SUPER-WIRELAB.XY is a high performance table-top laser micrometer designed to be used off-line to check diameter and ovalization of drawn or extruded products.

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.

It can also be used for the control of rectangular-section products (eg. metal strip).

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.
How does it work?

The SUPER-WIRELAB.XY system uses a laser gauge of the XACTUM series, which allows one to make fast and repeatable measurements. The system can measure products with round or rectangular section (metal strip).

By using a special fixture, the sample is rotated during the measurement: the laser sensor scans the with a 1500 Hz frequency and link each scan to the angular position detected by an encoder (steps of 0.1°). In this way in the round section products you can control the diameter over 360° of the circumference: are detected the average diameter MED-D, the maximum MAX-D, the minimum MIN-D and ovality which is really MAX-D - MIN-D. In the rectangular section products during the fixture rotation, the system detects the two dimensions DIM-1 and DIM-2.

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. The collection of measurements along the circumference allow also to draw a polar plot of the circular sections.

The fixture is equipped with a pneumatic system for the wire clamping, controlled by foot switch; furthermore the measurement is started automatically during the rotation by the fixture itself.

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 spread sheet in a way to allow further data processing by the user to personalize the measurement data.

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

System Composition

The Basic system consists of:

• XLS13XY dual axis Xactum Intelligent Laser Micrometer
• Hand driven rotating fixture with pneumatic clamping of the sample and with angle position encoder
• CE-200 Operator’s Interface Panel, Table-Top version
• Super-Wirelab.XY software pre-installed in the gauge
• Base plate for the gauge
• 0.5 m connecting cable

Some optional accessories are available:

• 42 columns thermal printer with parallel interface for printing the measurement reports
• GageXcom, PC software, Windows (*) compatible, for real time data transfer into Excel (*) spread sheets
• Gauge Calibration Report.
The Super-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
Two measuring modes are available: ROUND (for round section products) and SQUARE (for rectangular section products.) You can make the following measurements:

**ROUND mode**
- Average diameter - MED-D
- Maximum diameter - MAX-D
- Minimum diameter - MIN-D
- Diameter range - RNG-D = MAX-D - MIN-D

**SQUARE mode**
- X axis dimension - DIM-1
- Y axis dimension - DIM-2

Polar Diagram
The angle encoder allows the system to draw the polar diagram with the profile of the section (only round products). The diagram can be viewed on the display or printed (optional thermal printer).

Display millimeters or inches
The measurement unit can be selected by the user; switching the unit is immediate.

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.

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 system 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 AERDOL 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.

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.

Connecting Wirelab to a PC
Through the Ethernet link, the system 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 spread sheet, to allow further data processing and custom report editing, using the standard Excel functions. The system programming is also possible through Excel, using another spread sheet 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
Specifications

<table>
<thead>
<tr>
<th>SUPER-WIRELAB</th>
<th>XY13/F</th>
<th>XY 13/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge Model</td>
<td>XLS15XY/1500/F</td>
<td>XLS15XY/1500/B</td>
</tr>
<tr>
<td>Measuring Field (mm)</td>
<td>4 x 4</td>
<td>4 x 4</td>
</tr>
<tr>
<td>Measurable Diameters (2) (mm)</td>
<td>0.02 - 1.5</td>
<td>0.05 - 3</td>
</tr>
<tr>
<td>Max Diagonal (rectangular sect.) (mm)</td>
<td>1.5</td>
<td>3</td>
</tr>
<tr>
<td>Resolution (Selectable) (µm)</td>
<td>10 / 1 / 0.1 / 0.01</td>
<td>10 / 1 / 0.1 / 0.01</td>
</tr>
<tr>
<td>Linearity (Centred Product) (3) (µm)</td>
<td>± 0.5</td>
<td>± 0.5</td>
</tr>
<tr>
<td>Linearity (Full Range) (3) (µm)</td>
<td>± 1</td>
<td>± 1</td>
</tr>
<tr>
<td>Linearity (Reduced Field) (3) (µm)</td>
<td>± 0.5</td>
<td>± 0.5</td>
</tr>
<tr>
<td>Repeatability (T=1s, ±2σ) (4) (µm)</td>
<td>± 0.02</td>
<td>± 0.02</td>
</tr>
<tr>
<td>Beam Spot Size (s,l) (5) (mm)</td>
<td>0.02 x 0.1</td>
<td>0.05 x 0.1</td>
</tr>
<tr>
<td>Scanning Frequency (Hz)</td>
<td>1500 (X) x 1500 (Y)</td>
<td>1500 (X) x 1500 (Y)</td>
</tr>
<tr>
<td>Scanning Speed (m/s)</td>
<td>163</td>
<td>163</td>
</tr>
<tr>
<td>Gauge Thermal Coefficient (6) (µm/m°C)</td>
<td>-11.5</td>
<td>-11.5</td>
</tr>
<tr>
<td>Laser Source</td>
<td>VLD (Visible Laser Diode), λ = 650 nm</td>
<td>VLD (Visible Laser Diode), λ = 650 nm</td>
</tr>
<tr>
<td>Dimensions (7) (mm)</td>
<td>292 x 240 x 255</td>
<td>292 x 240 x 255</td>
</tr>
<tr>
<td>Weight (8) (kg)</td>
<td>6.5</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Note

(1) For Ø ≥ 0.1 mm; for smaller diameters the field is proportionally reduced up to 1 x 1 mm for Ø = 0.05 mm.
(2) Maximum measurable diameters limited by the fixture configuration.
(3) Related to the average diameter (X+Y)/2. The value is inclusive of the Aeroel’s masters uncertainty (± 0.5 µm)
(4) For Ø ≤ 1 mm, Per Ø > 1 mm the linearity is ± 1 µm
(5) 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 Ø=1 mm. The value is inclusive of the Aeroel’s masters uncertainty (± 0.5 µm)
(6) The reduced field is 2 x 2 mm
(7) Single shot repeatability (± 2σ) is ± 0.05 µm (Ø ≤ 3 mm)
(8) Elliptical spot: “s” is the thickness and “l” is the width.

Hand driven rotating fixture

Maximum sample rotation angle: 100°
Equipped with angle encoder with 0.1° increments
Pneumatic wire clamping (compressed air)
Foot switch to open the clamps
Clamps with adjustable pressure

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)