Hot Ion Vacuum Gauges

From atmosphere to ultrahigh vacuum with one gauge

INFICON

Inspired by visions. Proven by success.

From atmosphere to ultrahigh vacuum with one gauge

The INFICON Hot Ion Family of vacuum gauges combines the advantages of up to three different technologies in a single compact economic package to measure process and base pressure from 5 x10^{-10} to 1500 mbar (3.75 x10^{-10} to 1125 Torr). Combining technologies reduces the complexity of installation, setup, and integration, thus reducing cost and valuable tool space.

ADVANTAGES AT A GLANCE

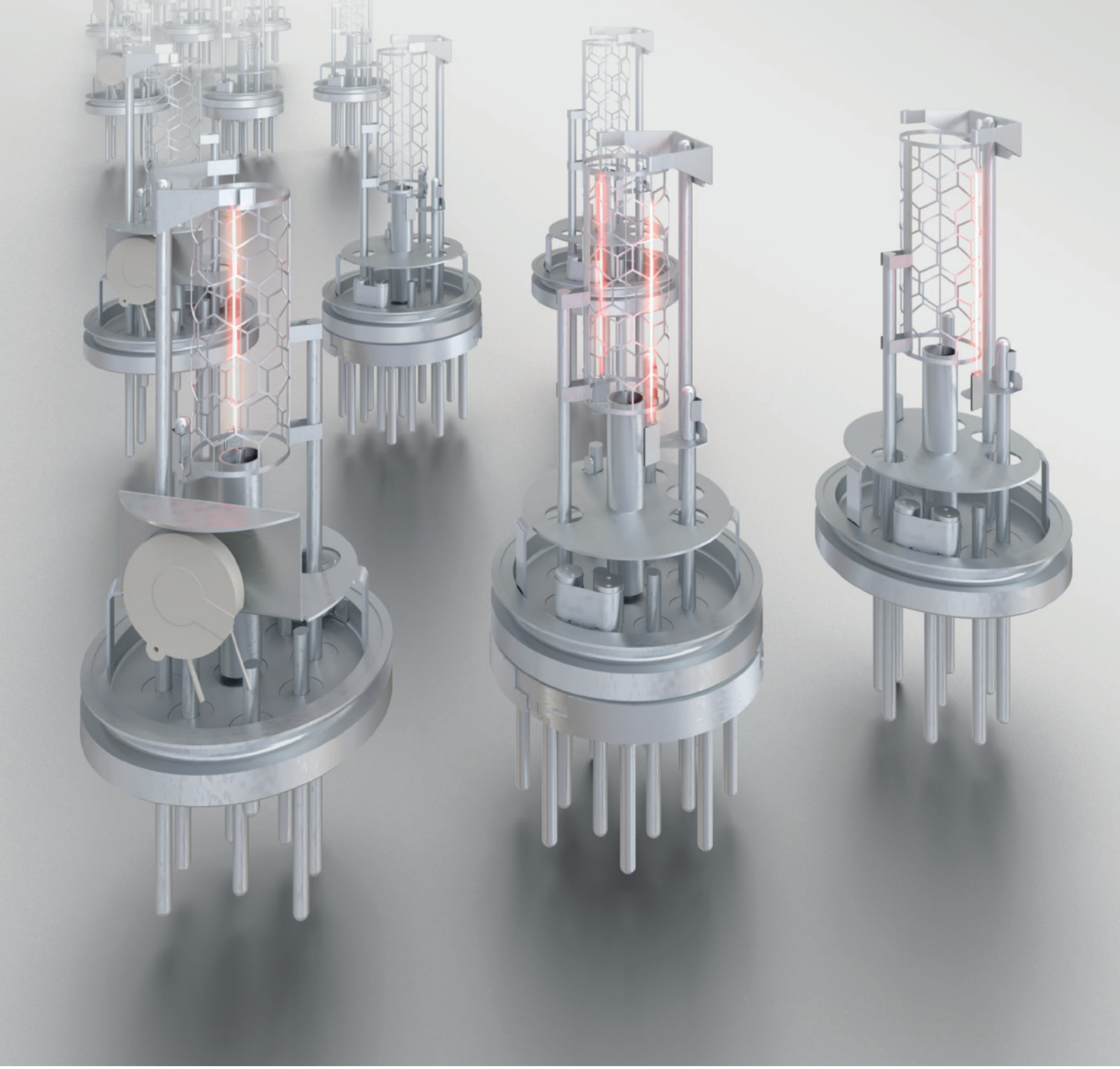
- Up to 13 decades in one gauge
- Save costs and tool space
- Install and forget
- Long lifetime
- Easy to exchange sensing element

TYPICAL APPLICATIONS

- Pressure measurement for semiconductor process, transfer, and load lock chambers
- General vacuum measurement and control in the low to ultrahigh vacuum range
- Physical vapor deposition (PVD) in industrial coating

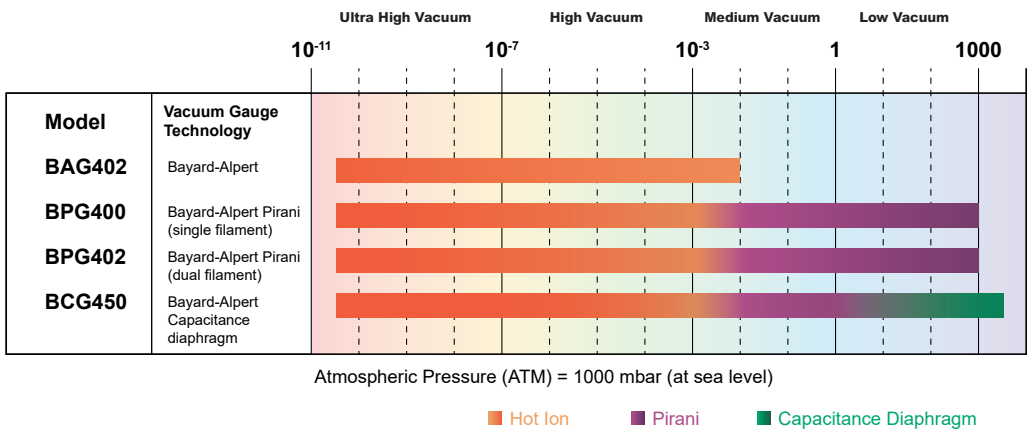
For applications that require stand alone hot ion gauge technology, INFICON offers the single technology Bayard Alpert Hot Ion Gauge BAG402-S.

The supported single or dual filament options offer superior accuracy and longevity. A broad range of interface options enable simple system integration.



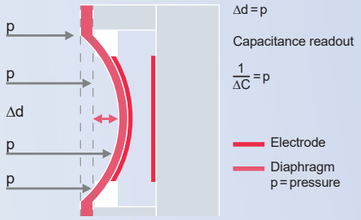
The Hot Ion Family

MEASUREMENT RANGE

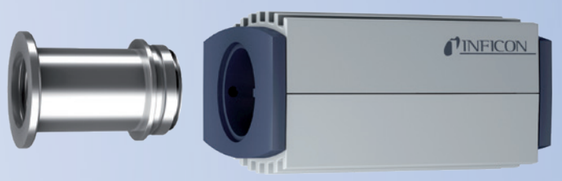


CDG WORKING PRINCIPLE

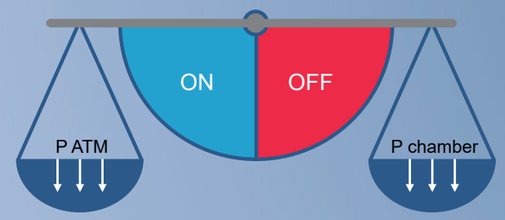
Direct pressure measurement
by diaphragm



REPLACEMENT SENSOR WITH ON-BOARD CALIBRATION DATA CHIP (BAG402, BPG402,BCG450)

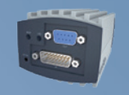


DIFFERENTIAL PRESSURE MEASUREMENT



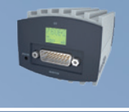
INTERFACES

EtherCAT
PROFINET



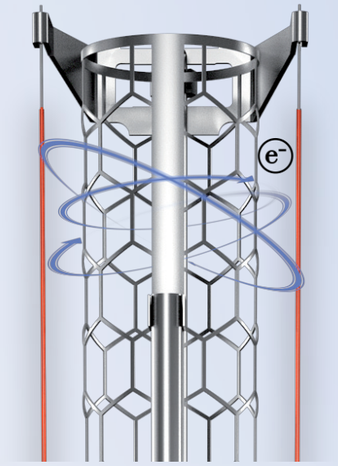
PROFIBUS

DeviceNet

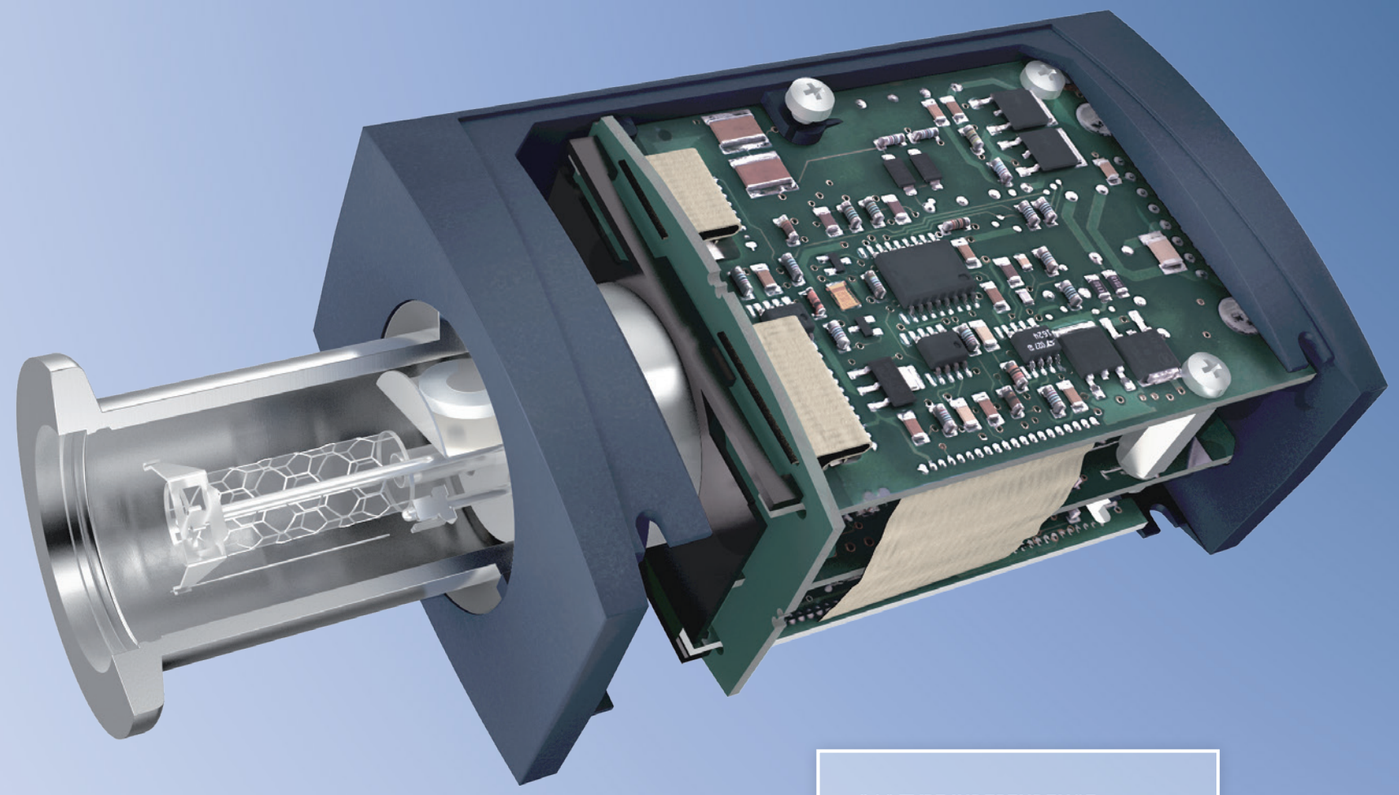


Analog / RS232
(optional display)

BAYARD-ALPERT SENSOR SYSTEM



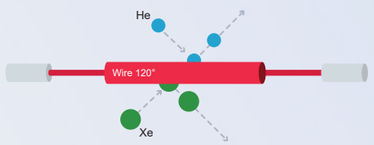
Long lifetime yttrium oxide coated iridium filaments



FEATURES

- Standard Logarithmic analog output signal
- Display
- Setpoints
- Status LED
- Single-, Dual, Triple Gauge Sensor
- ATM SWITCH function

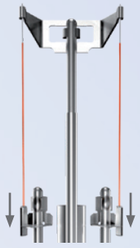
PIRANI PRINCIPLE



$P_{tot} = P_{gas} + P_{connection} + P_{radiation}$

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

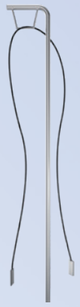
STABILITY AND ACCURACY



Filaments are kept precisely in position

Controlled tension

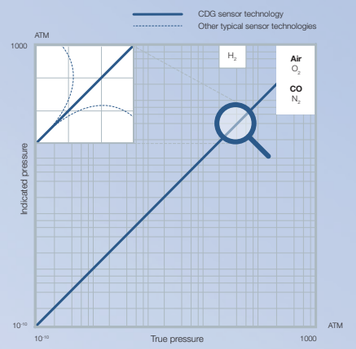
V-shaped filaments sag and displace



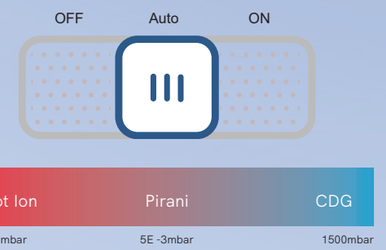
Stable

Nonstable

GAS TYPE INDEPENDENCE (BCG450)



ENHANCED LIFETIME THROUGH INTELLIGENT FILAMENT ON/OFF CONTROL



HOT ION VACUUM GAUGES

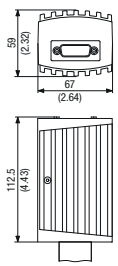
SPECIFICATIONS			BPG400	BPG402	BCG450
Sensor technology			Bayard-Alpert + Pirani	Bayard-Alpert (dual filament) + Pirani	Bayard-Alpert + Pirani + CDG + ATM sensor
Measurement range			5×10^{-10} … 1000 mbar 3.8×10^{-10} … 750 Torr		5×10^{-10} … 1500 mbar 3.75×10^{-10} … 1125 Torr
Accuracy (N_2) [1]	10^{-8} … 10^{-2} mbar		±15 % of reading		-
	10^{-8} … 50 mbar 50 … 950 mbar 950 … 1050 mbar		-		±15% of reading ±5% of reading ±2.5% of reading
Repeatability (N_2) [1]	10^{-8} … 10^{-2} mbar		5% of reading		
Degas	p < 7.2×10^{-6} mbar		Electron bombardment (max. 3 min)		
Electrical connection (analog / RS232)			D-sub, 15-pin, male		
Supply voltage			+20 … +28V / 0.8 A (dc) [2]		
Output signal analog			0 … 10 V (dc)		10.13 V (dc)
Voltage vs. pressure			log-linear, 0.75 V/decade		
Materials exposed to vacuum			Yt^2O^3, Ir, Pt, Mo, Cu, W, NiFe, NiCr, stainless steel, glass		Yt^2O^3, Ir, Mo, Cu, W, NiFe, NiCr, Al^2O^3, SnAg stainless steel, glass
Temperature	Operating		0 … +50°C		
	Bake-out	at flange with flange extension electronics removed	80°C 150°C [3] 150°C		
	Storage		-20 … +70°C		
Degree of protection			IP30		
Onboard sensor calibration data			-	yes	yes
Setpoints			Two with digital interfaces [2]	One for analog version Two with digital interfaces [2]	Two along with digital interfaces [2]
Display (optional)			yes (only analog / RS232 versions)		
Interfaces	digital interface 1		RS232 (integrated in D-sub15 connector)		
	digital interface 2		Profibus DP, DeviceNet	Profibus DP, DeviceNet, EtherCAT, ProfiNET	

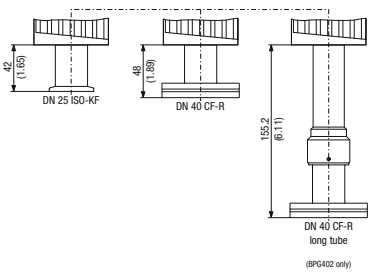
1 Typically
2 2W protected against power reversal and transient over-voltages
3 horizontally mounted

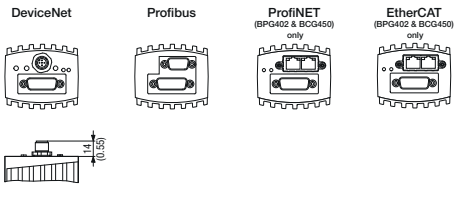
CE

DIMENSIONS

BPG40x / BCG450







mm (inch)

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