



ALD Sensors and High Temperature Crystals

OPTIMUM ACCURACY, UPTIME AND MINIMAL MAINTENANCE FOR ALD APPLICATIONS

INFICON ALD Sensors bring the repeatability, precision and durability of quartz crystal microbalance (QCM) measurement to atomic layer deposition (ALD). The ALD Sensor can withstand temperatures up to 450°C, and is designed to operate in the harsh environment of an ALD application. The exposed crystal electrode is fully grounded to effectively eliminate any potential issues with electrical interference.

DESIGNED SPECIFICALLY FOR ALD

A unique feature of the INFICON ALD sensor is a gas tube used to purge the back of the crystal and sensor cavity with an inert gas, typically nitrogen. This keeps reactive chamber gases from entering the sensor head and keeps the back of the crystal and electrical contacts free of deposition material. This technique allows for in situ measurement in systems where a standard (QCM) is not suitable.

FEEDTHROUGH AND FEEDTHROUGH CONNECTION

INFICON ALD Sensors are available in custom welded lengths or with compression fittings for adjustable length without the need for brazing or welding. All configurations use a 2 ¾ in. (CF40) ConFlat® flange feedthrough.

HIGH TEMPERATURE CRYSTALS FOR MORE ACCURATE MEASUREMENTS

The INFICON ALD Sensor can achieve the best measurement accuracy and lower frequency noise in high temperature applications when used with INFICON's new high temperature quartz crystals. These high temperature crystals are optimized for 120, 240, and 285°C applications, so you always have the right crystal for your process. Crystals optimized for other temperatures may be available. Contact INFICON for your needs.

FEATURES AND BENEFITS AT A GLANCE

- Operating temperature up to 450°C
 - Sensor is compatible with most ALD process temperatures
- Gas purge line keeps back of crystal free of deposition material
 - Significantly reduces maintenance
 - Maximizes system uptime
 - Maximizes measurement accuracy
- Welded ConFlat flange (CF40) option
 - Custom length with no customer welding required
- O-ring compression fitting option
 - Easy sensor length adjustment
- Three high temperature crystals available, optimized for 120, 240, and 285°C
 - Stable readings with low noise at high process temperatures
- Ask about custom high temperature crystals
 - Get the right crystal for your process

SPECIFICATIONS

Feature, Parameter, or Specification	Welded ALD Sensor (PN 750-713-G4)	Adjustable ALD Sensor (PN 750-717-G2 and G4)
Maximum temperature	450°C continuous	130°C continuous
Feedthrough	2 3/4 in. ConFlat®	2 3/4 in. ConFlat® equipped with O-ring compression fittings
Sensor/feedthrough connection	Welded (no fillers)	O-ring compression fittings
Gas and coax tubes	Gas: 3.2 mm (1/8 in.) OD (vacuum side) 6.4 mm (1/4 in.) OD (atmosphere side) Coax: 4.8 mm (3/16 in.) OD	Gas: 3.2 mm (1/8 in.) OD Coax: 4.8 mm (3/16 in.) OD
Sensor head size (maximum envelope)	34 x 35 x 24 mm (1.35 x 1.38 x 0.94 in.)	34 x 35 x 24 mm (1.35 x 1.38 x 0.94 in.)
Crystal exchange	Front loading, self-contained package Cam-type locking handle	Front loading, self-contained package Cam-type locking handle
Mounting	Four #4-40 tapped holes on back of sensor body	Four #4-40 tapped holes on back of sensor body
Materials		
Body and holder	304 type stainless steel	304 type stainless steel
Springs	Molybdenum and Inconel X-750	Molybdenum and Inconel X-750
Gas and coax tubes	Seamless 304 stainless steel	Seamless 304 stainless steel
Other mechanical parts	18-8 or 304 stainless steel	18-8 or 304 stainless steel
Insulators	>99% Al ₂ O ₃ in vacuum; other high density ceramics used elsewhere	>99% Al ₂ O ₃ in vacuum; other high density ceramics used elsewhere
Wire	1) Ni (in vacuum) 2) Ni plated Cu (elsewhere)	1) Ni (in vacuum) 2) Ni plated Cu (elsewhere)
Braze	Vacuum process high temperature Ni-Cr alloy	Vacuum process high temperature Ni-Cr alloy
O-ring compression fittings	N/A	304 stainless steel, Viton®

ORDERING INFORMATION

ALD Sensors

750-713-G4	Welded ALD Sensor (requires completed length specification form)
750-717-G2	Adjustable ALD Sensor, length adjustable from 101.6 to 393.7 mm (4 to 15.5 in.)
750-717-G4	Adjustable ALD Sensor, length adjustable from 101.6 to 901.7 mm (4 to 35.5 in.)

High Temperature Crystals

750-1058-G10	120°C optimized crystals, 6 MHz, 14 mm (0.55 in.), gold, pack of 10
750-1059-G10	240°C optimized crystals, 6 MHz, 14 mm (0.55 in.), gold, pack of 10
750-1060-G10	285°C optimized crystals, 6 MHz, 14 mm (0.55 in.), gold, pack of 10



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Due to our continuing program of product improvements, specifications are subject to change without notice.

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