

Granville-Phillips Convector[®] ATM Modules

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

Accurate and repeatable differential pressure setpoint at atmosphere

Compact, rugged, RF and noise-immune module is CE compliant

RS-485 version includes an optional local display

The Granville-Phillips Convector ATM module is a vacuum gauge that combines a piezo-resistive diaphragm with a proven Convector sensor to provide a continuous measurement from low vacuum to atmosphere and a setpoint relay activation at a defined differential pressure from atmosphere. This vacuum gauge module combines both the control electronics and combined sensor technologies in a compact design that is easy to install and operate. The Convector ATM module eliminates the need for two sensors in those applications that require low pressure measurement and an accurate indication of differential pressure at atmosphere, such as vacuum system loadlocks.



The Convector ATM module is available in both analog output or RS-485 interface versions. The Convector heat loss sensor provides vacuum pressure measurement over seven decades from 1×10^{-4} Torr to atmosphere. The diaphragm sensor technology measures the differential pressure between the inside of the vacuum space and the outside environment and activates a setpoint relay when a defined differential pressure is achieved.

Both units provide setpoints that are used to indicate a low vacuum level and when the defined differential pressure has been reached. The RS-485 version is available with an optional display that features a bright, 3-digit indication of the instantaneous pressure measurement.

Combining Gauge Technology

With over 20 years of successful field installations, the Granville-Phillips Convector gauge has become an industry standard for low vacuum measurement. Unlike traditional thermocouple and Pirani gauges, Convector gauges take advantage of heat loss due to convection cooling at higher pressure that extends the range of the Convector's measurement to atmosphere. Now, the performance of this module at atmosphere is enhanced with the addition of a piezo-resistive diaphragm in the same package. This sensor provides a highly reliable, accurate, and repeatable indication of differential pressure at atmosphere improving process efficiency and throughput.

Features and Benefits



Wide Measurement Range – Allows for monitoring of vacuum system performance continuously from atmosphere to 1×10^{-4} Torr (10^{-4} mbar, 10^{-2} Pa).

Differential Diaphragm Sensor Technology – Outputs an accurate and repeatable indication of differential pressure at atmosphere through a setpoint relay.

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

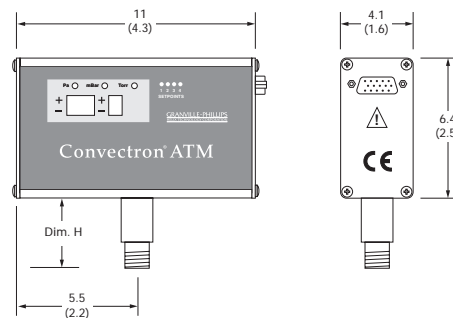
Process Setpoint Relays – Relay contacts are provided to control other vacuum equipment at defined absolute and atmospheric differential pressure setpoints.

RS-485 Version – Provides a digital interface for easy compatibility with computer controlled processes. Four process control relays are configured through the digital interface.

Optional Local Display – the RS-485 version provides an optional, 3-digit green LED display that can be programmed to display in Torr, mbar, or Pascal units.

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

Dimensions



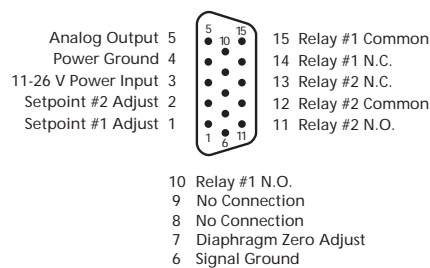
Vacuum Connection	Dim. H
1/8 NPT pipe thread/ 1/2 inch tubulation	2.2 (0.9)
1/4 inch 4VCR®-type female	3.0 (1.2)
1/2 inch 8VCR®-type female	3.9 (1.5)
NW16KF	3.1 (1.2)
NW25KF	3.1 (1.2)
NW40KF	3.7 (1.5)
1.33 inch (NW16CF) ConFlat®-type	3.8 (1.5)
2.75 inch (NW35CF) ConFlat®-type	3.8 (1.5)

Dimensions are in cm (inch)

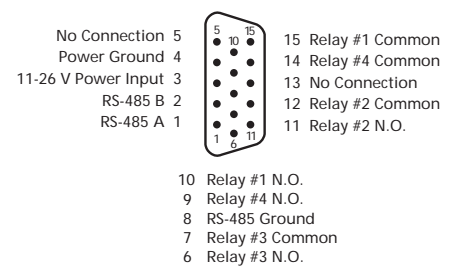
Customer I/O Pinouts

Male 15-pin high-density D-sub

Analogue Version



RS-485 Version



Technical Specifications

Absolute pressure measuring range for N ₂ (see notes 1 and 2 below)	
Torr	1x10 ⁻⁴ to 1000
mbar	1x10 ⁻⁴ to 1300
Pascal	1x10 ⁻² Pa to 130 kPa
Absolute pressure setpoint range	1x10 ⁻⁴ to 1000 Torr
Differential pressure measuring range	750 Torr below atmosphere to 250 Torr above atmosphere
Differential pressure accuracy	± (2.5 Torr + 2.5% of reading)
Differential pressure setpoint range	750 Torr below atmosphere to 125 Torr above atmosphere
Operating temperature	0° to 40°C (32° to 104°F) ambient, non-condensing
Storage temperature	-40°C to 85°C (-40° to 185°F)
CE compliance	
EMC directive	89/336/EEC; EN 50081-2, EN 50082-2, EN 61326-1
Low voltage directive	73/23/EEC; EN 61010-1
Analog output version	
Analog output	0.375 to 5.659 Vdc for 0 to 1000 Torr absolute for N ₂ , Non-linear
Number of setpoints	Two single-pole, double throw (SPDT) - one assigned to absolute pressure range, one assigned to the differential pressure range
RS-485 version	
Baud rates	1200, 2400, 4800, 9600, 19200 (Default), 38400
Number of setpoints	Four single-pole, single-throw, (SPST) normally open - each can be independently assigned to absolute or differential pressure
Optional local display	3-digit green LED, automatic ranging
Units of measure	Torr, mbar, or Pascal
I/O connector	Male, 15-pin, high-density D-sub
Relay rating	1A at 30 Vdc resistive, or AC non-inductive
Power required	
Analog version	1.6 Watts maximum
RS-485 version	3.3 Watts maximum
Mounting position	Horizontal preferred
Case material	Aluminum extrusion with powder coat
Convectron sensor filament	Gold-plated tungsten
Other materials exposed to vacuum	304 stainless steel, borosilicate glass, Kovar, alumina, NiFe alloy, polyimide, pyrex, ceramic, silicon, epoxy, RTV and nickel
Internal volume	40 cm ³ (2.5 inch ³)
Weight	340 gm (12 oz) with 1/8 NPT Fitting

Notes

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

Ordering Information

Convectron ATM Modules

Select one of the output configurations, vacuum fitting, and measurement units (RS-485 only) to create the appropriate catalog number.

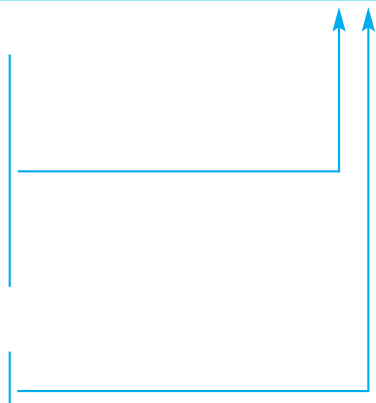
Analog output, no display	385001 - G #
RS-485 interface, no display	385002 - G # - #
RS-485 interface, with display	385003 - G # - #

Vacuum Fitting:

1/8 NPT, 1/2 inch tubulation	P
1/4 inch VCR-type female	Q
1/2 inch VCR-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



Ordering Example

To order a Convectron ATM Module with RS-485 output no display, NW16KF vacuum fitting, and units in Torr, select catalog number 385002-GD-T.

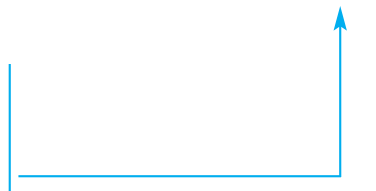
Replacement Gauges

Replacement Gauge for Convectron ATM Modules

385200 - G #

Vacuum Fittings

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



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).



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