

# 316 VACUUM GAUGE CONTROLLER



For *CONVECTRON*<sup>™</sup>, thermocouple, and capacitance manometer gauges.

**GRANVILLE-PHILLIPS**  
HELIX TECHNOLOGY CORPORATION

*Advanced Vacuum Measurement Solutions*

## FEATURES

### Convenience and Versatility

The ever increasing expense and complexity of today's vacuum systems demands easy to use gauging that delivers higher performance and high value. The 316 Vacuum Gauge Controller (VGC) meets these demands.

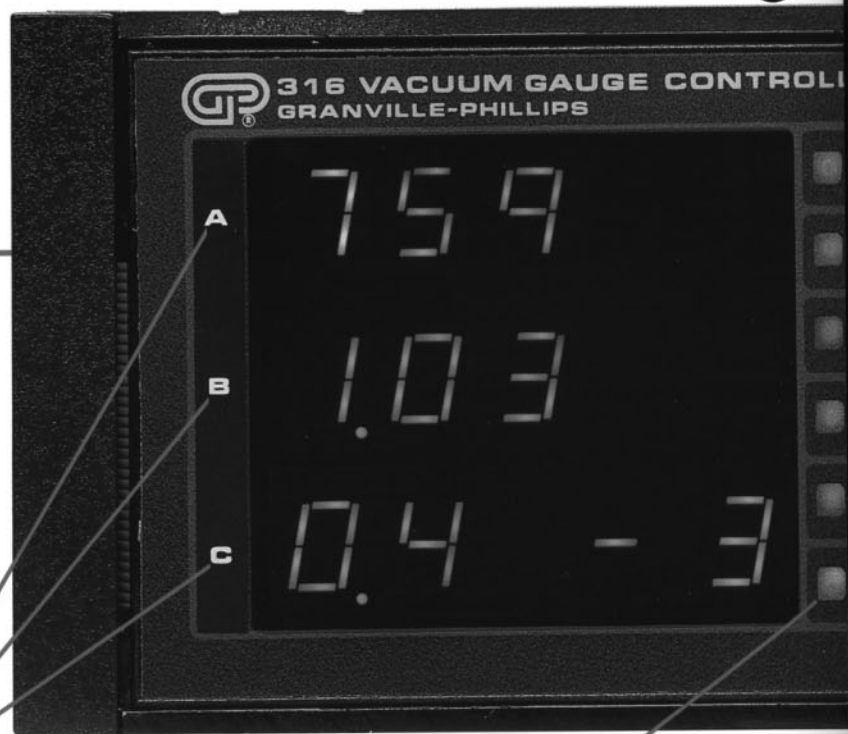
Now you can measure pressure at three points in a vacuum system simultaneously with a single 316 VGC. The 316 VGC displays pressure from up to either three wide-range *CONVECTRON* gauges, two *CONVECTRON* gauges and a capacitance manometer, or three thermocouple gauges.

The compact 3½ in. high half-rack controller replaces up to three single controllers, saving rack or bench space. Modular design makes upgrading fast and simple. Optional RS-232 (wire or fiber optic interface) or IEEE-488 computer interfaces provide convenient remote operation.

### Improved Process Control

The 316 VGC allows automatic control of pressure related events in your vacuum system by offering optional one to four user defined, two- or six-channel process control modules, each with visual status indication of the processes being controlled. Manual override switches for each setpoint allow the operator to assume direct control of the process when required, and may be secured against unauthorized use.

Custom Set-Up  
Select Switches



*CONVECTRON* Gauge,  
Capacitance Manometer,  
or Thermocouple Gauge  
Readouts

Process Control  
Status Lights

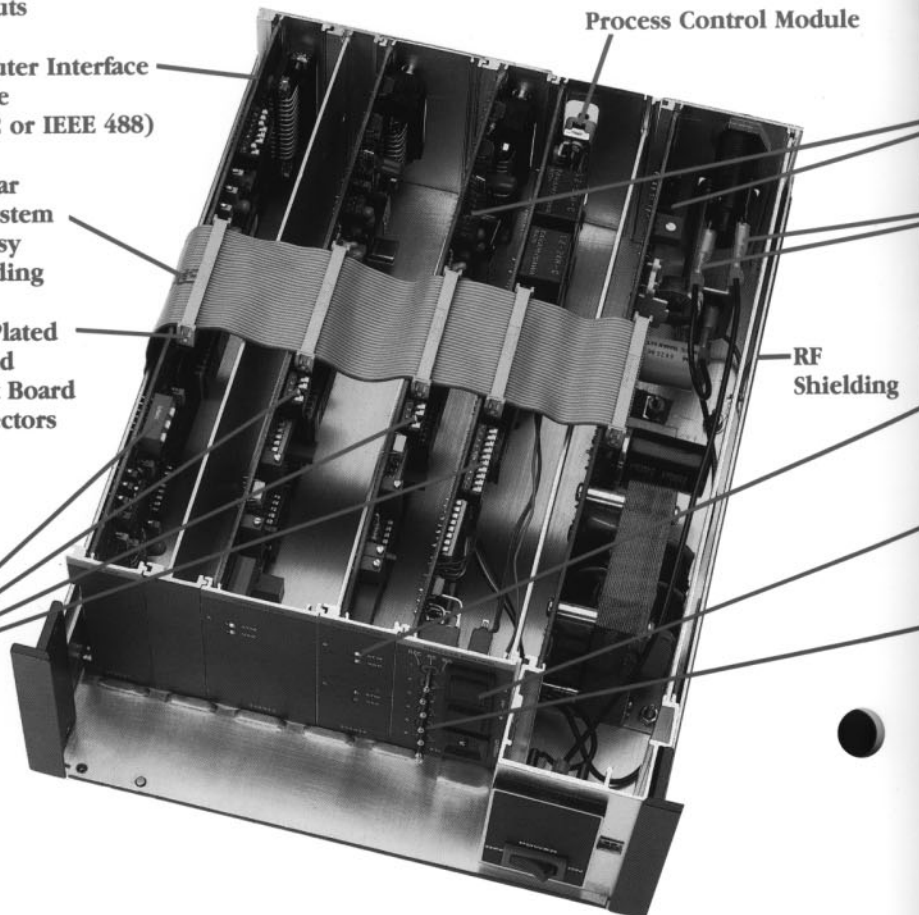
Computer Interface  
Module  
(RS232 or IEEE 488)

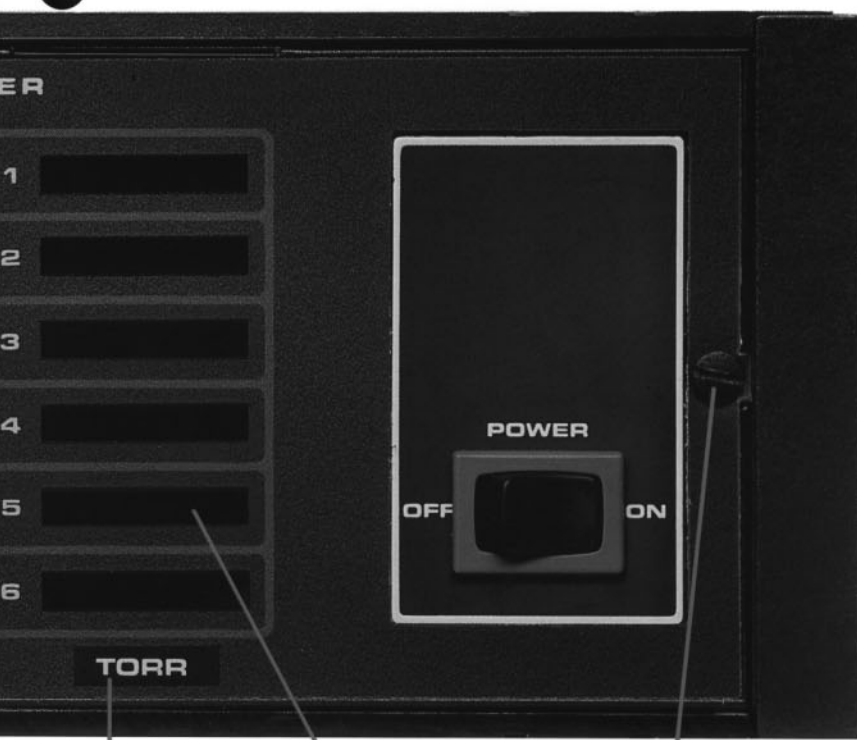
Process Control Module

Modular  
Bus System  
For Easy  
Upgrading

Gold Plated  
Pin and  
Socket Board  
Connectors

RF  
Shielding





Torr/mbar/Pascal  
User Selectable

User  
Process ID Labels

Optional Security  
Lock Available

Trouble Shooting  
LED Indicators

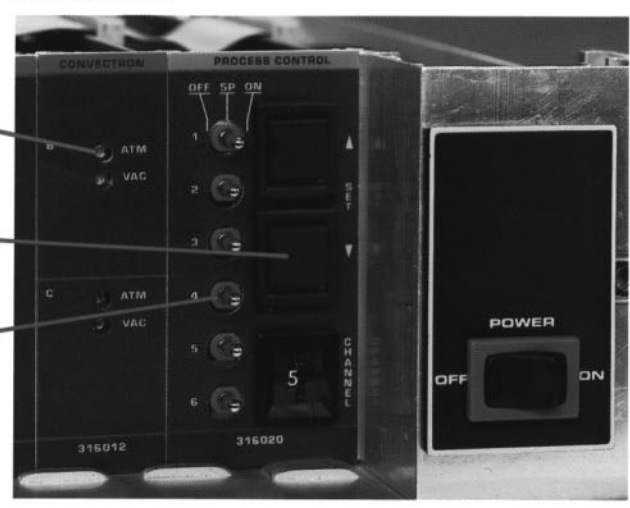
Power Line  
RF Filter

Control Panel

Accessible  
Calibration  
Adjustments

Digital  
Setpoint  
Controls

Manual  
Override  
Switches

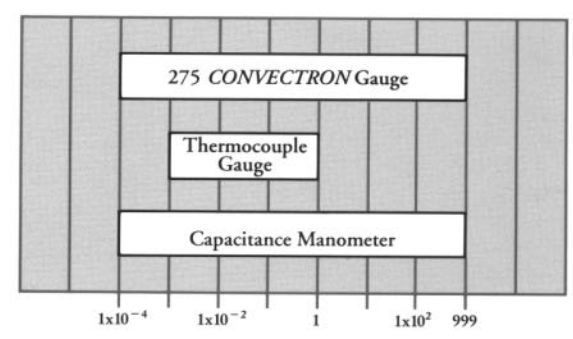


## Broad Range and Accuracy

Using the unique Granville-Phillips *CONVECTRON* gauge, the 316 VGC gives accurate, repeatable pressure readings with excellent resolution from  $1 \times 10^{-4}$  to 999 Torr. Each *CONVECTRON* tube is individually calibrated to be within  $\pm 2\%$  of reading over most of its range and has precise temperature compensation superior to that of conventional Pirani or thermocouple gauges.

The Capacitance Manometer module operates many popular manometer heads with full scale ranges from 1 to 1000 Torr and provides accurate, gas independent measurements.

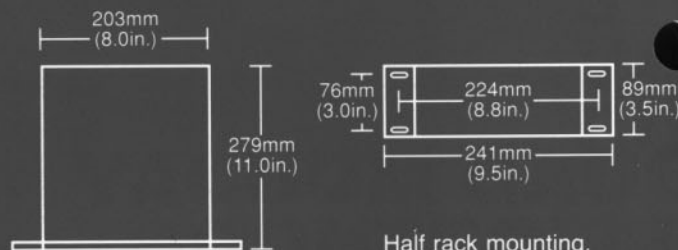
Pressure  
in  
Torr



## Meeting Your Needs

The 316 VGC was designed to meet the demanding needs of today's vacuum users. When you need high value, improved performance, and the proven reliability that goes into every Granville-Phillips product, select the 316 Vacuum Gauge Controller.

# 316 VACUUM GAUGE CONTROLLER



Half rack mounting.

## TECHNICAL DATA

### 316 Basic Controller

**Display format:** torr/mtorr notation, 3 digit mantissa with floating decimal point and exponent

**Unit of measure:** torr, mbar, pascal  
User selectable

**Display update time:** 0.5 second. Selectable to 3 seconds, averaged

**Mounting configurations:** Half rack, full rack centered, full rack offset, bench mount, side-by-side

**Controller ambient temperature:** 0 to 40 °C

**Operating line voltage:** 100, 115, 230 Vac. 50 to 60 Hz

### CONVECTRON Gauge Modules

**Gauge type:** GPC Series 275

**Pressure range:**  $1 \times 10^{-4}$  to 999 Torr, N<sub>2</sub> equivalent

**Gas type:** Calibrated for N<sub>2</sub>

**Analog output:** Linear with respect to the logarithm of pressure.  
1 volt/decade

**Ambient operating temperature; tube:** 15 to 50 °C

**Bakeout temperature; tube:** 150 °C max

### Capacitance Manometer Module

**Transducer types:** MKS models 220B, 221A, 222A/B (422B), 224, 227A  
Vacuum General models CML, CM, CMT, CMH, CMHS  
Please check with GPC regarding compatibility of other transducers.

**Pressure range:**  $1 \times 10^{-4}$  to 999 Torr, dependent on transducer range

**Gas type:** Reading is gas type independent

**Analog output:** Capacitance manometer:  
Linear, 0 to 10 volts

CONVECTRON gauge:  
Logarithmic, 1 volt/decade

### Thermocouple Gauge Modules

**Gauge type:** GPC 270006

**Pressure range:**  $1 \times 10^{-3}$  to 1 Torr, N<sub>2</sub> equivalent

**Gas type:** Calibrated for N<sub>2</sub>

**Analog output:** 0 to 10 volts, nonlinear

### ORDERING INFORMATION

**CATALOG DESCRIPTION**  
**NUMBER**

#### Basic Controllers

<b>316001</b>	Single CONVECTRON gauge, upgradable, accepts modules below
<b>316002</b>	Single Thermocouple gauge, upgradable, accepts modules below

**Note:** the above controllers allow operation of three vacuum gauges

#### Available Modules

<b>316016</b>	Dual CONVECTRON gauge module, Channels B and C
<b>316018</b>	Dual Thermocouple gauge module, Channels B and C
<b>316019</b>	Two channel Process Control module
<b>316020</b>	Six channel Process Control module
<b>316027</b>	One to four channel (user selectable) Process Control module
<b>316021</b>	RS-232 bi-directional interface
<b>316024</b>	RS-232 fiber optic bi-directional interface
<b>316022</b>	IEEE-488 bi-directional interface
<b>316026</b>	Capacitance manometer/CONVECTRON module
<b>316100</b>	True linear analog output module (for thermocouple gauges only) 0-10V

#### Cables

##### Single CONVECTRON Cables

<b>316007</b>	10 feet
<b>316008</b>	25 feet
<b>316009</b>	50 feet
<b>316010</b>	Custom, 500 ft. max.

### Dual CONVECTRON Cables

<b>303030</b>	10 feet
<b>303031</b>	25 feet
<b>303032</b>	50 feet
<b>303040</b>	Custom, 500 ft. max.

### Single Thermocouple Cables

<b>316011</b>	10 feet
<b>316012</b>	25 feet
<b>316013</b>	50 feet
<b>316014</b>	Custom, 200 ft. max.

### Dual Thermocouple Cables

<b>307054</b>	10 feet
<b>307055</b>	25 feet
<b>307056</b>	50 feet
<b>307057</b>	Custom, 200 ft. max.

### Capacitance Manometer Cables

<b>307027</b>	10 feet
<b>307028</b>	25 feet
<b>307029</b>	50 feet

### Where to Order

Information regarding order placement, technical assistance, or the location of the sales office nearest you is available through our corporate office: Granville-Phillips Co., 5675 Arapahoe Ave., Boulder, Colorado 80303-1398, USA, Telephone: (303) 443-7660, (800) 776-6543. Fax: (303) 443-2546

### Terms and Price Policy

F.O.B. Plant, Boulder, Colorado USA. Other terms will be quoted on request. Granville-Phillips reserves the right to change prices and specifications without notice.

### Limited Warranty

This equipment is warranted for a period of one year to be free of defects in materials and workmanship subject to certain exceptions and limitations which are expressly stated in our Limited Warranty for this equipment, a copy of which is included in each instruction manual or which will be mailed to you upon request. Extended warranty available at time of purchase only.

### Call to Order

Call Today for applications assistance or to order vacuum gauges that could significantly increase the productivity of your vacuum-based process.

**GRANVILLE-PHILLIPS**  
HELIX TECHNOLOGY CORPORATION

Advanced Vacuum Measurement Solutions

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