Intended Use

The BCG450, BCG450-SD, BCG450-SE and BCG450-SP gauges have been designed for vacuum measurement of pressures in the pressure range 5×10⁻¹⁰ to 1500 mbar. They must not be used for measuring flammable or combustible gases in mixture containing oxygen (e.g. atmospheric oxygen) within the explosion range.

Trademarks

DevilTronix™ Open DevilTronix Vendor Association, Inc. Trigonnet™ INFICON AG EtherCAT™ Beckhoff Automation GmbH, Germany

Functional Principle

Due to the combination of three sensor technologies incorporated in the gauge (Capacitance diaphragm sensor, Pirani sensor, and hot cathode ionization sensor (BA)), a minimized gas type dependence is achieved. Below 1 mbar, the Pirani sensor and the hot cathode are switched off (to prevent filament burn-out). It is switched on by the Pirani measurement when the pressure exceeds 2.5×10⁻⁹ mbar. Gauge adjustment is carried out automatically, no manual adjustment is required.

A user programmable atmospheric pressure switching function is incorporated.

Liability and Warranty

INFICON assumes no liability and the warranty becomes null and void if the end-user or third parties:

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of changes (modifications, alterations etc.) in the product
- use the product with accessories not listed in the product documentation.

The end-user assumes the responsibility in conjunction with the media used.

Gauge failure due to contamination or wear and tear, as well as wear and tear parts (e.g. flaments), are not covered by the warranty.

Validity

This document applies to products with the following part numbers (PN):

- BCG450 (without display)
- 353-551 (PN 25 ISO-KF)
- 353-591 (PN ISO-KF, with baffle)
- 353-552 (PN 25 ISO-KF)
- 353-592 (PN 25 ISO-KF, with baffle)
- BCG450-SD (with DeviNet interface and switching function)
- 353-553 (PN 25 ISO-KF)
- 353-593 (PN 25 ISO-KF, with baffle)
- BCG450-SE (with EtherCAT interface and switching function)
- Latest EtherCAT version (ETG.5003.2080 S (R) V1.3.0)

Corporate Identification

INFICON assumes no liability and the warranty becomes null and void if the end-user or third parties:

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of changes (modifications, alterations etc.) in the product
- use the product with accessories not listed in the product documentation.

The end-user assumes the responsibility in conjunction with the media used.

Gauge failure due to contamination or wear and tear, as well as wear and tear parts (e.g. flaments), are not covered by the warranty.

Personnel Qualifications

**Skilled personnel**

All work described in this manual may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used.
- Consider possible reactions (e.g. explosions) of the process media due to the heat generated by the product.
- Adhere to the applicable regulations and take the necessary precautionary measures for all work you are going to perform and consider the safety instructions in this document.
- Before beginning to work, find out whether any vacuum components are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Communicate the safety instructions to all other users.
**Caution**

Vacuum system.

Remove the protective lid and install the product to the "Vacuum Connection".

Atmospheric pressure

The following information on the electrical connection of the TripleGauge™ BCG450 is recommended (see [1] and [2] for details on the device). The gauge is supplied with a built-in grid. For potentially contaminating applications and to protect the measuring chamber, preferably choose a horizontal crossover range.

**Power Connection (BCG450)**

The following information on the electrical connection as well as the wiring diagram applies to BCG450 only (see [1] and [2]) for details on the electrical connection and additional functions of BCG450-SD, -SE, and -SP.

Make sure the vacuum connection is properly made (= "Vacuum Connection").

No cable connected is available, make one according to the following diagram.

**Caution**

Dirt sensitive area.

Touching the product or parts thereof with bare hands increases the desorption rate. Always wear clean, lint-free gloves and use clean tools when working in this area.

- **Deinstallation**
  - Vent the vacuum system.
  - Put the gauge out of operation, switch off power supply.
  - Unfasten the lock screws and unplug the sensor cable.
  - Remove the gauge from the vacuum system and replace the protective lid.

**Disposal**

- **DANGER**
  - Contaminated parts can be detrimental to health and environment.

Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

- **WARNING**
  - Substances detrimental to the environment
  - Products or parts thereof (magnetic and non-magnetic components, operating fluids etc.) can be detrimental to the environment.

Dispose of such substances in accordance with the relevant local regulations.

**Deinstallation**

- Vent the vacuum system.
- Put the gauge out of operation, switch off power supply.
- Unfasten the lock screws and unplug the sensor cable.
- Remove the gauge from the vacuum system and replace the protective lid.

**Adjusting the Gauge**

- Adjust the gauge automatically (adjustment of the atmosphere switching function (atmosphere sensor))

**Diagnosis**

- Check the protective lid.
- Connect the sensor cable to the gauge.
- Connect the cable with the lock screws.
- Connect the sensor cable to the controller.

**Operation**

- When the supply voltage is applied, the measuring signal is also available between pins 2 (+) and 12 (–) (Relationship measuring principle = "Technical Data" and "[2]").
- BCG450-SD, -SE, and -SP can also be operated via the corresponding fieldbus interface (DeviceNET, EtherCAT, or PROFIBUS, or [1] and [2] for further details and functions).
- Allow for a stabilizing time of 1 to 10 minutes. Once the gauge has been switched on, permanently leave it on irrespective of the pressure.

**Gas Type Dependence**

- Pressure range
- Measuring principle
- Gas type dependence
- Pressure reading
- Pressure unit
- Function display
- Error display

**Display**

(BCG450 with part numbers 353-552 and 353-553)

- Pressure reading
- Pressure unit
- Function display
- Error display

**Maintenance, Troubleshooting**

In case of severe contamination or a malfunction, the sensor can be replaced (= "[1]").

Adjustment of the atmosphere sensor is described in detail in [1].

- Gauge failures due to contamination or wear and tear, as well as expendable parts (e. g. filament), are not covered by the warranty.

**Returning the Product**

- Contaminated products (radioactive, toxic, caustic, or biological hazard etc.) must be dismantled in accordance with the relevant national regulations, separated according to their materials, and recycled.

- Other components
  - Such components must be separated according to their materials and recycled.

**Further Information**

- INFICON, www.inficon.com
- INFICON AG, LI–9496 Balzers, Liechtenstein
- INFICON AG, LI–9496 Balzers, Liechtenstein
- www.inficon.com
- Dr. Bernhard Andreus
- Director Product Evolution
- Meno Kern
- Product Manager

**EU Declaration of Conformity**

We, INFICON, hereby declare that the equipment mentioned below complies with the provisions of the following Directives:

- 2014/30/EU, O.J. L 256/55, 30.3.2014
- (EMC directive; Directive relating to electromagnetic compatibility)
- 2011/65/EU, O.J. L 174/88, 1.7.2011
- (RoHS directive; Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment)

**Standards**

- Harmonized and international/national standards and specifications:
  - EN 61010-1:2010 (Safety requirements for electrical equipment for measurement, control and laboratory use)
  - EN 61326-1:2013, Group 1, Class B (EMC requirements for electrical equipment for measurement, control and laboratory use)

**Manufacturer / Signatures**

INFICON AG, Aa Landstrasse 6, Li-9496 Balzers
22 January 2018
Dr. Bernhard Andreus
Director Product Evolution
Meno Kern
Product Manager