



Convection Gauge; PC Board, 24 VDC Power

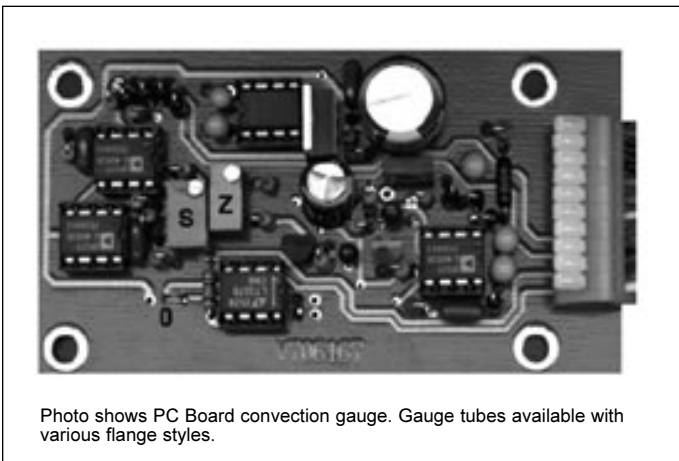
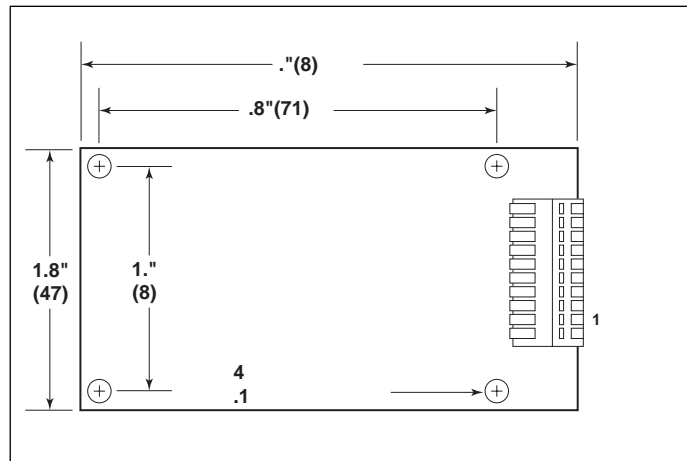


Photo shows PC Board convection gauge. Gauge tubes available with various flange styles.



PC Board Convection Gauge

Convection gauges are very popular because they can measure from atmosphere to 1 mTorr. More properly described as “Convection Enhanced Pirani Gauges,” these rugged and inexpensive instruments can directly interface with your PLC to control all crossovers and initiate substrate heat down to 1×10^{-3} Torr. Other units of measure such as mbar and Pascal can be easily selected. Below about 20 Torr the principle of measuring is the same as traditional Pirani gauges so accuracy of \pm a few milliTorr is easily achieved.

Specifications, PC Board Convection Gauges

Range of Measurement: 1 milliTorr to Atmosphere or equivalent range in Pascal or mbar.

Sensor Type: Thermal conductivity with convection enhancement.

Resolution: ± 2 milliTorr from 1 to 25 milliTorr; or 2% of full scale.

Response Time: Less than 1 second for 90% of an increase in pressure, less than 4 secs. for a decrease in pressure from atmosphere to 1 mTorr.

Hysteresis: Minimum hysteresis is less than 2 mTorr from 1 to 25 mTorr and less than 2% of full scale to atmosphere.

Maximum Pressure without Affecting Calibration: 2300 Torr (30 PSIG)

Maximum Gauge Tube Temperature: 100 °C (212 °F) maximum bake out of gauge tubes in air or vacuum. Automatic compensation 0 to 35°C.

Analog Output: 0 to 5 VDC, non linear. Other outputs such as 0 to 10 VDC can be provided. Look up table of output vs. pressure in Torr, mbar and Pascal included.

Gauge Tube Orientation: Axis of tube must be horizontal.

Power: 12 to 35 VDC, less than 200 mA

Gauge Tube Cable: See ordering information Use up to 150 m (500 ft.) without affecting calibration.

Weight: Net: 0.12 lb. (57 g); Ship: 0.4 lbs. (300 g.)

Power Supplies These instruments will operate with any voltage from 12 to 35 volts D.C. and can be powered from your D.C. bus. If no D.C. power is available these wall mount supplies will operate with any input from 100 to 240 VAC (90 to 264 VAC) 47 to 63 Hz. 4 A.C. plugs are included for outlets in USA, UK, Europe and Australia.

P/N V104134, 800 mA Suitable for 4 instruments\$69.

P/N V104135, 1600 mA Suitable for 8 instruments\$101.

Safe With Mercury and Fluorine

Mercury and Fluorine vapors are no problem for the Vacuum Research PC Board convection gauge. Our filament is a platinum alloy which operates below 100 °C and all other gauge tube components exposed to vacuum are 300 series stainless steel. For outdoor applications, or for corrosive ambient conditions, gauge tubes are also available with stainless steel connector pins.

Nitrogen, Argon and Other Gases

The convection gauge can be calibrated to read directly for argon or other gases. But, if your system uses a variety of gases, or if accuracy between 2 Torr and 800 Torr is critical in your process, then the Vacuum Research Wide Range Diaphragm Manometer instruments may be a better choice. Complete specifications for these diaphragm sensor instruments can be found in our catalog and our web site.

Ordering Information, PC Board Convection Gauges

Convection Gauge PC Board

Convection gauge PC board with range of 1 milliTorr to atmosphere and output signal of 0 to 5 VDC. Power required is 12 to 35 VDC @ 200 mA. Calibrated and ready to operate.

P/N: 801188. \$190.

Gauge Tube with 1.4 in. NPT thread P/N 912105. \$110.

Gauge Tube with 1/2 in. outside diameter P/N 912280. \$119.

Gauge Tube with NW-16 flange P/N 912286. \$131.

Gauge Tube with NW-25 P/N 912287. \$131.

Gauge Tube with VCR-8 female flange P/N 912288. \$154.

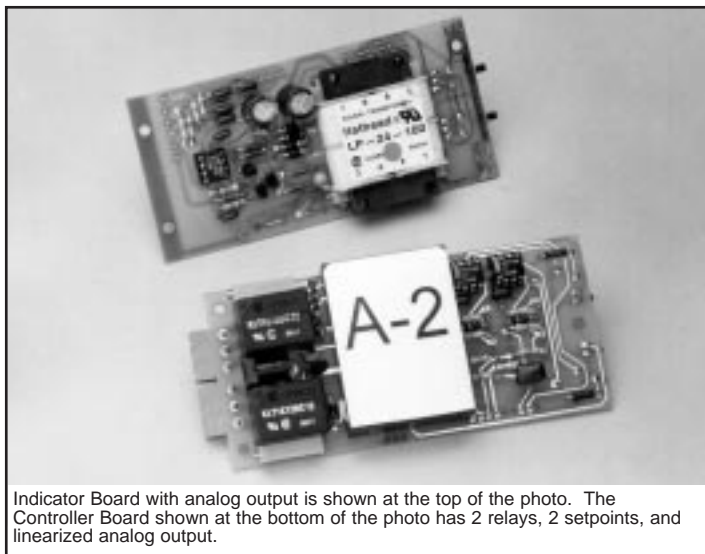
Calibrator for Convection Gauge PC Board

Plugs directly onto the gauge tube connector for easy verification of zero and span. P/N: 912279. \$49.

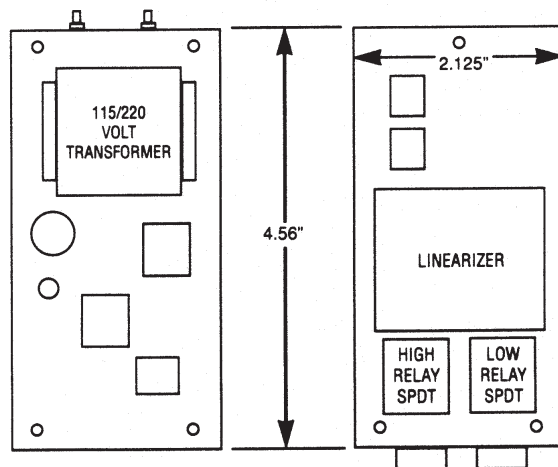
Cable Assembly includes a connector for the sensor on one end and stripped and tinned leads on the other end to connect to the terminal strip on the circuit board. Connector on only one end allows the cable to be pulled through conduit or to more easily enter your cabinet. Specify length. Calibration not affected by cables less than 150 meters (500 ft.)
P/N V801029 xxx feet \$20. plus \$1./Ft



Vacuum Gauge — PC Boards



Indicator Board with analog output is shown at the top of the photo. The Controller Board shown at the bottom of the photo has 2 relays, 2 setpoints, and linearized analog output.



These instruments receive the same burn in and careful testing as all VRC instruments, but are provided without display, enclosure, or cables. They are primarily used by OEMs and systems builders.

For OEM quantity and blanket order discounts, please contact our Pittsburgh factory. Select gauge tubes with flanges and materials appropriate for your system from the preceding sections of this catalog.

Gauge Tubes and Accessories

Gauge tubes and sensors for these PC board gauges are available with a variety of flanges including pipe thread, KF-16, and explosion-proof fittings. To see the complete selection, please turn to:

- .01 to 100 mTorr gauge tubes, page 12
- 1 to 2000 mTorr gauge tubes, page 10
- .01 to 20 Torr gauge tubes, page 13
- 1 to 1500 Torr gauge tubes, page 16

.01 to 100 mTorr Pirani (gauge tubes on page 12)		
Description	P/N	
Printed circuit board Pirani Gauge with non linear output 0 to 240 mV at 100 mT. Power required: 2 to 18 VDC, 609 mA.	912045	
Printed circuit board Pirani Gauge as described above with non linear output 0 to 240 mV at 100 mT. Power required: 115 VAC, 2.4 watt.	912046	
Optional linearizer for PCB Pirani Gauges described above. Linear output 0 to 1 VDC (0.1 mV/mT). Power required: less than 0.1 watt.	912051	
Optional linearizer as described above but with 2 set points and 2 SPDT relays, same linear output 0 to 1 VDC (0.1 mV/mT). Power required: approximately 1 watt.	912042	
Calibrator for 100 mTorr Vacuum Gauge.	912019	

.01 to 20 Torr Pirani (gauge tubes on page 13)		
Description	P/N	
Printed circuit board Pirani Gauge with non linear output 0 to 393.6 mV at 20 Torr. Power required: 12 to 18 VDC, 200 mA.	912049	
Printed circuit board Pirani Gauge with non linear output 0 to 393.6 mV at 20 Torr. Power required: 115 VAC, 6 watt.	912050	
Optional linearizer for PCB Pirani Gauges described above. Linear output 0 to 2 VDC (1 mV/10 mT). Power required: less than 0.1 watt.	912053	
Optional linearizer with 2 set points and 2 SPDT relays, linear output 0 to 2 VDC (1 mV/10 mT). Power required: approximately 1 watt.	912043	
Calibrator for 20 Torr Vacuum Gauge.	912009	

1 to 2000 mTorr Pirani (gauge tubes on page 10)		
Description	P/N	Price
Printed circuit board Pirani Gauge with non linear output 0 to 495 mV at 2000 mT. Power required: 2 to 18 VDC, 60 mA.	912047	
Printed circuit board Pirani Gauge with non linear output 0 to 495 mV at 2000 mT. Power required: 115 VAC, 2.4 watt.	912048	
Optional linearizer for PCB Pirani Gauges described above. Linear output 0 to 2 VDC (1 mV/mT). Power required: less than 0.1 watt.	912052	
Optional linearizer as described above but with 2 set points and 2 SPDT relays, same linear output 0 to 1 VDC (0.1 mV/mT). Power required: approximately 1 watt.	912043	
Calibrator for 1 to 2000 mTorr Vacuum Gauge.	912008	

1 to 1500 Torr Diaphragm (gauge tubes on page 16)		
Description	P/N	Price
Printed circuit boards (set of 2) with linear analog output 0 to 1.5 VDC (1 mV/Torr). Power required: ±12 to 18 VDC, 200 mA.	912227	
Printed circuit boards (set of 2) with linear analog output 0 to 1.5 VDC (1 mV/Torr). Power required: 115 or 230 VAC 50/60 Hz.	912228	
Printed circuit boards (set of 2) with linear analog output 0 to 1.5 VDC (1 mV/Torr). 2 adjustable set points and 2 relays. Power required: ±12 to 18 VDC, 400 mA.	912225	
Printed circuit boards (set of 2) with linear analog output 0 to 1.5 VDC (1 mV/Torr). 2 adjustable set points and 2 relays. Power required: 115 or 230 VAC 50/60 Hz.	912226	
Calibrator for 1500 Torr Vacuum Gauge.	912027	