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BPG402-S

Bayard-Alpert Pirani Gauge

The INFICON Bayard-Alpert Pirani Combination Gauge, BPG402-S, functions as two gauges in a single compact unit measuring from 5 × 10^{-10} mbar to atmosphere (3.8 × 10^{-10} Torr to atmosphere). Combining technologies reduces the complexity of installation, setup, and integration. Choose the BPG402-S with two yttrium oxide coated iridium filaments for affordable and repeatable process to base pressure measurements in one economical package. Sensing elements with on-board calibration data guarantees high reproducibility when exchanging sensors.



ADVANTAGES

- Extremely wide measurement range from 5 × 10^{-10} mbar to atmosphere (3.8 × 10^{-10} Torr to atmosphere)
- Excellent repeatability in the process pressure range from 10^{-8} …10^{-2} mbar of 5%
- Pirani interlock protects the filament from premature burnout
- Two long-life yttrium oxide coated iridium filaments
- Optional graphic display and Fieldbus interfaces available, e.g. EtherCAT, DeviceNet, etc.
- Latest EtherCAT protocol generation 2.0
- Automatic high vacuum Pirani adjustment reduces operator interventions
- Easy to exchange sensing element with on-board calibration data guarantees high reproducibility
- RoHS compliance

APPLICATIONS

- Pressure measurement in semiconductor process and transfer chambers
- Industrial coating
- General vacuum measurement and control in the low to ultra high vacuum range

BPG402-S

ORDERING INFORMATION

Type	BPG402-S w/o display	BPG402-S with display	BPG402-SL with long tube w/o display	BPG402-SP with Profibus DP[1]	BPG402-SD with DeviceNet™[1]	BPG402-SE with EtherCAT®[2] [1]
DN 25 ISO-KF	**353-570**	**353-572**	-	**353-574**	**353-576**	**353-596**
DN 40 CF-R	**353-571**	**353-573**	**353-578**	**353-575**	**353-577**	**353-597**

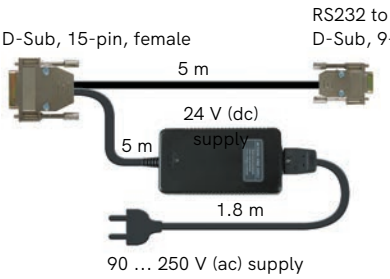
[1] Communication standard ETG.5 == 3.2080 S (R) V1.3.0; old version V1.0.0 still available on request

[2] not available with LCD

Spare Parts	BPG402-S	BPG402-S	BPG402-SL	BPG402-SP	BPG402-SD	BPG402-SE
Replacement sensor DN 25 ISO-KF	**354-494**	**354-494**	-	**354-494**	**354-494**	**354-494**
Replacement sensor DN 40 CF-R	**354-495**	**354-495**	**354-496**	**354-495**	**354-495**	**354-495**

Accessories	Part no.
Power supply 24 V (dc) / RS232C line	**353-511**
Baffle	**353-512**
Centering ring with baffle DN 25 ISO-KF	**211-113**

Power supply 24 V (dc) / RS232C line



Baffle:

Prevents contamination of the sensor.
Easy installation into the vacuum connection - no tools required.



BPG402-S

SPECIFICATIONS

	BPG402-S / -SL Standard	BPG402-S Display
Measurement range (air, O_2, CO, N_2)	5×10^{-10} … 1000 mbar (3.8×10^{-10} … 750 Torr)	
Accuracy 10^{-8} … 10^{-2} mbar	±15% of reading	
Repeatability 10^{-8} … 10^{-2} mbar	5% of reading	
Degas [1] p < 7.2×10^{-6} mbar	Electron bombardment, max. 3 min	
Pressure, max. (absolute)	2 bar	
Temperature		
Operation (ambient)	0 - +50°C	
Storage	-20 - +70°C	
Bakeout at flange without electronics		
BPG402-S	80°C	
BPG402-SL	150°C	
Supply voltage	+20 - +28 V / ≤0.8 A (dc)	
Output signal analog	0 - +10 V	
Measurement range	+0.774 - +10 V	
Voltage vs. pressure	0.75 V / Decade	
Error signal	0.1 / 0.3 / 0.5 V	
Load impedance, min.	10 kΩ	
Set point relay	1	
Range	1×10^{-9} … 100 mbar	
Relay contact	NO, potential free	
Hysteresis	10% of reading	
Contact rating	≤30 V / ≤0.5 A (dc)	
Digital functions	Degas	
Interface (digital) [2]	RS232C	
Emission control	Automatic / manual via interface	
Filament	Two Yt_2O_3 coated Ir	
Filament status	LED / digital output	
Electrical connection	D-Sub, 15 pin, male	
Cable length, max. [3]	100 m (330 ft)	
Materials exposed to vacuum	Yt_2O_3, Ir, Pt, Mo, Cu, W, NiFe, NiCr, stainless steel, glass	
Internal volume KF / CF	24 cm^3 (1.46 $in.^3$) / 34 cm^3 (2.1 $in.^3$)	
Weight KF / CF	450 g / 710 g	
Degree of protection	IP30	

[1] Reduced accuracy during degas

[2] Simultaneous use of RS232C or VGC40x and VGC50x series controllers and Fieldbus is not allowed

[3] For RS232C operation <30 m

BPG402-S

SPECIFICATIONS INTERFACES

DeviceNet™	
Protocol	DeviceNet™, group 2 slave only
Data rate switch	125, 250, 500 kBaud or network programmable
Cable length	
125 kbps	500 m (1650 ft.)
250 kbps	250 m (825 ft.)
500 kbps	100 m (330 ft.)
MAC ID	Two switches (address 00 – 63) or network programmable
Digital functions	Read pressure, select units: Torr, mbar, Pa Degas function, Pirani full scale adjust Monitor gauge status Safe state allows definition of behavior in case of error Detailed alarm and warning information
Analog functions	0 … 10 V analog output pressure indication two setpoint relays A + B
Visual communication indicators	LED network status (green / red) LED module status (green / red)
Specification	DeviceNet™ “Vacuum Gauge Device Profile”
Device type	“CG” for combination gauge
I / O slave messaging	Polling only
Setpoint relays	2
Range	1×10^{-9} … 100 mbar
Relay contact	NO, potential free
Hysteresis	10 % of reading
Contact rating	60 V / 0.5 A (dc)
Supply voltage for DeviceNet™	+11 - +25 V / 0.5 A (dc)
Supply voltage for gauge	+20 - +28 V / 0.8 A (dc)
Connector for DeviceNet™	Microstyle, 5-pin
Connector for Gauges (analog output, supply voltage, setpoints)	D-Sub, 15-pin, male

EtherCAT®	
Protocol	EtherCAT®
Communication standards	Semiconductor Device Profile ETG.5003 Part 1 Common Device Profile ETG.5003 Part 2080 “Specific Device Profile - Vacuum Pressure Gauge"
Process Data	Fixed PDO mapping and configurable PDO mapping
EtherCAT connector	RJ45, 8-pin (socket), IN and OUT
Cable	Shielded Ethernet CAT5e or higher
Cable length	≤100 m (330 ft.)
Data rate	100000 Kbps

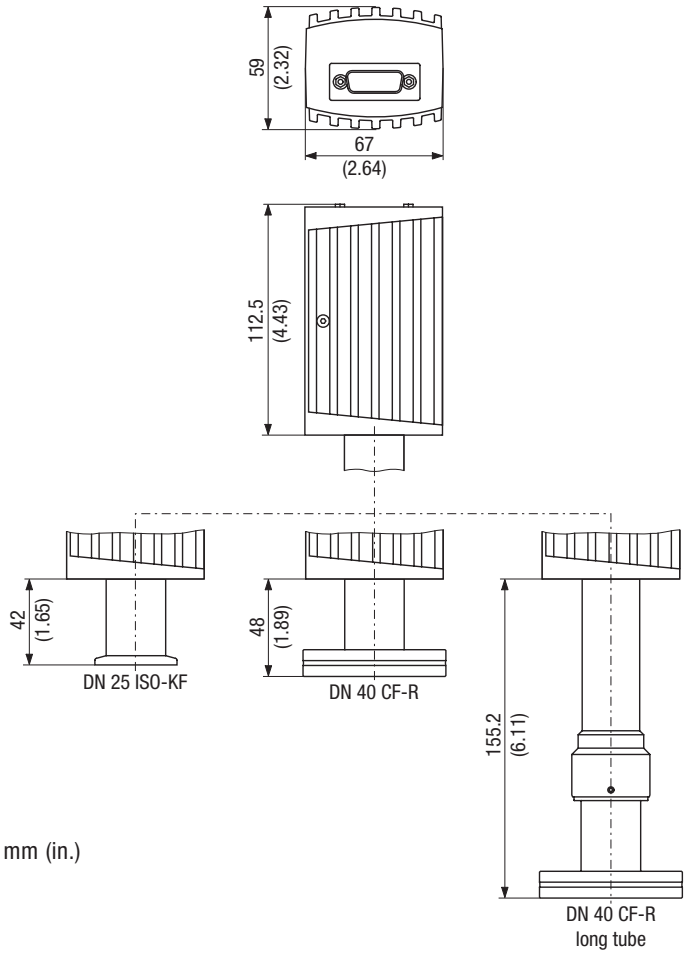
BPG402-S

PROFIBUS DP	
Baud rates	9.6 / 19.2 / 93.75 / 187.5 / 500 kBaude 1.5 / 12 MBaud
Address	Two switches (address 00 - 127) or network programmable
Digital functions	Read pressure, select units: Torr, mbar, Pa Degas function, Pirani full scale adjust Monitor gauge status, filament status Safe state allows definition of behavior in case of error Detailed alarm and warning information
Analog functions	0 … 10 V analog output pressure indication two setpoint relays A + B
Setpoint relays	2
Range	1×10^{-9} … 100 mbar
Relay contact	NO, potential free
Hysteresis	10 % of reading
Contact rating	≤30 V / ≤0.5 A (dc)
Connector for Profibus DP	D-Sub, 9-pin, female
Connector for BPG (analog output, supply voltage, setpoints)	D-Sub, 15-pin, male

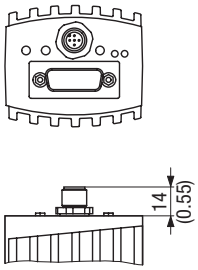
BPG402-S

DIMENSIONS

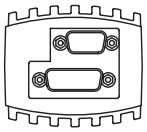
BPG402-S/-SL



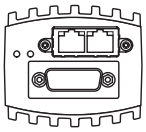
BPG402-SD (DeviceNet)



BPG402-SP (Profibus)



BPG402-SE (EtherCAT)



mm (in.)

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