



**InstruTech®**

**Series 502 Hornet™ Cold Cathode Inverted Magnetron Miniature-Ionization Vacuum Gauge**

**Wide measurement range**  
 7.6 x 10<sup>-10</sup> to 7.6 x 10<sup>-3</sup> Torr  
 1 x 10<sup>-9</sup> to 1 x 10<sup>-2</sup> mbar  
 1 x 10<sup>-7</sup> to 1 Pa

**Patented ultra-low magnetic stray field expands applications suitability**

**Prolonged lifetime in harsh environments**

**Built-in Controller with digital input sensor control and log-linear analog output**

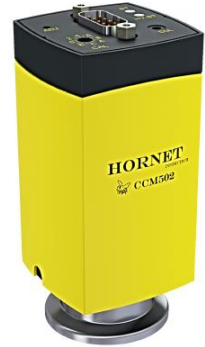
**Unique interchangeable dual chamber sensor design provides for virtually zero maintenance and easy sensor replacement**

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

**Corrosion resistant feed through**

**Compact small footprint**

**Reliable fast sensor(anode) activation**



**CCM502 Hornet**

The CCM502 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. Additionally, a sensor activation aid mounted on the anode improves the time it takes to activate the cold cathode sensor.

The patented ultra-low magnetic stray field design expands the use of this technology beyond the traditional cold cathode applications. i.e., the CCM502 can be used in combination with instruments sensitive to external magnetic fields generated by conventional cold cathode gauges. A unique interchangeable dual chamber inside the sensor assembly avoids cleaning cycles and reduces maintenance, making the Hornet 502 the most robust and economical vacuum gauge of its kind.

The low current collector option is recommended for use in heavy gases such as Argon to prevent self-sputtering while the high current version is recommended for gases such as N<sub>2</sub> /air, etc.

The CCM502 Hornet ionization vacuum gauge module provides the basic signal conditioning required to turn the sensor into a complete vacuum pressure measurement instrument.

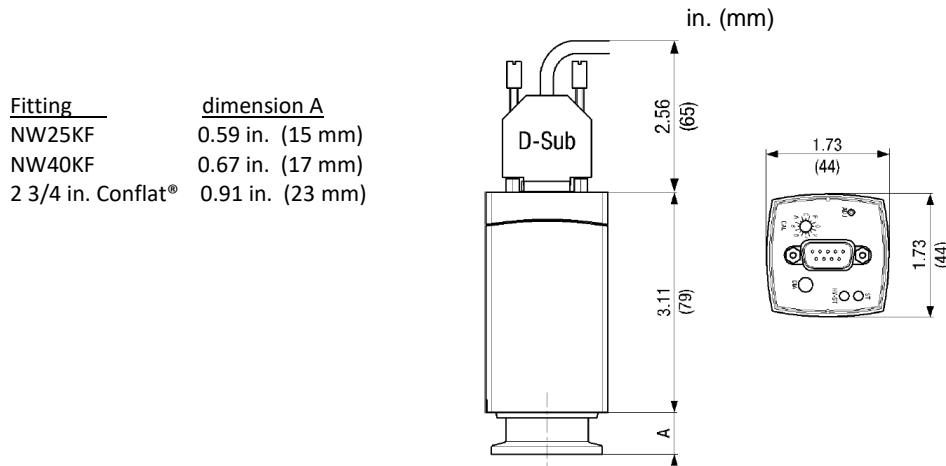
The built-in controller provides digital input control capability for sensor activation. Additionally, it provides one log-linear analog output for the measured pressure and a sensor status output providing flexibility for various process control schemes.

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.

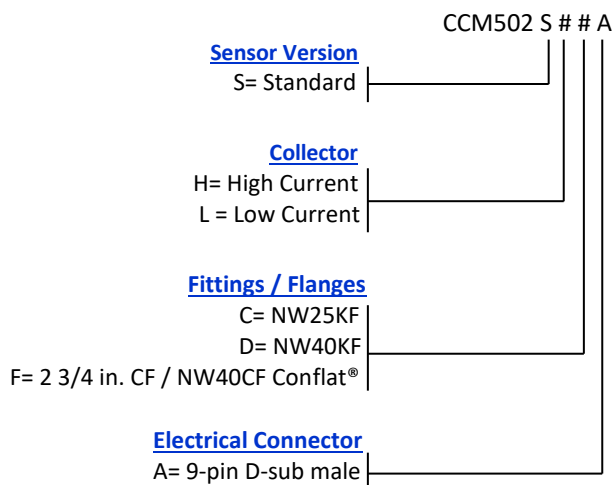
**Specifications**

measurement range	7.6 x 10 <sup>-10</sup> to 7.6 x 10 <sup>-3</sup> Torr / 1 x 10 <sup>-9</sup> to 1 x 10 <sup>-2</sup> mbar / 1 x 10 <sup>-7</sup> to 1 Pa
accuracy - N <sub>2</sub> (typical)	7.6 x 10 <sup>-9</sup> to 7.6 x 10 <sup>-3</sup> Torr: ± 30% of reading
repeatability - (typical)	7.6 x 10 <sup>-9</sup> to 7.6 x 10 <sup>-3</sup> Torr: ± 5% of reading
materials exposed to gases	anode: molybdenum others: Ni alloy, Al <sub>2</sub> O <sub>3</sub> , stainless steel, glass
internal gauge volume	1.391 in <sup>3</sup> (22.8 cm <sup>3</sup> )
admissible pressure	145 psi, 10 bar absolute (limited to inert gases < 50 °C)
temperature	operating: + 5 to + 55 °C storage: -40 to + 70 °C
bakeout temperature (at flange)	150 °C (sensor only - electronics removed)
humidity (30 days a year)	
7.6x10 <sup>-8</sup> ... 7.6 x10 <sup>-3</sup> Torr	0 to 95% relative humidity, non-condensing
7.6x10 <sup>-9</sup> ... 7.6 x10 <sup>-3</sup> Torr	0 to 70% relative humidity, non-condensing
weight	0.61 lb. (0.28 kg) with NW25 KF flange
housing (electronics)	aluminum extrusion
mounting orientation	any
input signal	sensor enable (anode voltage turned on) is set by continuity to ground

analog output	log-linear 0 to 8 Vdc, 1 V/decade
error signal	analog output switches to $\geq 10$ V
response time	
$p = 7.6 \times 10^{-9}$ Torr	$\sim 1$ sec
$p > 7.6 \times 10^{-7}$ Torr	$< 100$ msec
status output	sensor on/off status is determined by open collector transistor (ground emitter) rated at 30 V max. $V_{CE}$ , 100 mA max. $I_C$ . Transistor off = Sensor off, Transistor on = Sensor on
input power	14.5 to 30 Vdc, 2 W protected against power reversal and transient over-voltages
supply voltage ripple	$\leq 1$ Vp-p
high voltage in measuring chamber	operating voltage (anode): $\leq 3.3$ KV sensor activation voltage (anode): $\leq 4.5$ KV
current in measuring chamber	low current collector version: $\leq 100 \mu A$ high current collector version: $\leq 500 \mu A$
connector	9-pin D-sub male
CE compliance	EMC (EN61000-6-2, EN61000-6-3, EN61010-1, EN61326-1)
environmental	RoHS compliant



Ordering Information	CCM502 Part Number	Spare Parts / Accessories Part Numbers
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CCM502 Spare Sensor, NW25KF	CC5SC
CCM502 Spare Sensor, NW40KF	CC5SD
CCM502 Spare Sensor, 2 3/4 in. CF / NW40CF Conflat	CC5SF
Spare Ionization Chamber	IL002588
Sensor (anode) activation aid (set of 10 pcs)	IL002587
Tool set for removing/installing sensor activation aid	IL002586
Centering ring with fine filter, NW25KF	IL002585

Example: CCM502SHDA (CCM502 with standard sensor, high current collector, NW40KF fitting, 9-pin D-Sub connector)



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