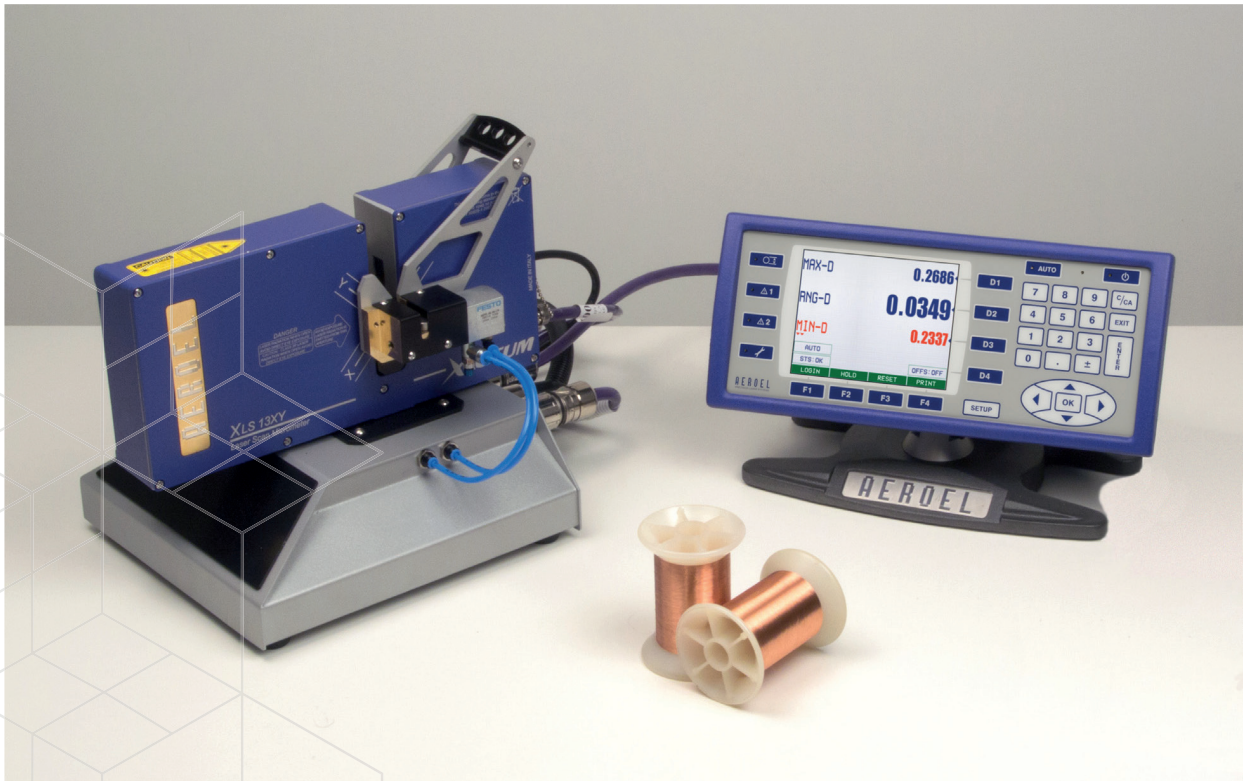


# AEROEL WIRELAB<sup>XY</sup>

Ultra Accurate Table-Top Laser Micrometer  
for the Wire Industry



**WIRELAB.XY is a high performance table-top laser micrometer designed to be used off-line to check drawn or extruded products, when diameter and ovalization must be accurately measured.**

**It is the ideal instrument to measure wire samples, optical fibers and magnet wire or to check the die diameter by measuring the drawn wire.**

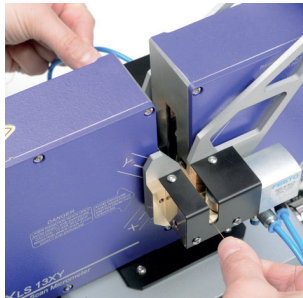
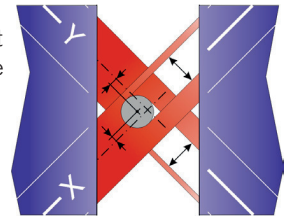
With no other instrument can you measure diameters so quickly, so accurately and so easily!

Ultra-accurate and perfectly reproducible measurements, thanks to an outstanding Laser Technology offered at affordable conditions.

## MARPOSS

# How does it work ?

The WIRELAB system uses a laser gauge of the XACTUM series, which allows one to make fast and repeatable measurements in a wide range of diameters. The measurement is made by placing the part on a V block. The part is measured in two orthogonal directions (X and Y) in a way to calculate both the diameters DX and DY, their difference  $|DX-DY|$  and the average diameter  $(DX+DY)/2$ .



Using a special fixture to manually rotate the part, the diameter can be measured over 360° of the circumference to precisely measure the maximum MAX-D, the minimum MIN-D and ovality which is really MAX-D - MIN-D.

The measured values are displayed on a highly visible backlit LCD display. They are compared with the tolerance limits to check the dimensional conformity of the part.

Through the RS232 serial port or the Ethernet link, the WIRELAB can be connected to an external PC. By using the GageXcom software all measured data are presented in real time to an Excel spreadsheet in a way to allow further data processing by the user to personalize the measurement data.

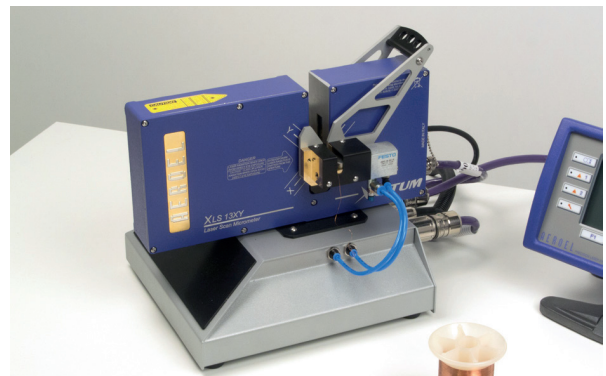
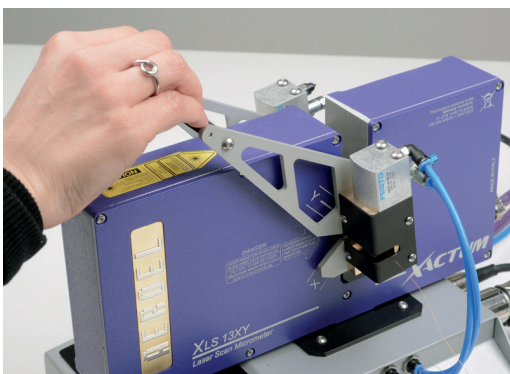
## System Composition

The Basic system consists of:

- XLS13XY or XLS35XY dual axis Xactum Intelligent Laser Micrometer;
- CE-200 Operator's Interface Panel, Table-Top version;
- WIRELAB.XY software pre-installed in the gauge;
- Base plate for the gauge;
- 0.5 m connecting cable.

Some optional accessories are available:

- Foot switch, to start the measurement while keeping the hands free for sample handling;
- GageXcom, PC software, Windows (\*) compatible, for real time data transfer into Excel (\*) spreadsheets;
- Hand driven rotating fixture (for the XLS13XY only);
- Fixed V blocks to hold samples;
- Gauge Calibration Report.



## Benefits

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

**Ultra accurate**: measure to an accuracy that before was only achievable in a metrology room, by using much more expensive equipment and specialized personnel.

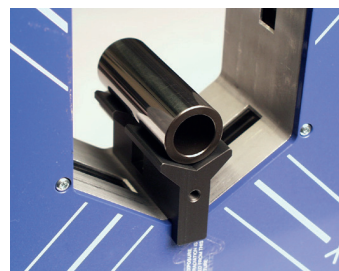
**Highly flexible**: different samples and sizes can be measured without system pre-setting or re-mastering.

**Extremely fast and easy to use**: reduce inspection time and improve measurement capability

**Competitive price**: the favorable cost-to-benefit ratio ensures a quick pay back time.

**Quality certification**: measurement results can be immediately recorded and processed by an external computer to get custom made printed reports.

**3 years guarantee**: very long operational life by using high quality components and a solid state laser diode.



(\*) Windows and Excel are registered trade marks of Microsoft Corporation

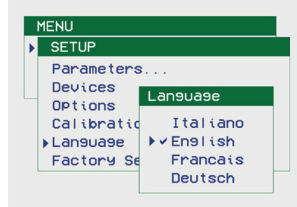
# The Wirelab software

## Smart software for easy programming.

Many pop-up menus and sub-menus are available, to make the system set-up and programming very easy. This is usually done by authorized personnel, who will have his own password to access system programming: the operator will only be allowed to recall pre-stored parameters and to make the measurements.

## Multiple language menu

The menu and the display messages are in English, Italian, German and French, each language being selectable by the operator.

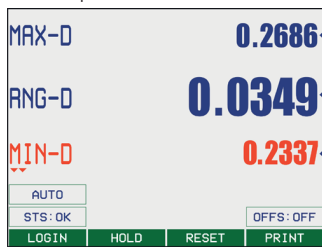


## Gauging flexibility

3 measuring modes are available: **Free Running**,

**On-Command Single Shot**, and **On-Command Continuous** (from a Start to a Stop command).

An additional **Auto-start** mode is included to trigger automatically a Single Shot measurement when a part is detected by the laser (after a programmable delay). All on-command measurements are triggered using a touch button on the display, an optional foot-switch or the serial line. When in **Free-Running** mode, the display will continuously show the diameters measured along the X and Y axes. The **On-Command Single-Shot** mode is used to get one set of measured values only, just after the Start input. The **Continuous** mode is used to check the full



geometry of the section, taking several readings, all along the 360° of the sample circumference. The maximum and minimum diameters are retained, as well as the Max-Min value, which is the true ovality of the sample.

## Display millimeters or inches

The measurement unit can be selected by the user; switching the unit is immediate, with automatic data conversion and saving.

## Transparent products can be easily measured

By setting the Glass Logic mode to ON, it is possible to check transparent samples, like optical fibers or glass tubes. The mode switching is immediate, no additional pre-setting or re-mastering is required.

## Highly visible display

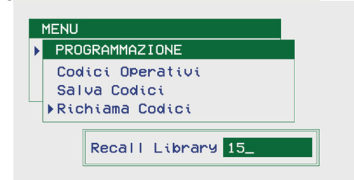
The measured values are shown in large characters on a high-visibility, backlit LCD display. 3 values can be displayed at the same time, each one is chosen among the results available in the selected measuring mode.

## Tolerance Checking

The user can program the nominal values and the tolerances for each product being measured: after any check the Go, No-Go and Pre-alarm messages are displayed and output signals are activated, to switch-on lamps or to drive other external devices.

## Library for 1000 products

It is possible to save in memory, in a Product Library, up to 1000 different sets of nominal and tolerance values, for each specific part to be checked: to program the Wirelab for a new product, just dial in the new part number and recall the new control set.



## Permanent self calibration

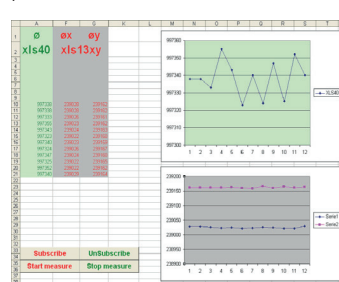
An exclusive self calibration device is included in each Aeroel gauge: this is based on a real master inserted inside the gauge and checked at each scan. Periodical re-mastering is no longer required, but the Factory Calibration can be changed by the user to fit his own master. At any time the Factory Calibration can be restored.

## Insensitive to the ambient temperature change

The self calibration device and the excellent thermal stability of the gauge automatically compensate for the drift due to the ambient temperature change making it possible to use the Wirelab in the workshop.

## Connecting Wirelab to a PC

Through the Ethernet link, Wirelab can be connected to a PC to transmit the measured data or to be remotely programmed. Using the GageXcom PC software, it is possible to transfer in real time all the measured data



into an Excel spreadsheet, to allow further data processing and custom report editing, using the standard Excel functions. The system programming is also possible through Excel, using another spreadsheet to input the programming parameters

being sent to the gauge.

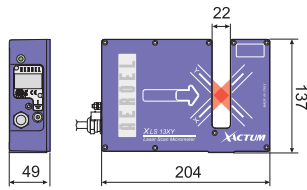
## I/O Lines for Easy Interfacing.

8 output lines for Go, No-Go and Prealarm inputs for each measured dimension, and a Start/Stop input to connect the foot switch.

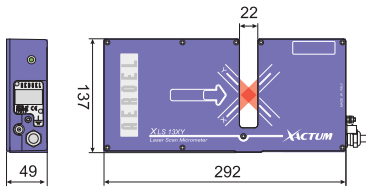


# Specifications

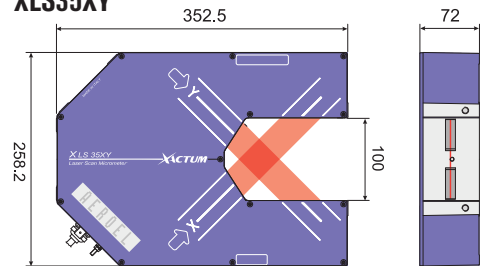
## XLS13XY/480



## XLS13XY/1500



## XLS35XY



All dimensions are in mm.

WIRELAB	XY 13/A	XY 13/B	XY 13/A/HF	XY 13/B/HF	XY 35/A	XY 35/B/HF
<b>Gauge Model</b>	XLS13XY/480/A	XLS13XY/480/B	XLS13XY/1500/A	XLS13XY/1500/B	XLS35XY/480/B	XLS35XY/1500/B
<b>Measuring Field</b> (mm)	13 x 13 <sup>(1)</sup>	4 x 4 <sup>(2)</sup>	13 x 13 <sup>(1)</sup>	4 x 4 <sup>(3)</sup>	35 x 35 <sup>(4)</sup>	
<b>Measurable Diameters</b> (mm)	0.1 - 10	0.03 - 3 <sup>(5)</sup>	0.1 - 10	0.05 - 3 <sup>(5)</sup>	0.2 - 32	
<b>Resolution (Selectable)</b> (μm)	10 / 1 / 0.1 / 0.01					
<b>Linearity (Centred Product)</b> <sup>(6)</sup> (μm)	± 0.5 <sup>(7)</sup>					± 1 <sup>(8)</sup>
<b>Linearity (Full Range)</b> <sup>(9)</sup> (μm)	± 1.5	± 1	± 1.5	± 1	± 2.5	± 5
<b>Linearity (Reduced Field)</b> <sup>(10)</sup> (mm)	± 1	± 0.5	± 1	± 0.5	± 1.5	
<b>Repeatability (T=1s, ±2σ)</b> <sup>(11)</sup> (μm)	± 0.15 <sup>(12)</sup>	± 0.03 <sup>(13)</sup>	± 0.04 <sup>(14)</sup>	± 0.02 <sup>(15)</sup>	± 0.3	± 0.15
<b>Beam Spot Size (s,l)</b> <sup>(16)</sup> (mm)	0.1 x 4	0.03 x 0.1	0.1 x 4	0.05 x 0.1	0.2 x 0.1	
<b>Scanning Frequency</b> (Hz)	480 (X) x 480 (Y)		1500 (X) x 1500 (Y)		480 (X) x 480 (Y)	1500 (X) x 1500 (Y)
<b>Scanning Speed</b> (m/s)	156		163		288	300
<b>Gauge Thermal Coefficient</b> <sup>(17)</sup> (μm/m°C)	-11.5					
<b>Laser Source</b>	VLD (Visible Laser Diode); λ = 650 nm					
<b>Dimensions</b> (mm)	204 x 137 x 49		292 x 137 x 49		352.5 x 258.2 x 72	
<b>Weight</b> (kg)	2		2.5		5.8	

### Notes

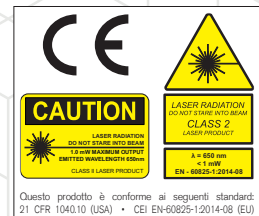
- (1) For  $\varnothing \geq 0.3$  mm; for smaller dia. the field is proportionally reduced up to 4 x 4 mm for  $\varnothing = 0.1$  mm.  
 (2) For  $\varnothing \geq 0.1$  mm; for smaller dia. the field is proportionally reduced up to 1 x 1 mm for  $\varnothing = 0.03$  mm.  
 (3) For  $\varnothing \geq 0.1$  mm; for smaller dia. the field is proportionally reduced up to 1 x 1 mm for  $\varnothing = 0.05$  mm.  
 (4) For  $\varnothing \geq 0.3$  mm; for smaller dia. the field is proportionally reduced up to 20 x 20 mm for  $\varnothing = 0.2$  mm.  
 (5) With centred product the maximum measurable diameter is 10 mm.  
 (6) Related to the average diameter (X+Y)/2. The value is inclusive of the Aeroel's masters uncertainty ( $\pm 0.3$  μm)  
 (7) For  $\varnothing \leq 1$  mm. For  $\varnothing > 1$  mm the linearity is  $\pm 1$  μm.  
 (8) For  $\varnothing \leq 15$  mm. For  $\varnothing > 15$  mm the linearity is  $\pm 1.5$  μm ( $\pm 2.5$  μm for the model 1500/B).  
 (9) Maximum measurable shift of the average diameter (X+Y)/2, when a master is moved along the two X and Y axes crossing the centre of the field, checked with  $\varnothing=3$  mm (XLS13XY//A),  $\varnothing=1$  mm (XLS13XY//B) or  $\varnothing=8$  mm (XLS35XY). The value is inclusive of the Aeroel's masters uncertainty ( $\pm 0.3$  μm)  
 (10) The field is 5 x 5 (13XY//A), 2 x 2 (13XY//B) or 16 x 16 (35XY).  
 (11) Single shot repeatability ( $\pm 2\sigma$ ) is  $\pm 1$  μm (XLS13XY/480),  $\pm 0.75$  μm (XLS13XY/1500  $\varnothing \leq 3$  mm),  $\pm 1.5$  μm (XLS13XY/1500  $\varnothing > 3$  mm),  $\pm 3.5$  μm (XLS35XY/480) and  $\pm 2.5$  μm (XLS35XY/1500)  
 (12) For  $\varnothing \leq 0.5$  mm the repeatability is  $\pm 0.03$  μm.  
 (13) For  $\varnothing \leq 0.5$  mm. For  $\varnothing > 0.5$  mm the repeatability is  $\pm 0.08$  μm.  
 (14) For  $\varnothing \leq 0.5$  mm the repeatability is  $\pm 0.02$  μm.  
 (15) For  $\varnothing \leq 0.5$  mm. For  $\varnothing > 0.5$  mm the repeatability is  $\pm 0.03$  μm.  
 (16) Elliptical spot: "s" is the thickness and "l" is the width.  
 (17) 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.

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)



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esq  
ISO 9001:2015

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MANAGEMENT SYSTEM