

Analog Output Voltage

Volts d.c.	Pressure in mTorr	Pressure in mbar	Pressure in Pascal
.000	0	0	0 0
.054	10	13.3	1.33
.525	20	26.6	2.66
.750	30	40	4.00
.970	40	53.3	5.33
1.17	50	66.6	6.66
1.52	70	93.3	9.33
1.81	90	120.0	12.00
1.94	100	133.3	13.33
2.16	120	160.0	16.00
2.54	150	200.0	20.00
2.80	200	266.6	26.66
3.25	300	400.0	40.00
3.54	400	533.2	53.33
3.70	500	666.5	66.66
4.04	1000	1,333.	133.3
4.21	2000	2666.	266.6
4.43	atmos.	atmos.	atmos.

OPERATING INSTRUCTIONS

2000 mTorr Thermocouple Vacuum Gauges

Your 2000 mTorr Thermocouple Gauge has been calibrated at the factory using N.I.S.T. Traceable Vacuum Gauges. All you need to do is install the gauge tube in your vacuum system and plug it into the octal connector on the Gauge Tube cable. Then connect the vacuum gauge line cord to AC power and the instrument is ready for operation.

These instruments operate with the following manufacturer's Gauge Tubes:

Varian 531 and 536
 MDC TGT 531S
 VRC 531 Stainless Steel

Instruments may be ordered for operation on either 115 V, 60 Hz or 230 V, 50 Hz power. Be certain that your power matches the voltage on the instrument's serial number tag.

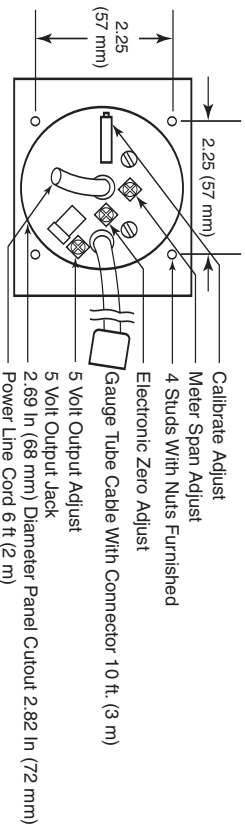
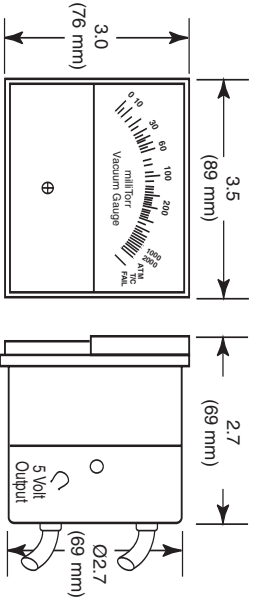
Calibration

If in the future you want to verify the calibration of your gauge, please follow this procedure.

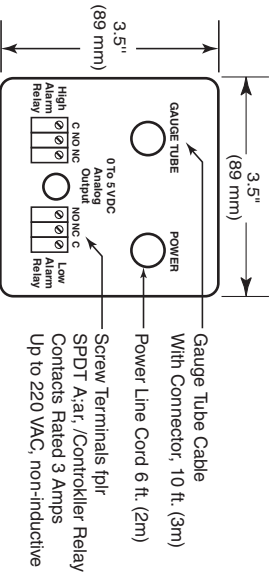
NOTE: Be advised that the calibration of Thermocouple Gauges is affected by changes in length of the gauge tube (sensor) cable. When calibrating, be sure to do so with the same cable length as is used during actual operation of the gauge.

1. Connect a new, clean gauge tube to a vacuum system with pressure below 1×10^{-4} and let the vacuum gauge warm up for 15 minutes. The gauge should read zero, if it does not, proceed to the next step.
2. Verify the mechanical zero of the meter. Disconnect the AC power and make sure the instrument is straight upright; not lying on its back. The meter pointer should now be just barely below zero. When looking at the meter straight on, you should see a small bit of white showing between the pointer and the zero mark. Adjust the front panel screw if required.

3. After adjusting the mechanical meter zero, a new gauge tube at 1×10^{-4} should read zero after a 15 minute warm up. If it does not, adjust the zero pot (located to the right of the analog output connector when looking at the instrument from the rear).



2000 mTorr Analog Vacuum Gauge



Rear Panel 2000 mTorr Analog Gauge Controller With 2 Set Points

4. Vent the gauge tube to atmosphere and adjust the span pot until the meter reads between the two 'ATM' lines. (The span pot is located to the left of the analog output connector when viewing the instrument from the rear.)

Analog Output

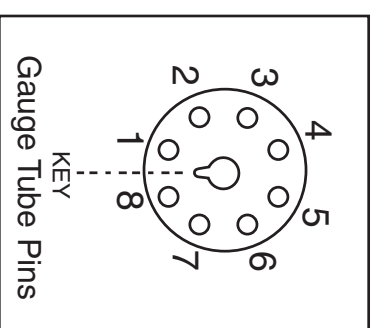
The analog output is nominally 0-5 VDC and available at the small plug extending from the top of the can. The voltage is zero at hard vacuum and 4.45 volts at ATM. The output is non-linear and a chart is provided on the back page showing output volts vs. pressure.

Gauge Tube Wiring

Hold the gauge tube with the connector pins pointing towards you and the key at the 6 o'clock position. The pin at 7 o'clock is pin number one. The pin at 5 o'clock is number 8. When the tube is good and at atmospheric pressure, the resistance between pins 1 and 5 will be approximately 1.7 ohms. Between pins 3 and 7 the resistance should be approximately 1.4 ohms.

Do not make resistance measurements when the tube is at vacuum.

If the resistance values are higher than specified, the tube is broken and must be replaced.



Setting the Control Points on Dual Set Point Models

To set the control points, press in either the Low or High "Push To Display" push-button on the front panel. This will display that set point on the meter. Adjust the multi-turn pot that corresponds to that set point until the desired pressure for the control action is read on the meter. Release the "Push To Display" push-button and the instrument will again read pressure.

The LED's show control action in the following manner:

- Relay energized, LED is ON; de-energized, LED is OFF
- Relays are de-energized when pressure is above the set-point (on atmospheric pressure side of set point.)
- Atmospheric pressure = de-energized = loss of power
- "NORMAL" = de-energized relay
- No Power = in no power state relays are de-energized

With no power to the instrument the relays go to their "normal" (de-energized) position and the LED is off. The relay are also de-energized and the LED is off when pressure being measured is above the set-point (that is, closer to atmosphere).

When the pressure gets below the set point value the LED lights and the relay changes to the energized state.

Contact Rating:

- 3 A @ 115 or 120 VAC, resistive
- 1.5 A @ 28 VDC, inductive

Gently pull the rear panel connectors and they will detach from their sockets for wiring. Plug the connectors back in after wires are connected.