



# CrystalSix<sup>®</sup> Sensor

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The INFICON CrystalSix sensor is critical for long processes demanding continuous rate control. Whether an OLED, MBE, Solar, long Optical Coating, or other processes having an extended period between chamber venting, the CrystalSix sensor offers the security of 6 quartz monitor crystals in one sensor head. 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

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- Holds six crystals with robust, automatic switching to maximize process uptime
- 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

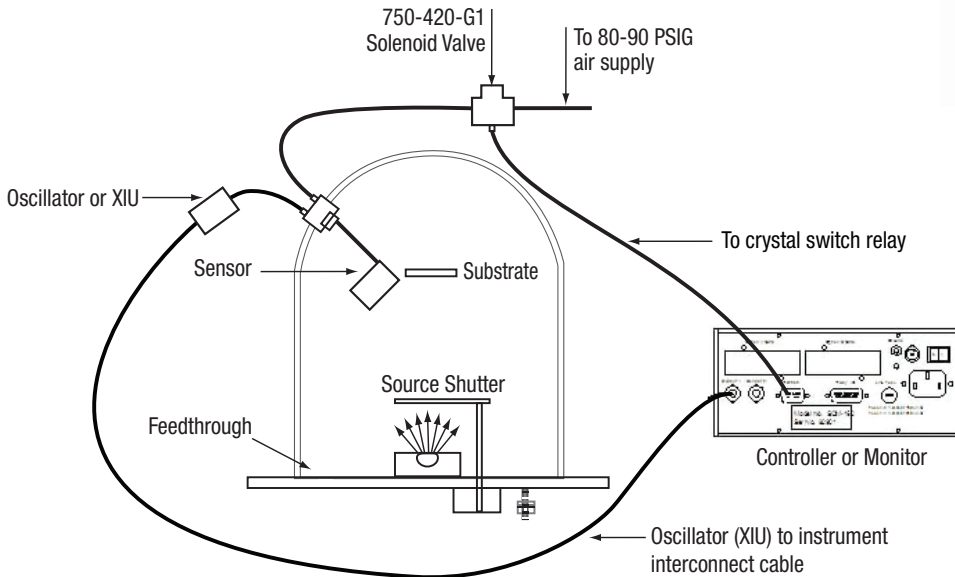
CrystalSix Sensor .....750-446-G1  
 CrystalSix Sensor with Shutter.....SPS-1039-G1

#### NOTE 1:

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

#### NOTE 2:

The CrystalSix sensor cannot be used on the XTM/2, TM400, TM350, or SQM160 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 30 in. (76 cm)
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)	3.8 in. (9.7 cm) DIA x 2.0 in. (5.1 cm) high

### Installation Requirements

Feedthrough	Qty (1) 2¾ in. ConFlat® with one coaxial feedthrough, two pass water, one air IPN 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 IPN 750-030-G1,
Other	User to provide vacuum-tight braze joints or connectors for the water and air tubes. Valve assembly for air, IPN 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 meter 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, 0.125 in. (0.32 cm) O.D. x 0.016 in. (0.04 cm) Wall Thickness 30 in. Long (76 cm) seamless stainless steel tubing
Connector (Microdot®)	Stainless steel
Insulators	>99% Al <sub>2</sub> O <sub>3</sub>
Cable	Teflon® insulated copper
Crystal	0.550 in. Diameter
Body and carousel	2024 T351 Aluminum

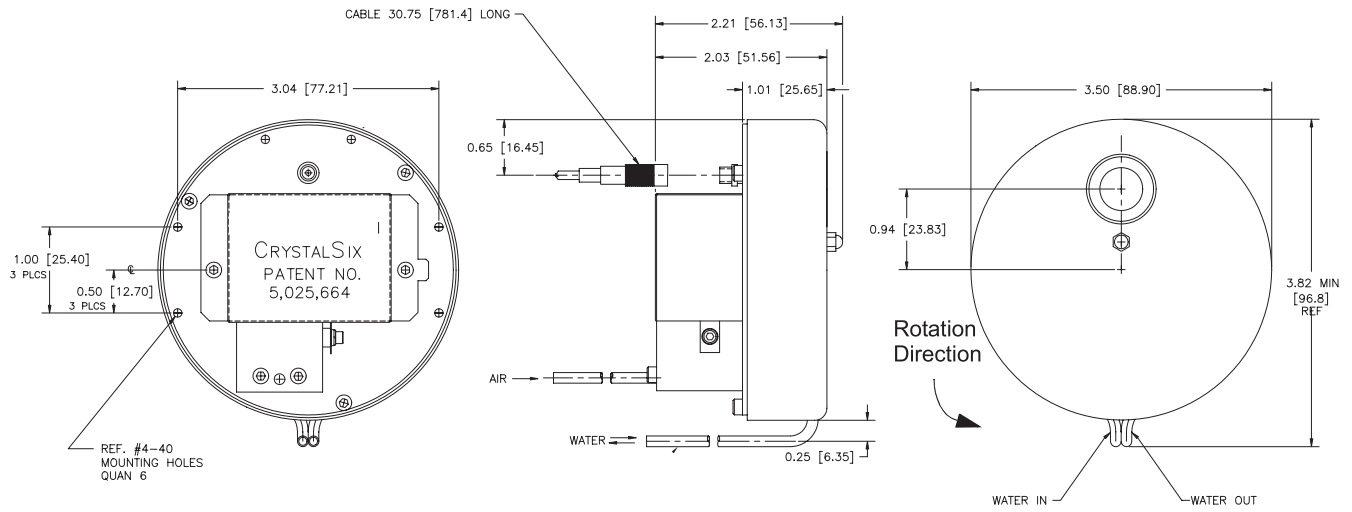
## SPARE PARTS LIST

### CrystalSix Sensors

P/N	Description
007-007	Retaining Spring (part of Crystal Holder)
007-023	Ceramic Retainer
007-044	In-vacuum Cable 30.75 in. / 78 cm.
070-0170	#2 Lockwasher (part of Heat Shield Assembly)
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)
070-0877	Shim Spacer (part of Heat Shield Assembly)
070-0879	Bearing (at center of Top Plate Weld Assembly)
073-114	Wire 0.022 in. x 1.06 in. (clamps Heat Shield Retaining Pin)
082-026	#2-56 Nut (part of Heat Shield Assembly)
750-048-P1	Retaining Spring (clamps Crystal Holders to Carousel)
750-175-P1	Bottom Insulator (underneath Leaf Springs)
750-188-P2	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 4.40 in / 11.2 cm
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

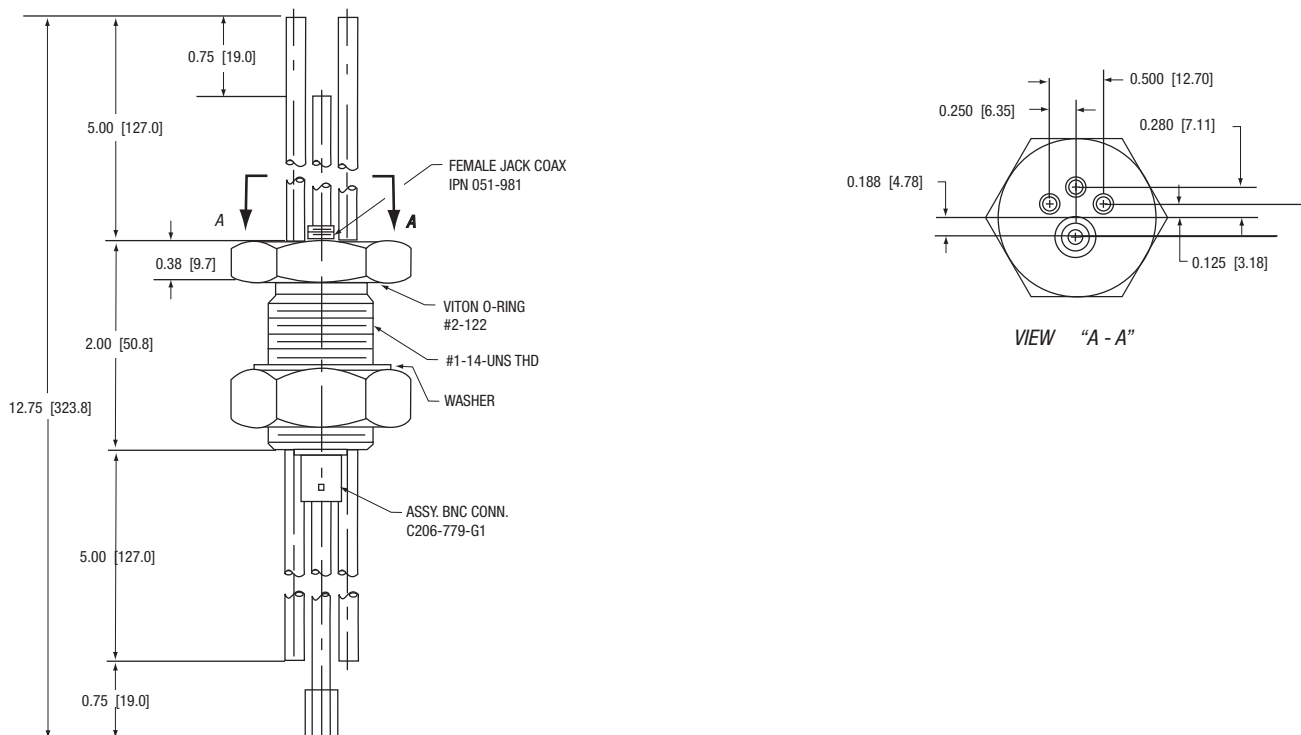
### 750-446-G1 CrystalSix Sensor



## DIMENSIONS

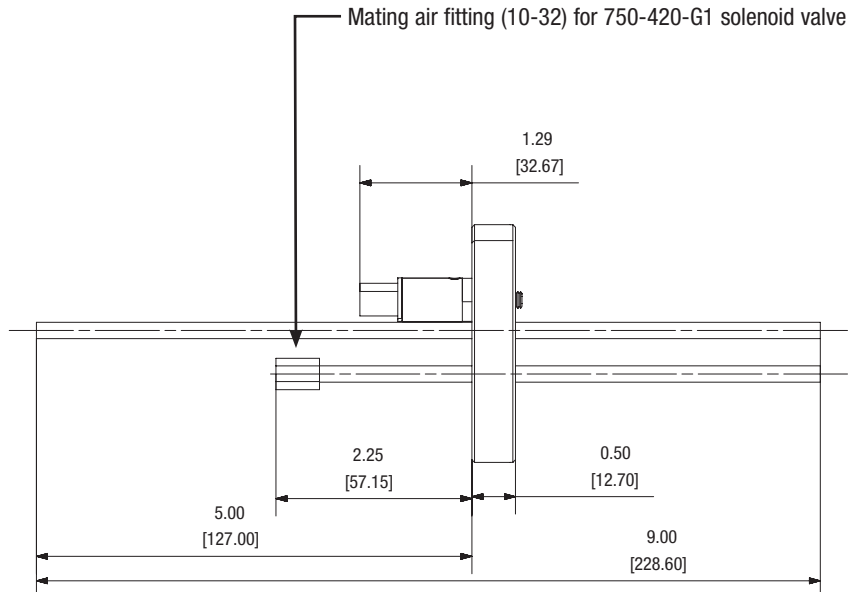
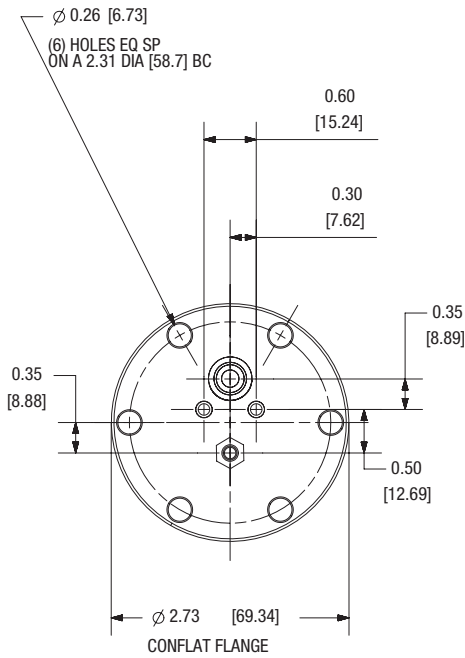
The CrystalSix Sensor 750-446-G1 can be used with the following Fedthroughs:

### P/N 750-030-G1



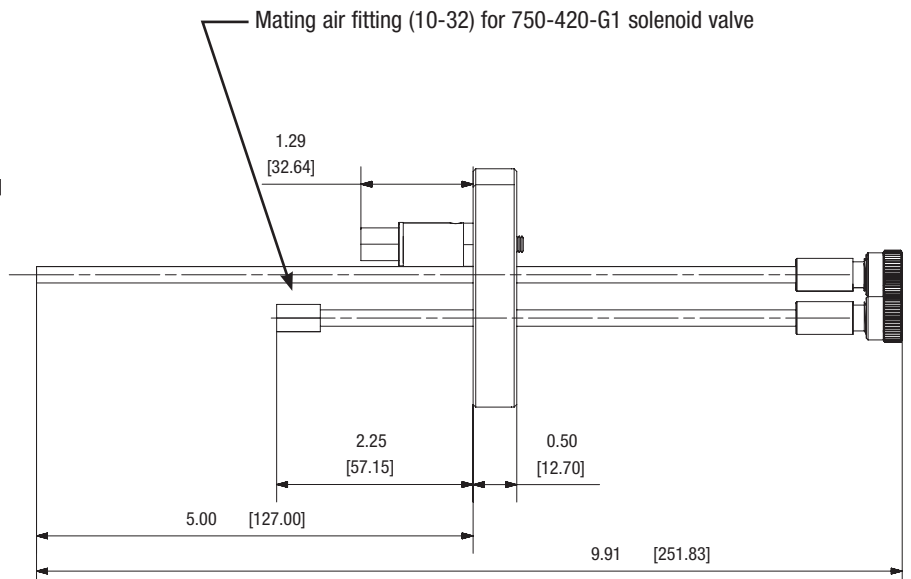
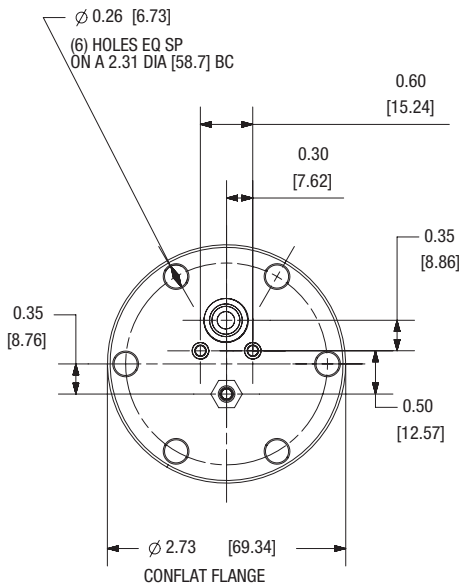
## DIMENSIONS

### P/N 750-685-G1



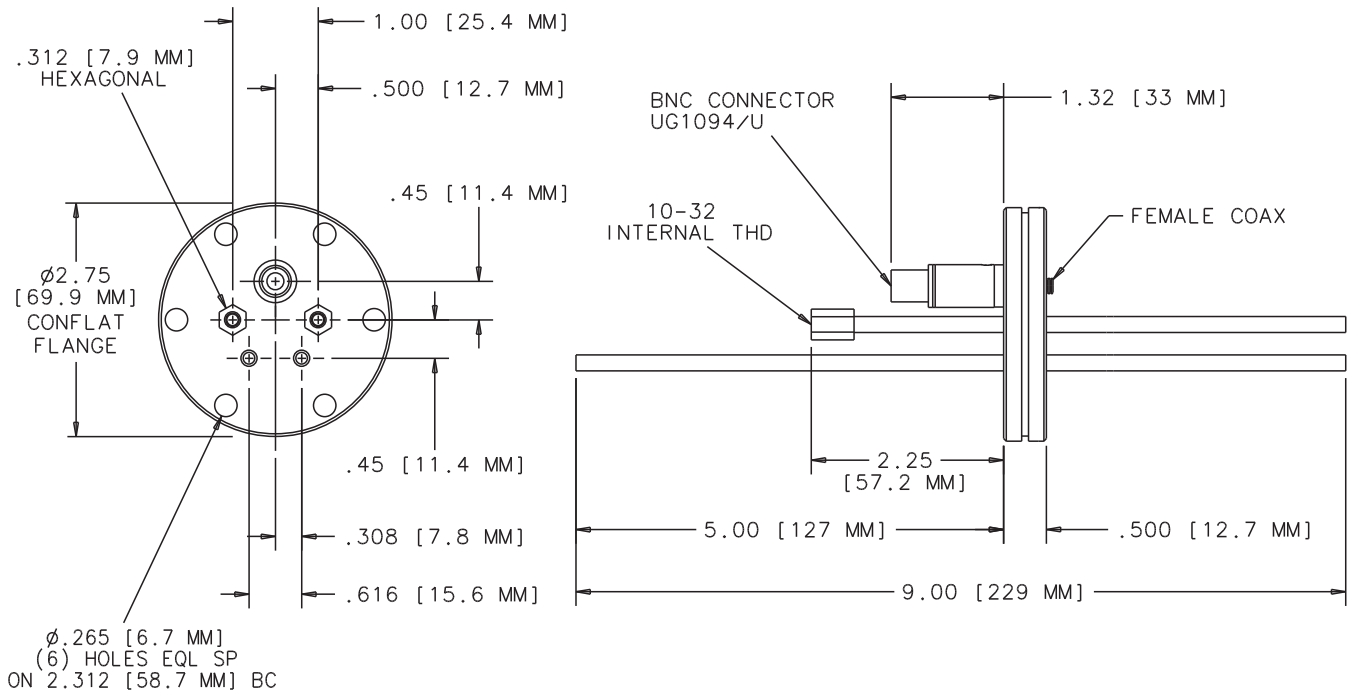
## DIMENSIONS

### P/N 750-685-G2



## DIMENSIONS

The CrystalSix Sensor with shutter SPS-1039-G1 can be used with Feedthrough P/N 750-683-G1



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