

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.

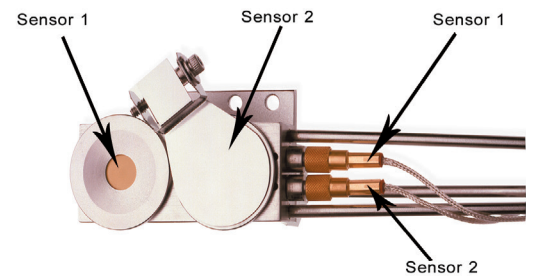
The exposed crystal electrode is fully grounded to effectively eliminate problems due to RF interference.

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. 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 20.3–71.1 cm (8–28 in.). 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:
 - 2.54 cm (1 in.) 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 cable, crystal snatcher and user manual. Crystals sold separately)

Standard Sensor
(water lines parallel)

Length of sensor (see notes 1 and 5)

Standard length
includes 78.1 cm (30.75 in.) in-vacuum cable (see note 4)

Feedthrough (see note 2)

None
1 in. bolt
CF40

Feedthrough connection (see notes 3 and 5)

Sensor not connected to feedthrough
Sensor welded to feedthrough
Feedthrough equipped with Ultra-Torr compression fittings
(allows for adjustable sensor length).

Welded sensor length

(use only when feedthrough connection is 7)
(see notes 2 and 5)

Not required when feedthrough connection option is 0 or 8.

Weld length in centimeters, 20–70 cm (8–27.5 in.). 20–70

Weld length in centimeters, 71–99 cm (28–39 in.). 71–99

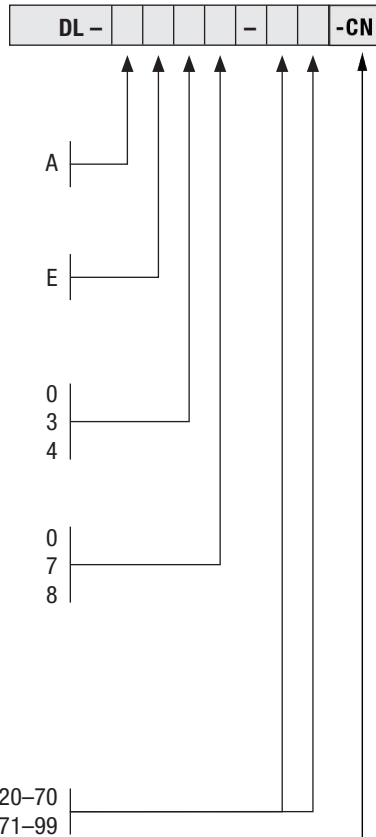
*** Other lengths may be available: contact factory.

Other lengths will be considered a special order
and will be subject to additional cost and lead time

The following combinations are not available: (see notes 3 and 4):

DL-AE47, DL-AG47, DL-AE38, DL-AG38

Examples of non-valid part numbers include all options with no feedthrough connection or compression fittings and a welded sensor length; for example, DL-AE40-20, DL-BE40-20, etc.



NOTE 1:

Orders for a WELDED sensor/feedthrough combination are measured from center of the crystal to the vacuum side (sealing surface) of the feedthrough. Once a welded sensor order is confirmed, it cannot be cancelled.

NOTE 2:

Feedthrough configuration varies depending on options selected (Front Load or Cool Drawer, with or without shutter, type of feedthrough, etc.). Example: SL-A0E37 uses feedthrough PN 002-042 while SL-A1E37 uses feedthrough PN 750-030-G1.

NOTE 3:

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

NOTE 4:

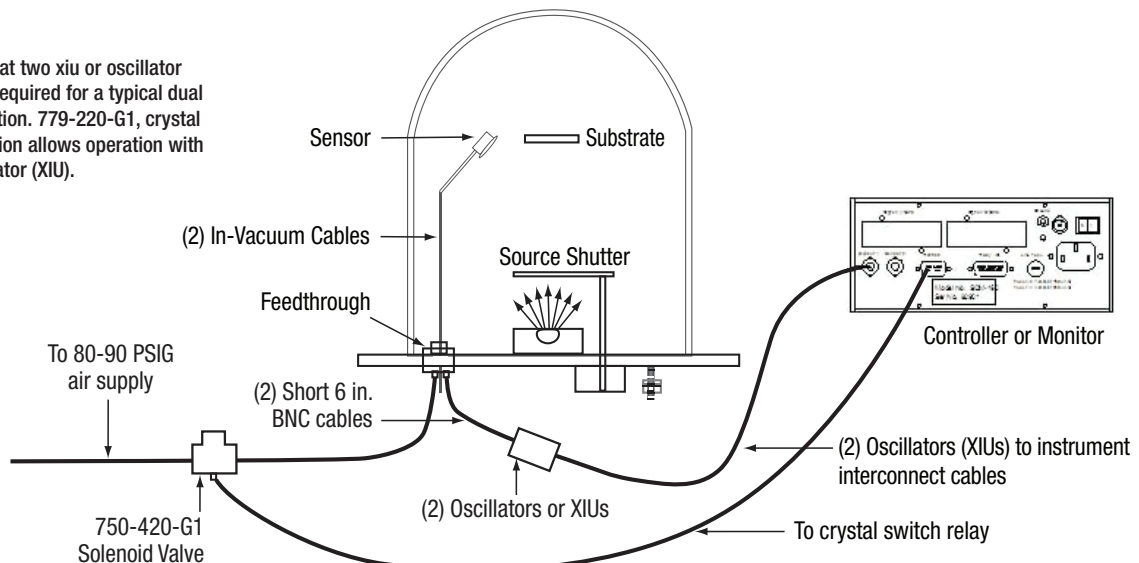
For sensors ordered without a weld connection (option "0" or "8"), tubes are made to a length of approximately 76.2 cm (30 in.).

NOTE 5:

Front Load Dual sensors welded to lengths between 28 and 34 inches will include a 36 inch in-vacuum cable. Sensors welded to lengths between 34 and 39 inches will include a 48 inch in-vacuum cable.

"-CN" suffix added for sensors made in China

NOTE: (2) indicates that two 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-AE00 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)	39.12 x 82.04 x 49.54 mm (1.54 x 3.23 x 1.95 in.)
Water tube and coax length, "E" sensor	Standard 762 mm (30 in.)
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	One 69.85 mm (2¾ in.) ConFlat® with two Microdot®, two pass water and air, or One 25.4 mm (1 in.) bolt with two Microdot, two pass water and air.
Other	1) Valve assembly for air — PN 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.

Materials

Body and holder	304 Type stainless steel
Springs	Au plated Be-Cu
Water tubes	S-304, 3.175 mm (0.125 in.) OD x 0.381 mm (0.015 in.) wall thickness seamless stainless steel tubing
Connector (Microdot)	Stainless steel, Teflon® and glass insulated
Insulators	>99% Al ₂ O ₃
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. \pm 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.

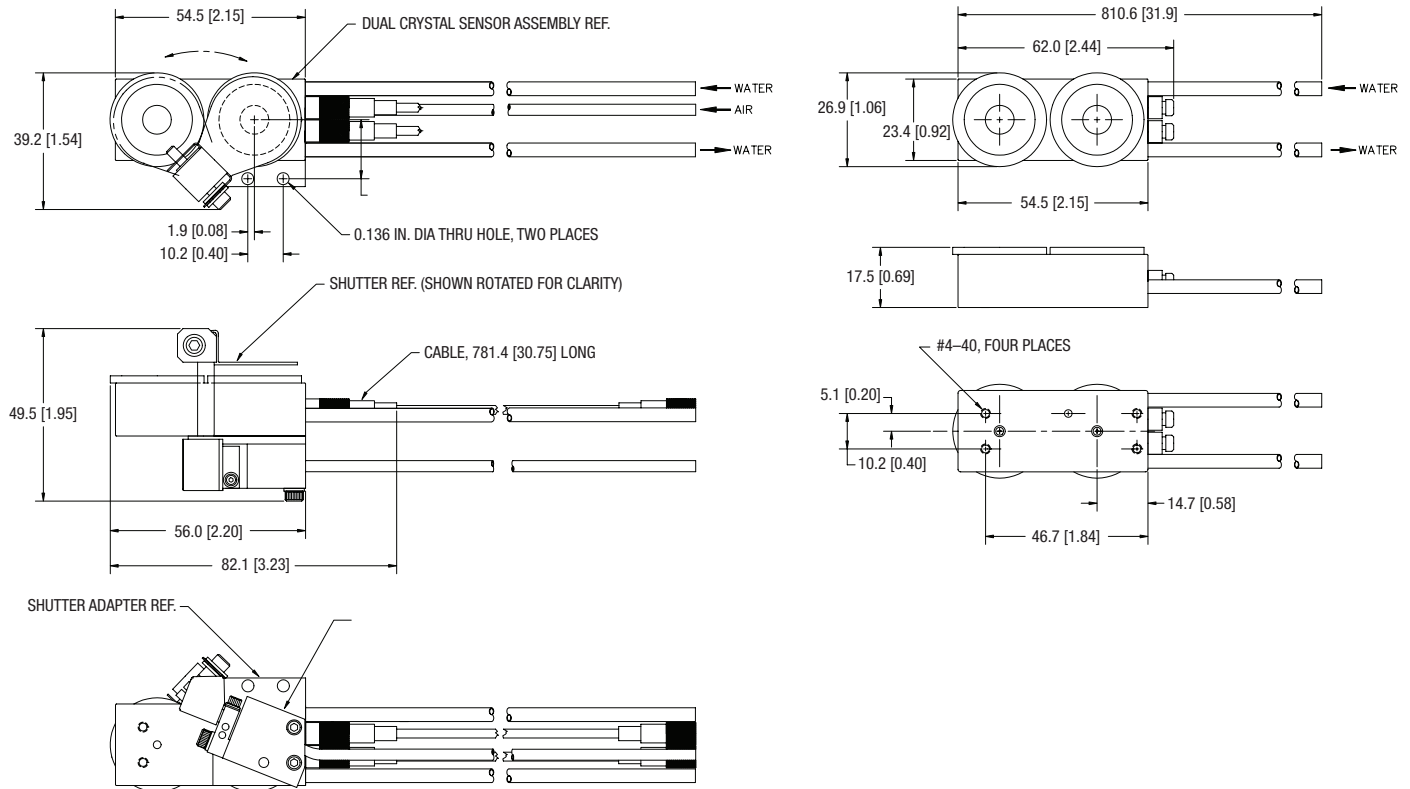
SPARE PARTS LIST

P/N	Description
007-007	Retainer spring (for crystal holder)
007-023	Ceramic retainer
007-044	In-vacuum cable, 78.1cm (30.75 in.)
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 152.4 cm (60 in.)

DIMENSIONS

DL-AE00 Front Load Dual Sensor (sensor only)

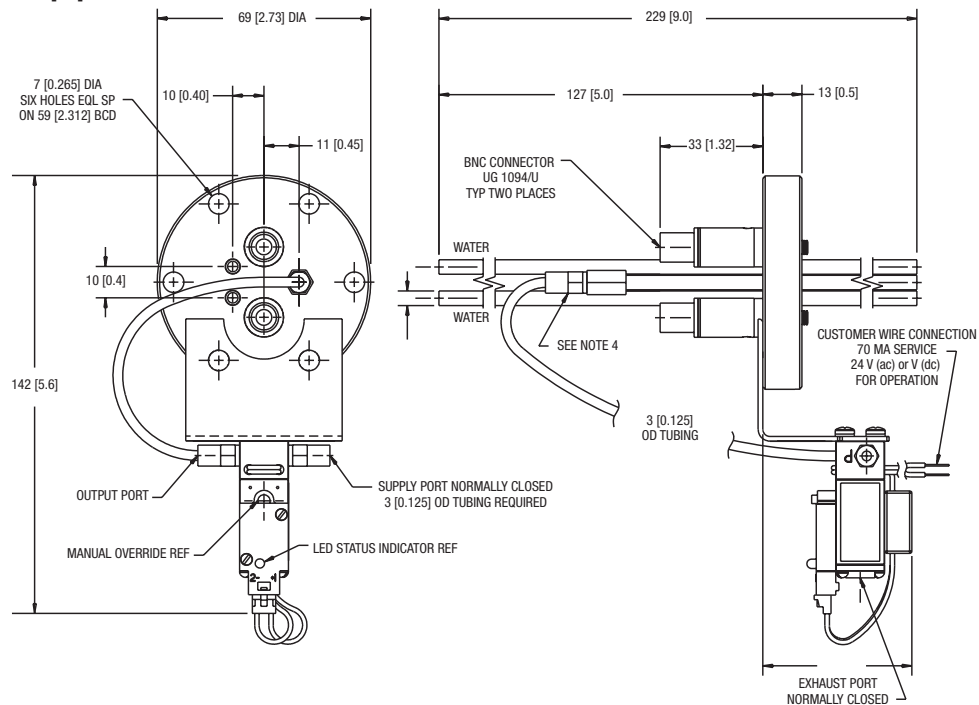
NOTE: Measurements in cm [in.]



DIMENSIONS

Feedthrough used for DL-AE40 sensor / feedthrough combination (feedthrough PN 002-080, shown with 750-420-G1 solenoid valve)

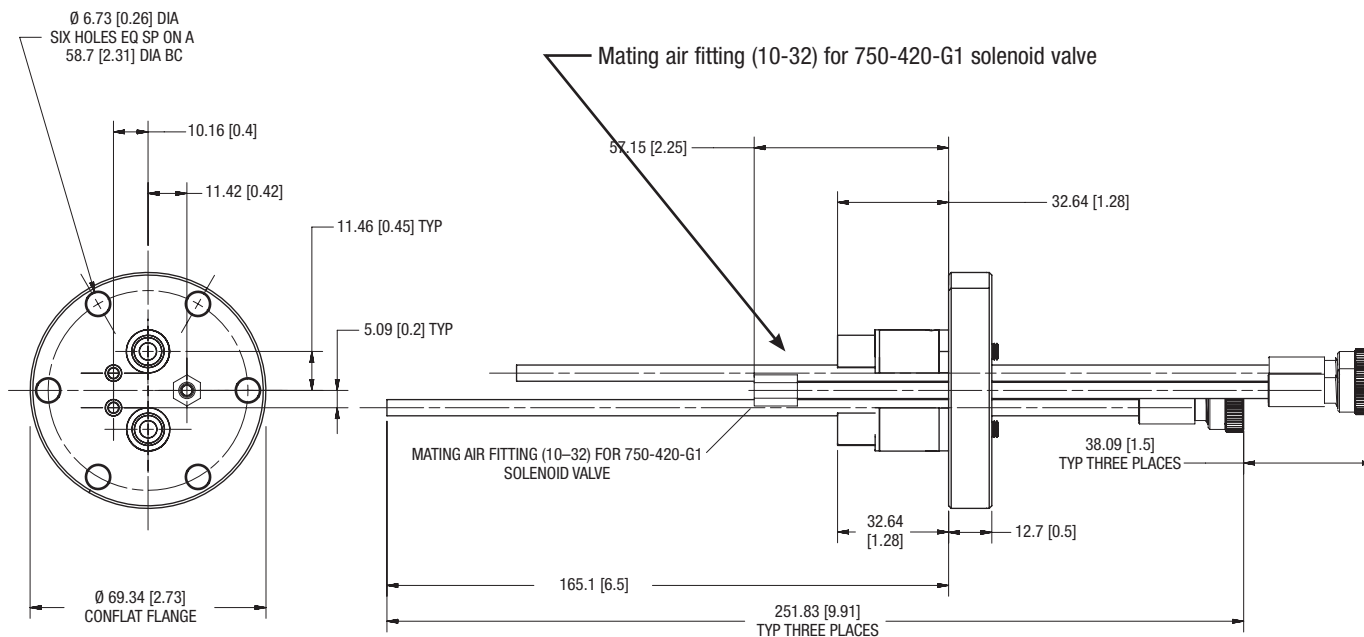
NOTE: Measurements in cm [in.]



DIMENSIONS

Feedthrough used for DL-AE48 sensor/feedthrough combination (feedthrough PN 206-890-G2)

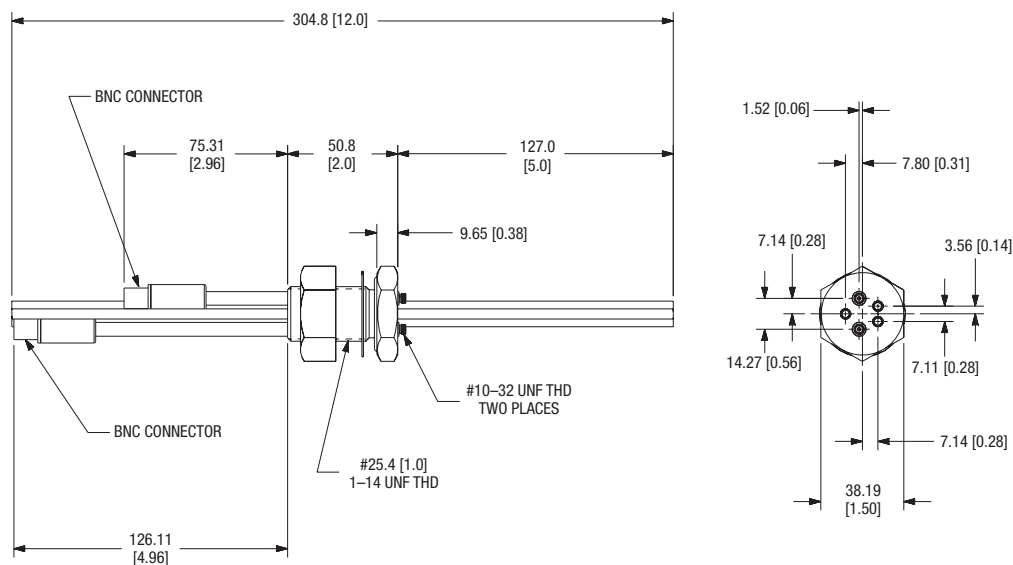
NOTE: Measurements in cm [in.]



DIMENSIONS

Feedthrough used for DL-AE37 and DL-AE30 sensor/feedthrough combination (feedthrough PN 750-707-G1)

NOTE: Measurements in cm [in.]



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