



# Convection Enhanced Pirani Gauges

Accurate from atmosphere  
to mid vacuum.

# Accurate from atmosphere to mid vacuum

**The INFICON Enhanced Pirani family of vacuum gauges uses the most advanced convection enhanced Pirani sensor available on the market.**

- extended measurement range from  $1.3 \times 10^{-4}$  to 1333 mbar
- higher accuracy (up to +/-2.5%) than conventional thermal conductivity Pirani technology

## ADVANTAGES AT A GLANCE

- Convection enhanced Pirani technology for extended measurement range and accuracy.
- Active gauge versions with built-in controller, OLED and mechanical set points in 2 different versions:
  - a) RS232/RS485 digital interface version plus choice of analog output signals
  - b) DeviceNet digital interface version
- Passive gauge version PGE050 + VGC031 controller with display, mechanical set points, RS232/RS485 digital interface and choice of analog output signals.
- Designed for highest drop in compatibility. Replaces various older and current versions of MKS/Granville-Phillips® Mini-Convector® modules (GP275)
- Platinum filament version for corrosion resistance.

## APPLICATIONS

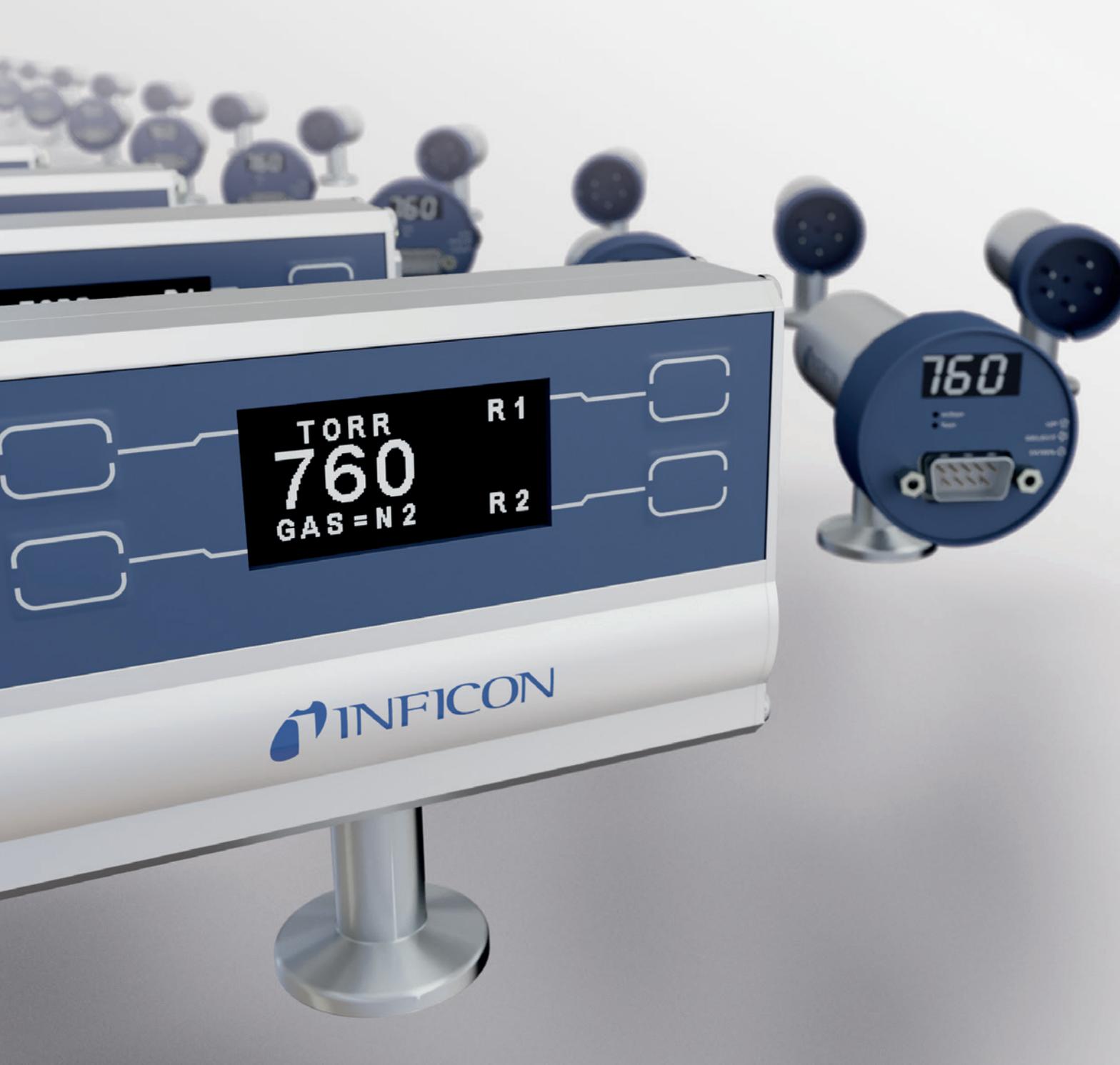
- Fore vacuum pressure monitoring
- General vacuum measurement and control from atmosphere to medium vacuum range
- RAC and Automotive

INFICON convection enhanced Pirani gauges series PGE is available in two active and one passive gauge set up.

The PGE series provides a bright and easy to read OLED display, one or two set points, different analog outputs signals and two different digital interfaces. PGE500 is available either with RS485/RS232 or DeviceNet interface.

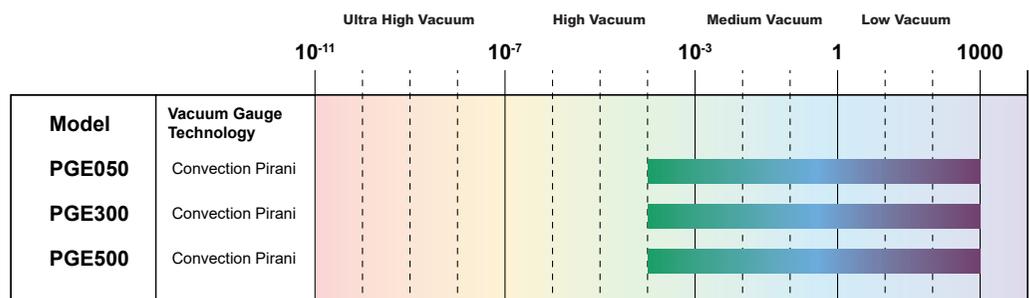
All gauges in the PGE series, PGE050, PGE300 and PGE500, carry the same superior convection enhanced Pirani sensor technology inside and are easy to set up and suited to work carefree in a wide range of semiconductor and industrial applications.





## Convection Enhanced Pirani Family PGE050, PGE300, PGE500

### MEASUREMENT RANGE

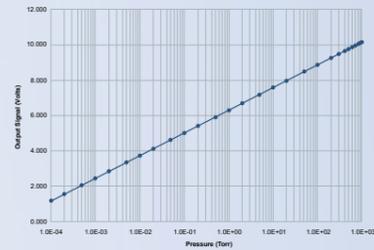


Atmospheric Pressure (ATM) = 1000 mbar (at sea level)

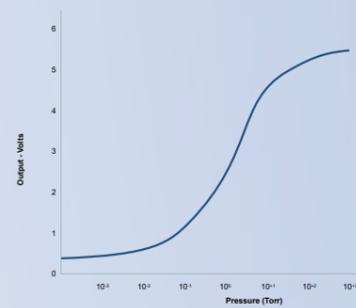
■ Cold Cathode    ■ Pirani    ■ Capacitance Diaphragm

### ANALOG OUTPUT SIGNALS

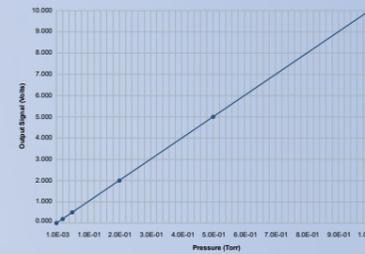
#### Output 0.6 to 10.23 V log-linear



#### Output S-Curve non-linear



#### Output 0 to 10 V linear

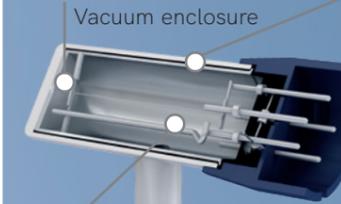


### INTERFACE PGE300

Nine pin D-Sub male analog output



### INFICON PGE050 / PGE300 / PGE500



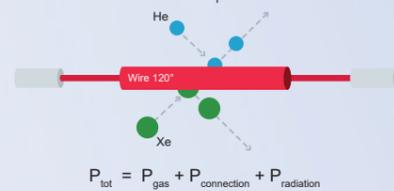
Temperature compensation coils outside of the vacuum enclosure for:

- Less outgassing (due to reduced internal volume and surface area)
- Faster response time to pressure changes

Sensor wire / filament (gold plated tungsten or platinum)  
Robust and simplified design - increased durability with extended warranty

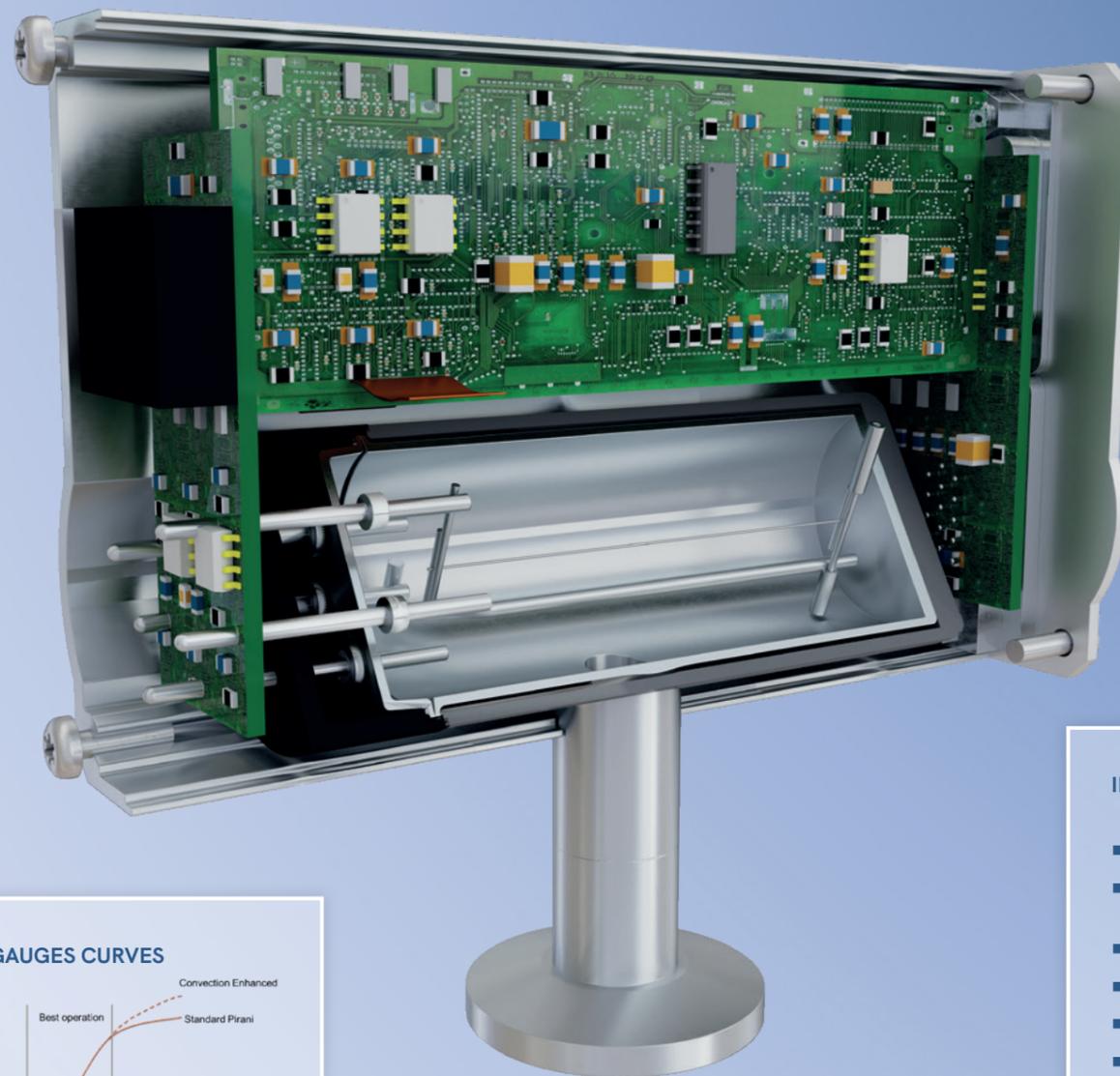
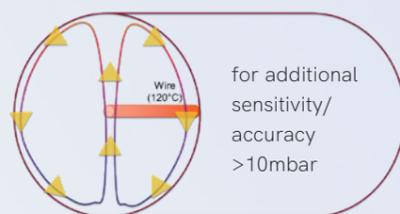
### GENERAL PIRANI PRINCIPLE

The temperature will be conducted through the gas molecules. The temperature loss of the hot filament is a function of the pressure.

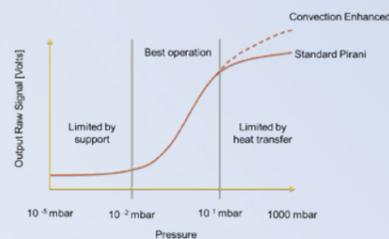


### CONVECTION ENHANCED PIRANI PRINCIPLE

The convection enhanced Pirani allows convection current circulation within the measurement tube. The wire heats the surrounding gas causing it to rise to the top of the tube where it is cooled and returned to the bottom, simultaneously the cooler gas is drawn from the bottom, resulting in the convection circulation process. This physics results in additional sensitivity/accuracy above 10 mbar.



### PIRANI GAUGES CURVES



### PASSIVE GAUGE / CONTROLLER SET UP



### ACTIVE GAUGE VERSIONS



### INTERFACE PGE500

- Bright OLED display
- Designed for easy operation and natural progression of set up parameters
- Four soft-keys located on front panel used to select and program various functions
- The display identifies what function key represents during programming
- Version A: RS485/ RS232 + analog output
- Version B: DeviceNet



## CONVECTION ENHANCED PIRANI GAUGES

SPECIFICATIONS		PGE050, PGE300 & PGE500
Measurement range		1.3 x 10 <sup>-4</sup> ... 1333 mbar 1 x 10 <sup>-4</sup> ... 1000 Torr 1.3 x 10 <sup>-2</sup> Pa ... 133 kPa
Accuracy (N <sub>2</sub> ) <sup>1</sup>	1.3 x 10 <sup>-4</sup> ... 1.3 x 10 <sup>-3</sup> mbar 1.3 x 10 <sup>-3</sup> ... 530 mbar 530 ... 1333 mbar	0.1 x 10 <sup>-3</sup> mbar resolution +10 % of reading +2.5 % of reading
	1 x 10 <sup>-4</sup> ... 1 x 10 <sup>-3</sup> Torr 1 x 10 <sup>-3</sup> ... 400 Torr 400 ... 1000 Torr	0.1 mTorr resolution +10 % of reading +2.5 % of reading
Repeatability (N <sub>2</sub> ) <sup>1</sup>		+2% of reading
Electrical connection	PGE300 (analog)	D-Sub, 9-pin, male
	PGE500 (RS485, RS232, analog)	D-sub, 9-pin, male and D-sub, 15-pin HD, male (with RS485)
	PGE500 (DeviceNet)	D-sub 9-pin, male used for setpoint relays and 5-pin Micro for power and DeviceNet interface
Supply voltage		+12 ... +28 <sup>2)</sup>
Materials exposed to vacuum		gold-plated W (or platinum), 304 & 316 stainless steel, glass, Ni, Teflon®
Internal volume		26 (1.589) cm <sup>3</sup> (in <sup>3</sup> )
Internal surface area		59.7 (9.25) cm <sup>3</sup> (in <sup>3</sup> )
Admissible temperature	<b>PGE050</b> Operation Bakeout <sup>3)</sup>	0 ... +50 °C <150 °C
	<b>PGE300</b> Operation Bakeout Storage	0 ... +40 °C <70 °C -40 ... +70 °C
	<b>PGE500</b> Operation Bakeout (electronics removed) Storage	0 ... +40 °C <150 °C -40 ... +70 °C
Setpoint relay	<b>PGE300</b>	1 (single-pole double-throw relay (SPDT) 1A at 30V(dc) resistive, or V(ac) non-inductive
	<b>PGE500</b>	2 (single-pole double-throw relays(SPDT) 1A at 30V(dc) resistive, or V(ac) non-inductive

<sup>1)</sup> Typically

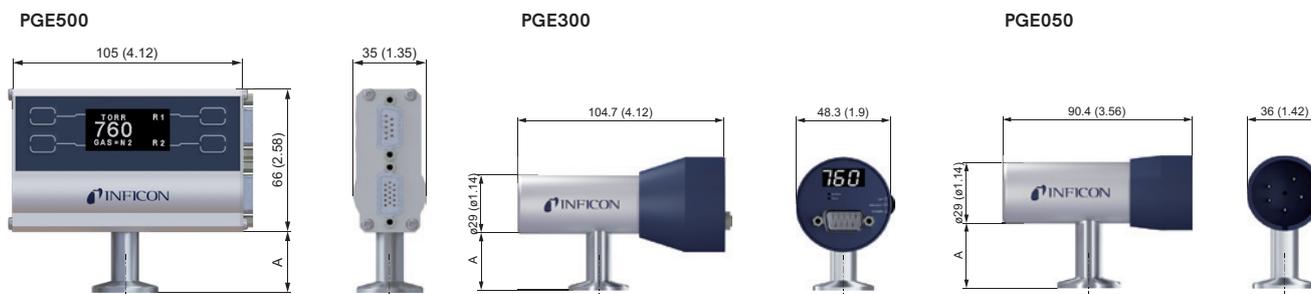
<sup>2)</sup> 2W protected against power reversal and transient over-voltages

<sup>3)</sup> non-operating, with electronics cable detached



## DIMENSIONS

mm (inch)



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Due to our continuing program of product improvements, specifications are subject to change without notice.  
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