



IMM-100

Thin Film Deposition Monitor

Protect and Grow Your Profit with Precision Rate and Thickness Monitoring

IMM-100 is a deposition monitor built with ModeLock technology to maximize reproducibility and uniformity with the highest thickness accuracy, best measurement resolution, and lowest rate noise.

With the oscillator built-in, IMM-100 can be easily integrated into an EtherCAT system with minimal hardware and footprint. This powerful and precise measurement monitor is sure to bring a new level of performance to your process.

HOW MODELOCK WORKS

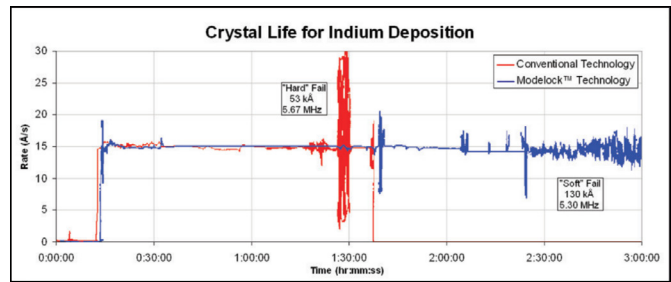
The proven INFICON ModeLock measurement system provides crystal-frequency information with precision not possible from conventional “active oscillator” systems. It eliminates “mode-hopping,” a failure to maintain crystal

oscillation at the fundamental frequency. ModeLock continuously tests the monitor crystal for resonance at the fundamental frequency, thereby eliminating weaknesses inherent in the conventional measurement method. Conventional measurement methods incorporate the quartz monitoring crystal as an active element of the oscillator circuit. Consequently, the crystal controls the oscillator circuit. So, as the electrical characteristics of the crystal change during deposition, the oscillator circuit becomes less stable and may “hop” to another resonant frequency or fail completely, resulting in an inaccurate film thickness. More powerful and precise—yet faster—than the conventional method, ModeLock continually tests and analyzes the phase frequency relationship of the crystal. The crystal is not an active part of the oscillator circuit.

FEATURES AT A GLANCE

- Available in single-layer and multiple-layer models
- INFICON ModeLock technology provides the longest crystal life and ensures the most stable, highest resolution rate and thickness measurement available, even at very low rates
- Maximize yield with the best QCM thickness measurement possible
- Single channel rate and thickness monitor without unnecessary added features to minimize cost
- ± 0.0035 Hz over 100 ms sample
- EtherCAT communications for seamless integration
- Compact size to minimize integration costs by saving tool real estate
- Expert application support, able to discuss unique application needs and give greater support than the competition
- RoHS compliant

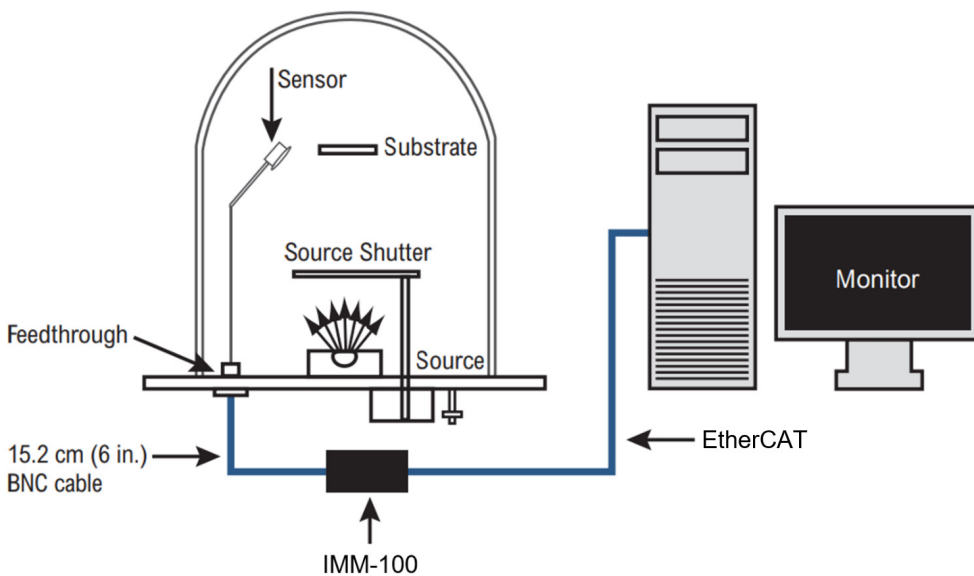
The ModeLock measurement system determines and applies a precise frequency to the crystal, preventing the crystal from “hopping,” or operating at a frequency other than the fundamental. This process takes place thousands of times per second to determine the resonant frequency to a precision of 0.0035 Hz/100 ms.



INFICON ModeLock measurement technology provides significantly longer crystal life, illustrated here in the deposition of indium.

IMM-100—A SIMPLE QCM

Figure below shows a typical IMM-100 thin film deposition system. A complete QCM system consists of IMM-100, a sensor, feedthrough, a computer, and crystals.



Typical IMM-100 installation

SPECIFICATIONS

Sensor inputs	One, female BNC
Measurement frequency range	6.0 to 4.5 MHz (fixed)
Frequency resolution	±0.0035 Hz @ 6 MHz
Measurement interval	0.10 s
Reference frequency stability	±2 ppm 0-50°C
Rate and thickness resolution	0.0042 Å (new crystal); 0.0076 Å (crystal @ 4.5 MHz) over 100 ms sample for material density = 1.0, Z-Ratio = 1.0
Measurement technique	ModeLock
Input voltage	24 V (dc)
Operating temperature	0 to 50°C (32 to 122°F)
Size	222.6 mm (8.76 in.) x 106.1 mm (4.18 in.) x 35.3 mm (1.39 in.)
Weight	0.48 kg (1.05 lbs.)
Communication type	EtherCAT, 2 RJ45 jacks, supports data daisy chaining. Explicit device ID via switches

ACCESSORIES

OPTIONAL POWER SUPPLIES

The power supplies listed below are rated for an input of 100 to 249 V (ac), 2 A, 50 to 60 Hz with an output of 24V (dc), 3.34 A, 80 W maximum.

961-021-G1	Power Supply Kit 80 - 250 VAC / 4 ft (1.2m) US plug
961-021-G2	Power Supply Kit 80 - 250 VAC / 4 ft (1.2 m) US plug w/ 15 ft (4.5m) Extension Cable
961-021-G3	Power Supply Kit 80 - 250 VAC / 4 ft (1.2 m) US plug w/ 30 ft (9m) Extension Cable
961-021-G4	Power Supply Kit 80 - 250 VAC / 4 ft (1.2 m) 230V plug
961-021-G5	Power Supply Kit 80 - 250 VAC / 4 ft (1.2 m) 230V plug w/ 15 ft (4.5m) Extension Cable
961-021-G6	Power Supply Kit 80 - 250 VAC / 4 ft (1.2 m) 230V plug w/ 30 ft (9m) Extension Cable
961-021-G7	Power Supply Kit IL 240V
961-021-G8	Power Supply Kit IL 4.5 M Extension
961-021-G9	Power Supply Kit IL 9.0 M Extension
961-021-G10	Power Supply Kit UK 240V
961-021-G11	Power Supply Kit UK 4.5 M Extension
961-021-G12	Power Supply Kit UK 9.0 M Extension

OPTIONAL MOUNTING BRACKET

785-202-G1	Mounting bracket with four clean room compatible shock absorbing, female-to-female, stainless steel mounting feet
785-201-G1	Mounting bracket with four shock absorbing, male-to-female, black Neoprene rubber mounting feet

OPTIONAL COMMUNICATIONS CABLE

600-1190-P4	Ethernet 4 m cable
600-1190-P8	Ethernet 7.6 m cable
600-1190-P15	Ethernet 15 m cable



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