internet; you will find all the latest information about Aeroel's products and service



[www.youtube.com/aeroelsystems](http://www.youtube.com/aeroelsystems)

It is the channel with the video of Aeroel measurement system and application



AEROEL S.R.L.  
Via Pier Paolo Pasolini 35/3  
Pradamano (UD)  
33040 - ITALY  
Phone +39 0432 671301  
Fax +39 0432 671543  
e-mail: [aeroel@aeroel.it](mailto:aeroel@aeroel.it)  
http: //www.aeroel.it

