

## BPG402-Sx ATM to Ultra-High Vacuum Gauge

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The INFICON Bayard-Alpert Pirani Combination Gauge, BPG402-S, functions as two gauges in a single compact unit measuring from  $5 \times 10^{-10}$  mbar to atmosphere ( $3.8 \times 10^{-10}$  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.



### BENEFITS

- Extremely wide measurement range from  $5 \times 10^{-10}$  mbar to atmosphere ( $3.8 \times 10^{-10}$  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
- Automatic high vacuum Pirani adjustment reduces operator interventions
- Easy to exchange sensing element with on-board calibration data guarantees high reproducibility
- RoHS compliance

### ORDER INFORMATION

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Type	BPG402-S
BPG402-S DN 25 ISO-KF	353-570
BPG402-S DN 40 CF-R	353-571
BPG402-S LCD, DN 25 ISO-KF	353-572
BPG402-S LCD, DN 40 CF-R	353-573
BPG402-SD DNet, DN 25 ISO-KF	353-576
BPG402-SD DNet, DN 40 CF-R	353-577
BPG402-SE ECAT, DN 25 ISO-KF	353-590
BPG402-SE ECAT, DN 40 CF-R	353-591
BPG402-SL long tube DN 40 CF-R	353-578
BPG402-SP PBus, DN 25 ISO-KF	353-574
BPG402-SP PBus, DN 40 CF-R	353-575

## SPECIFICATIONS

Type	BPG402-S
Measurement range (air, O <sub>2</sub> , CO, N <sub>2</sub> )	5×10 <sup>-10</sup> ... 1000 mbar
Measurement range (air, O <sub>2</sub> , CO, N <sub>2</sub> )	3.8×10 <sup>-10</sup> ... 750 Torr
Accuracy	
10 <sup>-8</sup> ... 10 <sup>-2</sup> mbar	% of reading ±15
Repeatability	
10 <sup>-8</sup> ... 10 <sup>-2</sup> mbar	% of reading 5
Degas (1)	
p < 7.2 × 10 <sup>-6</sup>	mbar electron bombardment, max. 3 min
Pressure, max.	2 bar (absolute)
Temperature	
Operation (ambient)	0 ... +50 °C
Storage	-20 ... +70 °C
Bakeout at flange without electronics BPG402-S	80 °C
Bakeout at flange without electronics BPG402-SL	150 °C
Supply voltage	V (dc) +20 ... +28
Supply voltage	A (dc) ≤0.8
Output signal analog	

## SPECIFICATIONS

Type		BPG402-S
Output signal	V	0 ... +10
Measurement range	V	+0.774 ... +10
Error signal	V	0.1 / 0.3 / 0.5
Output signal analog		
Voltage vs. pressure	volts per decade	0.75
Output signal analog		
Load impedance, min.	kΩ	10
Setpoint relay		
Number of setpoints		1
Relay contact		n.o., potential free
Setpoint relay		
Range	mbar	1×10 <sup>-9</sup> ... 100
Setpoint relay		
Hysteresis	% of reading	10
Setpoint relay		
Contact rating	V (dc)	≤30
Setpoint relay		
Contact rating	A (dc)	≤0.5
Digital functions		
Interface (digital) (2)		degas RS232C
Emission control		automatic / manual via interface
Filament		two Yt <sub>2</sub> O <sub>3</sub> coated Ir
Filament status / relay		LED / relay
Electrical connection		
Cable length, max. (3)	m (ft.)	D-Sub, 15-pin, male 100 (330)
Materials exposed to vacuum		Yt <sub>2</sub> O <sub>3</sub> , Ir, Pt, Mo, Cu, W, NiFe, NiCr, stainless steel, glass
Internal volume KF / CF	cm <sup>3</sup> (in. <sup>3</sup> )	24 (1.46) / 34 (2.1)
Weight KF / CF	g	450 / 710
Degree of protection		
		IP30
Profibus DP		
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
Profibus DP		
Baud rates	Mbaud	1.5 / 12
Profibus DP		

## SPECIFICATIONS

Type	BPG402-S	
Address	2 switches (address 00 - 127) or network programmable	
Digital functions	read pressure, select units: Torr, mbar, Pa; emission control, degas function, monitor gauge status, filament status, safe state allows definition of behavior in case of error, detailed alarm and warn	
Analog functions	0 ... 10 V analog output pressure indication, two setpoint relays A + B	
Setpoint relays: Number of setpoints	2	
Setpoint relays: Relay contact	n.o., potential free	
Connector for Profibus DP	D-Sub, 9-pin, female	
Connector for CDG (analog output, supply voltage, setpoints)	D-Sub, 15-pin, male	
Profibus DP		
Setpoint relays: Range	mbar	$1 \times 10^{-9}$ ... 100
Profibus DP		
Setpoint relays: Hysteresis	% of reading	10
Profibus DP		
Setpoint relays: Contact rating	V (dc)	$\leq 30$
Profibus DP		
Setpoint relays: Contact rating	A (dc)	$\leq 0.5$
DeviceNet™		
Protocol	DeviceNet™, group 2 slave only	
MAC ID	2 switches (address 00 - 63) or network programmable	
Digital functions	read pressure, select units: Torr, mbar, Pa ; emission control, degas function , monitor gauge status, filament status , safe state allows definition of behavior in case of error , detailed alarm and	
Analog functions	0 ... 10 V analog output pressure indication , two setpoint relays A + B	
Specification	DeviceNet™ "Vacuum Gauge Device Profile"	
Device type	"CG" for combination gauge	
I / O slave messaging	polling only	
Setpoint relay: Number of setpoints	2	

## SPECIFICATIONS

Type	BPG402-S	
Setpoint relays: Relay contact	n.o., potential free	
Connector for DeviceNet™	Microstyle, 5-pin	
Connector for BPG (analog output, supply voltage, setpoints)	D-Sub, 15-pin, male	
DeviceNet™		
Data rate switch	kBaud	125, 250, 500 or network programmable
DeviceNet™		
Cable length 125 kbps	m (ft.)	500 (1650)
Cable length 250 kbps	m (ft.)	250 (825)
Cable length 500 kbps	m (ft.)	100 (330)
DeviceNet™		
Setpoint relays: Range	mbar	1×10 <sup>-9</sup> ... 100
DeviceNet™		
Setpoint relays: Hysteresis	% of reading	10
DeviceNet™		
Setpoint relays: Contact rating	V (dc)	≤30
Supply voltage for DeviceNet™	V (dc)	+11 ... +25
Supply voltage for gauge	V (dc)	+20 ... +28
DeviceNet™		
Setpoint relays: Contact rating	A (dc)	≤0.5
Supply voltage for DeviceNet™	A (dc)	≤0.5
Supply voltage for gauge	A (dc)	≤0.8
EtherCAT		
Protocol EtherCAT	protocol specialized for EtherCAT	
Communication standards	ETG.5003 Part 1 "Semiconductor Device Profile" ETG.5003 Part 2080 "Specific Device Profile: Vacuum Pressure Gauge"	
Node address	Explicit Device Identification	
Physical layer	100BASE-Tx (IEEE 802.3)	
Digital functions EtherCAT	read pressure, select units: Torr, mbar, Pa emission control, degas function monitor gauge status, filament status safe state allows definition of behavior in case of error detailed alarm and warning	

## SPECIFICATIONS

Type		BPG402-S
Process data		Fixed PDO mapping and configurable PDO mapping
Mailbox (CoE)		SDO requests, responses and information
EtherCAT connector		RJ45, 8-pin (socket), IN and OUT
Cable		shielded Ethernet CAT5e or higher
EtherCAT		
Cable length	m (ft.)	≤100 (330)

- 1) Reduced accuracy during degas
- 2) Simultaneous use of RS232C or VGC40x series controllers and Fieldbus is not allowed
- 3) For RS232C operation <30m

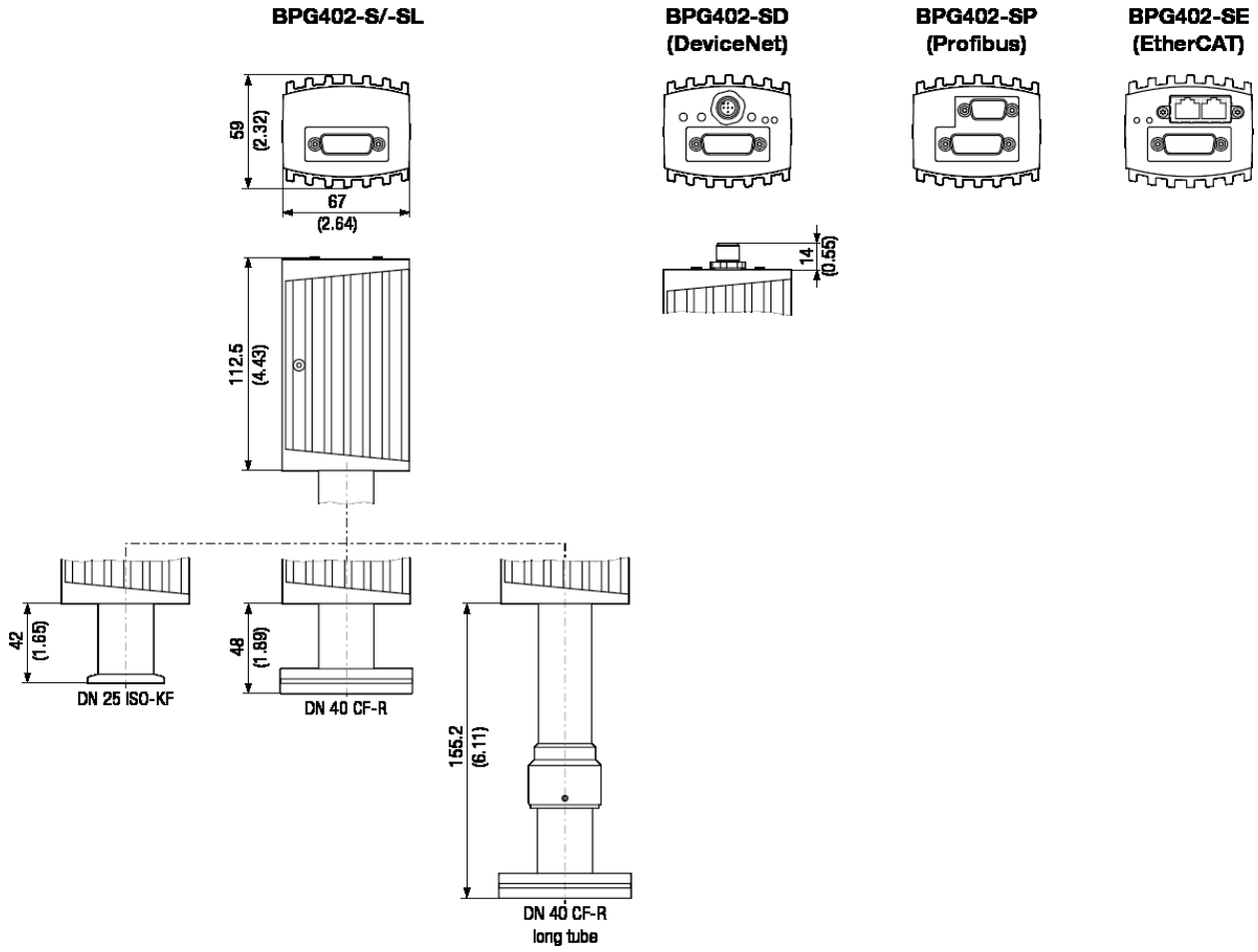
## SPAREPARTS

	BPG402-S
Spare sensor head BPG402 DN 25 ISO-KF	354-494
Spare sensor head BPG402 DN 40 CF-R	354-495

## ACCESSORIES

	BPG402-S
Baffle for BPG400	353-512
Centering ring with baffle DN 25 KF	211-113
Power supply BPG400 24VDC	353-511

## DIMENSIONS



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