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# InstruTech CVG Convection Vacuum Gauge

## Installation and Operating Instructions

Revision 1.01 - 9 Nov 2006

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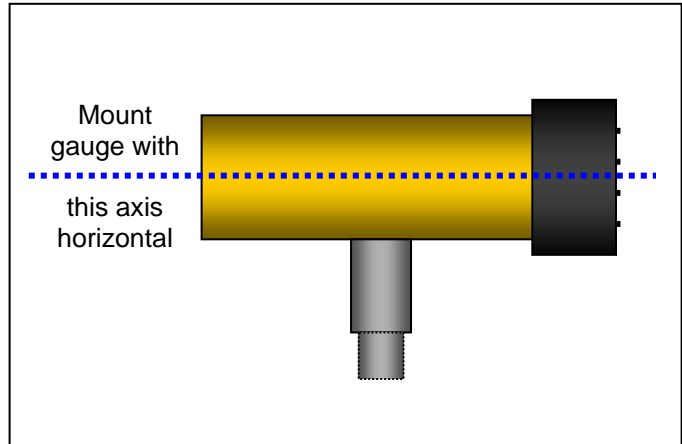
### Mounting the InstruTech CVG convection gauge on your vacuum system

Mount the gauge as close as possible to the pressure you want to measure. Long or restricted tubing will create a pressure difference (error) between your process and the gauge, and cause a delay in response to pressure changes. Mounting the gauge too close to a gas source will also cause errors in the readings.

Don't mount the gauge near a source of heating or cooling, such as heaters or air conditioning vents.

Mount the gauge with its main (long) axis horizontal (see diagram at right). Pressure reading errors will occur above 1 Torr if the gauge is not mounted horizontally. (Below 1 Torr, mounting position has little to no effect.)

Mount the gauge with port down, if possible, to help minimize the effect of any particles or condensation in the gauge.



Don't mount the gauge where it will be subjected to excessive vibration, such as on mechanical pumps. Vibrations may cause 'noisy' readings, and reading errors due to induced cooling of the sensor.

Fittings - follow the fitting manufacturer's recommendations and note the following:

- NPT fittings: Wrap the threaded portion of the tubing with Teflon tape and hand tighten the gauge into the gauge port. Do not use a wrench or other tool which may damage the gauge.

### Connecting and operating your InstruTech CVG convection gauge

The InstruTech CVG will directly replace Convectron<sup>®</sup> gauges with all existing controllers or modules. Connect the CVG to your Convectron<sup>®</sup> controller with your existing cable, or install in your Mini-Convectron<sup>®</sup> module, following the instructions for your particular electronics. Follow those same instructions for setup and operation. A good recommended practice is to remove power from any cable prior to connecting or disconnecting it.

### Grounding

Be sure the vacuum gauge and the rest of your vacuum system are properly grounded to protect personnel from shock and injury. Be aware that some vacuum fittings, especially those with O-rings, do not produce a good electrical connection between the gauge and the chamber it is connected to.

## Gases other than clean dry Air or N<sub>2</sub>.

**Calibration:** Most thermal vacuum gauges, including InstruTech gauges, are calibrated for use with air or N<sub>2</sub>. All gases have different thermal conductivity values, so a thermal vacuum gauge produces different/erroneous readings unless you make corrections. In some cases, the difference in readings can create a dangerous situation. For example: If you vent your vacuum chamber with Argon, the readings are lower than the true pressure, and you may backfill your chamber well above atmospheric pressure and it's overpressure limit. Around atmospheric pressure, even the difference between Air and N<sub>2</sub> will give different readings.

**Flammable or Explosive Gases:** Thermal vacuum gauges expose a heated wire to the gases being measured. Under some conditions, there may be sufficient energy to ignite a flammable or explosive gas. Thermal gauges are not recommended for use with flammable or explosive gases or mixtures.

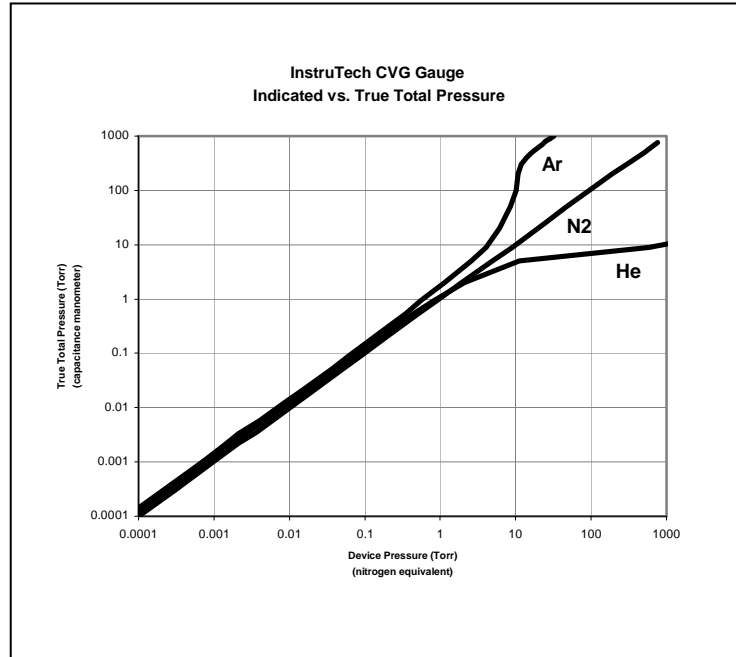
**Condensable Gases:** Water vapor or other condensable gases can cause erratic and erroneous readings if the gas condenses into liquid on the internal gauge surfaces or elements. Warming the gauge during the process (up to 50°C) may help prevent such condensation.

**Particulates and Contamination:** Dust, dirt, and particles or contamination from a process can damage the gauge or cause erroneous readings. Even in a clean environment, particles are often created during the installation process when component surfaces rub against each other (such as when joining fittings). Back streaming oil from vacuum pumps will also cause erroneous readings and eventual failure of the gauge. A filter on the inlet may help keep out particles, and prolong the life of the gauge by minimizing the amount of contaminants that get into the gauge.

## Overpressure

InstruTech convection gauges are not intended for use at pressures above ~35psig (~3 bars). If your chamber goes to higher pressures, you should install an isolation valve to protect the gauge. With some fittings, actual safe overpressure may be lower; for example, a quick-connect fitting may release the gauge (like a bullet !) with only a few psi overpressure.

*Helpful information is also available in application notes, on such topics as cleaning vacuum gauges, and using thermal vacuum gauges with different gases. Call us or visit our website.*



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### **Factory Service and Support**

If you need help setting up, operating, or troubleshooting your module, you are welcome to call us during normal business hours (8:00am to 5:00pm Mountain time) Monday through Friday, at 303-651-0551 or e-mail us at [info@instrutechinc.com](mailto:info@instrutechinc.com) .

If it becomes necessary to return the unit to InstruTech for service or calibration, please call or e-mail us for a return authorization number. For the safety of our employees, you must download a material disclosure form from our website at [www.instrutechinc.com](http://www.instrutechinc.com) Please use this form to provide a history of the gauge detailing what gases have been used. We cannot work on gauges that have been exposed to hazardous materials.

### **Warranty**

SELLER warrants that its products, are free of defects in workmanship and material and fit for the uses set forth in SELLER's catalog or product specifications, under the normal use and service for which they are intended.

The entire warranty obligation of SELLER is for the repair or replacement, at SELLER's option, of products or parts (examination of which shall disclose to SELLER's satisfaction that it is defective) returned, to SELLER's plant, properly identified within twenty four (24) months (unless otherwise noted) after the date of shipment from InstruTech Plant. BUYER must obtain the approval of SELLER and a return authorization number prior to shipment.

Alteration or removal of serial numbers or other identification marks renders this warranty void. The warranty does not apply to products or components which have been abused, altered, operated outside of the environmental specifications of the product, improperly handled or installed, or units which have not been operated in accordance with SELLER's instructions. Furthermore the warranty does not apply to products that have been contaminated, or when the product or part is damaged during the warranty period due to causes other than ordinary wear and tear to the product including, but not limited to, accidents, transportation, neglect, misuse, use of the product for any purpose other than that for which it was designed.

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