

# Front Load Dual Sensor

INFICON Front Load Dual crystal sensors offer proven reliability and durability and have the best thermal stability of any sensor head on the market. The dual sensor provides a backup crystal and is essential for critical processes where it is desirable to have a second crystal in the vacuum chamber.

The front load design allows for easy insertion of the crystal holder in applications lacking sufficient room for side insertion. Assembled mechanically rather than soldered, parts can be replaced conveniently in the field, if necessary. Sensors can be ordered individually or in a sensor / feedthrough combination that can be either welded or assembled with compression fittings.

## Sensor Configurations

The Front Load Dual Sensor is available in a standard mount configuration where the water tubes are parallel to the crystal face. A pneumatically driven crystal shutter comes standard to protect the back up crystal, while the primary crystal monitors the deposition rate. The shutter is designed to flip down allowing easy crystal replacement.

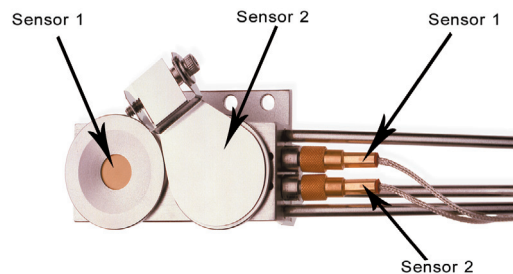
The exposed crystal electrode is fully grounded to effectively eliminate problems due to RF interference.

## Feedthroughs

INFICON offers two feedthroughs, a 1 inch bolt feedthrough or a 2¾ inch (CF40) ConFlat® flange feedthrough. KF40 feedthroughs are available on request.

## Feedthrough Connection

Front Load Dual Sensors can be ordered in combination with a feedthrough. The sensor / feedthrough connection can be either made with compression fittings or welded when in combination with a 1 inch bolt. If a weld connection is desired, a sensor length specification form, provided by INFICON, must be completed prior to ordering. Compression fittings allow for easy adjustability without the need for brazing or welding. The feedthrough can be moved along the length of the tubes allowing the length inside the vacuum systems to be adjusted over a range of 8 in. to 28 in. (20.3 cm to 71.1 cm) for “E” length sensors and 8 in. to 48 in. (20.3 cm to 121.9 cm) for “G” length sensors. Once the desired length is determined, the compression fittings allow for a finger tight tube seal.



## ADVANTAGES

- Dual crystals
- Crystal shutter
- Front load crystal holder
- Easy installation
- Available with:
  - 1 in. (2.54 cm) bolt feedthrough
  - CF40 feedthrough
- Adjustable length if ordered with compression fittings
- No brazing required if ordered with compression fittings or welded to feedthrough
- Sensor / Feedthrough combinations available welded to customer specified lengths.

## ORDERING INFORMATION

### Front Load Dual Sensor (with in-vacuum cables)

#### Type of sensor (Includes in-vacuum Cables, Crystal Snatcher and User Manual. Crystals sold separately)

Dual Sensor (water lines parallel to crystal face) with shutter .....

#### Length of Sensor – SEE NOTES 1 and 3

Standard length – 8 in. to 28 in. (203mm to 711 mm) Includes two 30.75 in. (781 mm) In-vacuum cables. **SEE NOTE 6** .....

Extended length – Greater than 28 in. (711 mm); maximum 48 in. (1219 mm) Includes 60 in. (1524 mm) In-vacuum cable. **SEE NOTE 6** .....

#### Feedthrough

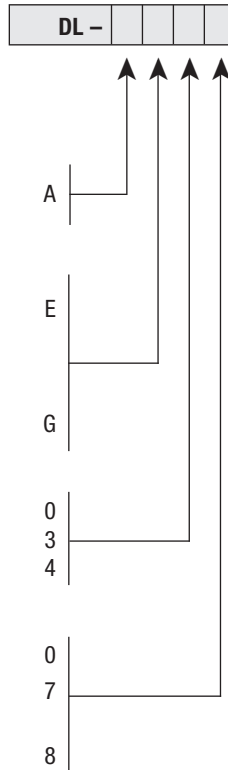
None.....  
 1 in. (2.54 cm) bolt .....  
 CF40.....

#### Feedthrough Connection

Sensor not connected to Feedthrough.....  
 Sensor Welded to Feedthrough.....  
 Variable length with Ultra-Torr compression fittings. (Allows the sensor length to be variable by using compression fittings).....

The following combinations are not available (See Notes 4 and 5):  
 DL-AE47, DL-AG47

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



#### NOTE 1:

Orders for sensors welded to feedthroughs cannot be entered without signed off dimensional drawing. Once special length or manufactured order is confirmed, it is not cancelable. INFICON will provide a sensor length specification form.

#### NOTE 2:

Feedthrough configuration varies depending on options selected (type of feedthrough, and connection). Example: SL-A0E37 uses feedthrough p/n 002-042 while SL-A1E37 uses feedthrough p/n 750-030-G1.

#### NOTE 3:

Sensor lengths are measured from center of the crystal to the vacuum side (sealing surface) of the feedthrough (see drawing).

#### NOTE 4:

Front Load Dual sensors ordered with 1 in. bolt style feedthrough require a special feedthrough (contact factory for availability).

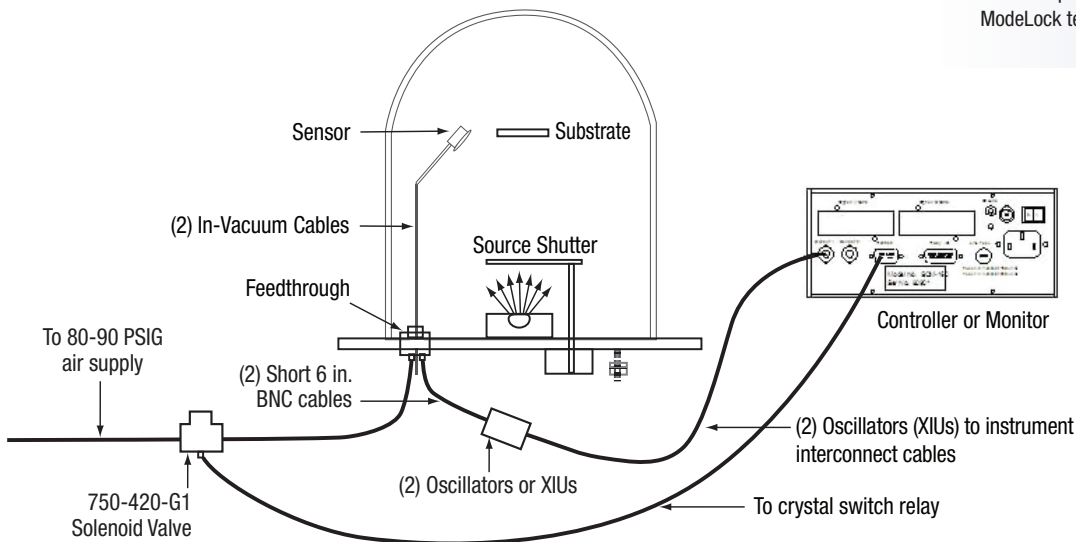
#### NOTE 5:

Front Load Dual sensors ordered with a CF40 feedthrough cannot be welded due to dimensional limits of the CF40.

#### NOTE 6:

For sensors ordered without a weld connection (option "0" or "8"), tubes are made to a length of 29.75 in. (756mm) for "E" length and 44.75 in. (1137 mm) for "G" length sensors.

Operation with 60 in. (152.4 cm) in-vacuum cables requires a monitor/controller with ModeLock technology (XTC/3, IC6/ Cygnus 2).



**NOTE:** (2) indicates that 2 xiu or oscillator packages are required for a typical dual sensor installation. 779-220-G1, crystal two switch option allows operation with only one oscillator (XIU).

## SPECIFICATIONS

### DL-A \_ 0 0 series Front Load Dual Sensor Specifications

Maximum bakeout temp with no water	130° C
Maximum operating isothermal environment temperature with minimum water flow	400° C
Size (maximum envelope without shutter)	1.54 in. x 3.23 in. x 1.95 in. (39.12 mm x 82.04 mm x 49.54 mm)
Water tube and coax length, “E” sensor	Standard 30 in. (762 mm)
Crystal exchange	Front-loading, self-contained package for ease of exchange. Shutter flips up to ease access to the holders.
Mounting	Two #4-40 tapped holes on the back of the sensor body

### Installation Requirements

Feedthrough	Qty. (1) 2¾ in. (69.85 mm) ConFlat® with 2 Microdot®, 2 pass water and air, or Qty. (1) 1 in. (25.4 mm) bolt with 2 Microdot, 2 pass water and air.
Other	1) Valve assembly for air—IPN 750-420-G1 2) Two oscillators or one oscillator and 779-220-G1 CrystalTwo Switch designed to interface with the deposition controller. 3) For automatic operation, the deposition process controller must be designed for the implementation of this feature.
Utilities	1) Minimum water flow 150-200 cc/min, 30°C max (Do not allow to freeze.) 2) Air, 80 PSIG (5.5 bar) [552 kPa] very low volume, DO NOT EXCEED 110 PSIG (7.6 bar) [760 kPa]
Water quality	Coolant should not contain chlorides as stress corrosion cracking may occur. Extremely dirty water may result in loss of cooling capacity.
<b>Materials</b>	
Body and holder	304 Type stainless steel
Springs	Au plated Be-Cu
Water tubes	S-304, 0.125 in. (3.175 mm) OD x 0.015 in. (0.381 mm) Wall thickness seamless stainless steel tubing
Connector (Microdot)	Stainless steel, Teflon® and glass insulated
Insulators	>99% Al <sub>2</sub> O <sub>3</sub>
Wire	Teflon insulated copper
Other mechanical parts	304 or 18-8 stainless steel
Braze	Vacuum process high temperature Ni-Cr alloy
Crystal	0.550 in. (13.97 mm) diameter

## SPECIFICATIONS

### Feedthrough Specifications

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

#### 1 in. 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:

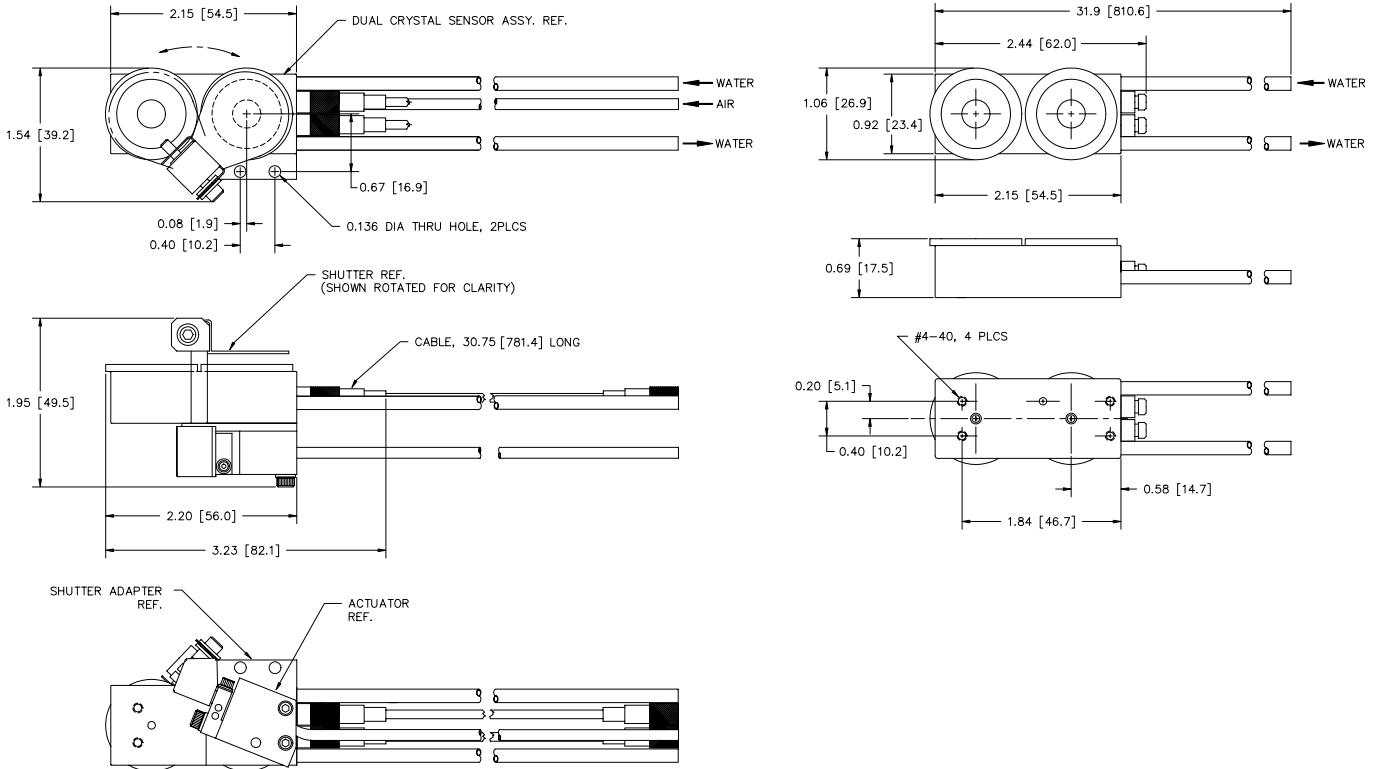
Materials	304 stainless steel, Teflon, ceramic, beryllium nickel
Temperature	Operational environment to 450° C with water cooling or 165° C without
Mounting	Mates with 2¾ in. ConFlat type flanges with 1.375 in. I.D. min.

## SPARE PARTS LIST

P/N	Description
007-007	Retainer Spring (for Crystal Holder)
007-023	Ceramic Retainer
007-044	In-Vacuum Cable, 30.75 in. / 78.1cm
080-018	Set Screw (for Female Coax)
082-044	Teflon Screw (for Leaf Spring)
750-115-P4	Coupling (for Bellows Assembly)
750-169-P2	Bellows Assembly (Coupling not included)
750-171-P1	Finger Spring Contact
750-172-G1	Crystal Holder (includes Retainer Spring)
750-174-P2	Female Coax
750-175-P1	Insulator (underneath Leaf Spring)
750-188-P3	Leaf Spring
750-210-G1	Shutter Module (Bellows Assembly, Shaft Assembly, and Shutter Assembly)
750-215-G1	Shaft Assembly (part of Shutter Module)
750-216-G1	Shutter Assembly (part of Shutter Module)
321-039-G13	In-Vacuum cable 60 in. (152.4 cm)

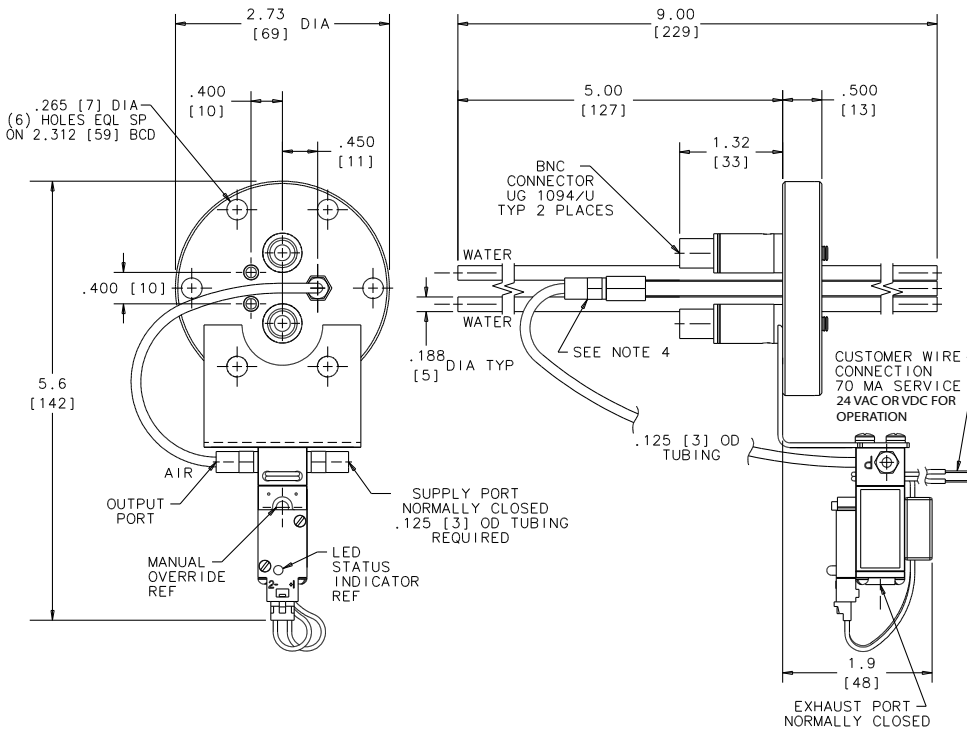
## DIMENSIONS

### DL-AE00 or DL-AG00 Front Load Dual Sensor (sensor only)



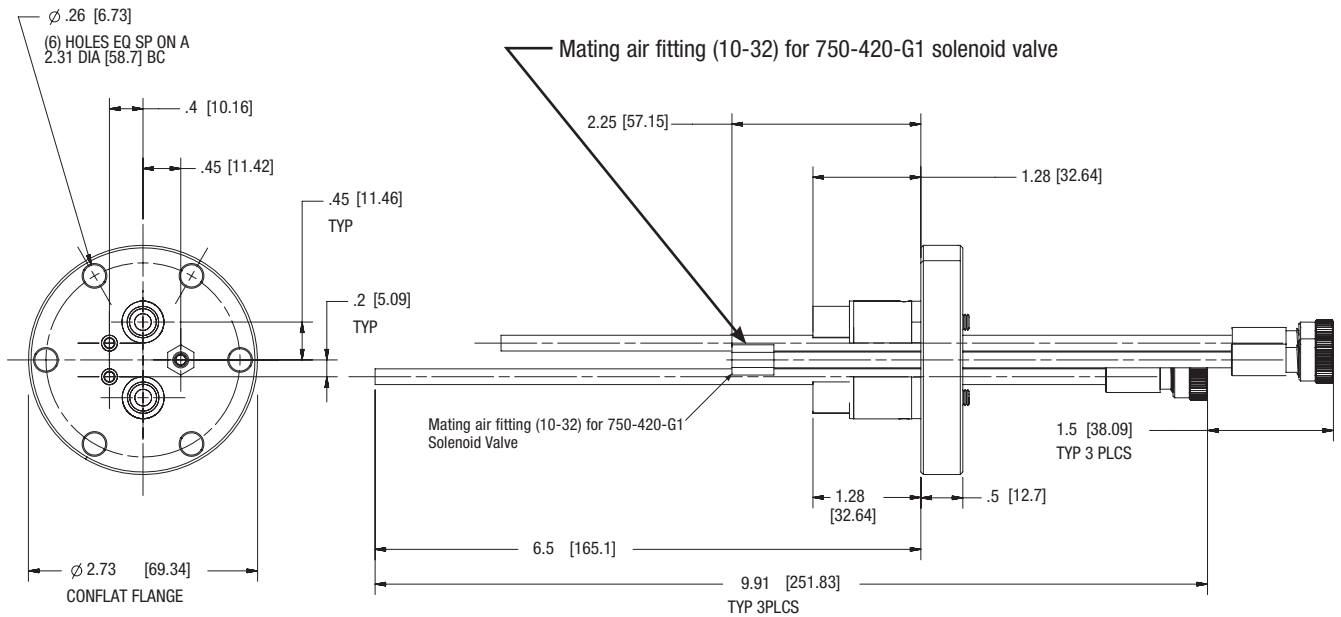
## DIMENSIONS

### Feedthrough used for DL-A\_4\_0 Sensor / Feedthrough Combination (Feedthrough IPN 002-080, shown with 750-420-G1 solenoid valve)



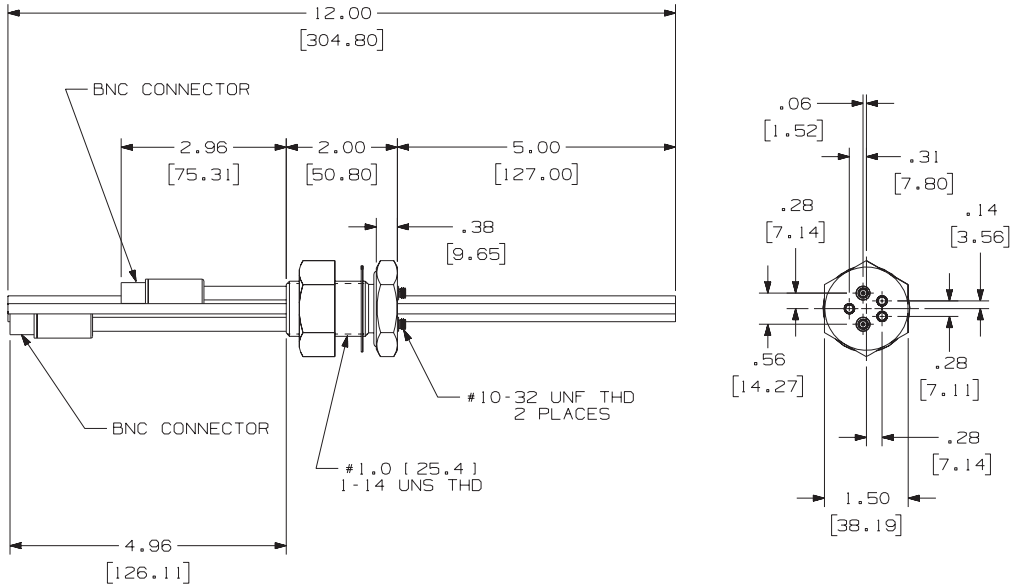
## DIMENSIONS

### Feedthrough Used For DL-A \_ 4 8 Sensor / Feedthrough Combination (Feedthrough IPN 206-890-G2)



## DIMENSIONS

### Feedthrough used for DL-A \_ 3 7 and DL-A \_ 3 0 Sensor / Feedthrough Combination (Feedthrough IPN 750-707-G1)



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