

XPLORELINE.XY



**Use the Xactum Intelligent Laser
Micrometers as on-line diameter
gauges, in the Xplorelin configuration:**

No other instrument allows you measure diameters so quickly, so accurately and so easily.

It's the ideal instrument for the on-line diameter monitoring of continuous products like electric cable, magnet wire, optical fibers, plastic tubes, extruded profiles, glass tubes, etc.

Thanks to the Aeroel, outstanding laser technology, high accuracy, ease of use and excellent reliability are offered at affordable conditions: payback can be realized in just a few months.

The Xploreline.XY

The XLS gauges are programmed with a dedicated software and are completed with a display unit and a remote control: using such a measuring "system" you can monitor the diameter on-line, measuring fast moving products very accurately, to achieve 100% check and to avoid any dimensional non-conformity.



Exclusive Aeroel features

- The scanning motor based on the **Fluid Dynamic Bearing technology**, without ball bearing ⁽¹⁾ works perfectly, with no wear.
- **The NO-VAR option** allows you to automatically compensate for the expansion of the part when room temperature changes. The user only needs to program the proper coefficient of thermal expansion of the part.
- **The Web Server** allows you to connect the sensor through the Ethernet line to any Internet browser and "see it" as a website, where you can view the measures, set-up and program the gauge and even display the video signal (light pulse).

Measuring modes

The gauge is continuously reading the **Diameters Dx and Dy along two crossed axes** and the **Center Position of the product, Cx and Cy**, at a scan frequency of the gauge of 960 or 2400 Hz, depending on model. Each single scan reading is called **Single Scan Value**: the related measuring repeatability is specified in the gauge performance table and it is so good that any Single Scan Value can be considered to detect any flaw that turns into a diameter change. It is therefore possible to **look for small diameter changes**, having a minimum length which is depending upon the the scanning pitch. ⁽²⁾

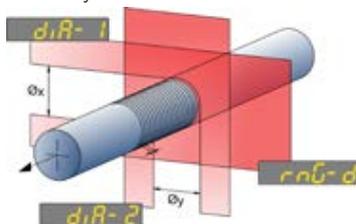
To improve the measuring repeatability or to filter small product irregularities, **it is possible to average some N consecutive Single Scan Values** and to get their average value, **Instant Value**; N is programmable by the user and can be as low as N=1, to make the Instant Values coincide with the Single Scan Values. The measuring repeatability of an Instant Value can be computed by dividing the single scan repeatability by the square root of the number of averaged scans N.

In addition **it is also possible to consider a group o K** ⁽³⁾

consecutive Instant Values and among them to take the **Maximum** and **Minimum** Values and to compute their **Average Value** ⁽⁴⁾ and the **Range=Maximum-Minimum** ⁽⁵⁾.

For instance the following values are computed and displayed: Dx, Dy, Dxy=(Dx+Dy)/2, Ovality=Dx-Dy, average Center Positions Cx and Cy, Davg, Dmax, Dmin, and Range=Dmax-Dmin ⁽⁶⁾.

By properly setting N and K it is possible to program the system to perform flaw detection or average diameter measurement or to measure other product dimensions that correspond to maximum and minimum values.



Types of measurements

It measures the diameter D and the position C of the Center of the part, from the Center of the measuring field.

The part can be **opaque or transparent**.



System configuration

The Xploreline.XY system is composed by:

- a dual axis Xactum gauge, XLS13XY or XLS35XY type
- Xploreline.XY software pre loaded in the gauge
- DM-100 multi-colour LED display
- universal power supply
- an I.R. Remote Control
- connecting cable L=5m, between gauge and display

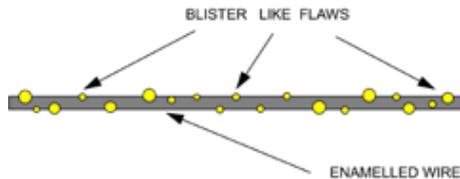
Some optional accessories which are available:

- telescopic stand for the laser gauge
- dust protective brackets for the gauge
- extension cables
- Hand-held programming terminal
- GageXcom software for PC communication
- PC Software for networking



The Blistbuster Software

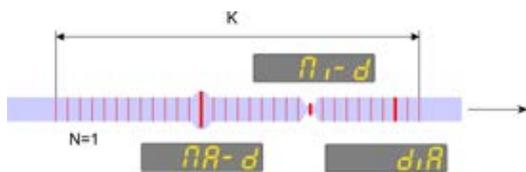
The Xplorelin.XY software includes a measuring feature that can be very useful to check the **diameter smoothness** of a continuous product (for instance magnet wire) and to detect a very special type of **recurrent flaws**, commonly called **"Blisters"**.



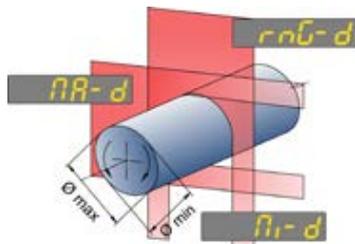
The **"Blistbuster"** function has been designed to detect and to "measure" such type of flaws, with new and dedicated numerical parameters: the algorithm is based on statistical assumptions so a quite long section of wire must be checked, including a rather high number of flaws. **It is impossible to detect any single flaw or to measure its real dimensions, unless the flaw length be longer than the scanning pitch.** ⁽²⁾

Measurement examples

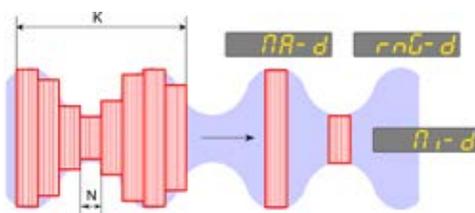
Measuring the average diameter and looking for flaws: set $N=1$ and K large enough to smooth the diameter readings. ⁽⁷⁾



Measuring the wire diameter and ovality: the product twisting improves the accuracy



Checking corrugated product: the peak values and the waviness can be detected.



Display and remote control

Multicolour LED display to show the measured values and to allow system programming through the IR remote control. The measured and programmed data can be scrolled on the display by using the remote control or the SET key on the display panel.



It is possible to save in memory, in a **Product Library**, up to 1000 different sets of programmed parameters, each one for the specific part to be checked.

The display color will change into the color corresponding to the tolerance status of the shown variable (**green, orange or red**).

The display unit includes **4 programmable alarm output lines** to drive additional external devices.

Optional analog output, $\pm 10V$ proportional to the diameter deviation from the nominal set point ⁽⁸⁾

Simple and quick **programming using the remote control** keys and the messages on the display.

Offset function for user re-mastering.

Input lines for meter counting/resetting pulses, to compute and display the product length

Selectable Measuring Unit inch/mm and Resolution (to $0.01 \mu m / 1 \times 10^{-6}$ inch). ⁽⁹⁾

PC interface

An **external/remote computer** can be connected to the system through the **Ethernet/RS232** interface, to **program the system or to get the measured data**. The Ethernet line is very useful to network several systems.

The **Web Server** allows you to connect the sensor through the Ethernet line to any Internet browser and "see it" as a website

It is possible to use the RS232 port in VT100 emulation mode, which makes it possible the connection of the system to a PC using the **Windows** ⁽¹⁰⁾ **Hyperterminal** program or to a hand-held programming terminal.



Using the optional **GageXcom software** provided by Aeroel, you can use **Excel** ⁽¹⁰⁾ spread-sheets to set-up the system and to get all measured results: you can write your own applications by writing suitable Excel Macros and using standard Excel functions to process data.

(1) Available only on the 480 Hz scanners.

(2) The scanning pitch is given by the line speed divided by the gauge scanning frequency

(3) K is programmable by the user: its minimum value is 4 for the 480 Hz gauges or 16 for the 1200 Hz gauges.

(4) The Average Value is the result of an average over $N \times K$ Instant values.

(5) The Max, Min, Avg and Range Values, computed over a group of K Instant Values, are called Extreme Values.

(6) The D_{max} and D_{min} values are the maximum and minimum value over K Instant values of D_x or D_y .

(7) The length of the shortest flaw which can be detected is given by the line speed divided by the gauge scanning frequency

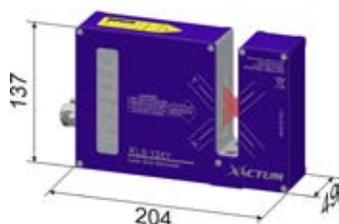
(8) When the analog output is used, 2 output lines only are available.

(9) Due to the display limitations, the 6 most significant digits only are shown; the full resolution is anyway available using the serial output ports.

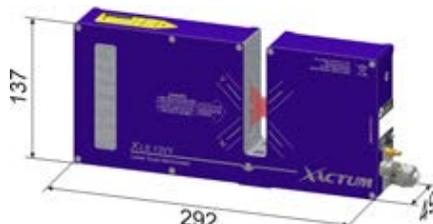
(10) Windows and Excel are registered trademarks of Microsoft Corporation

Technical characteristics

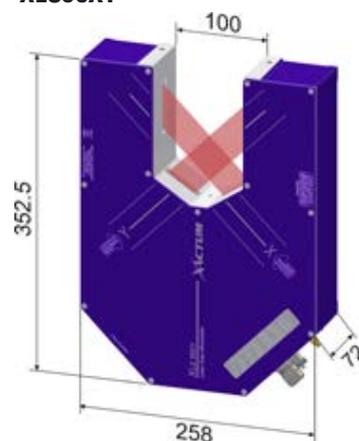
XLS13XY/480



XLS13XY/1500



XLS35XY



All dimensions are in mm.



DISPLAY AND ALARMS MODULE DM-100

- Main Display LED** 6 digits, 7 segments multicolour
- Sub Display LED** 2 digit
- 6 Warning lights** for the Status of the Inputs and the Outputs
- 4 Outputs** protected PNP, I_{max}: 100 mA
- 2 Inputs** PNP, I_{typ}: 15 mA
- Dimensions:** 97 x 49 x 158 mm
- Weight:** 0.5 kg
- Power supply:** 24 VDC 150 mA



I.R. REMOTE CONTROL

- Size:** 180 x 50 x 26 mm
- Weight:** 80 g (without batteries)
- Power supply:** 2 AAA 1.5 V batteries

Available models

Gauge Model	TABLE-GAUGE.XY13		TABLE-GAUGE.XY35
	XLS13XY		XLS35XY
Beam height (mm)	13 x 13	4 x 4	35 x 35
Measurement range (mm)	From 0.1 to 10	From 0.03 to 3	From 0.2 to 32
Scanning rate (Hz)	2 x 480 / 2 x 1500		
Resolution (µm)	0.01 at best		
Repeatability (µm)	± 0.02 at best		± 0.15 at best
Linearity (µm)	± 0.5 at best		± 1 at best



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



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