



# BCG450 ATM to Ultra-High Vacuum Triple-Gauge™

The INFICON Bayard-Alpert Pirani Capacitance Diaphragm Gauge (Triple-Gauge™), BCG450, combines the advantages of three different technologies in a single, compact, economical package to measure process and base pressure from  $5 \times 10^{-10}$  to 1500 mbar ( $3.75 \times 10^{-10}$  to 1125 Torr). The BCG450 is designed to take the place of three sensors (hot ion, convection enhanced Pirani and vacuum switch), thus reducing cost and valuable tool space.

Now available with **Profinet** digital interface.



## ADVANTAGES

- BCG450 saves cost and tool space and reduces the complexity of vacuum measurement installation and setup
- Gas-type-independent pressure measurement above 10 Torr provides more reliable loadlock control for any gas mixture
- Pirani interlock protects the hot filament from premature burnout
- Automatic high vacuum Pirani adjustment reduces operator interventions
- Differential pressure measurement at atmosphere eliminates uncertainty related to atmospheric pressure changes
- Easy-to-exchange sensing element with on-board calibration data guarantees reproducibility
- Optional graphic display and Fieldbus interfaces available
- RoHS compliance

## ORDER INFORMATION

Type	BCG450
BCG450 DN 25 ISO-KF	353-550
BCG450 DN 40 CF-R	353-551
BCG450 LCD, DN 25 ISO-KF	353-552
BCG450 LCD, DN 40 CF-R	353-553
BCG450 TripleGauge; W, DN 40 CF-R	353-606
BCG450-PN Profinet, DN 25 ISO-KF	353-517
BCG450-PN Profinet, DN 40 CF-R	353-518
BCG450-SD DNet, DN 25 ISO-KF	353-557
BCG450-SD DNet, DN 40 CF-R	353-558
BCG450-SE ECAT, DN 25 ISO-KF	353-592
BCG450-SE ECAT, DN 40 CF-R	353-593
BCG450-SE ECAT, DN 25 ISO-KF	353-598
BCG450-SE ECAT, DN 40 CF-R	353-599
BCG450-SP PBus, DN 40 CF-R	353-556
BCG450-SP PBus, DN 25 ISO-KF	353-554
Spare sensor head BCG450, DN 25 ISO-KF	354-492
Spare sensor head BCG450, DN 40 CF-R	354-493

## SPECIFICATIONS

Type	BCG450	
Measurement range	mbar	$5 \times 10^{-10}$ ... 1500
Measurement range	Torr	$3.75 \times 10^{-10}$ ... 1125
Accuracy		
$10^{-8}$ ... 50 mbar	% of reading	$\pm 15$
50 ... 950 mbar	% of reading	$\pm 5$
950 ... 1050 mbar	% of reading	$\pm 2.5$
Repeatability		
$10^{-8}$ ... $10^{-2}$ mbar	% of reading	5
Hot ion emission on	mbar	$2 \times 10^{-2}$ (high)
(selectable high / low, via RS232 / Fieldbus)	mbar	$8 \times 10^{-3}$ (low)
Degas (1)		
$p < 7.2 \times 10^{-6}$	mbar	electron bombardment, max. 3 min

## SPECIFICATIONS

Type		BCG450
Pressure, max.	bar (absolute)	5
Temperature		
Operation (ambient)	°C	0 ... +50
Storage	°C	-20 ... +70
Bakeout at flange	°C	80
Bakeout electronics removed	°C	150
Supply voltage	V (dc)	20 ... 28
Supply voltage	A (dc)	0.8
Output signal analog		
Output signal	V	0 ... 10.3
Measurement range output	V	0.774 ... 10.3
Error signal	V	0.3 / 0.5
Output signal analog		
Relation voltage / pressure	volts per decade	0.75
Output signal analog		
Minimum load	kΩ	10
Interface (digital) (2)		RS232C
Connector		D-Sub, 15-pin, male
Cable length, max. (3)	m (ft.)	100 (330)
Materials exposed to vacuum		Yt <sub>2</sub> O <sub>3</sub> , Ir, Mo, Cu, W, NiFe, NiCr, Al <sub>2</sub> O <sub>3</sub> , SnAg, 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	285 / 550
Degree of protection		IP30
DeviceNet™		
Protocol		DeviceNet™, group 2 slave only
MAC ID		2 switches (address 00 - 63) or network programmable
Network size		up to 64 nodes per segment
Digital functions		read pressure, select units: Torr, mbar, Pa; degas function, 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)

## SPECIFICATIONS

Type		BCG450
Specification		DeviceNet™ "Vacuum Gauge Device Profile"
Device type		"CG" for combination gauge
I / O slave messaging		polling only
Setpoint relays: Number of setpoints		2
Setpoint relays: Relay contact		n.o., potential free
Setpoint relays: Connector		D-Sub, 15-pin, male
Connector for DeviceNet™		Microstyle, 5-pin
Connector for BCG (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	$1 \times 10^{-9}$ ... 1400
DeviceNet™		
Setpoint relays: Hysteresis	% of reading	10
DeviceNet™		
Setpoint relays: Contact rating	V (dc)	60
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
Profibus DP		
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
Profibus DP		
Baud rates	Mbaud	1.5 / 12

## SPECIFICATIONS

Type	BCG450
Profibus DP	
Address	2 switches (address 00 - 127) or network programmable
Digital functions	read pressure, select units: Torr, mbar, Pa ; degas function , 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
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 BCG (analog output, supply voltage, setpoints)	D-Sub, 15-pin, male
Profibus DP	
Setpoint relays: Range	mbar
	$1 \times 10^{-9} \dots 1400$
Profibus DP	
Setpoint relays: Hysteresis	% of reading
	10
Profibus DP	
Setpoint relays: Contact rating	V (dc)
	60
Profibus DP	
Setpoint relays: Contact rating	A (dc)
	0.5
EtherCAT	
Protocol EtherCAT	protocol specialized for EtherCAT
Communication standards	ETG.5003.1 S (R) V1.1.0: Part 1 Common Device Profile (CDP) ETG.5003.2080 S (R) V1.3.0: Part 2080: Specific Device Profile (SDP) 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
Process data	Fixed PDO mapping and configurable PDO mapping
Mailbox (CoE)	SDO requests, responses and information

## SPECIFICATIONS

Type		BCG450
EtherCAT connector		RJ45, 8-pin (socket), IN and OUT
Cable		shielded Ethernet CAT5e or higher
EtherCAT		
Cable length	m (ft.)	≤100 (330)
Profinet		
Communication protocol		protocol specialized for Profinet
Data rate		100 Mbps
Physical layer		100BASE-Tx (IEEE 802.3)
Digital functions Profinet		read pressure, select Units (Torr, mbar, Pa), emission control, degas function, monitor gauge status, filament status
Analog function		10 ... 10 V analog output pressure indication
Profinet connector		2 x RJ45, 8-pin (socket), input & output
Profinet Cable		Special Ethernet Patch Cable or Crossover Cable, shielded (CA5e quality or higher)
Cable length		≤100 m (330 ft)
Cyclic data		IO-data
Mailbox (CoE) Profinet		configuration, responses and information

(1) Reduced accuracy during degas

(2) Simultaneous use of RS232C or VGC40x series controllers and Fieldbus is not allowed

(3) For RS232C operation <30m

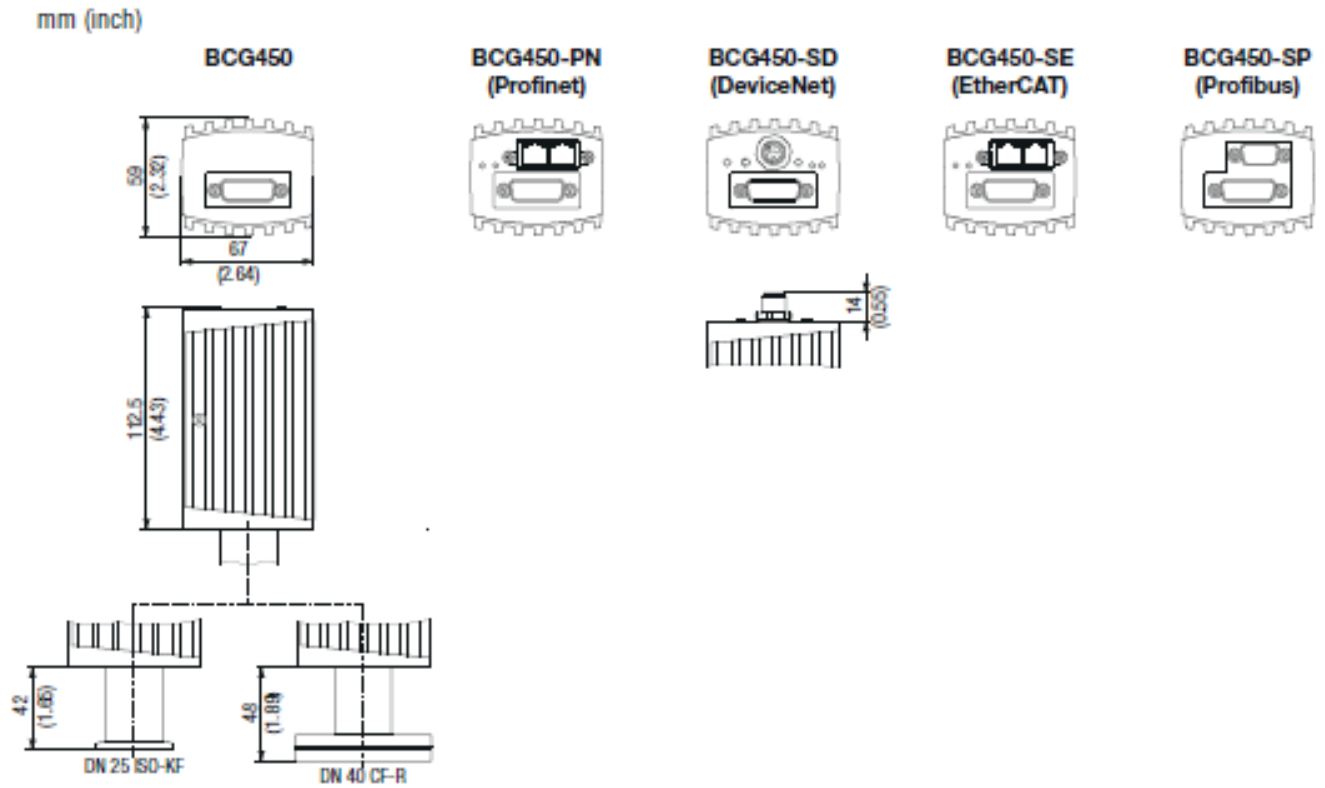
## SPAREPARTS

		BCG450
Spare sensor head BCG450, DN 25 ISO-KF		354-492
Spare sensor head BCG450, DN 40 CF-R		354-493

## ACCESSORIES

	BCG450
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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