



InstruTech®

Series 301 Busy Bee™ Pirani Capacitance Vacuum Gauge

Wide measurement range

3.8×10^{-5} to 1,125 Torr

5×10^{-5} to 1,500 mbar

5×10^{-3} Pa to 150 kPa

Pirani sensor combined with robust ceramic capacitance diaphragm gauge provides gas independent measurements above 7.6 Torr

Gas independent measurements above 7.6 Torr allows for safe venting of any gas mixture

Built-in backlit display, two setpoint relays, log-linear analog output and an optional atmospheric switch

Accurate and repeatable for reliable and fast atmospheric pressure readings

Can be mounted in any orientation

Sensor with on-board calibration data can be easily replaced in the field



PCM301 Busy Bee

The PCM301 Busy Bee™ module is ideal for applications from medium vacuum to above atmosphere. The unit combines pirani technology with a ceramic capacitance diaphragm sensor to provide repeatable and accurate readings. Above 7.6 Torr, it is not gas dependent which allows for safe venting of any gas mixture.

The instrument is offered standard with a built-in backlit display and two set point relays providing flexibility for a variety of process control schemes. It can be mounted in any orientation for easy adaption of any tool design.

The PCM301 Busy Bee pirani capacitance vacuum gauge module provides the basic signal conditioning required to

turn the sensor into a complete vacuum pressure measurement instrument.

At low pressures, only the signal of the pirani sensor is used for pressure measurement and at high pressures, only the signal of the diaphragm capacitive sensor is used. To determine the output signal in the intermediate range, both signals are used proportionally to determine the pressure for accuracy through the range of the unit.

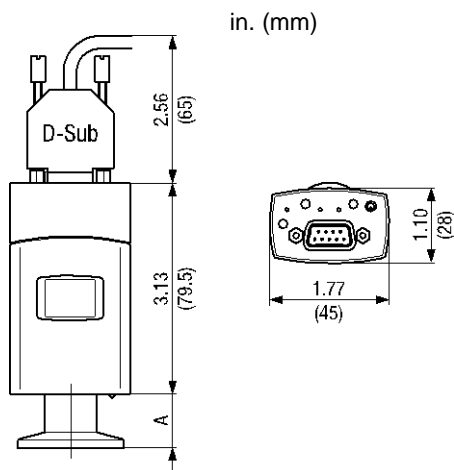
The combination of superior sensor design and enhanced signal processing provides optimal and stable pressure readings over the entire measurement range.

Specifications

measurement range	3.8×10^{-5} to 1,125 Torr / 5×10^{-5} to 1,500 mbar / 5×10^{-3} Pa to 150 kPa
accuracy - N ₂ (typical)	3.8×10^{-4} to 7.6×10^{-4} Torr: $\pm 50\%$ of reading 7.6×10^{-4} to 75 Torr: $\pm 15\%$ of reading 75 to 715 Torr: $\pm 5\%$ of reading 715 to 790 Torr: $\pm 2.5\%$ of reading
repeatability - (typical)	7.6×10^{-4} to 825 Torr: $\pm 2\%$ of reading
materials exposed to gases	W, Ni, NiFe, Al ₂ O ₃ , SnAg, stainless steel, glass
internal gauge volume	1/8 in. NPT: 0.32 in ³ (5.2 cm ³), KF16: 0.29 in ³ (4.7 cm ³), KF25 & 4 VCR: 0.34 in ³ (5.5 cm ³) 1.33 in. Mini-CF: 0.49 in ³ (8 cm ³), 8 VCR: 0.43 in ³ (7 cm ³) 16KF long tube: 0.88 in ³ (14.5 cm ³), 1.33 in. Mini-CF long tube: 0.85 in ³ (14 cm ³)
admissible pressure	≤ 72.5 psi (5 bar) absolute
temperature	operating: +10 to +50 °C storage: -20 to +65 °C
bakeout temperature	≤ 80 °C at flange ≤ 250 °C at flange with the long tube option
weight	4 to 4.5 oz. (115 to 130 g)
housing (electronics)	aluminum extrusion
mounting orientation	any
analog output	log-linear 0 to 8 Vdc, 1 V/decade
error signal	analog output switches to 0 V
response time	< 30 ms

input power	15 to 30 Vdc, ≤ 2.5 W protected against power reversal
supply voltage ripple	≤ 1 p-p
setpoint relays	2 Solid State, normally open, potential free, <30 V (ac) / (dc), ≤ 0.3 A resistive
setpoint relay hysteresis	10% of threshold
setpoint relay range (N ₂)	3.8×10^{-5} to 1,125 Torr
supply voltage ripple	≤ 1 p-p
connector	9-pin D-sub male
CE compliance	EMC (EN61000-6-2, EN61000-6-3, EN61010)
environmental	RoHS compliant

Fitting	dimension A
1/8 in. NPT	1.41 in. (36 mm)
NW16KF	0.57 in. (14.5 mm)
NW25KF	0.85 in. (21.5 mm)
1 1/3 in. Mini-CF	1.22 in. (30.9 mm)
1/4 in. Cajon 4VCR	1.68 in. (42.7 mm)
1/2 in. Cajon 8VCR	1.82 in. (46.3 mm)
NW16KF w. Long Tube	5.15 in. (130.8 mm)
1 1/3 in. Mini-CF w. Long Tube	5.13 in. (130.2 mm)



Ordering Information

PCM301 Part Number

Spare Parts / Accessories Part Numbers

	PCM301 T U T # # A
Sensor Material	
T = Tungsten	
Display Units of Measure	
T = Torr	
Fitting / Flanges	
A = 1/8 in. NPT Male	
B = NW16KF	
C = NW25KF	
E = 1 1/3 in. Mini-CF (NW16CF)	
G = 4VCR Female	
H = 8VCR Female	
I = 16KF with Long Tube	
J = 1 1/3 in. Mini-CF with Long Tube	
Electronics	
C = 2 set-point relays (absolute P.)	
D = 2 setpoint relays (1 for absolute press. and 1 for atmospheric switch)	
Electrical Connector	
A = 9-pin D-sub male	

PCM301 Spare Sensor, 1/8 in. NPT Male	PC3A
PCM301 Spare Sensor, NW16KF	PC3B
PCM301 Spare Sensor, NW25KF	PC3C
PCM301 Spare Sensor, 1 1/3 in. Mini-CF	PC3E
PCM301 Spare Sensor, 4 VCR Female	PC3G
PCM301 Spare Sensor, 8 VCR Female	PC3H
PCM301 Spare Sensor, 16KF Long Tube	PC3BL
PCM301 Spare Sensor, 1 1/3 in. Mini-CF Long Tube	PC3EL
Centering ring with fine filter, NW16 KF	002628

Example: PCM301TUTBCA (PCM301 tungsten pirani sensor, Torr display, NW16KF fitting, two setpoint relays, 9-pin D-Sub Connector)



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