



CRITICAL COMPONENTS
GROUP

Granville-Phillips® Series 275 Mini-Convector® Modules with DeviceNet™ Interface

Advanced Vacuum Measurement Solutions

VACUUM PRODUCTS

Benefits

- DeviceNet™ digital interface facilitates easy system integration
- 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
- Two software-controlled setpoint relays provide safety interlocking
- All functions programmable through interface
- Optional local display aids setup and diagnostics

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. They are all you need to provide a vacuum pressure signal to your control system. Modules are available with analog output, RS-485 interface, and now DeviceNet™ interface, featured in this brochure.

DeviceNet™ Interface

The DeviceNet interface is a networking solution that reduces the time and cost of wiring, installation, and automation of vacuum processes. As an open network standard, DeviceNet provides a convenient way to connect a wide variety of measurement and control devices used on today's advanced vacuum systems. In some industries, such as semiconductor manufacturing, the DeviceNet interface is a preferred network standard.

Mini-Convector® Modules

Mini-Convector Modules use the latest electronics technology to operate the Granville-Phillips® Convector® Gauge. With over 20 years of successful field installations, the Convector 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 that use only conductive heat loss, Convector Gauges take advantage of heat loss due to convection at higher pressures. This extends the range of accurate, repeatable measurement to atmosphere.

Convector 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-Convector® Modules with DeviceNet™ Interface

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 high level of immunity to RF noise and is CE compliant.

Local Display (Optional): An easy-to-read 3-digit green LED display gives a point-of-use pressure indication.

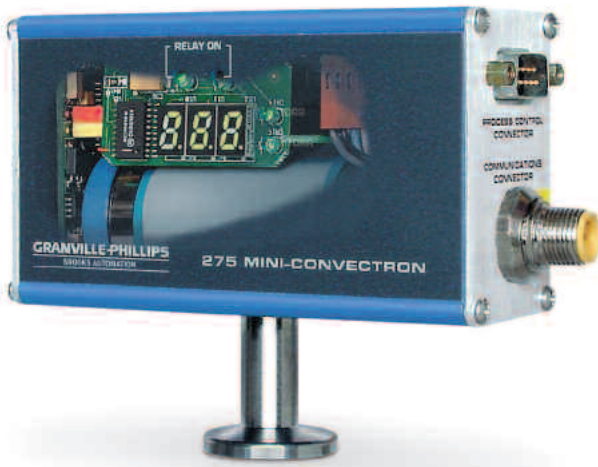
Process Setpoints: Relay contacts allow control of other vacuum equipment and provide safety interlocking. Settings are adjustable through the DeviceNet interface and stored in non-volatile memory.

DeviceNet Interface: Provides high speed access to pressure measurement and easy integration with other sensors and controls.

Programmable Functions: All key gauge parameters are accessible through the DeviceNet interface, which allows automated calibration and easy configuration of gauge parameters.

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

Wide Selection of Vacuum Fittings: Simplifies installation on your vacuum system.



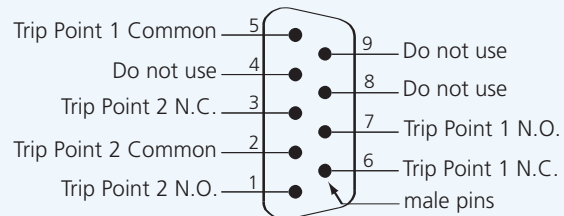
Granville-Phillips® Mini-Convectron®



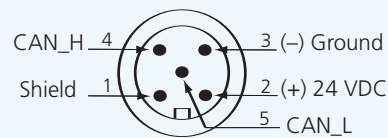
Parameter Adjustment Side

Electrical Connectors

Process Control Relay Connector



DeviceNet Micro Connector

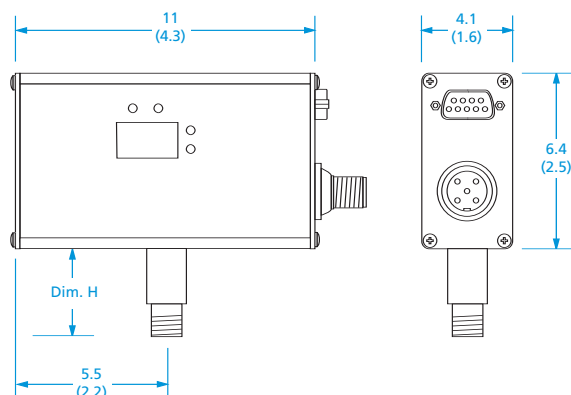


Technical Specifications

Measuring range for air and N ₂ (see note 1, below)	
Torr	1x10 ⁻⁴ to 1000
mbar	1x10 ⁻⁴ to 1300 (see note 2 below)
Pa	1x10 ⁻² Pa to 130 kPa
Resolution	1x10 ⁻⁴ Torr, 1x10 ⁻⁴ mbar, 1x10 ⁻² Pa
Mounting position	Horizontal preferred
Power required	11 to 26 Vdc, 0.5 A at 11 Vdc, 5.5 W max
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
Display (optional)	3-digit green LED, automatic ranging (see note 2, below)
Resolution	Least significant digit on each range
Setpoint relays	
Configuration	Two single-pole, double-throw (SPDT)
Contact rating	1 A at 30 Vdc resistive, AC non-inductive
Adjustments	Value, direction, and hysteresis through software
Range	1x10 ⁻³ to 1000 Torr, 1 x 10 ⁻³ to 1300 mbar, 1 x 10 ⁻¹ Pa to 130 kPa
Resolution	2 significant digits
Connector	9-pin D male
DeviceNet interface	
Parameters adjustable	Vacuum and atmosphere calibrations, setpoints
Device type	Vacuum/pressure gauge device
Messaging	Polled I/O and explicit
Baud rates	125K, 250K, or 500K, switch selectable
Connector	5-pin Micro
Convectron Gauge	
Sensor materials	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)
Gauge bakeout temperature	150 °C maximum, non-operating, electronics removed

- Measurements will change with different gases and mixtures. Correction curves for common gases are provided in the instruction manual. Convectron Gauges are not intended for use with flammable or explosive gases.
- The 3-digit display cannot read higher than 999. For units calibrated in mbar, the output signal continues up to the full scale of 1300 mbar, but the display will read a maximum of 999 mbar.

Dimensions



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	3.9 (1.5)
2.75 inch (NW35CF) Conflat®-type	3.9 (1.5)
NW16KF	3.1 (1.2)
NW25KF	3.1 (1.2)
NW40KF	3.9 (1.5)

Dimensions are in cm (in.)

VCR is a registered trademark of Cajon Co; Conflat of Varian Associates.

Ordering Information



Mini-Convectron Modules with DeviceNet Interface

Choose a basic module, vacuum connection and measurement unit to create your catalog number.

With No Display **275553 - G x - x**

With 3-Digit Display **275538 - G x - x**

Vacuum Connection:

1/8 NPT / 1/2 inch tubulation	P
1/4 inch 4VCR-type female	Q
1/2 inch 8VCR-type female	R
NW16KF	D
NW25KF	E
NW40KF	K
1.33 inch (NW16CF) Conflat-type	F
2.75 inch (NW35CF) Conflat-type	G

Measurement units:

Torr	T
mbar	M
Pa	P



Example: To order a Mini-Convectron DeviceNet Module with 3-digit display, NW16KF fitting, and measurement units in Torr, select catalog number 275538-GD-T

Replacement Gauges



Vacuum Connection

1/8 NPT / 1/2 inch tubulation	275810
1/4 inch 4VCR-type female	275811
1/2 inch 8VCR-type female	275864
NW16KF	275816
NW25KF	275817
NW40KF	275818
1.33 inch (NW16CF) Conflat-type	275813
2.75 inch (NW35CF) Conflat-type	275814

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.

