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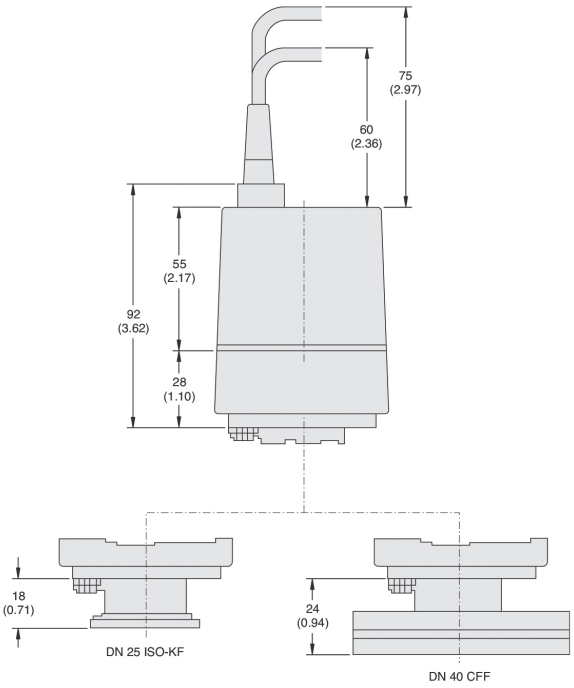
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Data Sheet

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FRG-700/FRG-702 Full Range Pirani Inverted Magnetron Gauges





Dimensions: millimeters (inches)

The Agilent FRG-700 gauge is a full range gauge that provides two measuring technologies in a single, compact and economic package to measure process and base pressure from 3.8 x 10^{-9} Torr to atmosphere (5 x 10^{-9} to 1013 mbar). The single, compact unit with one logarithmic analog output signal, significantly reduces the complexity of installation, setup, and integration. The benefits of this combination gauge are reduced cost and a marked reduction in valuable space requirements.

The FRG-702 is the all-metal version of the FRG-700, incorporating a metal-sealed feedthrough. It can be operated at higher temperatures (max. 150°C at flange) than the FRG-700 (max. 55°C at flange).

Features	Benefits
Combination gauge – inverted magnetron and Pirani, with wide measurement range from 5 x 10^{-9} mbar to atmosphere	Measures 9 decades using 1 compact gauge, 1 connection, 1 sensor cable and 1 A/D converter; reduces complexity and cost
No filament to burn out; easy to clean	Low maintenance and reduced cost
Excellent ignition properties	Rapid start-up
Can be operated by a Agilent AG Turbo Pump Controller, TPS-Compact or TPS-Mini	Greatly reduces cost and space requirements
LED indicator for high voltage on	Provides quick visual indication of status

Technical Specifications

Measurement range	5 x 10^{-9} to 1000 mbar (3.8 x 10^{-9} to 760 Torr)			
Accuracy	±30% of reading, typical			
Repeatability	±5% of reading, typical			
Mounting orientation	Any			
Admissible temperature	Operation (ambient) 5 to 55 °C	Storage −40 to +65 °C	Bake-out* (w/o electronics) 1 50 °C	Filament temperature (Pirani) 120 °C
Supply voltage	At gauge 15 to 30 VDC	Ripple ≤1 Vpp	Power consumption ≤2 W	
Output signal (measurement signal)	Voltage range 0 to 10.5 V	Measurement range 1.82 to 8.6 V		
Voltage vs. pressure	0.6 V/decade, logarithmic			
Error signal	<0.5 V (no supply), >9.5 V (Pirani sensor, filament rupture)			
Minimum loaded impedance	10 kΩ, short-circuit proof			
Response time	<10 ms (@ p> 10^{-6} mbar), ≈1000 ms (@ p= 10^{-8} mbar)			
Identification gauge	85 kΩ, referenced to supply common			
Status	Pirani-only mode 0 V (low)	Combined Pirani/cold cathode mode 15 V to 30 (high)	LED LED green high voltage on	
Electrical connection	RJ45/FCC 68, 8 pole female			
Sensor cable	8 poles plus shielding			
Maximum cable length	≤50 m			
Operating voltage/current	≤3.3 kV/≤500 A			
Materials exposed to vacuum	FRG-700 - SS, Al_2O_3, FPM75, Mo, Ni, Au, W0 to 10.5 V	FRG-702 - SS, Al_2O_3, FPM75, Mo, Ni, Au, W		
Internal volume	≈ 20 cm^3			
Weight	FRG-700 - DN 25 ISO-KF ≈700g, DN 40 CF-F (2.75 in CFF) ≈980 g FRG-702 - DN 25 ISO-KF ≈730g, DN 40 CF-F (2.75 in CFF) ≈1010 g			
Standards	EN 61000-6-2, EN 61000-6-3, EN 61010-1			

* Without electronics and magnetic shielding.

Ordering Information

Description	Part Number
FRG-700 Pirani/IMG Combination Gauge, DN 25 ISO-KF	FRG700KF25
FRG-700 Pirani/IMG Combination Gauge, DN 40 CFF (2.75 in CFF)	FRG700CF35
FRG-702 Pirani/IMG Combination Gauge, DN 25 ISO-KF, All Metal – bakeable	FRG702KF25
FRG-702 Pirani/IMG Combination Gauge, DN 40 CFF (2.75 in CFF), All Metal – bakeable	FRG702CF35
Accessories	
FRG-700 Gauge Maintenance Kit	FRG700MAINT
FRG-700 Gauge Repair Kit	FRG700REPR
FRG-702 Gauge Maintenance Kit	FRG702MAINT
FRG-702 Gauge Repair Kit	FRG702REPR
FRG-700/702 Magnetic Shielding	FRG700MSHD
Active gauge cable for Turbo AG Controllers, TPS Mini/Compact, 3 meters	9699960
Active gauge cable for Turbo AG Controllers, TPS Mini/Compact, 5 meters	9699961

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https://www.agilent.com/en/product/vacuum-technologies/vacuum-measurement/active-gauges/frg-700-702-full-range-pirani-inverted-magnetron-gauge

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