Granville-Phillips® Series 275 Mini-Convectron® Modules with Analog Output or RS-485 Interface Advanced Vacuum Measurement Solutions

VACUUM PRODUCTS

Benefits

- Wide range pressure measurement from atmosphere to 10^{-4} Torr (10^{-4} mbar, 10^{-2} Pa)
- Individually calibrated gauges assure highest measurement performance
- Compact, rugged, RF and noise-immune module is CE compliant
- Easy installation in space restricted locations
- Available with setpoint relays for safety interlocking
- Optional local display aids setup and diagnostics
- Digital interface versions for use with computer controlled systems

Modular vacuum gauges are an ideal solution for applications that do not need front panel displays and controls. These compact, convenient, reliable, cost-saving modules have the control electronics mounted directly on the gauge. The all-metal package provides a rugged enclosure and a high level of immunity to electrical noise.

Vacuum Gauge Modules

Vacuum pressure measurements over seven decades from atmosphere to $1x10^{-4}$ Torr ($1x10^{-4}$ mbar, $1x10^{-2}$ Pa) are provided by Granville-Phillips Mini-Convectron Modules. Versions are available with analog output, RS-485 interface, or with DeviceNet™ interface (described in a separate brochure). The basic versions have adjustable setpoint relays that allow you to control other functions of your vacuum process or provide safety interlocking. The digital display version features a bright, 3-digit display that gives instantaneous on-site pressure measurement. A version with a convenient linear analog output signal is also available.

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, repeatable vacuum measurements to atmosphere. To assure the highest level of accuracy and gauge-to-gauge repeatability, 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.

Mini-Convectron® Modules

Ideal vacuum products
www.idealvac.com

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 Calibration: Assures the highest level of accuracy and gauge-to-gauge reproducibility.

All-metal Package: Provides a high level of immunity to RF noise and is CE compliant.

Process Setpoints: Relay contacts are available on most versions to control other vacuum equipment and provide safety interlocking.

Granville-Phillips® Mini-Convectron®

Linear Analog Output Version: Outputs a linear, high-level dc signal of 0 to 10 volts, for 0 to 1 Torr, which can be used to control pressure related processes, or read directly by a digital volt meter (DVM) or data acquisition system.

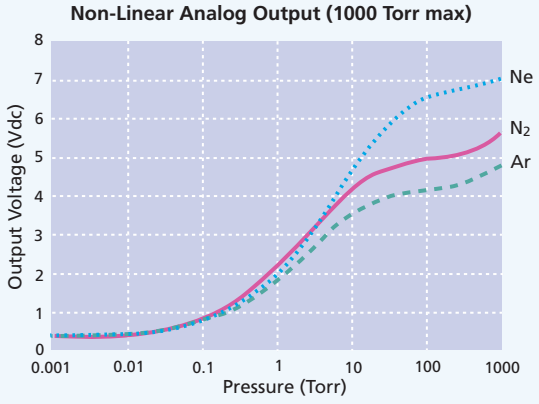
Digital Display Version: Provides an easy-to-read, 3-digit green LED display that automatically adjusts between two ranges (Torr and mTorr or kPa and Pa). It has two setpoint relays that can easily be adjusted using the digital display.

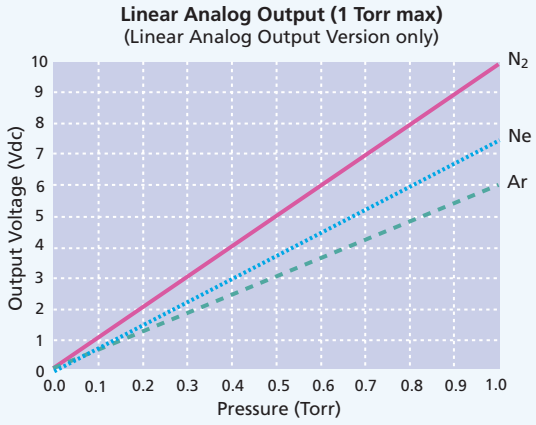
Digital Interface Version: Provides an RS-485 interface for easy compatibility with computer controlled processes. It has two setpoint relays that are adjusted through the RS-485 interface.

Low Power Requirements: System integration is easy using standard low voltage dc power sources.

Replaceable Gauge: Gauge can be quickly and easily replaced using only a screwdriver.

Analog Output



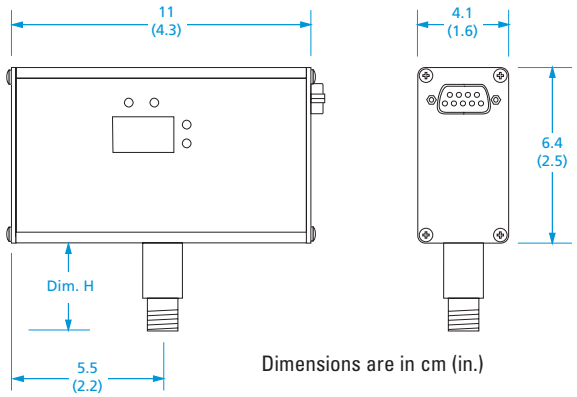


Technical Specifications

Measuring range for air and N_2 (see note 1 and 2 below)	
Torr	$1x10^{-4}$ to 1000
mbar	$1x10^{-4}$ to 1300
Pa	$1x10^{-2}$ Pa to 130 kPa
Resolution	$1x10^{-4}$ Torr, $1x10^{-4}$ mbar, $1x10^{-2}$ Pa
Mounting position	Horizontal preferred
Weight	340 gm (12oz) with 1/8 NPT fitting
Operating temperature	0 °C to 40 °C ambient, non-condensing
Non-operating temperature	-40 °C to 70 °C
Case material	Aluminum extrusion
CE compliance	EMC Directive 89/336/EEC, EN 50081-2, EN 50082-2
Basic Version	1 or 2 setpoint relays
Analog output	0.375 to 5.659 Vdc for 0 to 1000 Torr of N_2, non-linear
Power required	11.5 to 26.5 Vdc, 0.1 A at 11.5 Vdc, 1.6 W max
Connector for 1 relay	11.5 to 26.5 Vdc, 0.1 A at 11.5 Vdc, 1.6 W max
Connector for 2 relays	11.5 to 26.5 Vdc, 0.1 A at 11.5 Vdc, 1.6 W max
Linear Analog Output Version	2 analog outputs, no setpoints
Analog output 1	0.0 to 10.0 Vdc for 0 to 1 Torr of N_2, linear
Analog output 2	0.375 to 5.659 Vdc for 0 to 1000 Torr of N_2, non-linear
Power required	11.5 to 26.5 Vdc, 0.15 A at 11.5 Vdc, 3.5 W max
Connector	9-pin subminiature-D male
Display	3-digit green LED, automatic ranging (see note 2, below)
Resolution	Least significant digit on each range
Digital Interface Version	RS-485, 2 setpoint relays
Parameters adjustable	Vacuum and atmosphere calibration, setpoints (value, direction and hysteresis)
Baud rates	19200 Baud (default value)
Data format	ASCII, 8 data bits, one stop bit, no parity, no handshake (default values)
Power required	11.5 to 26.5 Vdc, 0.12 A at 11.5 Vdc, 2 W max
Connector	15-pin subminiature-D male, high density
Resolution	Least significant digit on each range
Setpoint relay configuration	Single-pole, double-throw (SPDT)
Contact rating	1 A at 30 Vdc resistive, AC non-inductive
Range	$1x10^{-3}$ to 1000 Torr, $1x10^{-3}$ to 1300 mbar, $1x10^{-1}$ Pa to 130 kPa
Resolution	2 significant digits
Convectron Gauge	
Sensor materials	Gold-plated tungsten
Other materials exposed to gas	304 stainless steel, borosilicate glass, Kovar, alumina, NiFe alloy, polyimide
Internal volume	35 cm^3 (2.14 $inch^3$)
Gauge bakeout temperature	150°C maximum, non-operating, with electronics removed

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



Dimensions are in cm (in.)

Vacuum Connections	Dim. H
1/8 NPT pipe thread / 1/2" tubulation	2.2 (0.9)
1/4 inch 4VCR-type female	3.0 (1.2)
1/2 inch 8VCR-type female	3.9 (1.5)
1.33 inch (NW16CF) ConFlat-type	3.8 (1.5)
2.75 inch (NW35CF) ConFlat-type	3.8 (1.5)
NW16KF	3.1 (1.2)
NW25KF	3.1 (1.2)
NW40KF	3.7 (1.5)

Ordering Information

Vacuum Connection:	**Basic Version** with one setpoint relay, non-linear analog output, without display Catalog No.	**Basic Version** with two setpoint relays, non-linear analog output, without display Catalog No.	**Linear Analog Output Version** with both linear and non-linear analog output, without setpoint relays or display Catalog No.	**Digital Display Version** with two setpoint relays, non-linear analog output, display in Torr Catalog No.	**Digital Display Version** with two setpoint relays, non-linear analog output, display in pa Catalog No.	**Digital Display Version** with two setpoint relays, RS-485 interface, without display Catalog No.
1/8 NPT / 1/2 inch tubulation	275800-EU	275870-EU	275850-EU	275904-EU	275904-EU-P	275527-EU
1/4 inch VCR®-type female fitting	275801-EU	275871-EU	275851-EU	275905-EU	275905-EU-P	275528-EU
1/2 inch VCR-type female fitting	275863-EU	275867-EU	275862-EU	275906-EU	275906-EU-P	275529-EU
3/8 inch VCO®-type male fitting	275802-EU	275872-EU	275852-EU	275907-EU	275907-EU-P	275530-EU
1.33 inch (NW16CF) ConFlat®-type	275803-EU	275873-EU	275853-EU	275908-EU	275908-EU-P	275531-EU
2.75 inch (NW35CF) ConFlat-type	275804-EU	275874-EU	275854-EU	275909-EU	275909-EU-P	275532-EU
NW16KF	275806-EU	275876-EU	275856-EU	275911-EU	275911-EU-P	275546-EU
NW25KF	275807-EU	275877-EU	275857-EU	275912-EU	275912-EU-P	275534-EU
NW40KF	275808-EU	275878-EU	275858-EU	275913-EU	275913-EU-P	275535-EU

Wall transformer to convert 120 Vac to 12 Vdc, with 15-pin subminiature-D connector for use with Digital Display modules only (UL Listed): Catalog No. 275933.

Replacement Convectron Gauges for Mini-Convectron Modules are listed in the current Granville-Phillips Products Price List.

Backed by GUTS®

All Granville-Phillips products are backed by the GUTS (Guaranteed Uptime Support) rapid response network, our comprehensive customer support program. When you call the GUTS service center, you are guaranteed immediate, competent response and action by a vacuum expert from our world-wide technical support staff. We're at work for you 24 hours a day, 365 days a year. 1-800-FOR-GUTS (800-367-4887).

For more information, please contact your local Brooks Automation sales representative or visit www.brooks.com.

Brooks

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