

SemiQCM™ SR for TDMAT

SemiQCM SR Sensor

INFICON SemiQCM SR sensors, installed on the foreline of a semiconductor chamber, offer a proven solution as part of a precursor delivery fault detection system. By connecting to FabGuard® via an IMM-200, the SemiQCM SR sensor becomes an integrated part of the tool. The sensor is installed via a KF40 cross or KF40 Tee to the foreline and actively monitors excess precursor and precursor derivatives for each wafer run. The failure to deliver precursor to a wafer can be detected in as little as one wafer. Additional information on this precursor delivery fault detection system can be found in the TDMAT Precursor Monitoring with a Quartz Crystal Microbalance Application Note.

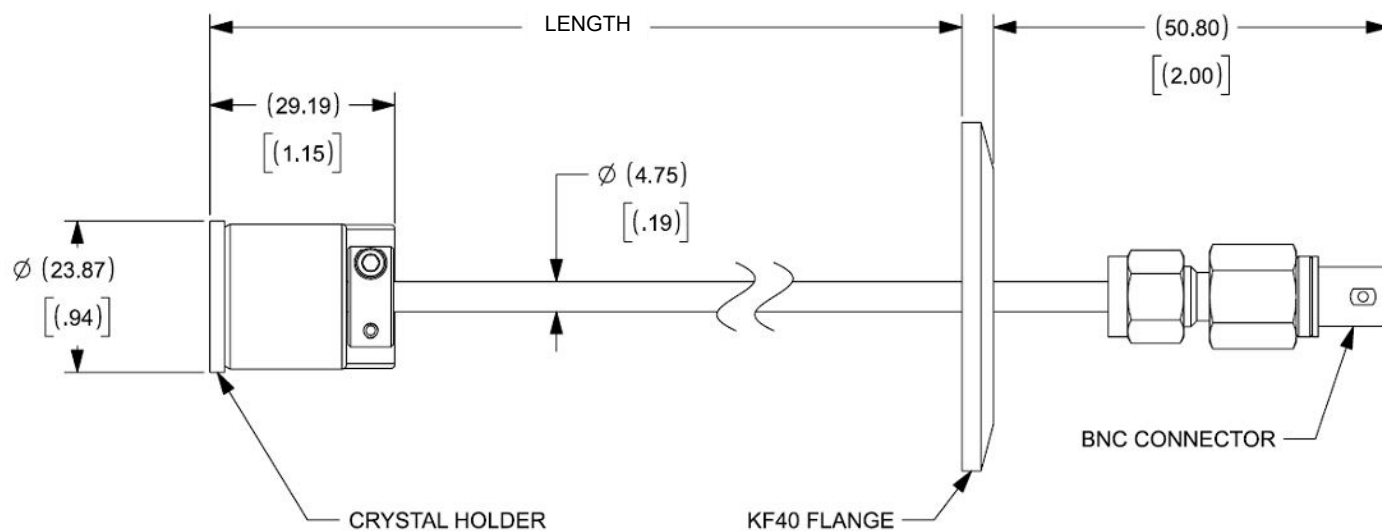
Specifications

Maximum temperature	200 °C
Sensor head size (maximum envelope)	23.87 mm O.D. x 29.19 mm (0.94 in. O.D. x 1.15 in.)
Mounting feedthrough	KF40 flange

Materials

Body and holder	304 stainless steel
Springs	Au plated BeCu
Coax line	5 mm (1.88 in.) O.D. stainless steel
Other mechanical parts	18-8 or 304 stainless steel, Hastelloy® c276
Insulators	>99% Al ₂ O ₃ in vacuum: Teflon® used elsewhere
Wire	1. Ni (in vacuum) 2. Ni plated Cu (elsewhere)
Braze	Vacuum process high temperature NiCr alloy
Crystal	13.97 mm (0.550 in.) diameter

Dimensions

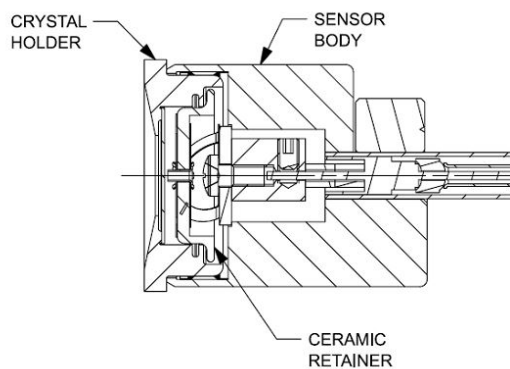


Sensor P/N	Length*
750-7000-G5	50 mm (1.97 in.)
750-7000-G6	60 mm (2.36 in.)
750-7000-G7	70 mm (2.76 in.)
750-7000-G8	80 mm (3.15 in.)
750-7000-G9	90 mm (3.54 in.)
750-7000-G10	100 mm (3.94 in.)
750-7000-G11	110 mm (4.33 in.)
750-7000-G12	120 mm (4.72 in.)
750-7000-G13	130 mm (5.12 in.)
750-7000-G14	140 mm (5.52 in.)
750-7000-G15	150 mm (5.90 in.)

*Length tolerance is +0/-6 mm.

Spare Parts List

P/N	Description
750-7013-G1S	Crystal holder assembly
750-7005-G1S	Crystal holder with retainer spring
007-023	Ceramic retainer
750-1090-G10	6 MHz Crystals



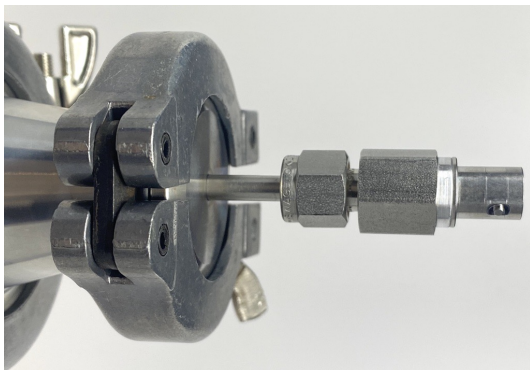
Crystal Holder Assembly Replacement

Replacing the entire crystal holder assembly is recommended over only replacing the crystal, as it takes less time and no additional tools are required.

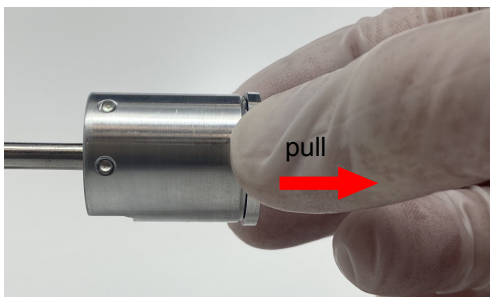


Avoid touching the crystal.

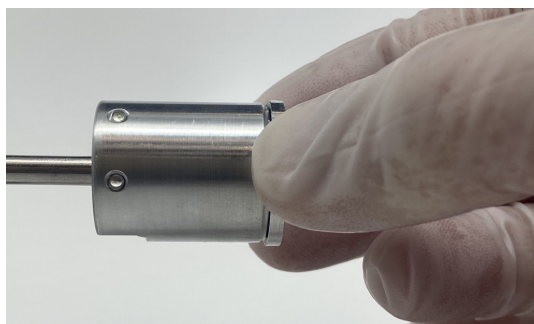
1. Remove the QCM sensor from the foreline by releasing the KF40 clamp.



2. Pull the crystal holder assembly straight out of the QCM sensor body.



3. Install the new crystal holder assembly into the sensor body by pressing the crystal holder straight in, making certain that the crystal holder is completely seated in the sensor body. Some force is required, but ensure that the crystal is not used for leverage.



4. Install the QCM sensor back on the foreline with a KF40 clamp and the appropriate centering ring.

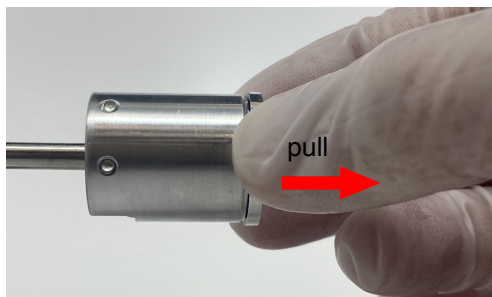
Crystal Replacement

Replacing only the crystal is an alternative option, but a crystal snatcher is required and the replacement process takes more time.

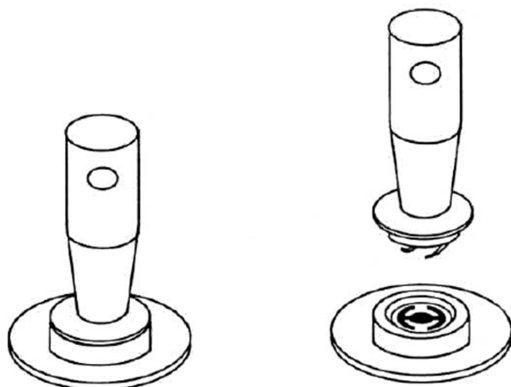


Avoid touching the crystal. Only handle the QCM crystal with Teflon tweezers and only handle the outer edge of the crystal.

1. Remove the QCM sensor from the foreline by releasing the KF40 clamp.
2. Pull the crystal holder straight out of the QCM sensor body.



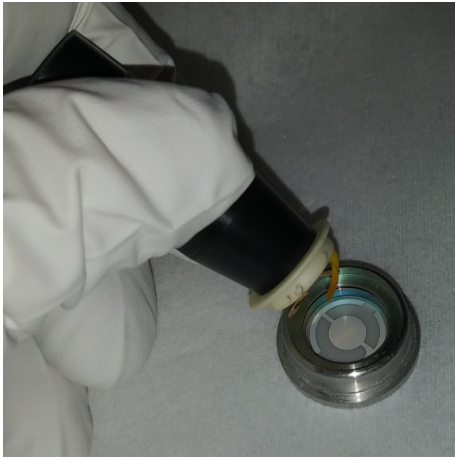
3. Insert the tapered end of a crystal snatcher (PN 008-007) into the ceramic retainer as shown below and apply a small amount of pressure. This locks the ceramic retainer to the snatcher and allows the ceramic retainer to be pulled straight out.



4. Invert the crystal holder to allow the crystal to drop out.
5. Using Teflon tweezers, grasp the edge of the new crystal. Orient the crystal so the patterned electrode is facing up. Gently insert the edge of the crystal beneath one of the wire segments inside the crystal holder. Release the crystal and ensure the crystal has dropped past both wire segments in the crystal holder.



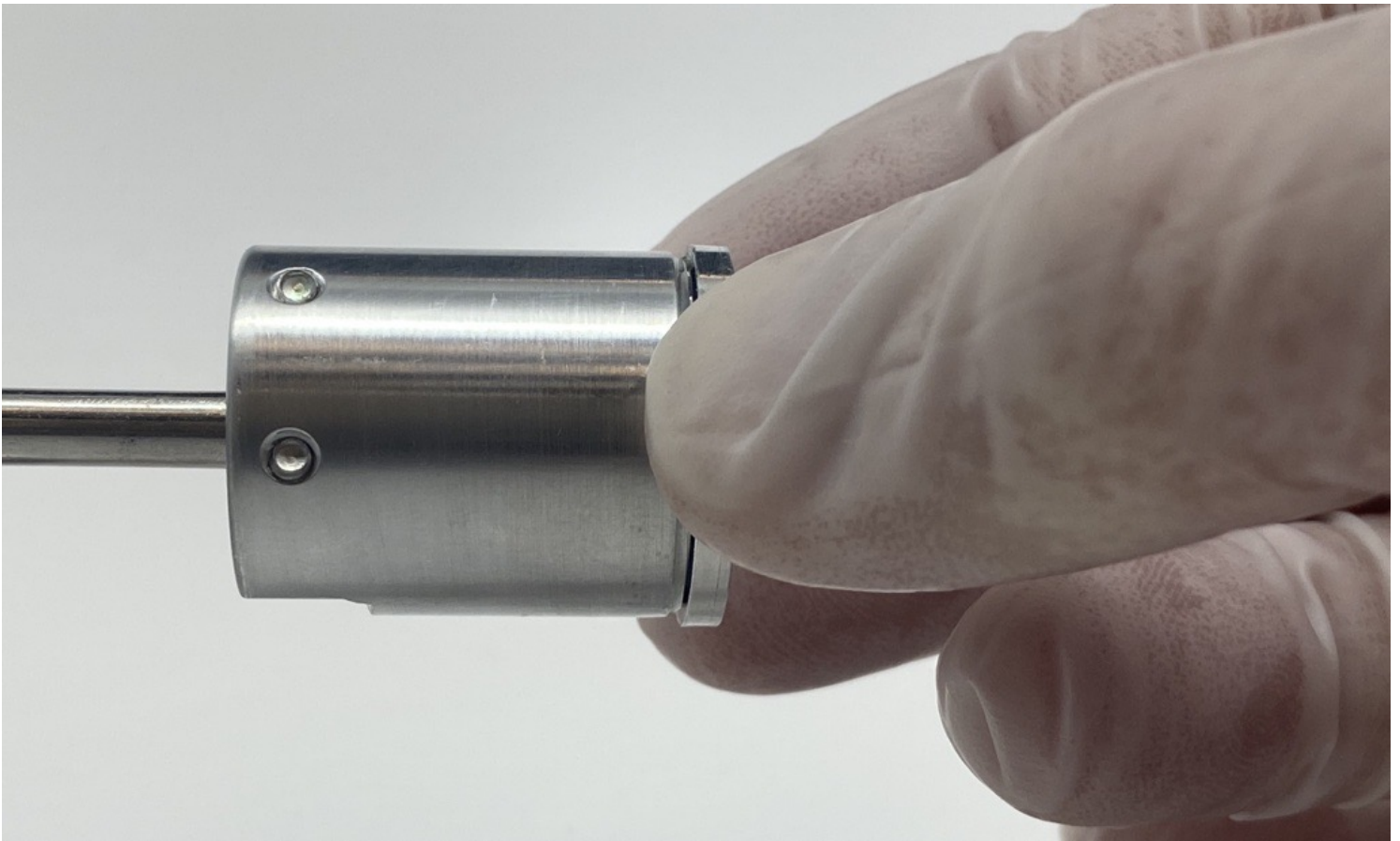
6. Replace the ceramic retainer. Initially orient the ceramic retainer at an angle to display the spring wire segments in the crystal holder. Avoid using excessive force when handling the ceramic retainer to prevent breakage. Avoid rotating the ceramic retainer after installation, to prevent scratching the crystal electrode.



7. Release the crystal snatcher with a slight side-to-side rocking motion. Using the backside of the crystal snatcher, push the ceramic retainer to ensure it is completely seated.



8. Reinstall the crystal holder into the sensor body by pressing the crystal holder straight in, making certain that the crystal holder is completely seated in the sensor body. Some force may be required.



9. Install the QCM sensor back on the foreline with a KF40 clamp and the appropriate centering ring.