

631F

Heated (150°C or 200°C) Absolute Baratron® Capacitance Manometer



The 631F Baratron® capacitance manometer, operating at very high internal temperatures, minimizes the deposition of process byproducts within the sensor—nearly eliminating output drift caused by contamination. Its available operating temperatures are 150°C or 200°C, permitting use in the most demanding vacuum processes in semiconductor manufacturing, such as metal etching and nitride film chemical vapor deposition (CVD). Its new packaging reduces the amount of installation space needed by at least 40%, making it even easier to design into new systems or retrofit into existing equipment.

The 631F is completely self-contained, requiring only input power of $\pm 15\text{VDC}$ for operation. No separate electronics modules are used, which both reduces the amount of installation space needed and provides better performance

due to elimination of noise-generating interconnecting cables. Its Inconel® sensor offers extremely high resistance to corrosion, and its overpressure rating of 45 psia ensures good repeatability and stability regardless of the system operating conditions. The 631F high-performance analog electronics also include fail-safe overtemperature protection and LED status lamps to indicate its operating state. An internally-mounted set of two (2) UL-approved solid-state trip relays for pressure and one (1) UL-approved electro-mechanical relay for heater failure is also available, allowing the manometer to control external equipment or components. The pressure trip relays may be adjusted by the user independently at atmospheric pressure, eliminating the need for vacuum pumps during set point adjustment.

Product Features

- Sensor operating temperature of 150°C or 200°C
- All-Inconel capacitance sensor
- High 45 psia overpressure rating
- Optional internally-mounted process relays, solid-state
- Insensitive to gas composition
- Performance is unaffected by occasional pressure bursts



Key Benefits

- Compact design
- Long-term performance in nitride CVD, metal etch, and sterilizing processes
- Reduces installation space, and eliminates noise caused by interconnecting cables

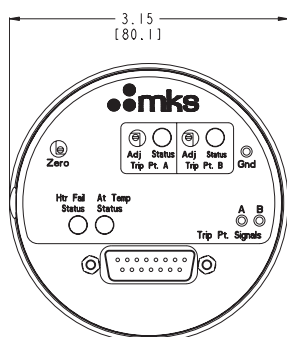
Specifications

Full Scale Pressure Ranges	1, 2, 10, 30, 100, and 1000 Torr (mmHg)
Accuracy	0.50% of Reading
Temperature Coefficients	
Zero	• 0.004% Full Scale/°C (0.008% Full Scale/°C for 1 Torr range) for 150°C products • 0.008% Full Scale/°C (0.016% Full Scale/°C for 1 Torr range) for 200°C products
Span	• 0.02% Reading/°C
Response Time	50 msec
Internal Volume	6.3 cm ³
Input Power	±15VDC (±5%) @ 1.0 amps max
Output Signal	Analog 0-10 VDC into >10 k Ω load
Warmup Time	4 hours or less
Operating Temperature Range	15 to 50°C
Ambient Airflow Requirements	
150°C Models	• 50 ft/min for ambient temperatures of 45 – 50°C
200°C Models	• 150 ft/min for ambient temperatures of 40 – 50°C
Resolution	0.01% of Full Scale
Overpressure Limit	45 psia
Materials Exposed to Process Gases	Inconel® or Incoloy® nickel alloys ¹
Trip Relay Option	• Two (2) internally mounted process pressure trip relays, solid state, independently adjustable by customer at atmospheric pressure from 0.5% to 100% of Full Scale range. Relay capacity of 0.20 amps @ 30 VDC. Comply with UL1577 requirements. • Option also includes one (1) UL-approved non-adjustable electromechanical relay for heater failure, rated at 1.0 amps @ 30 VDC.
Fittings	
Standard	• 0.50" (12 mm) OD tube
Optional	• Swagelok® 8 VCR® female, NW16-KF, 1.5" TriClover, and 2" TriClover
Compliance	CE ²

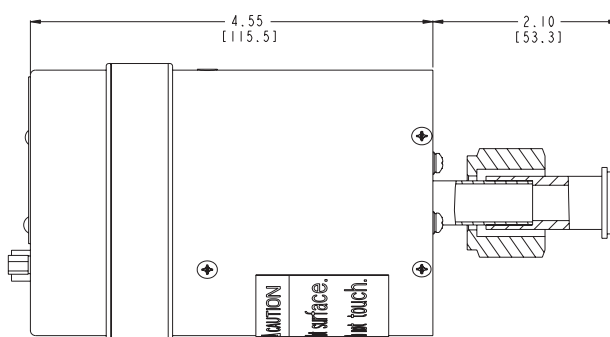
¹ Products with TriClover fittings have 316L stainless steel fittings.

² For CE compliance, the mating electrical connector must be properly grounded.

Dimensional Drawing



SCALE 8:5



SECTION A-A
FITTING CODE 8
8 VCR FEMALE SOCKET WELD GLAND
SAME LENGTH AS 631A

Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

Ordering Information

Ordering Code Example: GGGGXXUYZTRR	Code	Configuration
Model (GGGG)		
631F Absolute Manometer	631F	631F
Ranges (XX)		
1 2 10 30 100 1000	01 02 11 31 12 13	11
Units Of Measurements (U)		
Torr mbar Pascal	T M L	T
Fittings (Y)		
½" OD tube 8 VCR female, 1.58" (40.1 mm) port length 8 VCR female, 2.10" (53.3 mm) port length 8 VCR female, 2.50" (63.5 mm) port length NW16-KF ³ 1.5" TriClover 2.0" TriClover	A B 8 9 D M N	B
Accuracy (Z)		
Standard 0.50% of Reading	F	F
Temperature (T)		
150°C 200°C	H P	H
Integral Relays (RR)		
No relays Trip Point A Above Set Point, Trip Point B Above Set Point ⁴ Trip Point A Above Set Point, Trip Point B Below Set Point ⁴ Trip Point A Below Set Point, Trip Point B Below Set Point ⁴ Trip Point A Below Set Point, Trip Point B Above Set Point ⁴	None AA AB BB BA	AA

3. Contact MKS Applications Engineering for sealing material recommendations.

4. Unless otherwise specified, both relays will be set to activate at 50% of Full Scale.