Capacitance Diaphragm Gauge

Porter CDG020D

The INFICON Porter CDG020D Capacitance Diaphragm Gauge is a high quality, cost effective, gas type independent absolute pressure sensor. The Porter is designed for stable long time performance in industrial environments. The ceramic sensor provides excellent span stability over many years of maintenance free operation paired with outstanding zero stability. The corrosion resistant single material sensor architecture guaranties excellent temperature compensation. Fully digital electronics and small footprint defines flexibility in any integration. The Porter vacuum gauge is humble, reliable, always available and never overpaid.

Advantages

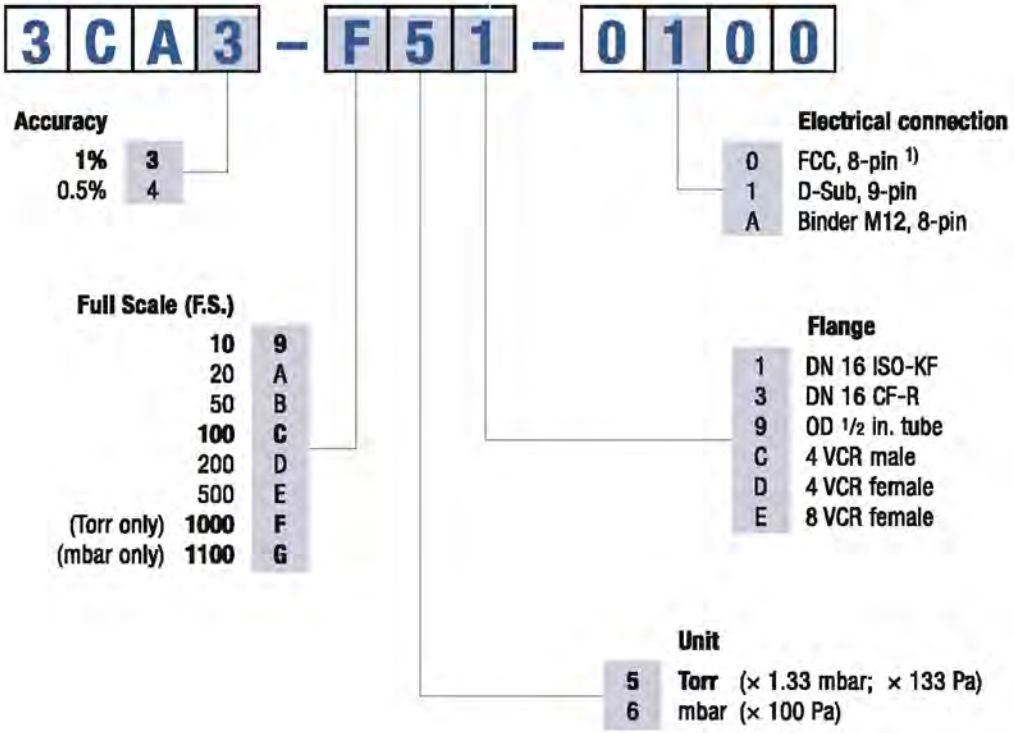
- Excellent span stability—gas type independent
- Corrosion resistant alumina sensor
- Compact, smallest size in it's class
- Easy integration, any mounting orientation
- Digital signal processing
- Maintenance free

Applications

- Vacuum coating
- Vacuum monitoring
- Sterilization
- Food and packaging
- Vacuum oven, puller
- Analytical
- Chemical vacuum processes

Porter CDG020D (continued)

Ordering Information



1) for use with INFICON controllers

bold = standard products

Other flange types and full scales (F.S.) on request.

Porter CDG020D (continued)

Specifications

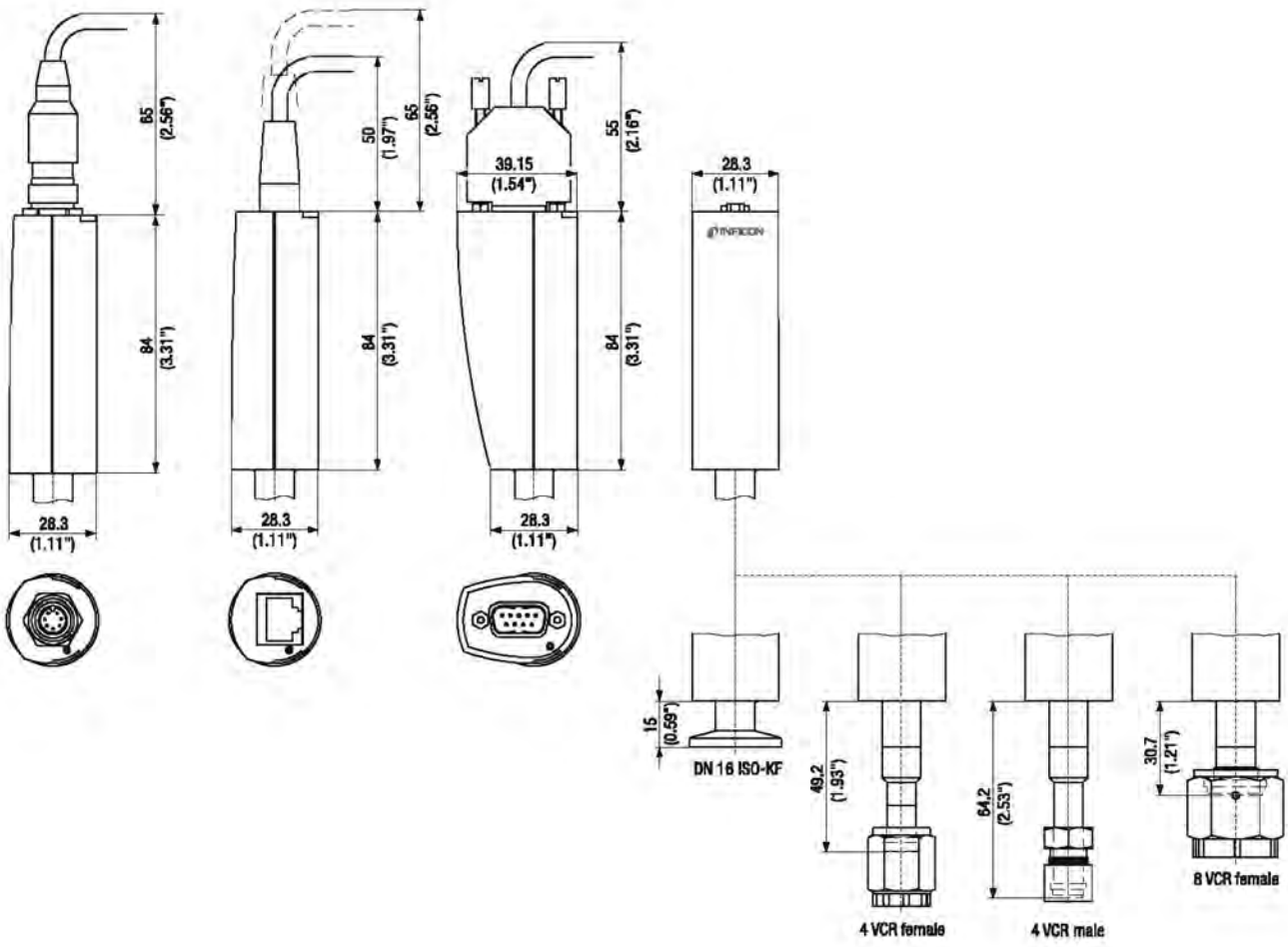
Measurement Range	**Torr**	**1000**	**100**	**10**	*500*	*200*	*50*	*20*			
F.S. (Full Scale)	**Pa**	**133,322**	**13,332**	**1,333**	*66,661*	*26,664*	*6,666*	*2,666*	**110,000**	**10,000**	**1000**
	mbar	**1333**	**133**	**13.3**	*667*	*267*	*66.7*	*27*	**1100**	**100**	**10**
Accuracy [1]											
3CA3-xxx-xxx	% of reading					1					
3CA4-	% of reading					0.5					
Temperature effect											
On zero	% F.S. / °C					0.02					
On span	% of reading / °C					0.02					
Resolution	% F.S.					0.05					
Long time stability	% F.S. / year					<0.5					
Lowest reading	% F.S.					0.05					
Temperature compensated range	°C					+10 ... +50					
Admissible temperature											
Operation (ambient)	°C					0 ... +70					
Bakeout at flange [2]	°C					≤110					
Storage	°C					–20 ... +85					
Ambient humidity limits	% RH					<80%, non-condensing					
Supply voltage	V (dc)					+13 ... +30					
Power consumption	W					≤0.3					
Output signal (analog)	V (dc)					0 ... +10					
Max. output voltage	V (dc)					+10.24					
Response time [3]	ms					100					
Degree of protection						IP 40					
Standards											
CE conformity						EMC (EN 61000-6-2, EN 61000-6-3), EN 61010-1 and RoHS					
ETL certification						UL 61010-1, CAN/CSA C22.2 No. 61010-1					
SEMI compliance						SEMI S2					
Electrical connection											
3CAx-xxx-0000						FCC, 8-pin					
-0100						D-Sub, 9-pin, male					
-0A00						Binder M12, 8-pin, male					
Materials exposed to vacuum						Aluminum oxide ceramic (Al_2O_3), stainless steel 1.4404 (AISI 316L),					
Tightness	mbar l/s					<1x10^{-9}					
Mounting orientation						Any					
Internal volume											
DN 16 ISO-KF	cm^3 (in.^{3})					3.7 (0.226)					
4 VCR male	cm^3 (in.^{3})					6.1 (0.372)					
4 VCR female	cm^3 (in.^{3})					5.6 (0.342)					
8 VCR female	cm^3 (in.^{3})					5.1 (0.311)					
Weight											
DN 16 ISO-KF	g					~110					
4 VCR male	g					~123					
4 VCR female	g					~133					
8 VCR female	g					~159					
Maintenance						none					

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Non-operation
3) Increase 10 ... 90% F.S.

Porter CDG020D (continued)

Dimensions

mm (in.)



Capacitance Diaphragm Gauge

Sky CDG025D, CDG025D-S 0.1 ...1000 Torr/mbar

The INFICON SKY CDG025D Capacitance Diaphragm Gauge line of highly accurate temperature compensated manometers is designed for stable performance in harsh manufacturing tool environments. Advanced digital electronics improve gauge performance and offer easy handling features such as one push button zero function and setpoint adjustment. The corrosion resistant ultra pure ceramic sensor provides excellent zero stability with a long life expectancy of several million pressure cycles, including atmospheric bursts. A unique sensor shielding (patent pending) protects the gauge from process contamination. A robust mechanical design and digital electronics improve EMC compatibility, long term stability and temperature compensation. The CDG025D sets new standards for fast stability after power on and fast recovery from atmospheric pressure exposure.

Advantages

- Full scale ranges from 100 mTorr ... 1000 Torr
- Fast stability after power on
- Fast recovery from atmospheric pressure
- Corrosion resistant ceramic sensor
- Excellent long term signal stability
- Temperature compensated
- Sensor protected from contamination
- One push button zero function
- Wide range power supply
- Two setpoints (optional)
- RS232 interface (optional)

Applications

- Semiconductor manufacturing equipment for Etch, CVD, PVD, ALD
- Data storage and display manufacturing equipment
- Industrial vacuum equipment
- General high accuracy pressure measurement

Sky CDG025D, CDG025D-S 0.1 ...1000 Torr/mbar (continued)

Ordering Information

CDG025D, temperature compensated

Full Scale Range			Flange type			
Torr	**Pascal**	**mbar**	**1/2 in. tube**	**DN 16 ISO-KF**	**DN 16 CF-R**	**8 VCR**
1000	**133,322**	**1333**	**375-000**	**375-001**	**375-002**	**375-003**
100	**13,332**	**133**	**376-000**	**376-001**	**376-002**	**376-003**
10	**1,333**	**13.3**	**377-000**	**377-001**	**377-002**	**377-003**
1	**133**	**1.3**	**378-000**	**378-001**	**378-002**	**378-003**
0.1	**13.3**	**0.13**	**379-000**	**379-001**	**379-002**	**379-003**

CDG025D, with 2 setpoints and RS232 interface, temperature compensated

Full Scale Range			Flange type			
Torr	**Pascal**	**mbar**	**1/2 in. tube**	**DN 16 ISO-KF**	**DN 16 CF-R**	**8 VCR**
1000	**133,322**	**1333**	**375-300**	**375-301**	**375-302**	**375-303**
–	110,000	1,100	375-500	375-501	375-502	375-503
200	26,664	267	382-300	382-301	382-302	382-303
100	**13,332**	**133**	**376-300**	**376-301**	**376-302**	**376-303**
–	10,000	100	376-500	376-501	376-502	376-503
20	2,666	26.7	383-300	383-301	383-302	383-303
10	**1,333**	**13.3**	**377-300**	**377-301**	**377-302**	**377-303**
–	1,000	10	377-500	377-501	377-502	377-503
1	**133**	**1.3**	**378-300**	**378-301**	**378-302**	**378-303**
–	100	1	378-500	378-501	378-502	378-503
0.25	33.3	0.33	385-300	385-301	385-302	385-303
0.1	**13.3**	**0.13**	**379-300**	**379-301**	**379-302**	**379-303**
–	10	0.1	379-500	379-501	379-502	379-503

bold = standard products

Other flange types and full scale ranges on request.

Sky CDG025D, CDG025D-S 0.1 ...1000 Torr/mbar (continued)

Specifications (Torr based standard products)

Measurement Range **F.S. (Full Scale)**	**Torr** **Pa** **mbar**	**1000** **133,322** **1333**	**100** **13,332** **133**	**10** **1,333** **13.3**	**1** **133** **1.3**	**0.1** **13** **0.13**
Accuracy [1]	% of reading	0.2	0.2	0.2	0.2	0.5
Temperature effect						
on zero	% F.S. / °C	0.005	0.005	0.005	0.015	0.02
on span	% of reading / °C	0.01	0.01	0.01	0.01	0.03
Resolution	% F.S.	0.003	0.003	0.003	0.003	0.003
Pressure, max.	kPa (absolute)	400	260	260	260	130
Response time [2]	ms	30	30	30	30	130
Lowest reading	% F.S.	0.01				
Lowest suggested reading	% F.S.	0.05				
Lowest suggested control pressure	% F.S.	0.5				
Temperature						
Operation (ambient)	°C	+5 ... +50				
Bakeout at flange [3]	°C	≤110				
Storage	°C	–20 ... +65				
Supply voltage	V (dc)	14 ... 30				
Power consumption	W	≤1				
Output signal (analog)	V (dc)	0 ... +10				
Degree of protection		IP 30				
Standards		EN 61000-6-2, EN 61000-6-3, EN 61010, UL 61010-1, CSA 22.2 No.61010-1, RoHS				
Electrical connection		D-sub, 15 pole, male				
Setpoint [4]		Two setpoints (SP1, SP2)				
Relay contact	V (dc) / A (dc)	30 / ≤0.5				
Hysteresis	% F.S.	1				
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), Vacon 70 [5], stainless steel (AISI 316L [5]), AgCuTi hard solder, sealing glass				

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) Non-operation
4) CDG025D-S only
5) 28% Ni, 23% Co, 49% Fe
6) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Sky CDG025D, CDG025D-S 0.1 ...1000 Torr/mbar (continued)

Specifications (Torr based other ranges)

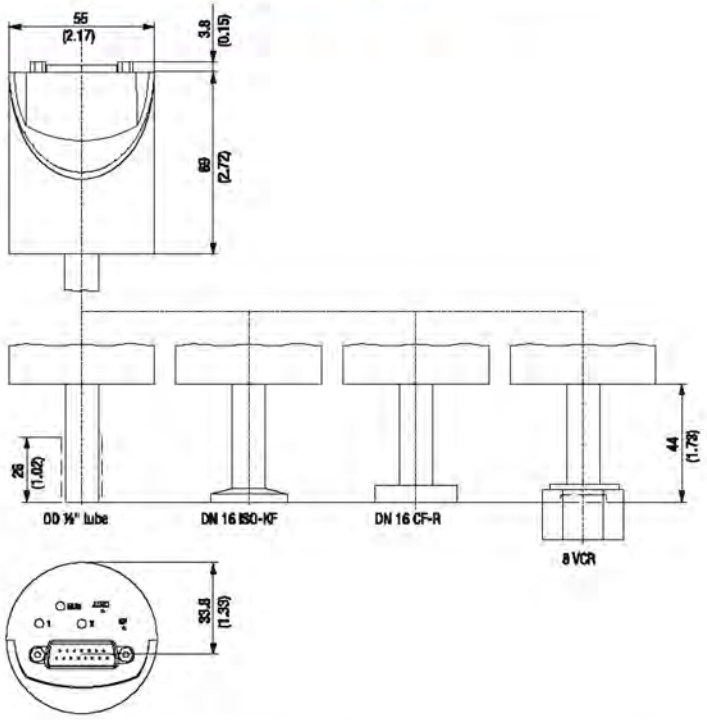
Measurement Range F.S. (Full Scale)	Torr Pa mbar	– 110,000 1000	200 26,664 267	– 10,000 100	20 2,666 26.7	– 1,000 10	– 100 1	0.25 33.3 0.33	– 10 0.1
Accuracy [1]	% of reading	0.2	0.2	0.2	0.2	0.2	0.2	0.25	0.5
Temperature effect									
on zero	% F.S. / °C	0.005	0.005	0.005	0.005	0.005	0.015	0.02	0.02
on span	% of reading / °C	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03
Resolution	% F.S.	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Pressure, max.	kPa (absolute)	400	260	260	260	260	260	130	130
Response time [2]	ms	30	30	30	30	30	30	130	130

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.

For further specifications, see table above.

Dimensions, Internal Volume, Weight

mm (in.)



		½ in. tube	DN 16 ISO KF	DN 16 CF-R	8 VCR
Internal volume	cm³ (in.³)	3.6 (0.22)	3.6 (0.22)	3.6 (0.22)	3.6 (0.22)
Weight	g	310	330	350	370

Capacitance Diaphragm Gauge

Sky CDG025D–X3 0.1 ...1000 Torr/mbar

The INFICON SKY CDG025D Capacitance Diaphragm Gauge line of highly accurate temperature compensated manometers is designed for stable performance in harsh manufacturing tool environments. Advanced digital electronics improve gauge performance and offer easy handling features such as one push button zero function and setpoint adjustment. The corrosion resistant ultra pure ceramic sensor provides excellent zero stability with a long life expectancy of several million pressure cycles, including atmospheric bursts. A unique sensor shielding (patent pending) protects the gauge from process contamination. A robust mechanical design and digital electronics improve EMC compatibility, long term stability and temperature compensation. The CDG025D sets new standards for fast stability after power on and fast recovery from atmospheric pressure exposure.

Advantages

- Full scale ranges from 100 mTorr ... 1000 Torr
- Fast stability after power on
- Fast recovery from atmospheric pressure
- Corrosion resistant ceramic sensor
- Excellent long term signal stability
- Temperature compensated
- Sensor double protected from contamination
- One push button zero function
- Wide range power supply
- Two setpoints
- RS232 interface
- Clean room compliant

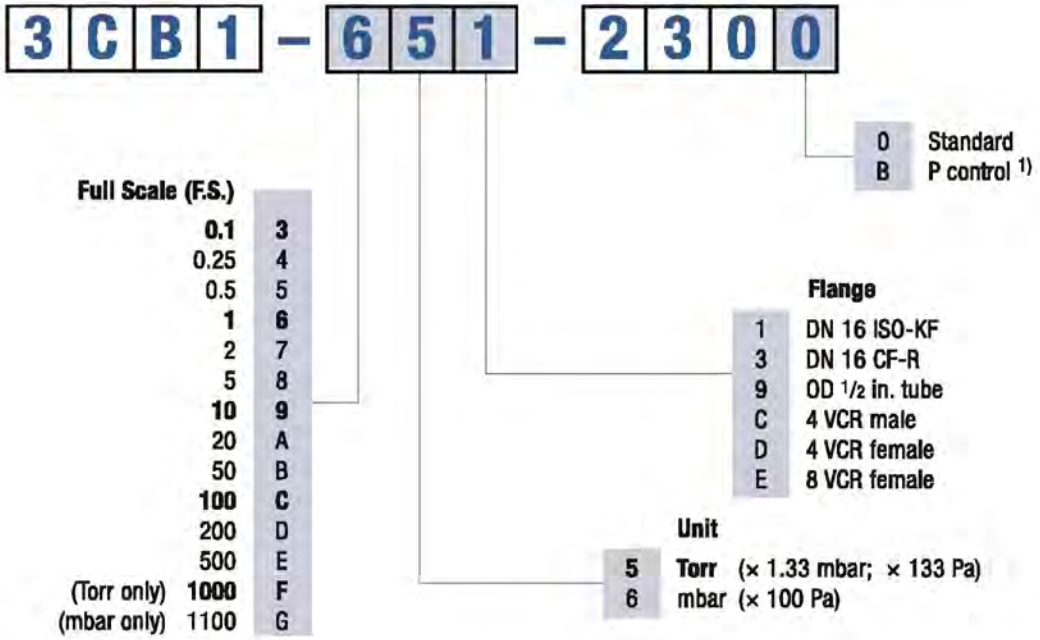
Applications

Accurate and fast pressure measurement for demanding applications:

- Semiconductor manufacturing equipment for Etch, CVD, PVD, ALD
- Data storage and display manufacturing equipment
- Industrial vacuum equipment
- General high accuracy pressure measurement

Sky CDG025D-X3 0.1 ...1000 Torr/mbar (continued)

Ordering Information



1) Optimized signal filter setting for pressure control.

bold = standard products

Other flange types and full scale ranges (F.S.) on request.

Sky CDG025D–X3 0.1 ...1000 Torr/mbar (continued)

Specifications (Torr based standard products)

Measurement Range **F.S. (Full Scale)**	**Torr** **Pa** **mbar**	**1000** **133,322** **1333**	**100** **13,332** **133**	**10** **1,333** **13.3**	**1** **133** **1.3**	**0.1** **13** **0.13**
Accuracy [1]	% of reading	0.2	0.2	0.2	0.2	0.5
Temperature effect						
on zero	% F.S. / °C	0.005	0.005	0.005	0.015	0.02
on span	% of reading / °C	0.01	0.01	0.01	0.01	0.03
Resolution	% F.S.	0.003	0.003	0.003	0.003	0.003
Pressure, max.	kPa (absolute)	400	260	260	260	130
Response time [2]	ms	30	30	30	30	130 / 30 [3]
Lowest reading	% F.S.	0.01				
Lowest suggested reading	% F.S.	0.05				
Lowest suggested control pressure	% F.S.	0.5				
Temperature						
Operation (ambient)	°C	+5 ... +50				
Bakeout at flange [4]	°C	≤110				
Storage	°C	–20 ... +65				
Supply voltage	V (dc)	+14 ... +30				
Power consumption	W	≤1				
Output signal (analog)	V (dc)	0 ... +10				
Degree of protection		IP 30				
Standards		EN 61000-6-2, EN 61000-6-3, EN 61010, UL 61010-1, CSA 22.2 No.61010-1, RoHS				
Electrical connection		D-Sub, 15-pin, male				
Setpoint		Two setpoints (SP1, SP2)				
Relay contact	V (dc) / A (dc)	30 / ≤0.5				
Hysteresis	% F.S.	1				
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L[5])				

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For pressure control type only
4) Non-operation
5) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Sky CDG025D–X3 0.1 ...1000 Torr/mbar (continued)

Specifications (Torr based other ranges)

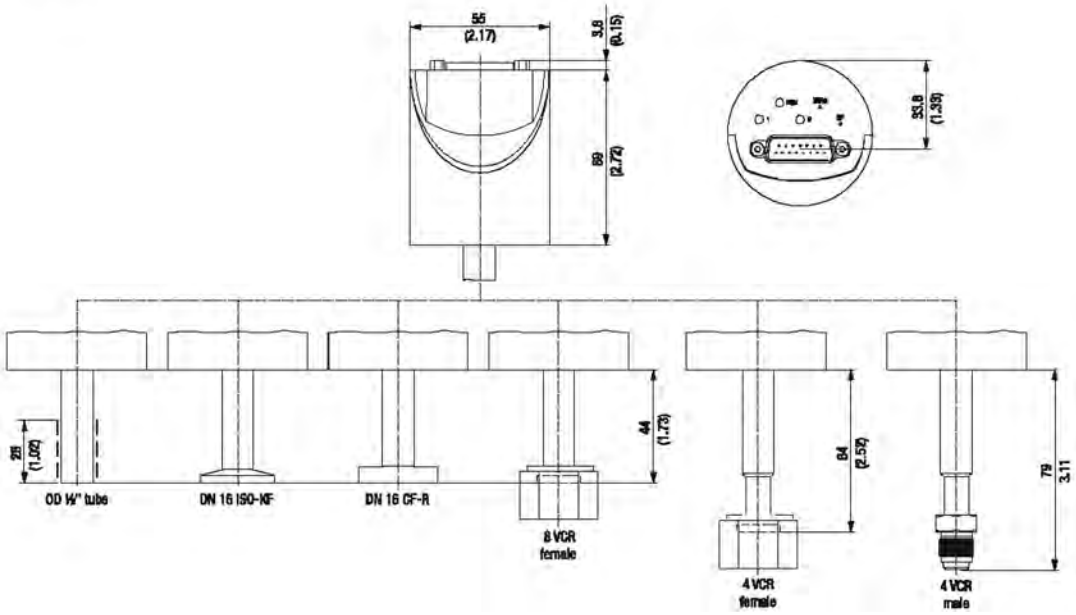
Measurement Range F.S. (Full Scale)	Torr Pa mbar	– 110,000 1100	200 26,664 267	– 10,000 100	20 2,666 26.7	– 1,000 10	– 100 1	0.25 33.3 0.33	– 10 0.1
Accuracy [1]	% of reading	0.2	0.2	0.2	0.2	0.2	0.2	0.25	0.5
Temperature effect									
on zero	% F.S. / °C	0.005	0.005	0.005	0.005	0.005	0.015	0.02	0.02
on span	% of reading / °C	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03
Pressure, max.	kPa (absolute)	236	260	260	260	260	260	130	130
Resolution	% F.S.	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Response time [2]	ms	30	30	30	30	30	30	130	130 / 30 [3]

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For pressure control type only

Further specifications see table above.

Dimensions, Internal Volume, Weight

mm (in.)



		½ in. tube	DN 16 ISO KF	DN 16 CF-R	8 VCR
Internal volume	cm³ (in.³)	3.6 (0.22)	3.6 (0.22)	3.6 (0.22)	3.6 (0.22)
Weight	g	310	330	350	370

Capacitance Diaphragm Gauge

Sky CDG025D–X3 4–20mA current loop 0.1 ...1000 Torr/mbar

The INFICON SKY CDG025D Capacitance Diaphragm Gauge line of highly accurate temperature compensated manometers is designed for stable performance in harsh manufacturing tool environments. Advanced digital electronics improve gauge performance and offer easy handling features such as one push button zero function and setpoint adjustment. The corrosion resistant ultra pure ceramic sensor provides excellent zero stability with a long life expectancy of several million pressure cycles, including atmospheric bursts. A unique sensor shielding (patent pending) protects the gauge from process contamination. A robust mechanical design and digital electronics improve EMC compatibility, long term stability and temperature compensation. The CDG025D sets new standards for fast stability after power on and fast recovery from atmospheric pressure exposure.

Advantages

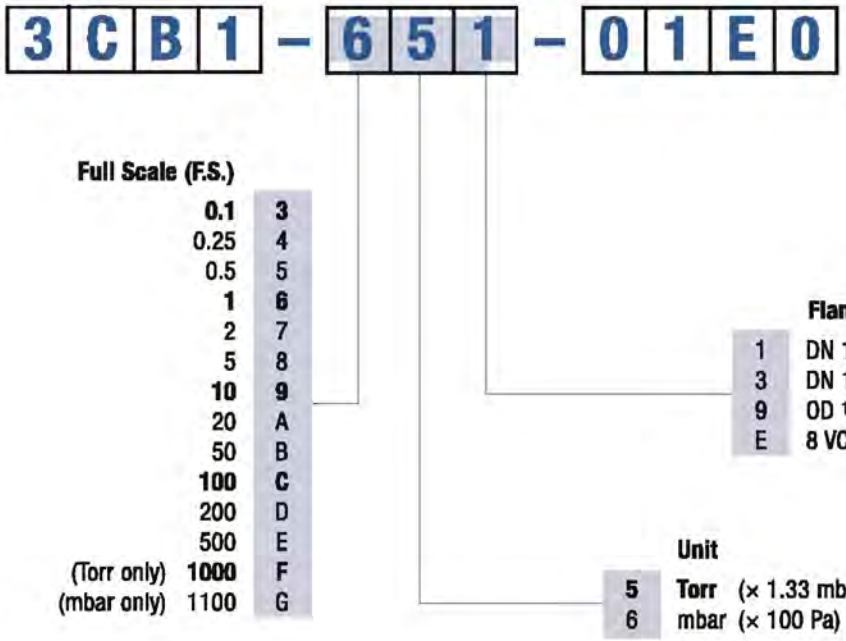
- Full scale ranges from 100 mTorr ... 1000 Torr
- Fast stability after power on
- Fast recovery from atmospheric pressure
- Corrosion resistant ceramic sensor
- Excellent long term signal stability
- Temperature compensated
- Sensor double protected from contamination
- One pushbutton zero function
- Interface with 2-wire current loop
- Long cable distance (<300m)
- Low energy gauge
- Remote zero included
- Clean room compliant
- Status LED

Applications

- Semiconductor manufacturing equipment for Etch, CVD, PVD, ALD
- Data storage and display manufacturing equipment
- Industrial vacuum equipment
- General high accuracy pressure measurement

Sky CDG025D–X3 4–20mA current loop (continued)

Ordering Information



bold = standard products

Other flange types and full scale ranges (F.S.) on request.

Sky CDG025D-X3 4-20mA current loop (continued)

Specifications (Torr based standard products)

Measurement Range	**Torr**	**1000**	**500...10**	**1**	**0.25**	**0.1**
F.S. (Full Scale)	**Pa**	**133.332**	**66.661...1.333**	**133**	**33.3**	**13**
	mbar	**1100**	**66.7...13.3**	**1.3**	**0.33**	**0.13**
Accuracy [1]	% of reading	0.2	0.2	0.2	0.25	0.5
Temperature effect						
on zero	% F.S. / °C	0.005	0.005	0.015	0.02	0.02
on span	% of reading / °C	0.01	0.01	0.01	0.03	0.03
Resolution	% F.S.	0.003	0.003	0.003	0.003	0.003
Pressure, max.	kPa (absolute)	300	200	200	200	130
Response time [2]	ms	≤100	≤100	≤100	≤100	≤100
Lowest reading	% F.S.	0.01				
Lowest suggested reading	% F.S.	0.05				
Lowest suggested control pressure	% F.S.	0.5				
Temperature						
Operation (ambient)	°C	+5 ... +60				
Bakeout at flange [3]	°C	≤110				
Storage	°C	–20 ... +65				
Supply voltage	V (dc)	+21 ... +27				
Output signal (analog)		2-wire, current loop				
Relationship current-preasure		linear				
Signal range	mA	3.8 ... 20.2				
Measureing range (zero ... FS)	mA	4.0 ... 20.0				
Loaded impedance RL						
Ω		typical 500Ω±1% 24±3 V (dc) [4]				
absolute		309 ... 657Ω at 24 V (dc) [4]				
remote zero input		digital input, floating contact				
High level (pulse > 1s)		+21 ... +27 V (dc) / ≤8 mA				
Low level		≤2				
remote zero function						
High level (pulse > 1s)		auto zero adjust				
Low level		measurement operation				
Degree of protection		IP 30				
Standards						
CE conformity		EN 61000-6-3, EN 61010, 61326-1 & RoHS				
ETL certification		UL 61010-1, CSA 22.2 No.61010-1				
Electrical connection		D-Sub, 9-pin, male				
Sensor cable						
Without remote zero		two-wire cable plus shielding, twisted				
With remote zero		four-wire cable plus shielding, twisted				
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L[5])				
Internal volume						
I. volume 1/2" tube	cm^3 ($in.^3$)	3.6 (0.22)				
I. volume DN 16 ISO-KF	cm^3 ($in.^3$)	3.6 (0.22)				
I. volume DN 16 CF-R	cm^3 ($in.^3$)	3.6 (0.22)				
I. volume 8 VCR®	cm^3 ($in.^3$)	3.6 (0.22)				

Sky CDG025D–X3 4–20mA current loop (continued)

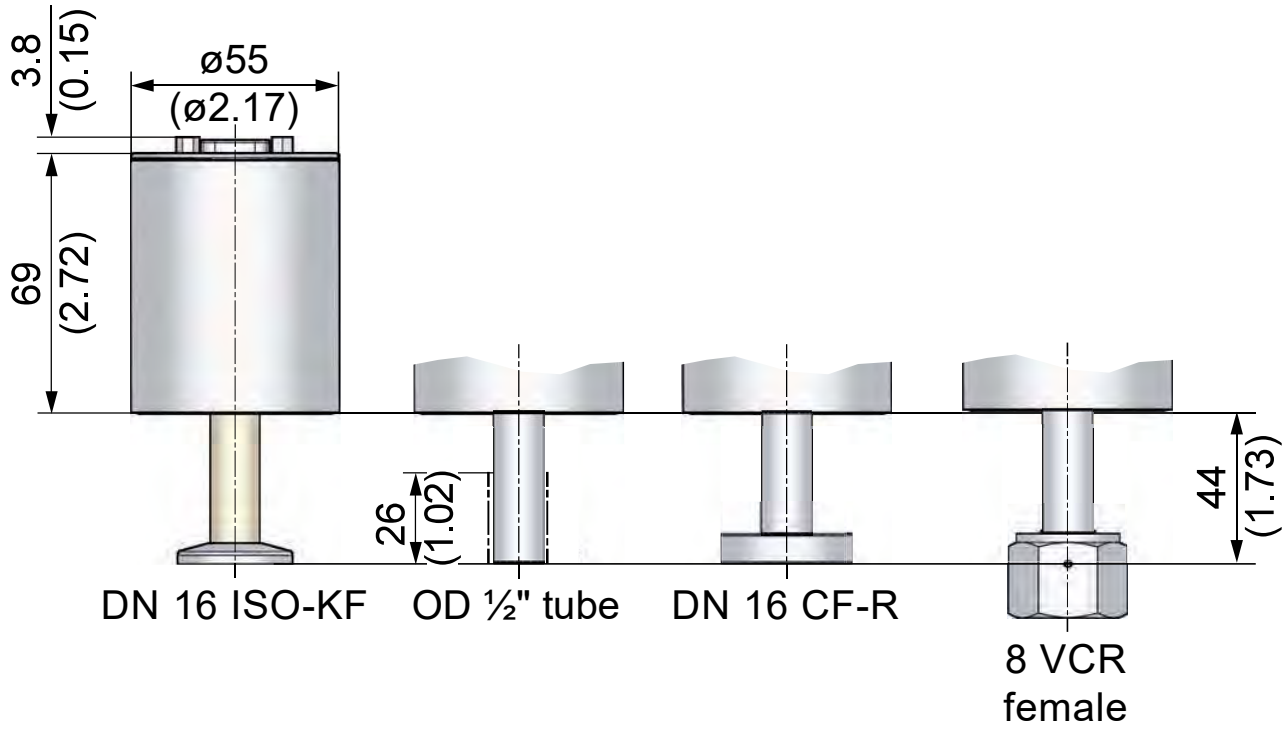
Specifications (Torr based standard products)

Measurement Range	Torr	1000	500...10	1	0.25	0.1
F.S. (Full Scale)	Pa	133.332	66.661...1.333	133	33.3	13
	mbar	1100	66.7...13.3	1.3	0.33	0.13
Weight						
1/2 in. tube	g			310		
DN 16 ISO-KF	g			330		
DN 16 CF-R	g			350		
8 VCR®	g			370		

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 … 90% F.S.
3) Non operation
4) Supply voltage at the gauge
5) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Dimensions

mm (in.)



Capacitance Diaphragm Gauge

Edge CDG025D2 with EtherCAT 0.1... 1000Torr/mbar

INFICON temperature compensated Edge CDG025D2 with EtherCAT Capacitance Diaphragm Gauge is a highly accurate vacuum measurement instrument designed for harsh manufacturing environments.

The proven temperature compensated, corrosion resistant, ultra-pure ceramic sensor provides superior span stability over many years paired with state-of-the-art zero stability. Edge comes with the INFICON patented unique sensor shield which protects the gauge from undesired process by-products. Advanced electronics offer a wide range of configurable signal conditioning for all applications with EtherCAT fieldbus interface..

Advantages

- Easy integration, EtherCAT, wide variety of full scales and flanges, standard with two set points
- Easy one push button or remote signal zero command, zero offset adjustable
- Diagnostic port for quick service and maintenance
- Corrosion resistant ceramic sensor
- Excellent long term signal stability
- Temperature compensated
- Sensor protected from contamination
- Compliance & standards: CE, EN, UL, SEMI, RoHS

Applications

- Semiconductor manufacturing equipment for Etch, CVD, PVD, ALD
- Data storage and display manufacturing equipment
- Industrial vacuum equipment
- General high accuracy pressure measurement

Edge CDG025D2 with EtherCAT 0.1 ... 1000Torr/mbar (continued)

Ordering Information

3	C	B	5	–	9	5	1	–	2	3	G	0

0 Standard
B P control [1)]

Full Scale (F.S.)

0.1	**3**
0.25	4
0.5	5
1	**6**
2	7
5	8
10	**9**
20	A
50	B
100	**C**
200	D
500	E
(Torr only) 1000	**F**
(mbar only) 1100	G

Flange

1	DN 16 ISO-KF
3	DN 16 CF-R
9	OD 1/2 in. tube
C	4 VCR female
D	4 VCR female
E	8 VCR female

Unit

5	**Torr** (× 1.33 mbar; × 133 Pa)
6	mbar (× 100 Pa)

[1)] Optimised signal filter setting for pressure control

bold = standard products

Other flange types and full scales (F.S.) on request.

Edge CDG025D2 with EtherCAT 0.1 ... 1000Torr/mbar (continued)

Specifications (Torr based standard products)

Measurement Range	**Torr**	**1000**	**500 ... 10**	**1**	**0.25**	**0.1**
F.S. (Full Scale)	**Pa**	**133.322**	**66.661 ...1.333**	**133**	**33.3**	**13**
	mbar	**1100**	**133 ...13.3**	**1.3**	**0.33**	**0.13**
Accuracy [1]	% of reading	0.2	0.2	0.2	0.25	0.5
Temperature effect						
on zero	% F.S. / °C	0.005	0.005	0.015	0.02	0.02
on span	% of reading / °C	0.01	0.01	0.01	0.03	0.03
Pressure, max.	kPa (absolute)	400	260	260	130	130
Resolution	% F.S.	0.003				
Lowest reading	% F.S.	0.01				
Lowest suggested reading	% F.S.	0.05				
Lowest suggested control pressure	% F.S.	0.5				
Temperature						
Sensor	°C	25				
Operation (ambient)	°C	+5 ... +50				
Bakeout at flange	°C	≤110				
Storage	°C	−20 ... +65				
Supply voltage	V (dc)	+14 ... +30 VDC or ± 15 V (±5%)				
Power consumption						
At operating temperature	W	≤1				
Output signal (analog)	V (dc)	0 ... +10				
Response time [2]	ms		30		130	130/30 [3]
Degree of protection		IP 40				
Standards						
CE conformity		EN 61000-6-2/-6-3, EN 61010 & RoHS				
ETL certification		UL 61010-1, CSA 22.2 No.61010-1				
SEMI compliance		SEMI S2				
Electrical connection		D-sub, 15 pole, male				
Setpoint						
Number of setpoints		2 (SP1, SP2)				
Relay contact	V (dc)	≤30				
	A (dc)	≤0.5				
Hysteresis	% F.S.	1				
Diagnostic port						
Protocol		RS232-C				
Read		pressure, status, ID				
Set		set points, filter, zero adjust, factory reset, DC offset				
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L[4])				
Internal volume						
1/2" tube	cm^3 ($in.^3$)	4.2 (0.26)				
DN 16 ISO-KF	cm^3 ($in.^3$)	4.2 (0.26)				
DN 16 CF-R	cm^3 ($in.^3$)	4.2 (0.26)				
8 VCR®	cm^3 ($in.^3$)	4.2 (0.26)				
Weight						
1/2" tube	g	837				
DN 16 ISO-KF	g	852				
DN 16 CF-R	g	875				
8 VCR®	g	897				

Edge CDG025D2 with EtherCAT 0.1 ... 1000Torr/mbar (continued)

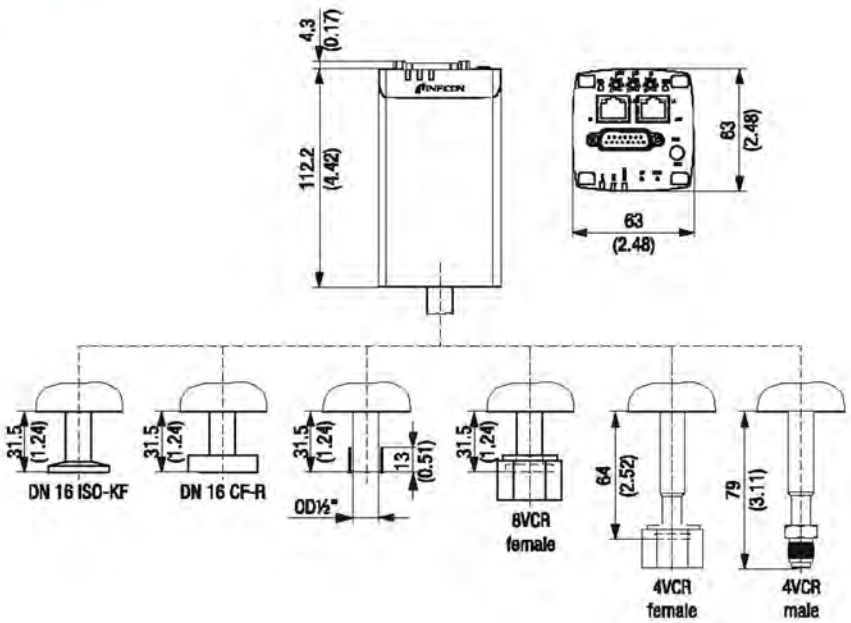
Specifications (Torr based standard products)

Measurement Range	Torr	1000	500 ... 10	1	0.25	0.1
F.S. (Full Scale)	Pa	133.322	66.661 ...1.333	133	33.3	13
	mbar	1100	133 ...13.3	1.3	0.33	0.13
EtherCAT						
Protocol EtherCAT		protocol specialized for EtherCAT				
Communication standards		ETG.5003 Part 1 "Semiconductor Device Profile" ETG.5003 Part 2080 "Specific Device Profile: Vacuum Pressure Gauge				
Node address		Explicit Device Identification				
Physical layer		100BASE-Tx (IEEE802.3)				
Digital functions	read	pressure, status, ID				
	set	set points, filter, zero adjust, reset, DC offset				
Mailbox (CoE)		SDO requests, responses and information				
Process data		Fixed PDO mapping and configurable PDO mapping				
EtherCAT connector		RJ45, 8-pin (socket), IN and OUT				
Cable		shielded Ethernet CAT5e or higher				
EtherCAT						
Data rate	Kbps	100000				
Cable length	m (ft.)	≤100 (330)				

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For pressure control type only
4) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Dimensions

mm (in.)



Capacitance Diaphragm Gauge

Sky CDG045D 0.05 ...1000 Torr/mbar

INFICON SKY CDG045D manometers are your best choice for highly accurate total pressure measurement and control. CDG045D gauges are temperature controlled at 45°C for superior signal stability and repeatability. They are available for full scale ranges from 50 mTorr
to 1000 Torr, with all common flange types and fieldbus interfaces and provide a linear 0 to 10 V, gas type independent, pressure signal. INFICON capacitance manometers use a corrosion proof ultra pure alumina ceramic diaphragm. The advantages of the ceramic sensor are better signal stability, faster recovery from atmosphere, short warm up time and an extraordinary lifetime. INFICON CDG are high quality, cost effective pressure sensors for demanding vacuum applications.

Advantages

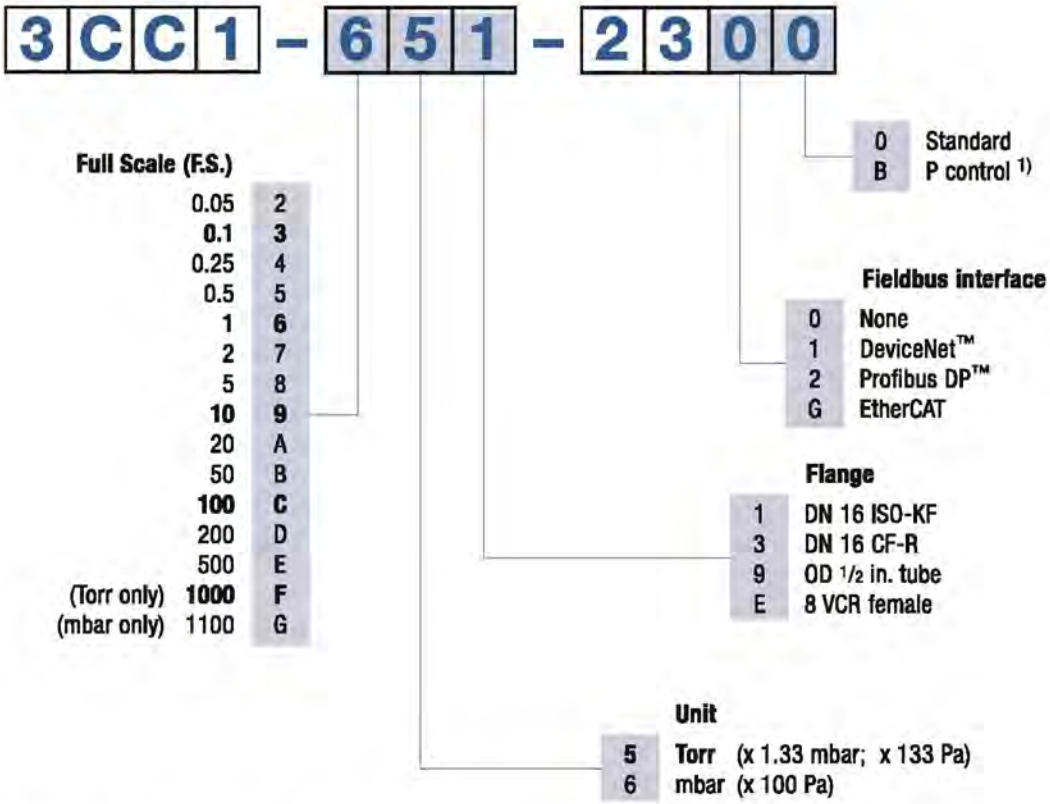
- Lower cost of ownership, 50% faster warm up, energy efficient low power consumption
- Easy integration, wide variety of full scales, flanges and interfaces, standard with two set points
- Easy one push button or remote signal zero command, zero offset adjustable
- Diagnostic port for quick service and maintenance
- Two year warranty, longer lifetime with advanced heating concept and gauge protection
- No long term recalibration due to excellent signal stability and repeatability, even in harsh plasma applications
- Compliance and standards: CE, EN, UL, SEMI, RoHS

Applications

- Etch, CVD, PVD and other semiconductor production processes
- Chemical and corrosive vacuum processes
- General thin film and vacuum processes
- Reference sensor for monitoring of test instruments according to international standards
- Transfer standard for traceability measurements

Sky CDG045D 0.05 ...1000 Torr/mbar (continued)

Ordering Information



1) Optimized signal filter setting for pressure control

bold = standard products

Other flange types and full scale ranges (F.S.) on request.

Accessories

	Diagnostic
Communication adapter (2 m) for PC RS232 serial port	303-333

Software to run the diagnostic functions on Windows NT, XP can be downloaded from our website.

Sky CDG045D 0.05 ...1000 Torr/mbar (continued)

Specifications (Torr based standard products)

Type		1000 Torr, 1100 mbar	500 ... 1 Torr / mbar	0.5 ... 0.05Torr / mbar
Accuracy (1)	% of reading	0.15	0.15	0.15
Temperature effect on zero	percent FS/°C	0.0025	0.0025	0.005
Temperature effect on span	% of reading / °C	0.01	0.01	0.01
Pressure, max.	kPa (absolute)	400	260	130
Resolution	percent FS	0.003	0.003	0.003
Lowest reading	percent FS	0.01	0.01	0.01
Lowest suggested reading	percent FS	0.05	0.05	0.05
Lowest suggested control pressure	percent FS	0.5	0.5	0.5
Temperature				
Operation (ambient)	°C	+10 ... +40	+10 ... +40	+10 ... +40
Bakeout at flange	°C	≤110	≤110	≤110
Storage	°C	–20 ... +65	–20 ... +65	–20 ... +65
Supply voltage		+14 ... +30 V (dc) or ±15 V (±5%)	+14 ... +30 V (dc) or ±15 V (±5%)	+14 ... +30 V (dc) or ±15 V (±5%)
Power consumption				
During Heat up	W	≤12	≤12	≤12
At operating temperature	W	≤8	≤8	≤8
Output signal (analog)	V (dc)	0 ... +10	0 ... +10	0 ... +10
Response time (2)	ms	30	30	130/30 [3]
Degree of protection		IP 40	IP 40	IP 40
Standards				
CE conformity		EN 61000-6-2/-6-3, EN 61010 & RoHS	EN 61000-6-2/-6-3, EN 61010 & RoHS	EN 61000-6-2/-6-3, EN 61010 & RoHS
ETL certification		UL 61010-1, CSA 22.2 No.61010-1	UL 61010-1, CSA 22.2 No.61010-1	UL 61010-1, CSA 22.2 No.61010-1
SEMI compliance		SEMI S2	SEMI S2	SEMI S2
Electrical connection		D-sub, 15 pole, male	D-sub, 15 pole, male	D-sub, 15 pole, male
Setpoint				
Number of setpoints		2 (SP1,SP2)	2 (SP1,SP2)	2 (SP1,SP2)
Setpoint				
Relay contact	V (dc)	≤30	≤30	≤30
Relay contact	A (dc)	≤0.5	≤0.5	≤0.5
Setpoint				
Hysteresis	percent FS	1	1	1
Diagnostic port				
Protocol		RS232-C	RS232-C	RS232-C
Read		pressure, status, ID	pressure, status, ID	pressure, status, ID
Set		set points, filter, zero adjust, factory reset, DC offset	set points, filter, zero adjust, factory reset, DC offset	set points, filter, zero adjust, factory reset, DC offset
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316l [4])	Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316l [4])	Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316l [4])

Sky CDG045D 0.05 ...1000 Torr/mbar (continued)

Specifications (Torr based standard products)

Type		1000 Torr, 1100 mbar	500 ... 1 Torr / mbar	0.5 ... 0.05Torr / mbar
Internal volume				
I. volume 1/2 in. tube	cm³ (in.³)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)
I. volume DN 16 ISO KF	cm³ (in.³)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)
I. volume DN 16 CF-R	cm³ (in.³)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)
I. volume 8 VCR	cm³ (in.³)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)
Weight				
Weight 1/2 in. tube	g	837	837	837
Weight DN 16 ISO KF	g	852	852	852
Weight DN 16 CF-R	g	875	875	875
Weight 8 VCR	g	897	897	897

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation
2) Increase 10 ... 90% F.S.
3) For pressure control type only
4) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Specifications (Torr based other ranges)

Measurement Range	Torr	500	200	50	20	5	2	0.5	0.25
F.S. (Full Scale)	Pa	66,661	26,664	6,666.1	2,666	666.61	266.66	66.66	33.3
	mbar	666.61	267	66.67	26.7	6.6661	2.67	0.67	0.33
Accuracy 1)	% of reading	0.15							
Temperature effect									
on zero	% F.S. / °C	0.0025						0.005	
on span	% of reading / °C	0.01							
Pressure, max.	kPa (absolute)	400			260			130	
Response time 2)	ms	30						130	

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.

Further specifications see table above.

Specifications (mbar based products)

Measurement Range	mbar	1100	100	10	1	0.1
F.S. (Full Scale)	Pa	110,000	10,000	1,000	100	10
Accuracy 1)	% of reading	0.15				
Temperature effect						
on zero	% F.S. / °C	0.0025				0.005
on span	% of reading / °C	0.01				
Pressure, max.	kPa (absolute)	400		260		130
Response time 2)	ms	30				130 / 30 3)

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For pressure control type only
4) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Further specifications see tables «SPECIFICATIONS (Torr based standard products)» and «SPECIFICATIONS (Torr based other products)».

Sky CDG045D 0.05 ...1000 Torr/mbar (continued)

Specifications (DeviceNet)

		CDG045D DeviceNet
Protocol		DeviceNet, group 2 slave only
Data rate	kBaud	125, 250, 500 by switch or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		address 00 - 63 by switch or network programmable
Digital functions	read	pressure, status, ID
	set	set points, filter, zero adjust, factory reset, DC offset
Specification		DeviceNet "Vacuum Gauge Device Profile" (ODVA)
Device type		"VG" vacuum gauge
I/O slave messaging		polling only
Supply voltage for gauge at D-sub connector		+14 ... +30 V (dc) or ±15 V / ≤12 W
Supply voltage for DeviceNet transceiver at microstyle connector		24 V nom / <2 W (11 ... 25 V)
Connector for DeviceNet		microstyle, 5 pin, male
Connector for CDG (analog output, supply voltage CDG, setpoints)		D-sub, 15 pin, male

Specifications (Profibus DP)

		CDG045D Profibus DP
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
	MBaud	1.5 / 12
Address		Address 00 - 125 by switch or network programmable
Digital functions	read	Pressure, status, ID
	set	Set points, filter, zero adjust, factory reset, DC offset
Connector for Profibus DP		D-sub, 9 pin, female
Connector for CDG (analog output, supply voltage, setpoints)		D-sub, 15 pin, male

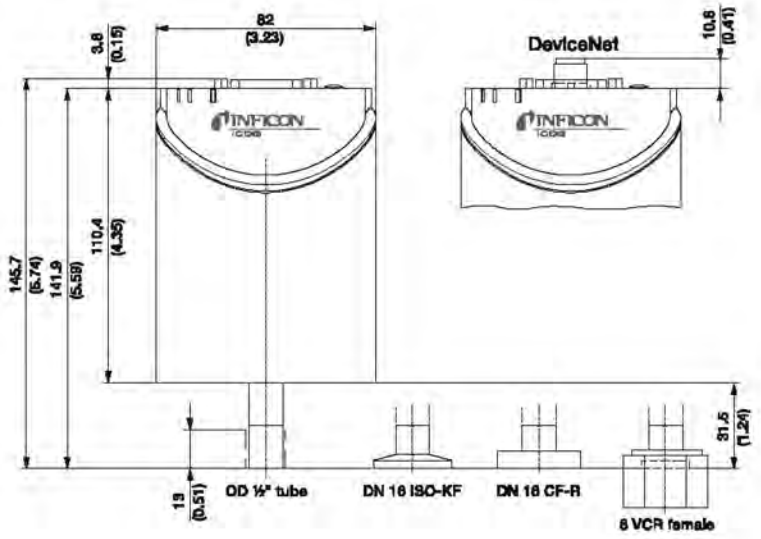
Specifications (EtherCAT)

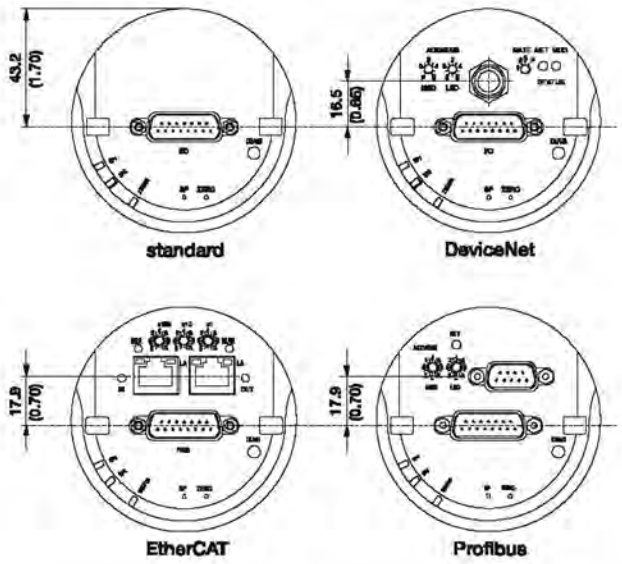
	CDG045D EtherCAT
Protocol	protocol specialized for EtherCAT
Communication Standards	ETG.5003 Part 1 "Semiconductor Device Profile" ETG.5003 Part 2080 "Semiconductor Device Profile" Specific Device Profile: Vacuum Gauge
Node address	Explicit Device Identification
Physical layer	100BASE-Tx-(IEEE 802.3)
Digital functions read	Pressure, status, ID
Digital functions set	Set points, filter, zero adjust, reset, DC offset
Mailbox (CoE)	SDO requests, responses and information
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 m (ft.)	<100 (330)

Sky CDG045D 0.05 ...1000 Torr/mbar (continued)

Dimensions

mm (in.)





		½ in. tube	DN 16 ISO KF	DN 16 CF-R	8 VCR
Internal volume	cm³ (in.³)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)
Weight	g	837	852	875	897

Capacitance Diaphragm Gauge

Edge CDG045D2 1... 1000Torr/mbar

INFICON Edge Capacitance Diaphragm Gauge is a highly accurate vacuum mesurement instrument designed for harsh manufacturing environments. The proven temperature controlled, corrosion resistant, ultra-pure ceramic sensor provides superior span stability over many years paired with state-of-the-art zero stability. Edge comes with the INFICON patented unique sensor shield, which protects the gauge from undesired process by-products. Advanced electronics offer a wide range of configurable signal conditioning for all applications and optional EtherCAT® fieldbus interface. The innovative heating concept enables a cool to the touch surface and saves valuable tool space. INFICON Edge is the smallest vacuum measurement instrument of its kind.

Advantages

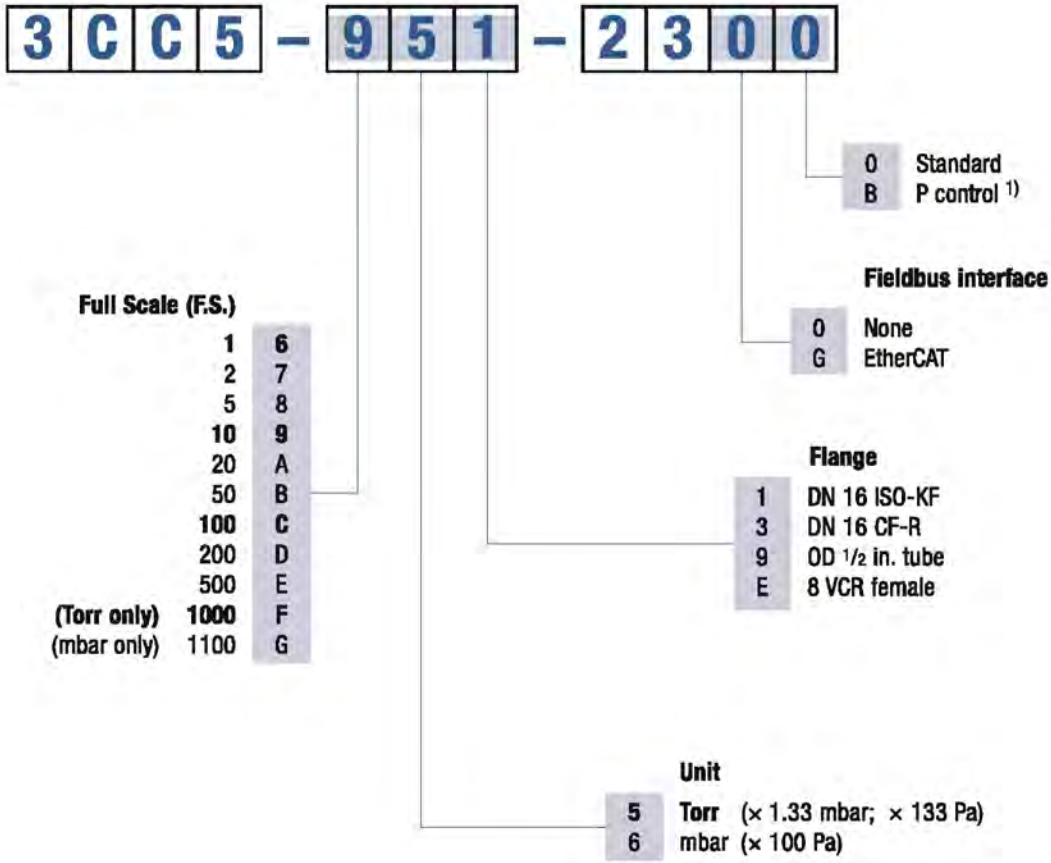
- Compact, saves valuable tool space
- Easy integration, EtherCAT, wide variety of full scales and flanges, standard with two set points
- Easy one push button or remote signal zero command, zero offset adjustable
- Diagnostic port for quick service and maintenance
- Two year warranty, longer life time with advanced heating concept and gauge protection.
- No long term recalibration due to excellent signal stability and repeatability, even in harsh plasma applications
- Compliance and standards: CE, EN, UL, SEMI, RoHS

Applications

- CVD, Etch, PVD and other semiconductor production processes

Edge CDG045D2 1... 1000Torr/mbar (continued)

Ordering Information



1) Optimized signal filter setting for pressure control

bold = standard products

Other flange types and full scales (F.S.) on request.

Edge CDG045D2 1... 1000Torr/mbar (continued)

Specifications

Type		1000 Torr, 1100 mbar	500 ... 1 Torr/mbar
Accuracy [1]	% of reading	0.15	
Temperature effect			
On zero	% F.S./°C	0.0025	
On span	% of reading/°C	0.01	
Pressure, max.	kPa (absolute)	400	260
Resolution	% F.S.	0.003	
Lowest reading	% F.S.	0.01	
Lowest suggested reading	% F.S.	0.05	
Lowest suggested control pressure	% F.S.	0.5	
Temperature			
Operation (ambient)	°C	+10 ... +40	
Bakeout at flange	°C	≤110	
Storage	°C	−20 ... +65	
Supply voltage		+14 ... +30 V (dc) or ±15 V (±5%)	
Power consumption			
During Heat up	W	≤12	
At operating temperature	W	≤8	
Output signal (analog)	V (dc)	0 ... +10	
Response time [2]	ms	30	
Degree of protection		IP 40	
Standards			
CE conformity		EMC (EN 61000-6-2, EN 61000-6-3), EN 61010-1 and RoHS	
ETL certification		UL 61010-1, CSA 22.2 No. 61010-1	
SEMI compliance		SEMI S2	
Electrical connection		D-sub, 15 pole, male	
Setpoint			
Number of setpoints		2 (SP1, SP2)	
Relay contact	V (dc)/A (dc)	≤30/≤0.5	
Hysteresis	% F.S.	1	
Diagnostic port			
Protocol		RS232-C	
Read		Pressure, status, ID	
Set		Setpoints, filter, zero adjust, factory reset, DC offset	
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L [4])	
Internal volume			
1/2 in. tube	cm^3 ($in.^3$)	4.2 (0.26)	
DN 16 ISO-KF	cm^3 ($in.^3$)	4.2 (0.26)	
DN 16 CF-R	cm^3 ($in.^3$)	4.2 (0.26)	
8 VCR® female	cm^3 ($in.^3$)	4.2 (0.26)	
Weight			
1/2 in. tube	g	~837	
DN 16 ISO-KF	g	~852	
DN 16 CF-R	g	~875	
8 VCR female	g	~897	

Edge CDG045D2 1... 1000Torr/mbar (continued)

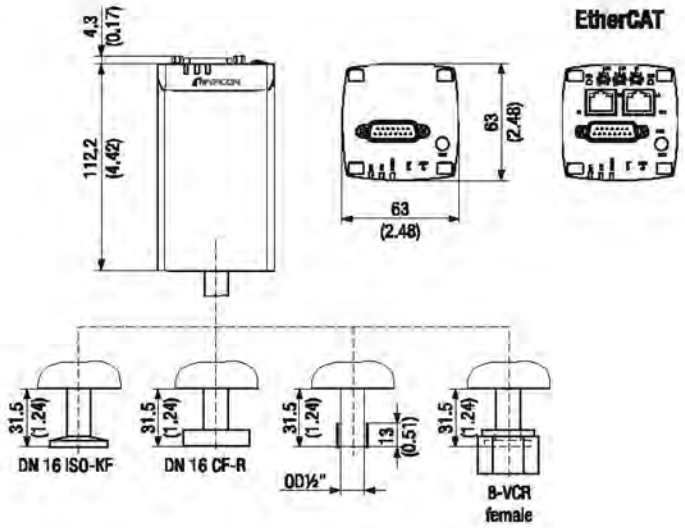
Specifications

Type		1000 Torr, 1100 mbar	500 ... 1 Torr / mbar
EtherCAT			
Protocol EtherCAT		Protocol specialized for EtherCAT	
Communication standards		ETG.5003 Part 1, "Semiconductor Device Profile" ETG.5003 Part 2080, "Specific Device Profile: Vacuum Pressure Gauge"	
Node address		Explicit Device Identification	
Physical layer		100BASE-Tx (IEEE 802.3)	
Digital functions read		Pressure, status, ID	
Digital functions set		Set points, filter, zero adjust, reset, DC offset	
Mailbox (CoE)		SDO requests, responses and information	
Process data		Fixed PDO mapping and configurable PDO mapping	
EtherCAT connector		RJ45, 8-pin (socket), IN and OUT	
Cable		Shielded Ethernet CAT5e or higher	
EtherCAT			
Data rate	kbps	100000	
EtherCAT			
Cable length	m (ft.)	≤100 (330)	

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For presssure control type only
4) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Dimensions

mm (in.)



Capacitance Diaphragm Gauge

Stripe CDG045Dhs 0.01 ... 1000Torr/mbar

INFICON Stripe high-speed Capacitance Diaphragm Gauges are the fastest, highly accurate vacuum measurement instruments available. With a less than 2 ms response time combined with the EtherCAT fieldbus interface it opens up a total new field of applications. The proven temperature controlled, corrosion resistant, ultra-pure ceramic sensor provides superior span stability over many years paired with state-of-the-art zero stability. Stripe comes with the INFICON patented unique sensor shield which protects the gauge from undesired process by-products. INFICON Stripe using an innovative heating concept, which provides a cool to the touch surface, and its unique speed capabilities, enabling an unprecedented productivity increase, making it the most advanced vacuum instrument of its kind.

Stripe CDG045Dhs is a proud winner of the prestigious 2014 R&D 100 Award!

Advantages

- High productivity — faster than 2 ms response time (FS > 50 mTorr)
- Flexible integration — EtherCAT fieldbus
- Long lifetime — proven ceramic sensor
- Forget recalibration — 90ppm/year full scale stability

Applications

- Atomic layer deposition
- High speed process control
- PVD, CVD, Etch
- General high temperature vacuum applications

Stripe CDG045Dhs 0.01... 1000Torr/mbar (continued)

Ordering Information

3	C	C	9	–	6	5	1	–	2	3	G	0

Flange

1	DN 16 ISO-KF
3	DN 16 CF-R
9	OD 1/2 in. tube
E	8 VCR female

Unit

5	**Torr** (× 1.33 mbar; × 133 Pa)
6	mbar (× 100 Pa)

Full Scale (F.S.)

0.1 [1]	S
0.02 [1]	1
0.05 [1]	2
0.1	**3**
0.25	4
0.5	5
1	**6**
2	7
5	8
10	**9**
20	A
50	B
100	**C**
200	D
500	E
(Torr only) 1000	**F**
(mbar only) 1100	G

[1] Mounting orientation: vertical

bold = standard products

Other flange types and full scales (F.S.) on request.

Stripe CDG045Dhs 0.01... 1000Torr / mbar (continued)

Specifications

Type		1000Torr / 1100mbar ... 0.5Torr / mbar	0.02 ... 0.01 Torr / mbar
Accuracy [1]	% of reading	0.15	-
Precision	% of reading	-	0.2
Temperature effect			
On zero			
1000 ...1 Torr/mbar	% F.S. / °C	0.0025	-
0.5 ...0.05 Torr/mbar	% F.S. / °C	0.0005	-
0.02 ...0.01 Torr	% F.S. / °C	-	0.01
On span	% of reading / °C	0.01	
Pressure, max.			
P max 100Torr/mbar	kPa (absolute)	400	
P max 500...1Torr/mbar	kPa (absolute)	260	
P max 0.5...0.01Torr/mbar	kPa (absolute)	130	
Resolution	% F.S.	0.003	
Lowest reading	% F.S.	0.01	
Lowest suggested reading	% F.S.	0.05	
Lowest suggested control pressure	% F.S.	0.5	
Temperature			
Operation (ambient)	°C	+10 ... +40	
Bakeout at flange	°C	≤110	
Storage	°C	−20 ... +85	
Supply voltage		+14 ... +30 V (dc) or ±15 V (±5%)	
Power consumption			
During Heat up	W	≤14	
At operating temperature	W	≤9	
Output signal (analog)	V (dc)	0 ... +10	
Response time [2]	ms	2	
Degree of protection		IP 30	
Standards			
CE conformity		EN 61000-6-2, EN 61000-6-3, EN 61010 and RoHS	
ETL certification		UL 61010-1, CSA 22.2 No. 61010-1	
SEMI compliance		SEMI S2	
Electrical connection		D-sub, 15 pole, male	
Setpoint			
Number of setpoints		2 (SP1, SP2)	
Relay contact	V (dc) / A (dc)	≤30 / ≤0.5	
Hysteresis	% F.S.	1	
Diagnostic port			
Protocol		USB	
Read		Pressure, status, ID	
Set		Setpoints, filter, zero adjust, factory reset, DC offset	
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L)	
Internal volume			
1/2 in. tube	cm^3 ($in.^3$)	4.2 (0.26)	
DN 16 ISO-KF	cm^3 ($in.^3$)	4.2 (0.26)	
DN 16 CF-R	cm^3 ($in.^3$)	4.2 (0.26)	
8 VCR female	cm^3 ($in.^3$)	4.2 (0.26)	

[1] Non-linearity, hysterisi, repeatability at 25°C ambient operating temperature without emperature effects after 2 hours operation

[2] Increase 10 ... 90 % FS

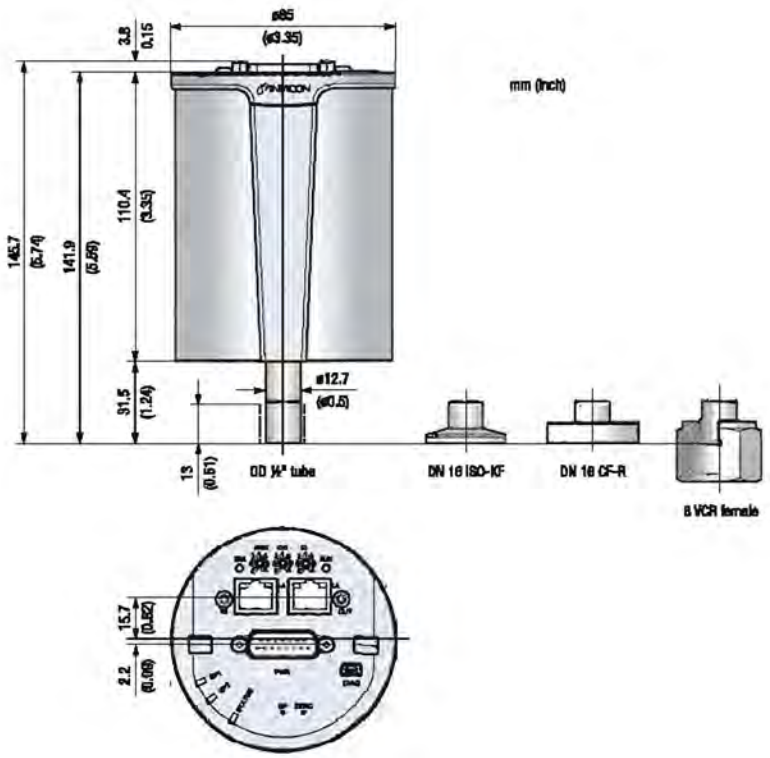
Stripe CDG045Dhs 0.01... 1000Torr/mbar (continued)

Specifications

Type		1000Torr / 1100mbar ... 0.5Torr / mba	0.02 ... 0.01 Torr / mbar
Weight			
1/2 in. tube	g		837
DN 16 ISO-KF	g		852
DN 16 CF-R	g		875
8 VCR female	g		897
EtherCAT			
Protocol EtherCAT		Protocol specialized for EtherCAT	
Communication standards		ETG.5003 Part 1, "Semiconductor Device Profile" ETG.5003 Part 2080, "Specific Device Profile: Vacuum Pressure Gauge"	
Node address		Explicit Device Identification	
Physical layer		100BASE-Tx (IEEE 802.3)	
Digital functions read		Pressure, status, ID	
Digital functions set		Set points, filter, zero adjust, reset, DC offset	
Mailbox (CoE)		SDO requests, responses and information	
Process data		Fixed PDO mapping and configurable PDO mapping	
EtherCAT connector		RJ45, 8-pin (socket), IN and OUT	
Cable		Shielded Ethernet CAT5e or higher	
EtherCAT			
Cable length	m (ft.)	≤100 (330)	

Dimensions

mm (in.)



Capacitance Diaphragm Gauge

Cube CDGsci

The high end INFICON Cube Capacitance Diaphragm Instrument is the most accurate (≤0.025 % Rd accuracy; ≤50 ppm F.S. Repeatability) and most stable vacuum gauge available (<5 ppm F.S./°C temperature stability; <70 ppm F.S./year long term stability). Cube is designed as a pure reference device to standardize vacuum measurement systems and is the only choice for vacuum research applications. The proven INFICON temperature controlled, corrosion resistant ultrapure ceramic sensor is at the heart of Cube's outstanding performance. Cube sets new standards in modern communication and user flexibility with a 20 Bit analog output and RS232-C, TCP/IP and HTML digital output connected through a wireless or wired Ethernet interface. Each device comes with a quality assurance certificate, hand-signed by Cube's leading product researchers. Delivery in a reusable hard shell suit case for storage or shipment to calibration laboratories underlines its professionality.

Advantages

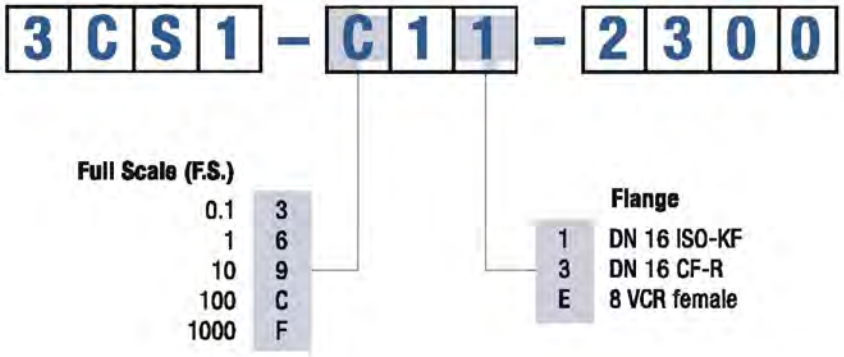
- True high precision pressure measurement — ceramic technology
- Full stable ouput — proven by PTB
- Flexible communication — various modern interfaces
- All functions integrated — no controller required
- Direct mounting to chamber — optimized center of gravity
- Transportation without isolation valve possible

Applications

- Transfer standard
- Main reference gauge
- Research
- In-house standard

Cube CDGsci (continued)

Ordering Information



Other flange types and full scale ranges (F.S.) on request.

Cube CDGsci (continued)

Specifications

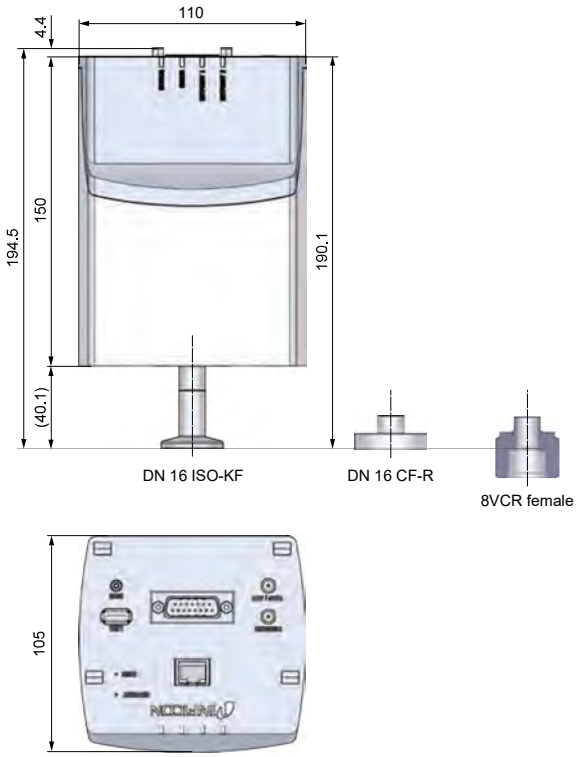
Type		1000 Torr	100 ... 1 Torr	100 mTorr
Accuracy [1]	% of reading	0.025	0.025	0.05
Temperature effect				
On zero	% F.S. / °C	0.0005	0.0005	0.005
On span	% of reading / °C	0.001	0.001	0.01
Pressure, max.	bar (absolute)	3	2.5	1.5
Lowest reading	% F.S.		0.01	
Lowest suggested reading	% F.S.		0.05	
Temperature				
Operation (ambient)	°C		+10 ... +40	
Storage	°C		−10 ... +50	
Supply voltage			+14 ... +30 V (dc) or ±15 V (±5%)	
Power consumption				
During Heat up	W	≤15	≤15	≤12
At operating temperature	W	≤10	≤10	≤8
Output signal (analog)	V (dc)		0 ... +10	
Response time [2]	ms		100	
Degree of protection			IP 40	
Standards				
CE conformity			EN 61000-6-2, EN 61000-6-3, EN 61010-1 and RoHS	
ETL certification			UL 61010-1, CSA 22.2 No. 61010-1	
SEMI compliance			SEMI S2	
Electrical connection			D-sub, 15 pole, male; 2 x LEMO Coax; Ethernet FCC	
Setpoint				
Number of setpoints			2 (SP1, SP2)	
Relay contact	V (dc) / A (dc)		≤30 / ≤0.5	
Hysteresis	% F.S.		1	
Diagnostic port				
Protocol		Web pages, REST services, RS232-ASCII	Web pages, REST services, RS232-ASCII	RS232-C
Read			Pressure, status, ID	
Set			Setpoints, filter, zero adjust, factory reset, DC offset	
Materials exposed to vacuum			Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L [4])	
Internal volume				
DN 16 ISO-KF	cm^3 ($in.^3$)		4.2 (0.26)	
DN 16 CF-R	cm^3 ($in.^3$)		4.2 (0.26)	
8 VCR female	cm^3 ($in.^3$)		4.2 (0.26)	
Weight				
DN 16 ISO-KF	g		~1670	
DN 16 CF-R	g		~1670	
8 VCR female	g		~1670	

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For presssure control type only
4) 18% Cr, 10% Ni, 3% Mo, 69% Fe

Cube CDGsci (continued)

Dimensions

mm (in.)



Capacitance Diaphragm Gauges

Sky CDG100D 0.1 ... 1000Torr/mbar

INFICON SKY CDG100D manometers are your best choice for accurate total pressure measurement and control. CDG100D gauges are temperature controlled at 100°C for superior performance in demanding semiconductor and plasma processes. They are available for full scale ranges from 100 mTorr to 1000 Torr, with all common flange types and fieldbus interfaces and provide a linear 0 to 10 V, gas type independent, pressure signal. INFICON capacitance manometers use an ultra pure alumina ceramic diaphragm which is corrosion proof. The advantages of the ceramic sensor are better signal stability, faster recovery from atmosphere, short warm up time and an extraordinary lifetime. INFICON CDG are high quality, cost effective pressure sensors for demanding semiconductor, plasma and vacuum applications.

Advantages

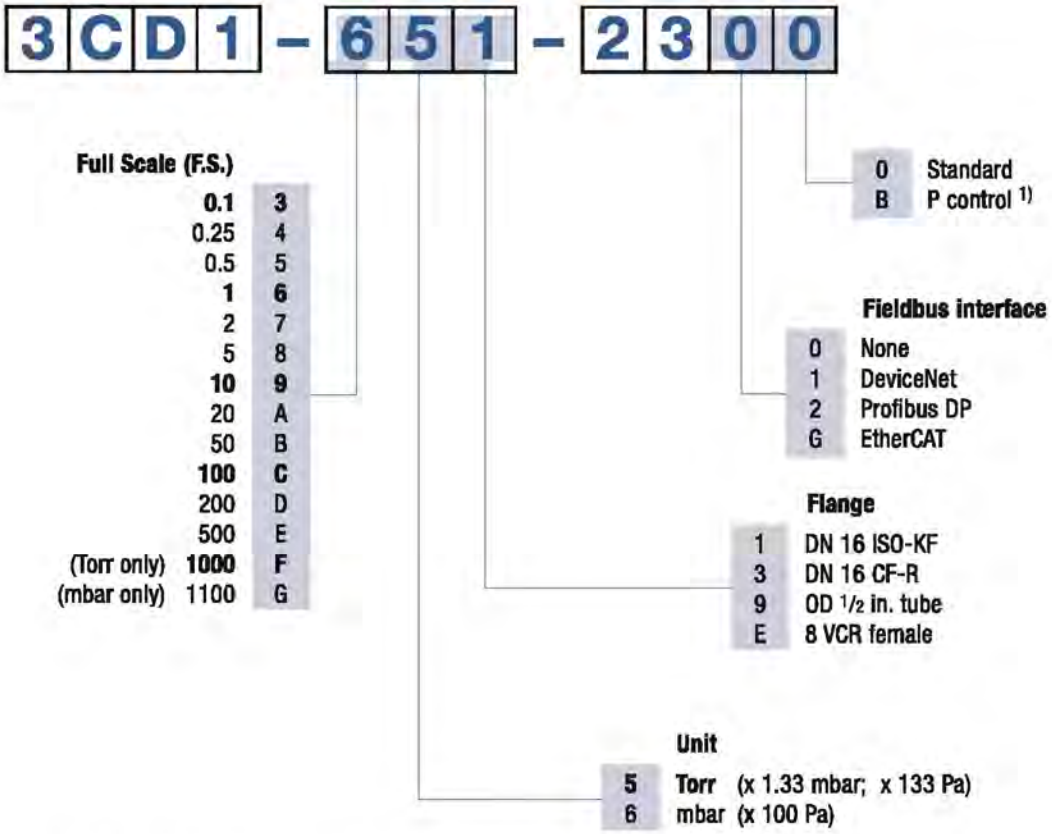
- Lower cost of ownership, 50% faster warm up, energy efficient low power consumption
- Easy integration, wide variety of full scales, flanges and interfaces, standard with two set points
- Easy one push button or remote signal zero command, zero offset adjustable
- Diagnostic port for quick service and maintenance
- Two year warranty, longer lifetime with advanced heating concept and gauge protection
- No long term recalibration due to excellent signal stability and repeatability, even in harsh plasma applications
- Compliance and standards: CE, EN, UL, SEMI, RoHS

Applications

- Etch, PVD, CVD and other semiconductor production processes
- Chemical and corrosive high temperature processes
- General thin film and vacuum processes requiring gauge protection

Sky CDG100D (continued)

Ordering Information



1) Optimized signal filter setting for pressure control

bold = standard products

Other flange types and full scale ranges (F.S.) on request.

Accessories

	Diagnostic
Communication adapter (2 m) for PC RS232 serial port	303-333

Software to run the diagnostic functions on Windows NT, XP can be downloaded from our website.

Sky CDG100D (continued)

Specifications (Torr based standard products)

Measurement Range F.S. (Full Scale)	Torr Pa mbar	1000 133,322 1333	100 13,332 133	10 1,333 13.3	1 133 1.3	0.1 13 0.13
Accuracy [1]	% of reading			0.2		0.4
Temperature effect						
on zero	% F.S. / °C			0.0025		0.005
on span	% of reading / °C			0.02		
Pressure, max.	kPa (absolute)	400		260		130
Resolution	% F.S.			0.003		
Lowest reading	% F.S.			0.01		
Lowest suggested reading	% F.S.			0.05		
Lowest suggested control pressure	% F.S.			0.5		
Temperature						
Operation (ambient) [5]	°C			+10 ... +50		
Bakeout at flange	°C			≤110		
Storage	°C			–20 ... +65		
Supply voltage				+14 ... +30 V (dc) or ±15 V (±5%)		
Power consumption						
During Heat up	W			≤15		
At operating temperature	W			≤10		
Output signal (analog)	V (dc)			0 ... +10		
Response time [2]	ms			30		130 / 30 [3]
Degree of protection				IP 40		
Standards			EN 61000-6-2, EN 61000-6-3, EN 61010, UL 61010-1, CSA 22.2 No.61010-1, SEMI S-2			
Electrical connection				D-sub, 15 pole, male		
Setpoint				Two setpoints (SP1, SP2)		
Relay contact	V (dc) / A (dc)			≤30 / ≤0.5		
Hysteresis	% F.S.			1		
Diagnostic port						
Protocol				RS232-C		
Read				Pressure, status, ID,		
Set				Set points, filter, zero adjust, factory reset, DC offset		
Materials exposed to vacuum				Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L [4])		

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For pressure control type only
4) 18% Cr, 10% Ni, 3% Mo, 69% Fe
5) Ambient temperatures >40°C may increase surface temperature above SEMI S2 compliance levels — mark "caution hot!"

Sky CDG100D (continued)

Specifications (Torr based other ranges)

Measurement Range F.S. (Full Scale)	Torr Pa mbar	500 66,661 666.61	200 26,664 267	50 6,666.1 66.67	20 2,666 26.7	5 666.61 6.6661	2 266.66 2.67	0.5 66.66 0.67	0.25 33.3 0.33
Accuracy [1]	% of reading	0.2						0.4	
Temperature effect									
on zero	% F.S. / °C	0.0025						0.005	
on span	% of reading / °C	0.02							
Pressure, max.	kPa (absolute)	400		260				130	
Response time [2]	ms	30						130	

[1] Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
[2] Increase 10 ... 90% F.S.

Further specifications see table above.

Specifications (mbar based products)

Measurement Range F.S. (Full Scale)	mbar Pa	1100 110,000	100 10,000	10 1,000	1 100	0.1 10
Accuracy [1]	% of reading	0.2				0.4
Temperature effect						
on zero	% F.S. / °C	0.0025				0.005
on span	% of reading / °C	0.02				
Pressure, max.	kPa (absolute)	400		260		130
Response time [2]	ms	30				130 / 30 [3]

[1] Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
[2] Increase 10 ... 90% F.S.
[3] For pressure control type only

Further specifications see table «SPECIFICATIONS (Torr based standard products)».

Sky CDG100D (continued)

Specifications (DeviceNet)

		CDG100D DeviceNet
Protocol		DeviceNet, group 2 slave only
Data rate	kBaud	125, 250, 500 by switch or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Address 00 - 63 by switch or network programmable
Digital functions	read	Pressure, status, ID
	set	Set points, filter, zero adjust, factory reset, DC offset
Specification		DeviceNet "Vacuum Gauge Device Profile" (ODVA)
Device type		"VG" vacuum gauge
I/O slave messaging		Polling only
Supply voltage for gauge at D-sub connector		+14 ... +30 V (dc) or ±15 V / ≤12 W
Supply voltage for DeviceNet transceiver at microstyle connector		24 V nom / <2 W (11 ... 25 V)
Connector for DeviceNet		Microstyle, 5 pin, male
Connector for CDG (analog output, supply voltage CDG, setpoints)		D-sub, 15 pin, male

Specifications (Profibus DP)

		CDG100D Profibus DP
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
	MBaud	1.5 / 12
Address		Address 00 - 125 by switch or network programmable
Digital functions	read	Pressure, status, ID
	set	Set points, filter, zero adjust, factory reset, DC offset
Connector for Profibus DP		D-sub, 9 pin, female
Connector for CDG (analog output, supply voltage, setpoints)		D-sub, 15 pin, male

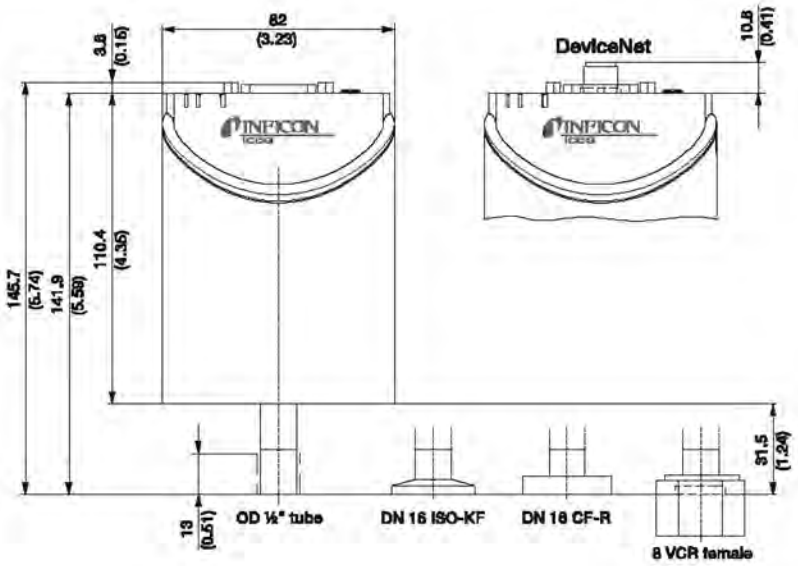
Specifications (EtherCAT)

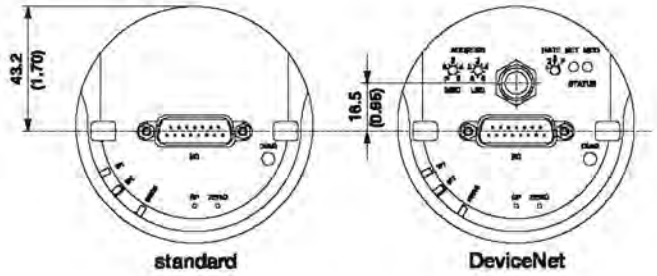
	CDG100D EtherCAT
Protocol	protocol specialized for EtherCAT
Communication Standards	ETG.5003 Part 1 "Semiconductor Device Profile" ETG.5003 Part 2080 "Semiconductor Device Profile" Specific Device Profile: Vacuum Gauge
Node address	Explicit Device Identification
Physical layer	100BASE-Tx-(IEEE 802.3)
Digital functions read	Pressure, status, ID
Digital functions set	Set points, filter, zero adjust, reset, DC offset
Mailbox (CoE)	SDO requests, responses and information
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 m (ft.)	<100 (330)

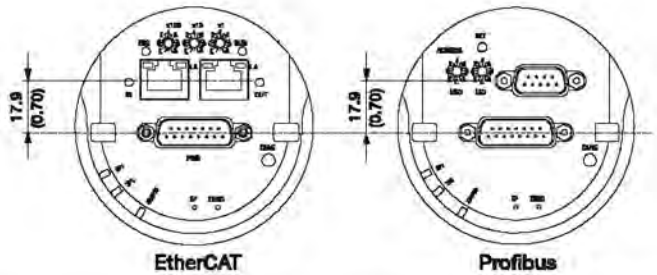
Sky CDG100D (continued)

Dimensions

mm (in.)







		½ in. tube	DN 16 ISO KF	DN 16 CF-R	8 VCR
Internal volume	cm³ (in.³)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)
Weight	g	837	852	875	897

Capacitance Diaphragm Gauge

Edge CDG100D2 1... 1000Torr/mbar

INFICON Edge Capacitance Diaphragm Gauge is a highly accurate vacuum mesurement instrument designed for harsh manufacturing environments. The proven temperature controlled, corrosion resistant, ultra-pure ceramic sensor provides superior span stability over many years paired with state-of-the-art zero stability. Edge comes with the INFICON patented unique sensor shield which protects the gauge from undesired process by-products. Advanced electronics offer a wide range of configurable signal conditioning for all applications and optional EtherCAT fieldbus interface. The innovative heating concept enables a cool to the touch surface and saves valuable tool space. INFICON Edge is the smallest vacuum measurement instrument of its kind.

Advantages

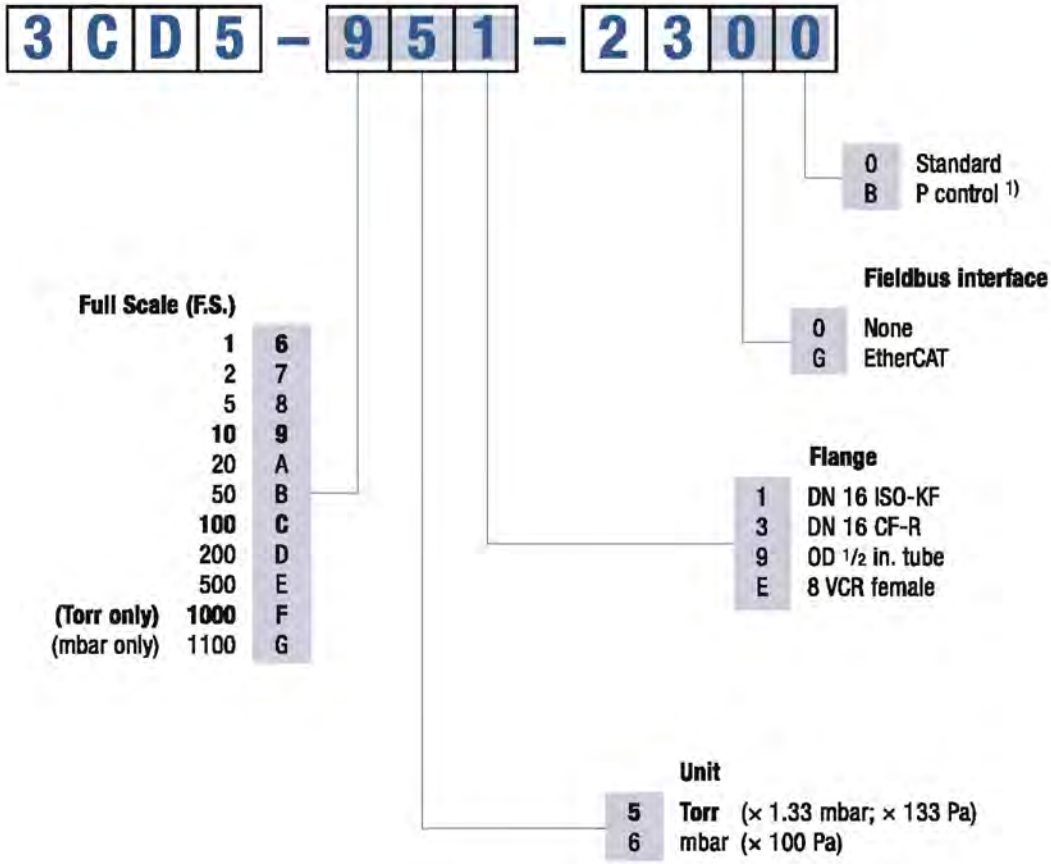
- Compact, saves valuable tool space
- Easy integration, EtherCAT, wide variety of full scales and flanges, standard with two set points
- Easy one push button or remote signal zero command, zero offset adjustable
- Diagnostic port for quick service and maintenance
- Two year warranty, longer life time with advanced heating concept and gauge protection.
- No long term recalibration due to excellent signal stability and repeatability, even in harsh plasma applications
- Compliance and standards: CE, EN, UL, SEMI, RoHS

Applications

- CVD, Etch, PVD and other semiconductor production processes

Edge CDG100D2 1... 1000Torr/mbar (continued)

Ordering Information



1) Optimized signal filter setting for pressure control

bold = standard products

Other flange types and full scales (F.S.) on request.

Edge CDG100D2 1... 1000Torr/mbar (continued)

Specifications

Type		1000 ... 500 Torr / mbar	200 ... 1 Torr / mbar
Accuracy [1]	% of reading	0.15	
Temperature effect			
On zero	% F.S. / °C	0.0025	
On span	% of reading / °C	0.02	
Pressure, max.	kPa (absolute)	400	260
Resolution	% F.S.	0.003	
Lowest reading	% F.S.	0.01	
Lowest suggested reading	% F.S.	0.05	
Lowest suggested control pressure	% F.S.	0.5	
Temperature			
Operation (ambient) [5]	°C	+10 ... +50 [5]	+10 ... +50
Bakeout at flange	°C	≤110	
Storage	°C	–20 ... +65	-20 ... +65
Supply voltage		+14 ... +30 V (dc) or ±15 V (±5%)	
Power consumption			
During Heat up	W	≤20	
At operating temperature	W	≤14	
Output signal (analog)	V (dc)	0 ... +10	
Response time [2]	ms	30	
Degree of protection		IP 40	
Standards			
CE conformity		EN 61000-6-2, EN 61000-6-3, EN 61010-1 and RoHS	
ETL certification		UL 61010-1, CSA 22.2 No. 61010-1	
SEMI compliance		SEMI S2 [5]	SEMI S2
Electrical connection		D-sub, 15 pole, male	
Setpoint			
Number of setpoints		2 (SP1, SP2)	
Relay contact	V (dc) / A (dc)	≤30 / ≤0.5	
Hysteresis	% F.S.	1	
Diagnostic port			
Protocol		RS232-C	
Read		Pressure, status, ID	
Set		Setpoints, filter, zero adjust, factory reset, DC offset	
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L [4])	
Internal volume			
1/2 in. tube	cm^3 ($in.^3$)	4.2 (0.26)	
DN 16 ISO-KF	cm^3 ($in.^3$)	4.2 (0.26)	
DN 16 CF-R	cm^3 ($in.^3$)	4.2 (0.26)	
8 VCR female	cm^3 ($in.^3$)	4.2 (0.26)	
Weight			
1/2 in. tube	g	~837	
DN 16 ISO-KF	g	~852	
DN 16 CF-R	g	~875	
8 VCR female	g	~897	

Edge CDG100D2 1... 1000Torr/mbar (continued)

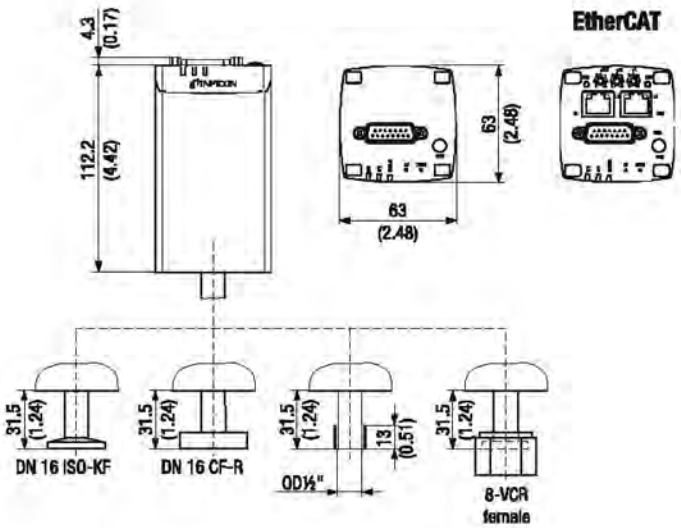
Specifications

Type		1000 ... 500 Torr/mbar	200 ... 1 Torr / mbar
EtherCAT			
Protocol EtherCAT		Protocol specialized for EtherCAT	
Communication standards		ETG.5003 Part 1, "Semiconductor Device Profile" ETG.5003 Part 2080, "Specific Device Profile: Vacuum Pressure Gauge"	
Node address		Explicit Device Identification	
Physical layer		100BASE-Tx (IEEE 802.3)	
Digital functions read		Pressure, status, ID	
Digital functions set		Set points, filter, zero adjust, reset, DC offset	
Mailbox (CoE)		SDO requests, responses and information	
Process data		Fixed PDO mapping and configurable PDO mapping	
EtherCAT connector		RJ45, 8-pin (socket), IN and OUT	
Cable		Shielded Ethernet CAT5e or higher	
Connector for CDG (analog output, supply voltage, setpoints)		D-sub. 15 pin, male	
EtherCAT			
Data rate	kbps	100000	
EtherCAT			
Cable length	m (ft.)	≤100 (330)	

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) For presssure control type only
4) 18% Cr, 10% Ni, 3% Mo, 69% Fe
5) Ambient temperatures >40°C may increase surface temperature above SEMI S2 compliance levels — mark "caution hot!"

Dimensions

mm (in.)



Capacitance Diaphragm Gauge

Stripe CDG100Dhs 0.1 ... 1000Torr/mbar

INFICON Stripe high-speed Capacitance Diaphragm Gauges are the fastest, highly accurate vacuum measurement instruments available. With a less than 2 ms response time combined with the EtherCAT fieldbus interface it opens up a total new field of applications. The proven temperature controlled, corrosion resistant, ultra-pure ceramic sensor provides superior span stability over many years paired with state-of-the-art zero stability. Stripe comes with the INFICON patented unique sensor shield which protects the gauge from undesired process by-products. INFICON Stripe using an innovative heating concept, which provides a cool to the touch surface, and its unique speed capabilities,enabling an unprecedented productivity increase, making it the most advanced vacuum instrument of its kind.

Advantages

- High productivity — faster than 2 ms response time
- Flexible integration — EtherCAT fieldbus
- Long lifetime — proven ceramic sensor
- Forget recalibration — 90ppm / year full scale stability

Applications

- Atomic layer deposition
- High speed process control
- PVD, CVD, Etch
- General high temperature vacuum applications

Stripe CDG100Dhs 0.1... 1000Torr/mbar (continued)

Ordering Information

Flange

1	DN 16 ISO-KF
3	DN 16 CF-R
9	OD 1/2 in. tube
E	8 VCR female

Full Scale (F.S.)

	0.1	**3**
	0.25	4
	0.5	5
	1	**6**
	2	7
	5	8
	10	**9**
	20	A
	50	B
	100	**C**
	200	D
	500	E
(Torr only)	**1000**	**F**
(mbar only)	1100	G

Unit

5	**Torr** (× 1.33 mbar; × 133 Pa)
6	mbar (× 100 Pa)

bold = standard products

Other flange types and full scales (F.S.) on request.

Stripe CDG100Dhs 0.1... 1000Torr/mbar (continued)

Specifications

Type		1000 ... 500 Torr / mbar	200 ... 1 Torr / mbar	0.5 ... 0.1 Torr / mbar
Accuracy	% of reading	0.2	0.2	0.4
Temperature effect				
On zero	% F.S. / °C	0.0025	0.0025	0.005
On span	% of reading / °C		0.02	
Pressure, max.	kPa (absolute)	400	260	130
Resolution	% F.S.		0.003	
Lowest reading	% F.S.		0.01	
Lowest suggested reading	% F.S.		0.05	
Lowest suggested control pressure	% F.S.		0.5	
Temperature				
Operation (ambient)	°C		+10 ... +50	
Bakeout at flange	°C		≤110	
Storage	°C		–20 ... +85	
Supply voltage			+14 ... +30 V (dc) or ±15 V (±5%)	
Power consumption				
During Heat up	W		≤16	
At operating temperature	W		≤11	
Output signal (analog)	V (dc)		0 ... +10	
Response time	ms		2	
Degree of protection			IP 30	
Standards				
CE conformity			EN 61000-6-2, EN 61000-6-3, EN 61010-1 and RoHS	
ETL certification			UL 61010-1, CSA 22.2 No. 61010-1	
SEMI compliance			SEMI S2	
Electrical connection			D-sub, 15 pole, male	
Setpoint				
Number of setpoints			2 (SP1, SP2)	
Relay contact	V (dc) / A (dc)		≤30 / ≤0.5	
Hysteresis	% F.S.		1	
Diagnostic port				
Protocol			USB	
Read			Pressure, status, ID	
Set			Setpoints, filter, zero adjust, factory reset, DC offset	
Materials exposed to vacuum			Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L)	
Internal volume				
1/2 in. tube	cm^3 ($in.^3$)		4.2 (0.26)	
DN 16 ISO-KF	cm^3 ($in.^3$)		4.2 (0.26)	
DN 16 CF-R	cm^3 ($in.^3$)		4.2 (0.26)	
8 VCR female	cm^3 ($in.^3$)		4.2 (0.26)	
Weight				
1/2 in. tube	g		~837	
DN 16 ISO-KF	g		~852	
DN 16 CF-R	g		~875	
8 VCR female	g		~897	

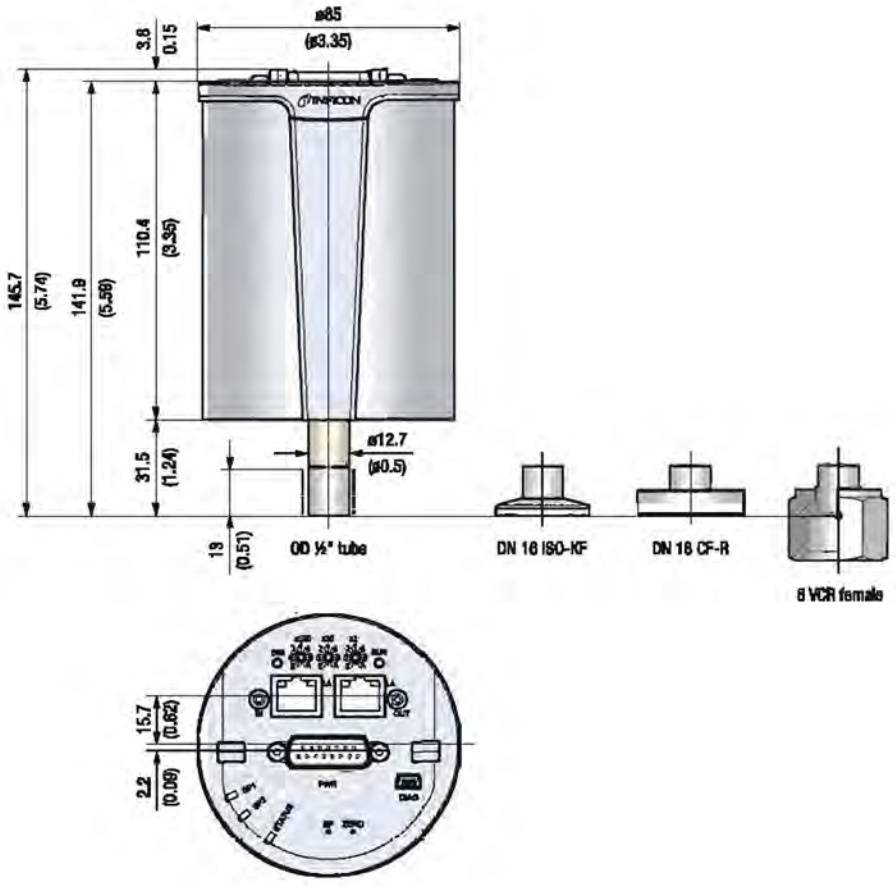
Stripe CDG100Dhs 0.1... 1000Torr/mbar (continued)

Specifications

Type		1000 ... 500 Torr / mbar	200 ... 1 Torr / mbar	0.5 ... 0.1 Torr / mbar
EtherCAT				
Protocol EtherCAT		Protocol specialized for EtherCAT		
Communication standards		ETG.5003 Part 1, "Semiconductor Device Profile" ETG.5003 Part 2080, "Specific Device Profile: Vacuum Pressure Gauge"		
Node address		Explicit Device Identification		
Physical layer		100BASE-Tx (IEEE 802.3)		
Digital functions read		Pressure, status, ID		
Digital functions set		Set points, filter, zero adjust, reset, DC offset		
Mailbox (CoE)		SDO requests, responses and information		
Process data		Fixed PDO mapping and configurable PDO mapping		
EtherCAT connector		RJ45, 8-pin (socket), IN and OUT		
Cable		Shielded Ethernet CAT5e or higher		
EtherCAT				
Cable length	m (ft.)	≤100 (330)		

Dimensions

mm (in.)



Capacitance Diaphragm Gauges

Sky CDG160D, CDG200D 1 ... 1000 Torr/mbar

INFICON SKY CDG160D and CDG200D high temperature manometers are your best choice for accurate total pressure measurement and control. CDG160D and CDG200D gauges are temperature controlled at 160°C respectively 200°C for superior performance in demanding semiconductor and plasma processes. They are available for full scale ranges from 1 Torr to 1000 Torr, with all common flange types and fieldbus interfaces and provide a linear 0 to 10V, gas type independent, pressure signal. INFICON capacitance manometers use an ultra pure alumina ceramic diaphragm which is corrosion proof. The advantages of the ceramic sensor are better signal stability, faster recovery from atmosphere, short warm up time and an extraordinary lifetime. INFICON CDGs are high quality, cost effective pressure sensors for demanding semiconductor, plasma and vacuum applications.

Advantages

- Lower cost of ownership, 50% faster warm up, energy efficient low power consumption
- Easy integration, wide variety of full scales, flanges and interfaces, standard with two set points
- Easy one push button or remote signal zero command, zero offset adjustable
- Diagnostic port for quick service and maintenance
- Two year warranty, longer lifetime with HT heating concept and gauge protection
- No long term recalibration due to excellent signal stability and repeatability, even in harsh plasma applications
- Compliance and standards: CE, EN, UL, SEMI, RoHS

Applications

- Etch, CVD, PVD and and other semiconductor production processes
- Chemical and corrosive high temperature processes
- General thin film and vacuum processes requiring gauge protection

Sky CDG160D, CDG200D 1 ... 1000 Torr/mbar (continued)

Ordering Information

3	C	E	1	–	6	5	E	–	2	3	0	0

Sensor temperature °C

160	E
200	F

Full Scale (F.S.)

	1	**6**
	2	7
	5	8
	10	**9**
	20	A
	50	B
	100	**C**
	200	D
	500	E
(Torr only)	**1000**	**F**
(mbar only)	1100	G

Unit

5	**Torr** (x 1.33 mbar; x 133 Pa)
6	mbar (x 100 Pa)

Flange

1	DN 16 ISO-KF
3	DN 16 CF-R
9	OD 1/2 in. tube
E	**8 VCR female**

Fieldbus interface

0	None
1	DeviceNet
2	Profibus DP
G	EtherCAT

0	Standard
B	P control [1]

[1] Optimized signal filter setting for pressure control

bold = standard products

Other flange types and full scale ranges (F.S.) on request.

Accessories

	Diagnostic
Communication adapter (2 m) for PC RS232 serial port	303-333

Software to run the diagnostic functions on Windows NT, XP can be downloaded from our website.

Sky CDG160D, CDG200D 1 ... 1000 Torr/mbar (continued)

Specifications (Torr based standard products)

Measurement Range F.S. (Full Scale)	Torr Pa mbar	1000 133,322 1333	100 13,332 133	10 1,333 13.3	1 133 1.3
Accuracy [1]	% of reading	0.4			
Temperature effect					
on zero	% F.S. / °C	0.005			
on span	% of reading / °C	0.02			
Pressure, max.	kPa (absolute)	400	260		
Resolution	% F.S.	0.003			
Lowest reading	% F.S.	0.01			
Lowest suggested reading	% F.S.	0.05			
Lowest suggested control pressure	% F.S.	0.5			
Temperature					
Operation (ambient) [4]	°C	+10 ... +50			
Bakeout at flange	°C	≤200			
Storage	°C	–20 ... +65			
Supply voltage		+21 ... +30 V (dc) or ±15 V (±5%)			
Power consumption during heat up					
CDG160D	W	≤18			
CDG200D	W	≤25			
Power consumption at operating temperature					
CDG160D	W	≤12			
CDG200D	W	≤18			
Output signal (analog)	V (dc)	0 ... +10			
Response time [2]	ms	30			
Degree of protection		IP 40			
Standards		EN 61000-6-2, EN 61000-6-3, EN 61010, UL 61010-1, CSA 22.2 No.61010-1, SEMI S-2			
Electrical connection		D-Sub, 15-pin, male			
Setpoint		Two setpoints (SP1, SP2)			
Relay contact	V (dc) / A (dc)	≤30 / ≤0.5			
Hysteresis	% F.S.	1			
Diagnostic port					
Protocol		RS232-C			
Read		Pressure, status, ID,			
Set		Set points, filter, zero adjust, factory reset, DC offset			
Materials exposed to vacuum		Aluminum oxide ceramic (Al_2O_3), stainless steel (AISI 316L [3])			

1) Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.
2) Increase 10 ... 90% F.S.
3) 18% Cr, 10% Ni, 3% Mo, 69% Fe
4) Ambient temperatures >40°C may increase surface temperature above SEMI S2 compliance levels — mark "caution hot!"

Sky CDG160D, CDG200D 1 ... 1000 Torr/mbar (continued)

Specifications (Torr based other ranges)

Measurement Range F.S. (Full Scale)	Torr Pa mbar	500 66,661 666.61	200 26,664 267	50 6,666.1 66.67	20 2,666 26.7	5 666.61 6.6661	2 266.66 2.67
Accuracy [1]	% of reading			0.4			
Temperature effect							
on zero	% F.S. / °C			0.005			
on span	% of reading / °C			0.02			
Pressure, max.	kPa (absolute)	400		260			
Resolution	% F.S.			0.003			

[1] Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.

Further specifications see table above.

Specifications (mbar based products)

Measurement Range F.S. (Full Scale)	mbar Pa	1100 110,000	100 10,000	10 1,000	1 100
Accuracy [1]	% of reading		0.4		
Temperature effect					
on zero	% F.S. / °C		0.005		
on span	% of reading / °C		0.02		
Pressure, max.	kPa (absolute)	400	260		
Resolution	% F.S.		0.003		

[1] Non-linearity, hysteresis, repeatability at 25°C ambient operating temperature without temperature effects after two hours operation.

Further specifications see table «SPECIFICATIONS (Torr based standard products)».

Specifications (DeviceNet)

		CDG160D, CDG200D DeviceNet
Protocol		DeviceNet, group 2 slave only
Data rate	kBaud	125, 250, 500 by switch or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Address 00 - 63 by switch or network programmable
Digital functions	read	Pressure, status, ID
	set	Set points, filter, zero adjust, factory reset, DC offset
Specification		DeviceNet "Vacuum Gauge Device Profile" (ODVA)
Device type		"VG" vacuum gauge
I / O slave messaging		Polling only
Supply voltage for gauge at D-sub connector		+14 ... +30 V (dc) or ±15 V / ≤12 W
Supply voltage for DeviceNet transceiver at microstyle connector		24 V nom / <2 W (11 ... 25 V)
Connector for DeviceNet		Microstyle, 5-pin, male
Connector for CDG (analog output, supply voltage CDG, setpoints)		D-Sub, 15-pin, male

Sky CDG160D, CDG200D 1 ... 1000 Torr/mbar (continued)

Specifications (Profibus DP)

		CDG160D, CDG200D Profibus DP
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
	MBaud	1.5 / 12
Address		Address 00 - 125 by switch or network programmable
Digital functions	read	Pressure, status, ID
	set	Set points, filter, zero adjust, factory reset, DC offset
Connector for Profibus DP		D-Sub, 9-pin, female
Connector for CDG (analog output, supply voltage, setpoints)		D-Sub, 15-pin, male

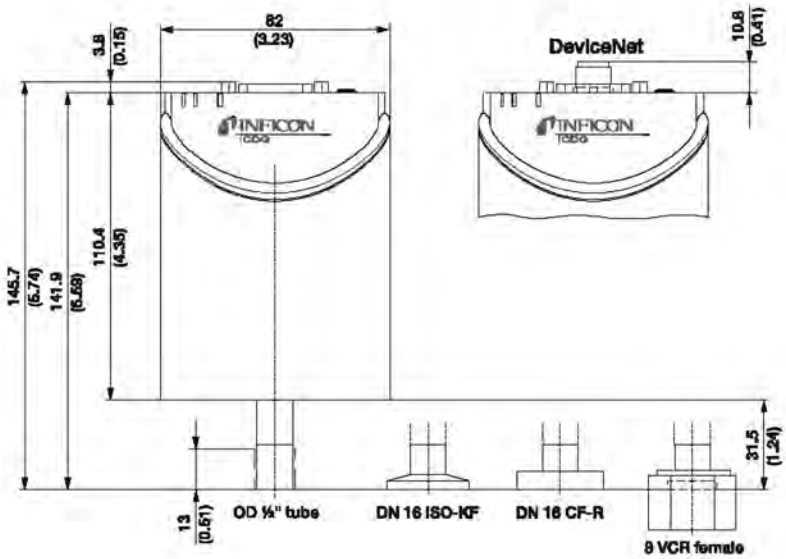
Specifications (EtherCAT)

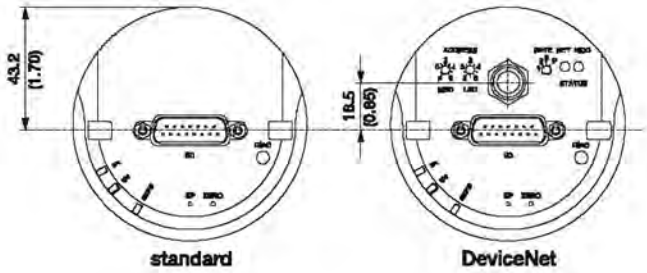
	CDG160D, CDG200D EtherCAT
Protocol	protocol specialized for EtherCAT
Communication Standards	ETG.5003 Part 1 "Semiconductor Device Profile" ETG.5003 Part 2080 "Semiconductor Device Profile" Specific Device Profile: Vacuum Gauge
Node address	Explicit Device Identification
Physical layer	100BASE-Tx-(IEEE 802.3)
Digital functions read	Pressure, status, ID
Digital functions set	Set points, filter, zero adjust, reset, DC offset
Mailbox (CoE)	SDO requests, responses and information
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 m (ft.)	<100 (330)

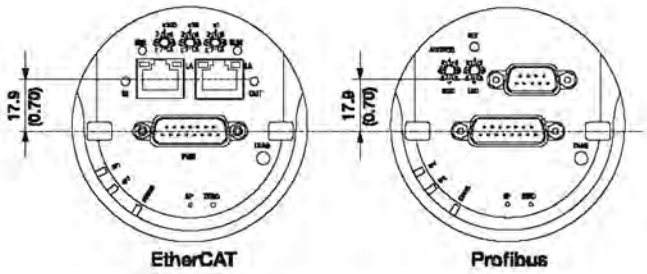
Sky CDG160D, CDG200D 1 ... 1000 Torr/mbar (continued)

Dimensions, Internal Volume, Weight

mm (in.)







		½ in. tube	DN 16 ISO KF	DN 16 CF-R	8 VCR
Internal volume	cm³ (in.³)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)	4.2 (0.26)
Weight	g	837	852	875	897

Pressure Display for CDG

VGD500

The INFICON Vacuum Gauge Display VGD500 connects to our CDG product line to provide a 4 Digit Display. It's a small unit which displays the pressure of the gauge. The pressure reading is selectable in pressure unit Torr, mTorr, mbar and Pa.

Advantages

- 4 Digit display for easy read out
- Large 10mm active LED display - readable from distance and wide range gauge of angle
- In-line plug design
- 15pin D-Sub, no extra power connection
- Compact small size
- Compatible with all Fullscale; 100 mTorr
- Pressure Units selectable (Torr, mTorr, mbar and Pa)
- CE certified

Ordering Information

Type	VGD500
VGD500 Vacuum Gauge Display	**399-653**

VGD500 (continued)

Specifications

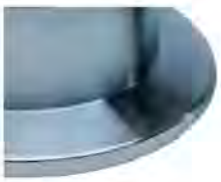
Type		VGD500
Display		4 digits
Connection		
Gauge Side		D-Sub, 15-pin, female
Measurement cable side		D-Sub, 15-pin, male
Signal		digital input RS232
Pressure unit (adjustable)		Torr (default), mTorr, mbar, Pa
Supply		
Power consumption	W	≤1
Voltage		+14 ... +30V (dc) or +/- 15V (ac)
Degree of protection		IP 40
Temperature		
Operation	°C	+5 ... +50
Storage	°C	-20 ... +85
Use		Indoors only
Connectable gauges in the measurement range (F.S.) 0.1 mbar/Torr to 1000 mbar/Torr		CDG025D / -S, CDG025D-X3, CDG045D ... CDG200D, CDG045D2 ... CDG100D2
Weight	g	58
Dimensions	mm	50x63x34

Application specific CDG solutions

INFICONs innovative ceramic capacitance diaphragm technology offers new and unique solutions. The flexible platform allows direct drop in replacements for legacy products. Please contact our sales for more information.

AllCeramic, the metal free process CDG

Only ceramic surfaces (aluminum oxide) are wetted to process media. This option is available to all CDG products (SKY, Edge, Stripe).



- Higher corrosion resistance
- Lower metal contamination
- Lower particle contamination
- Longer lifetime, less maintance

Remote CDG, custom engineered

Standard heated CDG products are not matching your design requirments? Remote heated CDG could be the perfect solution.

- Sensor integrated in hot environment
- Sensor integrated in limited space

UHP Porter

You need a UHP compatible CDG? INFICONs xParts coating lifts the product performance to UHP level matched with clean room double packaging.

- Lower particle contamination
- Chemical resistant
- Lower metal contamination

Application specific CDG solutions (continued)

Drop in retrofit solutions

You need to replace a legacy gauge of any brand? No problem, INFICON offers attractive drop in solutions for most legacy products matching other vendors pinout and functionality. Some examples are:

- Dual output
- Trip point versions with pinout and trip point voltage levels

Pin	Leagacy Gauge	INFICON Standard Gauge	INFICON drop in replacement
1	Trip point A V-level	SP1 common	SP1 voltage level
2	Pressure signal output	Signal output	Signal output
3	Trip point A N.C.	Status	SP1 normaly closed contact N.C.
4	Trip point A N.O.	SP1 no	SP1 normally open contact N.O.
5	Power return	Supply common	Supply common
6	-15VDC	Supply (-15V)	Supply (-15V)
7	+15VDC	Supply (+14...+30V)	Supply (+14...+30 or +15V)
8	Trip point A Com	SP2 no	SP1 common
9	Trip point B N.O.	SP2 common	SP2 normally open contat N.O.
10	Trip point B N.C.	Gauge identification	SP2 normally closed
11	Trip point B Com	Supply	SP2 common
12	Pressure signal return	Signal common	SP2 Voltage level
13	Trip point B V-Level	RS232 TxD	SP2 Voltage level
14	No connection	RS232 RXD	Not used
15	Chassis ground	Chassis ground	Housing (Chassis ground)

You didn't find the CDG solving your application?

INFICONs ceramic capacitance diaphragm technology paired with digital signal processing and experienced engineering will offer leading, innovative solutions. Please contact INFICON and describe your measurement requirements.

Bayard-Alpert Hot Ion Gauge

BAG302

The INFICON single Bayard-Alpert Hot Ion Gauge BAG302 covers a wide measurement range from 1.3 x 10^{-9} mbar to 6.7 x 10^{-2} mbar (1 x 10^{-9} Torr to 5 x 10^{-2} Torr). The compact All in one Hot Ion gauge BAG302 offers an easy to exchange dual filament sensor, a built in OLED display, set-point relay and a long-linear analog output as well as an integrated RS485 digital interface for increased integration flexibility.
These features combined with the rugged design makes the BAG302 an affordable and repeatable process to base pressure measurement instrument of its own and provides a high value/low cost of ownership choice.
The BAG302 is considered as OEM gauge and therefore not supported by VGC50x controller series.

Advantages

- Wide measurement range from 1.3 x 10^{-9} mbar to 6.7 x 10^{-2} mbar (1 x 10^{-9} Torr to 5 x 10^{-2} Torr)
- Two long-life yttrium oxide coated iridium filaments
- Tungsten filaments on special order
- All-in-One active gauge with built-in display, set-point, analog output and standard integrated RS485 digital interface
- Bright digital OLED display with keypad for simple setup, operation and programming
- User programmable set point relay
- User programmable display unitss in mbar, Torr or Pa
- RoHS compliance
- User selectable Auto-ranging of emission current
- Mechanical strength and ruggedness
- Choice of various flange options
- Easy to exchange sensing element
- Compliance & standards: CE, RoHS
- Direct drop in replaces Granville-Phillips® 354 Micro-Ion® Module - identical control functions including software commands (RS485)

Applications

- Pressure measurement in semiconductor process and transfer chambers
- Industrial coating
- General vacuum measurement and control in the low to ultra high vacuum range

BAG302 (continued)

Ordering Information

Type	BAG302	Replacement Sensor
(Yt_2O_3 coated iridium filaments)	OLED, SP, analog output, RS485	
DN 16 ISO-KF	352-050	352-060
DN 25 ISO-KF	352-051	352-061
DN 40 ISO-KF	352-052	352-062
DN 16 CF-R	352-053	352-063
DN 16 CF-R	352-054	352-064
3/4" tube	352-055	352-065
8 VCR female	352-056	352-066

Specifications

Type			BAG302
Measurement range		mbar	1.3×10^{-9} ... 6.7×10^{-2}
		Torr	1×10^{-9} ... 5×10^{-2}
		Pa	1.3×10^{-7} ... 6.7
Accuracy (N_2)[1]			
1.3×10^{-8} ... 6.7×10^{-2} mbar		% of reading	±15
1×10^{-8} ... 5×10^{-2} Torr		% of reading	±15
Repeatability [1]		% of reading	±5
Degas [2]	$p < 6.7 \times 10^{-5}$	mbar	electron bombardment, 2 min (default)
	$p < 5.00 \times 10^{-5}$	Torr	(programmable between 2 ... 10 min)
Temperature			
Operation (ambient)		°C	0 ... +40
Storage		°C	-40 ... +70
Bakeout at flange (sensor only, electronics removed)		°C	200
Supply voltage		V (dc)	+20 ... +28 [3]
Output signal analog		V	0 ... +9 (log linear)
Voltage vs. pressure		V / Decade	1
Set point relay			1 (single-pole double-throw relay (SPDT)) 1 A at 30 V (dc) resistive, or V (ac) non-inductive
Digital functions			degas, filament on/off and emission control
Interface (digital)			RS485
Emission control			Manual
Filament			Two Yt_2O_3 coated Ir
Filament status			display / digital output
Electrical connection			D-Sub, 9-pin, male for analog D-Sub, 9-pin, female for RS485
Materials exposed to vacuum			Yt_2O_3, Ir, W, Ta, stainless steel, glass, Ni
Mounting orientation			any
Internal volume		cm^3 ($inch^3$)	16.4 (1.0)
Weight KF / CF		g (lb)	270 (0.6)

1) typically
2) Reduced accuracy during degas
2) 30 W protected against power reversal and transient over-voltages

BAG302 (continued)

Dimensions

Dimension A	mm	(In)
DN 16 ISO-KF	37	(1.45)
DN 25 ISO-KF	37	(1.45)
DN 40 ISO-KF	37	(1.45)
DN 16 CF-R	47	(1.85)
DN 40 CF-R	33	(1.7)
8 VCR female	65	(2.58)
3/4" tube	55	(2.16)

Accessories

Power supply for BAG302[1)]	352-075

Input power:	V (ac)	100 ... 240
Output power:	V (dc)	+24 @ 2.5 A (60 W)
Cable length:	m (ft)	2 (6)

1) The IEC 60320 AC power entry receptacle allows use with any user supplied AC mains cord set available worldwide

Bayard–Alpert Gauge

BAG402

The INFICON single Bayard-Alpert Hot Ion Gauge BAG402 covers a wide measurement range from 5 x 10^{-10} mbar to 2.7 x 10^{-2} mbar (3.75 x 10^{-10} Torr to 2 x 10^{-2} Torr). Choose the INFICON BAG402 for affordable and repeatable process to base pressure measurements in a compact active gauge package. The unique, supported dual filaments offer superior accuracy, longterm stability and longevity.
The BAG402 is considered as OEM gauge and therefore is not supported by VGC50x controller series.

Advantages

- Measurement range from 5 x 10^{-10} mbar to 2.7 x 10^{-2} mbar (3.75 x 10^{-10} Torr to 2 x 10^{-2} Torr)
- Excellent repeatability in the process pressure range from 10^{-8} … 10^{-2} mbar of ±5%
- Overpressure detection protects the filament from premature burnout
- Two long-life yttrium oxide coated iridium filaments
- Emission current selection reduces control complexity
- Easy to exchange sensing element with on-board calibration data guarantees high reproducibility
- RoHS compliance

Applications

- Pressure measurement in semiconductor process and transfer chambers
- Industrial coating
- General vacuum measurement and control in the low to ultra high vacuum range

Ordering Information

Type	**BAG402**
Setpoint	**none**
Connector	**D-Sub, 9-pin**
Interface	**analog**
DN 25 ISO-KF	**353-600**
DN 40 CF-R	**353-601**
Replacement sensor DN 25 ISO-KF	**354-484**
Replacement sensor DN 40 CF-R	**354-485**

BAG402 (continued)

Accessories

Baffle	**353-512**
Centering ring with baffle DN 25 ISO-KF	**211-113**

Specifications

Type			**BAG402** **D-Sub, 9-pin**
Measurement range	(air, O_2, CO, N_2)	mbar (Torr)	5×10^{-10} ... 2.7×10^{-2} (3.75×10^{-10} ... 2×10^{-2})
Accuracy	10^{-8} ... 10^{-2} mbar	% of reading	±15
Repeatability	10^{-8} ... 10^{-2} mbar	% of reading	5
Degas [1]	$p < 7.2 \times 10^{-6}$	mbar	Electron bombardment, max. 3 min
Pressure, max.	bar (absolute)		2
Temperature			
Operation (ambient)		°C	0 ... +50
Storage		°C	-20 ... +70
Bakeout at flange without electronics		°C	80
Supply voltage		V / A (dc)	+20 ... +28 / ≤0.8
Output signal analog		V	0 ... +10.5
Measurement range		V	0.57 ... 8.31
Voltage vs. pressure		V / Decade	1
Error signal		V	>10
Load impedance, min.		kΩ	10
Digital functions			Degas and emission control
Interface (digital)			Diagnostic port
Emission control			Manual
Filament			Two Yt_2O_3 coated Ir
Filament status			LED / digital output
Electrical connection			D-Sub, 9-pin, male
Cable length, max.		m (ft)	100 (330)
Materials exposed to vacuum			Yt_2O_3, Ir, Pt, Mo, W, NiFe, NiCr, stainless steel, glass
Internal volume KF / CF		cm^3 ($inch^3$)	24 (1.46) / 34 (2.1)
Weight KF / CF		g	450 / 710
Degree of protection			IP30

[1] Reduced accuracy during degas

BAG402 (continued)

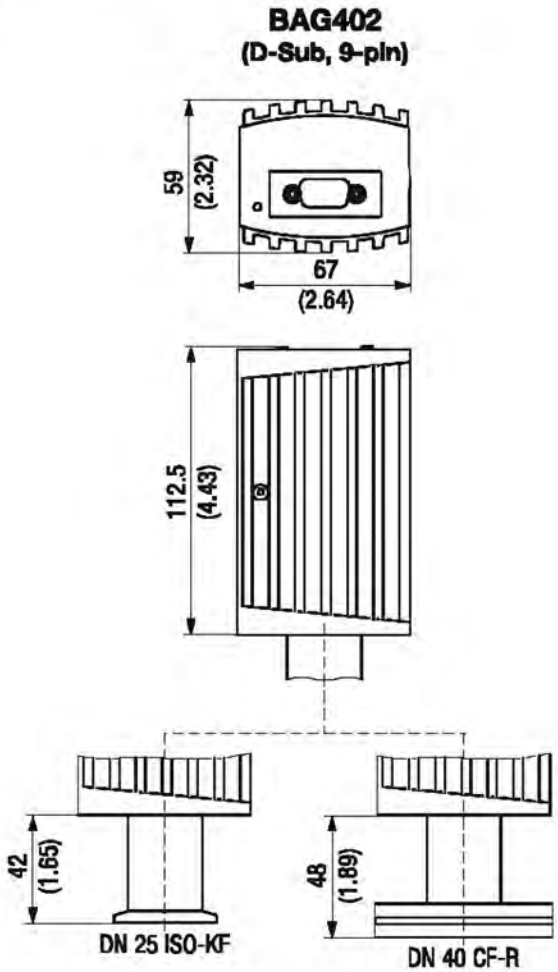
Accessories

Baffle:

Prevents contamination of the sensor.
Fast and easy installation.

Dimensions

mm (in.)



Bayard-Alpert Pirani Gauge

BPG400

The INFICON Bayard-Alpert Pirani Combination Gauge, BPG400, functions as two gauges in a single compact unit measuring from 5 x 10^{-10} mbar to atmosphere (3.8 x 10^{-10} Torr to atmosphere). Combining technologies reduces the complexity of installation, setup, and integration. Choose the BPG400 for affordable and repeatable process to base pressure measurements in one economic package.

Advantages

- Extremely wide measurement range from 5 x 10^{-10} mbar to atmosphere (3.8 x 10^{-10} Torr to atmosphere)
- Excellent repeatability in the process pressure range from 10^{-8} ... 10^{-2} mbar of 5%
- The Pirani interlock protects the Bayard-Alpert system from premature filament burnout and excess contamination from high pressure operation
- Long-life yttrium oxide coated iridum filament
- Optional graphic display and Fieldbus interfaces available
- Automatic high vacuum Pirani adjustment reduces operator interventions
- RoHS compliance

Applications

- Pressure measurement in semiconductor process and transfer chambers
- Industrial coating
- General vacuum measurement and control in the low to ultra high vacuum range

Ordering Information

Type	BPG400 without LCD	BPG400 with LCD	BPG400-SP with Profibus DP	BPG400-SD with DeviceNet
DN 25 ISO-KF	353-500	353-501	353-505	353-507
DN 40 CF-R	353-502	353-503	353-506	353-508
Replacement sensor 25 ISO-KF	354-490	354-490	354-490	354-490
Replacement sensor 40 CF-R	354-491	354-491	354-491	354-491

Accessories

Power supply 24 V (dc) / RS232C line	353-511
Bakeout extension, 100 mm (3.94 in.)	353-510
Baffle	353-512
Centering ring with baffle DN 25 ISO-KF	211-113

BPG400 (continued)

Specifications

			BPG400 Standard **BPG400** Display
Measurement range	(air, O_2, CO, N_2)	mbar (Torr)	5×10^{-10} ... 1000 (3.8×10^{-10} ... 750)
Accuracy	10^{-5} ... 10^{-2} mbar	% of reading	±15
Repeatability	10^{-8} ... 10^{-2} mbar	% of reading	5
Degas [1]	$p < 7.2 \times 10^{-6}$	mbar	Electron bombardment, max. 3 min
Pressure, max.		bar (absolute)	2
Temperature			
Operation (ambient)		°C	0 ... +50
Storage		°C	–20 ... +70
Bakeout			
At flange with extension		°C	150
At flange without extension		°C	80
Electronics removed		°C	150
Supply voltage		V / A (dc)	+20 ... +28 / 0.8
Output signal analog		V	0 ... +10
Measurement range		V	+0.774 ... +10
Voltage vs. pressure		V / Decade	0.75
Error signal		V	0.3 / 0.5
Load impedance, min.		kΩ	10
Interface (digital) [2]			RS232C
Electrical connection			D-Sub, 15-pin, male
Cable length, max. [3]		m (ft.)	100 (330)
Materials exposed to vacuum			Yt_2O_3, Ir, Pt, Mo, Cu, W, NiFe, NiCr, stainless steel, glass
Internal volume KF / CF		cm^3 ($in.^3$)	24 (1.46) / 34 (2.1)
Weight KF / CF		g	285 / 550
Degree of protection			IP30

1) Reduced accuracy during degas
2) Simultaneous use of RS232C or VGC400 series controllers and Fieldbus is not allowed
3) For RS232C operation <30 m

Specifications (Profibus DP)

		BPG400-SP Profibus DP
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
	MBaud	1.5 / 12
Address		Two switches (address 00 - 127) or network programmable
Digital functions		Read pressure, select units: Torr, mbar, Pa Degas function, Pirani full scale adjust 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		2
Range	mbar	1×10^{-9} ... 100
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V / A (dc)	60 / 0.5
Connector for Profibus DP		D-Sub, 9-pin, female
Connector for BPG (analog output, supply voltage, setpoints)		D-Sub, 15-pin, male

BPG400 (continued)

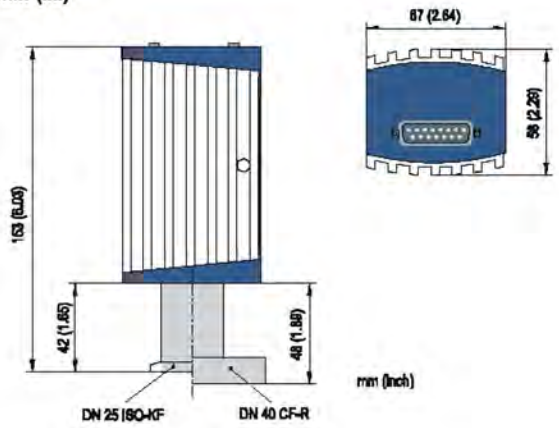
Specifications (DeviceNet)

		BPG400-SD DeviceNet
Protocol		DeviceNet, group 2 slave only
Data rate switch	kBaud	125, 250, 500 or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Two switches (address 00 – 63) or network programmable
Digital functions		Read pressure, select units: Torr, mbar, Pa Degas function, Pirani full scale adjust 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
Specification		DeviceNet "Vacuum Gauge Device Profile"
Device type		"CG" for combination gauge
I/O slave messaging		Polling only
Setpoint relays		2
Range	mbar	1×10^{-9} ... 100
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V/A (dc)	60/0.5
Supply voltage for DeviceNet	V/A (dc)	+11 ... +25/0.5
Supply voltage for gauge	V/A (dc)	+20 ... +28/0.8
Connector for DeviceNet		Microstyle, 5-pin
Connector for BPG (analog output, supply voltage, setpoints)		D-Sub, 15-pin, male

BPG400 (continued)

Dimensions

mm (in.)



Accessories

Power supply 24 V (dc) / RS232C line

Bakeout extension:

Allows measurement at flange temperatures up to 150°C.
Easy installation into the vacuum connection - no tools required.

Baffle:

Prevents contamination of the sensor.
Fast and easy installation.

Bayard-Alpert Pirani Gauge

BPG402-S

The INFICON Bayard-Alpert Pirani Combination Gauge, BPG402-S, functions as two gauges in a single compact unit measuring from 5 x 10^{-10} mbar to atmosphere (3.8 x 10^{-10} Torr to atmosphere). Combining technologies reduces the complexity of installation, setup, and integration. Choose the BPG402-S with two yttrium oxide coated iridium filaments for affordable and repeatable process to base pressure measurements in one economical package. Sensing elements with on-board calibration data guarantees high reproducibility when exchanging sensors.

Advantages

- Extremely wide measurement range from 5 x 10^{-10} mbar to atmosphere (3.8 x 10^{-10} Torr to atmosphere)
- Excellent repeatability in the process pressure range from 10^{-8} ... 10^{-2} mbar of 5%
- Pirani interlock protects the filament from premature burnout
- Two long-life yttrium oxide coated iridium filaments
- Optional graphic display and Fieldbus interfaces available, e.g. EtherCAT
- Automatic high vacuum Pirani adjustment reduces operator interventions
- Easy to exchange sensing element with on-board calibration data guarantees high reproducibility
- RoHS compliance

Applications

- Pressure measurement in semiconductor process and transfer chambers
- Industrial coating
- General vacuum measurement and control in the low to ultra high vacuum range

Ordering Information

Type	BPG402-S without display	BPG402-S with display	BPG402-SL with long tube without display	BPG402-SP with Profibus DP	BPG402-SD with DeviceNet	BPG402-SE with EtherCAT
DN 25 ISO-KF	353-570	353-572	–	353-574	353-576	353-590
DN 40 CF-R	353-571	353-573	353-578	353-575	353-577	353-591
Replacement sensor 25 ISO-KF	354-494	354-494	–	354-494	354-494	354-494
Replacement sensor 40 CF-R	354-495	354-495	354-496	354-495	354-495	354-495

BPG402-S (continued)

Accessories

Power supply 24 V (dc) / RS232C line	**353-511**
Baffle	**353-512**
Centering ring with baffle DN 25 ISO-KF	**211-113**

Specifications

			BPG402-S / -SL Standard **BPG402-S** Display
Measurement range	(air, O_2, CO, N_2)	mbar (Torr)	5×10^{-10} … 1000 (3.8×10^{-10} … 750)
Accuracy	10^{-8} … 10^{-2} mbar	% of reading	±15
Repeatability	10^{-8} … 10^{-2} mbar	% of reading	5
Degas [1]	$p < 7.2 \times 10^{-6}$	mbar	Electron bombardment, max. 3 min
Pressure, max.		bar (absolute)	2
Temperature			
Operation (ambient)		°C	0 … +50
Storage		°C	–20 … +70
Bakeout at flange without electronics			
BPG402-S		°C	80
BPG402-SL		°C	150
Supply voltage		V / A (dc)	+20 … +28 / ≤0.8
Output signal analog		V	0 … +10
Measurement range		V	+0.774 … +10
Voltage vs. pressure		V / Decade	0.75
Error signal		V	0.1 / 0.3 / 0.5
Load impedance, min.		kΩ	10
Set point relay			1
Range		mbar	1×10^{-9} … 100
Relay contact			n.o., potential free
Hysteresis		% of reading	10
Contact rating		V / A (dc)	≤30 / ≤0.5
Digital functions			Degas
Interface (digital) [2]			RS232C
Emission control			Automatic / manual via interface
Filament			Two Yt_2O_3 coated Ir
Filament status			LED / digital output
Electrical connection			D-Sub, 15 pin, male
Cable length, max. [3]		m (ft.)	100 (330)
Materials exposed to vacuum			Yt_2O_3, Ir, Pt, Mo, Cu, W, NiFe, NiCr, stainless steel, glass
Internal volume KF / CF		cm^3 ($In.^3$)	24 (1.46) / 34 (2.1)
Weight KF / CF		g	450 / 710
Degree of protection			IP30

1) Reduced accuracy during degas
2) Simultaneous use of RS232C or VGC400 series controllers and Fieldbus is not allowed
3) For RS232C operation <30 m

BPG402-S (continued)

Specifications (Profibus DP)

		BPG402-SP Profibus DP
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
	MBaud	1.5 / 12
Address		Two switches (address 00 – 127) or network programmable
Digital functions		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 information
Analog functions		0 ... 10 V analog output pressure indication Two setpoint relays A + B
Setpoint relays		2
Range	mbar	1 x 10^{-9} ... 100
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V / A (dc)	≤30 / ≤0.5
Connector for Profibus DP		D-Sub, 9 pin, female
Connector for BPG (analog output, supply voltage, setpoints)		D-Sub, 15 pin, male

Specifications (EtherCAT)

		BPG402-SE EtherCAT
Protocol		EtherCAT
Communication Standards		ETG.5003 Part 1 [1] ETG.5003 Part 2080 [2] Specific Device Profile: Vacuum Gauge
Node address		Explicit Device Identification
Physical layer		100BASE-Tx-(IEEE 802.3)
Digital functions		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 information
Setpoint relays		2
Range	mbar	1×10-9 ... 100
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V / A (dc)	≤30 / ≤0.5
EtherCAT connector		2 × RJ45, 8-pin (socket), input and output
Cable		special Ethernet Patch Cable or Crossover Cable, shielded (CAT5e quality or higher)
Cable length	m (ft)	≤100 (330)
Process data		fixed PDO mapping and configurable PDO mapping
Mailbox (CoE)		SDO requests, responses and information

[1] Semiconductor Device Profile
[2] Specific Device Profile: Vacuum Pressure Gauge

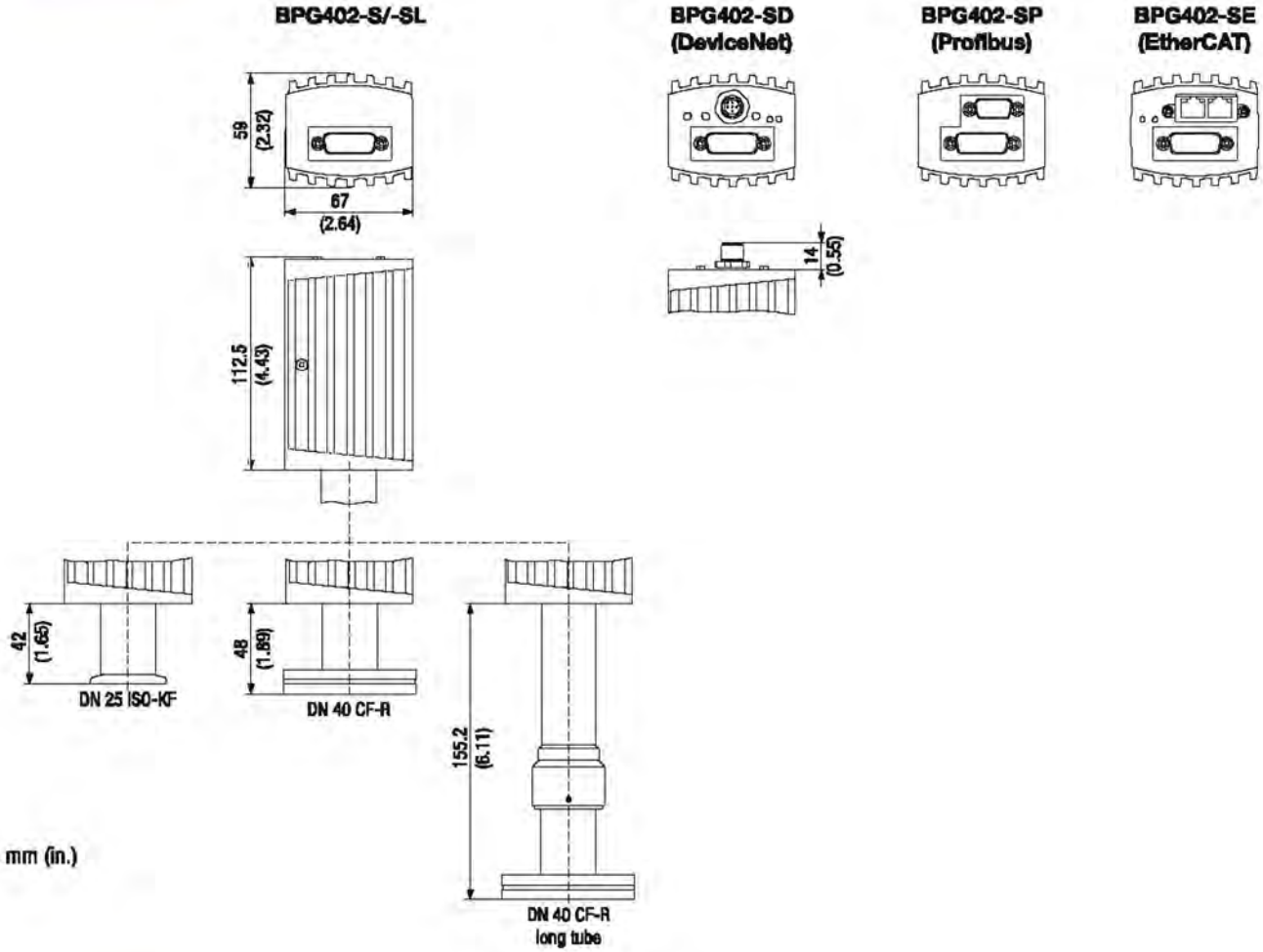
BPG402-S (continued)

Specifications (DeviceNet)

		BPG402-SD DeviceNet
Protocol		DeviceNet, group 2 slave only
Data rate switch	kBaud	125, 250, 500 or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Two switches (address 00 – 63) or network programmable
Digital functions		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 information
Analog functions		0 ... 10 V analog output pressure indication Two setpoint relays A + B
Specification		DeviceNet "Vacuum Gauge Device Profile"
Device type		"CG" for combination gauge
I/O slave messaging		Polling only
Setpoint relays		2
Range	mbar	1×10^{-9} ... 100
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V/A (dc)	≤30 / ≤0.5
Supply voltage for DeviceNet	V/A (dc)	+11 ... +25 / ≤0.5
Supply voltage for gauge	V/A (dc)	+20 ... +28 / ≤0.8
Connector for DeviceNet		Microstyle, 5 pin
Connector for BPG (analog output, supply voltage, setpoints)		D-Sub, 15 pin, male

BPG402-S (continued)

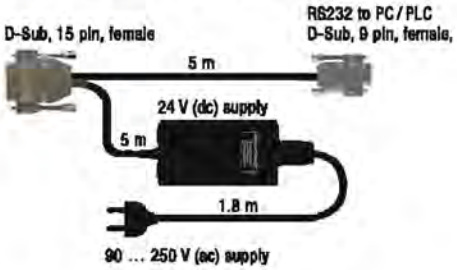
Dimensions



mm (in.)

Accessories

Power supply 24 V (dc) / RS232C line



Baffle:

Prevents contamination of the sensor.
Easy installation into the vacuum connection - no tools required.

High Pressure Hot Ionization Pirani Gauge

HPG400

The INFICON High Pressure Hot Ionization Pirani Gauge, HPG400, combines High Pressure Hot Ionization and Pirani sensors in a single, compact, economical package to measure pressure from 2 x 10^{-6} mbar to atmosphere (1.5 x 10^{-6} Torr to atmosphere). The HPG400 provides highly repeatable and reproducible pressure measurement for accurate sputter process pressure control.

Advantages

- HPG400 saves cost and tool space and reduces the complexity of vacuum system installation and setup
- The high pressure hot ion gauge delivers accurate, reliable pressure measurements from 1 x 10^{-5} … 1 mbar for improved process control
- User selectable hot ion emission activation between 5 x 10^{-2} and 1 mbar
- Pirani interlock protects the hot filament from premature burnout
- Optional graphic display and Fieldbus interfaces available
- Automatic high vacuum Pirani adjustment reduces operator interventions
- RoHS compliance

Applications

- Sputter applications in semiconductor manufacturing, electronics and media industry
- Industrial coating
- General vacuum measurement and control in the low to high vacuum range

Ordering Information

Type	HPG400 without LCD	HPG400 with LCD	HPG400-SP with Profibus DP[1]	HPG400-SD with DeviceNet[1]
DN 25 ISO-KF	353-520	353-521	353-525	353-527
DN 40 CF-F	353-522	353-523	353-526	353-528
Replacement sensor 25 ISO-KF	354-487	354-487	354-487	354-487
Replacement sensor 40 CF-R	354-488	354-488	354-488	354-488

1) Not available with LCD

Accessories

Power supply 24 V (dc) / RS232C line	353-511
Centering ring with baffle DN 25 ISO-KF	211-113

HPG400 (continued)

Specifications

			HPG400 Standard HPG400 Display
Measurement range	(air, N_2)	mbar (Torr)	2×10^{-8} ... 1000 (1.5×10^{-6} ... 750)
Accuracy	10^{-5} ... 1 mbar	% of reading	±15 [1]
Repeatability	10^{-5} ... 10^{-1} mbar	% of reading	2
10^{-1} ... 100 mbar		% of reading	30
Hot ion emission on, selectable		mbar	1
	mbar	5×10^{-1}	
	mbar	2×10^{-1}	
	mbar	1×10^{-1}	
	mbar	5×10^{-2}	
Pressure, max.		bar (absolute)	2
Temperature			
Operation (ambient)		°C	0 ... +50
Storage		°C	–20 ... +70
Bakeout			
At flange		°C	80
Electronics removed		°C	150
Supply voltage		V / A (dc)	20 ... 28 / 0.8
Output signal analog		V	0 ... +10.2
Measurement range			
Hot cathode		V	1.5 ... 7.5
Pirani		V	8.5 ... 9.75
Voltage vs. pressure			
Hot cathode		V / Decade	1
Pirani		V / Decade	0.25
Error signal			
Hot cathode		V	0.3
Pirani		V	0.5
Load impedance , min.		kΩ	10
Interface (digital) [2]			RS232C
Electrical connection			D-Sub, 15-pin, male
Cable length, max.[3]		m (ft.)	100 (330)
Materials exposed to vacuum			Yt_2O_3, Ir, Pt, Mo, Cu, W, NiFe, NiCr, stainless steel, glass
Internal volume KF / CF		cm^3 ($in.^3$)	20 (1.2) / 30 (1.8)
Weight KF / CF		g	430 / 695
Degree of protection			IP30

1) Accuracy from 10^{-5} mbar to the selected hot ion emission on value
2) Simultaneous use of RS232C or VGC400 series controllers and Fieldbus is not allowed
3) For RS232C operation <30 m

HPG400 (continued)

Specifications (DeviceNet)

		HPG400-SD DeviceNet
Protocol		DeviceNet, group 2 slave only
Data rate switch	kBaud	125, 250, 500 or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Two switches (address 00 – 63) or network programmable
Network size		Up to 64 nodes per segment
Digital functions		Read pressure, select units: Torr, mbar, Pa Pirani full scale adjust 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)
Specification		DeviceNet "Vacuum Gauge Device Profile"
Device type		"CG" for combination gauge
I / O slave messaging		Polling only
Setpoint relays		2
Range	mbar	$2x10^{-6}$ ... 100
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V (dc) / A	60 / 0.5
Supply voltage for DeviceNet	V (dc) / A	11 ... 25 / 0.5
Supply voltage for gauge	V (dc) / A	20 ... 28
Connector for DeviceNet		Microstyle, 5-pin
Connector for HPG (analog output, supply voltage, setpoints)		D-Sub, 15-pin, male

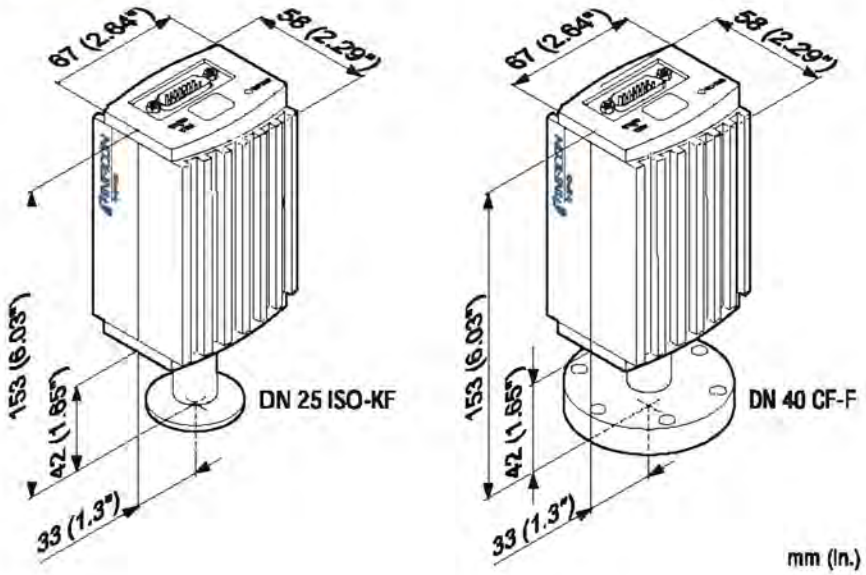
Specifications (Profibus DP)

		HPG400-SP Profibus DP
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
	MBaud	1.5 / 12
Address		Two switches (address 00 - 127) or network programmable
Digital functions		Read pressure, select units: Torr, mbar, Pa Pirani full scale adjust 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		2
Range	mbar	$1x10^{-6}$ ... 100
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V (dc) / A	60 / 0.5
Connector for Profibus DP		D-Sub, 9-pin, female
Connector for HPG (analog output, supply voltage, setpoints)		D-Sub, 15-pin, male

HPG400 (continued)

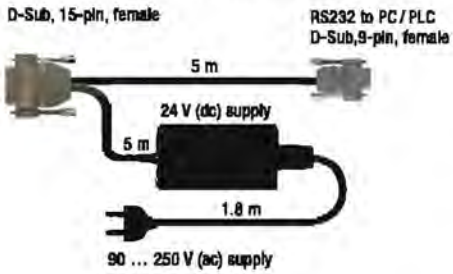
Dimensions

mm (in.)



Accessories

Power supply 24 V (dc) / RS232C line



Pirani Gauge Enhanced

PGE500

The INFICON Pirani Gauge Enhanced (PGE) is equipped with the latest digital convection enhanced Pirani technology available on the market. Due to the physical properties of convection this type of Pirani offers higher accuracy in the measurement range between 100 to 1000 mbar. The rugged gauge and sensor design in combination with many factory build in features, such as the bright, sharp and clear OLED display with integrated keypad, RS485/RS232 digital interface and 4 selectable analog output signals make the PGE500 a high value/ low cost of ownership choice. All these features qualify this gauge for many applications where an economical vacuum measurement from low to high vacuum range is required.

Advantages

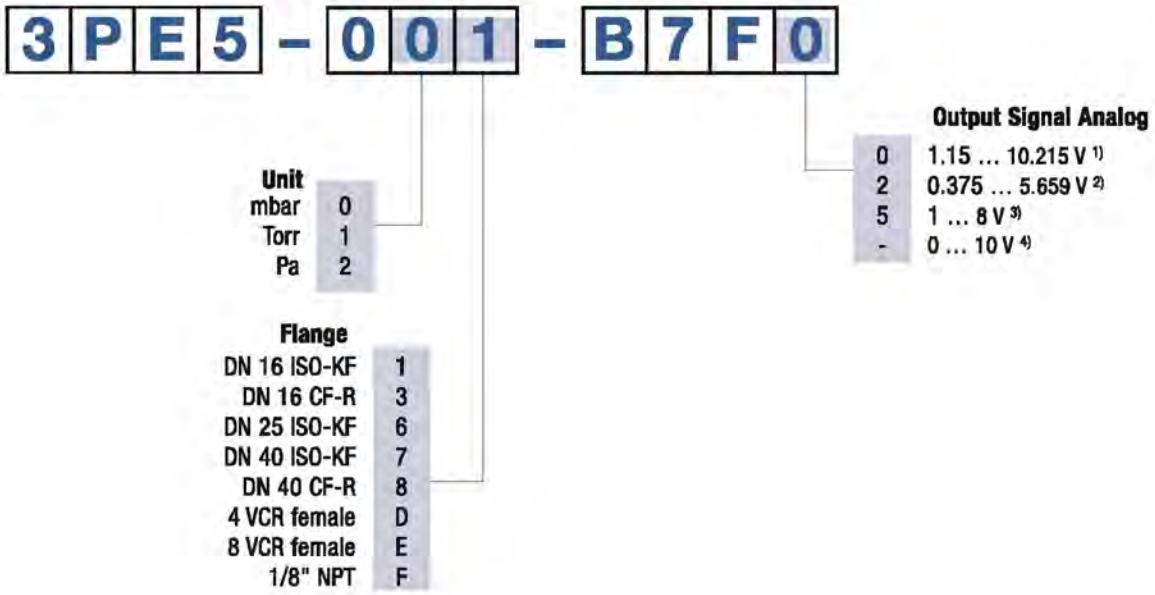
- Convection Enhanced Pirani Technology for wide measurement range and higher accuracy near atmosphere
- All-in-One active gauge with built-in display, 2 set points, 4 analog output signalsl, and 2 digital interfaces
- Bright digital OLED display with keypad for simple setup, calibration and operation
- 4 optional analog output signals (3 user selectable, 1 default)
- Factory pre-set analog output signal or selectable via keypad
- Factory pre-set display units or selectable via keypad
- User programmable set point relays (factory pre-set on request for volume orders)
- Gold plated tungsten filament
- Mechanical strength, highly robust and less susceptible to mechanical shock and vibration
- Choice of flange options
- Compliance & standards: CE, RoHS
- Direct drop in replaces most Granville-Phillips® Mini-Convectron® modules (GP275)

Applications

- Fore vacuum pressure measurement
- General vacuum measurement and control from low to the high vacuum range

PGE500 (continued)

Ordering Information



1) log-linear, $p=10^{0.778(U-c)}$
2) non-linear S-curve, compatible to most Granville-Phillips® Mini-Convectron® modules (GP275)
3) log-linear, $p=10^{(V-5)}$
4) linear, available on all devices by default on pin 9

PGE500 (continued)

Specifications

Type		PGE500
Filament		Tungsten gold-plated
Measurement range	mbar	1.3×10^{-4} ... 1333
	Torr	1×10^{-4} ... 1000
	Pa	1.3×10^{-2} ... 133000
Accuracy (N_2)[1]		
1.3×10^{-4} ... 1.3×10^{-3} mbar		0.1 x 10^{-3} mbar resolution
1.3×10^{-3} ... 530 mbar	% of reading	±10
530 ... 1333 mbar	% of reading	±2.5
1×10^{-4} ... 1×10^{-3} Torr		0.1 mTorr resolution
1×10^{-3} ... 400 Torr	% of reading	±10
400 ... 1000 Torr	% of reading	±2.5
Repeatability (N_2)[1]	% of reading	±2
Admissible Temperature		
Operation	°C	0 ... +40
Storage	°C	-40 ...+70
Bakeout (electronics removed)	°C	≤150
Supply voltage	V (dc)	+12 ... +28) [2]
Output signal (analog)		
3PE5-0xx-B7F0	V (dc)	1.15 ... 10.215 (log-linear)
3PE5-0xx-B7F2	V (dc)	0.375 ... 5.659 (non-linear S-curve)
3PE5-0xx-B7F5	V (dc)	1 ... 8 (log-linear)
3PE5-0xx-B7F-[3]	V (dc)	1 ... 10 (linear)
Voltage vs. pressure		
3PE5-0xx-B7F0	V / Decade	1.286
3PE5-0xx-B7F5	V / Decade	1
Setpoint relay		2 (single-pole double-throw relays (SPDT)) 1 A at 30 V (dc) resistive, or V (ac) non-inductive
Electrical connection		D-Sub, 9-pin, male and D-Sub, 15-pin HD, male (with RS485)
Mounting orientation		horizontal recommended [4]
Materials exposed to vacuum		gold-plated tungsten, 304 & 316 stainless steel, glass, nickel, Teflon®
Internal volume	cm^3 ($in.^3$)	26 (1.589)
Internal surface area	cm^2 ($in.^2$)	59.7 (9.25)
Weight	g (oz)	340 (12)

1) typically
2) 2 W protected agianst power reversal and transient over-voltages
3) available on all devices by default on pin 9
4) orientation has no effect on measurements below 1.3 mbar (1 Torr)

PGE500 (continued)

Dimensions

mm (in.)

Dimension A	mm	(in)
DN 16 ISO-KF	29.5	(1.16)
DN 25 ISO-KF	29.5	(1.16)
DN 40 ISO-KF	29.5	(1.16)
DN 16 CF-R	34	(1.34)
DN 40 CF-R	34	(1.34)
4 VCR female	43.7	(1.72)
8 VCR female	40.9	(1.61)
1/8" NPT	21.8	(0.86)

Accessories

Power supply for PGE300 & PGE500[1)]	352-525

Input power:	V (ac)	100 ... 240
Output power:	V (dc)	+24 @ 2.5 A (60 W)
Cable length:	m (ft)	2 (6)

1) The IEC 60320 AC power entry receptacle allows use with any user supplied AC mains cord set available worldwide

Pirani Gauge Enhanced

PGE300

The INFICON Pirani Gauge Enhanced 300 (PGE300) like it's bigger brother PGE500 is equipped with the latest digital convection enhanced Pirani technology available on the market. Equipped with the same sensor components as the PGE500, the PGE300 yields the same higher accuracy readings in the measurement range between 100 to 1000 mbar.
The PGE300 offers only the critical built-in features that the majority of customers in the vacuum industry are looking for, minimizing costs and maximizing efficiency. This rugged gauge and sensor design, in combination with the factory build in clear readable LED display, 3 selectanle analog output signals and a set point relay makes the PGE300 a high value/low cost of ownership choice not only for OEM customers, but all customers.
These features qualify this gauge for many applications where an economical vacuum measurement from low to high vacuum range is required. With its wider measuring range and higher accuracy, especially at lower pressures in combination with the economically priced built in features the PGE300 also is the first choice when replacing thermocouple gauges in your vacuum system.

Advantages

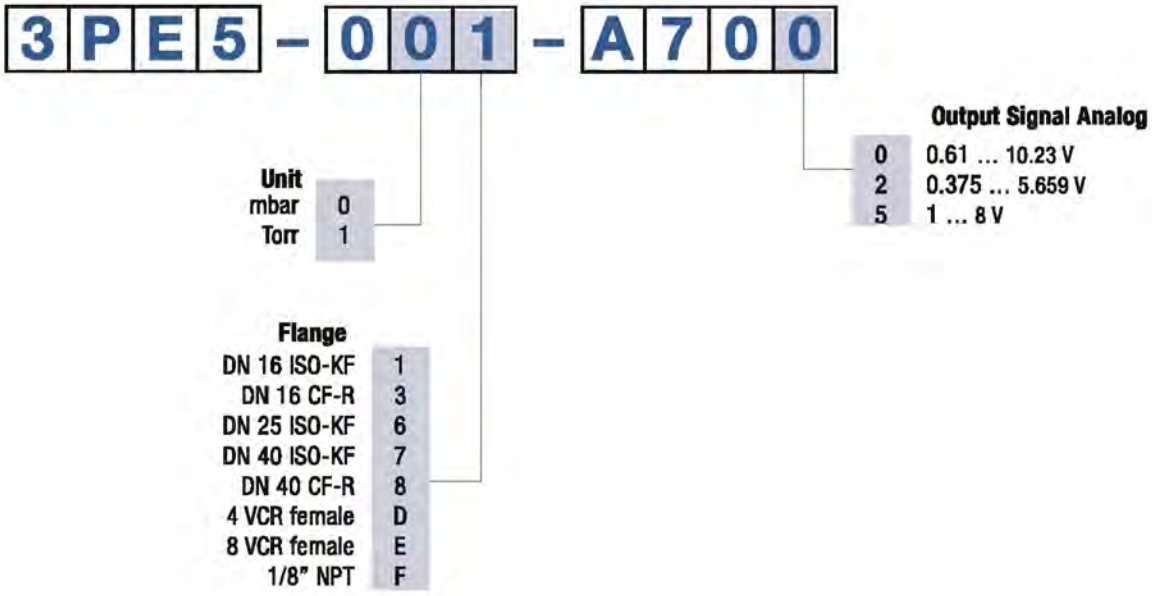
- Convection Enhanced Pirani Technology for wide measurement range and higher accuracy near atmosphere
- All-in-One active gauge with built-in display, 1 set point and 3 selectable analog output signals!
- Bright digital LED display features a user friendly for calibration and operation
- 3 optional analog output signals (user selectable)
- Factory pre-set analog output signal or selectable via user interface
- User programmable set point relays
- Gold plated tungsten filament
- Mechanical strength, highly robust and less susceptible to mechanical shock and vibration
- Choice of flange options
- Compliance & standards: CE, RoHS
- Direct drop in replaces most Granville-Phillips® Mini-Convectron® modules (GP275) and ideal device for upgrading your installed thermocouple gauges

Applications

- Fore vacuum pressure measurement
- General vacuum measurement and control from low to the high vacuum range

PGE300 (continued)

Ordering Information



PGE300 (continued)

Specifications

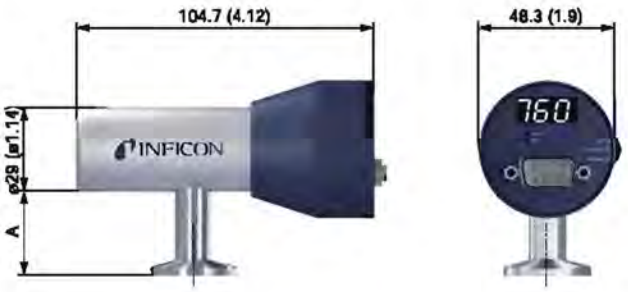
Type		PGE300
Filament		Tungsten gold-plated
Measurement range	mbar	1.3×10^{-4} ... 1333
	Torr	1×10^{-4} ... 1000
	Pa	1.3×10^{-2} ... 1333000
Accuracy (N_2)[1]		
1.3×10^{-4} ... 1.3×10^{-3} mbar		0.1 x 10^{-3} mbar resolution
1.3×10^{-3} ... 530 mbar	% of reading	±10
530 ... 1333 mbar	% of reading	±2.5
1×10^{-4} ... 1×10^{-3} Torr		0.1 mTorr resolution
1×10^{-3} ... 400 Torr	% of reading	±10
400 ... 1000 Torr	% of reading	±2.5
Repeatability (N_2)[1]	% of reading	±2
Admissible Temperature		
Operation	°C	0 ... +40
Storage	°C	-40 ...+70
Bakeout	°C	≤70
Supply voltage	V (dc)	+12 ... +28) [2]
Output signal (analog)		
3PE5-0xx-A700	V (dc)	0.61 ... 10.23 (log-linear)
3PE5-0xx-A702	V (dc)	0.375 ... 5.659
3PE5-0xx-A705	V (dc)	1 ... 8 (log-linear)
Voltage vs. pressure		
3PE5-0xx-A700	V / Decade	1.286
3PE5-0xx / -A705	V / Decade	1
Setpoint relay		1 (single-pole double-throw relay (SPDT)) 1 A at 30 V (dc) resistive, or V (ac) non-inductive
Electrical connection		D-Sub, 9-pin, male
Mounting orientation		horizontal recommended [3]
Materials exposed to vacuum		gold-plated tungsten, 304 & 316 stainless steel, glass, nickel, Teflon®
Internal volume	cm^3 ($in.^3$)	26 (1.589)
Internal surface area	cm^2 ($in.^2$)	59.7 (9.25)
Weight	g (oz)	136 (4.8)

1) typically
2) 2 W protected against power reversal and transient over-voltages
3) orientation has no effect on measurements below 1.3 mbar (1 Torr)

PGE300 (continued)

Dimensions

mm (in.)



Dimension A	mm	(In)
DN 16 ISO-KF	33	(1.3)
DN 25 ISO-KF	33	(1.3)
DN 40 ISO-KF	33	(1.3)
DN 16 CF-R	27.4	(1.08)
DN 40 CF-R	37.3	(1.47)
4 VCR female	47.2	(1.86)
8 VCR female	44.5	(1.75)
1/8" NPT male	25.4	(1)

Accessories

Power supply for PGE300 & PGE500[1)]	352-525

Input power:	V (ac)	100 ... 240
Output power:	V (dc)	+24 @ 2.5 A (60 W)
Cable length:	m (ft)	2 (6)

1) The IEC 60320 AC power entry receptacle allows use with any user supplied AC mains cord set available worldwide

Bayard-Alpert Pirani Capacitance Diaphragm Gauge

TripleGauge BCG450

The INFICON Bayard-Alpert Pirani Capacitance Diaphragm Gauge, BCG450, combines the advantages of three different technologies in a single, compact, economical package to measure process and base pressure from 5 x 10^{-10} to 1500 mbar (3.75 x 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.

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, e.g. EtherCAT
- RoHS compliance

Applications

- Pressure measurement in Semiconductor process, transfer and loadlock chambers
- Industrial coating
- General vacuum measurement and control on systems in the low to ultra high vacuum range

Ordering Information

Type	BCG450 without LCD	BCG450 with LCD	BCG450-SP with Profibus DP [1]	BCG450-SD with DeviceNet [1]	BCG450-SE with EtherCAT [1]
DN 25 ISO-KF	353-550	353-552	353-554	353-557	353-592
DN 40 CF-R	353-551	353-553	353-556	353-558	353-593
Replacement sensor 25 ISO-KF	354-492	354-492	354-492	354-492	354-492
Replacement sensor 40 CF-R	354-493	354-493	354-493	354-493	354-493

[1] Not available with LCD display

Accessories

Power supply 24 V (dc) / RS 232 C line	353-511
Baffle	353-512
Centering ring with baffle DN 25 ISO-KF	211-113

TripleGauge BCG450 (continued)

Specifications

			BCG450 Standard **BCG450** Display
Measurement range		mbar (Torr)	5×10^{-10} to 1500 (3.75×10^{-10} to 1125)
Accuracy	10^{-8}... 50 mbar	% of reading	±15
	50 ... 950 mbar	% of reading	±5
	950 ... 1050 mbar	% of reading	±2.5
Repeatability	10^{-8} ... 10^{-2} mbar	% of reading	5
Hot ion emission on		mbar	2×10^{-2} (high)
(selectable high / low, via RS232 / Fieldbus)		mbar	8×10^{-3} (low)
Degas[1] $p < 7.2 \times 10^{-8}$		mbar	Electron bombardment, max. 3 min
Pressure, max.		bar (absolute)	5
Temperature			
Operation (ambient)		°C	0 ... +50
Storage		°C	–20 ... +70
Bakeout			
At flange		°C	80
Electronics removed		°C	150
Supply voltage		V / A (dc)	20 ... 28 / 0.8
Output signal analog		V	0 ... 10.3
Measurement range		V	0.774 ... 10.3
Relation voltage / pressure		V / Decade	0.75
Error signal		V	0.3 / 0.5
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_2O_3, Ir, Mo, Cu, W, NiFe, NiCr, Al_2O_3, SnAg, stainless steel, glass
Internal volume KF / CF		cm^3 ($in.^3$)	24 (1.46) / 34 (2.1)
Weight KF / CF		g	285 / 550
Degree of protection			IP30

1) Reduced accuracy during degas
2) Simultaneous use of RS232C or VGC400 series controllers and Fieldbus is not allowed
3) For RS232C operation <30m

TripleGauge BCG450 (continued)

Specifications (Profibus DP)

		BCG450-SP Profibus DP
Baud rates	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500
	MBaud	1.5 / 12
Address		Two 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		2
Range	mbar	1 x 10^{-9} ... 1400
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V / A (dc)	60 / 0.5
Connector for Profibus DP		D-Sub, 9-pin, female
Connector for BCG (analog output, supply voltage, setpoints)		D-Sub, 15-pin, male

Specifications (EtherCAT)

		BCG450-SE EtherCAT
Protocol		EtherCAT
Communication standard		ETG.5003 Part 1 [1] ETG.5003 Part 2080 [2]
Node address		Explicit Device Identification
Physical layer		100BASE-Tx (IEEE 802.3)
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
Setpoint relays		2
Range	mbar	1 x 10^{-9} ... 1400
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V / A (dc)	60 / 0.5
EtherCAT connector		2 x RJ45, 8-pin (socket), input and output
Cable		special Ethernet Patch Cable or Crossover Cable, shielded (CAT5e quality or higher)
Cable length	m (ft)	≤100 (330)
Process data		fixed PDO mapping and configurable PDO mapping
Mailbox (CoE)		SDO requests, responses and Information

[1] Semiconductor Device Profile
[2] Specific Device Profile: Vacuum Pressure Gauge

TripleGauge BCG450 (continued)

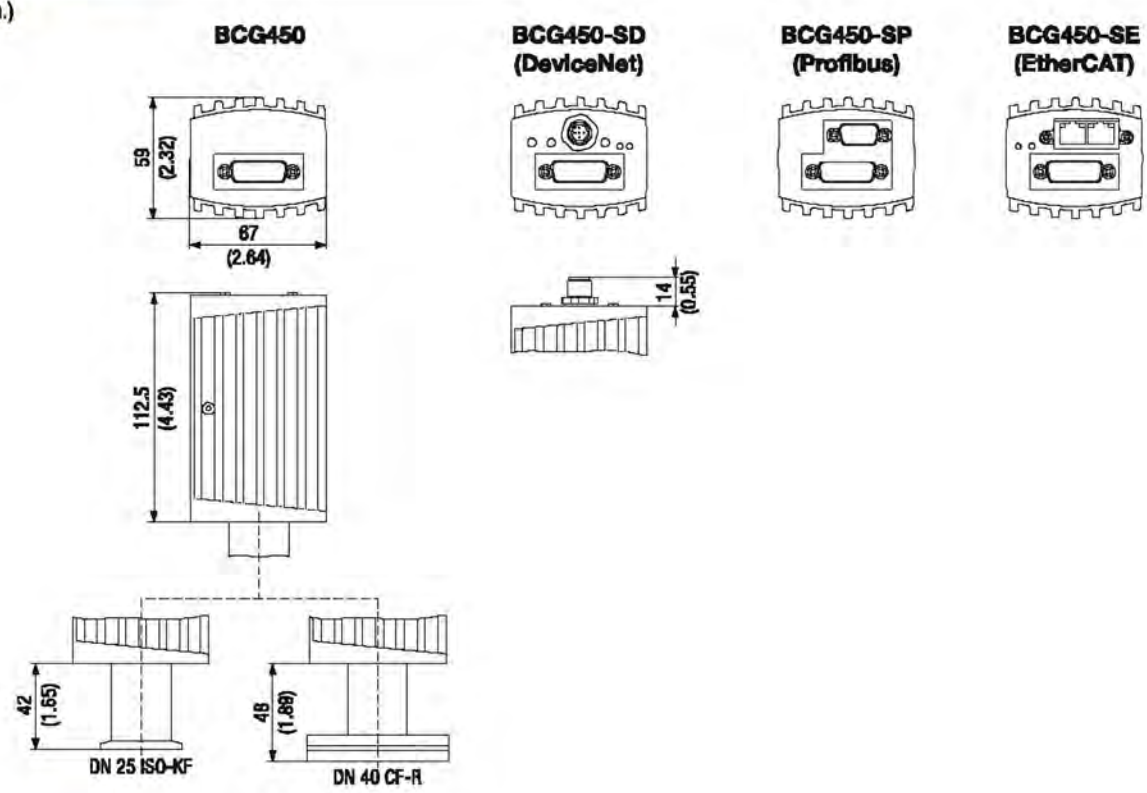
Specifications (DeviceNet)

		BCG450-SD DeviceNet
Protocol		DeviceNet, group 2 slave only
Data rate switch	kBaud	125, 250, 500 or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Two 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)
Specification		DeviceNet "Vacuum Gauge Device Profile"
Device type		"CG" for combination gauge
I / O slave messaging		polling only
Setpoint relays		2
Range	mbar	1×10^{-9} ... 1400
Relay contact		n.o., potential free
Hysteresis	% of reading	10
Contact rating	V / A (dc)	60 / 0.5
Connector		D-Sub, 15-pin, male
Supply voltage for DeviceNet	V / A (dc)	11 ... 25 / 0.5
Supply voltage for gauge	V / A (dc)	20 ... 28 / 0.8
Connector for DeviceNet		Microstyle, 5 pin
Connector for BCG (analog output, supply voltage, setpoints)		D-sub, 15-pin, male

TripleGauge BCG450 (continued)

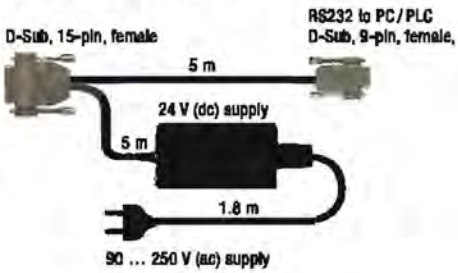
Dimensions

mm (in.)



Accessories

Power supply 24 V (dc) / RS 232 C line



Baffle

Prevents contamination of the sensor.
Fast and easy installation.

Pirani Standard Gauge

PSG500/-S, PSG502-S, PSG510-S, PSG512-S

The INFICON Pirani Standard Gauges, PSG500, PSG502-S, PSG510-S and PSG512-S, employ the most advanced digital Pirani technology available in the marketplace. The rugged stainless steel sensor cell and compact design qualify them for use on semiconductor systems and for standard applications, such as fore vacuum lines.

Advantages

- Easy push button ATM and HV adjustment
- Space saving rugged design
- Aluminum housing
- Mounts in any orientation
- All stainless steel measuring cell
- Logarithmic signal output for easy integration
- 10 bar absolute overpressure with threaded connections
- 250°C bakeable version
- Nickel filament option for corrosive applications
- Ceramic feedthrough for extremely corrosive applications (PSG510 and PSG512)
- Optional setpoints
- RoHS compliance

Applications

- Controlling high vacuum ionization gauges
- Fore vacuum pressure monitoring
- Safety circuits in vacuum systems
- General vacuum measurement and control in the fine and rough vacuum range

PSG500/-S, PSG502-S, PSG510-S, PSG512-S (continued)

Ordering Information

Type	PSG500	PSG500-S	PSG502-S	PSG510-S	PSG512-S
Setpoints	None	Two setpoints	Two setpoints	Two setpoints	Two setpoints
Filament	Tungsten	Tungsten	Nickel	Tungsten	Nickel
DN 16 ISO-KF	350-060	350-080	350-140	350-200	350-300
DN 16 CF-R	350-062	350-082	350-142		
1/8 in. NPT	350-061	350-081	350-141		
8 VCR	350-064	350-084	350-144		
4 VCR	350-065	350-085	350-145		
1/2 in. tube	350-063	350-083	350-143		
7/16-20 UNF	350-066	350-086	350-146		
DN 16 ISO-KF long tube	350-067	350-087	350-147		
DN 16 CF-R long tube	350-068	350-088	350-148		

Replacement sensor				
Filament	Tungsten	Nickel	Tungsten	Nickel
DN 16 ISO-KF	350-920	350-900	350-930	350-940
DN 16 CF-R	350-922	350-902		
1/8 in. NPT	350-921	350-901		
8 VCR	350-924	350-904		
4 VCR	350-926	350-906		
1/2 in. tube	350-923	350-903		
7/16-20 UNF	350-925	350-905		
DN 16 ISO-KF long tube	350-927	350-907		
DN 16 CF-R long tube	350-928	350-908		

PSG500/-S, PSG502-S, PSG510-S, PSG512-S (continued)

Specifications

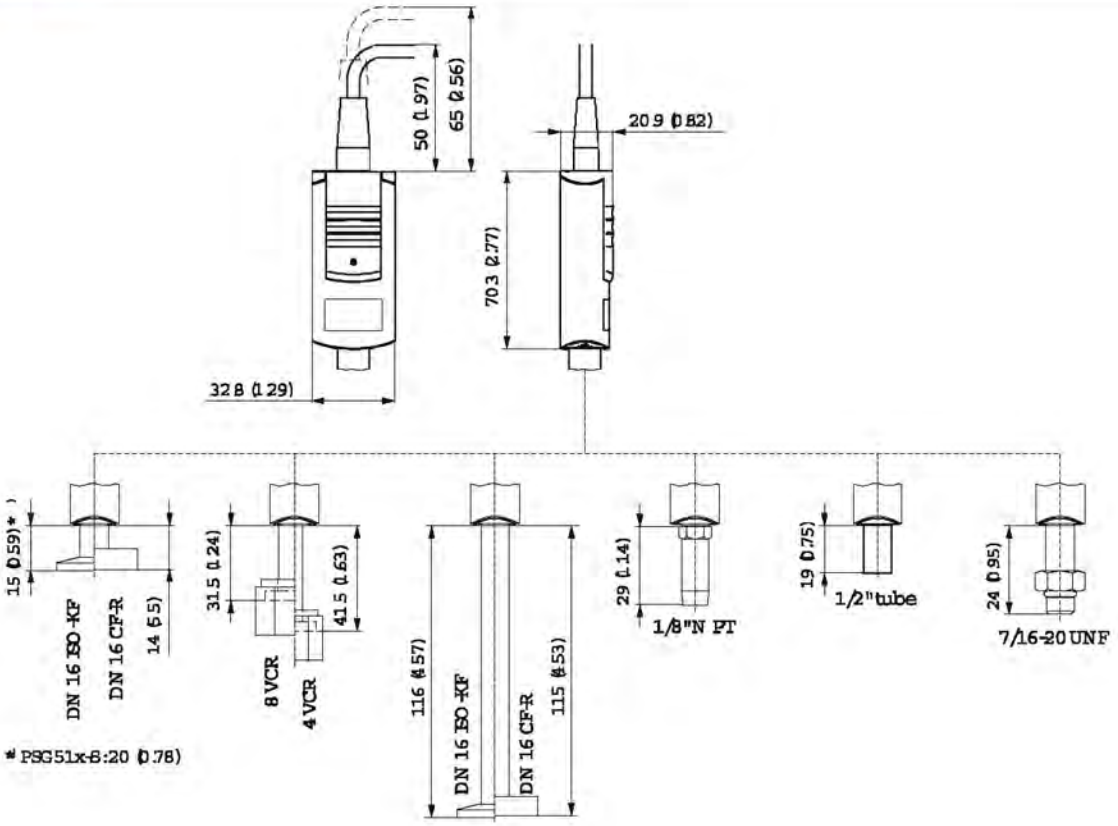
Type			PSG500	PSG500-S	PSG502-S	PSG510-S	PSG512-S
Filament			Tungsten	Tungsten	Nickel	Tungsten	Nickel
Measuring principle			thermal conductance according to Pirani				
Measurement range (air, O_2, CO, N_2)		mbar	5×10^{-4} to 1000				
Accuracy (N_2)	1×10^{-3} ... 100 mbar	% of reading	±15%				
	5×10^{-4} ... 1×10^{-3} mbar	% of reading	±50%				
	100 ... 1000 mbar	% of reading	±50%				
Repeatability (air)	1×10^{-3} ... 100 mbar	% of reading	2%				
Output signal (measurement signal)							
Voltage range		V	0 ... +10.3				
Measurement range		V	+1.9 ... +10.0				
Voltage vs. pressure			Logarithmic 1.286 V/decade				
Error signal		V	0 ... +0.5 (filament rupture)				
Output impedance		Ω	2 x 4.7				
Minimum loaded impedance		kΩ	10, short-circuit proof				
Response time		ms	80				
Gauge identification		kΩ	27.0, referenced to supply common				
Adjustment			One tactile switch for ATM and HV adjustment				
Setpoint			none	2			
Setting range		mbar		2×10^{-3} ... 500			
Hysteresis		% of reading		10% above lower threshold			
Relay contact		V (dc) / A (dc)		30 / 0.5 floating			
Switching time		ms		<20			
Supply voltage							
At gauge		V (dc)	+14 ... +30				
Ripple		V_{pp}	≤1				
Current consumption		mA	<500 (max. starting current)				
Power consumption		W	≤1				
Electrical connection			FCC 68 / RJ45 appliance connector, 8 poles, male				
Sensor cable			8 poles plus shielding				
Cable length		m	≤100 (8 x 0.14 mm²)				
Materials exposed to vacuum			Glass, Ni, NiFe DIN 1.4301/1.4305/1.4435			Al_2O_3, Ni, DIN 1.3981/1.4305/1.4435	
Filament			W	W	Ni	W	Ni
Internal volume							
DN 16 ISO-KF, DN 16 CF-R, 7/16-20 UNF		cm^3 ($in.^3$)	1.5 (0.092)				
DN 16 ISO-KF and DN 16 CF-R long tube		cm^3 ($in.^3$)	10 (0.61)				
1/8 in. NPT, 4 VCR, 8 VCR, 1/2 in. tube		cm^3 ($in.^3$)	2 (0.122)				
Admissible pressure		bar (absolute)	10, limited to inert gases				
Admissible temperature							
Operation		°C	+5 ... +60				
Vacuum connection [1]		°C	80 / 250 [2]				
Storage		°C	–20 ... +65				
Mounting orientation			any				
Degree of protection			IP40				
Weight							
DN 16 ISO-KF, 7/16-20 UNF		g	80				
DN 16 CF-R, 4 VCR		g	100				
1/8 in. NPT, 1/2 in. tube		g	70				
8 VCR, DN 16 ISO-KF long tube		g	130				
DN 16 CF-R long tube		g	140				

1) In horizontal mounting orientation
2) Long tube

PSG500/-S, PSG502-S, PSG510-S, PSG512-S (continued)

Dimensions

mm (in.)



Pirani Standard Gauge

PSG550, PSG552, PSG554

The INFICON Pirani Standard Gauge (PSG55x) employs like his brothers PCG55x and PSG50x the most advanced digital Pirani technology available. The rugged sensor design combined with the compact size and the variety of features qualifies as the right product for measurement from low to the high vacuum range.

Advantages

- Available with Tungsten (PSG550) or nickel (PSG552) filament or with a fully ceramic coated (PSG554) sensor unit for highly corrosive applications
- Optional display, setpoints and digital interfaces, e.g. EtherCAT
- Easy to exchange plug and play sensor element with on-board calibration data—guarantees high reproducibility and low cost of ownership
- Selectable output signal and various plug versions for easy integration
- Mounts in any orientation—provides engineering freedom in tool design
- Diagnostic port on all versions
- Compliance and standards: CE, EN, UL, CSA, RoHS

Applications

- Fore vacuum pressure measurement
- Safety circuits in vacuum systems
- General vacuum measurement and control from low to the high vacuum range

PSG550, PSG552, PSG554 (continued)

Ordering Information

Filament

Tungsten	1
Nickel	2
Ceramic coated	3
Tungsten, galv. isolated [1]	6
Nickel, galv. isolated [1]	7
Ceramic coated, galv. isolated [1]	8

Unit [2]

mbar	0
Torr	1
Pa	2
micron	3

Flange

DN 16 ISO-KF	1
DN 16 ISO-KF long tube	2
DN 16 CF-F	4
DN 16 CF-R long tube	5
DN 25 ISO-KF	6
4 VCR female	D
8 VCR female	E
1/8 in. NPT	F
Surface mount 29 mm / 1.15 in.	K
4 VCR 90° female	M
7/16-20 UNF male	N

Measurement range

0	0.61 … 10.23 V [3]
1	1.2 … 8.68 V
2	0.375 … 5.659V
3	1.57 … 9.05 V

Digital Interface

0	None [3]
1	DeviceNet [4] [7]
2	Profibus DP [1] [7]
8	EtherCAT [1] [7]
-	RS485 [8]

Electrical connection

0	FCC, 8-pin [3]
1	D-Sub, 9-pin
2	D-Sub, 15-pin HD
4	D-Sub, 15-pin HD, with RS485 [5]

Display, switching functions

0	None
1	LCD
2	2 setpoints (solid state)
4	LCD and 2 setpoints (solid state)
6	2 setpoints (mechanical) [6]

1) Only with D-Sub 9-pin connector available
2) When selecting LCD (liquid crystal display) choose desired pressure unit
3) Choose these settings when using an INFICON VGC40x or PGD400 controller or when choosing "4" under electrical connections
4) Only with D-Sub 9-pin connector and galvanically isolated available
5) Only without additional digital interface available
6) Only with D-Sub 9-pin connector without LCD available
7) Fieldbus options only available together with switching functions (select number "2" or "4" from table "Display, switching functions")
8) Just selectable via number "4" from table "Electrical connection"

PSG550, PSG552, PSG554 (continued)

Specifications (continued)

Type			PSG550	PSG552	PSG554
Filament			Tungsten	Nickel	Ceramic coated
Measurement range		mbar (Torr)		5×10^{-5} ... 1000 (3.8×10^{-5} ... 750)	
Accuracy (N_2)	5×10^{-4} ... 1×10^{-3} mbar	% of reading		±50	
	1×10^{-3} ... 100 mbar	% of reading		±15	
	100 ... 1000 mbar	% of reading		±50	
Repeatability (N_2)	1×10^{-3} ... 100 mbar	% of reading		±2	
Admissible pressure		bar (absolute)		≤5	
Pressure, max.		bar (absolute)		10	
Admissible temperature					
Operation (ambient)		°C		+10 ... +50	
Storage		°C		−20 ... +65	
Bakeout at flange		°C		≤80	
Long tube		°C		≤250	
Supply voltage		V / A (dc)		+15 ... +30	
Power consumption					
Without fieldbus		W		≤2.5	
DeviceNet		W		≤3	
Profibus DP		W		≤3	
Output signal analog					
3Plx-0xx-xxx0		V		0 ... +10	
-xxx1		V		0 ... +8.5	
-xxx2		V		0 ... +5.529	
-xxx3		V		0 ... +8.875	
Measuring range					
3Plx-0xx-xxx0		V		+0.61 ... +10	
-xxx1		V		+1.2 ... +8.5	
-xxx2		V		+0.375 ... +5.529	
-xxx3		V		+1.57 ... +8.875	
Voltage vs. pressure					
3Plx-0xx-xxx0		V / Decade		1.286	
3Plx-0xx-xxx1 / -xxx2 / -xxx3		V / Decade		1	
Load impedance		kΩ		>10	
Setpoint relay				2	
Range (N_2)		mbar		5×10^{-5} ... 1000	
Relay contact				n.o., potential free	
Hysteresis		% of threshold		10	
Contact rating					
Solid state relays		V / A (dc)		≤30 / ≤0.3	
Mechanical relays		V / A (dc)		≤30 / ≤1	
Switching time		ms		≤30	
Interface (digital)				RS232C	
Electrical connection					
3Plx-0xx-x0xx				FCC, 8-pin	
-x1xx				D-Sub, 9-pin, male	
-x2xx				D-Sub, 15-pin HD, male	
-x4xx				D-Sub, 15-pin HD, with RS485, male	
Cable length		m (ft.)		≤100 (≤330)	
RS232C operation		m (ft.)		≤30 (≤100)	
Materials exposed to vacuum			W, Ni, NiFe, glass, SnAg, stainless steel	Ni, NiFe, glass, SnAg, stainless steel	Al_2O_3, stainless steel

(continued)

PSG550, PSG552, PSG554 (continued)

Specifications (continued)

Type Filament		PSG550 Tungsten	PSG552 Nickel	PSG554 Ceramic coated
Internal volume				
DN 16 ISO-KF	cm^3		4.7	
DN 16 ISO-KF long tube	cm^3		14.5	
DN 16 CF-F	cm^3		8	
DN 16 CF-R long tube	cm^3		14	
DN 25 ISO-KF, 4 VCR	cm^3		5.5	
8 VCR	cm^3		7	
1/8 in. NPT, 7/16-20 UNF	cm^3		5.2	
Surface mount 29 mm (1.15 in.)	cm^3		4.9	
4 VCR 90°	cm^3		7.9	
Weight				
Without fieldbus interface	g		115 ... 130	
With fieldbus interface	g		230 ... 250	
Degree of protection			IP 40	
Standards			EN 61000-6-2/-6-3, EN 61010, UL 61010-1, CSA 22.2 No. 61010-1	

Specifications (DeviceNet)

Protocol		DeviceNet, group 2 slave only
Data rate switch	kBaud	125, 250, 500 or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Two switches (address 00 – 63) or network programmable
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts Monitor gauge status, detailed alarm and warning information, Safe state allows definition of behavior in case of error
Specification		DeviceNet "Vacuum Gauge Device Profile"
Device type		"CG" for combination gauge
I/O slave messaging		Polling only
Supply voltage for DeviceNet		
3PI6-/3PI7-/3PI8-0xx-xxxx	V/A (dc)	+15 ... +30
Power consumption		
3PI6-/3PI7-/3PI8-0xx-xxxx	W	≤3
Connector for DeviceNet		Micro-Style, 5-pin, male

Specifications (Profibus DP)

Baud rates	kBaud MBaud	9.6/19.2/93.75/187.5/500 1.5/12
Address		Two switches (address 00 – 127) or network programmable
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts Monitor gauge status, detailed alarm and warning information, Safe state allows definition of behavior in case of error
Connector for Profibus DP		D-Sub, 9-pin, female

PSG550, PSG552, PSG554 (continued)

Specifications (EtherCAT)

		PSG55x EtherCAT
Protocol		EtherCAT
Communication standard		ETG.5003 Part 1 [1] ETG.5003 Part 2080 [2]
Node address		Explicit Device Identification
Physical layer		100BASE-Tx (IEEE 802.3)
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts monitor gauge status, detailed alarm and warning information, safe state allows definition of behavior in case of error
EtherCAT connector		2 x RJ45, 8-pin (socket), input and output
Cable		Special Ethernet Patch Cable or Crossover Cable, shielded (CAT5e quality or higher)
Cable length	m (ft)	≤100 (330)
Process data		Fixed PDO mapping and configurable PDO mapping
Mailbox (CoE)		SDO requests, responses and information

1) Semiconductor Device Profile
2) Specific Device Profile: Vacuum Pressure Gauge

Specifications (RS485C)

Baud rates	kBaud	9.6 / 19.2 / 38.4 /57.6
Address		Two switches (address 00 – 255)
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts monitor gauge status, detailed alarm and warning information, safe state allows definition of behavior in case of error
Connector for RS485		D-Sub, 15-pin HD, male

Spare Parts

Type Filament		PSG550 Tungsten	PSG552 Nickel	PSG554 Ceramic coated
Replacement sensor	DN 16 ISO-KF	355-925	355-936	355-947
	DN 16 ISO-KF long tube	355-926	355-937	355-948
	DN 16 CF-F	355-927	355-938	355-949
	DN 16 CF-R long tube	355-928	355-939	355-950
	DN 25 ISO-KF	355-929	355-940	355-951
	4 VCR female	355-932	355-943	355-954
	8 VCR female	355-931	355-942	355-953
	1/8 in. NPT	355-930	355-941	355-952
	Surface mount 29 mm (1.15 in.)	355-934	355-945	355-956
	4 VCR 90° female	355-935	355-946	355-957
	7/16-20 UNF male	355-933	355-944	355-955

PSG550, PSG552, PSG554 (continued)

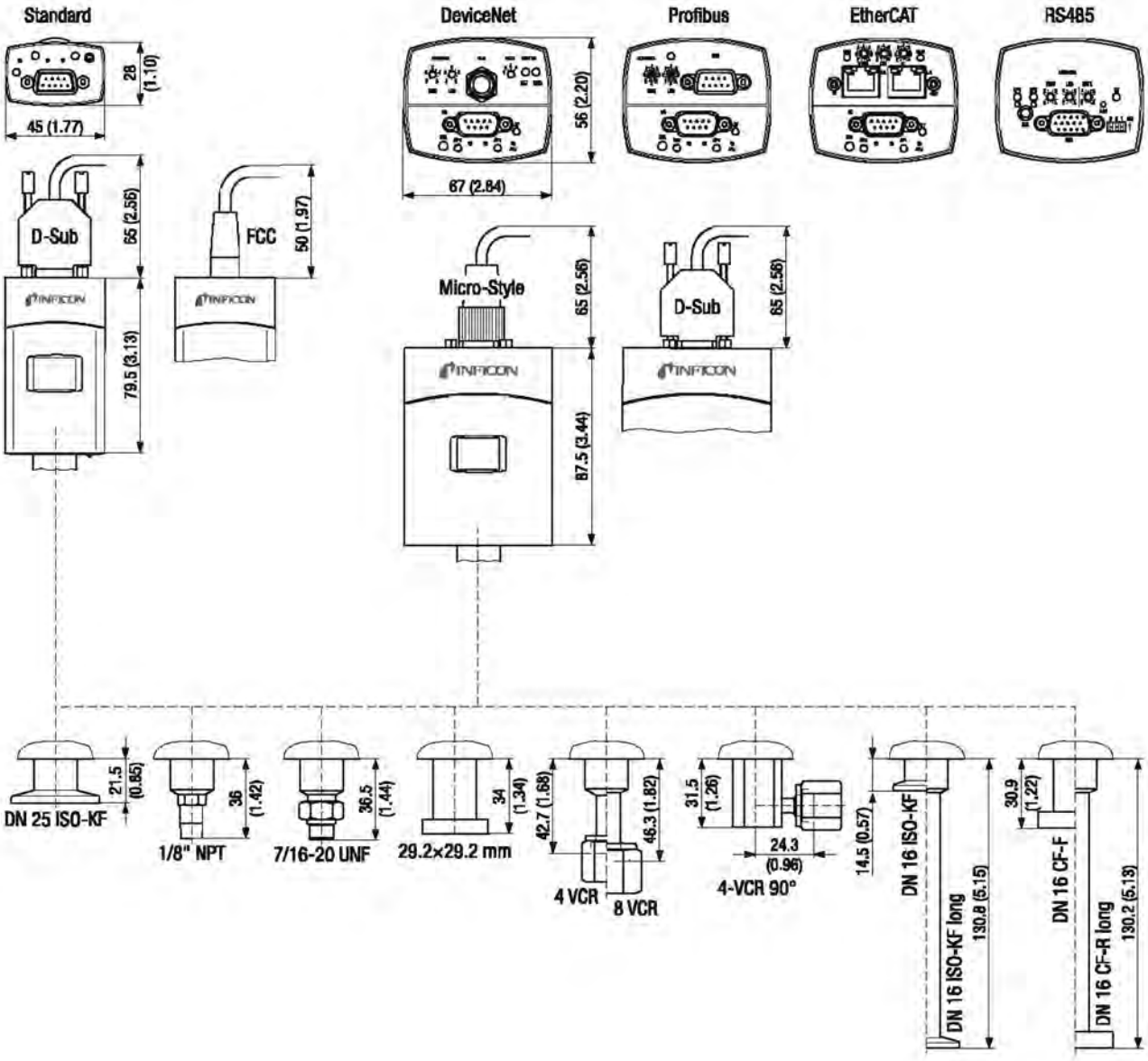
Accessories

Centering ring with filter (DN 16 ISO-KF)	211-097
Diagnostic: [1] Communication adapter (2 m) for PC RS232C serial port	303-333

[1] Software to run the diagnostic functions on Windows NT, XP can be downloaded from our website.

Dimensions

mm (in.)



Pirani Capacitance Diaphragm Gauge

PCG550, PCG552, PCG554

The INFICON Pirani Capacitance Diaphragm Gauge (PCG55x) combines the INFICON Pirani technology with the advantages of a ceramic capacitance diaphragm sensor in a single product.

In the measurement range between 10 mbar and atmosphere the capacitance diaphragm technology provides gas-type independent, highly accurate values for reliable pressure measurement. The PCG55x offers also a variety of features which allows the right product configuration for the demanded application.

Advantages

- Gas-type independent above 10 mbar—allows safe venting with any gas mixture
- High accuracy and reproducibility at atmosphere—for reliable atmospheric pressure detection
- Fast atmospheric detection—eliminates waiting time and shortens process cycle
- Versatile of mounting orientation—provides engineering freedom in tool design
- Available with Tungsten (PCG550) or nickel (PCG552) filament or with a fully ceramic coated (PCG554) sensor unit for highly corrosive applications
- Easy to exchange plug and play sensor element with on-board calibration data—guarantees high reproducibility and low cost of ownership
- Selectable output signal for easy integration
- Optional atmospheric switch, display and digital interfaces e.g. EtherCAT
- Diagnostic port on all versions
- Compliance and standards: CE, EN, UL, CSA, RoHS

Applications

- Load Lock control
- Fore vacuum pressure measurement
- Safety circuits in vacuum systems
- General vacuum measurement and control in the medium and rough vacuum range

PCG550, PCG552, PCG554 (continued)

Ordering Information

3	P	C	1	–	0	0	1	–	1	1	0	1

Filament

Tungsten	1
Nickel	2
Ceramic coated	3
Tungsten, galv. isolated [1]	6
Nickel, galv. isolated [1]	7
Ceramic coated, galv. isolated [1]	8

Unit [2]

mbar	0
Torr	1
Pa	2
micron	3

Flange

DN 16 ISO-KF	1
DN 16 ISO-KF long tube	2
DN 16 CF-F	4
DN 16 CF-R long tube	5
DN 25 ISO-KF	6
4 VCR female	D
8 VCR female	E
1/8 in. NPT	F
Surface mount 29 mm (1.15 in.)	K
4 VCR 90° female	M
7/16-20 UNF male	N

Display, switching functions

0	None
1	LCD display
2	2 setpoints (solid state)
3	ATM and 2 setpoints (solid state)
4	LCD display and 2 setpoints (solid state)
5	ATM and LCD display and 2 setpoints (solid state)
6	2 setpoints (mechanical) [6]
7	ATM and 2 setpoints (mechanical) [6]

Electrical connection

0	FCC, 8-pin [3]
1	D-Sub, 9-pin
2	D-Sub, 15-pin HD
4	D-Sub, 15-pin HD with RS485 [5] [7]

Digital interface

0	None [3]
1	DeviceNet [4] [7]
2	Profibus DP [1] [7]
8	EtherCAT [1] [7]
–	RS485 [8]

Measurement range

0	0.61 … 10.23 V [3]
1	1.2 … 8.68 V
2	0.375 … 5.659V
3	1.57 … 9.05 V

1) Only with D-Sub 9-pin connector available
2) When selecting LCD (liquid crystal display) choose desired pressure unit
3) Choose these settings when using the INFICON VGC40x/PGD controllers or if selecting "4" under electrical connections
4) Only with D-Sub 9-pin connector and galvanically isolated available
5) Only without additional digital interface available
6) Only with D-Sub 9-pin connector without LCD display available
7) Fieldbus options only available together with switching functions (select number "2", "3", "4", or "5" from table "Display, switching functions")
8) Just selectable via number "4" from table "Electrical connection.

PCG550, PCG552, PCG554 (continued)

Specifications

Type Filament			PCG550 Tungsten	PCG552 Nickel	PCG554 Ceramic coated
Measurement range		mbar (Torr)		5 x 10^{-6} ... 1500 (3.8 x 10^{-6} ... 1125)	
Accuracy	5 x 10^{-4} ... 1 x 10^{-3} mbar (N_2)	% of reading		±50	
	1 x 10^{-3} ... 100 mbar (N_2)	% of reading		±15	
	100 ... 950 mbar	% of reading		±5	
	950 ... 1050 mbar	% of reading		±2.5	
Repeatability	1 x 10^{-3} ... 1100 mbar (N_2)	% of reading		±2	
Admissible pressure		bar (absolute)		≤5	
Pressure, max.		bar (absolute)		≥10	
Admissible temperature					
Operation (ambient)		°C		+10 ... +50	
Storage		°C		-20 ... +65	
Bakeout at flange		°C		≤80	
Long tube		°C		≤250	
Supply voltage		V / A (dc)		+15 ... +30	
Power consumption					
Without fieldbus		W		≤2.5	
DeviceNet		W		≤3	
Profibus DP		W		≤3	
Output signal analog					
3PCx-0xx-xxx0		V		0 ... +10.23	
-xxx1		V		0 ... +8.68	
-xxx2		V		0 ... +5.659	
-xxx3		V		0 ... +9.05	
Measuring range					
3PCx-0xx-xxx0		V		+0.61 ... +10.23	
-xxx1		V		+1.2 ... +8.68	
-xxx2		V		+0.375 ... +5.659	
-xxx3		V		+1.57 ... +9.05	
Voltage vs. pressure					
3PCx-0xx-xxx0		V / Decade		1.286	
3PCx-0xx-xxx1 / -xxx2 / -xxx3		V / Decade		1	
Load impedance		kΩ		>10	
Setpoint relay				2	
Range (N_2)		mbar		5 x 10^{-6} ... 1500	
Relay contact				n.o., potential free	
Hysteresis		% of threshold		10	
Contact rating					
Solid state relays		V / A (dc)		≤30 / ≤0.3	
Mechanical relays		V / A (dc)		≤30 / ≤1	
Switching time		ms		≤30	
Interface (digital)				RS232C	
Electrical connection					
3PCx-0xx-x0xx				FCC, 8-pin	
-x1xx				D-Sub, 9-pin, male	
-x2xx				D-Sub, 15-pin HD, male	
-x4xx				D-Sub, 15-pin HD with RS485, male	
Cable length		m (ft.)		≤100 (≤330)	
RS232C operation		m (ft.)		≤30 (≤100)	

(continued)

PCG550, PCG552, PCG554 (continued)

Specifications (concluded)

Type Filament		PCG550 Tungsten	PCG552 Nickel	PCG554 Ceramic coated
Materials exposed to vacuum		W, Ni, NiFe, Al_2O_3, SnAg, stainless steel, glass	Ni, NiFe, Al_2O_3, SnAg, stainless steel, glass	Al_2O_3, stainless steel
Internal volume				
DN 16 ISO-KF	cm^3		4.7	
DN 16 ISO-KF long tube	cm^3		14.5	
DN 16 CF-F	cm^3		8	
DN 16 CF-R long tube	cm^3		14	
DN 25 ISO-KF, 4 VCR	cm^3		5.5	
8 VCR	cm^3		7	
1/8 in. NPT, 7/16-20 UNF	cm^3		5.2	
Surface mount 29 mm (1.15 in.)	cm^3		4.9	
4 VCR 90°	cm^3		7.9	
Weight				
Without fieldbus interface	g		115 ... 130	
With fieldbus interface	g		230 ... 250	
Degree of protection			IP 40	
Standards			EN 61000-6-2/-6-3, EN 61010, UL 61010-1, CSA 22.2 No. 61010-1	

Specifications (DeviceNet)

Protocol		DeviceNet, group 2 slave only
Data rate switch	kBaud	125, 250, 500 or network programmable
Cable length		
125 kbps	m (ft.)	500 (1650)
250 kbps	m (ft.)	250 (825)
500 kbps	m (ft.)	100 (330)
MAC ID		Two switches (address 00 – 63) or network programmable
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts monitor gauge status, detailed alarm and warning information, safe state allows definition of behavior in case of error
Specification		DeviceNet "Vacuum Gauge Device Profile"
Device type		"CG" for combination gauge
I/O slave messaging		Polling only
Supply voltage for DeviceNet		
3PC8-/3PC7-/3PC8-0xx-xxxx	V/A (dc)	+15 ... +30
Power consumption		
3PC8-/3PC7-/3PC8-0xx-xxxx	W	≤3
Connector for DeviceNet		Micro-Style, 5-pin, male

Specifications (Profibus DP)

Baud rates	kBaud	9.6/19.2/93.75/187.5/500
	MBaud	1.5/12
Address		Two switches (address 00 – 127) or network programmable
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts monitor gauge status, detailed alarm and warning information, safe state allows definition of behavior in case of error
Connector for Profibus DP		D-Sub, 9-pin, female

PCG550, PCG552, PCG554 (continued)

Specifications (EtherCAT)

		PCG55x EtherCAT
Protocol		EtherCAT
Communication standard		ETG.5003 Part 1 [1] ETG.5003 Part 2080 [2]
Node address		Explicit Device Identification
Physical layer		100BASE-Tx (IEEE 802.3)
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts monitor gauge status, detailed alarm and warning information, safe state allows definition of behavior in case of error
EtherCAT connector		2 × RJ45, 8-pin (socket), input and output
Cable		special Ethernet Patch Cable or Crossover Cable, shielded (CAT5e quality or higher)
Cable length	m (ft)	≤100 (330)
Process data		fixed PDO mapping and configurable PDO mapping
Mailbox (CoE)		SDO requests, responses and information

1) Semiconductor Device Profile
2) Specific Device Profile: Vacuum Pressure Gauge

Specifications (RS485C)

Baud rates	kBaud	9.6 / 19.2 / 38.4 / 57.6
Address		Two switches (address 00 – 255)
Digital functions		Read pressure, select units: Torr, mbar, Pa, micron, counts monitor gauge status, detailed alarm and warning information, safe state allows definition of behavior in case of error
Connector for RS485		D-Sub, 15-pin HD, male

Spare Parts

Type Filament		PCG550 Tungsten	PCG552 Nickel	PCG554 Ceramic coated
Replacement sensor	DN 16 ISO-KF	357-925	357-936	357-947
	DN 16 ISO-KF long tube	357-926	357-937	357-948
	DN 16 CF-F	357-927	357-938	357-949
	DN 16 CF-R long tube	357-928	357-939	357-950
	DN 25 ISO-KF	357-929	357-940	357-951
	4 VCR female	357-932	357-943	357-954
	8 VCR female	357-931	357-942	357-953
	1/8 in. NPT	357-930	357-941	357-952
	Surface mount 29 mm (1.15 in.)	357-934	357-945	357-956
	4 VCR 90° female	357-935	357-946	357-957
	7/16-20 UNF male	357-933	357-944	357-955

Accessories

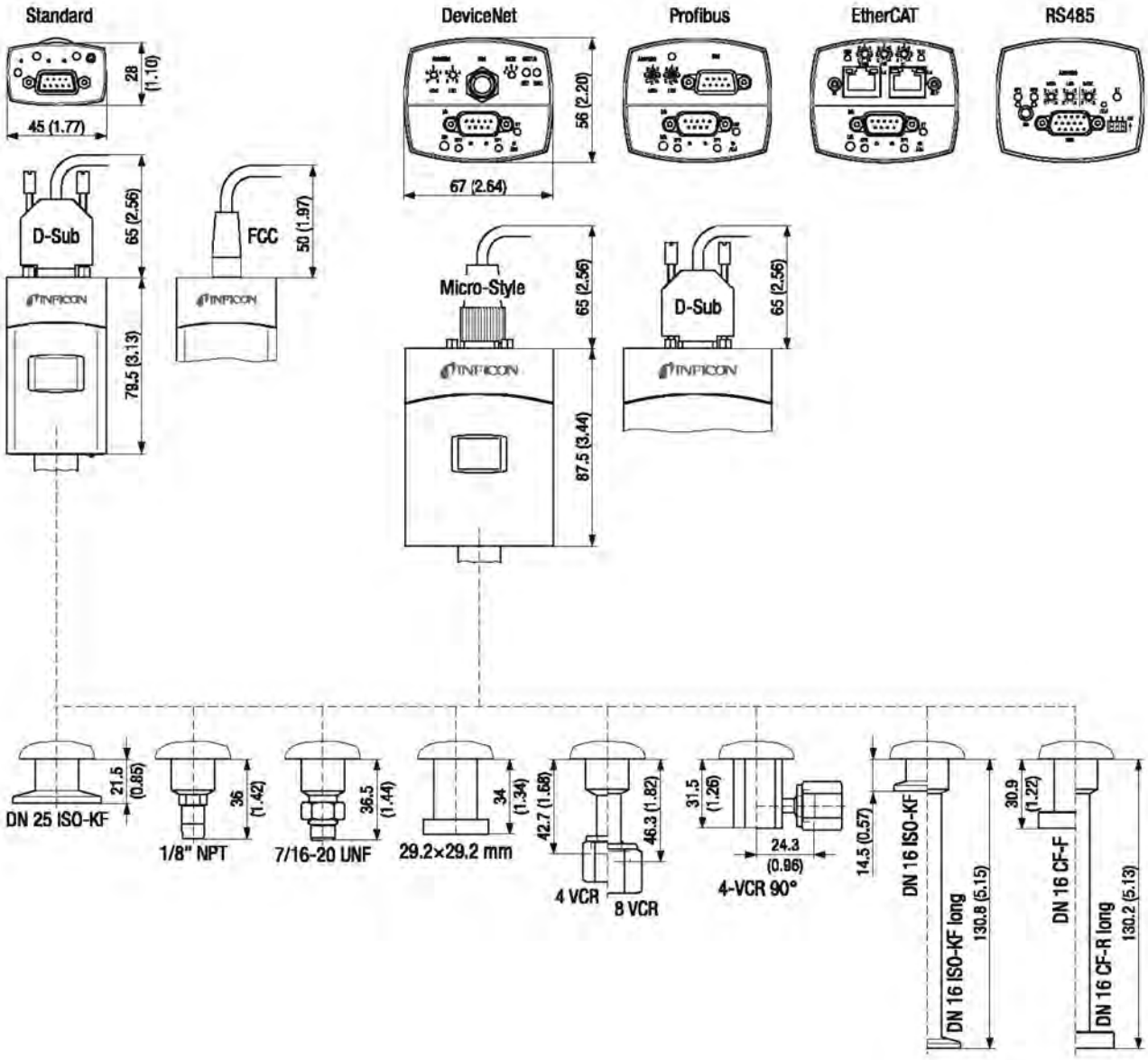
Centering ring with filter (DN 16 ISO-KF)	211-097
Diagnostic:[1] Communication adapter (2 m) for PC RS232C serial port	303-333

1) Software to run the diagnostic functions on Windows NT, XP can be downloaded from our website.

PCG550, PCG552, PCG554 (continued)

Dimensions, Internal Volume, Weight

mm (in.)



Penning Gauge

PEG100

The INFICON Penning Gauge PEG100 provides reliable high vacuum measurements. The rugged Penning cold cathode sensor has no filament to burn out. Due to titanium cathode plates and the reduced high voltage after plasma ignition, the gauge can be operated also in sputtering applications. The fieldbus options, in addition to the logarithmic analog output signal, allow easy integration into vacuum systems using Profibus DP or DeviceNet protocols.

Advantages

- Wide measurement range from 1 x 10^{-9} mbar to 1 x 10^{-2} mbar (7.5 x 10^{-10} Torr to 7.5 x 10^{-3} Torr)
- All-metal cold cathode sensor (Penning) with ceramic feedthrough
- Innovative electrode geometry provides excellent ignition properties
- Decreased high voltage after plasma ignition and titanium cathode plates reduce risk of contamination, even during sputtering operations with argon
- The anode ring and the titanium cathode can be cleaned or replaced easily
- Minimal magnetic field intensity adjacent to gauge
- LED indicator for power on and plasma ignited
- Logarithmic analog output signal
- Fieldbus interface (Profibus DB, DeviceNet) for easy integration into vacuum systems using network communications

Applications

- High vacuum pressure monitoring
- Evaporation and sputtering systems
- General vacuum measurement and control in the fine and high vacuum range

Ordering Information

Type	PEG100	PEG100-D with DeviceNet	PEG100-P with Profibus DP
DN 25 ISO-KF	351-000	351-003	351-005
DN 40 CF-F	351-002	351-004	—
Replacement cathode plates, titanium Set of five pieces	351-490	351-490	351-490

PEG100 (continued)

Specifications

		PEG100
Measurement range	mbar	1×10^{-9} to 1×10^{-2}
	Torr	7.5×10^{-10} to 7.5×10^{-3}
Accuracy 10^{-8} to 10^{-4} mbar	% of reading	±30
Pressure, max. (absolute)	bar	10
Temperature		
Operation (ambient)	°C	+10 to +50
Storage	°C	–20 to +75
Bakeout		
without electronics	°C	350
with electronics, at flange	°C	70
Supply		
Voltage	V (dc)	14.5 to 36
Consumption, max.	W	<2
Output signal analog	V	0 to 10.6
Measurement range	V	0.66 to 10
Relation voltage / pressure	V / Decade	1.333
Connector		FCC 68, female, 8 pin (shielded)
Cable length, max. (analog)	m (ft.)	100 (330)
Materials exposed to vacuum		Stainless steel, CrNi, Al_2O_3, NiFe, Mo, Cu, Ni, Ti
Internal volume	cm^3 ($in.^3$)	21 (1.28)
Weight, approx.	g	500
Protection type		IP40

Specifications (DeviceNet)

		PEG100-D DeviceNet
Device type		generic
Explicit peer to peer messaging		no
I / O peer to peer messaging		no
Configuration consistency value		no
Faulted node recovery		no
Baud rates	kBaud	125 / 250 / 500
Master / Scanner		no
I / O slave messaging		
Bit Strobe		yes
Polling		yes
Cyclic		yes
Change of State (COS)		yes
Supply for DeviceNet	V (dc)	11 to 25
Connector for DeviceNet		Phoenix Combicon, 5 pin

Specifications (Profibus DP)

		PEG100-P Profibus DP
Supported baud rates (auto detection)	kBaud	9.6 / 19.2 / 93.75 / 187.5 / 500 / 1500
Expanded user parameter data	Bytes	5
Configuring		
Number of input and output data		2
Sync-Mode and Freeze-Mode		Yes
Connector		D-sub, 9 pin

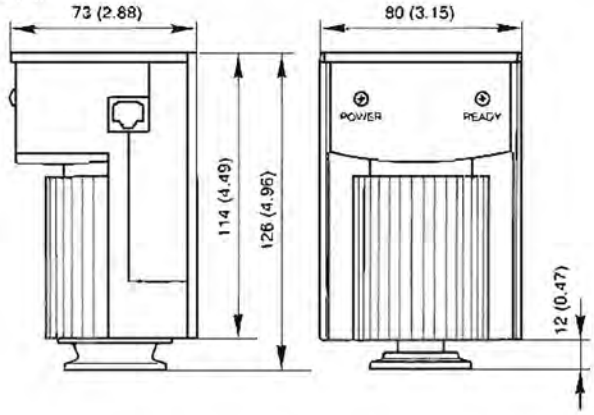
PEG100 (continued)

Spareparts

Type	PEG100
Spare Cathode Plate, set of 5 pcs	351-490

Dimensions

mm (in.)



Inverted Magnetron
Inverted Magnetron Pirani Gauge

Gemini MAG/MPG500, MAG/MPG504

The INFICON Gemini sensor MAG500 is just a purely cold cathode gauge while his twin MPG500 combines two sensor systems (cold cathode and Pirani) in the same housing. The MPG500 measures from atmosphere to 1 x 10^{-9} mbar. The patented ultra-low magnetic stray field design in both gauges gives opportunities in existing and new applications. A unique interchangeable dual chamber sensor unit reduces maintanance cycles and time. This is making Gemini the most robust and economical vacuum sensor of its kind.

Gemini Cold Cathode and combination sensor's comes with fully integrated digital electronics, providing ultimate flexibility for system integration. Both cold cathode and Pirani combination sensor option provide seamless transition, reliability, poractivity and flexibility across wide ranging applications.

Advantages

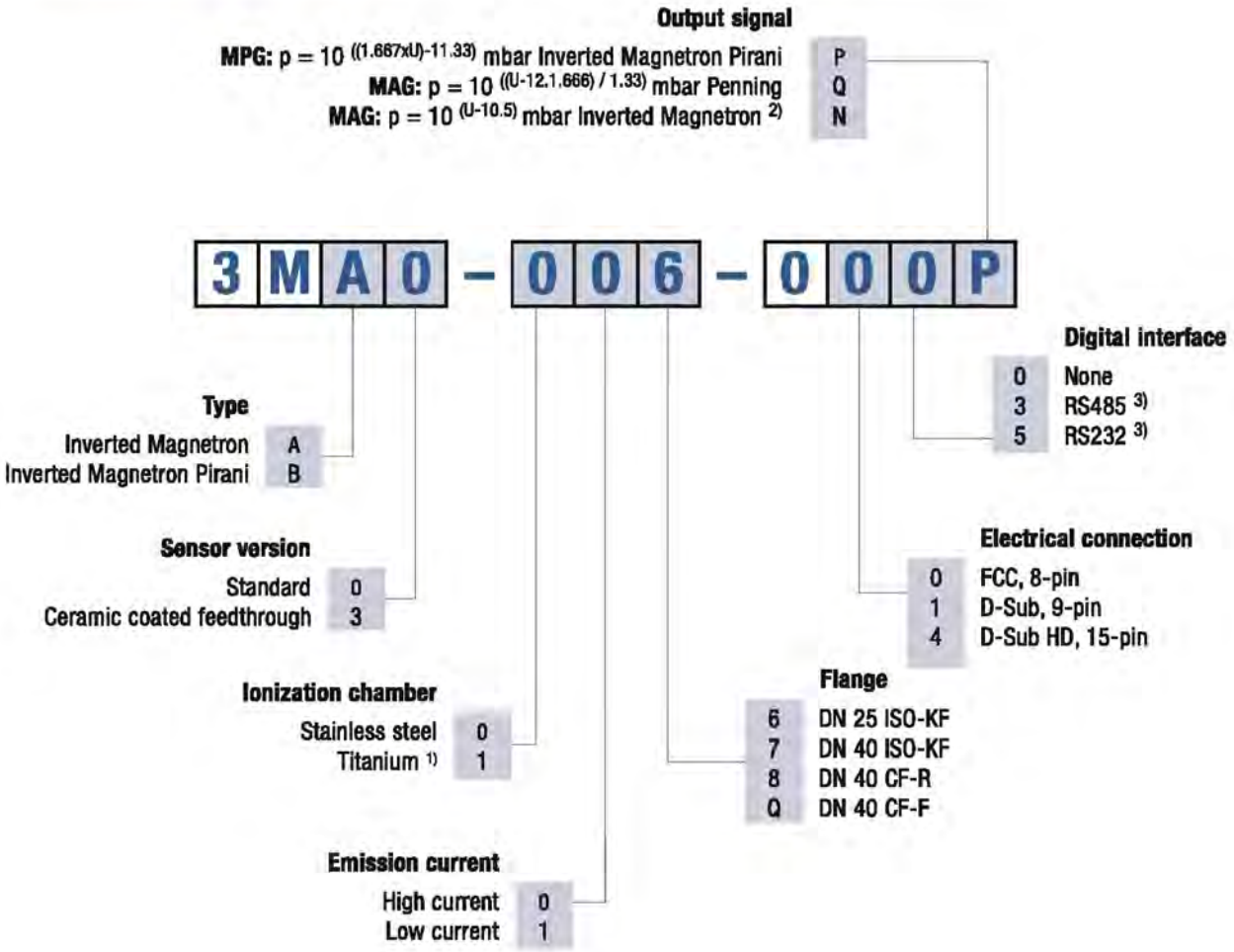
- Long lifetime in harsh environments
- Reliable fast ignition
- Low magnetic stray field
- Selectable measuring current
- Fast maintenance - replaceable insert
- Corrosion proof feedthrough
- Digital interface RS 232/485

Applications

- Base pressure monitoring and control, from atmosphere to high vacuum in evaporation and sputter coating applications.
- General vacuum measurement – industrial furnaces, architectural glass, semiconductor, production labratory's..
- Analytical and R&D applications – mass spectrometry, electron microscopes, ophthalmic, optical, medical and high energy physics.

Gemini MAG/MPG500, MAG/MPG504 (continued)

Ordering Information



1) For low current version only.

2) Not suited for operation with an INFICON vacuum gauge controller VGC40x or VGC50x.

3) Digital interfaces only available with D-Sub HD, 15-pin connection (select number "4" from table "Electrical connection") to select 3 & 5 from "Digital interfaces"

Gemini MAG/MPG500, MAG/MPG504 (continued)

Specifications

Type		MAG50x	MPG50x
Measurement system		Cold Cathode ionization measurement system (according to the inverted magnetron principle)	Pirani and Cold Cathode ionization measurement system (according to the inverted magnetron principle)
Measurement range (air, N2)			
mbar		1×10^{-9} ... 1×10^{-2}	1×10^{-9} ... 1000
Torr		7.6×10^{-10} ... 7.6×10^{-3}	7.6×10^{-10} ... 760
Accuracy (N2)			
1×10^{-8} ... 1×10^{-2} mbar	% of reading	30	–
1×10^{-8} ... 100 mbar	% of reading	–	30
100 ... 1000 mbar	% of reading	–	50
Repeatability (N2)			
1×10^{-8} ... 1×10^{-2} mbar	% of reading	5	–
1×10^{-8} ... 100 mbar	% of reading	–	5
Mounting orientation		any	
Admissible pressure	bar (absolute)	10 (limited to inert gases <55°C)	
Admissible temperature			
Operation (ambient)	°C	+5 ... +55	
Bakeout at flange [1]	°C	≤150	
Storage	°C	–40 ... +70	
Filament temperature	°C	–	120
Relative humidity for 30 days a year			
1×10^{-7} 1×10^{-2} mbar	% RH	≤95 (non-condensing)	
1×10^{-8} 1×10^{-2} mbar	% RH	≤70 (non-condensing)	
Supply voltage			
At gauge [2]	V (dc)	+14.5 ... +30	
Ripple	V_{pp}	≤1	
Power consumption	W	≤2	
Fuse to be connected	AT	≤1	
Voltage range (analog output)	V	0 ... +10.5	
Measurement range			
3MAx-0xx-0x0N	V	+1.5 ... +8.5	–
3MBx-0xx-0x0Q	V	+0.667 ... +10	–
3MAx-0xx-0x0P	V	–	+1.398 ... +8.598
Voltage vs. pressure			
3MAx-0xx-0x0N	V/decade	1 (logarithmic)	–
3MBx-0xx-0x0Q	V/decade	1.33 (logarithmic)	–
3MAx-0xx-0x0P	V/decade	–	0.6 (logarithmic)
Error signal			
3MAx-0xx-0x0N	V	<+0.5	–
3MBx-0xx-0x0Q	V	≤+0.3	–
3MAx-0xx-0x0P	V	–	+9.5 ... +10.5
Output impedance	Ω	2 x 4.7 (short circuit-proof)	
Load impedance	kΩ	≥10 (short circuit-proof)	
Step response time			
$p > 10^{-6}$ mbar	ms	<100	
$p = 10^{-8}$ mbar	s	≈1	

Gemini MAG/MPG500, MAG/MPG504 (continued)

Specifications

Type		MAG50x	MPG50x
Gauge identification			
3MAx-0xx-0x0N	kΩ	–	–
3MBx-0xx-0x0Q	kΩ	100	–
3MAx-0xx-0x0P	kΩ	–	85
Status signal	V	+14.5 ... +30 (cold cathode ignited)	
Status (pin 6)			
Cold cathode ignited	V	+15 ... +30	–
Pirani-only mode	V	–	0 (low)
Combined Pirani / Cold Cathode	V	–	+15 ... +30 (high)
Electrical connection			
3Mxx-0xx-000x		FCC68, 8-pin, female	
3Mxx-0xx-010x		D-Sub, 9-pin, male	
3Mxx-0xx-040x		D-Sub, 15-pin HD, male	
Sensor cable			
3Mxx-0xx-000x		8-pin, shielded	
3Mxx-0xx-010x		9-pin, shielded	
3Mxx-0xx-040x		15-pin, shielded	
Cable length (FCC only)	m	≤50 (0.14 mm²/conductor)	
High voltage (in the measuring chamber)			
Ignition voltage	kV	≤4.5	
Operating voltage	kV	≤3.3	
Current (in the measuring chamber)			
High current	µA	≤500	
Low current	µA	≤100	
Materials exposed to vacuum			
3MxO-0xx-0x0x		Ni alloys, Mo, Al_2O_3, glass, stainless steels	W, Ni alloy, Mo, Al_2O_3, glass, stainless steels
3Mx3-0xx-0x0x		Mo, Al_2O_3, stainless steels	W, Mo, Al_2O_3, stainless steels
Internal volume			
DN 25 ISO-KF	cm^3	≈19.9	
DN 40 ISO-KF	cm^3	≈20.9	
DN 40 CF-F	cm^3	≈25.2	
DN 40 CF-R	cm^3	≈25.6	
Weight			
DN 25 ISO-KF	g	<280	
DN 40 ISO-KF	g	<320	
DN 40 CF-F & CF-R	g	<570	
Degree of protection		IP40	
Standards			
CE conformity		EMC (EN 61000-6-2, EN61000-6-3), EN 61010-1 & RoHS	

1) Without electronics
2) The minimum voltage of the supply unit must be increased proportionally to the length of the sensor cable

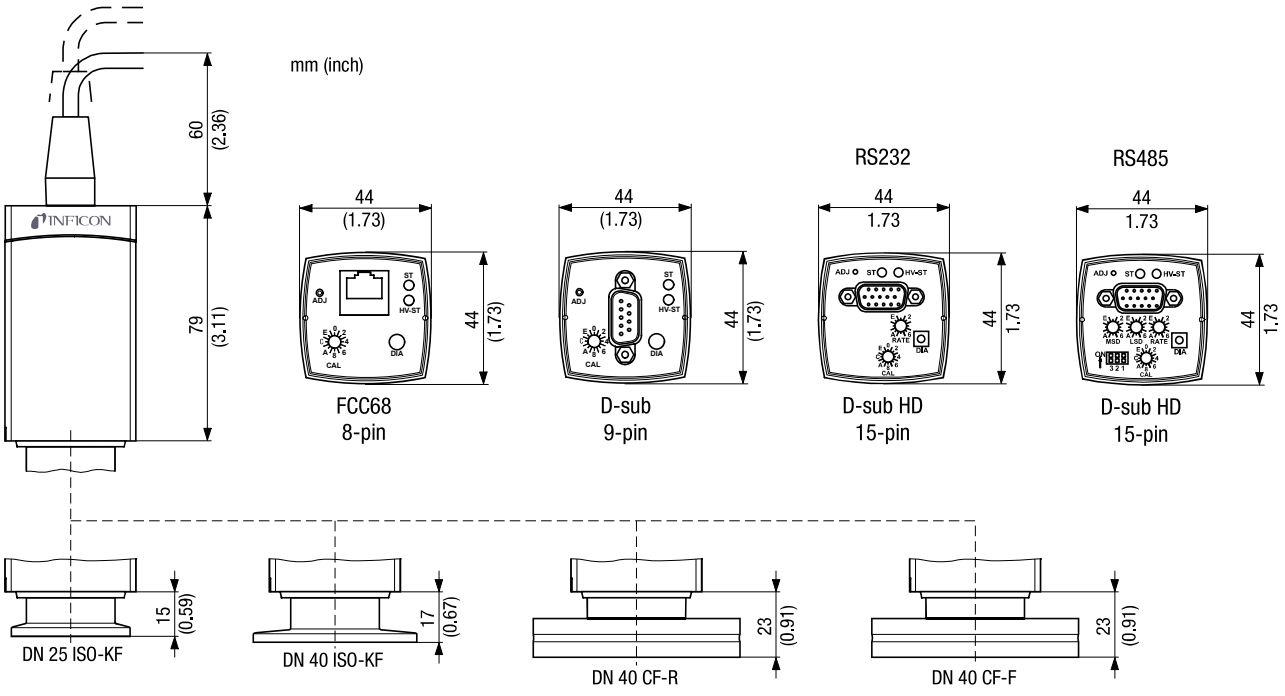
Gemini MAG/MPG500, MAG/MPG504 (continued)

Specifications

Baud rates	KBaud	9.6 / 19.2 / 38.4 / 57.6
Address		2 switches (address 00 - 255)
Digital functions		read pressure, select units: Torr, mbar, Pa, micron, counts monitor gauge status, detailed alarm and warning information, saft state alllows definition of behaviour in case of error
Connector for RS485		D-Sub, 15-pin HD, male

Dimensions

mm (in.)



Inverted Magnetron Pirani Gauge

MPG400/401

The INFICON Inverted Magnetron Pirani Gauges, MPG400 and MPG401, measure from
5 x 10^{-9} mbar to atmosphere (3.8 x 10^{-9} Torr to atmosphere). Combining technologies into one single compact unit with one logarithmic analog out put signal significantly reduces
the complexity of installation, setup and integration.

Advantages

- Combination gauge—inverted Magnetron and Pirani
- Wide measurement range from 5 x 10^{-9} mbar to atmosphere
- No filament to burn out
- Excellent ignition properties
- Easy to clean
- FPM or metal-sealed feedthrough
- LED indicator for high voltage on
- Logarithmic analog output signal

Applications

- High vacuum pressure monitoring
- Base pressure for evaporation and sputtering systems
- General vacuum measurement and control in the medium and high vacuum range

Ordering Information

Type	MPG400 FPM sealed	MPG401 Metal-sealed
DN 25 ISO-KF	**351-010**	**351-020**
DN 40 ISO-KF	**351-011**	**351-021**
DN 40 CF-F	**351-012**	**351-022**

Accessories

Type	MPG400 FPM sealed	MPG401 Metal-sealed
Magnetic shield	**351-023**	**351-023**

MPG400/401 - continued

Specifications

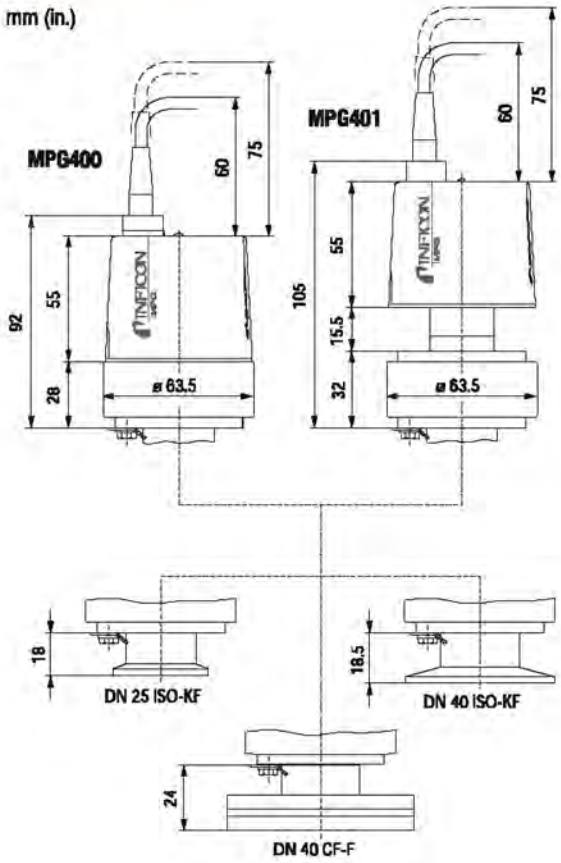
			MPG400 FPM sealed	MPG401 Metal-sealed
Measurement range (air, N_2)		mbar (Torr)	5×10^{-9} ... 1000	(3.8×10^{-9} ... 760)
Accuracy (N_2)	1×10^{-8} ... 100 mbar	% of reading	≈±30%	
Repeatability	1×10^{-8} ... 100 mbar	% of reading	≈±5%	
Mounting orientation			any	
Admissible pressure		bar (absolute)	≤10 (limited to inert gases)	
Admissible temperature				
Operation (ambient)		°C	+5 ... +55	
Storage		°C	–40 ... +65	
Bake-out [1]		°C	150	
Filament temperature (Pirani)		°C	120	
Supply voltage				
At gauge		V (dc)	+15 ... +30	
At supply unit with max. cable length [2]		V (dc)	+16 ... +30	
Ripple		V_{pp}	≤1	
Power consumption		W	≤2	
Fuse to be connected		AT	≤1	
Output signal (measurement signal)				
Voltage range		V	0 ... +10.5	
Measurement range		V	+1.82 ... +8.6	
Voltage vs. pressure			Logarithmic, 0.6 V/decade	
Error signal		V	<0.5 (no supply)	
		V	>9.5 (Pirani sensor, filament rupture)	
Output impedance		Ω	2 x 10	
Minimum loaded impedance		kΩ	10, short-circuit proof	
Response time	$p > 10^{-6}$ mbar	ms	<10	
	$p = 10^{-6}$ mbar	ms	≈1000	
Identification gauge		kΩ	85, referenced to supply common	
Status				
Pirani-only mode		V	0 (low)	
Combined Pirani / cold cathode mode		V	15 ... 30 (high)	
LED		LED green	high voltage on	
Electrical connection			FCC 68 appliance connector, 8 poles, female	
Sensor cable			8 poles plus shielding	
Cable length		m	≤50 (8×0.14 mm²)	
Operating voltage		kV	≤3.3	
Operating current		µA	≤500	
Materials exposed to vacuum			Stainless steel, Al_2O_3, FPM75, Mo, Ni, Au, W	Stainless steel, Al_2O_3, Ag, Cu, Sn Mo, Ni, Au, W
Internal volume		cm^3	≈20	
Weight				
DN 25 ISO-KF		g	≈700	≈730
DN 40 ISO-KF		g	≈720	≈750
DN 40 CF-F		g	≈980	≈1010
Protection category			IP 40	
Standards			EN 61000-6-2, EN 61000-6-3, EN 61010-1	

[1] Without electronics and magnetic shielding.
[2] The minimum voltage of the supply unit must be increased proportionally to the length of the sensor cable.

MPG400/401 – continued

Dimensions

mm (in.)



Spare Parts

Type	MPG400 FPM sealed	MPG401 Metal-sealed
Maintenance kit includes: support/centering ring seals ignition aid	351-999	351-997
Repair kit includes: Pirani element anode anode extension [1] Cu seal [1] screw fitting [1] support/centering ring seals ignition aid	351-998	351-996
Ignition aid kit includes: ignition aid	351-995	351-995
Mounting tool for ignition aid	351-994	351-994

[1] MPG401 only

Vacuum Gauge Controller

VGC50x

Sustainable solution for process measurement, control and data log

Compatible to the wide range of INFICON acive gauges, the new VGC50x series of active gauge controllers are able to monitor and data log the entire pressure range from 10^{-10} to 1500 mbar (10^{-10} to 1125 Torr) and the set point status.

Advantages

- Simple operation with dot matrix menu guided display for parameter, sensor or general settings
- Very bright and clear Display for long distance instrument read-out
- Bar graph display with setpoints's or pressure vs. time display
- Data log and parameter log function with USB port (rear side) and USB stick (front side)
- Ethernet interface
- Firmware upgrade available online or with USB stick
- Two free definable setpoints per channel with adjustable hysteresis
- High Resolution - 16 bit A/D converter
- Automatic identification of the INFICON active gauges
- Programmable 0 to 10 V Chart Recorder Output with logarithmic/ linear characteristics for single gauge or gauge combination (only VGC502 and VGC503)

Ordering Information

Type	VGC501	VGC502	VGC503
Vacuum Gauge Controller	**398-481**	**398-482**	**398-483**
Adapter rack mount 2HE / 3HE	398-499	-	-
Adapter USB to RS232	398-487	398-487	398-487

VGC50x (continued)

Accessories

Gauges	PCG, PEG, PSG, MAG, MPG, Porter	BCG, BPG, HPG, CDG-D	CDG (unheated)
Signal read out and communication	analog only	digital RS232 / analog	analog only
Cable connectors	FCC / FCC	D-Sub[1] / D-Sub[1]	FCC / D-Sub[1]
Cable to VGC50x in m (ft)			
3 (9.0)	398-500	398-520	398-540
5 (16.5)	398-501	398-521	398-541
10 (33.0)	398-502	398-522	398-542
15 (49.5)	398-503	398-523	398-543
20 (66.0)	398-504	398-524	398-544
30 (99.0)	398-505	398-525	398-545

Other lengths on request

[1] D-Sub 15-pin

Specifications

Type		VGC501	VGC502	VGC503
Measurement channels		1	2	3
Display			LCD, LED backlight	
Rate	1/s		10	
Connectable gauges with display range				
CDG (A/D)	Torr		1×10^{-3} x F.S ... 1 x F.S	
PCG	Torr		3.75×10^{-4} ... 1125	
PSG	Torr		3.75×10^{-4} ... 750	
MPG	Torr		3.75×10^{-9} ... 750	
PEG	Torr		7.5×10^{-10} ... 7.5×10^{-3}	
MAG	Torr		7.5×10^{-10} ... 7.5×10^{-3}	
BCG	Torr		3.75×10^{-10} ... 1125	
BPG	Torr		3.75×10^{-10} ... 750	
HPG	Torr		1.5×10^{-6} ... 750	
Connectable gauges with display range				
PCG	mbar		5×10^{-4} ... 1500	
PSG	mbar		5×10^{-4} ... 1000	
MPG	mbar		1×10^{-9} ... 1000	
PEG	mbar		1×10^{-9} ... 1×10^{-2}	
MAG	mbar		1×10^{-9} ... 1×10^{-2}	
BCG	mbar		5×10^{-10} ... 1500	
BPG	mbar		5×10^{-10} ... 1000	
HPG	mbar		2×10^{-5} ... 1000	
Measurement unit (selectable)			mbar, Torr, Pa, hPa, Micron, V	
Setpoints				
Setpoint relays		2	4	6
Channel assignment		1	1 or 2	1, 2 or 3

VGC50x (continued)

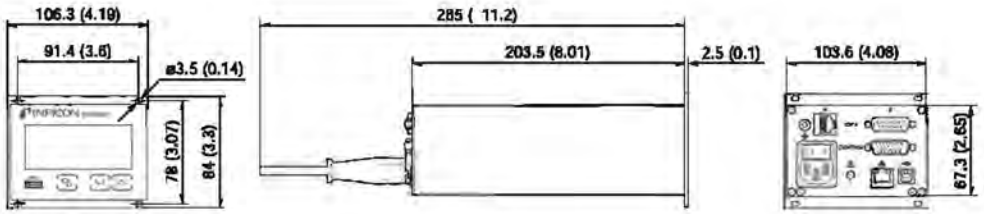
Specifications

Type		VGC501	VGC502	VGC503
Setpoints				
Adjustment range			sensor dependent	
Hysteresis			adjustable	
Relay contact			floating changeover contact	
Connector		D-Sub, 15-pin, male	D-Sub, 25-pin, male	D-Sub, 25-pin, male
Contact rating	V (ac) · A		30 / 1	
	V (dc) · A		60 / 0.5	
Analog output				
Range	V		0 … 10.3, sensor analog output signal	
Analog output		1	2	3
programmable analog output		-	1	1
Connector		D-Sub, 15-pin, male	D-Sub, 9-pin, male	D-Sub, 9-pin, male
Interface				
Connector			USB slave, master and Ethernet, USB Typ A (stick), USB Type B, FCC68/RJ45	
Power				
Supply	V (ac)		100 … 240	
Frequency	Hz		50 … 60	
Consumption	W	≤45	≤65	≤90
Operating temperature (ambiance)	°C		+5 … +50	

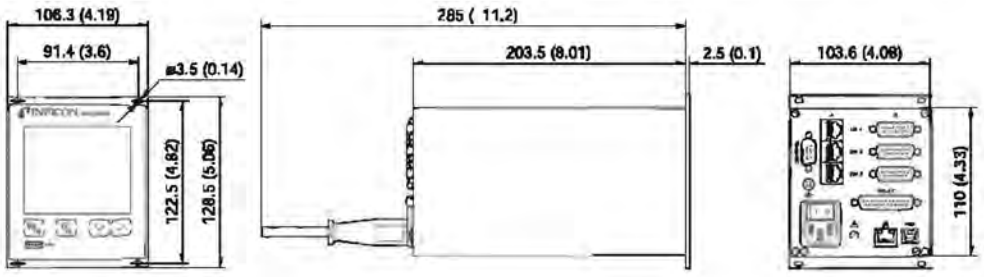
Dimensions

mm (in.)

VGC501



VGC502
VGC503



Pirani Gauge Display

PGD500

The INFICON Pirani Gauge Display PGD500 in combination with the INFICON Pirani Standard Gauge PSG5xx provides a cost effective pressure monitoring solution.

Although it is called Pirani Gauge Display the PGD500 also supports our PCG55x and MPG series vacuum gauges.

Advantages

- User selectable measurement unit (Pa, mbar or Torr)
- Compact bench top model design can be easily mounted in a panel or 19 in. rack
- 0 to 10 V output signal from the gauge is available for use in PLC or with a chart recorder
- One free adjustable set point
- User selectable aguge PSG, PCG and MPG

Applications

- Fore vacuum pressure measurement
- Pressure measurement on filling stations for RAC and automotive applications
- Pressure measurement in light bulb production lines
- General vacuum measurement and control in the medium and rough vacuum range

Ordering Information

Type	PGD500
Pirani Gauge Display	398-802

Accessories

Sensor cable [1]	1.3 m (4.27 ft.)	398-498
Seal with centering ring and filter	DN 16 ISO-KF	211-090
Adapter for rackmount 2HE / 3HE		398-499

[1] Other lengths on request

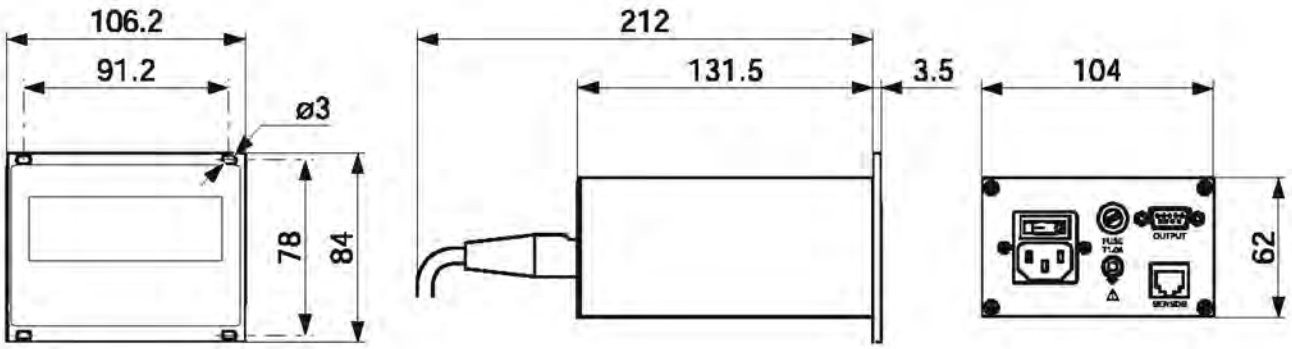
PGD500 (continued)

Specifications

Measurement channels (sensors to connect)		1 (PSG5xx, PCG5xx or MPG series)
Display		LED
Range	Pa	5×10^{-2} ... 1×10^{5}
	mbar	5×10^{-4} ... 1000
Measurement rate	1/s	30
Measurement unit (selectable)		Pascal, mbar, Torr
Setpoint		
Setpoint relay		1
Adjustment range		1×10^{-3} ... 500
Hysteresis		≥10% of measurement value
Relay contact		Floating changeover contact
Contact rating	V (ac) / A	50 / 5
Connector		D-Sub, 9 pin, male
Analog output	V	0 ... 10.3, sensor output signal
Power		
Supply	V (ac)	100 ... 240
Frequency	Hz	50 ... 60
Consumption	VA	≤30
Temperature		
Operation (ambiance)	°C	+5 ... +50
Storage	°C	-20 ... 60
Relative humidity		≤80% up to +31°C Decreasing to 50% at +40°C
Degree of protection		IP20
Weight	kg	0.85

Dimensions

mm (in.)



Vacuum Switch

VSA100A

The pressure switch VSA100A is used as a safety switch in vacuum systems. For example, to automatically interrupt the gas supply when venting vacuum systems with a purge gas at a pressure of 6 mbar below atmospheric pressure.

At a differential pressure of 6 mbar resp. return switching pressure of 3 mbar below atmospheric pressure, an elastic diaphragm actuates a changeover contact which in turn may be used to switch directly any ancillary equipment.

The electrical connections are protected by a plastic cover.

Advantages

- Reliable and budget-priced vacuum switch
- Long service life
- Rugged design
- Easy to integrate
- IP 44 protection
- Can be connected to a programmable control

Applications

- Control of load lock chambers
- Safety shutdown of vacuum systems

Ordering Information

Type	VSA100A
DN 16 ISO-KF, complete with 3 m (9.9 ft.) cable	399-001

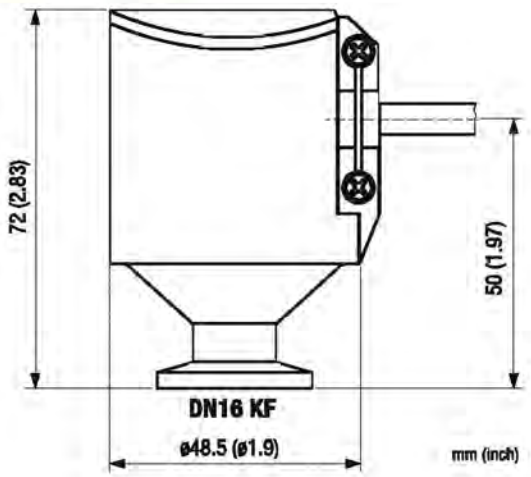
VSA100A - continued

Specifications

Switching pressure	mbar	6 ±2 (below atmosphere)
Back switching	mbar	3 ±2 (below atmosphere)
Operating pressure (absolute)	bar	<2
Helium permeation	mbar l/s	$<10^{-6}$
Leak rate	mbar l/s	$<5 \times 10^{-8}$
Temperature		
Operation	°C	0 ... +85
Storage	°C	-20 ... +85
Switching contacts (gold plated)		Change over contact
Voltage max.	V (dc) / V (ac)	24/24
Current max.	mA	30 (24 V (dc)) / 100 (24 V (ac))
Load min.	mA	1
Electrical connector		Cable, bare wire
Cable length, standard	m (ft.)	3 (9.9)
Vacuum connection		DN 16 ISO-KF
Protective type		IP 44
Mounting orientation		Vertical (standing)
Internal volume	cm^3 ($in.^3$)	2 (0.122)
Materials exposed to vacuum		Stainless steel 1.4305, EPDM, PTFE (Teflon)
Weight	g	315

Technical Note: Due to the diaphragm material used (EPDM), the Vacuum Switch VSA100A is not suited for applications in which the process gas contains large quantities of helium. The leak rate of the diaphragm for helium is $<10^{-6}$ mbar l/s.

Dimensions



Vacuum Switch

VSA200, VSD200

INFICON Vacuum Switches are designed for accurate and reliable pressure detection. These robust electronic switches are used in all vacuum applications, including pressure interlock. The switches are available in two versions, absolute (references vacuum) or differential (references ambient).

Advantages

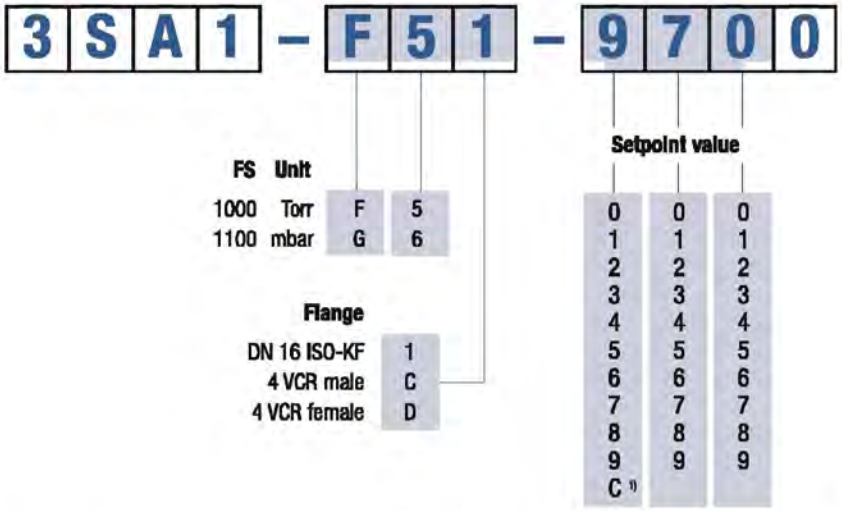
- Corrosion resistant all stainless steel design
- Relay output with potential free contacts
- Easy installation with setpoints factory preset or field-adjustable
- High-accuracy temperature compensated sensor
- Robust design, cleanroom compliant
- Pressure range 1 x 10-9 mbar ... 2 bar
- CE, RoHS

Applications

- Atmospheric pressure detection for all vacuum applications
- Pressure interlock (power supplies, gas supplies, pumps, valves, actuators, etc.)
- Vacuum to high vacuum

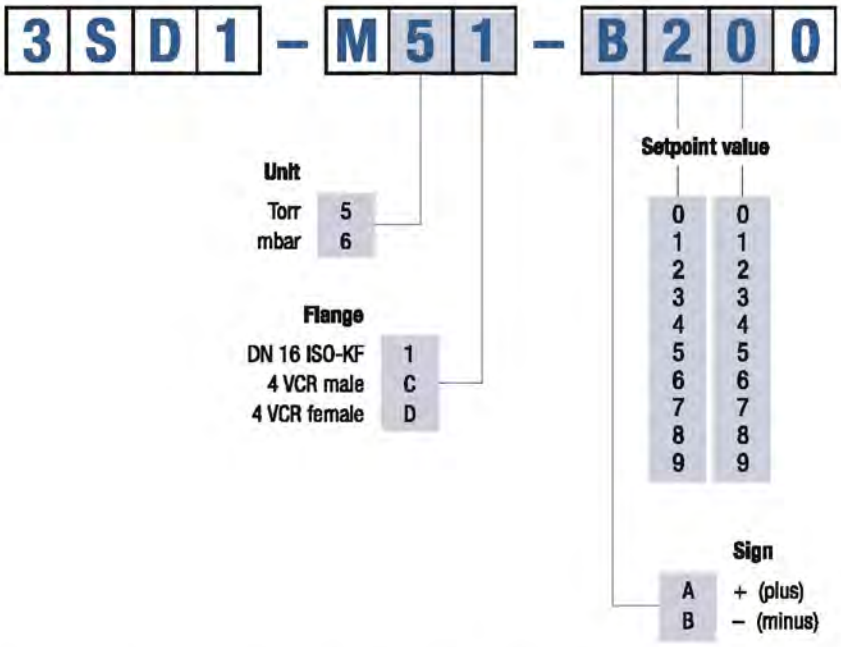
VSA200, VSD200 - continued

Ordering Information VSA200 absolute switch



Example: Setpoint at 970 Torr absolute pressure, DN 16 ISO-KF: **3SA1-F51-9700**
Setpoint at 1080 mbar absolute pressure, 4 VCR male: **3SA1-G6C-C800**

Ordering Information VSD200 differential switch



Example: 20 Torr below ambient pressure, DN 16 ISO-KF: **3SD1-M51-B200**

VSA200, VSD200 – continued

Specifications

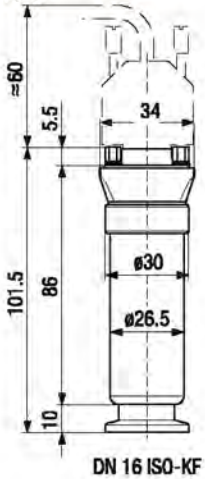
		VSA200		VSD200	
Full Scale (F.S.)	mbar (absolute)	–	1100	–	–
	Torr (absolute)	1000	–	–	–
Differential range [1]	mbar	–	–	–	–100 … +50
	Torr	–	–	–100 … +50	–
Setpoint range	mbar		30 … 1060		–99 … +46
	Torr	20 … 970	–	–99 … +46	–
Admissible pressure	bar (absolute)	5		2	
Setpoint relay					
Relay output		n.o., n.c., potential free			
Contact rating	V / A (dc)	30 / 1			
	V / A (ac)	125 / 0.3			
Setpoint accuracy	% F.S.	0.5			
Temperature effect on zero and span	% F.S. / °C	≤±0.02			
Response time	ms	≤45			
Hysteresis	% F.S.	2			
Electrical connection		D-Sub, 9-pin			
Supply voltage	V (dc)	14 … 30			
Power consumption	W	<0.5			
Admissible temperature					
Operation (ambient)	°C	0 … 70			
Storage	°C	–40 … 80			
Materials exposed to vacuum		Stainless steel			
Mounting orientation		Any			
Internal volume					
DN 16 ISO-KF	cm^3 ($in.^3$)	2.81 (0.17)			
4 VCR	cm^3 ($in.^3$)	0.93 (0.057)			
Weight	g	140			
Degree of protection		IP 40			
Sensor protection		Short circuit protection and reverse polarity protection			

[1] References to ambient pressure.

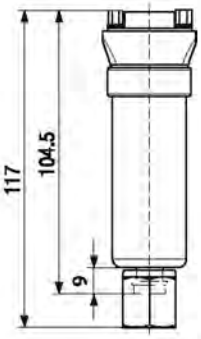
VSA200, VSD200 - continued

Dimensions

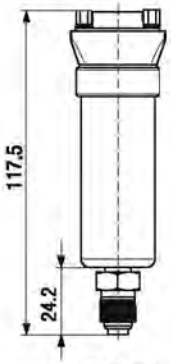
mm (In.)



DN 16 ISO-KF



4 VCR female



4 VCR male

Accessories

Communication adapter (2 m) for PC USB port [1]	**303-336**

[1] Software to read or write data on Windows can be downloaded from our website.

Vacuum Switch

VSC150A

The INFICON Vacuum Switch VSC150 is an absolute pressure switch with an adjustable electrical switching contact from 0.5 to 2000 mbar. the mechanical design allows short therm overload of 3000 mbar without impairing the switching accuracy of ±0.1 mbar. INFICON offers customer specific adjustment of pressure switch.

Advantages

- High switching accuracy (±0.1 mbar)
- Stable long term operating characteristics
- Rugged, corrosion protected design
- Increased switching capability when using switching amplifier
- Switching contacts (normally closed) in the reference chamber and thus protected against process media
- Adapter available for differential pressure measurement

Applications

- Pressure switch or differential pressure switch to control valves, pumps, power supplies
- Load lock chambers
- Process chambers

Ordering Information

Type	VSC150A
DN 16 ISO-KF	399-005

Accessories

SV Switching Amplifier	399-008
Pressure Switch Adjustment	399-006
Differential Pressure Adapter	399-007

VSC150A - continued

Specifications

		VSC150A Vacuum Switch
Switching range	mbar	0.5 ... 2000
Response sensivity	mbar	0.1
Overload limit	mbar	3000
Switching hysteresis	mbar	0.5
Temperature		
Operation (ambient)	°C	5 ... 90
Storage	°C	–20 ... 70
Bakeout (max. 8 h)	°C	120
Coefficient of switch point	% / K of switching value	0.4
Vacuum connection		DN 16 ISO-KF
Electrical connection		Protected plug (DIN 43650)
Switch		n.c.
Switching voltage	V	24
Switching current	mA	10
Contact resistance	Ω	<1
Protection category		IP 65
Materials in contact with the medium		
Sensing volume		Stainless steel 1.4301, 1.4401, 1.4310, 1.3541, FPM75
Reference volume		Stainless steel 1.4301, 1.4401, 1.3541, glass, gold
Sensing volume [1]	cm^3	≈4
Reference volume	cm^3	≈20
Weight	kg	1.3

[1] Including connection port.

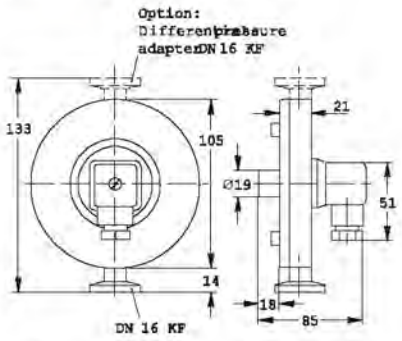
Specifications

		SV Switching Amplifier
Mains supply (selectable)	V	110 ... 130, 220 ... 240
Mains frequency	Hz	50 / 60
Power consumption	VA	3
Output relay		Change over contact
Switching voltage	V	250
Switching current	A	5
Switching capacity	VA	500
Response time	ms	30
Release time	ms	7
Control circuit	V / mA	24 / 10
Operation temperature	°C	5 ... 50
Weight	kg	0.36

VSC150A - continued

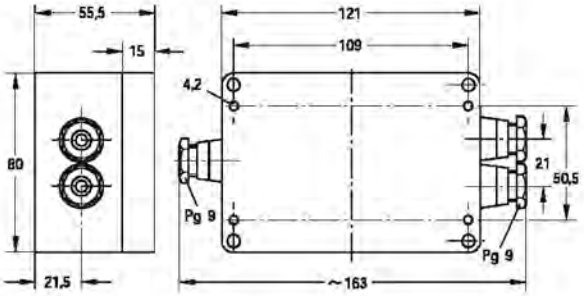
Dimensions

VSC150A Vacuum Switch



mm

SV Switching Amplifier



mm