



InstruTech®

Series 701 Wasp™ Cold Cathode Inverted Magnetron / Pirani Miniature Full Range Vacuum Gauge

Wide measurement range

7.6 x 10⁻¹⁰ to 760 Torr
 1 x 10⁻⁹ to 1000 mbar
 1 x 10⁻⁷ Pa to 101 kPa

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

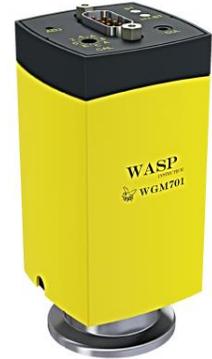
Unique interchangeable dual chamber sensor design provides for virtually zero maintenance and easy sensor replacement

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



WGM701 Wasp

The WGM701 Wasp™ vacuum gauge module combines Cold Cathode Inverted Magnetron technology with a pirani sensor to provide reliable and continuous pressure measurements from atmosphere to high vacuum.

The 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 applications when using a cold cathode technology. i.e., the WGM701 can be used in combination with instruments sensitive to external magnetic fields generated by conventional vacuum gauges utilizing a cold cathode sensor. This novel magnetic field design also allows the gauge to be used in environments where strong magnetic fields are present.

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 N₂ /air.

A unique interchangeable dual chamber inside the sensor assembly avoids cleaning cycles and reduces maintenance, making the WGM701 the most robust and economical vacuum gauge of its kind.

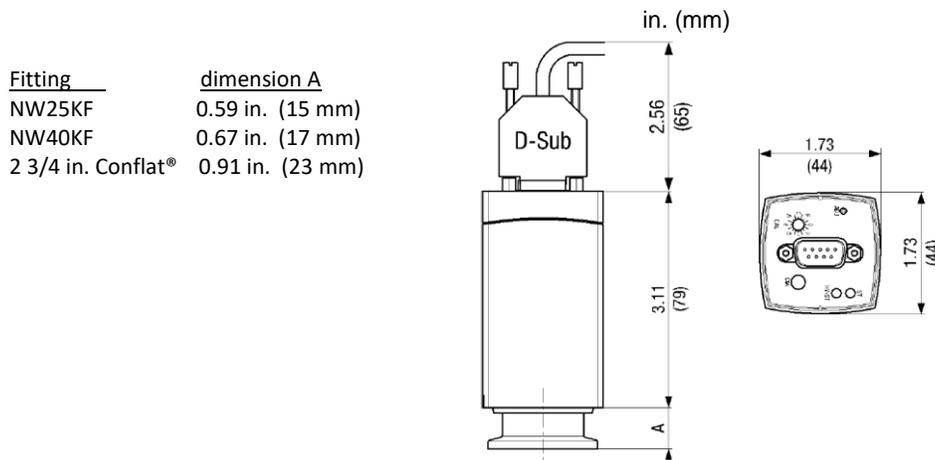
The WGM701 provides the basic signal conditioning required to turn the sensor into a complete vacuum pressure measurement instrument. The built-in controller provides a log-linear analog output for the measured pressure as well as a sensor status output. The cold cathode sensor is automatically activated once the pressure measured by the pirani sensor has indicated a low enough pressure level of 7.6 x 10⁻³ Torr.

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

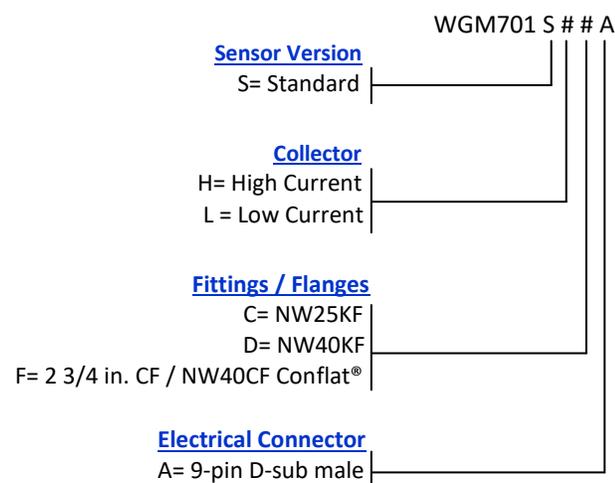
Specifications

measurement range	7.6 x 10 ⁻¹⁰ to 760 Torr / 1 x 10 ⁻⁹ to 1,000 mbar / 1 x 10 ⁻⁷ Pa to 101 kPa
accuracy - N ₂ (typical)	7.6 x 10 ⁻⁹ to 7.6 x 10 ⁻³ Torr: ± 30% of reading 7.6 x 10 ⁻³ to 75 Torr: ± 15% of reading 75 to 760 Torr: ± 50 % of reading
repeatability - (typical)	7.6 x 10 ⁻⁹ to 75 Torr: ± 5% of reading
materials exposed to gases	pirani sensor: tungsten cold cathode anode: molybdenum others: Ni alloy, Al ₂ O ₃ , stainless steel, glass
internal gauge volume	1.391 in ³ (22.8 cm ³)
admissible pressure	145 psi, 10 bar abs (limited to inert gases < 50 °C)
temperature	operating: + 5 to + 55 °C storage: -40 to + 70 °C
humidity (30 days a year)	
7.6x10 ⁻⁸ ... 7.6 x10 ⁻³ Torr	0 to 95% relative humidity, non-condensing
7.6x10 ⁻⁹ ... 7.6 x10 ⁻³ Torr	0 to 70% relative humidity, non-condensing

bakeout temperature (at flange)	150 °C (sensor only - electronics removed)
weight	0.61 lb. (0.28 kg) with NW25 KF flange
housing (electronics)	aluminum extrusion
mounting orientation	any
analog output	log-linear 0.5 to 7 Vdc, 0.5 V/decade
error signal	analog output switches to ≥ 10 V
response time:	$p = 7.6 \times 10^{-9}$ Torr ~ 1 sec $p > 7.6 \times 10^{-7}$ Torr < 100 msec
status output	cold cathode sensor on/off status is determined by open collector transistor (ground emitter) rated at 30 V max. V_{CE} , 100 mA I_C max. 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	≤ 1 Vp-p
high voltage in measuring chamber	operating voltage (anode): ≤ 3.3 KV sensor activation voltage (anode): ≤ 4.5 KV
current in measuring chamber	low current collector version: ≤ 100 μ A high current collector version: ≤ 500 μ 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	WGM701 Part Number	Spare Parts / Accessories Part Numbers
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WGM701 Spare Sensor, NW25KF	WG7SC
WGM701 Spare Sensor, NW40KF	WG7SD
WGM701 Spare Sensor, 2 3/4 in. CF / NW40CF Conflat	WG7SF
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: WGM701SHDA (WGM701 with standard sensor, high current collector, NW40KF fitting, 9-pin D-Sub connector)



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