AEROEL

MECLABX

Bench-top Laser Micrometer

The MECLAB.X Bench Top Laser Micrometer is a high precision instrument for ultra-high accuracy diameter measurements, ideal for the off-line, manual measurement of a wide range of ground or turned parts,

with different shape and size, such as

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

Based on an Xactum high speed, high accuracy Laser Micrometer, the Meclab.X system uses a CE-200 Operator's Interface Panel with integrated touch sensitive Keyboard and large LCD screen to provide an extremely friendly interface to the user.

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AVAILABLE SYSTEMS

Meclab.X basic

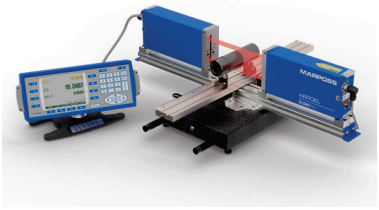
The basic system consists of:

- XLS40 or XLS80 Xactum Intelligent Laser Sensor
- Base for the system
- CE-200 Operator's Interface Panel, Bench-Top version
- Meclab.X software pre-installed in the sensor
- Power supplies and connecting cables

MECLAB.X40

MECLAB.X80

MECLAB.X40-S



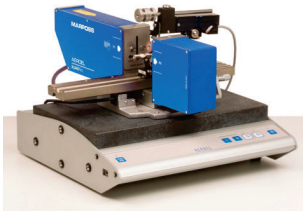
MECLAB.X80-S

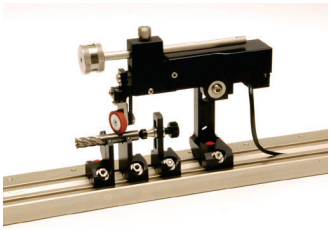
Meclab.X-S

The S version includes a flat granite basement with a precision linear stage to mount the holding accessories and to move the part. The slide can be 400, 640 or 820 mm long with useful range 160, 400 or 580 mm.

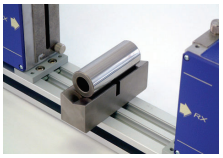
Meclab.X-SR

The SR version includes an equipped base, mounted under the granite base, containing the electric supply and control circuits for the optional devices to rotate the part. Available: a pair of motorized centers and a motor driven device to rotate the part, with friction driving wheel both with stepper motor.

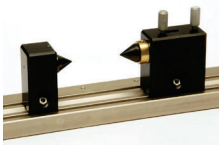




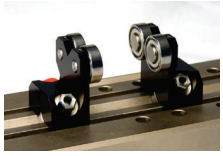
Optional fixtures and accessories



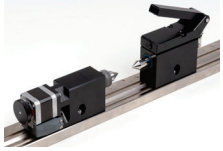
Universal V block in hardened steel or insulated material (basic version)



Pair of centers to be mounted on the slide, at adjustable positions (S version)

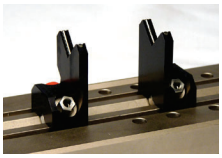


Pair of free rolls (various heights) to be mounted along the slide (S version)

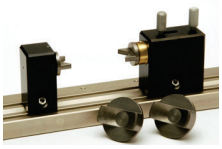


Pair of motorized centers (SR version)

Magnetic scale to read the slide position, resolution 0.005 mm (S version)

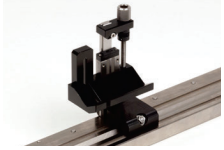


Pair of fixed V blocks (various heights) to be mounted along the slide (S version)



Set of two pairs of hollow cones, to be used with dead centers (S version)

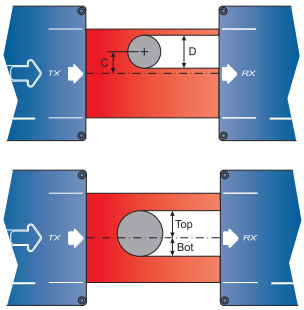
Device for the fine tuning of the slide position, with micrometric head, 0.5 mm/rev pitch, ± 6.5 mm range (S version)



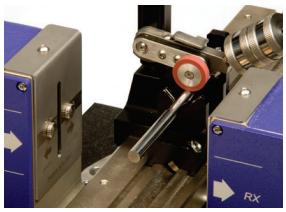
Vertically adjustable V block to be mounted on the gauge or along the slide (Meclab.X40)

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

VERY FLEXIBLE IN USE



The **Meclab.X** System measures the part diameter D and the position of the part axis C or the positions of the edges of the part, Tot (upper) and Bot (lower), all referred to the center of the measuring field.
3 measuring modes are available: **Free running, On-Command Single Shot** and **On-Command Continuous**. An additional **Auto-start** mode is included to trigger automatically a Single Shot measurement when a part is detected by the laser. During the **On-Command Continuous** mode, for every measured variable the maximum, minimum and average values are retained, as well as the Range value = Max – Min, but the user can enable and display only the desired values. In this way, by selecting the appropriate type and mode of measurement and moving the part into the laser beam, it is also possible to check the ovality and the straightness of hard metal blanks, as run-out of the center position (Range of C) during a complete rotation.

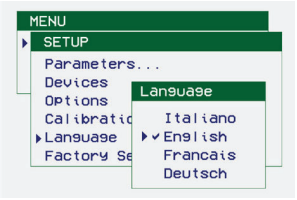


The **Meclab.T** system is available, with special fixtures and software for the measurement of full carbide cutting tools, odd or even edges.

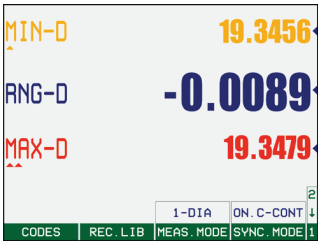
Multiple language pop-up menus for easy set-up and programming.

Display millimeters or inches

Reading the slide position



Transparent products can be easily measured



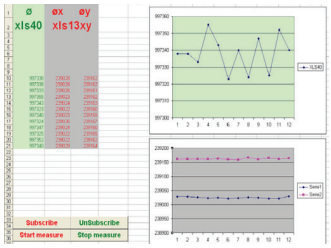
Display of 3 measured variables

Quick tolerance check and alarm outputs

1000 parts library for quick programming

I/O Lines for Easy Interfacing and start/ stop input for a foot switch

Connection to a PC and easy Excel interface (²)

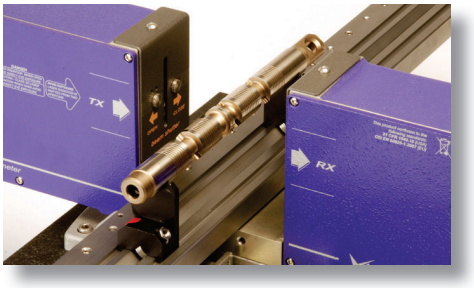


THE XACTUM TECNOLOGY

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

- Wide measuring field: 40 or 80 mm
- Measurable diameters from 0.06 to 78 mm
- Excellent linearity: ± 0.5 µm at best (¹)
- Outstanding repeatability: ± 0.05 µm (¹)
- Permanent self-calibration
- NO-VAR technology: no measuring drift due to changing room temperature by programming the coefficient of thermal expansion of the part

AEROEL EXCLUSIVE



BENEFITS

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

Using no PC, it's ideal to be placed in the workshop, close to the machine.

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.

(¹) Values referred to XLS40/1500 Laser Sensor.
(²) Excel is a registered trademark of Microsoft Corporation

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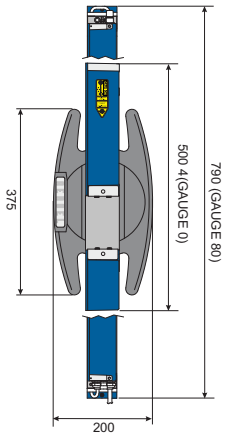
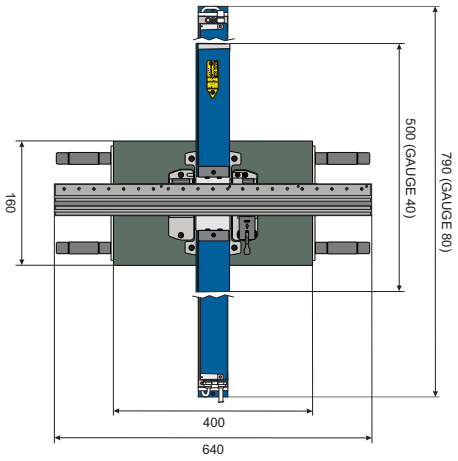
SPECIFICATIONS

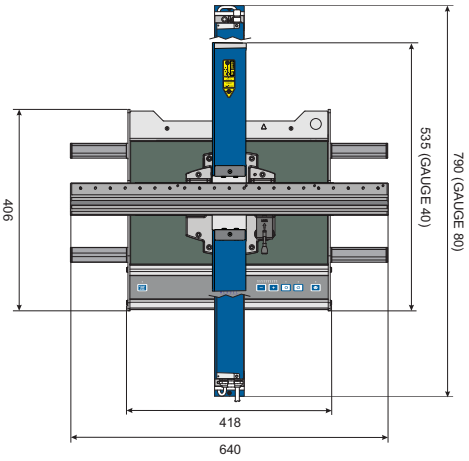
BASIC SYSTEM



S VERSION



SR VERSION



All dimensions are in mm.

Type of gauge		XLS40/1500/B	XLS80/1500/B
Measuring Field	(mm)	40.5	80
Measurable Diameters	(mm)	0.06 - 40	0.75 - 78
Resolution (Selectable)	(µm)	10 / 1 / 0.1 / 0.01	
Linearity (Centred Product)	(µm)	± 0.5 (1)	± 1 (2)
Linearity (in the Measuring Plane) (3)	(µm)	± 0.5	± 2
Repeatability (T=1s, ±2σ) (4)	(µm)	± 0.07	± 0.2
Beam Spot Size (s,l) (5)	(mm)	0.06 x 0.1	0.4 x 0.2
Side Dither of the Scanning Plane	(mm)	± 0.02	± 0.05
Scanning Frequency	(Hz)	1500	
Scanning Speed	(m/s)	300	588
Gauge Thermal Coefficient (6)	(µm/m°C)	- 11.5	
Laser Source		VLD (Visible Laser Diode); λ = 650 nm	
Dimensions of the Basic System (7)	(mm)	500 x 162 x 200	790 x 198 x 200
Weight of the Basic System (7)	(kg)	6	9
Dimensions of the S Version (7)	(mm)	500 x 237 x 640	790 x 271 x 640
Weight of the S Version (7)	(kg)	31	34
Dimensions of SR Version (7)	(mm)	535 x 290 x 640	790 x 324 x 640
Weight of SR Version (7)	(kg)	33	36

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.

(1) For Ø ≤ 25 mm. For Ø > 25 mm the linearity is ± 0.75 µm. The value is inclusive of the Aeroel's masters uncertainty (± 0.3 µm)

(2) For Ø ≤ 40 mm. For Ø > 40 mm the linearity is ± 1.5 µm. The value is inclusive of the Aeroel's masters uncertainty (± 0.3 µm)

(3) Maximum error, when a master is moved in the measuring plane, checked with Ø=8 mm (XLS40) or Ø=20 mm (XLS80). The measuring plane is located halfway between transmitter and receiver.

(4) Single shot repeatability (± 2σ) is ± 1.5 µm (XLS40)and ± 3.5 µm (XLS80)

(5) Elliptical spot: "s" is the thickness and "l" is the width.

(6) 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°/h. When the NO-VAR option is ENABLED, the gauge thermal expansion coefficient is programmable by the user.

(7) Referred to the laser sensor, the basement and the linear slide (S, SQ and SR versions)

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

CE-200 Operator's Interface Panel

Color **LCD Display**, 640x480, backlit

"Touch-Sensitive" **capacitive keyboard**, with 35 keys and 7 warning LED

RS485 interface to connect the XLS gauges

8 protected PNP outputs, 5 PNP **inputs, 2 inputs** to the gauge

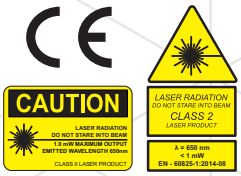
Ethernet & RS232 ports and **Centronics output for parallel printer**

2 configurable **analog outputs**

Dimensions: 132 x 350 x 76.5 mm (panel alone)

Weight: 2 kg (panel), 3.1 kg (table-top version)

Power supply: 24 VDC, 100 mA Typical (1 A max)



www.aeroel.it

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

www.youtube.com/aeroelsystems

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

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