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Series 275

Analog, RS485 and DeviceNet™ Modules

The Mini-Convectron® Module combines the high precision convection enhanced Pirani gauge with electronics to provide a compact, convenient, reliable, and cost-saving solution for vacuum measurement from atmosphere to 10^{-4} Torr. With over 35 years of successful field installations, the 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 that use only conductive heat loss, Convectron gauges take advantage of heat loss due to convection at higher pressures. This extends the range of accurate, repeatable measurement to atmosphere. Modules are available with analog output, RS485 interface, and DeviceNet interface.

Product Features

- Wide range pressure measurement from atmosphere to 10^{-4} Torr (10^{-4} mbar, 10^{-2} Pa)
- Individually calibrated gauges assure highest measurement performance
- Available with set point relays for safety interlocking
- Optional local display aids setup and diagnostics
- Digital interface versions for use with computer controlled systems
- DeviceNet digital interface facilitates easy system integration



Key Benefits

- Cost-savings solution for vacuum measurement
- Compact, rugged, RF and noise-immune module
- All functions programmable through RS485 or DeviceNet interfaces

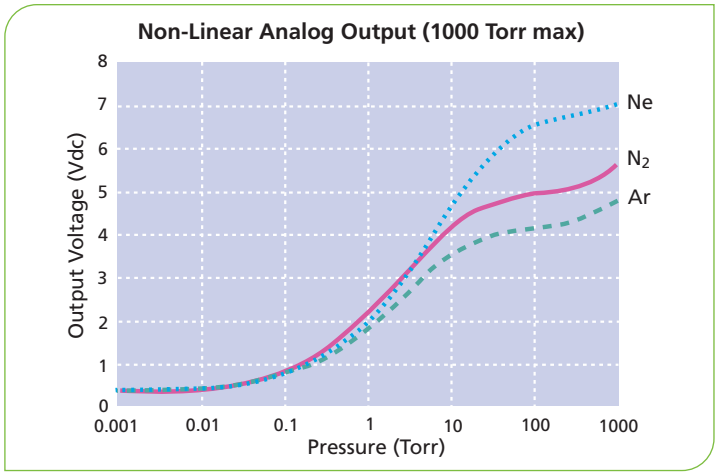
- **Wide Measurement Range:** Allows vacuum system performance to be monitored continuously from atmosphere to 10^{-4} Torr (10^{-4} mbar, 10^{-2} Pa).
- **Individual Calibration:** Assures the highest level of accuracy and gauge-to-gauge reproducibility.
- **All-Metal Package:** Provides a high level of immunity to RF and noise and is CE compliant.
- **Programmable Process Set Points:** Relay contacts are available on most versions to control other vacuum equipment and provide safety interlocking.
- **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).
- **Digital Interface Version:** Provides RS485 or DeviceNet interface for easy compatibility with computer controlled processes.
- **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.



Display Side (Analog shown)



Parameter Adjustment Side (DeviceNet shown)



Analog Output



Parameter Adjustment Side (RS485 shown)

Specifications

Measuring Range for Air and N_2 See Notes (1), (2)	
Torr	$1x10^{-4}$ to 1000
mbar	$1x10^{-4}$ to 1300 See Note (2)
Pa	$1x10^{-2}$ Pa to 130 kPa
Step Size at Minimum Pressure	$1x10^{-4}$ Torr, $1x10^{-4}$ mbar, $1x10^{-2}$ Pa
Mounting Position	Horizontal preferred
Power Required	
DeviceNet	11 to 26 VDC, 0.5 A at 11 VDC, 2.5 W max
Analog	11.5 to 26.5 VDC, 0.1 A at 11.5 VDC, 1.6 W max, 1.8 max (with display)
RS485	11.5 to 26.5 VDC, 0.12 A at 11.5 VDC, 2 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
Enclosure	Aluminum IP20 rating
Display (optional)	3-digit green LED, automatic ranging See Note (3)
Resolution	Least significant digit on each range
Set Point Relays	0, 1 or 2
Configuration	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, $1x10^{-3}$ to 1300 mbar, $1x10^{-1}$ Pa to 130 kPa
Resolution	2 significant digits
Analog Output	0.375 to 5.659 VDC for 0 to 1000 Torr of N_2, non-linear
RS485 Digital Interface	RS485, 2 set point relays
Parameters Adjustable	Vacuum and atmosphere calibration, set points (value, direction and hysteresis)
Baud Rates	300-115.2K, 19200 Baud (default value)
Data Format	ASCII, 8 data bits, one stop bit, no parity, no handshake (default values)
Resolution	Least significant digit on each range
DeviceNet Interface	
Parameters Adjustable	Vacuum and atmosphere calibrations, set points
Device Type	Vacuum/pressure gauge device
Messaging	Polled I/O and explicit
Address	0 to 63, selected by using the Low and High address switches
Baud Rates	125K, 250K, or 500K, switch selectable
Connector	5-pin Micro
Connectors	9 or 15-pin subminiature-D male, high density 5-pin Micro DeviceNet
Convectron Gauge	
Sensor Materials	Gold-plated tungsten or Platinum
Other Materials Exposed to Gas	304 stainless steel, borosilicate glass, Kovar®, alumina, NiFe alloy, polyimide
Internal Volume	40 cc (2.5 cu. in)
Gauge Bakeout Temperature	150°C maximum, non-operating, with electronics removed
Compliance	CE

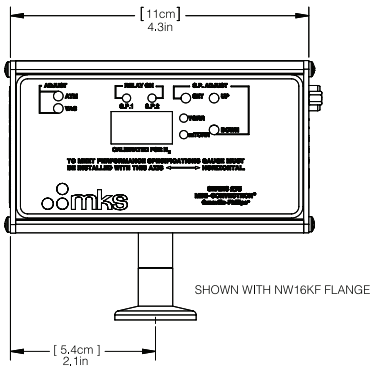
Notes:

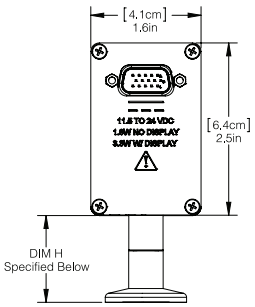
(1) Measurements will change with different gases and mixtures. Correction curves for common gases are provided in the instruction manual.

(2) For units calibrated in mbar, the output signal continues up to the Full Scale of 1300 mbar, but the digital display does not display past 999 mbar.

(3) Convectron Gauges are not intended for use with flammable or explosive gases.

Ordering Information





Vacuum Connection	Dim. H
1/8 NPT pipe thread/1/2 inch tubulation	2.2 (0.9)
1/4 inch 4 VCR®-type female	3.0 (1.2)
1/2 inch 8 VCR®-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)

Dimensional Drawing

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

Ordering Code Example: 275600-0-GD-T	Code	Configuration
Module		
Series 275 Module	275	275
Display		
Without display (All interface options, 1 or 2 set points) With display (Analog, DeviceNet, 0 or 2 set points)	4 6	6
Interface		
Analog RS485 (Available only with 2 set points, no display) DeviceNet (Available only with 2 set points)	00 10 20	00
Relay Set Points		
No Relay Set Points (Analog with display only) 1 Relay Set Point (Analog without display only) 2 Relay Set Points (Analog with/without display) (RS485 without display) (DeviceNet with display)	0 1 2	0
Filaments		
Gold-plated Tungsten Platinum	G P	G
Flange/Fitting		
NW16KF NW25KF 1.33 inch (NW16CF) ConFlat-type 2.75 inch (NW35CF) ConFlat-type NW40KF 1/8 inch NPT / 1/2 inch tubulation 1/4 inch VCR-type female 1/2 inch VCR-type female	D E F G K P Q R	D
Measurement Units		
Torr mbar Pa	T M P	T

Also available: Mini-Convectron, without display, 0-10 VDC Linear Analog, 1 mTorr to 1 Torr, 0 Set Points, Gold-plated Tungsten, Torr

Ordering Code Example: 275330-GD	Code	Configuration
Module		
Series 275 Module	275330	275330
Filaments		
Gold-plated Tungsten	G	G
Flange/Fitting		
NW16KF NW25KF 1.33 inch (NW16CF) ConFlat-type 2.75 inch (NW35CF) ConFlat-type NW40KF 1/8 inch NPT / 1/2 inch tubulation 1/4 inch VCR-type female 1/2 inch VCR-type female	D E F G K P Q R	D

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