



INSTRUCTION MANUAL

DIGIVAC™ Model 2L760

Digital Vacuum Gauge

YOU MUST READ THIS MANUAL BEFORE USE

Readings from 1 – 760 Torr
1-1013 mbar

NOTE: The DigiVac Model 2L760 has been discontinued. However, we are able to service, calibrate and/or repair existing Models in the market at this time. If you require a replacement gauge, we recommend the StrataVac 775i see web page [here](#) that has added features and benefits compared to this model.

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1.0 DESCRIPTION AND PRINCIPLE OF OPERATION.

The Model DIGIVAC 2L760 senses vacuum (absolute pressure) using a precision integrated strain gauge transducer. The transducer has a thin silicon diaphragm with an array of resistors. One side is evacuated, while the other is exposed to the pressure to be measured. Changes in the sensed pressure cause the relative values of the resistors to change. This result is an output voltage which is linearized, temperature compensated, scaled and amplified. The voltage is displayed on the DIGIVAC 760 as 0 to 760 Torr or 0 to 1013 mbar.

The instrument features large, bright LEDs visible from a distance with a hard, vinyl clad metal enclosure. The straight forward design yields a low power instrument, that is simple to build and simple to operate. The model 2L760 can be ordered with optional control relays, analog output, and RS232 output, to simplify integration with existing process controllers or computers. In addition, this device can be Ethernet enabled, to allow monitoring via a web browser with our free ReAct browser software. The user can access your instrument from across the hall, or across the world. All instruments leave our factory tested and calibrated under real vacuum against a NIST standard.

2.0 CONSTRUCTION.

The controller consists of the indicating and controlling instrument, the configured sensor, the sensor cable, the output interfaces and an universal AC power adapter.

The instrument is housed in a rugged free-standing vinyl clad metal enclosure. It can be placed on a level surface for easy viewing from across the room. The gauge tube houses the sensor circuitry and terminates in an octal connector. On this model, the connector wiring terminates at the instrument with a 9 pin DSub connection. Regulating circuitry in the 2L760 provides constant current for gauge tube excitation, and thus compensates for resistance in the probe leads.

3.0 UNPACKING AND INSPECTION.

After the instrument is received, it should be carefully unpacked and inspected for damage during shipment and for completeness. In the event of a loss during shipment, a claim should immediately be made to the common carrier or the postal service, as applicable. The DIGIVAC warranty pertains only to the instrument, and does not cover losses in shipping. Each 2L760 should come with:

- User Manual (this document)
- Display controller (beige box with red lens)
- Power supply (universal adapter with US plug)
- Configured Sensors
- RS232 (optional)
 - RS232 Port
 - 5' RS232 Cable (phono to Female DB9)
- Ethernet (optional, includes RS232)
 - Ethernet Port
 - Null modem RS232 converter
 - 2' Ethernet Cable
 - Null Modem Ethernet Cable
 - Configuration CD

4.0 INSTALLATION.

The instrument should be located in a clean, dry environment for best results. The gauge tube cable should be identified by wire tags or markings specific to your environment.

Sensors perform best when installed in a thread-down orientation in a clean, dry vacuum system. While threading the gauge tube into the manifold, the gauge tube cable should be disconnected to avoid damage. In this way, twisting of the cable and the octal socket on the tube is avoided. Care should be exercised to install the tubes in a dry part of the system. The gauge tube should be protected against oil and other contaminants by installing it in such a way to protect it. A good practice is to mount the gauge tube in the most vertically distant place from oil and other contaminants as applicable. The gauge tube should be mounted in the most stable pressure region of the vessel to be measured. For example, it would be better to install the gauge tube on a tank rather than on the pipe that is directly connected to a vacuum pump. In the event of contamination, see section 6.0 for gauge tube cleaning instructions.

The RS232 connection can be made to a PLC or computer via a male DB9 cable connection to the female jack on the DIGIVAC. The DIGIVAC acts as a DCE, so a straight serial connection is appropriate.

Please use the supplied 5V AC adapter with your instrument. This adapter provides clean short protected power to protect and insure accuracy of the internal circuitry.

5.0 OPERATION.

After installation, the DIGIVAC is ready for operation. The unit will normally provide accurate readings immediately.

Make all connections to sensors, and relay outputs with the power disconnected. NEVER DISCONNECT SENSOR OR OUTPUT WIRES WHILE UNIT IS POWERED UP.

In cases where the system has contaminants, as is often the case with metalizing and coating equipment, it is often effective to isolate the gauge tube with a solenoid or manual valve during periods when contamination is most active.



The user can purchase additional options:

- RS232 – The instrument puts out a standard RS232 serial stream with settings 9600, 8, N, and 1. The unit transmits but does not receive, and displays the current vacuum indication in the current units.
- Analog out – This output reads from 0 to 5 Volts from a pressure of 1 Torr to 760 Torr.
- Relay Control outputs

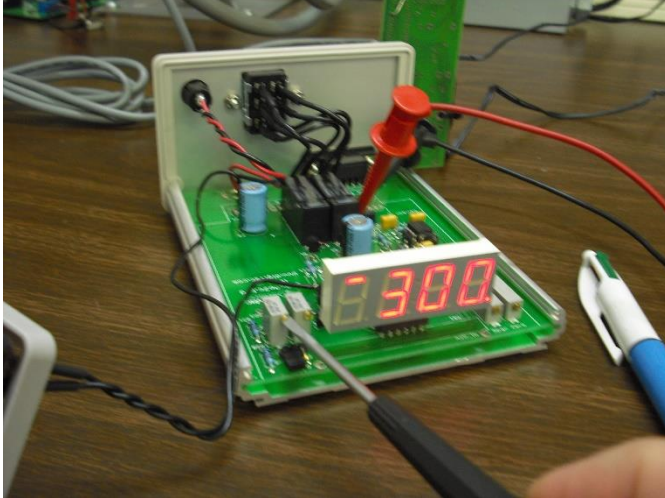
Units configured with controls will have two set point SPDT relays adjustable with a potentiometer.

Operation:

1. Relay 1 will be activated when the set point falls below the configured set point, and will remain active until the vacuum level (pressure) rises above set point. This will be indicated by a relay “click” and also a hash mark in the upper left corner.
2. Relay 2 will act in the same way.

Configuration:

1. Remove front panel with Phillips head screw driver
2. Set the vacuum level for set point 1 by shorting the left most and center pin with the jumper provided, then set the left most potentiometer to the desired vacuum level.

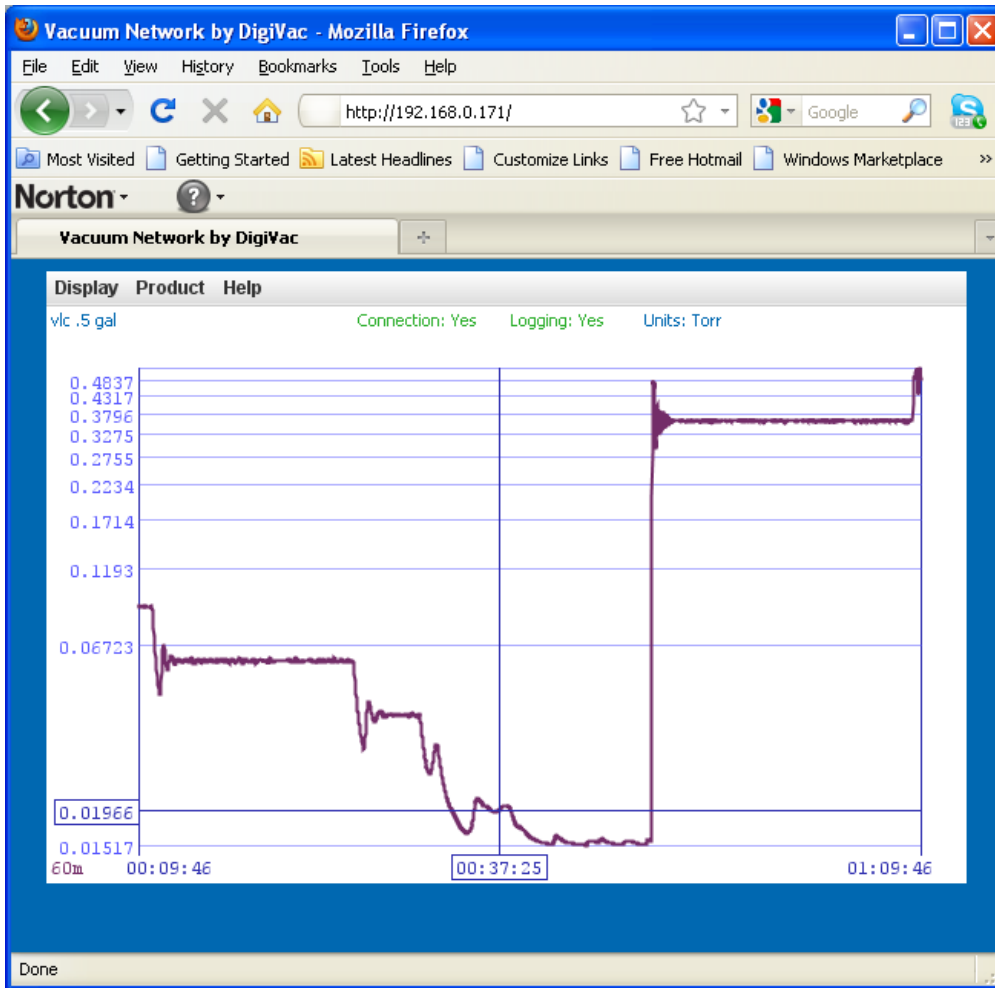


3. Follow the same procedure for setting set point 2, shorting the center pin and the right pin, then adjusting the potentiometer on the right
4. Replace the jumper on the center pin and close up unit.

Rear View of 2L760:

SP1	SP2
Normally Open	Normally Open
Normally Closed	Normally Closed
Common	Common

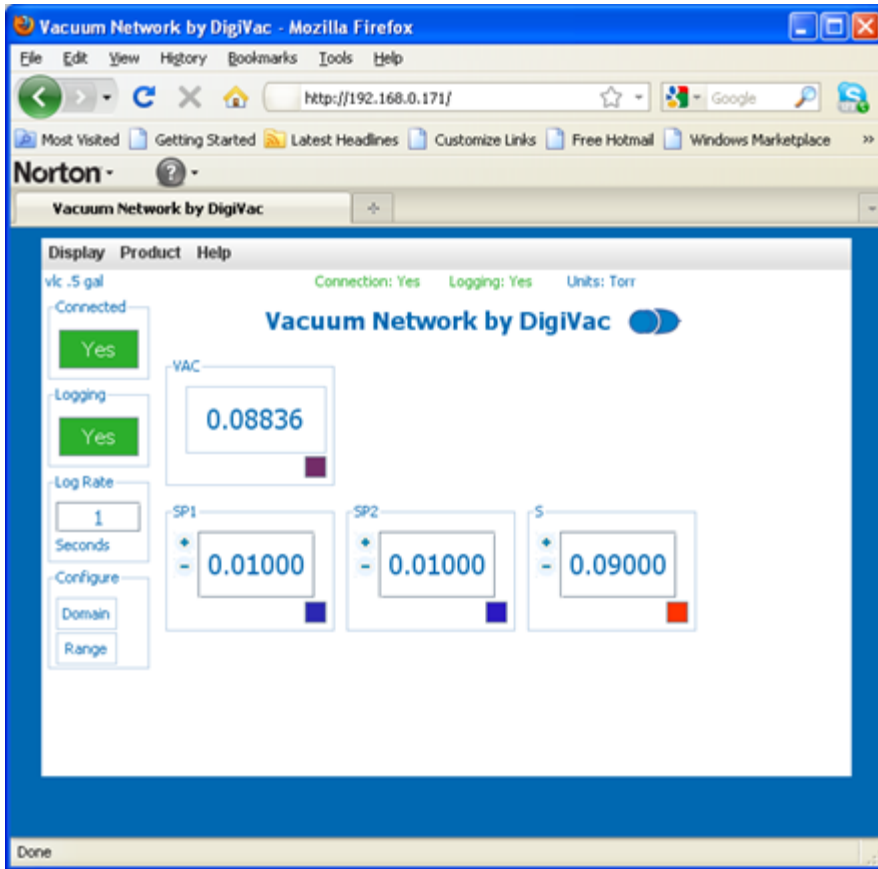
If you purchased the Wireless or Ethernet option, please refer to the model 200 Ethernet Addendum for initial setup. Your 2L760 should be set by default with the IP address 192.168.0.200. Surf over to <http://192.168.0.200> (or whatever your IP address was set to) and say “yes” to security screens authorizing a DIGIVAC applet to run in your browser. You should see a screen that looks like:



Feel free to connect to the IP address:10001 with HyperTerminal, putty or your favorite communication tool to communicate directly with the device.

To use the 2L760 web

terminal capability, highlight Display ► Terminal



The terminal window popup will display, the user can execute all the commands in:



Press return or enter to submit the query or change the set point. Note that while the web terminal is open, the main 2L760 screen will not update. If at any time the web terminal or the main 2L760 applet window becomes unresponsive, close the.

6.0 SERVICING - GAUGE TUBE CLEANING.

In some cases, a gauge tube may become contaminated with oil or other foreign matter. Once contamination occurs, the sensor needs to be replaced. Please send the controller back to DIGIVAC for mating gauge tube replacement.

6.1 FACTORY REPAIR AND CALIBRATION.

The vacuum gauge assembly is designed to provide years of trouble-free service, and the liberal internal use of plug-in components makes it easily repairable. Field servicing of the unit is not recommended. The accuracy of calibration is dependent on the quality of the gauge tube, accuracy of calibration is difficult to achieve in a field setting. Each DIGIVAC vacuum gauge controller is calibrated to the particular vacuum gauge sensor that is shipped with the unit.

In the event the user must recalibrate the instrument, the following procedures are suggested.

- A. Before re-calibrating the instrument, it should be ascertained that the instrument is in fact incorrect. In many cases, the problem will be with a tube that is contaminated, or a system that is operating improperly. It is recommended that a spare tube be kept on hand and stored in a clean, dry place. Then, in cases of suspect readings, the tube should be changed before proceeding further.

- B. Calibration instructions:
 1. Put gauge on a manifold with a standard such as a capacitance manometer, and set manifold pressure to 750 Torr or 1000 mbar
 2. Adjust "ATM" potentiometer to 750 Torr (for Torr units) (or 1000 mbar) (matching standard)
 3. Set manifold to 5 Torr and adjust "vac" potentiometer so it reads 5 Torr +/- 0.2 Torr. (for mbar installations, set at 6.4 mbar +/- 0.2 mbar)

7.0 NOTES ON CALIBRATION.

The DIGIVAC is calibrated in nitrogen. This device can measure any clean dry gas and retain calibration.

Note that isolated transducers like capacitance manometers are independent of gas type or moisture content.

8.0 UNDERSTANDING TORR.

The 2L760 and many similar instruments are calibrated in microns or "millitorr." Microns are not really a measure of vacuum at all, but rather of absolute pressure. It will be recalled that the pressure of the atmosphere is 14.696 or approximately 14.7 pounds per square inch at sea level. This pressure is due to the weight of all of the air in the earth's atmosphere above any particular square inch. This 14.696 psi is equivalent to the pressure produced by a mercury column of approximately 29.92 inches high or .76 meters (about 3/4 of a yard) or 760 millimeters of mercury. Atmospheric pressure varies greatly with altitude. It decreases approximately 1 inch of mercury per thousand feet of altitude. It also varies widely with local weather conditions. (Variations of one half inch in a single day are common.) The word vacuum means pressure lower than atmospheric or "suction," but, in describing negative pressure, the atmosphere is only a satisfactory reference if we are dealing with values of vacuum down to about 27 inches of mercury. Below that, it is much more useful to talk in terms of absolute pressure, starting from absolute zero. The 2L760 and all similar instruments measure negative pressure below 27" of mercury.

One TORR, a commonly used unit, is an absolute pressure of one millimeter of mercury. A millitorr is equal to one thousandth of a TORR. A MICRON is the same as a millitorr.

9.0 ACCESSORIES AND MODIFICATIONS.

The following are offered as accessory equipment or field-installed modifications.

Padded shoulder strap Case with Velcro closure- For instruments that will be used in the field, particularly in cryogenic applications, a padded shoulder strap case is available.

COMPATIBILITY WITH OTHER GAUGE TUBES.

On special order, DIGIVAC Instruments can be provided to use with most other vacuum gauge tubes. AC and DC excitation are available. Gauges have been provided for Hastings, Varian, Thermionics, Veeco, VRC, and Fredericks gauge tubes.

10.0 TERMS AND CONDITIONS

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