



INSTRUCTION MANUAL

DIGIVAC Model 450

Digital Vacuum Gauges and Vacuum Level Controllers

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Digivac Model 450 Digital Vacuum Level Controller

Overview

This instrument works in conjunction with a precision isolated integrated circuit pressure transducer and a large bore proportional solenoid valve to measure and control vacuum. Its range is 0 to 760 Torr. Optional range is 0 to 1000 millibar.

The valve opens proportionally from 0 to 100%. The voltage to the valve is controlled using a PWM (FET transistor pulse width modulating) technique which allows precise positioning of the valve plunger without developing heat or EMI (electro-magnetic interference)

The unit, when shipped, is pre-tested, pre calibrated, and ready for operation.

Installation

Position the unit as desired and make the following connections:

- Connect the power supply to AC power 115 to 230 volts 50/60/400 Hz.
- Connect the power jack to the rear of the unit.
- Connect the Right Hose connection (as seen from the rear of the unit) to the vacuum pump
- Connect the Left Hose connection (as seen from the rear of the unit) to the system

Rack Installation:

The unit may be mounted on racks using the tray fittings available from VWR Scientific and other vendors.

Operation:

- Place both front panel toggle switches in the center position
- Using the knob, set the desired pressure.
- Move the right switch to the up (regulate) position.

The unit will now read:

```
760 Torr  758 Set
48%pwm   reg
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- The first line shows the current pressure and the set point
- The second shows the current value of the Pulse Width to the solenoid and the mode of operation.

Accuracy:

- Indicated pressure is accurate within + / - 3 Torr.
- Control accuracy is normally at or within a few Torr of the setting.
- It is often helpful to adjust the setting based on experience to achieve greater accuracy.

Switch Functions

- Purge (left) Switch Controls purge mode on units that are so equipped.
 - On units without purge, it should be left in the center position.
- Mode (right) Switch controls the mode of operation
 - Up position is Regulation
 - The unit positions the valve as required to maintain the desired pressure.
 - Center position is Off
 - This is handy for setting the set point without operating the valve yet.
 - Lower position is Full
 - Full open valve regardless of setting.
- The switches may be operated in any sequence without harming the unit.

Software

The unit comes with 2 different versions of controller software:

1. Software intended for directly connected vacuum pumps that relies on the leak characteristics of the vessel for bleed up, and a proportional valve to control the vacuum applied to the vessel
 - a. This version of controller software (lanlcd2sp.hex) has been shipping with our product since 2002. It is by far the most well deployed vacuum level control software in our portfolio.
 - b. This version of software can have an optional RS232 port for either PLC/PC control or the optionally purchased VDC – Valve Controller Digivac Software that allows the user to set 16 vacuum levels and duration to facilitate complex scientific scenarios, and approach a ramp rate. <http://www.digitalvacuumgauges.com/products/digivacmodel450-vlc.html>
2. Controller Software 8J22 is intended for use with vessels that don't leak, or it can be used to test scenarios that use house vacuum. When the unit is configured with RS232, bidirectional control can be established with a PC, PLC or other RS232 device for vacuum set point and reading of current vacuum level.

Additional Information:

- Power Supply: The unit has an external switching regulator power supply. It works with 115 or 230 Volts, AC or DC, without user intervention. Output is 18 Vdc.
- Constant voltage source: An integrated circuit based constant voltage source provides a current of 95 milliamps dc to excite the gauge tube.
- Amplifier: An integrated circuit operational amplifier senses the millivolt signal from the vacuum sensor and multiplies it by 40.
- A to D converter digitizes the voltage output from the amplifier.
- Microprocessor: The processor reads the A to D converter, performs mathematical calculations and displays the output on a 2 x 16 Character type LCD display. It also contains EEprom memory which can store calibration constants and set points.
- Has optional RS-232 output.
- Calibration:
 - The unit is calibrated at the Digivac Company.
 - Potentiometers provide for Zero and span adjustments.

Special units.

It is the policy of the Digivac Company to manufacture custom vacuum instrumentation for special applications whenever it is economically feasible to do so. Visit our web site for examples. We encourage inquiries about your special needs.

For repair or recalibration, return gauge to:

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