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Granville-Phillips Series 375 Convectron® Vacuum Gauge Controller

Compact, easy-to-install controller meets the needs of today's panel-mount applications

Wide range vacuum pressure measurement from atmosphere to 10^{-4} Torr (10^{-4} mbar, 10^{-2} Pa)

Individually calibrated Convectron Gauges assure highest measurement performance

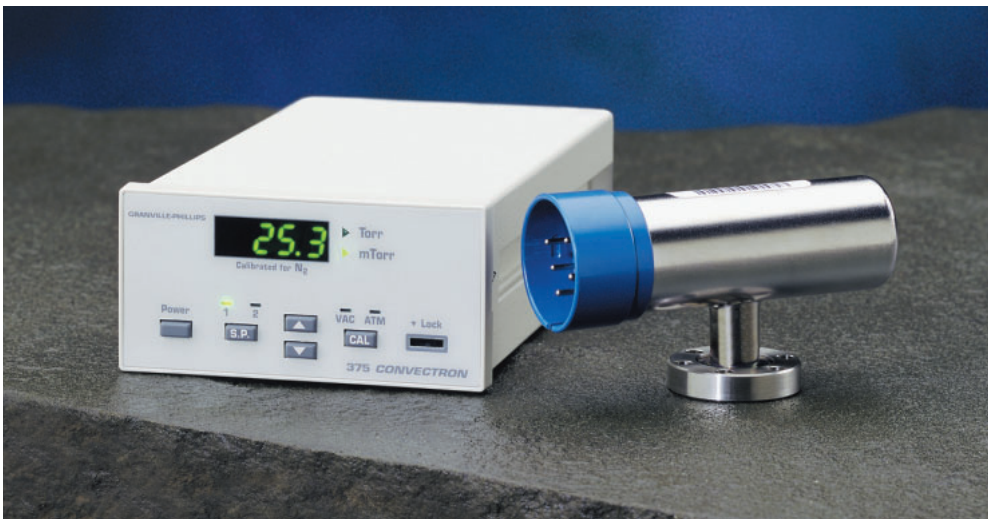
Push-button controls allow for easy calibration and parameter adjustments

All-metal package is rugged, noise-immune and CE compliant

Flexible design allows for optional setpoint relays and digital interfaces

Vacuum Gauge Controller

The Series 375 Controller uses the latest electronic technology to operate the Granville-Phillips Convectron Gauge. It provides accurate, reliable vacuum measurements over seven decades from atmosphere to $1x10^{-4}$ Torr ($1x10^{-4}$ mbar, $1 x10^{-2}$ Pa). This controller is easy to use with push-button controls that allow gauge calibration and adjustment of setpoint values without the need for special tools. Its compact 1/8 DIN size occupies half the space of older controllers, and its rugged all-metal package provides a high level of noise immunity.



The Series 375 controller can be used as a simple readout device for basic vacuum system control or integrated into computer controlled systems. It provides a range of electrical outputs including a selection of analog outputs, and options to add setpoint relays and digital interfaces. It is designed for easy installation in panel-mount applications. The small size, rugged construction and flexible design make the Series 375 Controller an ideal solution for today's vacuum system.

Convectron Gauge Technology

With over 20 years of successful field installations, the Granville-Phillips Convectron Gauge has become an industry standard. It is a unique variation of thermal conductivity gauges where pressure measurement is based on the rate of heat loss from a sensor wire. Unlike traditional thermocouple and Pirani gauges, Convectron Gauges take advantage of heat loss due to convection cooling at higher pressures. This extends the range of accurate, reproducible vacuum measurements to atmosphere. To assure the highest level of accuracy and gauge-to-gauge reproducibility, each Convectron Gauge is individually calibrated at our factory.

Convectron Gauges are in use today on hundreds of thousands of vacuum processes throughout the world, making them a wise choice for many vacuum applications.

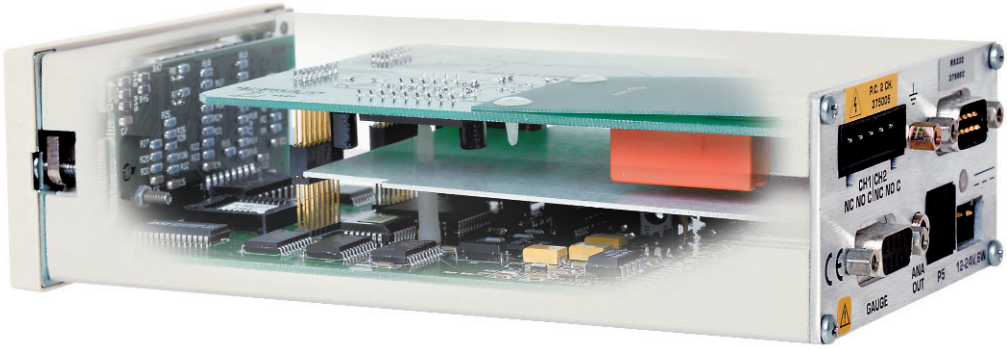
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Features and Benefits

Wide Measurement Range – Allows vacuum system performance to be monitored continuously from atmosphere to 10^{-4} Torr (10^{-4} mbar, 10^{-2} Pa).

Individual Gauge Calibration – Assures the highest level of accuracy and gauge-to-gauge reproducibility. No pre-installation calibration is required.

High Measurement Resolution – Designed to take full advantage of Convectron Gauge technology with 1 Torr (1 mbar, 0.1 kPa) resolution at atmosphere and 0.1 mTorr ($1x10^{-4}$ mbar, $1x10^{-2}$ Pa) resolution at low pressure.



Compact 1/8 DIN Controller – Easy to install in space restricted locations.

Auto-Ranging Digital Display – An easy-to-read, 3-digit green LED display automatically adjusts using two ranges (Torr and mTorr, mbar and 10^{-3} mbar or kPa and Pa) to provide a continuous measurement readout from atmosphere to low pressure.

Push-Button Controls – Calibration and setpoint settings are easy to adjust using buttons on the front panel. No special tools are required.

Easy-to-use Analog Signals – Provides a one volt per decade logarithmic signal or selectable non-linear signal that is backwards compatible with older Convectron controllers.

Flexible Design – Field-installable setpoint and digital interface options allow easy future upgrades as needs change.

Digital Interface Option – RS-232 or RS-485 interface allows for easy integration with computer controlled systems.

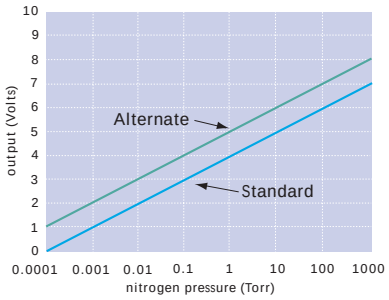
Process Setpoints Option – Relay contacts (rated at 230 Volts) allow control of other vacuum equipment, such as valves, pumps, heaters, alarms and safety interlocking.

Rugged All-Metal Package – Provides a high level of immunity to RF noise and is CE compliant.

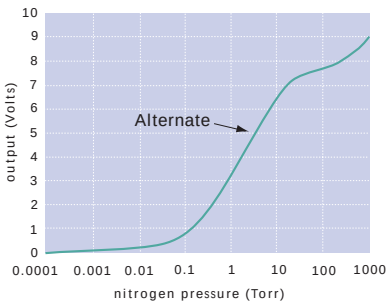
Sensor Protection – Designed to eliminate sensor overpowering that can result in calibration drift and premature failures.

Analog Outputs

Linear with log of pressure



Nonlinear



Standard analog output is 0 to 7 Volts that is linear in voltage with the log of pressure. Two alternate analog outputs can be selected using the front panel buttons: either 1 to 8 Volts that is linear in voltage with the log of pressure or 0 to 9 Volts that is non-linear with the log of pressure and mimics the output of older Granville-Phillips Vacuum Gauge Controllers.

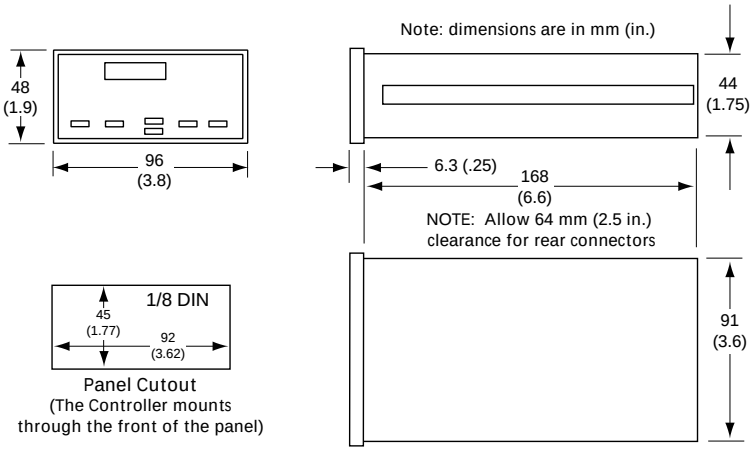
Technical Specifications

Measurement range for N_2/air (see Notes 1 & 2, below)	
Torr	$1x10^{-4}$ to 1000
mbar	$1x10^{-4}$ to 1333
Pa	$1x10^{-2}$ Pa to 133 kPa
Resolution	1×10^{-4} Torr, 1×10^{-4} mbar, 1×10^{-2} Pa
Display	3 digits, green LED, automatic ranging
Update rate	Every 0.5 sec
Readout resolution	Least significant digit on any range
Input voltage/power	12 to 24 Vdc, 0.5 A at 12 Vdc, 6 W max
Weight	0.72 kg (1.6 lb)
Operating temperature	0 °C to 40 ºC ambient, non-condensing
Non-operating temperature	-40 °C to 70 °C
CE compliance	EMC Directive 89/336/EEC, EN50081-2, EN50082-2
Setpoint relays (optional)	Two single-pole, double-throw (SPDT)
Contact rating	2 A, 230 Vac, 30 Vdc, resistive load
Adjustments	Value, direction, hysteresis
Range	1×10^{-3} to 1000 Torr, 1×10^{-3} to 1333 mbar,
	1×10^{-1} Pa to 133 kPa
Resolution	2 significant digits
Digital Interface (optional)	RS-232 or RS-485
Parameters adjustable	Vacuum and atmosphere calibrations, setpoints
Baud rate	9600 Baud (default value)
Data format	ASCII, 8 data bits, one stop-bit, no parity, no handshake
	(default values)
Convectron Gauge	
Sensor material	Gold-plated tungsten
Other materials exposed to gas	304 stainless steel, borosilicate glass, Kovar,
	alumina, NiFe alloy, polyimide
Internal volume	40 cm^3 (2.5 $in.^3$)
Weight	85 grams (3 ounces) plus vacuum connection fitting
Gauge operating temperature	0 ºC to 50 ºC ambient, non-condensing
Gauge bakeout temperature	150 ºC maximum, non-operating, cable disconnected
Mounting orientation	Horizontal preferred
Cable bakeout temperature	105 ºC maximum

Application Notes

1. Measurements will change with different gases and mixtures. Correction curves for common gases are provided in the instruction manual.
2. Convectron Gauges are not intended for use with flammable or explosive gases.

Dimensions



Ordering Information



Series 375 Convectron Vacuum Gauge Controller

Choose a readout option below to create your catalog number.

Measurement units: **375001 - X**

Torr	T
mbar	M
Pa	P

Select a digital interface option and setpoint option (if desired), the desired cable length, power supply, and Convectron Gauge from the items listed below.

Digital Interface Options (choose one module if desired)

RS-232 computer interface module	375002
RS-485/422 computer interface module	375003

Process Control Setpoint Option

Process Control module with 2 setpoint relays	375005



Convectron Cables (select desired length)

3 m (10 ft)	375009
8 m (25 ft)	375010
15 m (50 ft)	375011
Specify length up up to 150 m (500 ft)	375012



Power Supply (CE Compliant) **375007 - X**

Select power cord plug type, below.

North American 115 Vac / Japan 100 Vac	1
North American 240 Vac	2
Universal European 220 Vac	3
United Kingdom 240 Vac	4
Switzerland 220 Vac	5
Australian 240 Vac	6



Wall Mount Power Supply (UL Listed)

115 Vac with North American plug	375006



Convectron Gauges (select the desired vacuum connection)

1/8 NPT / 1/2 inch tubulation	275071
1/4 inch 4VCR-type female	275185
1/2 inch 8VCR-type female	275282
NW16KF	275203
NW25KF	275196
NW40KF	275316
1.33 inch (NW16CF) Conflat-type	275256
2.75 inch (NW35CF) Conflat-type	275238

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