



Pressure &

Vacuum Measurement Solutions

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E29F

HEATED (45°C OR 100°C) ABSOLUTE BARATRON® CAPACITANCE MANOMETER WITH ETCH SENSOR

The E29F is the recommended solution for use in etch processes. MKS has implemented solutions within the manometer's pressure sensing element to minimize the effects of process byproducts and process gases. For processes that generate large quantities of condensable byproducts, MKS recommends the etch baffle that significantly reduces the ability of byproducts to reach the sensor, minimizing process-induced zero drift. For very low pressure processes where fluorine burn-in is the main issue, MKS recommends the fluorine friendly etch baffle offering the ultimate in short- and long-term stability in fluorine chemistry.

The E29F is temperature-controlled to either 45°C or 100°C, accurate to $\pm 0.12\%$ of Reading, and includes efficient temperature control electronics to provide superior long-term stability and repeatability. It has an optional external zero input, which accepts a voltage equal to and opposite to the zero offset, to provide a zero output at zero pressure. The optional "At Temperature" LED/switch indicates that the sensor is at the controlled temperature (either 45°C or 100°C). The E29F is available in Full Scale ranges down to 50 mTorr for 100°C and to 20 mTorr for 45°C units, to better accommodate today's lower process pressures.

Based on the well-established Baratron capacitance manometer technology, the sensor's wetted surfaces are Inconel® for corrosion resistance. The modern stainless steel enclosure provides a cleanroom compatible product. The E29F is fully compatible with earlier MKS 629A, 629B, 629D, E29B, and E29D Baratron capacitance manometers.

Features & Benefits

Accurate

- Excellent long-term stability in the presence of extreme etch chemistries
- Percent of Reading accuracy for more precise output signal in lower pressure ranges
- Full Scale ranges as low as 20 mTorr for precise measurement of low pressure processes
- Measures total pressure directly, independent of gas composition

Robust

- All Inconel® corrosion resistant wetted surfaces
- Patented fluorine friendly etch baffle available upon request

- Integrated sump (US Patent #5,822,685) provides particle protection
- Deposition protection for extreme etch processes (Patent pending)
- High overpressure rating for improved reliability

Compatible

- Designed for use in etch process applications
- Cleanroom-compatible stainless steel package
- Compatible with earlier Baratron® capacitance manometers, MKS power supply/readout modules, and pressure controllers



Specifications and Ordering Information

Full Scale Ranges

Resolution

Accuracy

45°C

100°C

Temperature Coefficients

Zero, 45°C

Zero, 100°C

Span

Ambient Operating Temperature

Volume

Warm-Up Time

Overpressure Limit

Materials Exposed to Gases

Input Power Required

Output Signal

Optional Features LEDs and Switches

0.02 (45°C only), 0.05, 0.1, 1, 2, 10, 20, 100, 1000 Torr
0.001% of Full Scale (0.002% of Full Scale for 0.02 and 0.05 Torr)

0.12% of Reading (including non-linearity, hysteresis, and non-repeatability for 1-1000 Torr range), 0.15% for 0.10, 0.05 and 0.25 Torr, 0.25% for 0.02 Torr
0.25% (for 1-1000 Torr range), 0.50% for 0.10, 0.05 and 0.25 Torr

0.002% of Full Scale/°C for 1-1000 Torr, 0.005% of Full Scale/°C for 0.1 Torr, 0.015% of Full Scale/°C for 0.05 Torr, 0.03% of Full Scale/°C for 0.02 Torr
0.002% of Full Scale/°C for 1-1000 Torr, 0.01% of Full Scale/°C for 0.1 Torr, 0.02% of Full Scale/°C for 0.05 Torr

0.02% of Reading/°C

15-40°C for 45°C version

15-50°C for 100°C version

6.3 cc

2 hours for 1-1000 Torr Full Scale, 4 hours for 0.1 Torr Full Scale and lower

45 psia (310 kPa)

Inconel®

±15 VDC ±5% @ 0.25 Amps for 45°C, 0.5 Amps for 100°C

Pressure: 0 to +10 VDC into > 10K Ω load

"At Temperature" status semiconductor switch will turn "ON" and corresponding green LED will be "ON" when the instrument is at temperature. Option not available: 0.02 Torr/45°C and 0.05 Torr/100°C
External Zero allows voltage input that is equal to and opposite to a zero offset.

Option not available: 0.02 Torr/45°C and 0.05 Torr/100°C

Standard: 1/2" (12.7 mm) tubulation; Optional: 8 VCR® and 8 VCO® female, NW16 KF and NW25 KF,

1.33" OD CF and 2.75" OD CF

CE

Fittings

Compliance

Ordering Code Example: E29F01TBEJ2B

Code

Configuration

E29F

E29F

Ranges mmHg (Torr)

0.02

0.05

0.1

0.25

1

2

10

20

100

U2T (not available with 100°C)

U5T

.1T

RET

01T

02T

11T

21T

12T

01T

Fittings

1/2" Tube

8 VCR female

1.33" OD CF

NW16 KF (range < 5000 Torr)

8 VCO female

2.75" OD CF

NW25 KF (range < 5000 Torr)

A

B

C

D

E

L

Q

B

Accuracy (% of Reading)

0.12% (standard 45°C: 1, 2, 10, 20, 100 Torr only)

0.15% (standard 45°C: 0.05, 0.10 and 0.25 Torr only)

0.25% (standard 45°C: 0.02 Torr only, std. 100°C: 1 thru 1000 Torr)

0.50% (standard 100°C: 0.05, 0.25 and 0.100 Torr)

C (not available with 100°C)

D (not available with 100°C)

E

F

E

Temperature

45°C

100°C

J

L

J

Options

Standard Configuration/Vertical Calibration

Optional Heater Status Indication/Vertical Calibration

External Zero/Vertical Calibration

(not available on 45°C: 0.02 Torr and 100°C: 0.05 Torr)

Heater Status/External Zero/Vertical Calibration

(not available on 45°C: 0.02 Torr and 100°C: 0.05 Torr)

Standard Configuration/Horizontal Calibration

Optional Heater Status Indication/Horizontal Calibration

External Zero/Horizontal Calibration

(not available on 45°C: 0.02 Torr and 100°C: 0.05 Torr)

Heater Status/External Zero/Horizontal Calibration

(not available on 45°C: 0.02 Torr and 100°C: 0.05 Torr)

1

2

3

4

5

6

7

8

2

Connector

9 pin Type "D" with Thread Locks

9 pin Type "D" with Slide Locks

B

P

B

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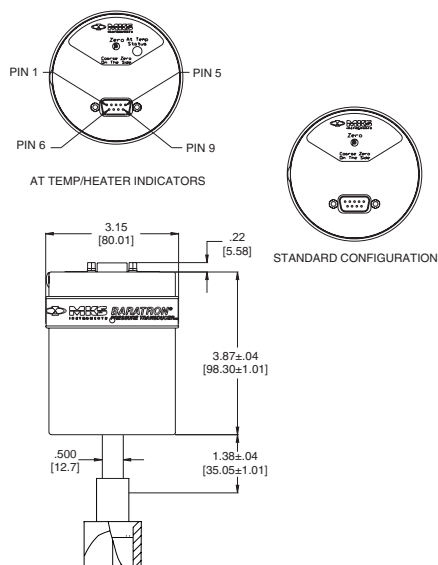
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Dimensional Drawing —

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

