



On left is an instrument calibrated in Torr and on the right an instrument calibrated in mbar. Transducers are available with all popular flange styles

- **Wide Range: 1 X 10<sup>-5</sup> to 1000 Torr**
- **Available in .01 X 10<sup>-3</sup> to 1300 mbar**
- **Linear With Any Gas from .05 to 1000 Torr**
- **Up to 4 Adjustable Set Points and 3 Amp Relays**
- **0 to 10 VDC and 4 to 20 mA Outputs Standard**
- **Linear Analog Outputs for Computer Interface**
- **Large Easy to Read Green LED Display**
- **316L Stainless Steel Diaphragms Standard**
- **Bench or 1/4 DIN Panel Mount Enclosure**
- **400 mSec. Response Time From .05 to 1000 Torr**
- **20 Sec. Response Time From .01 to 50 mTorr**
- **All Cables and Mounting Hardware Included**
- **Extension Cables up to 500 Feet, 150 meters**

**Fast Response**

The SUPER Wide Range Manometer uses a fast response diaphragm sensor to provide high accuracy measurements that are unaffected by gas composition from .05 to 1000 Torr. At pressures below 50 mTorr the easy to read green LED display is driven by a rugged Pirani sensor that is mounted in the transducer next to the Diaphragm sensor. The Diaphragm and Pirani sensors are both mounted in the same transducer body, and both are easily replaceable in the field.

**Two or Four Set Points for Process Control**

The SUPER Wide Range Manometer includes 2 adjustable set points, while the optional version provides 4 adjustable set points for process control. These process control set points have front panel LED indicators and can be set anywhere in the range of the instrument. Each set point drives its own SPDT relay. Contacts are rated 3 amps @ 220V, non-inductive.

**0 to 10 VDC and 4 to 20 mA Outputs**

SUPER wide range manometer provides 3 separate analog outputs. 0 to 1 VDC from the Pirani sensor for pressures from .01 to 100 mTorr. The diaphragm sensor provides both 0 to 10 VDC and 4-20 mA outputs. The 4-20 output can be changed in the field to have ranges of 0 to 1, 5, 10, 50 or 1000 Torr.

**Torr, or millibar**

The Vacuum Research SUPER Wide Range Manometer reads directly in Torr and mTorr, instruments with calibration of 0.01 X 10<sup>-3</sup> to 1300 mbar are available without extra cost.

**No Magnets and No High Voltage**

The sensors used in this gauge use less than 1 watt of power at less than 12 volts. There is no risk to technicians due to high voltage as in Penning and other magnetron style gauges. There are no magnetic fields to interfere with your sensitive circuits and beams.

**Electron-beam Evaporation**

The E-beam evaporator chamber, wafer, and crucible material must be evacuated to a low pressure (high vacuum in the 10<sup>-5</sup> Torr range) before deposition can begin. Once the correct vacuum level has been achieved, the SUPER wide-range manometer control contacts can activate the e-beam shutter, thus allowing deposition.

**Reactive Ion Etching (RIE)**

The evacuation of an RIE chamber is much the same as any other etching chamber. The chamber is evacuated down to 20 mTorr or less before admitting the process gases. Very often the chamber pressure is maintained at 20 mTorr less than the target etching pressure; then the RF is turned on. The SUPER wide range manometer with up to 4 set points is ideal for controlling the etching valve, etching pump and RF activation.

**SUPER Wide Range Gauge Calibrator**

Making sure that your vacuum gauge is working properly has never been easier. Our compact electronic calibrators allow you to adjust your SUPER Wide Range Diaphragm Manometer display to be exactly like new factory specification. No electronics training is required to operate these calibrators which allow you to adjust zero and full scale of the Display Unit without using a vacuum system. Just follow the step-by-step procedure on the calibrator front panel to ensure optimum performance of your SUPER Wide Range Manometer.

P/N: V912046 . . . . . \$545.

Standard and Auxiliary Output Model Specifications	.01 to 50 milli Torr Pirani Sensor	50 mTorr to 1000 Torr Diaphragm Sensor
<b>Sensor Type:</b>	Platinum alloy Pirani	316L Stainless Steel Diaphragm
<b>Resolution and Sensitivity:</b>	± .01 mTorr	50 mTorr to 30 Torr ± 10 mTorr 30 Torr to 1000 Torr ± 0.1 Torr
<b>Accuracy:</b>	3% of Reading or 3 mTorr	50 mTorr to 30 Torr ± 20 mTorr 30 Torr to 1000 Torr ± 1 Torr
<b>Hysteresis:</b> (to prevent chatter, up to 5% available)	Less than 2 mTorr minimum	50 mTorr to 30 Torr ± 20 mTorr 30 Torr to 1000 Torr ± 1 Torr
<b>Response:</b> For 90% of step change; 1 mT to Atmos. ~ 1 sec., 10 mT to 100 mT 7 sec., 1 mT to 10 mT 18 sec.		Under 400 msec. for 90 % of step change
<b>Analog Output (Standard Model):</b>	0 to 1.000 VDC	0 to 10 VDC plus scaleable 4-20 mA
<b>Analog Output (Auxiliary Output Model):</b>	0 to 1.000 VDC plus a second output programmable as 0 to 10 VDC or 4-20 mA	0 to 10 VDC or 4-20 mA. 4-20 can have F.S. of 1, 5, 10, 50 or 1000 Torr
<b>Effect of Ambient Temp. Changes from 0 °C to 50 °C</b> Reading will change less than:	0.2 mT per C° at 50 mT; 4 mT per C° at 900 mT	± 0.02% per C°
<b>Maximum Transducer Bakeout Temperature:</b>	100 °C	
<b>Digital Display:</b>	4 1/2 Digit, Green LED character height 0.47 in. (11 mm)	
<b>Maximum Pressure without Calibration Change:</b>	1,000 Torr; 18 PSIG, 1300 mbar	
<b>Set Points and Relays:</b>	2 or 4 independent set points with front panel LED indicators and 2 or 4 SPDT relays. 3 amp @ 220 VAC, non-inductive. Front panel adjustable over 100% of range.	
<b>Transducer Orientation:</b>	All instruments are calibrated with the transducer stem horizontal. Operating with other orientation may require a zero adjustment.	
<b>Line Voltage and Power:</b>	95 to 120V, 50/60 Hz standard; 220 V available. 5 watts with both relays energized.	
<b>Line Cord:</b>	65 inch (1.7 meter) attached, 3 conductor.	
<b>Bench or Panel Mounting:</b>	Panel cutout: 3.62 in. W X 3.62 in. H (92 X 92 mm). Panel mount jack screws included.	
<b>Dimensions: 1/4 Din. Front Panel 96 X 96 mm</b>	Cabinet 89 X 89 mm X 174mm F to B	
<b>Transducer Cables</b> (see pg. 39 for extension cables):	10 ft. (3 m) with connectors on both ends. Cables up to 500 ft. (150 m) available.	
<b>Weight with Transducer</b> (Standard / Aux. Output):	Net 4 lb. (1.8 kg); Shipping 6.0 lb. (2.7 kg); add 1 lb. (.22 kg) for Auxiliary Output model.	

**Buy Now! Go to [www.vacuumresearch.com](http://www.vacuumresearch.com) to order online**

## Display Units

### Standard Wide Range Gauge Display Units

Digital display unit with 2 set points and 2 analog outputs; 0 to 10 VDC & 4-20 mA for the 50 mTorr to 1000 Torr diaphragm range and 0 to 1 VDC for the .01 to 50 mTorr Pirani range. 1/4 DIN cabinet suitable for bench or panel mounting. Built to CSA standards. Line cord and 3 meter (10 ft) transducer cable included. A transducer is required and must be ordered separately.

#### For operation with 90-120 V, 50/60 Hz Power.

Calibrated in Torr/mTorr P/N 902310 .....\$875.  
Calibrated in mbar/10<sup>-3</sup> mbar P/N 902311 .....\$875.

#### For operation with 200-240 V, 50/60 Hz Power

Calibrated in Torr/mTorr P/N 902312 .....\$875.  
Calibrated in mbar/10<sup>-3</sup> mbar P/N 902313 .....\$875.

### Wide Range Display Units with Auxiliary Outputs

Similar to the standard display except the cabinet is taller, 4 set points and relays instead of two and the analog output for the Pirani Range is both 0 to 10 VDC and 4-20 mA. Built to CSA standards. Line cord and 10 ft. (3m.) transducer cable included. Transducer not included. A transducer is required and must be ordered separately.

#### For operation with 90-120 V, 50/60 Hz Power.

Calibrated in Torr/mTorr P/N 902282 .....\$1158.  
Calibrated in mbar/10<sup>-3</sup> mbar P/N 902283 .....\$1158.

#### For operation with 200-240 V, 50/60 Hz Power

Calibrated in Torr/mTorr P/N 902284 .....\$1158.  
Calibrated in mbar/10<sup>-3</sup> mbar P/N 902285 .....\$1158.

## Transducers

### 10<sup>-5</sup> to 1000 Torr Transducers with 316 L SS Diaphragm For Use with Instruments Calibrated in Torr or mbar

Transducer body is 304 stainless steel. Pirani gauge materials include 304 stainless steel, platinum alloy and glass to metal seals. Diaphragm sensor is all 316L stainless steel including the diaphragm itself.

25 mm O.D. Smooth (.98 in.) .....P/N: 902046 .....\$802.  
3/4 in. Smooth .....P/N: 902041 .....\$756.  
NW-16 Flange .....P/N: 902037 .....\$802.  
NW-25 Flange .....P/N: 902038 .....\$802.  
1.33 in. Conflat® .....P/N: 902039 .....\$802.  
2.75 in. Conflat® .....P/N: 902040 .....\$802.  
VCR-12 Male .....P/N: 902042 .....\$818.  
VCR-12 Female .....P/N: 902043 .....\$818.  
VCO-12 Male .....P/N: 902044 .....\$818.  
VCO-12 Female .....P/N: 902045 .....\$818.

### Replacement Sensors

In the event that either of the sensors in your wide range transducer should fail you have two choices for repair. You can purchase a replacement sensor and install and recalibrate the transducer yourself. The recommended procedure is to return the transducer to your supplier for repair.

#### Replacement Pirani Sensor for replacement in the field.

P/N 902299 .....\$129.

#### Replacement Stainless Diaphragm Sensor for replacement in the field.

P/N 902303 .....\$214.

#### Replacement Pirani Sensor replaced at the factory and including recalibration with our certified calibration instruments.

P/N 902314 .....\$196.

#### Replacement Stainless Steel Diaphragm Sensor replaced and including recalibration with our certified calibration instruments.

P/N 902315 .....\$281.