



High Temperature Capacitance Manometer

TYPE 631C ABSOLUTE MANOMETER

The Baratron® Type 631C is the RoHS-compliant version of the high temperature capacitance manometer that MKS Instruments introduced more than 10 years ago. These devices operate at very high internal temperatures that minimize the deposition of process byproducts within the sensor, which nearly eliminates output drift caused by such 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). It is also an ideal choice for use in biopharmaceutical processing equipment such as lyophilizers and sterilizers that use steam to prevent bacteria growth. 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 Type 631C 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 Type 631C high-performance analog electronics also include fail-safe overtemperature protection and LED status lamps to indicate its operating state. An internally-mounted set of (2) UL-approved trip relays for pressure and (1) UL-approved relay for heater failure is also available, allowing the manometer to control external equipment or components.

Features & Benefits

- Operating temperature of 150°C or 200°C
- Self-contained electronics
- All-Inconel capacitance sensor
- High 45 psia overpressure rating
- Compact design
- Optional internally-mounted process relays (2)
- Long-term performance in nitride CVD, metal etch, and sterilizing processes
- Reduces installation space, and eliminates noise caused by interconnecting cables
- Insensitive to gas composition
- Performance is unaffected by occasional pressure bursts
- Reduces installation envelope by at least 40% over earlier versions
- Meets current EU requirements for RoHS (Restriction of Hazardous Substances)



Pressure
& Control
Measurement

WWW.MKSINSTR.COM

Specifications and Ordering Information

Full Scale Pressure Ranges Accuracy

Temperature Coefficients

Zero

Span

Response Time

Internal Volume

Input Power

Output Signal

Warmup Time

Operating Temperature Range

Ambient Airflow Requirements

150°C Models

200°C Models

Resolution

Overpressure Limit

Materials Exposed to Process Gases

Approvals & Certifications

Restriction of Hazardous Substances

Trip Relay Option

1, 2, 10, 30, 100, and 1000 Torr (mm Hg)

0.50% of Reading

0.004% FS/°C (0.008% FS/°C for 1 Torr range) for 150°C products;
0.008% FS/°C (0.016% FS/°C for 1 Torr range) for 200°C products
0.02% Reading/°C

50 msec

6.3 cm³

± 15VDC (±5%) @ 1.0 amps max

Analog 0-10VDC into >10 kΩ load

4 hours or less

15 to 50°C

50 ft/min for ambient temperatures of 45 – 50°C

150 ft/min for ambient temperatures of 40 – 50°C

0.001% of FS

45 psia

Inconel® or Incoloy® nickel alloys¹

CE compliant to EMC Directive 2004/108/EC²

Fully compliant to RoHS Directive 2002-95-EC

(2) process pressure and (1) heater failure trip relays, independently adjustable from 0-100% of F.S. DPDT contacts rated at 1.0 amps at 30VDC or 0.3 amps at 30VAC. Relays conform to UL-1950 Basic Insulation at 125V. Internally mounted, externally adjustable by customer.

Fittings

Standard

Optional

0.50" (12 mm) OD tube

Swagelok® 8 VCR® female, NW16-KF, 1.5" TriClover, and 2" TriClover

Ordering Code Example: GGGGXUYZTRR Absolute Manometer

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

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

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

3. Contact MKS Applications Engineering for sealing material recommendations.

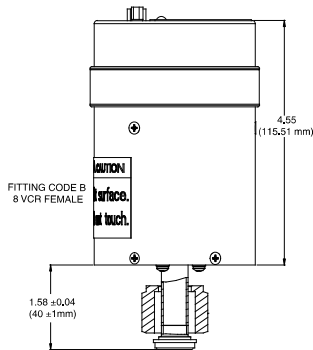
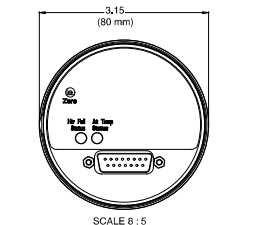
4. Unless otherwise specified, both relays will be set to activate at 50% of Full Scale.

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Dimensional Drawing —

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced). For dimensions on other configurations, please contact MKS Applications Engineering.

