

# Crystal12® Sensor

The INFICON Crystal 12 sensor is critical for long processes demanding continuous rate control. Whether an OLED, MBE, Solar or other process having an extended period between chamber venting, the Crystal 12 sensor offers the security of 12 quartz monitor crystals in one sensor head. When used with Cygnus 2, IC6, XTC/3M, XTC/3S, SQC-310 or SQC-310C, the Crystal 12 automatically rotates a new crystal into position whenever the current crystal fails or becomes unstable. Crystals are automatically replaced without interrupting your process for continuous deposition rate monitoring. To further minimize downtime, crystals can be preloaded into a second optional carousel, which can then be quickly and easily exchanged with the carousel containing the exhausted crystals, minimizing the time the system is open.

Crystal indexing is accomplished with a pneumatically driven mechanism. This pneumatic drive provides better 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.



## ADVANTAGES

- Holds 12 crystals with robust, automatic switching to maximize process uptime
- Easy-to-remove carousel allows fast replacement of all 12 crystals
- 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
- Easy-to-remove front deposition shield protects the crystals and carousel from material accumulation, minimizing the need to remove entire sensor for maintenance
- Optional mounting-post kit can be user-modified to accommodate metric hardware
- Optional crystal shutter available

## ORDERING INFORMATION

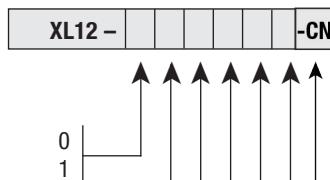
### Crystal 12 Sensor

**Type of sensor (Includes User Manual. Crystals sold separately)**

None.....	0
Base unit – Crystal 12 Sensor.....	1

### In-vacuum Cable Assembly Length – See Note 3

None.....	0
30.75 in. (78cm) .....	1
6 in. (15.2cm) .....	2
12 in. (30.5cm) .....	3
24 in. (61cm) .....	4
36 in. (91.4cm) .....	5
48 in. (121.9cm) .....	6
60 in. (152.4cm) .....	7
72 in. (182.9cm) .....	8



#### NOTE 1:

Auto Crystal Switch only with IC6, Cygnus 2, XTC/3M, XTC/3S, SQC-310, and SQC-310C.

#### NOTE 2:

The Crystal 12 Sensor requires the 750-420-G1 solenoid valve with orifice installed (IPN 059-0189, included in Crystal 12 ship kit).

#### NOTE 3:

All lengths are supported with IC6, Cygnus 2, XTC/3M, and XTC/3S. SQC-310 and SQC-310C support in-vacuum lengths up to 30.75 in. only.

#### NOTE 4:

Position feedback is not available with SQC-310 or SQC-310C.

**“-CN” suffix added for sensors made in China**

### Crystal Carousel Assembly

One (included in base unit).....	0
Spare Crystal Carousel Assembly.....	1



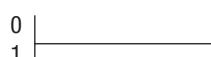
### Front Deposition Shield

One (included in base unit).....	0
Spare Front Deposition Shield .....	1



### Mounting Post with Hardware

None.....	0
Mounting Post Kit.....	1

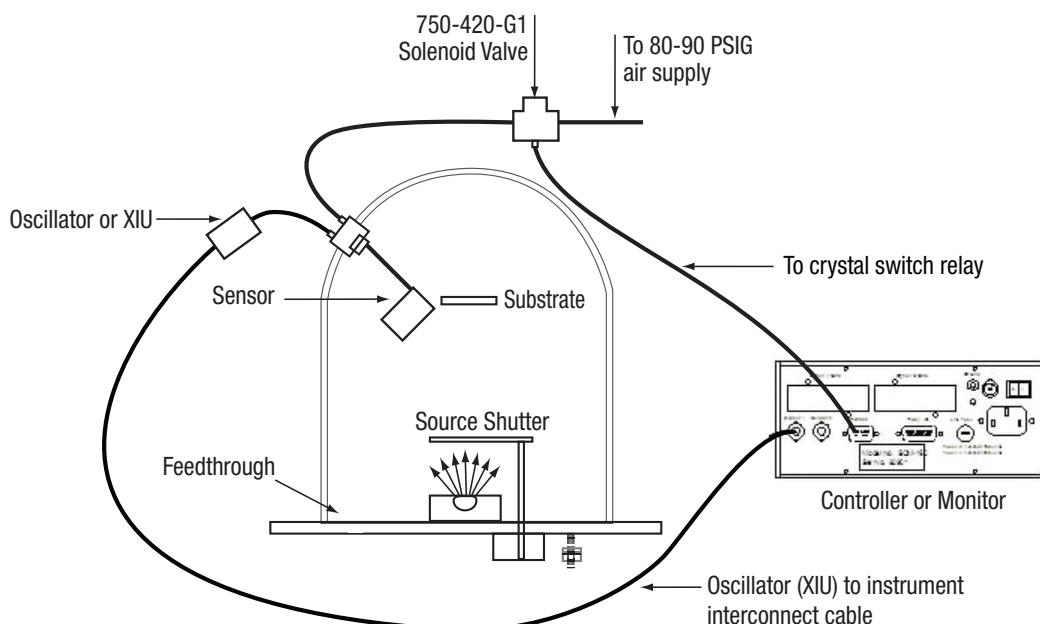


### Solenoid Valve – See Note 2

None.....	0
Solenoid Valve .....	1



**Custom parts, special bends and other non-standard parts available – Consult factory**



## SPECIFICATIONS

### XL12 series Crystal 12 Sensor Specifications

Maximum bakeout temp with no water	130° C
Maximum operating isothermal environment temperature with minimum water flow	300° C
Size (maximum envelope)	4.0 in. (102 mm) dia. x 3.3 in. (84 mm) high 4.75 in. (121 mm) dia. x 3.46 in. (88 mm) with optional mounting posts installed
Water and air length	Standard 30 in. (762 mm)
Crystal exchange	Front-loading
Mounting	Six #4-40 tapped holes on the back of the sensor body, six #4-40 tapped holes on outside circumference. Three #6-32 tapped holes with optional mounting kit (IPN 750-670-G1).
Weight	4.92 lb. (2.23 kg)

### Installation Requirements

Feedthrough	Qty (1) 2-3/4 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
Mounting	User to provide mounting structure adequate to support weight of Crystal12 and designed to facilitate removal and replacement with minimal change in exact position. An optional mounting post kit, IPN 750-670-G1, may be purchased for this purpose.
Air and Water Connections	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 Crystal12 accessory kit.)
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, Material Shield, Mechanical Parts,	
Body and Carousel	304 type stainless steel
Springs, Electrical Contacts	Au plated Be-Cu, Au Plated 302 stainless steel
Water and air tubes	S-304, 0.125 in. (3.2 mm) O.D. x .016 in. (0.4 mm) Wall Thickness x 30 in. Long (762 mm) seamless stainless steel tubing
Connector	Stainless steel
Insulators	Teflon, Peek®
Cable	Teflon insulated copper plated steel
Crystal	0.550 in. (13.97 mm) diameter

## SPECIFICATIONS

### Feedthrough Specifications

**Note:** Sensor / Feedthrough combination specifications are determined by lowest component specification.

**Example:** Crystal12 with CF40 is only rated to 300° C, not 450° C.

#### 1 inch bolt and Ultra-Torr (compression fitting) terminations:

Materials	304 stainless steel, Teflon, ceramic, beryllium nickel, VITON®
Temperature	Operational environment to 300° C with water cooling or 165° C without
Mounting	1.015 in. ±0.010 in. diameter aperture

#### CF 40 welded terminations:

Materials	304 stainless steel, Teflon, ceramic, beryllium nickel
Temperature	Operational environment to 450° C with water cooling or 165° C without
Mounting	Mates with 2 3/4 in. ConFlat type flanges with 1.375 in. I.D. min.

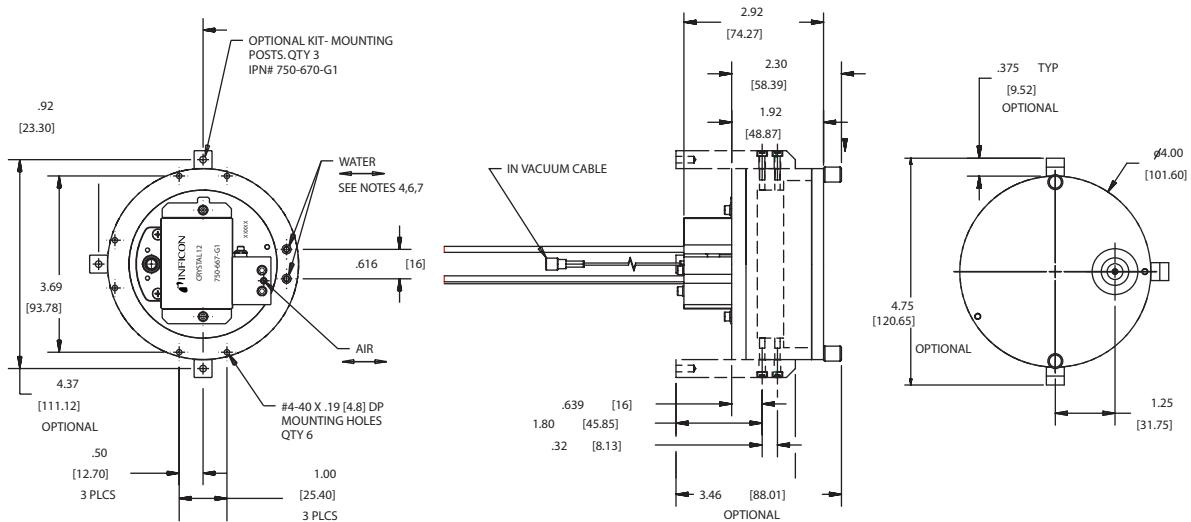
## SPARE PARTS LIST

P/N	Description
750-276-P3	Actuator Cover
750-644-G1	Housing
750-658-G1	Deposition Shield
750-286-P2	Pneumatic Actuator
750-291-P1	Detent
750-294-P2	Stop Ratchet
750-293-P2	Ratchet
750-256-P2	Extension Spring
750-252-P2	Spring Post
750-649-G1	Electrical Connection
750-295-G1	Pawl and Actuator
750-258-P2	Bearing Shaft
070-779	Ball Bearing
750-652-G1	Carousel
750-650-P1	Aperture Plate (without Dowel Pin)
070-1253	Dowel Pin
750-651-P1	Resistor Network Support
750-655-P1	Resistor Network Insulator
750-642-G1	Resistor Network
750-661-P1	Contact Terminal (Carousel component)
750-656-P1	Crystal Insulator (Carousel component)
321-038-P6	Leaf Spring (Carousel component)
750-657-P1	Grounding Leaf Spring
750-671-P1	Torsion Spring
750-626-P1	Spring
750-647-P1	Spindle
070-1268	Spindle Bearing (Spindle component)
070-1254	E-Ring (Spindle component)
750-660-P1	Location Screw (Spindle component)

P/N	Description
007-126	0.125 in. x 30 in. (3.175 mm x 762 mm) seamless tubing
070-201	#4 Split Lock Washer
084-004	#4-40 x .187 Hex Socket Head Screw
070-398	Retaining Ring
070-867	Shaft Spacer
070-170	#2 Split Lock Washer
070-177	#4-40 x 3.12 Hex Head Screw
080-038	#0-80 x 0.375 Phillips Pan Head Screw
082-032	#2 Internal Lock Washer
082-045	#2-56 x 0.187 Phillips Screw
084-054	#4 Split Lock Washer
082-022	#2 Flat Washer
082-024	#2-56 x 0.250 Hex Socket Screw
082-032	#2 Internal Lock Washer
750-292-P2	Detent Spacer
080-013	#0-80 Split Washer
080-007-P1	#0-80 x 0.170 Flat Washer
080-009-P1	#0-80 x 0.188 Socket Head Screw
084-048	#4-40 x 0.250 Flat Head Screw
750-665-P1	#2-56 Torsion Spring Shoulder Screw
070-170	#2 Split Lock Washer
082-045	#2-56 x 0.187 Phillips Screw
070-201	#4 Split Lock Washer
084-093	#4-40 x 1.125 Socket Head Screw
086-084-P2	#6-32 x 0.125 Set Screw
086-041	#6 Flat Washer
086-038	#6 Split Lock Washer
086-036	#6-32 x 3/8 Socket Head Screw
086-084-P2	#6-32 x 0.125 Set Screw

## DIMENSIONS

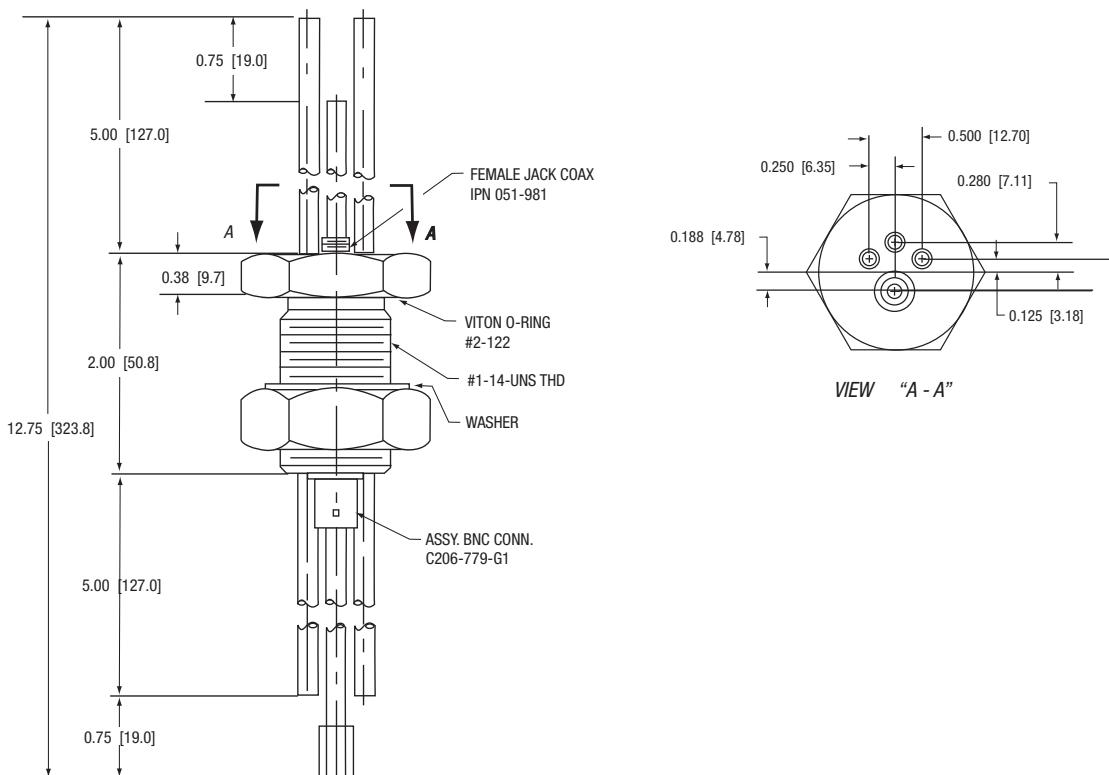
### XL12 series Crystal 12 Sensor



## DIMENSIONS

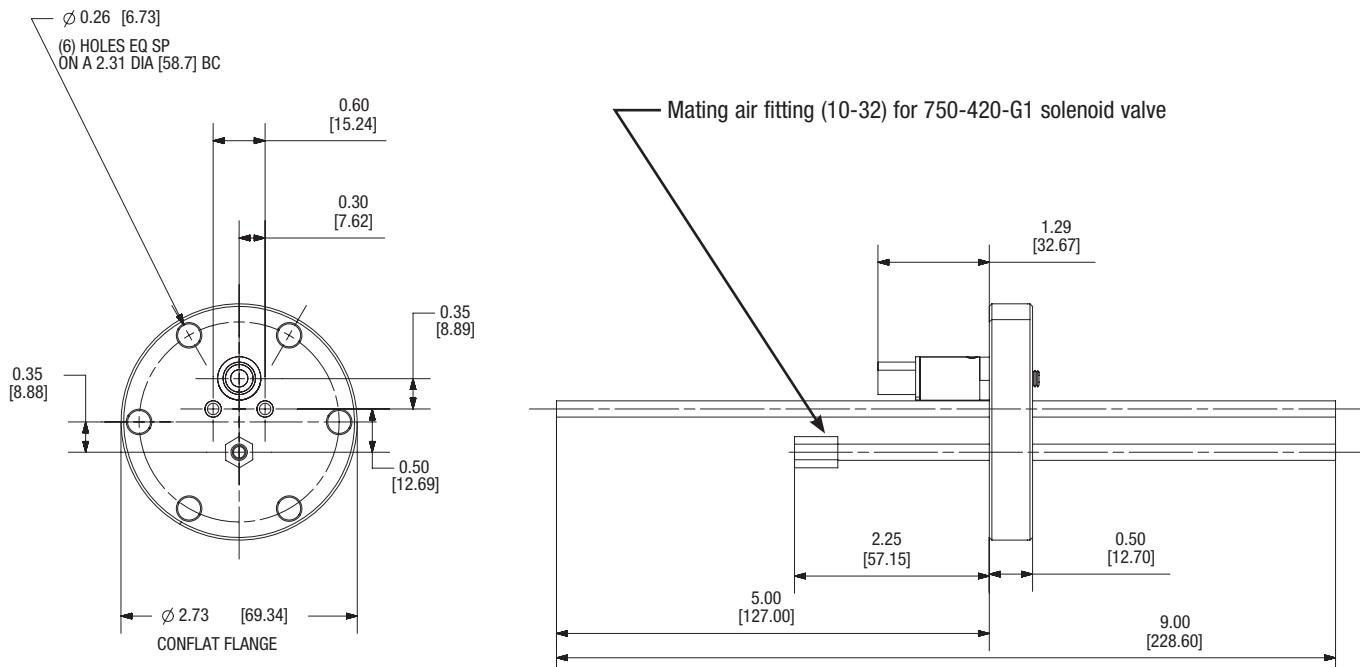
The Crystal 12 sensor can be used with the following Feedthroughs:

P/N 750-030-G1



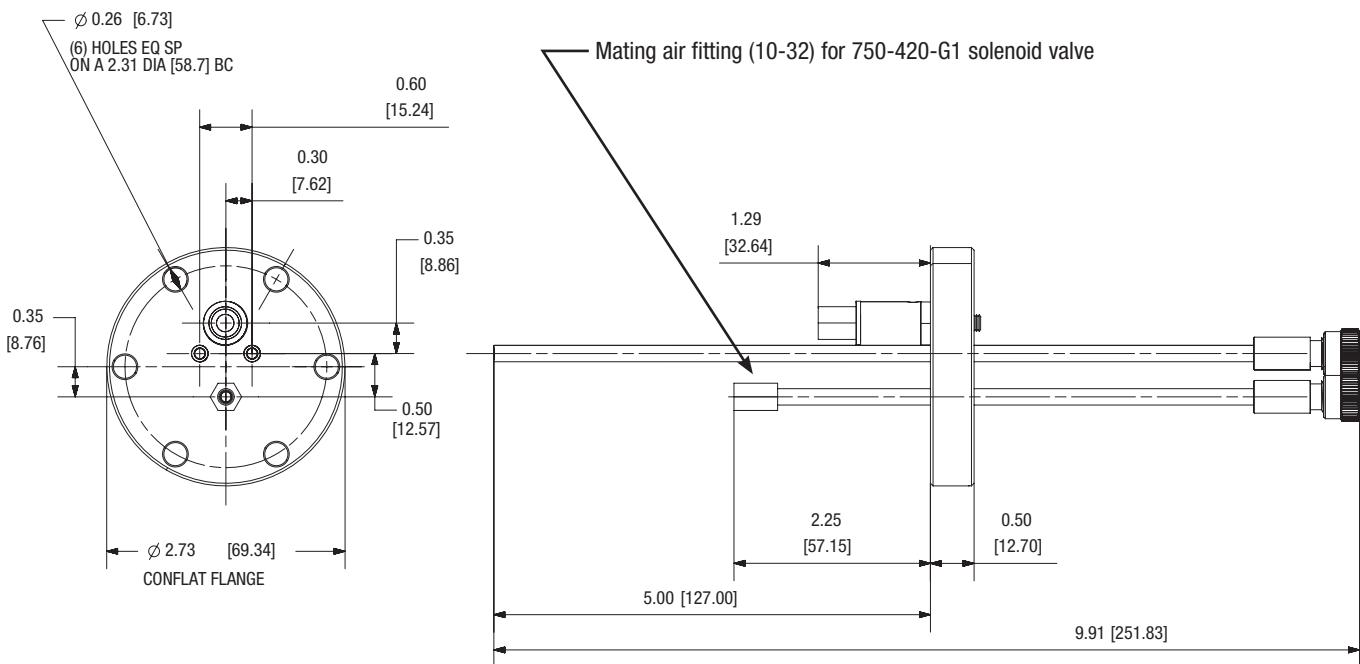
## DIMENSIONS

P/N 750-685-G1



## DIMENSIONS

P/N 750-685-G2



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