Trigon™ BPG552 DualGauge

Bayard-Alpert Pirani Gauge

For applications that require a measurement range from UHV (5 x10^{-10}) up to ATM (1000 mbar) the Trigon™ family contents the dual technology BPG552 gauge. BPG552 consists out of an Bayard-Alpert Hot Ionization sensor element as well out of a classical, robust and reliable Pirani sensor element. Beside of extending the usable process to base pressure measuring range of BPG552, the integrated Pirani also automatically switches on/ off the Bayard-Alpert high vacuum sensing element, depending on unhealthy pressure changes during the process. Combining technologies reduces the complexity of installation, setup, and integration, thus reducing cost and valuable tool space. The supported Bayard-Alpert dual filament offers superior accuracy, repeatability and longevity. The removable calibration data chip, that comes along with the easy to install BPG552 spare sensor, to secure a seamless accurate process measurement, enables a higher bakeability of the sensor unit. BPG552 is available with analog output or EtherCAT interface option. Both enable easiest system integration. The TrigonTM BAG552 can also be operated in conjunction with the INFICON Vacuum Gauge Controller series VGC501, VGC502, VGC503 or with other control devices.
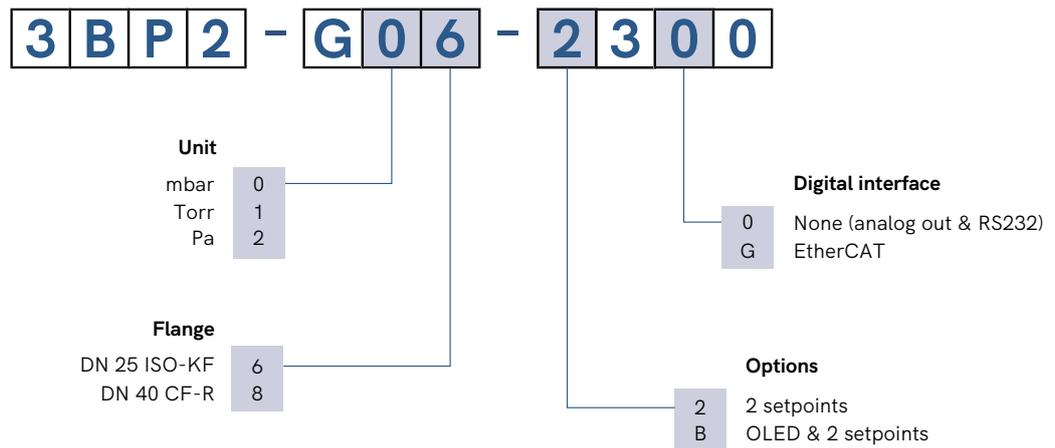
ADVANTAGES

- 2 sensing elements for a wide measurement range, cost reduction & space savingness
- 2 filaments for Bayard-Alpert system including Pirani interlock protection to avoid premature filament burnout
- Automatic high vacuum Pirani adjustment reduces operator interventions
- Galvanic isolated electronics to avoid electric stray current
- Sliding emission mode to avoid pressure jumps and freeze when switching the emission stream
- Extended bakeability due to removable calibration data chips
- Set point relays and bright & big OLED display (90° rotateable) with user interface
- Analog output, RS232C serial interface, EtherCAT®
- Usable in conjunction with VGC50x Controller series
- Backwards compatible to BPG402
- RoHS compliance

Trigon™ BPG552 DualGauge

3BP2 – G06 – 2300

Unit

mbar	0
Torr	1
Pa	2

Flange

DN 25 ISO-KF	6
DN 40 CF-R	8

Digital interface

0	None (analog out & RS232)
G	EtherCAT

Options

2	2 setpoints
B	OLED & 2 setpoints

Trigon™ BPG552 DualGauge

Type	BPG552
Pressure range	
$2 \times 10^{-2} \ldots 1000$ mbar	Pirani sensor
$5 \times 10^{-3} \ldots 2 \times 10^{-2}$ mbar	crossover range
$5 \times 10^{-10} \ldots 5 \times 10^{-3}$ mbar	hot cathode ionisation (BA)
Measurement range (air, O_2, CO, N_2)	$5 \times 10^{-10} \ldots 1000$ mbar, continuous
Accuracy	
$1 \times 10^{-8} \ldots 100$ mbar	$\pm15\%$ of reading
$100 \ldots 1000$ mbar	$\pm50\%$ of reading
Repeatability	5% of reading, $10^{-8} \ldots 100$ mbar (after 10 min. stabilization)
Switching threshold	
on	2.4×10^{-2} mbar
off	3.2×10^{-2} mbar
Emission current	
Sliding mode (default)	
$p \leq 8 \times 10^{-7}$ mbar	5 mA
$p > 1 \times 10^{-3}$ mbar	25 µA
Two-Point-Mode	
$p \leq 7.2 \times 10^{-6}$ mbar	5 mA
3.0×10^{-5} mbar $< p < 3.2 \times 10^{-2}$ mbar	25 µA
Emission current switching	
25 µA -> 5 mA	7.2×10^{-6} mbar
5 mA -> 25 µA	3.0×10^{-5} mbar
Degas	
Emission current ($p < 7.2 \times 10^{-6}$ mbar)	≈16 mA ($P_{degas} \approx 4$ W)
Control input signal	0 V/+24 V (dc), active high
Duration	≤3 min, followed by automatic stop. A new degas cycle can only be started after a waiting time of 30 min
Output signal	0 … +10 V
Measuring range	0.774 … +10.0 V (5×10^{-10} … 1000 mbar)
Relationship voltage-pressure	0.75 V/decade, logarithmic
Error signal	+0.1 V (EEPROM error) +0.3 V (BA sensor error) +0.5 V (Pirani sensor error)
Minimum load impedance	10 kΩ
Display	
Display panel	OLED, 3.81 cm (1.5")
Pressure units (pressure p)	mbar (default), Torr, Micron, Pa, hPa

Trigon™ BPG552 DualGauge

Type	BPG552
Power supply	
Supply voltage at the gauge	+24 V (dc) (+20 … +28 V (dc))
Ripple	$\leq 2\ V_{pp}$
Current consumption	
Standard	≤ 0.5 A
Degas	≤ 0.9 A
Emission start (< 200 ms)	≤ 1.4 A
Power consumption	
BPG552	≤ 18 W
BPG552 with EtherCAT	≤ 21 W
Fuse necessary	1.25 AT
Sensor cable connection	
Receptacle	D-sub 15-pin, male
Measuring cable	shielded, number of conductors depending on the functions used (max. 15 conductors plus shielding)
Cable length (supply voltage 24 V)	
Analog and fieldbus operation	≤ 35 m (0.25 mm^2 / conductor) ≤ 50 m (0.34 mm^2 / conductor) ≤ 100 m (1.0 mm^2 / conductor)
RS232C operation	≤ 30 m
Gauge identification	42 kΩ resistor between pin 10 and pin 5
Switching functions	
Setpoints	SP1, SP2
Adjustment range	5×10^{-10} … 1000 mbar, continuous
Relay contact rating	≤ 60 V (dc) / 0.5 A (dc), resistive
Admissible temperature	
Storage	–2 … +70 °C
Operation	0 … +50 °C
Bakeout	+150 °C (at vacuum connection, without electronics unit and calibration print, horizontally mounted)
Relative humidity	$\leq 65\%$ / 85% (no condensation) year's mean / during 60 days
Interface (digital)	Diagnostic port connection, RS232C, Jack connector. 2.5 m, 3-pin
Materials exposed to vacuum	stainless steel, NiFe, nickel plated, Hastelloy, glass, iridium, yttrium oxide (Y_2O_3), , tungsten, copper
Internal volume	
DN 25 ISO-KF	≈ 24 cm^3
DN 40 CF-R	≈ 34 cm^3
Weight	550 … 760g
Pressure max.	5 bar (absolute)
Mounting orientation	any
Degree of pollution	2
Degree of protection	IP40

Trigon™ BPG552 DualGauge

SPECIFICATIONS INTERFACES	

RS232C	
Data rate	9600 Baud
Data format	binary, 8 data bits, one stop bit, no parity bit, no handshake

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

INFICON

Trigon™ BPG552 DualGauge

DIMENSIONS

[mm]

DN 25 ISO-KF

DN 40 CF-R

INFICON

Inspired by visions. Proven by success.