

Trigon™ BCG552 TripleGauge®

Bayard-Alpert Pirani Capacitance Diaphragm Gauge

The TripleGauge® BCG552 combines 3 vacuum sensing elements in one sensor flange. This flagship of the new Trigon™ family offers extreme wide measurement range from UHV (5×10^{-10}) up to ATM (1500 mbar). With its additional ATM sensor BCG552 is predestinated to use for differential pressure measurement and the use as vacuum switch in several applications. BCG552 consists out of a Bayard-Alpert Hot Ionization sensor, a classical, robust and reliable Pirani sensor element and a miniaturized capacitance diaphragm gauge on vacuum side. A Piezo sensor on ATM side completes BCG552. 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 in the UHV and HV range, while the miniaturized Capacitance diaphragm gauge is superior accurate in the ATM range and gas type independent. BPG552 is available with analog output or EtherCAT interface option. Both enable easiest system integration. The Trigon™ BCG552 TripleGauge® can also be operated in conjunction with the INFICON Vacuum Gauge Controller series VGC501, VGC502, VGC503 or with other control devices.

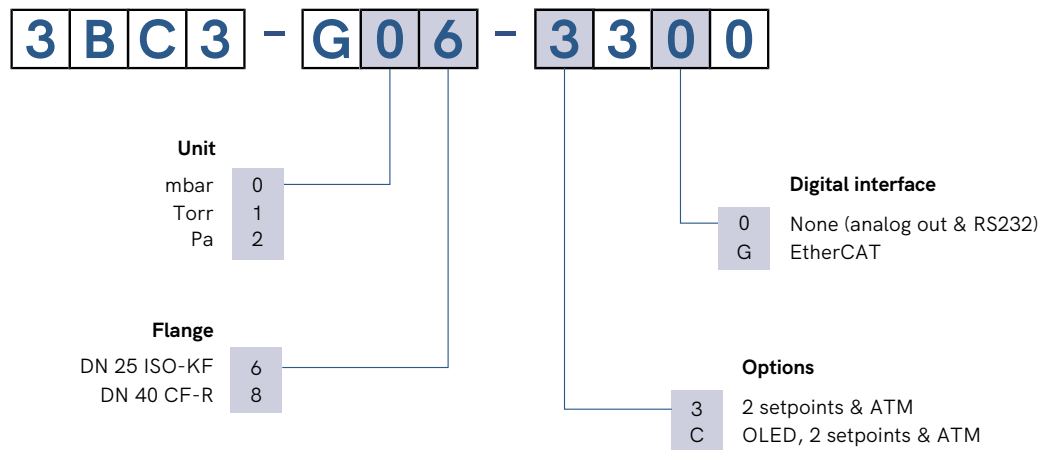


ADVANTAGES

- 3 + 1 sensing elements for extremely wide measurement range, cost reduction & space savingness including 2 filaments for Bayard-Alpert system
- Gas type independent pressure measurement above 10 Torr provides more reliable load lock control for any gas mixtures.
- Differential pressure measurement eliminates uncertainty related to atmospheric pressure changes
- 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
- 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 TripleGauge® BCG450
- RoHS compliance

Trigon™ BCG552 TripleGauge®

ORDERING INFORMATION



Trigon™ BCG552 TripleGauge®

SPECIFICATIONS

Type	BCG552
Pressure range	
10 ... 1500 mbar	capacitance diaphragm sensor
1 ... 10 mbar	crossover range
2×10^{-2} ... 1 mbar	Pirani sensor
5×10^{-3} ... 2×10^{-2} mbar	crossover range
5×10^{-10} ... 5×10^{-3} mbar	hot cathode ionisation (BA)
Measurement range (air, O ₂ , CO, N ₂)	5×10^{-10} ... 1500 mbar, continuous
Accuracy	
1×10^{-8} ... 50 mbar	±15% of reading
50 ... 950 mbar	±5% of reading
950 ... 1050 mbar	±2.5% of reading
Repeatability	5% of reading, 1×10^{-8} ... 1050 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 ($P_{\text{degas}} \approx 4$ 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 ... +10.13 V
Measuring range	0.774 ... +10.13 V (5×10^{-10} ... 1500 mbar)
Relationship voltage-pressure	0.75 V/decade, logarithmic
Error signal	+0.1 V (diaphragm sensor or 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

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Type	BCG552
Power supply	
Supply voltage at the gauge	+24 V (dc) (+20 ... +28 V (dc))
Ripple	≤2 V _{pp}
Current consumption	
Standard	≤0.5 A
Degas	≤0.9 A
Emission start (< 200 ms)	≤1.4 A
Power consumption	
BCG552	≤18 W
BCG552 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 ... 1500 mbar
Relay contact rating	≤60 V (dc) / 0.5 A (dc), resistive
Admissible temperature	
Storage	-2 ... +70 °C
Operation	0 ... +50 °C
Bakeout	+80 °C (at vacuum connection, without electronics unit, horizontally mounted)
Relative humidity	≤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, ceramic (Al ₂ O ₃), iridium, yttrium oxide (Y ₂ O ₃), tungsten, copper, SnAg
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

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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

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DIMENSIONS

[mm]

