Pressure & Vacuum Measurement Solutions

WWW.MKSINST.COM

627C and 628C
E27C and E28C

e-BARATRON® TEMPERATURE-CONTROLLED AND ETHERNET-ENABLED CAPACITANCE MANOMETER

For more than 10 years, the 600 Series Baratron® Capacitance Manometers have led the industry in long-term performance, accuracy, reliability, and worldwide installed base. The new Ethernet-enabled *e*-Baratron Types 627C and 628C now add the ability to network with Ethernet hubs and other devices for local or network diagnostics without disassembly or removal from the host system. Like other MKS Ethernet-equipped products, the 600C Series manometer includes embedded Internet browser software that allows it to communicate with any Windows®-based PC. Since the Ethernet port operates in parallel to the standard analog communications, the device can be diagnosed on a real-time basis during processing – a huge benefit for users who perform their own system analysis and troubleshooting. Even for users who do not use Ethernet networking, the Types 627C and 628C also have external LEDs to give a fast intuitive guide to the device's status. The 627C and 628C models use MKS' standard capacitance sensor, while the E27C and E28C models are equipped with MKS' patented Etch sensor that greatly reduces manometer drift in processes with condensable byproducts.

Features & Benefits

- Industry-leading accuracy and repeatability
- Standard product includes both analog and Ethernet communications for use in existing and latest generation of networked process tools
- Ethernet communications are real-time and can be run in parallel with analog communications, allowing *in-situ* diagnostics of device and process – no cable disconnection required
- Embedded Internet web browser communicates with any Windows-based PC
- Standard intuitive Graphical User Interface (GUI) with complete set of diagnostic routines that can be used for the device or the process
- Easy-to-understand external indicators for immediate device status information
- Full scale pressure ranges from 1,000 Torr to 0.10 Torr
- Operating temperatures of 45°C or 100°C for use in difficult semiconductor, display manufacturing, and biopharmaceutical processes
- Available with either standard or etch sensors for use in most applications.
- Pin-to-pin compatible with other heated analog Baratron capacitance manometers and some competitive products
- CE compliant, and tested to applicable provisions of SEMI S2-93 safety guidelines

Heated to either 45°C or 100°C for use in a wide range of semiconductor manufacturing and other related processes, the *e*-Baratron improves on its class-leading accuracy and repeatability – now to better than 0.10% of Reading for many configurations. Full scale ranges from 1,000 Torr (19.3 psia) to 0.10 Torr (0.13 mbar) give the product the widest application range of any capacitance manometer, and its standard Inconel® sensor has exceptional resistance to corrosion from aggressive gases. The Types 627C and 628C are also available with the patented MKS particle sump that prevents condensable byproducts from difficult processes from depositing on the diaphragm and causing drift. Last, the Types 627C and 628C retain their proven analog communications, making it literally a "drop-in" retrofit into existing processing systems.

The embedded Graphical User Interface (GUI) is capable of very detailed analyses of both the *e*-Baratron and the chamber that it is mounted on. Upon initially connecting a Windows PC, the user will see the Device Status screen (Figure 1), which gives a quick "at-a-glance" summary of the *e*-Baratron including the pressure, status, and general product information. The user can then move to the Plot screen (Figure 2) that shows a real-time plot of the actual pressure that the *e*-Baratron sees in the process chamber. This is a particularly powerful function that can be used for detailed process and system diagnostics. Since this mode can display transient pressure changes occurring as fast as 100 milliseconds, it can be used to troubleshoot and diagnose a wide variety of process system issues. Examples include improper isolation valve operation, pressure control instabilities, DC or RF power supply variations, process chemistry issues, and even vacuum pump operation. The *e*-Baratron GUI also continuously tracks its own function in areas such as temperature, current draw, and microprocessor operation - and reports back to you via the GUI the problem and when it happened (Figure 3). That helps you to to get the processing system back on-line and generating revenue faster.

Power, speed, and intelligence - all available in the Type 627C and 628C *e*-Baratrons. That's what you expect from the worldwide leader in capacitance manometers - and that's what MKS gives you.

Figure 1 —
Status Page

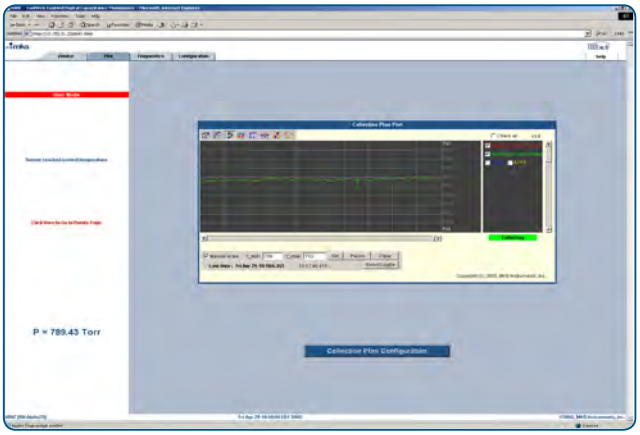


Figure 2 —
Plot Mode

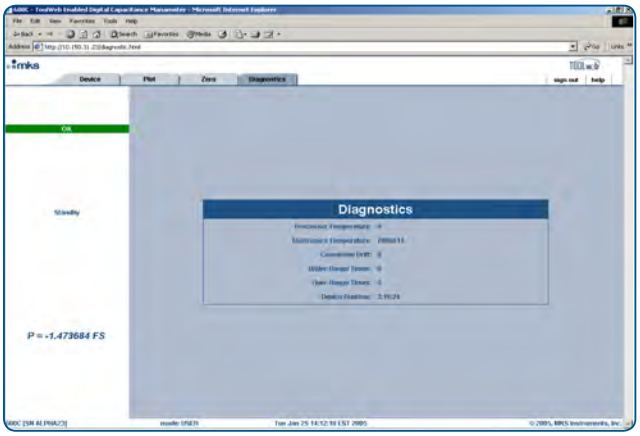


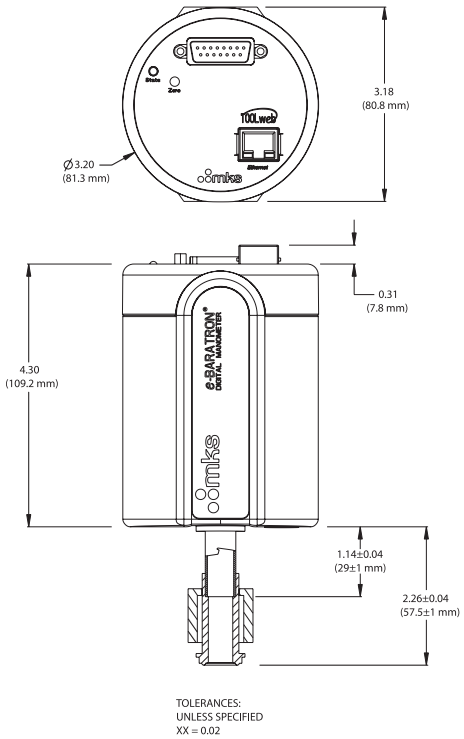
Figure 3 —
Diagnostics Mode

Specifications

Full Scale Ranges	0.1, 0.25, 1, 2, 10, 20, 100, 500, 1000 Torr
Resolution	0.001% FS
Accuracy**	
Types 627C and E27C	0.10% of Reading for ranges of 1 Torr or higher, 0.15% of Reading for 0.1 and 0.25 Torr ranges
Types 628C and E28C	0.25% of Reading for ranges of 1 Torr or higher, 0.50% of Reading for 0.1 and 0.25 Torr ranges
Temperature Coefficients	
Zero	0.002% FS/°C for all models of 1 Torr and higher; 0.005% FS/°C for 0.1 Torr range 627C, 0.01% FS/°C for 0.1 Torr range 628C
Span	0.02% Reading/°C
Ambient Operating Temperature	15 to 40°C for 45°C models; 15 to 50°C for 100°C models
Volume	6.3 cm^3
Warmup Time	2 hours for ranges of 1 Torr and higher; 4 hours for ranges below 1 Torr
Overpressure Limit	45 psia (310 kPa) or 120% of Full Scale, whichever is higher
Materials Exposed to Process Gases	Inconel
Input Power Required	±15VDC ± 5% or +24VDC ± 5% @ 300 mA for 45°C models, and 600 mA for 100°C models
Output Signal	
Analog	0-10VDC into > 10 kΩ load
Digital	Ethernet
Electrical Connectors	
Analog	9 or 15-pin D-subminiature
Digital	RJ45 receptacle
External Indicators	Multicolor status LED and two (2) green LEDs for Ethernet communications status
Electromagnetic Compatibility	Fully compliant to EMC Directive 2004/108/EC***
Fittings	
Standard	0.50” (12 mm) OD tube
Optional	8 VCR® male or female, 8 VCO® female, NW16-KF, NW25-KF, and 1.33” (33.8 mm) OD Conflat®

**Includes non-linearity, hysteresis, and non-repeatability.
***When connected to a properly shielded cable grounded at both ends.

Ordering Information



Dimensional Drawing —

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

Ordering Code Example: 628C11TGAC1B1	Code	Configuration
627C, standard sensor, heated to 45°C	627C	628C
628C, standard sensor, heated to 100°C	628C	
E27C, etch sensor, heated to 45°C	E27C	
E28C, etch sensor, heated to 100°C	E28C	
Pressure Range, Full Scale		
0.1	.1	11
1	01	
2	02	
10	11	
20	21	
100	12	
1000 (not available on E27C or E28C)	13	
Engineering Units		
Torr/mm Hg	T	T
mbar	M	
kPa	K	
Pascal	L	
Fittings		
Straight 0.50” (12mm) OD tube	BA	GA
8 VCR female	CE	
8 VCR male	CF	
8 VCR female, short tube	CR	
NW16-KF	GA	
NW25-KF	GC	
8 VCO female	DA	
Mini-CF rotatable	HA	
Accuracy		
0.10% Reading (see specifications for applicability)	C	C
0.15% Reading (see specifications for applicability)	D	
0.25% Reading (see specifications for applicability)	E	
0.50% Reading (see specifications for applicability)	F	
Options		
Vertical calibration	1	1
Horizontal calibration	5	
Analog Electrical Connector		
15-pin D-subminiature, thread lock	B	B
15-pin D-subminiature, slide lock	P	
9-pin D-subminiature, thread lock	A	
9-pin D-subminiature, slide lock	Z	
Digital Electrical Connector		
Ethernet RJ45 jack, diagnostics	1	1

MKS Instruments, Inc.
Global Headquarters

2 Tech Drive, Suite 201
Andover, MA 01810

Tel: 978.645.5500
Tel: 800.227.8766 (in U.S.A.)
Web: www.mksinst.com

MKS Instruments, Inc.
Pressure & Vacuum Measurement Solutions

Six Shattuck Road
Andover, MA 01810

Tel: 978.975.2350

627C/628C - 11/15