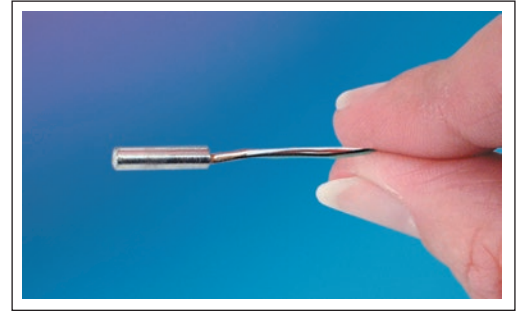




## CRYOGENIC STANDARD VERSION MINIATURE PRESSURE TRANSDUCER

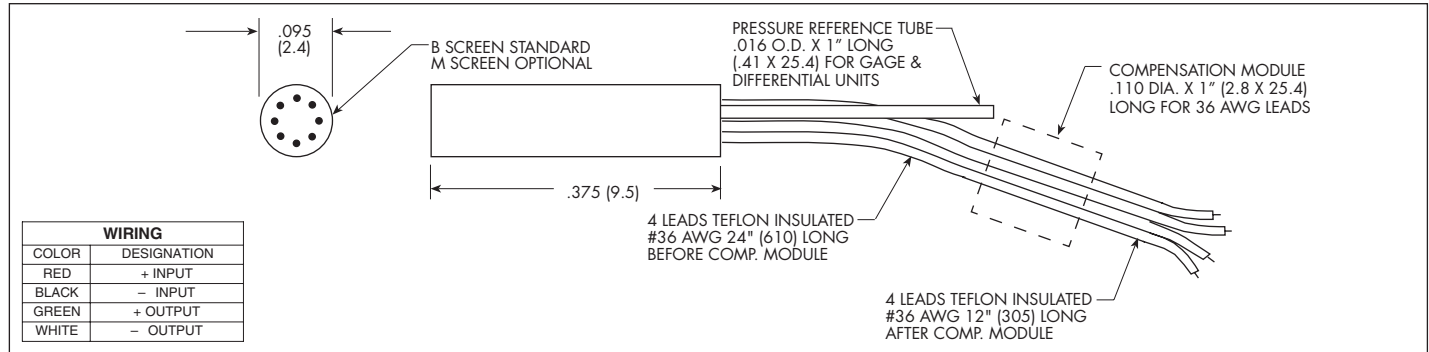
### CCQ-093 SERIES

- Cryogenic Operation -320°F to +250°F (-195.5°C to +120°C)
- Ideal For Turbine Engine Probes and Wind Tunnel Applications
- 50 Year History Of Successful Applications In Wind Tunnel And Flight Test Programs
- Patented Silicon on Silicon Integrated Sensor **VIS**<sup>®</sup>
- Size And Shape Ideal For Incorporation In User Designed Probes
- Excellent Static And Dynamic Performance



Similar in design to the XCQ-093 Series, these sensors are specifically intended for use in cryogenic wind tunnels. The extremely good low temperature stability of Kulite Sensors make them ideally suited for this application.

Kulite recommends the [KSC-2](#) signal conditioner to maximize the measurement capability of the CCQ-093 transducer.



|                      | 0.35<br>5   | 0.7<br>10  | 1.7<br>25            | 3.5<br>50                                 | 7<br>100             | 17<br>250             | 35<br>500            | 70 BAR<br>1000 PSI   |                      |
|----------------------|---|--|----------------------|---|----------------------|-----------------------|----------------------|----------------------|----------------------|
| <b>INPUT</b>         | Pressure Range  | Absolute, Gage, Differential   |                      | Absolute, Gage, Sealed Gage, Differential |                      | Absolute, Sealed Gage |                      |                      |                      |
|                      | Operational Mode  | Absolute, Gage, Differential   |                      | Absolute, Gage, Sealed Gage, Differential |                      | Absolute, Sealed Gage |                      |                      |                      |
|                      | Over Pressure   | 2 Times Rated Pressure   |                      |   |                      |                       |                      |                      |                      |
|                      | Burst Pressure  | 3 Times Rated Pressure   |                      |   |                      |                       |                      |                      |                      |
|                      | Pressure Media  | Most Nonconductive, Noncorrosive Liquids or Gases                                  |                      |   |                      |                       |                      |                      |                      |
|                      | Rated Electrical Excitation                             | 10 VDC   |                      |   |                      |                       |                      |                      |                      |
|                      | Maximum Electrical Excitation                           | 12 VDC   |                      |   |                      |                       |                      |                      |                      |
|                      | Input Impedance   | 1000 Ohms (Min.)   |                      |   |                      |                       |                      |                      |                      |
| <b>OUTPUT</b>        | Output Impedance  | 1000 Ohms (Nom.)   |                      |   |                      |                       |                      |                      |                      |
|                      | Full Scale Output (FSO)                                 | 100 mV (Nom.)  |                      |   |                      |                       |                      |                      |                      |
|                      | Residual Unbalance                                      | ± 5 mV (Typ.)  |                      |   |                      |                       |                      |                      |                      |
|                      | Combined Non-Linearity, Hysteresis and Repeatability    | ± 0.1% FSO BFSL (Typ.), ± 0.5% FSO (Max.)  |                      |   |                      |                       |                      |                      |                      |
|                      | Resolution  | Infinitesimal  |                      |   |                      |                       |                      |                      |                      |
|                      | Natural Frequency of Sensor Without Screen (KHz) (Typ.) | 150  | 175                  | 240                                       | 300                  | 380                   | 550                  | 700                  | 1000                 |
|                      | Acceleration Sensitivity % FS/g Perpendicular           | 1.5x10 <sup>-3</sup>   | 1.0x10 <sup>-3</sup> | 5.0x10 <sup>-4</sup>                      | 3.0x10 <sup>-4</sup> | 1.5x10 <sup>-4</sup>  | 1.0x10 <sup>-4</sup> | 6.0x10 <sup>-5</sup> | 4.5x10 <sup>-5</sup> |
|                      | Insulation Resistance                                   | 100 Megohm Min. @ 50 VDC   |                      |   |                      |                       |                      |                      |                      |
| <b>ENVIRONMENTAL</b> | Operating Temperature Range                             | -320°F to +250°F (-195.5°C to +120°C)  |                      |   |                      |                       |                      |                      |                      |
|                      | Compensated Temperature Range                           | -300°F to +100°F (-184.4°C to +37.5°C)   |                      |   |                      |                       |                      |                      |                      |
|                      | Thermal Zero Shift                                      | ± 1% FS/100°F (Typ.)   |                      |   |                      |                       |                      |                      |                      |
|                      | Thermal Sensitivity Shift                               | ± 1% /100°F (Typ.)   |                      |   |                      |                       |                      |                      |                      |
|                      | Linear Vibration  | 10-2,000 Hz Sine, 100g. (Max.)   |                      |   |                      |                       |                      |                      |                      |
| Mechanical Shock     | 20g half Sine Wave 11 msec. Duration                    |  |                      |   |                      |                       |                      |                      |                      |
| <b>PHYSICAL</b>      | Electrical Connection                                   | 4 Leads 36 AWG 36" Long  |                      |   |                      |                       |                      |                      |                      |
|                      | Weight  | .4 Gram (Nom.) Excluding Module and Leads  |                      |   |                      |                       |                      |                      |                      |
|                      | Pressure Sensing Principle                              | Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon |                      |   |                      |                       |                      |                      |                      |

Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (G) Continuous development and refinement of our products may result in specification changes without notice. Copyright © 2014 Kulite Semiconductor Products, Inc. All Rights Reserved. Kulite miniature pressure transducers are intended for use in test and research and development programs and are not necessarily designed to be used in production applications. For products designed to be used in production programs, please consult the factory.