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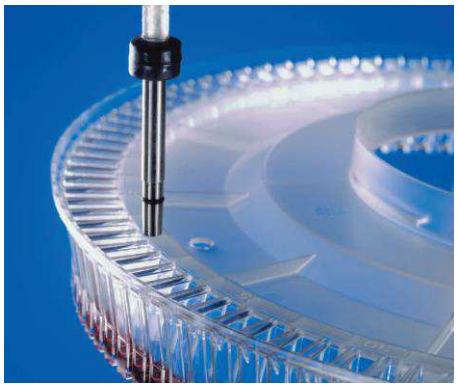

ML SERIES

Specifications

- Non-contact micromeasurement level/distance
- ± 0.0075 in (±0.19 mm) accuracy
- No contact with material
- Miniature size fits anywhere

The ML Series Precision Micromeasurement System uses very small sensor (VSS) technology to fit into those applications where ultrasonic sensors could not previously be used. The smaller size of the sensor enables the ML system to be used with autosamplers, robotic samplers, titration equipment, microsampling devices and test tube racks. The ML system performs high speed, multipoint, non-contact ultrasonic measurements with an accuracy of ± 0.0075 in (± 0.19 mm). Many operational settings are programmable through a serial port, allowing for application specific customization. A choice of 4-20 mA, 0-10 VDC or RS-232 output is available. Ultrasound has a number of advantages over other systems available since measurements are not affected by liquid color (or lack of color) and there is no physical contact with the liquid so no disturbance of the sample occurs

Features

- Operating Range: 0.5 to 5 in (12.7 to 127 mm)
- Vessel / tube opening (diameter) as small as 1/8 in (3.2 mm)
- Non-contact, ultrasonic operation eliminates contamination of sample media, while maintaining high system throughput
- No calibration or special installation requirements
- PC Compatible
- Measurements are not affected by liquid color, density, opacity
- Fast response time – Programmable
- Standard Accuracy ±0.0075 in (±0.19 mm)

Applications

- Adhesive Application
- Auto Sampler
- Bottle Filling
- Dimensional Profiling
- Drum/Tote Level
- Fill Verification
- Machine Run-Out
- Material Thickness
- Robotic Arm Position
- Shapes/Profiling
- Valve/Tool Position
- Wafer Counting
- Wafer Profiling

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Performance specifications

Parameter	Typical Value
Operating Range	0.5 to 5 in (12.7 to 127mm),
Accuracy	±0.0075 in (±0.19 mm) or ±0.15% of measured range at constant room temperature.
Repeatability	±0.05% of range
Temperature Compensation	Automatic over full operating range (optional)
Temperature Range	Sensor: -4 to 158°F (-20 to 70°C) Electronics: 32 to158°F (0 to 70°C)

Parameter	Typical Value
Input Power	24 VDC, 12 VDC
Output	Choice of 0-10 V, 4-20 mA, and RS-232 and alarm set point (ML-11) (See selection chart)
Channels	Single
Setpoints/ Sample	Programmable
Sample Rate	Programmable
Sensor Size	Outer diameter 0.25, See selection chart
Sensor Material	Epoxy with Teflon® sensor face
Cable Length	Available in lengths of 2, 5, 10, 20, and 25 feet.

Mechanical dimensions in inches [mm]

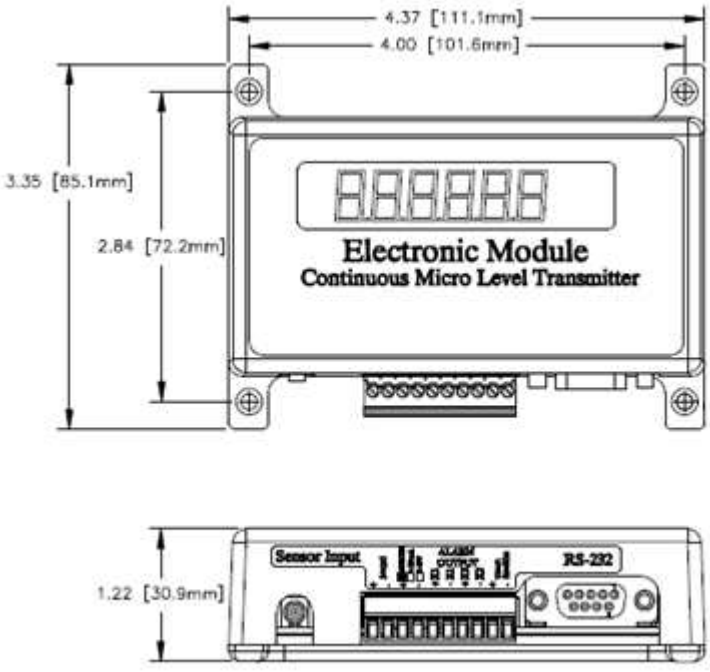

Figure 1: ML series elements electronic module

Mechanical dimensions in inches [mm]

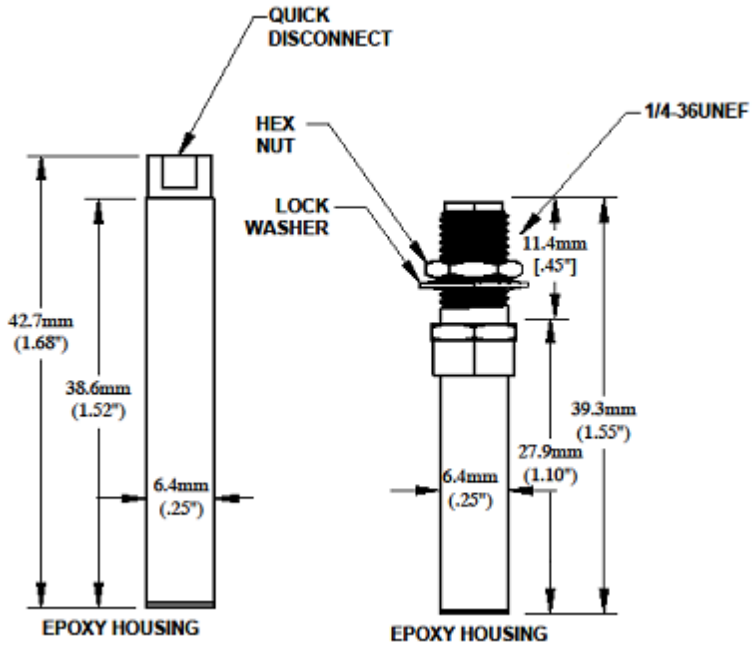

Figure 2: ML series elements sensors

Applications

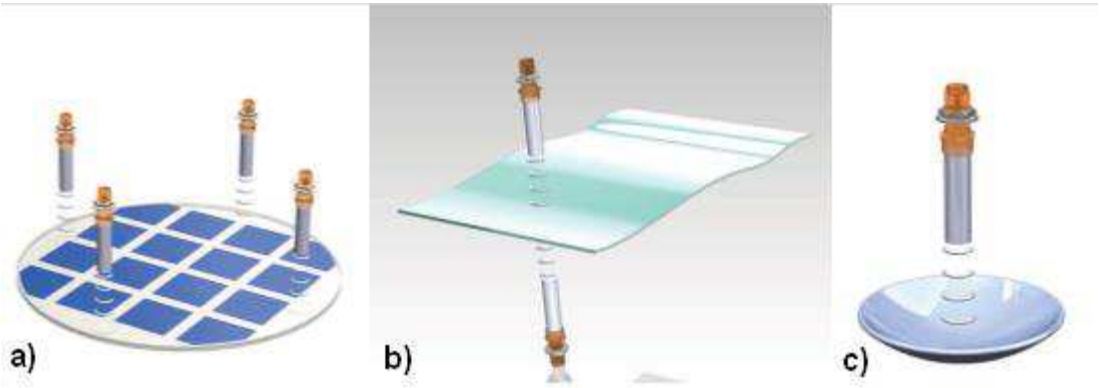

Figure 3: Applications of ML series elements; a) Semiconductor wafer profile, evenness, flatness, bow, warpage; b) Thickness measurement; c) Optics and contacts and lens thickness and curvature on-line inspection

Ordering information

Electronics, sensor, cable and temperature sensors are sold separately. Please submit separate part numbers.

A. Electronics

	Channels	Input Voltage	RS-232	Analog	Outputs Strobe in	Relays	Displays	Enclosure	Part Number
ML-01	1	24 VDC	X		X	2 relay		Nema 1	17608
ML-11	1	24 VDC	X	4-20mA		2 relay	X	Nema 1	17621
ML-11	1	24 VDC	X	0-10V		2 relay	X	Nema 1	17622
ML-11	1	24 VDC	X		X	2 relay	X	Nema 1	17623
ML-11	1	24 VDC	X	4-20mA		2 relay		Nema 1	17624
ML-11	1	24 VDC	X	0-10V		2 relay		Nema 1	17625

B. Sensor

Outer Diameter	Sensor Housing	Connection	Part Number
0.25 in	Epoxy	Quick Disconnect	098-10001
0.25 in	Epoxy	SMA	098-10060

C. Cable

Cable Type	Part Number*
Quick disconnect to SMB connection	CBL-Q1A0S2-XX
SMA to SMB connection	CBL-A2A0S2-XX

*Replace –XX in part number with the requested length in feet. Available lengths are 02, 05, 10, 20 & 25 feet.

D. Temperature Sensor (if required)

Part	Part Number
Temperature sensor	076-10005-XX

*Replace –XX in part number with the requested length in feet. Available lengths are 02, 05, & 10 feet.

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