

Photo shows the indicator and 1200 Torr head with Conflat flange.

The Vacuum Research Diaphragm Manometers are compact vacuum measurement and control instruments that are unaffected by gas composition. The sensors have 316 L stainless steel diaphragms and any sensor can measure liquid or gas pressure as well as vacuum.

Response time is less than 400 milliseconds for full scale and sensors are available with a variety of flanges including VCR and KF or NW styles. With any sensor, these instruments offer

**Specifications**

- Pressure Range:** 0.5 to 1200 Torr;  $\pm$  0.1 Torr
- Resolution:**  $\pm$  0.1 Torr over entire range.
- Display:** 4 1/2 digit red LED; characters .47 in. (12 mm) high.
- Calibration:** Any gas, liquid or vacuum compatible with sensor materials.
- Accuracy:** 1% of reading or 1 Torr.
- Response Time:** Less than 400 msec. for response to a step change.
- Linearity:**  $\pm$  0.15% Full Scale. Sensitivity:  $\pm$  0.1 Torr
- Analog Output:** 0 to 10 Volt DC into 2000 Ohm load or higher. 2 pin connector included. 4 to 20 mA output in addition to 0 to 10 Volt D.C. available.
- Sensor:** See "ordering Information" below for list of sensor heads.
- Materials:** All parts in contact with process are 316 L Stainless Steel.
- Set Point Range:** Full Scale, 0.5 to 1200 Torr. Repeatability:  $\pm$  1 Torr.
- Relays:** Controller model includes 2 relays; SPDT contacts rated 3A @ up to 220 VAC non-inductive.
- Sensor Internal Volume:** 1.25 ml for stainless steel sensor.

- 0.5 to 1200.0 Torr Range;  $\pm$  0.1 Torr Resolution
- Available 0.5 to 1600.0 mbar & 0.1 to 160.00 kPa
- 316 S.S. Diaphragm Measures Gas Or Liquid
- Dual Set Point Controller With 2 Relays
- Easy To Use; No Keyboards or Scrolling Menus
- Linear 0 to 10 VDC Output; 4-20 mA Optional
- Fast Response; Less Than 400 mSec. Full Scale

the precision and high resolution of digital electronics at the same price as analog instruments. Both indicator and controllers are provided in 1/4 DIN enclosures.

The Dual Set Point Controller operates two control relays. Set point values are adjusted from the front panel and displayed on the meter. Push-to-set switches simplify display of the set point pressures. Relays have 3 Amp contacts, SPDT, and have screw terminal connectors on the rear of the instruments.

- Line Power:** 115 VAC, 50/60 Hz; 230 VAC or 24 VDC optional at no additional cost.
- Wattage:** Less than 1 Watt for indicator; 2 Watts for controller.
- Line Regulation:**  $\pm$  20% change in line voltage produces less than 1% change in reading.
- Temperature Effects:** When changes occur in ambient temperature between 0  $^{\circ}$ C and 50  $^{\circ}$ C, reading will change no more than  $\pm$ 0.02% per  $^{\circ}$ C.
- Bakeout Temperature:** Sensor can be baked to 100  $^{\circ}$ C (212  $^{\circ}$ F) in air or vacuum.
- Dimensions:** 1/4 DIN enclosure. See drawing on page 44.
- Mounting:** Panel mounting hardware is standard. Bench mount and portable cabinets are also available, see page 43.
- Sensor Cables:** 10 ft. (3m) attached.
- Extension Cables:** Change sensor cable length without recalibration. Extensions to 250 ft. (75 m) can be used. See page 42.
- Line Cord:** 3 wire, 65 inch (170 cm) attached.
- Net Weight:** Indicator 1 lb., 2 oz. (0.5 kg); Controller 1 lb., 6 oz. (0.6 kg)
- Shipping Wt.:** Indicator 2 lbs., 8 oz. (1.1 kg); Controller: 3 lbs. (1.3 kg)

**Ordering Information Specify 115 or 230 V, 50/60 Hz or 24 VDC Power When Ordering**

**Digital Indicator and Controller**

- Dual Set Point Controller With Digital Display in 1/4 DIN enclosure.** Included are 2 adjustable set points with SPDT relays. Contacts rated 3 Amps up to 220 VAC non-inductive. 10 ft (3 m) sensor head cable, power line cord jack screws for panel mounting. 0 to 10 VDC analog output. Built to CSA standards. Sensor not included.  
P/N:902226 .....\$840.
- Digital Indicator only in 1/4 DIN enclosure.** Includes 10 ft (3 m) sensor head cable, power line cord, jack screws for panel mounting. 0 to 10 VDC analog output. Built to CSA standards. Sensor not included.  
P/N: 902225 .....\$630.
- 4 to 20 mA Output** in addition to 0 to 10 VDC analog output.  
P/N: V801082 .....add \$214.
- Calibrator for 0.5 to 1200 Torr Instruments** See page 37 for a complete description of the calibrator. P/N:912300 ..... \$345.
- Gauge and sensor accessories** .....see pages 42 and 43.

**1200 Torr Sensor Heads, 316 SS Diaphragms**

- Sensor Heads with Stainless Steel Diaphragm.** outer case and wetted parts 316 L stainless steel. Connector pins are nickel plated Kovar. Maximum bake-out temperature 100  $^{\circ}$ C.
- 1200 Torr Head, SS Diaphragm, 1/4 in. NPT,** P/N:912261. ....\$402.
- 1200 Torr Head, SS Diaphragm, VCR-8 Female,** P/N:912262. ....\$507.
- 1200 Torr Head, SS Diaphragm, VCR-4 Female,** P/N: 912263. ....\$452.
- 1200 Torr Head, SS Diaphragm, NW-16 Flange,** P/N:912264. ....\$452.
- 1200 Torr Head, SS Diaphragm, NW-25 Flange,** P/N:912265. ....\$452.
- 1200 Torr Head, SS Diaphragm, 1.33 in. Conflat<sup>®</sup>,** P/N:912266. ....\$452.
- 1200 Torr Head, SS Diaphragm, 1/2 in. OD Tube,** P/N:912267. ....\$452.
- 1200 Torr Head with All Stainless External Parts** for outdoor applications or wherever the use of all stainless steel is appropriate. All external parts are 316 SS except connector pins which are 304 SS. Add SS suffix to sensor P/N and to price: .....add \$42.

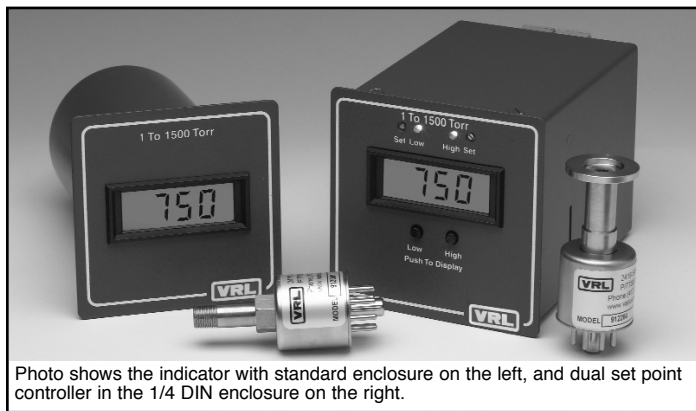


Photo shows the indicator with standard enclosure on the left, and dual set point controller in the 1/4 DIN enclosure on the right.

The Vacuum Research Diaphragm Manometers are compact vacuum measurement and control instruments. The sensors are available with either 316 SS or pure silicon diaphragms and any sensor can measure liquid or gas pressure as well as vacuum.

Response time is less than 400 milliseconds for full scale and sensors are available with a variety of flanges including 15 mm, VCR, and KF-16. With any sensor, these instruments offer the precision and high resolution of digital electronics at the same price as analog instruments. Both indicator and controllers are provided in 1/4 DIN or standard cylindrical enclosures.

## Specifications

- Pressure Range:** 1 to 1500 Torr;  $\pm 1$  Torr ( $\pm 0.1$  Torr optional).
- Calibration:** Any gas, liquid or vacuum compatible with sensor materials.
- Accuracy:** 1% of reading or 2 Torr.
- Response Time:** Less than 400 msec. for response to a step change.
- Linearity:**  $\pm 0.15\%$  Full Scale. Sensitivity:  $\pm 1$  Torr.
- Analog Output:** 0 to 1.500 Volt into 2000 Ohm load or higher. 2 pin connector included. 4 to 20 mA and 0 to 10 VDC output in addition to 0 to 1.500 Volt D.C. available for instruments in 1/4 DIN enclosure.
- Transducer:** See "ordering Information" below for list of transducers.
- Materials:** All parts in contact with process are 316 or 304 SS, or silicon.
- Set Point Range:** Full Scale, 1 to 1500 Torr. Repeatability:  $\pm 2$  Torr.
- Sensor Internal Volume:** 1.25 ml for SS; 0.5 ml for Silicon.
- Line Regulation:**  $\pm 20\%$  change in line voltage produces less than 1% change in reading.
- Line Power:** 115 VAC, 50/60 Hz; 230 VAC optional at no additional cost.

- 1 to 1500 Torr Range;  $\pm 1$  Torr Resolution
- $\pm 0.1$  Torr Resolution Available as Option
- Available in 1 to 2000 mbar & 0.1 to 200 kPa
- 316 S.S. Diaphragm Measures Gas Or Liquid
- Dual Set Point Controller With 2 Relays
- Easy To Read Large Backlit Digital Display
- Linear 0 to 1.5 VDC Output; 4-20 mA Optional
- Fast Response; Less Than 400 mSec. Full Scale

The Dual Set Point Controller operates two control relays. Set point values are adjusted from the front panel and displayed on the meter. Push-to-set switches simplify display of the set point pressures. Relays have 3 Amp contacts, SPDT, and have screw terminal connectors on the rear of the instruments.

For applications that require maximum resolution a special display unit is available with a 4 1/2 place LED display. To specify this feature add to the part number "HI-RES" suffix and add \$192.00 to the price.

- Wattage:** Less than 1 Watt for indicator; 2 Watts for controller.
- Temperature Effects:** When changes occur in ambient temperature between 0 °C and 50 °C, reading will change no more than  $\pm 0.02\%$  per °C.
- Bakeout Temperature:** Gauge tube can be baked to 100 °C (212 °F) in air or vacuum.
- Dimensions:** DIN enclosure: 92X92 mm panel cutout, 122 mm F to B.
- Standard enclosure:** 2.75 in. diameter panel cutout, 4.8 in. F to B.
- Mounting:** Panel mounting hardware is standard. Bench mount and portable cabinets are also available, see page 43.
- Transducer Cables:** 10 ft. (3m) attached.
- Extension Cables:** Change sensor cable length without recalibration. Extensions to 500 ft. (150m) can be used. See page 42.
- Line Cord:** 3 wire, 65 inch (170 cm) attached.
- Net Weight:** Indicator 1 lb., 2 oz. (0.5 kg); Controller 1 lb., 6 oz. (0.6 kg)
- Shipping Wt.:** Indicator 2 lbs., 8 oz. (1.1 kg); Controller: 3 lbs. (1.3 kg)

- Dual Set Point Controller With Digital Display** in standard enclosure. Transducer not included. P/N: 902019 ..... \$573.
- Dual Set Point Controller With Digital Display** in 1/4 DIN enclosure. Built to CSA standards. Transducer not included. P/N: 902094 ... \$613.
- Digital Indicator only** in standard enclosure. Transducer not included. P/N: 902020 ..... \$393.
- Digital Indicator only** in 1/4 DIN enclosure. Built to CSA standards. Transducer not included. P/N: 902093 ..... \$432.
- High Resolution Option** For higher resolution, instruments can be ordered with a 4 1/2 place LED display for resolution of  $\pm 0.1$  Torr. Add suffix "Hi-Res" and P/N V801302. Additional cost ..... \$204.
- 4 to 20 mA or 0 to 10 VDC Output** in addition to 0 to 1.5 VDC analog output. Only available for instruments in 1/4 DIN enclosure. P/N: V801082 ..... add \$214.
- Calibrator for 1 to 1500 Torr Instruments** See page 37 for a complete description of the calibrator. P/N: 912027 ..... \$231.
- Gauge and transducer accessories** ..... see pages 42 and 43.
- Transducer with Stainless Steel Diaphragm** outer case, connector pins, and wetted parts 316 stainless steel. Maximum bake-out temperature 125 °C. 1/4 in. NPT. P/N: 912022 ..... \$388.

- Stainless Steel Diaphragm with VCR-8 Female**, P/N: 902050 .. \$493.
- Stainless Steel Diaphragm with VCR-4**, P/N: 912219 ..... \$438.
- Stainless Steel Diaphragm with NW-16 Flange**, P/N: 912151 .. \$438.
- Stainless Steel Diaphragm with NW-25 Flange**, P/N: 912117 .. \$438.
- Stainless Steel Diaphragm with 1.33 in. Conflat®**, P/N: 912191 \$438.
- Stainless Steel Diaphragm with 1/2 in. OD Tube**, P/N: 912210 .. \$438.
- Stainless Steel Diaphragm with 1/8 in. NPT**, P/N: 912129 ..... \$438.
- Transducer with Silicon Diaphragm** body is 304 SS, connector pins are nickel plated Kovar®. Maximum bake-out temperature 125 °C.
- Silicon Diaphragm With 1/8 in. NPT Male Thread**, P/N: 912091 .. \$244.
- Silicon Diaphragm With 1/2 in. OD Tube**, P/N: 912211 ..... \$282.
- Silicon Diaphragm With NW-16 Flange**, P/N: 912023 ..... \$282.
- Silicon Diaphragm With NW-25 Flange**, P/N: 912119 ..... \$282.
- Silicon Diaphragm With 1.33 in. Conflat® Flange, non-rotatable**, P/N: 912026 ..... \$282.
- Silicon Diaphragm With VCR-4 Fitting**, P/N: 912025 ..... \$316.
- Silicon Diaphragm Transducers with All Stainless External Parts** for outdoor applications or wherever the use of 304 SS is appropriate. All external parts and connector pins are 304 SS. Add SS suffix to tube P/N and to tube price: ..... add \$42.