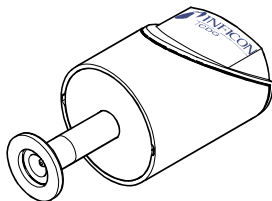


Capacitance Diaphragm Gauge

CDG025D

CDG025D-S






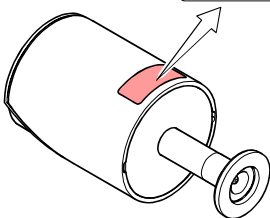
CE

Operating Manual
Incl. Declaration of Conformity

Product Identification

In all communications with INFICON, please specify the information given on the product nameplate. For convenient reference copy that information into the space provided below.

INFICON AG, LI-9496 Balzers		CE
Model:	-----	
PN:	-----	  
SN:	-----	
----- V ----- W		



Validity

This document applies to products with the following part numbers:

Without switching function

Part number	Flange	Torr	Pascal	mbar
375-000	½" tube	10 ⁻¹ ... 1000 (F.S.)	1.33×10 ¹ ... 133322 (F.S.)	1.33×10 ⁻¹ ... 1333 (F.S.)
375-001	DN 16 ISO-KF			
375-002	DN 16 CF-R			
375-003	8 VCR®			
375-200	½" tube	—	1.1×10 ¹ ... 110000 (F.S.)	1.1×10 ⁻¹ ... 1100 (F.S.)
375-201	DN 16 ISO-KF			
375-202	DN 16 CF-R			
375-203	8 VCR®			
376-000	½" tube	10 ⁻² ... 100 (F.S.)	1.33×10 ⁰ ... 13332.2 (F.S.)	10 ⁻² ... 133 (F.S.)
376-001	DN 16 ISO-KF			
376-002	DN 16 CF-R			
376-003	8 VCR®			
376-200	½" tube	—	10 ⁰ ... 10000 (F.S.)	10 ⁻² ... 100 (F.S.)
376-201	DN 16 ISO-KF			
376-202	DN 16 CF-R			
376-203	8 VCR®			
377-000	½" tube	10 ⁻³ ... 10 (F.S.)	1.33×10 ⁻¹ ... 1333.22 (F.S.)	10 ⁻³ ... 13.3 (F.S.)
377-001	DN 16 ISO-KF			
377-002	DN 16 CF-R			
377-003	8 VCR®			
377-200	½" tube	—	10 ⁻¹ ... 1000 (F.S.)	10 ⁻³ ... 10 (F.S.)
377-201	DN 16 ISO-KF			
377-202	DN 16 CF-R			
377-203	8 VCR®			

(continued)

Without switching function (continued)

Part number	Flange	Torr	Pascal	mbar
378-000	½" tube			
378-001	DN 16 ISO-KF	10 ⁻⁴	1.33×10 ⁻²	10 ⁻⁴
378-002	DN 16 CF-R	...	...	...
378-003	8 VCR®	1 (F.S.)	133.322 (F.S.)	1.3 (F.S.)
378-200	½" tube			
378-201	DN 16 ISO-KF	—	10 ⁻²	10 ⁻⁴
378-202	DN 16 CF-R		...	...
378-203	8 VCR®		100 (F.S.)	1 (F.S.)
379-000	½" tube			
379-001	DN 16 ISO-KF	10 ⁻⁵	1.33×10 ⁻³	10 ⁻⁵
379-002	DN 16 CF-R	...	...	...
379-003	8 VCR®	0.1 (F.S.)	13.3322 (F.S.)	0.13 (F.S.)
379-200	½" tube			
379-201	DN 16 ISO-KF	—	10 ⁻³	10 ⁻⁵
379-202	DN 16 CF-R		...	...
379-203	8 VCR®		10 (F.S.)	0.1 (F.S.)
382-000	½" tube			
382-001	DN 16 ISO-KF	2×10 ⁻²	2.66×10 ⁰	2.67×10 ⁻²
382-002	DN 16 CF-R	...	...	...
382-003	8 VCR®	200 (F.S.)	26664.4 (F.S.)	267 (F.S.)
382-200	½" tube			
382-201	DN 16 ISO-KF	—	2×10 ⁰	2×10 ⁻²
382-202	DN 16 CF-R		...	...
382-203	8 VCR®		20000 (F.S.)	200 (F.S.)
383-000	½" tube			
383-001	DN 16 ISO-KF	2×10 ⁻³	2.66×10 ⁻¹	2.67×10 ⁻³
383-002	DN 16 CF-R	...	...	...
383-003	8 VCR®	20 (F.S.)	2666.44 (F.S.)	26.67 (F.S.)

(continued)

Without switching function (concluded)

Part number	Flange	Torr	Pascal	mbar
383-200	½" tube	—	2×10 ⁻¹ ... 2000 (F.S.)	2×10 ⁻³ ... 20 (F.S.)
383-201	DN 16 ISO-KF			
383-202	DN 16 CF-R			
383-203	8 VCR®			
384-000	½" tube	2×10 ⁻⁴ ... 2 (F.S.)	2.66×10 ⁻² ... 266.644 (F.S.)	2.67×10 ⁻⁴ ... 2.67 (F.S.)
384-001	DN 16 ISO-KF			
384-002	DN 16 CF-R			
384-003	8 VCR®			
384-200	½" tube	—	2×10 ⁻² ... 200 (F.S.)	2×10 ⁻⁴ ... 2 (F.S.)
384-201	DN 16 ISO-KF			
384-202	DN 16 CF-R			
384-203	8 VCR®			
385-000	½" tube	2×10 ⁻⁵ ... 0.25 (F.S.)	3.33×10 ⁻³ ... 33.3305 (F.S.)	2.5×10 ⁻⁵ ... 0.33 (F.S.)
385-001	DN 16 ISO-KF			
385-002	DN 16 CF-R			
385-003	8 VCR®			
385-200	½" tube	—	2×10 ⁻³ ... 20 (F.S.)	2×10 ⁻⁵ ... 0.25 (F.S.)
385-201	DN 16 ISO-KF			
385-202	DN 16 CF-R			
385-203	8 VCR®			

With two switching functions

Part number	Flange	Torr	Pascal	mbar
375-300	½" tube	10 ⁻¹ ... 1000 (F.S.)	1.33×10 ¹ ... 133322 (F.S.)	1.33×10 ⁻¹ ... 1333 (F.S.)
375-301	DN 16 ISO-KF			
375-302	DN 16 CF-R			
375-303	8 VCR®			
375-500	½" tube	—	1.1×10 ¹ ... 110000 (F.S.)	1.1×10 ⁻¹ ... 1100 (F.S.)
375-501	DN 16 ISO-KF			
375-502	DN 16 CF-R			
375-503	8 VCR®			
376-300	½" tube	10 ⁻² ... 100 (F.S.)	1.33×10 ⁰ ... 13332.2 (F.S.)	10 ⁻² ... 133 (F.S.)
376-301	DN 16 ISO-KF			
376-302	DN 16 CF-R			
376-303	8 VCR®			
376-500	½" tube	—	10 ⁰ ... 10000 (F.S.)	10 ⁻² ... 100 (F.S.)
376-501	DN 16 ISO-KF			
376-502	DN 16 CF-R			
376-503	8 VCR®			
377-300	½" tube	10 ⁻³ ... 10 (F.S.)	1.33×10 ⁻¹ ... 1333.22 (F.S.)	10 ⁻³ ... 13.3 (F.S.)
377-301	DN 16 ISO-KF			
377-302	DN 16 CF-R			
377-303	8 VCR®			
377-500	½" tube	—	10 ⁻¹ ... 1000 (F.S.)	10 ⁻³ ... 10 (F.S.)
377-501	DN 16 ISO-KF			
377-502	DN 16 CF-R			
377-503	8 VCR®			

(continued)

With two switching functions (continued)

Part number	Flange	Torr	Pascal	mbar
378-300	½" tube	10 ⁻⁴ ... 1 (F.S.)	1.33×10 ⁻² ... 133.322 (F.S.)	10 ⁻⁴ ... 1.3 (F.S.)
378-301	DN 16 ISO-KF			
378-302	DN 16 CF-R			
378-303	8 VCR®			
378-304	4 VCR®			
378-500	½" tube	—	10 ⁻² ... 100 (F.S.)	10 ⁻⁴ ... 1 (F.S.)
378-501	DN 16 ISO-KF			
378-502	DN 16 CF-R			
378-503	8 VCR®			
379-300	½" tube	10 ⁻⁵ ... 0.1 (F.S.)	1.33×10 ⁻³ ... 13.3322 (F.S.)	10 ⁻⁵ ... 0.13 (F.S.)
379-301	DN 16 ISO-KF			
379-302	DN 16 CF-R			
379-303	8 VCR®			
379-500	½" tube	—	10 ⁻³ ... 10 (F.S.)	10 ⁻⁵ ... 0.1 (F.S.)
379-501	DN 16 ISO-KF			
379-502	DN 16 CF-R			
379-503	8 VCR®			
382-300	½" tube	2×10 ⁻² ... 200 (F.S.)	2.66×10 ⁰ ... 26664.4 (F.S.)	2.67×10 ⁻² ... 267 (F.S.)
382-301	DN 16 ISO-KF			
382-302	DN 16 CF-R			
382-303	8 VCR®			
382-500	½" tube	—	2×10 ⁰ ... 20000 (F.S.)	2×10 ⁻² ... 200 (F.S.)
382-501	DN 16 ISO-KF			
382-502	DN 16 CF-R			
382-503	8 VCR®			
383-300	½" tube	2×10 ⁻³ ... 20 (F.S.)	2.66×10 ⁻¹ ... 2666.44 (F.S.)	2.67×10 ⁻³ ... 26.67 (F.S.)
383-301	DN 16 ISO-KF			
383-302	DN 16 CF-R			
383-303	8 VCR®			

(continued)

With two switching functions (concluded)


Part number	Flange	Torr	Pascal	mbar
383-500	½" tube	—	2×10 ⁻¹ ... 2000 (F.S.)	2×10 ⁻³ ... 20 (F.S.)
383-501	DN 16 ISO-KF			
383-502	DN 16 CF-R			
383-503	8 VCR®			
384-300	½" tube	2×10 ⁻⁴ ... 2 (F.S.)	2.66×10 ⁻² ... 266.644 (F.S.)	2.67×10 ⁻⁴ ... 2.67 (F.S.)
384-301	DN 16 ISO-KF			
384-302	DN 16 CF-R			
384-303	8 VCR®			
384-500	½" tube	—	2×10 ⁻² ... 200 (F.S.)	2×10 ⁻⁴ ... 2 (F.S.)
384-501	DN 16 ISO-KF			
384-502	DN 16 CF-R			
384-503	8 VCR®			
385-300	½" tube	2×10 ⁻⁵ ... 0.25 (F.S.)	3.33×10 ⁻³ ... 33.3305 (F.S.)	2.5×10 ⁻⁵ ... 0.33 (F.S.)
385-301	DN 16 ISO-KF			
385-302	DN 16 CF-R			
385-303	8 VCR®			
385-500	½" tube	—	2×10 ⁻³ ... 20 (F.S.)	2×10 ⁻⁵ ... 0.25 (F.S.)
385-501	DN 16 ISO-KF			
385-502	DN 16 CF-R			
385-503	8 VCR®			
386-601	DN 16 ISO-KF	—	2×10 ⁻¹ ... 2000 (F.S.)	2×10 ⁻³ ... 20 (F.S.)

The part number (PN) can be taken from the product nameplate. If not indicated otherwise in the legends, the illustrations in this document correspond to CDG025D-S gauges with the DN 16 ISO-KF vacuum connection. They apply to other vacuum connections by analogy.

We reserve the right to make technical changes without prior notice.

All dimensions in mm.

Intended Use

The Capacitance Diaphragm Gauges of the CDG025 series are intended for absolute pressure measurement of gases in their respective pressure ranges (→  3).

The gauges belong to the SKY[®] Smart Sensors family and can be operated in connection with an INFICON Vacuum Gauge Controller (VGC series) or another appropriate measuring unit.

Function

The Capacitance Diaphragm Gauge consists of a capacitive sensor element made of aluminum oxide ceramics and electronics which convert the capacitance into a DC voltage output signal.



The output signal is linear to the measured pressure and independent of the gas type.

Trademarks

SKY[®] INFICON GmbH
VCR[®] Swagelok Marketing Co.

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For cross-references within this document, the symbol (→  XY) is used, for cross-references to further documents, listed under "Further Information", the symbol (→  [Z]).

1 Safety

1.1 Symbols Used



DANGER

Information on preventing any kind of physical injury.



WARNING

Information on preventing extensive equipment and environmental damage.



Caution

Information on correct handling or use. Disregard can lead to malfunctions or minor equipment damage.

1.2 Personnel Qualifications



Skilled personnel

All work described in this document 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.

1.3 General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used.
Consider possible reactions with the product materials.
- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do 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.

1.4 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 interventions (modifications, alterations etc.) on the product
- use the product with accessories not listed in the product documentation.

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

2 Technical Data


Measurement range	→ "Validity"
Accuracy	
375-X0X ... 378-X0X	0.20% of reading
379-X0X	0.50% of reading
382-X0X	0.20% of reading
385-X0X	0.25% of reading
Temperature effect on zero	
375-X0X ... 377-X0X	0.0050% F.S./ °C
378-X0X	0.015% F.S./ °C
379-X0X	0.020% F.S./ °C
382-X0X	0.0050% F.S./ °C
385-X0X	0.020% F.S./ °C
Temperature effect on span	
375-X0X ... 378-X0X	0.01% of reading / °C
379-X0X	0.03% of reading / °C
382-X0X	0.01% of reading / °C
385-X0X	0.03% of reading / °C
Resolution	0.003% F.S.
Gas type dependence	none
<hr/>	
Output signal analog (measuring signal)	
Voltage range	-5 ... +12 V
Measuring range	0 ... +10V
Relationship voltage-pressure	linear
Output impedance	0 Ω (short-circuit proof)
Loaded impedance	>10 kΩ
Response time	30 ms
<hr/>	
Gauge identification	Resistance 13.2 kΩ referenced to supply common (Voltage at pin 10 ≤5 V)
<hr/>	

Switching functions	SP1, SP2
Setting range	0 ... +10 V
Hysteresis	1% F.S.
Relay contact	60 VDC/ ≤ 0.5 ADC floating (n.o.)
closed	at low pressure (LED is lit)
open	at high pressure (LED is dark)
Switching time	≤ 50 ms


RS232C interface	
Transmission rate	9600 baud
Data format	binary 8 data bits one stop bit no parity bit no handshake
Connection	→ "Electrical Connection"

Further information about the RS232C interface →  [3].

Supply



DANGER



The gauge may only be connected to power supplies, instruments or control devices that conform to the requirements of a grounded protective extra-low voltage (SELV-E according to EN 61010). The connection to the gauge has to be fused ¹⁾.

¹⁾ INFICON controllers fulfill this requirement.

Supply voltage at the gauge ripple	+14 ... +30 VDC $\leq 1 V_{pp}$
Current consumption	<500 mA (max. starting current)
Power consumption (depending on supply voltage)	$\leq 1 W$
Fuse required ²⁾	1 AT (slow)
The gauge is protected against reverse polarity of the supply voltage.	
Electrical connection	15 poles D-Sub, male
Sensor cable	
without switching functions	5 poles plus shielding
with switching functions	9 poles plus shielding
Cable length	$\leq 100 m$ (0.14 mm ² conductor)
For longer cables, larger conductor cross-sections are required ($R_{cable} \leq 1.0 \Omega$).	
Grounding concept	
Vacuum flange - signal common	→ "Electrical Connection"
Supply common - signal common	conducted separately; for differential measurement (10 Ω)
Materials exposed to vacuum	
Flange, tube, protective chamber, plasma shield	stainless steel AISI 316L
Sensor and diaphragm	ceramics ($Al_2O_3 \geq 99.5\%$)
Sensor–diaphragm connection	glass ceramics solder
Ceramics–metal connection	AgTiCu hard solder, Vacon 70 (28% Ni, 23% Co, 49% Fe)
Internal volume	$\leq 6 cm^3$
Admissible pressure (absolute)	
375-X0X, 382-X0X	3 bar
376-X0X ... 378-X0X	2 bar
379-X0X, 385-X0X	1.3 bar
Bursting pressure (absolute)	5 bar

Admissible temperatures

Storage

-40 °C ... +65 °C

Operation

+5 °C ... +50 °C

Bakeout (not in operation)

≤110 °C at the flange

Relative humidity

≤80% at temperatures

≤+31 °C decreasing to 50%

at +40°C

Use

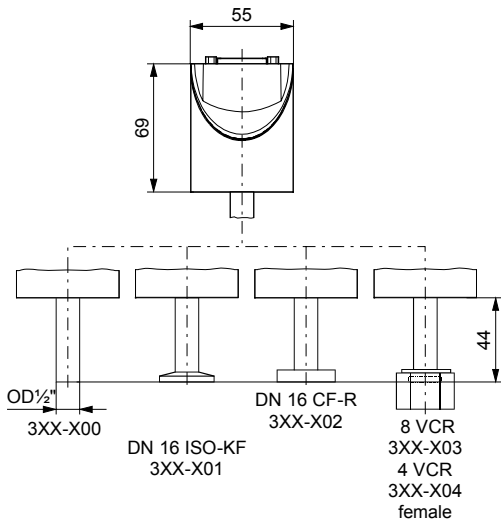
indoors only, altitude up to

2000 m NN

Type of protection

IP 30

Dimensions [mm]

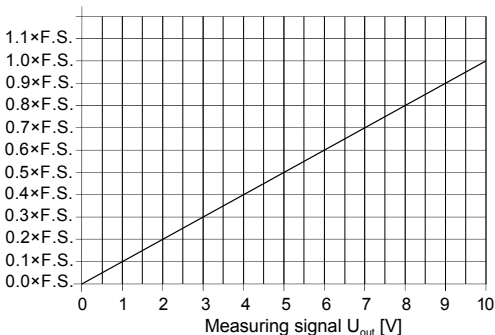


Weight

≤300 g

Analog Measuring Signal vs. Pressure

Pressure p



$$p = (U_{\text{out}} / 10 \text{ V}) \times p (\text{F.S.})$$

Conversion Torr \leftrightarrow Pascal

	Torr	mbar ²⁾	Pa ²⁾
c	1.00	1013.25 / 760 = 1.3332...	101325 / 760 = 133.3224...

Example: Gauge with 10 Torr F.S.
Measuring signal $U_{\text{out}} = 6 \text{ V}$

$$\begin{aligned} p &= (6 \text{ V} / 10 \text{ V}) \times 10 \text{ Torr} \\ &= 0.6 \times 10 \text{ Torr} = \mathbf{6 \text{ Torr}} \end{aligned}$$

²⁾ Source: NPL (National Physical Laboratory)
Guide to the Measurement of Pressure and Vacuum, ISBN 0904457x /
1998

3 Installation

3.1 Vacuum Connection



 **DANGER**

DANGER: overpressure in the vacuum system
>1 bar

Injury caused by released parts and harm caused by escaping process gases can result if clamps are opened while the vacuum system is pressurized.

Do not open any clamps while the vacuum system is pressurized. Use the type clamps which are suited to overpressure.



 **DANGER**

DANGER: overpressure in the vacuum system
>2.5 bar

KF flange connections with elastomer seals (e.g. O-rings) cannot withstand such pressures. Process media can thus leak and possibly damage your health.

Use O-rings provided with an outer centering ring.


DANGER


DANGER: protective ground

Products that are not correctly connected to ground can be extremely hazardous in the event of a fault.

Electrically connect the gauge to the grounded vacuum chamber. This connection must conform to the requirements of a protective connection according to EN 61010:

- CF and VCR flanges fulfill this requirement.
- For gauges with a KF flange, use a conductive metallic clamping ring.
- For gauges with a 1/2" tube, take appropriate measures to fulfill this requirement.


Caution


Caution: vacuum component

Dirt and damages impair the function of the vacuum component.

When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.


Caution


Caution: dirt sensitive area

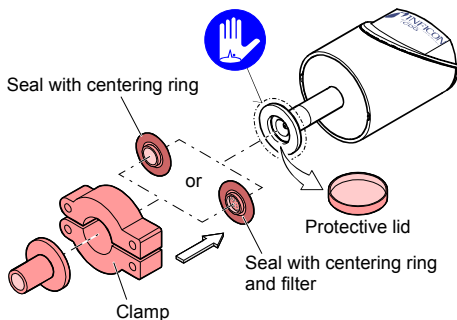
Touching the product or parts thereof with bare hands increases the desorption rate.

Always wear clean, lint-free gloves and use clean tools when working in this area.



Mount the gauge so that no vibrations occur. The gauge may be mounted in any orientation. To keep condensates and particles from getting into the measuring chamber preferably choose a horizontal to upright position and possibly use a seal with a centering ring and filter. If adjustment should be possible after the gauge has been installed, be sure to install it so that the buttons can be accessed with a pin (→ 23).

Remove the protective lid and connect the product to the vacuum system.



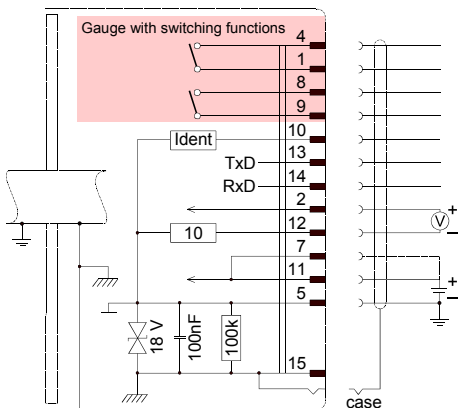
Keep the protective lid.

3.2 Electrical Connection



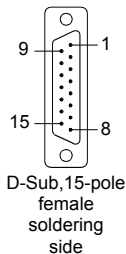
Make sure the vacuum connection is properly made (→ 18).

- 1** If no sensor cable is available, make one according to the following diagram.



Electrical connection

Pin 1, 4	Relay SP1, closing contact
Pin 2	Signal Output or thresholds SP1/2
Pin 5	Supply common, GND
Pin 7, 11	Supply
Pin 8, 9	Relay SP2, closing contact
Pin 10	Gauge identification Inficon *)
Pin 12	Signal common
Pin 13	RS232, TxD
Pin 14	RS232, RxD
Pin 15	Housing (Chassis Ground)
case	Housing (Chassis Ground)




- Pins 3 and 6 are not assigned in the gauge.
- The cable must be shielded and grounded as indicated in the above illustration and the Grounding concept *).

*) → "Technical Data"

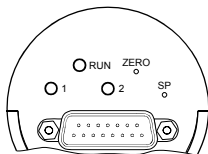
- 2 Connect the sensor cable to the gauge and secure it using the lock screws.
- 3 Connect the sensor cable to the controller.

4 Operation

Put the gauge into operation. If you are using an INFICON controller, define the measurement range (→  [1, 2]).

A warm-up time of at least ¼ hour should be allowed; for exact pressure measurements a warm-up time of at least 2 hours is required.

4.1 Displays



LED	State	Meaning
<RUN>	lit	Measurement mode
	flashing	Other mode, error
<1> (CDG025D-S only)	lit	$p \leq$ setpoint level 1
	flashing	Adjusting setpoint <1>
<2> (CDG025D-S only)	lit	$p \leq$ setpoint level 2
	flashing	Adjusting setpoint <2>

4.2 Zeroing the Gauge

When the gauge is operated for the first time, a zero adjustment should be performed.

Due to long time operation or contamination, a zero drift could occur and zero adjustment may become necessary.

For adjusting the zero, operate the gauge under the same ambient conditions and in the same mounting orientation as normally.

4.2.1 <ZERO> Adjustment

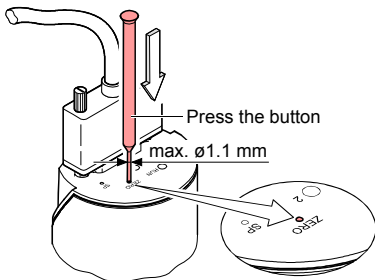
- 1 Evacuate the gauge to a pressure according to the table below:



	Recommended final pressure for zero adjustment		
375-X0X	$<5 \times 10^{-2}$ Torr	$<6.65 \times 10^0$ Pa	$<5 \times 10^{-2}$ mbar
376-X0X	$<5 \times 10^{-3}$ Torr	$<6.65 \times 10^{-1}$ Pa	$<5 \times 10^{-3}$ mbar
377-X0X	$<5 \times 10^{-4}$ Torr	$<6.65 \times 10^{-2}$ Pa	$<5 \times 10^{-4}$ mbar
378-X0X	$<5 \times 10^{-5}$ Torr	$<6.65 \times 10^{-3}$ Pa	$<5 \times 10^{-5}$ mbar
379-X0X	$<5 \times 10^{-6}$ Torr	$<6.65 \times 10^{-4}$ Pa	$<5 \times 10^{-6}$ mbar
382-X0X	$<10^{-2}$ Torr	$<1.33 \times 10^0$ Pa	$<10^{-2}$ mbar
383-X0X	$<10^{-3}$ Torr	$<1.33 \times 10^{-1}$ Pa	$<10^{-3}$ mbar
384-X0X	$<10^{-4}$ Torr	$<1.33 \times 10^{-2}$ Pa	$<10^{-4}$ mbar
385-X0X	$<10^{-5}$ Torr	$<1.33 \times 10^{-3}$ Pa	$<10^{-5}$ mbar

(If the final pressure in the gauge is too high for zero adjustment, the zero cannot be reached and the <RUN> LED flashes. If this is the case, activate the factory setting and adjust the zero again (→ 28).)

- 2 Operate the gauge for at least ¼ hour (until the signal is stable).

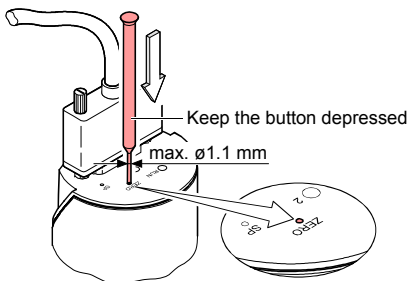
- 3 Push the <ZERO> button with a pin (max. $\varnothing 1.1$ mm). The zero adjustment runs automatically. The <RUN> LED flashes until the adjustment is completed.




-  After zero adjustment the gauge automatically returns to measurement mode.
-  The zero can also be adjusted via the RS232C interface. The <RUN> LED flashes if the signal output is negative.


4.2.2 <ZERO> Adjustment with Base-Pressure-Offset

- 1 Operate the gauge for at least $\frac{1}{4}$ hour (until the signal is stable).
- 2 Push the <ZERO> button with a pin (max. $\varnothing 1.1$ mm) and keep it depressed. The <RUN> LED starts flashing. After 5 s, the zero adjustment value, starting at the current output value, keeps continually changing (ramp) until the button is released or until the setting limit (min. 50% F.S.) is reached.



- 3** Push the <ZERO> button again:
- within 0...3 s: the zero adjustment value changes by one unit (fine adjustment)
 - within 3...5 s: the zero adjustment changes its direction (the flashing frequency of the <RUN> LED changes briefly).

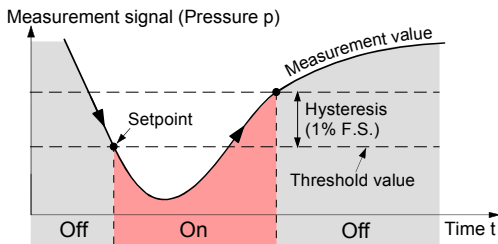
 If the <ZERO> button is released for more than 5 s, the gauge returns to the measurement mode.

 The zero with Base-Pressure-Offset can also be adjusted via the RS232C interface.

The <RUN> LED flashes if the signal output is negative.

4.3 Switching Functions (CDG025D-S only)

The two switching functions can be adjusted to any pressure within the whole measurement range (→ § 17). The current threshold values are output at the D-Sub connector instead of the pressure value (→ § 20) and can be measured with a voltmeter. If the pressure is lower than the threshold value, the corresponding LED (<1> or <2>) is lit and the corresponding relay (→ § 20) is activated.



4.3.1 Adjusting the Setpoints

 **DANGER**



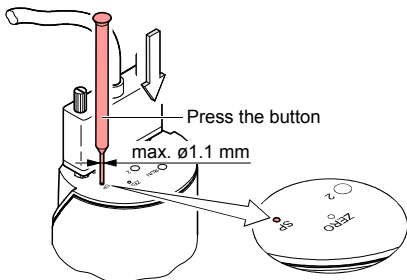
DANGER: malfunction

If processes are controlled via the signal output, keep in mind that by pushing the <SP> button the measurement signal is suppressed and the corresponding threshold value is output instead. This can cause malfunctions.

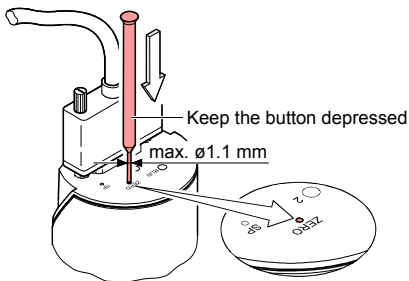
Push the <SP> button only if you are sure that no damages can arise from a malfunction.

Adjusting Setpoint <1>


- 1** Push the <SP> button with a pin (max. $\varnothing 1.1$ mm). The gauge changes to the switching function mode and outputs the current lower threshold value at the measurement value output for about 10 s (LED <1> flashes).




- 2** For changing the threshold value, push the <ZERO> button and keep it depressed. The threshold keeps changing from the current value (ramp) until the button is released or until the limit of the setting range is reached.




- 3** Push the <ZERO> button again:
- within 0...3 s: the threshold changes by one unit (fine adjustment)
 - within 3...5 s: the threshold adjustment changes its direction (the flashing frequency of the <RUN> LED changes briefly).

 If the <ZERO> button is released for more than 5 s, the gauge returns the measurement mode.

 The upper threshold is automatically set 1% F.S. above the lower one (hysteresis).

Adjusting Setpoint <2>

Push the <SP> button twice (LED <2> flashes). The adjustment procedure is the same as for setpoint <1>.

 The setpoints can also be adjusted via the RS232C interface.

4.4 Activating the Factory Setting (Factory Reset)

The factory parameter setting is activated by keeping the <ZERO> button depressed for at least 5 s while the gauge is being put into operation (Power ON).

5 Deinstallation



DANGER



DANGER: contaminated parts
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.



Caution



Caution: vacuum component
Dirt and damages impair the function of the vacuum component.

When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.



Caution



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.

- 1** Vent the vacuum system.
- 2** Turn the gauge off.

- 3** Unfasten the lock screws and disconnect the sensor cable.
- 4** Remove the gauge from the vacuum system and install the protective lid.

6 Maintenance, Repair

Under clean operating conditions, the product requires no maintenance.



Gauge failures due to contamination are not covered by the warranty.

INFICON assumes no liability and the warranty becomes null and void if any repair work is carried out by the end-user or third parties.

7 Returning the Product



WARNING



WARNING: forwarding contaminated products
Contaminated products (e.g. radioactive, toxic, caustic or microbiological hazard) can be detrimental to health and environment.

Products returned to INFICON should preferably be free of harmful substances. Adhere to the forwarding regulations of all involved countries and forwarding companies and enclose a duly completed declaration of contamination.

Products that are not clearly declared as "free of harmful substances" are decontaminated at the expense of the customer. Products not accompanied by a duly completed declaration of contamination are returned to the sender at his own expense.

8 Disposal



DANGER

Caution: contaminated parts

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



Caution: substances detrimental to the environment

Products or parts thereof (mechanical and electric components, operating fluids etc.) can be detrimental to the environment.

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

Separating the components

After disassembling the product, separate its components according to the following criteria:

- Contaminated components
Contaminated components (radioactive, toxic, caustic or biological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and disposed of.
- Other components
Such components must be separated according to their materials and recycled.

Further Information

- 📖 [1] www.inficon.com
Operating Manual
Vacuum Gauge Controller VGC032
tinb02e1
INFICON AG, LI-9496 Balzers, Liechtenstein
- 📖 [2] www.inficon.com
Operating Manual
Single-Channel Controller VGC401
tinb01e1
INFICON AG, LI-9496 Balzers, Liechtenstein
- 📖 [3] www.inficon.com
Communication Protocol
RS323C Interface
tira49e1
INFICON AG, LI-9496 Balzers, Liechtenstein

Declaration of Contamination

The service, repair, and/or disposal of vacuum equipment and components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.

This declaration may only be completed (in block letters) and signed by authorized and qualified staff.

1 Description of product
 Type _____
 Part number _____
 Serial number _____

2 Reason for return

3 Operating fluid(s) used (Must be drained before shipping.)

4 Used in copper process
 no yes **Seal product in plastic bag and mark it with a corresponding label.**

5 Process related contamination of product:

toxic	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>
caustic	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>
biological hazard	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)
explosive	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)
radioactive	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)
other harmful substances	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>

1) or not containing any amount of hazardous residues that exceed the permissible exposure limits

2) Products thus contaminated will not be accepted without written evidence of decontamination.

The product is free of any substances which are damaging to health. yes

6 Harmful substances, gases and/or by-products
 Please list all substances, gases, and by-products which the product may have come into contact with:

Trade/product name	Chemical name (or symbol)	Precautions associated with substance	Action if human contact

7 Legally binding declaration:
 We hereby declare that the information on this form is complete and accurate and that we will assume any further costs that may arise. The contaminated product will be dispatched in accordance with the applicable regulations.

Organization/company _____
 Address _____ Post code, place _____
 Phone _____ Fax _____
 Email _____
 Name _____

Date and legally binding signature _____ Company stamp _____

This form can be downloaded from our website.

Copies:
 Original for addressee - 1 copy for accompanying documents - 1 copy for file of sender

ETL Certification



ETL LISTED
CONFORMS TO UL STD 61010-1
CERTIFIED TO CAN/CSA STD C22.2
NO 61010-1

EC Declaration of Conformity



We, INFICON, hereby declare that the equipment mentioned below complies with the provisions of the Directive relating to electrical equipment designed for use within certain voltage limits 73/23/EEC and the Directive relating to electromagnetic compatibility 2004/108/EC.

Capacitance Diaphragm Gauge

CDG025D

CDG025D-S

Part numbers

375-000	376-000	377-000	378-000	379-000
375-001	376-001	377-001	378-001	379-001
375-002	376-002	377-002	378-002	379-002
375-003	376-003	377-003	378-003	379-003
375-200	376-200	377-200	378-200	379-200
375-201	376-201	377-201	378-201	379-201
375-202	376-202	377-202	378-202	379-202
375-203	376-203	377-203	378-203	379-203
375-300	376-300	377-300	378-300	379-300
375-301	376-301	377-301	378-301	379-301
375-302	376-302	377-302	378-302	379-302
375-303	376-303	377-303	378-303	379-303
			378-304	
375-500	376-500	377-500	378-500	379-500
375-501	376-501	377-501	378-501	379-501
375-502	376-502	377-502	378-502	379-502
375-503	376-503	377-503	378-503	379-503
382-000	383-000	384-000	385-000	386-601
382-001	383-001	384-001	385-001	
382-002	383-002	384-002	385-002	
382-003	383-003	384-003	385-003	

382-200	383-200	384-200	385-200
382-201	383-201	384-201	385-201
382-202	383-202	384-202	385-202
382-203	383-203	384-203	385-203
382-300	383-300	384-300	385-300
382-301	383-301	384-301	385-301
382-302	383-302	384-302	385-302
382-303	383-303	384-303	385-303
382-500	383-500	384-500	385-500
382-501	383-501	384-501	385-501
382-502	383-502	384-502	385-502
382-503	383-503	384-503	385-503

Standards

Harmonized and international/national standards and specifications:

- EN 61000-6-2 (Electromagnetic compatibility: generic immunity standard)
- EN 61000-6-3 (Electromagnetic compatibility: generic emission standard)
- EN 61010-1 (Safety requirements for electrical equipment for measurement, control and laboratory use)

Signatures

INFICON AG, Balzers

14 September 2006



Alex Nef
Product Manager

14 September 2006



Dr. Georg Sele
Technical Support Manager
Quality Representative

Notes

Notes

Original: German tina49d1-b (2006-09)



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LI-9496 Balzers
Liechtenstein
Tel +423 / 388 3111
Fax +423 / 388 3700
reachus@inficon.com

www.inficon.com