



CrystalSix® Sensor

INFICON CrystalSix Sensors are designed and manufactured to provide the best quality and reliability in thickness monitoring for applications where single and dual sensors do not last through the complete process life. Whether an OLED, MBE, solar, long optical coating, or other processes having an extended period between chamber venting, the CrystalSix Sensor will maximize PVD production with six crystals per sensor and minimize cost through a low price. When used with an INFICON Thin Film Controller, the CrystalSix automatically rotates a new crystal into position whenever the current crystal fails or becomes unstable. Crystals are automatically replaced without interrupting your process for continued deposition rate monitoring.

Crystal indexing is accomplished with a pneumatically driven mechanism. This pneumatic drive provides better crystal thermal stability than competitive units using expensive in-vacuum, heat generating, electric motors. One-eighth inch water cooling tubes keep the sensor head thermally stable and allow flexibility in sensor placement.

When used with certain INFICON thin film controllers, the sensor provides position feedback so specific positions can be used with specific materials.

ADVANTAGES

- Minimize investment with lowest upfront cost
- Increase production with maximum uptime
- Ensure quality products using real-time rate control for continuous or multi-layer film depositions
- Save time with easy installation for system integration
- Optimize system performance through worldwide expert applications support
- Compatibility with industry-leading INFICON controllers
- Stable crystal temperature, because crystal switching is pneumatically-driven (competitive units use heat-generating motors)
- 1/8 in. tubes maintain thermal stability and allow flexibility in sensor placement
- Optional crystal shutter available



ORDERING INFORMATION

CrystalSix Sensor

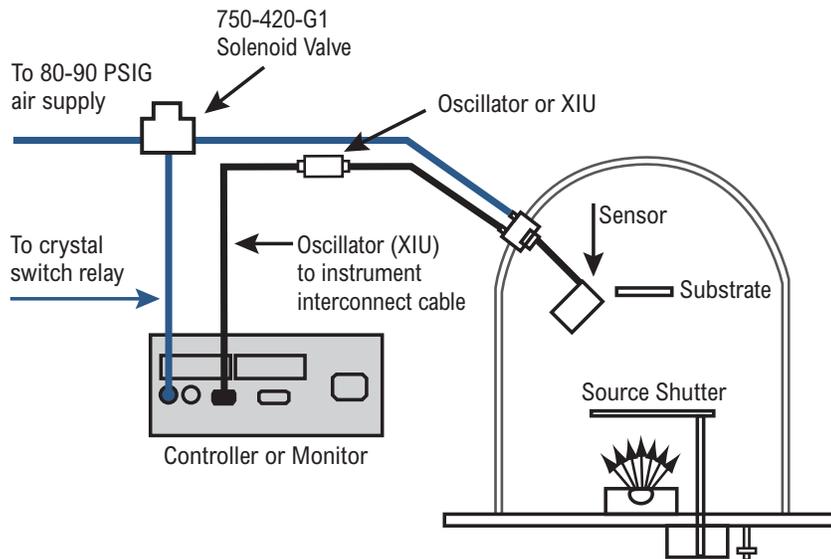
| | |
|---|----------------|
| CrystalSix Sensor | 750-446-G1 |
| CrystalSix Sensor with shutter | SPS-1039-G1 |
| CrystalSix Sensor (made in China) | 750-446-G1-CN |
| CrystalSix Sensor with shutter (made in China) | SPS-1039-G1-CN |

NOTE 1:

The CrystalSix sensor requires the 750-420-G1 solenoid valve with orifice installed (PN 059-0189 included in CrystalSix ship kit).

NOTE 2:

The CrystalSix sensor cannot be used on STM-2, STM-2XM, or SQM-160 quartz crystal monitors.



SPECIFICATIONS

750-446-G1 CrystalSix Sensor Specifications

| | |
|--|--|
| Maximum bakeout temp with no water | 130°C |
| Maximum operating isothermal environment temperature with minimum water flow | 400°C |
| Water, air and coax length | Standard 76 cm (30 in.) |
| Crystal exchange | Front-loading, extraction tool required (supplied with unit) |
| Mounting | Six #4-40 tapped holes on the back of the sensor body |
| Size (maximum envelope) | 9.7 cm (3.8 in.) DIA x 5.1 cm (2.0 in.) high |

Installation Requirements

| | |
|-------------|---|
| Feedthrough | Qty (1) 2¾ in. ConFlat® with one coaxial feedthrough, two pass water, one air PN 750-685-G1, or, Qty (1) 750-685-G2, with one coaxial feedthrough three tube with Ultra-Torr compression fittings or, Qty (1) 1 in. bolt with one coaxial feedthrough, two pass water, one air PN 750-030-G1, |
| Other | User to provide vacuum-tight braze joints or connectors for the water and air tubes. Valve assembly for air, PN 750-420-G1 (not provided), with a 0.022 in. restrictor orifice installed by the user. (Orifice included with CrystalSix accessory kit.) |

SPECIFICATIONS

750-446-G1 CrystalSix Sensor Specifications (continued)

Utilities

| | |
|----------------------|--|
| Minimum water flow | 150–200 cc/min, 30°C max (Do not allow water to freeze) Coolant should not contain chlorides as stress corrosion cracking may occur |
| Regulated air supply | 80–90 PSIG (5.5 bar–6.2 bar) [550 kPa – 620 kPa] 2 m maximum length of 1/8 in. tubing between sensor head and the solenoid valve |

Materials

| | |
|---|---|
| Plate, holders, material shield, mechanical parts | 304 type stainless steel |
| Springs, electrical contacts | Au plated Be-Cu, Au Plate Inconel, 303 stainless steel |
| Water and air tubes | S-304, 0.32 cm (0.125 in.) O.D. x 0.04 cm (0.016 in.) wall thickness 76 cm long (30 in.) seamless stainless steel tubing |
| Connector (Microdot®) | Stainless steel |
| Insulators | >99% Al ₂ O ₃ |
| Cable | Teflon® insulated copper |
| Crystal | 14 mm (0.550 in.) diameter |
| Body and carousel | 2024 T351 aluminum |

SPARE PARTS LIST

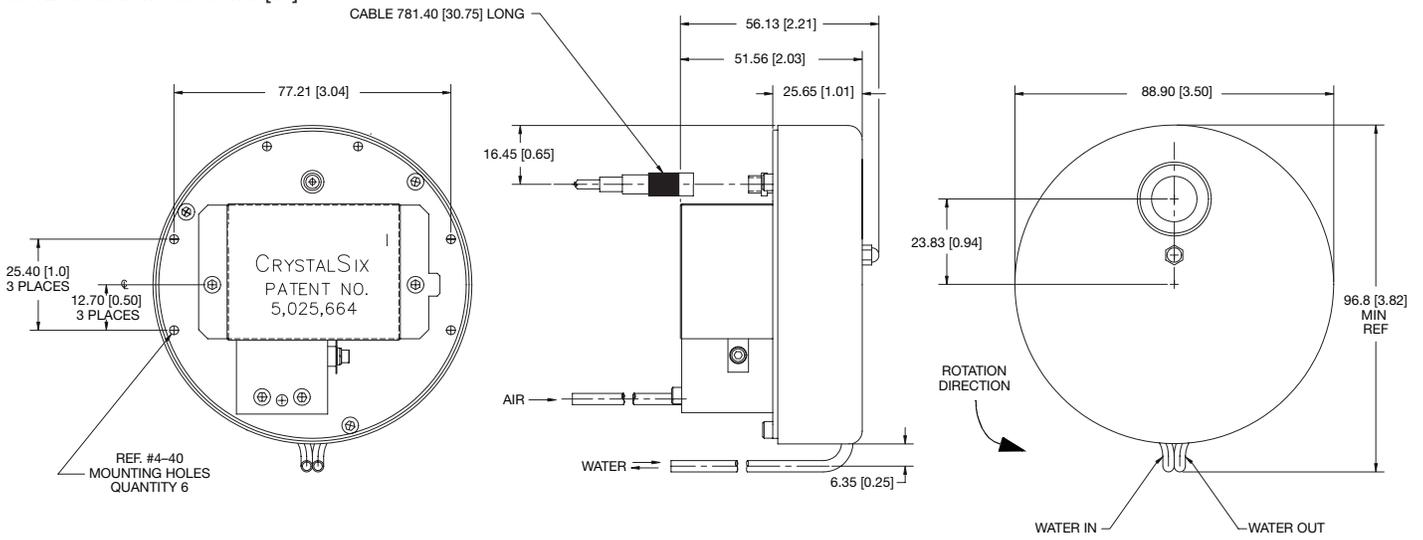
CrystalSix Sensors

| Part Number | Description |
|-------------|---|
| 007-007 | Retaining spring (part of crystal holder) |
| 007-023 | Ceramic retainer |
| 007-044 | In-vacuum cable 78 cm (30.75 in.) |
| 070-0398 | Retaining Ring (secures bearing located next to pawl and actuator stem) |
| 070-0777 | Compression spring (on carousel shaft) |
| 070-0778 | Ball bearing (underneath carousel) |
| 070-0779 | Bearing (makes contact with pawl and actuator stem) |
| 070-0870 | Teflon washer (on carousel shaft) |
| 750-048-P1 | Retaining spring (clamps crystal holders to carousel) |
| 750-175-P1 | Bottom insulator (underneath leaf springs) |
| 750-188-P3 | Leaf spring |
| 750-249-P2 | Retaining pin (part of heat shield assembly) |
| 750-250-G1 | Heat shield assembly |
| 750-256-P2 | Extension spring (part of top plate weld assembly) |
| 750-257-P3 | Corrugated spring 11.2 cm (4.40 in.) |
| 750-261-G1 | Carousel assembly (includes resistor network and electrical contacts) |
| 750-262-G1 | Crystal holder |
| 750-265-G1 | Top plate weld assembly |
| 750-276-P2 | Actuator cover |
| 750-278-P2 | Water line |
| 750-286-P2 | Bellows assembly |
| 750-290-P3 | Carousel electrical contacts (set of eight) |
| 750-291-P1 | Detent |
| 750-293-P2 | Ratchet |
| 750-294-P2 | Stop ratchet |
| 750-295-G1 | Pawl and actuator stem |
| 750-336-G1 | Resistor network assembly |
| 750-338-P1 | Contact insulator (underneath carousel electrical contacts) |

DIMENSIONS

750-446-G1 CrystalSix Sensor

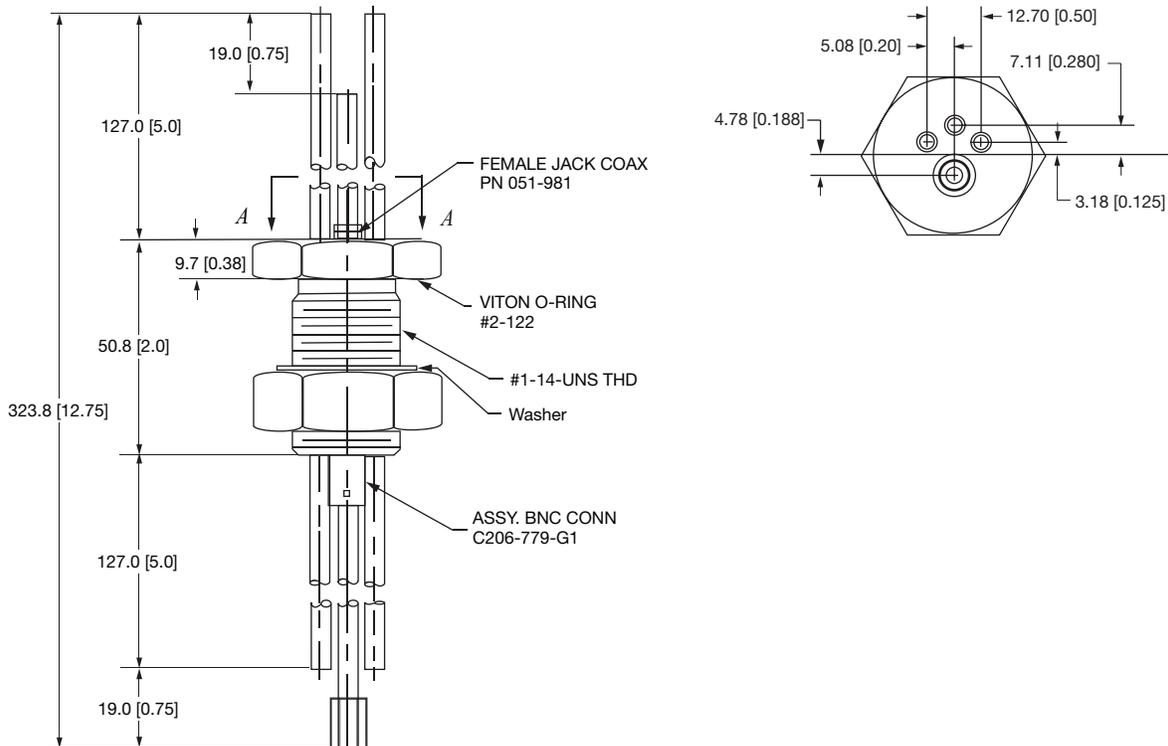
NOTE: Measurements in mm [in.]



DIMENSIONS

The CrystalSix Sensor 750-446-G1 can be used with the following feedthroughs:
PN 750-030-G1

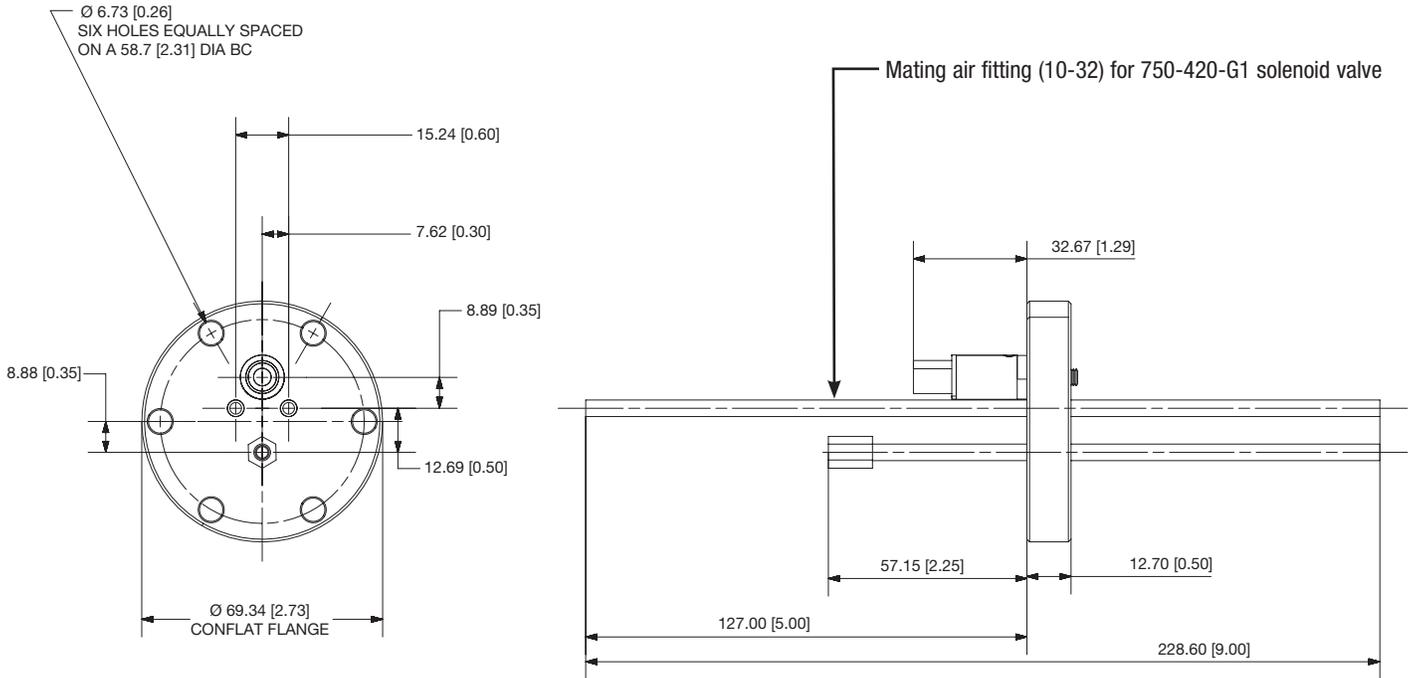
NOTE: Measurements in mm [in.]



DIMENSIONS

PN 750-685-G1

NOTE: Measurements in mm [in.]



DIMENSIONS

PN 750-685-G2

NOTE: Measurements in mm [in.]

