Series 501 Hornet™ Cold Cathode Miniature-Ionization Vacuum Gauge

Wide measurement range
1 x 10⁻⁹ to 1 x 10⁻¹ Torr
1.3 x 10⁻⁹ to 1.3 x 10⁻² mbar
1.3 x 10⁻⁷ to 1.3 Pa

Double-Inverted Magnetron Cold Cathode sensor, rugged and compact metal construction

Double-Inverted Magnetron improves sensor sensitivity and performance

Improved sensor signal to noise ratio provides stable and optimal performance throughout the measurement range

Built-in digital display, set-point relay, log-linear analog output and RS485 serial communication, are all standard features of the Hornet™

Bright digital OLED graphical display provides for a wide viewing angle

**CCM501 sensor**

The CCM501 Hornet™ Cold Cathode ionization gauge sensor assembly is constructed of a compact metal design resulting in a simple yet rugged sensor suitable for numerous industrial applications.

The Double-Inverted magnetron design places two opposing magnetic fields over the anode (sensor) to enhance the generations of ions. This nearly doubles the electron currents, maximizing the generation of ions and improving sensitivity and signal-to-noise ratio.

The sensor assembly can be easily disassembled and cleaned allowing long term use with minimal down time.

**CCM501 Built-in Controller & Display**

The CCM501 Hornet ionization vacuum gauge module provides the basic signal conditioning required to turn the sensor into a complete vacuum pressure measurement instrument.

The built-in controller is offered with a standard bright OLED display providing full programmability and a convenient user interface for setup and operation of the vacuum gauge.

The standard CCM501 model also provides one analog output with two different scaling selections, one setpoint relay and RS485 serial communications. This provides great flexibility for various process control schemes.

**Lower cost without sacrificing quality or functionality**

InstruTech has made numerous design enhancements to reduce cost and improve performance. The electrometer auto zeroes to ensure that the readings are not subject to temperature drift. This eliminates the need for unnecessary and expensive circuitry which further reduces the cost.

Anode voltage and ion current can be monitored in real time on the research screen. Sensitivity may be adjusted by the user.

Service screens allow monitoring of sensor operation. Error messages will be displayed for all fault conditions.

The display enables the user to select from 16 commonly used gases eliminating the need to apply correction factors to the displayed pressure readings.

Setpoint relay can be manually toggled to test for correct external circuit wiring.

The combination of superior sensor design and enhanced signal processing provides optimal and stable pressure readings over the entire measurement range from low to high vacuum.
Specifications

measurement range  \(1 \times 10^{-9} \text{ to } 1 \times 10^{-2} \text{ Torr} \) / \(1.3 \times 10^{-9} \text{ to } 1.3 \times 10^{-2} \text{ mbar} \) / \(1.3 \times 10^{-7} \text{ to } 1.3 \text{ Pa}\)

accuracy - \( \text{N}_2 \) (typical) \(1 \times 10^{-8} \text{ to } 1 \times 10^{-2} \text{ Torr}; \pm 30\% \text{ of reading}\)

repeatability - (typical) \(\pm 5\% \text{ of reading}\)

display bright OLED display, 2 digits plus 1 digit exponent, user-selectable Torr, mbar, or Pa

materials exposed to gases 304 stainless steel, ceramic, Viton® O-ring

sensitivity factory preset to 10 Torr \(-1\) (also user adjustable between 2 to 99)

overpressure protection gauge turns off at factory default setting of 1 \( \times 10^{-2} \text{ Torr}\)

internal gauge volume 1.965 in\(^3\) (32.2 cm\(^3\))

temperature operating; 0 to +40 °C storage; -40 to +70 °C

humidity 0 to 95% relative humidity, non-condensing

weight 1.7 lb. (0.77 kg) with NW25 KF flange

housing (electronics) aluminum extrusion

mounting orientation any

serial communications RS485 - ASCII protocol; minimum command interval: 50 ms

analog output user selectable scaling; log-linear 0 to 8 Vdc, 1 V/decade or 1.8 to 8.7 Vdc, 0.8 V/decade

setpoint relay one single-pole, double-throw (SPDT), 1 A at 30 Vdc resistive, or ac non-inductive

status outputs sensor on/off status is determined by display messages, via open collector transistor or RS485 serial communications

input signal sensor enable (anode voltage turned on) is set by continuity to ground using digital input, RS485 commands or manually using front panel programming soft-keys

input power 20 to 28 Vdc, 7.2 W protected against power reversal and transient over-voltages

connectors 9-pin D-sub male for analog and 15-pin D-sub male for RS485


environmental RoHS compliant

Ordering Information

<table>
<thead>
<tr>
<th>Fitting</th>
<th>dimension A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 in. Tube</td>
<td>2.56 in. (65 mm)</td>
</tr>
<tr>
<td>NW16KF</td>
<td>2.63 in. (67 mm)</td>
</tr>
<tr>
<td>NW25KF</td>
<td>2.63 in. (67 mm)</td>
</tr>
<tr>
<td>NW40KF</td>
<td>2.82 in. (72 mm)</td>
</tr>
<tr>
<td>1 1/3 in. Mini-CF</td>
<td>2.11 in. (54 mm)</td>
</tr>
<tr>
<td>2 3/4 in. Conflat®</td>
<td>2.63 in. (67 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCM501 Fittings / Flanges</th>
<th>Cold Cathode Module</th>
<th>Replacement / Spare Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 in. Tube (1 in. O.D. O-ring compression)</td>
<td>CCM501TD</td>
<td>CC5T</td>
</tr>
<tr>
<td>NW16KF</td>
<td>CCM501BD</td>
<td>CC5B</td>
</tr>
<tr>
<td>NW25KF</td>
<td>CCM501CD</td>
<td>CC5C</td>
</tr>
<tr>
<td>NW40KF</td>
<td>CCM501DD</td>
<td>CC5D</td>
</tr>
<tr>
<td>1 1/3 in. Mini-CF/NW16CF Mini-Conflat®</td>
<td>CCM501ED</td>
<td>CC5E</td>
</tr>
<tr>
<td>2 3/4 in. CF / NW35CF Conflat®</td>
<td>CCM501FD</td>
<td>CC5F</td>
</tr>
</tbody>
</table>