



**InstruTech®**

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

**Wide measurement range**  
 $7.6 \times 10^{-10}$  to  $7.6 \times 10^{-3}$  Torr  
 $1 \times 10^{-9}$  to  $1 \times 10^{-2}$  mbar  
 $1 \times 10^{-7}$  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. This novel magnetic field design also allows the CCM502 *Hornet* to be used in environments where strong magnetic fields are present.

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.

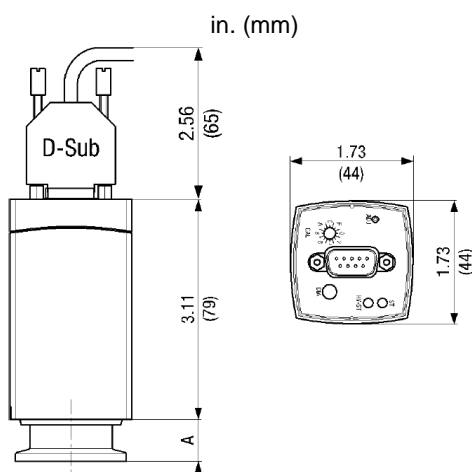
The combination of superior sensor design and enhanced signal processing provides optimal and stable pressure readings over the entire measurement range from low to high vacuum.

### ***Specifications***

measurement range	$7.6 \times 10^{-10}$ to $7.6 \times 10^{-3}$ Torr / $1 \times 10^{-9}$ to $1 \times 10^{-2}$ mbar / $1 \times 10^{-7}$ to 1 Pa	
accuracy - N <sub>2</sub> (typical)	$7.6 \times 10^{-9}$ to $7.6 \times 10^{-3}$ Torr: ± 30% of reading	
repeatability - (typical)	$7.6 \times 10^{-9}$ to $7.6 \times 10^{-3}$ Torr: ± 5% of reading	
materials exposed to gases	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)		
$7.6 \times 10^{-8}$ ... $7.6 \times 10^{-3}$ Torr	0 to 95% relative humidity, non-condensing	
$7.6 \times 10^{-9}$ ... $7.6 \times 10^{-3}$ 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

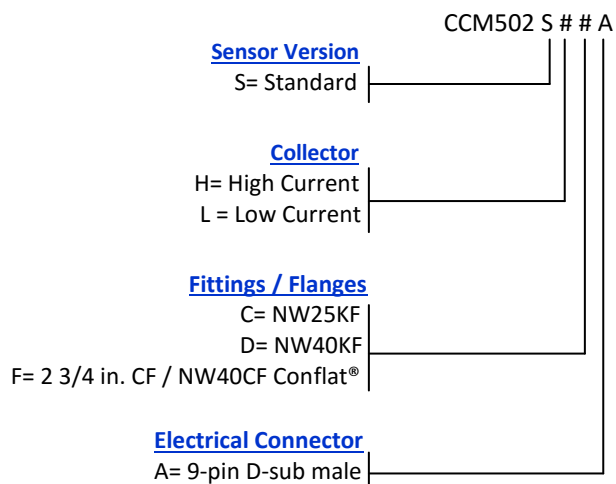
Fitting	dimension A
NW25KF	0.59 in. (15 mm)
NW40KF	0.67 in. (17 mm)
2 3/4 in. Conflat®	0.91 in. (23 mm)



### Ordering Information

### CCM502 Part Number

### Spare Parts / Accessories Part Numbers



CCM502 Spare Sensor, NW25KF	CC5SC
CCM502 Spare Sensor, NW40KF	CC5SD
CCM502 Spare Sensor, 2 3/4 in. CF / NW40CF Conflat	CC5SF
Spare Ionization Chamber	002588
Sensor (anode) activation aid (set of 10 pcs)	002587
Tool set for removing/installing sensor activation aid	002586
Centering ring with fine filter, NW25KF	002585

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



**InstruTech®**

1475 S. Fordham Street  
Longmont, CO 80503  
USA

Phone +1-303-651-0551  
Fax +1-303-678-1754  
E-mail [info@instrutechinc.com](mailto:info@instrutechinc.com)  
Web [www.instrutechinc.com](http://www.instrutechinc.com)