

# Agilent FRG-705 and FRG-707 Full Range Pirani Inverted Magnetron Gauge



## Product description

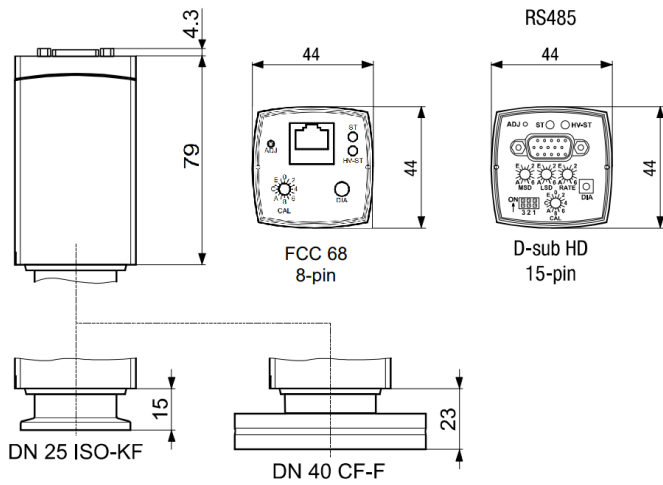
The Agilent FRG-705 and FRG-707 gauges combine the Agilent Pirani and inverted magnetron sensor into a single compact design that provides a measuring capability from atmosphere to  $7.6 \times 10^{-10}$  Torr ( $1.0 \times 10^{-9}$  mbar).

The innovative ultralow magnetic stray field makes the gauges suitable for a vast range of applications. The dual ionization chamber design reduces contamination and provides a longer lifespan. The FRG-705 and FRG-707 gauges are available with analog output signal and RS485 serial communication.

### Product features

- Ultralow magnetic stray field
- Dual ionization chamber—longer service life
- Fast ignition
- Easy maintenance
- Compact size
- RS485 digital interface (optional)

## Product outline drawing



## Technical specifications

Parameter		Value
Measurement Range (N <sub>2</sub> , Air)		1.0 × 10 <sup>-9</sup> to 1,000 mbar (7.6 × 10 <sup>-10</sup> Torr to atm)
Accuracy	1 × 10 <sup>-8</sup> ~ 100 mbar	± 30%
	100 ~ 1,000 mbar	± 50%
Repeatability	100 ~ 1,000 mbar	± 5%
Temperature	Operation (ambient)	5 to 55 °C
	Storage	-40 to 70 °C
	Bake-out at flange (without electronics)	≤ 150 °C
	Filament temperature	120 °C
Supply Voltage	At gauge	14.5 ~ 30 VDC
	Ripple	≤ 1 Vpp
	Power consumption	≤ 3 W
	Fuse to be connected	≤ 1 AT

Parameter		Value	
High Voltage (in the Measuring Chamber)		Operating voltage ≤ 3.3 kV	Ignition voltage ≤ 4.5 kV
Current (in the Measuring Chamber)		Low current version, FRG-705 ≤ 130 µA	High current version, FRG-707 ≤ 380 µA
RS485	Baud rates	9.6/19.2/38.4/57.6 kbaud	
	Address	2 switches (address 00 to 255)	
	Digital functions	Read pressure, select units: Torr, mbar, Pa, micron counts. Monitor gauge status, detailed alarm and warning information, safe state allows definition of behavior in case of error.	
Output Signal (Measurement Signal)		Measurement range 1.4 to 8.6 V	
Step Response Time	p > 10 <sup>-6</sup> mbar	< 100 ms	
	1 × 10 <sup>-6</sup> ≤ p ≤ 1 × 10 <sup>-8</sup> mbar	≈ 1 s	
Materials Exposed to Vacuum		W, Ni alloy, Al <sub>2</sub> O <sub>3</sub> , glass, stainless-steel	
Mounting Orientation		Any	
Degree of Protection		IP40	
Internal Volume		DN25 ISO-KF ≈ 20 cm <sup>3</sup>	DN40CF-F ≈ 25 cm <sup>3</sup>
Weight		DN25 ISO-KF < 280 g	DN40 CFF (2.75 in CFF) < 570 g
Gauge Controller		<ul style="list-style-type: none"> <li>- AGC-100</li> <li>- AGD-100</li> <li>- XGS-600*</li> <li>- Rack/remote AG controllers (74/84/304/305)*</li> </ul>	
Electrical Connection		FCC68, 8-pin, female	D-Sub HD, 15-pin, male (for RS485 version)
Sensor Cable		8-pin, shielded	15-pin, shielded (for RS485 version)
Maximum Cable Length		≤ 50 m (0.14 mm <sup>2</sup> /wire)	

\* Controller read down to 3.8 × 10<sup>-9</sup> mbar

## Ordering information

Description	Part Number	
FRG-705 Pirani/inverted magnetron combination full range gauge, low current, NW 25KF flange	FRG705KF25	
FRG-705 Pirani/inverted magnetron combination full range gauge, low current, DN 40 (2.75 in) ConFlat flange	FRG705CF35	
FRG-705 Pirani/inverted magnetron combination full range gauge, low current, with RS485, NW 25KF flange	FRG705KF25SI	
FRG-705 Pirani/inverted magnetron combination full range gauge, low current, with RS485, DN 40 (2.75 in) ConFlat flange	FRG705CF35SI	
FRG-707 Pirani/inverted magnetron combination full range gauge, high current, NW 25KF flange	FRG707KF25	
FRG-707 Pirani/inverted magnetron combination full range gauge, high current, DN 40 (2.75 in) ConFlat flange	FRG707CF35	
FRG-707 Pirani/inverted magnetron combination full range gauge, high current, with RS485 NW 25 KF flange	FRG707KF25SI	
FRG-707 Pirani/inverted magnetron combination full range gauge, high current, with RS485, DN 40 (2.75 in) ConFlat flange	FRG707CF35SI	
<b>Accessories</b>		
FRG-70x tool, for ignition kit	FRG700IGN	
FRG-705/707 mounting/removing tool for ignition aid	FRG705IGNT	
Cable for AGD-100 and AGC-100 controller, RJ45 plug	3 m	AGCCBL103
	5 m	AGCCBL105
	10 m	AGCCBL110
Cable for XGS-600 controller, RJ45 plug	3 ft	R35893003
	10 ft	R35893010
	25 ft	R35893025
	50 ft	R35893050
Cable to rack/remote AG controllers, RJ45 plug	3 m	9699960
	5 m	9699961
<b>Spare Parts</b>		
FRG-705/707 replacement sensor, NW 25KF flange, stainless-steel	FRG705KF25RS	
FRG-705/FRG-707 replacement sensor, 2.75 inches ConFlat flange (DN35), stainless-steel	FRG705CF35RS	
FRG-705/FRG-707 spare ion chamber, stainless-steel	FRG705IC	

## Contact information

### Americas

Toll free: +1 800 882 7426  
[vpl-customer@agilent.com](mailto:vpl-customer@agilent.com)

### Europe, Middle East, and Africa

Tel: +39 011 9979 369  
 Toll free: Tel: 800 234 234 00  
[vpt-customer@agilent.com](mailto:vpt-customer@agilent.com)

### Asia Pacific

[inquiry\\_lsca@agilent.com](mailto:inquiry_lsca@agilent.com)

### China

Landline phone: 800 06 778  
 Mobile phone: 400 06 778  
[contacts.vacuum@agilent.com](mailto:contacts.vacuum@agilent.com)

### Other countries

[vpt-customer@agilent.com](mailto:vpt-customer@agilent.com)

For more information, please contact your Agilent representative or visit [www.agilent.com/en/product/vacuum-technologies](http://www.agilent.com/en/product/vacuum-technologies) to chat live with a vacuum expert.

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