



VacuGuard User's Guide



Televac...The Finest In Vacuum Instrumentation

Some Thoughts From Televac

Thank you for purchasing this VacuGuard Instrument. The Televac VacuGuard is a unique and rugged, self-contained power source and display device for thermocouple vacuum sensors. It is both intuitive and easy to use and will provide you with many years of trouble-free service. This manual is designed to help VacuGuard users to gain the greatest benefit from its use. Please review the manual before attempting to operate the instrument.

1. Unpacking & Inspection

Inventory the Contents: Compare the list of items from your original purchase documents against the items listed on our shipping documents. Compare these against the actual contents of the shipping container. Report any differences to Televac.

Damage: In the unlikely event that the shipping container was damaged in transit, carefully inspect the contents for damage. If the VacuGuard Instrument or any of its accessories were damaged in transit, contact the freight carrier and tell them you wish to make a damage claim. Contact Televac for further instructions on replacement of damaged materials.

If the shipment arrived in good order, proceed to step 2.

2. Install the Battery - Reference to figure 1

A conventional 1.5 volt "D" size dry cell battery is provided with the VacuGuard instrument *unless* you've purchased the optional 1.5 volt NiCd rechargeable battery. You will need to install the battery. Access to the battery compartment will be found on the rear on the instrument case.

Fit a quarter or wide blade screwdriver into the slot on the battery compartment cover. Turn the cover 90 degrees counter clockwise. The alignment tabs on the interior of the cover should be visible at the 6 and 12 o'clock positions in the slots of the battery compartment. Turn the instrument to a vertical orientation and allow the cover to fall into your hand.

Insert the battery into the compartment with the positive (+) terminal facing toward the rear of the instrument. The negative (-) contact plate inside the compartment is spring-loaded, allowing for battery travel of as much as 0.75" Align the battery compartment cover over the end of the battery, so that the alignment tabs are again at the 6 and 12 o'clock positions. Press the cover into place and rotate it 90 degrees clockwise with a quarter or flat blade screwdriver to lock the cover into place. Proceed to step 3.



Figure 1

3. Install the Cable(s) - Reference to Figure 2

The VacuGuard is equipped to power and display the output of either Hastings type DV4, DV6 or Televac 2A series thermocouple sensors. Two modular (RJ type) cable ports are provided for this purpose on the rear of the instrument. A DV4/DV6 cable will fit into the lefthand port, while one of the two type 2A cables will fit the righthand port. Note that while the modular plugs are of different sizes, the modular plug of the 2A cable will fit either port, but will only work properly in the correct righthand port. The DV4/DV6 modular plug will only fit the lefthand port.

If you are planning to use both sensor types, be sure to install only one cable at a time. Install a cable now. Proceed to step 4.



Figure 2

4. Test Your VacuGuard - Reference to figure 3

Connect the cable you've installed in step 3 to the proper thermocouple sensor. Move the selector switch to the position for that sensor and turn on the instrument's power switch. Record the sensor's reading. In routine operation, the instrument's display will flash about once per second. We highly recommend you purchase a reference standard for the type of thermocouple sensor you are using. The reference standard will allow you to verify the correct operation of the VacuGuard Instrument. A list of recommended spares and options are noted on the last page of this User's Guide.



Figure 3

5.0 Useful Information to consider before using your VacuGuard instrument

5.1 Vacuum Terminology and The VacuGuard:

Atmospheric pressure is defined at 760 torr (at sea level, when the barometric pressure is 29.92" Hg). One Torr is 1/760 of atmospheric pressure. One Torr can also be expressed as 1000 Millitorr or 1000 Microns. One Millitorr or one Micron is 1/760,000 of atmospheric pressure.

The thermocouple sensors that are used with your VacuGuard instrument are designed to measure a *small portion* of that wide band of reduced pressure that extends from atmospheric pressure to a region known as very ultrahigh vacuum ($\sim 1 \times 10^{-14}$ torr). This total spectrum of measurable vacuum contains about 18 decades of pressure.

For example:

The Televac 2A series sensor measures from 20 torr to 1 millitorr. *Five decades.*

The DV-6/DV-6R sensors measure from 1 torr to 1 millitorr. *Four decades.*

The DV-4 measures from 20 torr to 0.1 torr. *Two decades.*

Please realize that the smaller the dynamic range of the sensor, the less visibility the user has to pressure changes.

5.2 Practical issues to consider with thermocouple sensors:

√ The most common failure mechanism is gross contamination. If there is a probable risk of contamination by particulate or liquids, we recommend the use of one of our sensor filters.

√ Vertical orientation with electrical pins 'up' (where practical) is usually preferred to inverted or horizontal orientation.

√ If your application requires a sensor that's immune to shock, vibration, excessive heat and/or severe weather conditions, contact us for information on our family of Miniature 2A sensors.

√ It is usually useful to have a known reference to periodically check the instrument and/or sensor performance. Refer to the information on the next page about our inexpensive reference standards.

5.3 Contacting us:

Our main telephone number is 215-928-4444 and our normal hours are 8:00am to 4:45pm eastern time.

Our fax number is 215-947-7464.

Our main email address is vacuum@televac.com

You can locate the name and contact information of your local Televac representative through our website - www.televac.com.

6.0 Troubleshooting

6.1 No Digital Display -

- Power Switch is 'off'. **Turn it 'on'**
- Battery is dead. **Replace or recharge as appropriate**

6.2 Improper Reading - *Note: Most improper readings are the result of a contaminated sensor. If in doubt, measure a sensor or reference standard that is known to be working properly.*

- Wrong cable or cable port is being used. **Choose correct cable or port per step 3.**
- Selector switch in wrong position. **Move to correct position per step 4.**
- Thermocouple sensor may be defective. **Test a known good thermocouple sensor or reference standard.**

6.3 Entire display or a single decimal point is flashing -

- Indication of low battery power. **Replace with a new or freshly recharged cell.**

7.0 Specifications

Software version 1.5

Power Source: 1.5 volt "D" size dry cell or optional NiCd battery

Cell Utilization: Approx. 60 hours per disposable cell or approx. 12-20 hours per NiCd charge*.

Display: Red LED, 0.56" high, four digits

Sensor Input: Televac 2A or 2A Miniature, DV4 or DV6, DV6R compatible

Cable Interface: RJ modular jack

Display Output: Torr or Millitorr as appropriate to sensor type

Size: 4.0" x 2.5" x 5.5"

Weight with battery: 23 oz.

**The rate of battery drain is a function of which brand thermocouple sensor is being measured.*

Recommended Options & Spares

Televac 2A reference standard, 1000, 100 and 0 millitorr	p/n 2-2100-242
Televac 2A sensor cable	p/n 2-9800-081
Televac 2A miniature sensor cable, NASA type	p/n 2-9800-082
DV4/DV6 sensor cable	p/n 1-2400-036
Rechargeable NiCd battery, pack of 2 cells	p/n 1-5400-025
Battery charger	p/n 1-5400-024
Soft sided carrying case	p/n 1-2600-26



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