

## Installation Guide - PT250/PT251 Pressure Transmitter



**WARNING!**  
Read Before Installation of  
PT250/PT251  
Pressure Transmitter

**DO NOT** use the PT250/PT251 without reading the installation guide in its entirety. Failure to do so may result in death or serious injury.

### General Information:

A failure resulting in injury or damage may be caused by excessive overpressure, excessive vibration or pressure pulsation, excessive instrument temperature, corrosion of the pressure containing parts, or other misuse. Should you have any questions prior to installation, contact Kavlico.

### Overpressure:

**Caution** – DO NOT exceed the pressure overload rating of the PT250/PT251. Failure to comply may result in irreversible electrical and/or mechanical failure to the pressure measuring and containing elements of the PT250/PT251.

Both static and dynamic overloads must be considered, especially if the PT250/PT251 is going to be installed in a hydraulic system application.

Hydraulic pressure fluctuations can result in very high and very fast peak pressures (i.e. water hammer effect).

To avoid damaging liquid surges, fluid lines should remain full (if possible) and pumps should be brought up to power slowly, and valves should be opened slowly. To avoid damage from both fluid hammer and surges a surge chamber should be installed.



If system pressure pulses are anticipated, select a PT250/PT251 transmitter with a pressure rating high enough to allow continuous operation at the highest expected pressure spikes.

### Freezing:

DO NOT allow freezing of process media in the pressure port of the PT250/PT251. The PT250/PT251 should be drained (mount in a vertical position with electrical termination facing upward) to prevent possible overpressure damage from frozen media.

### Use in Life Support Devices:

The PT250/PT251 is not allowed for use as a critical component in a life support device or system without the express written approval of Kavlico.

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## **Installation Guide - PT250/PT251 Pressure Transmitter**

### **Use in Life Support Devices (cont.)**

- Life support devices or systems are those which (a) are intended for surgical implant into the body, or (b) support to sustain life, and whose failure to perform, when properly used in accordance with the instructions for use provided in the product labeling, can be reasonably expected to result in a significant injury to the user.
- A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

### **Description:**

The Kavlico PT250/PT251 Pressure Transmitter is a high performance instrument that is intended for use in industrial applications where the process media to be measured is compatible with 304L stainless steel.

### **Mechanical Installation:**

- Environmental – The PT250/PT251 can be stored at -40°C to +125°C (-40°F to 257°F), and used within the temperature limits of -15°C to +125°C (5°F to 257°F). Ingress protection ratings of the PT250/PT251 are dependent upon the electrical termination specified.
- Mounting – The PT250/PT251 does not require any special mounting hardware and can be mounted in any orientation with negligible mounting position error effect. The PT250/PT251 can withstand substantial vibration without damage or significant output effect; however, it should always be a reasonable practice to mount the PT250/PT251 where there is minimum vibration. For transmitters with an NPT type

Pressure fitting apply sealing tape or equivalent sealant to the threads prior to installation. When installing or removing the PT250/PT251, apply a wrench to the hex wrench flats which are located above the pressure fitting. DO NOT under any circumstances tighten by using a pipe wrench on the housing as this can cause significant damage to the PT250/PT251. A wrench can only be used on the wrench flats of the hex.

### **Electro-Magnetic Interference:**

The electronic circuitry of the PT250/PT251 have been designed to minimize the effect of electromagnetic and radio frequency interference (RFI/EMI). To minimize susceptibility to noise, avoid running the termination wiring in a conduit that contains high current AC power cables. Where possible, also avoid running the termination wiring near inductive equipment.

### **Field Adjustments:**

The PT250/PT251 have been precisely calibrated and temperature compensated at the Kavlico factory to ensure long and stable performance. The PT250/PT251 can not be adjusted in the field.

### **Electrical Installation:**

Page 4 of the installation guide provides power supply requirements and the appropriate wiring instructions based upon the specific output signal and electrical termination features of the transmitter being installed.

### **Bench Test:**

For incoming inspection or failure evaluation, connect the PT250/PT251 to a dc voltage supply (off). The voltage supply should be set within the range specified for the model. Based upon the model's specified output, connect the output leads lead(s) to a mA meter. With no pressure on the unit, turn on the power supply and read the output signal on the ammeter. The reading should correspond to the specification indicated for null offset. If not, check the connections, wire color code and the setting of the power supply.

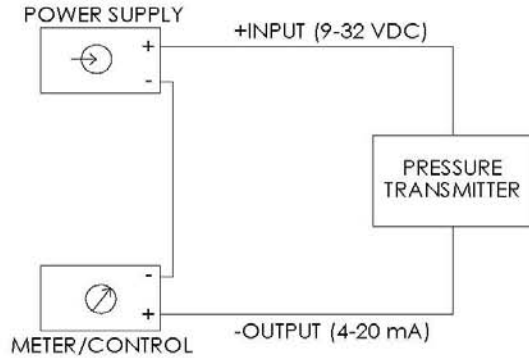
## Installation Guide - PT250/PT251 Pressure Transmitter



### Safety Considerations:

- Prior to installing and start-up of the PT250/PT251 pressure transmitter, you should verify that you have selected the appropriate scale range, and that the PT250/PT251 meets your desired performance and specific measurement conditions.
- You **MUST** observe the relevant local/national regulations and observe the applicable standards and directives for special applications (e.g. with dangerous media such as acetylene, flammable gasses or liquids and toxic gases or liquids and with refrigeration plants or compressors). **Should you NOT observe the appropriate regulations, serious injuries and/or damage can occur!**
- Open pressure connections only after the system is without pressure!
- DO NOT use the PT250/PT251 outside of the overload threshold. Make sure that the device is used only within the overload threshold limit at all times.
- Observe the ambient working conditions of the PT250/PT251.
- Only use the PT250/PT251 with compatible liquids and gases and avoid installing the transmitter in an environment with mechanical hazards.
- Only use the PT250/PT251 in accordance with the installation guidelines as described within this document: **Installation Guide – PT250/PT251 Pressure Transmitter**
- DO NOT interfere with or change the PT250/PT251 pressure transmitter in any way other than may be described within this installation guide.
- Should the PT250/PT251 become damaged or unsafe for operation, remove it from service and mark it to prevent the transmitter from being reinstalled accidentally.
- Should you be required to remove the PT250/PT251 from service, take all necessary precautions with regard to the remaining process media that may still reside within the pressure port as it may be hazardous or toxic.
- Repairs to the PT250/PT251 should be made by Kavlico only. To obtain a Return Material Authorization Number (RMA) call: **619-710-2000**
- Before removing the connector from the PT250/PT251, make sure to open circuit.
- Additional information about the PT250/PT251 in respect to features and specifications can be found in the PT250/PT251 Data Sheet which can be found on the Kavlico website at: [www.kavlico.com](http://www.kavlico.com) in the Resource Center.

### Electrical Installation and Wiring Guide - PT250/PT251



Minimum and maximum voltages at the terminals of the pressure transmitter are as follows:

$$V_{in}(\min) = 9 \text{ VDC}$$

$$V_{in}(\max) = 32 \text{ VDC (*derated above 85°C, see graph)}$$

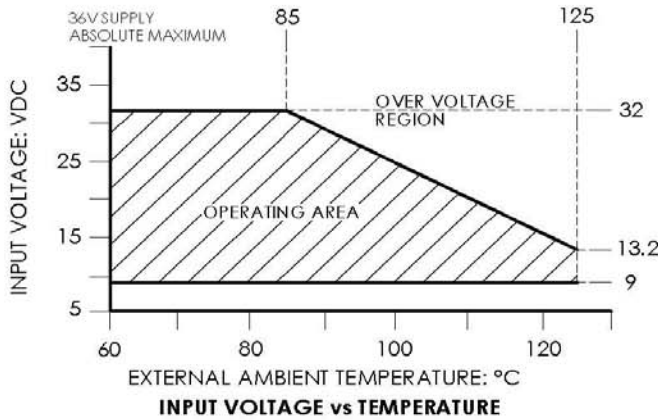
At all operating temperatures, minimum power supply voltage is calculated as:

$$VPS(\min) = 9 + .02 * R(\text{loop})$$

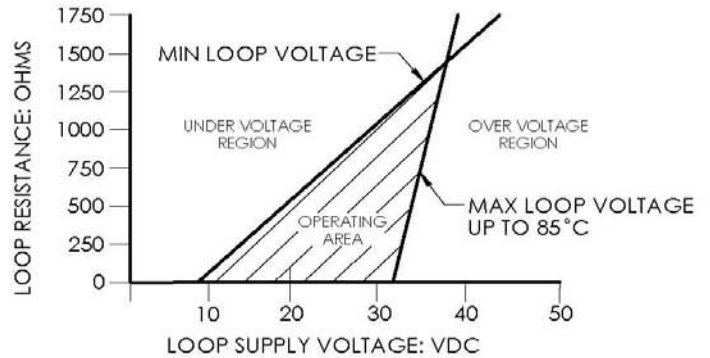
where:  
 $R(\text{loop}) = \text{total loop resistance}$

Use the graphs to calculate maximum power supply voltages depending on ambient temperature:

$$VPS(\max) = V_{in}(\max) + .004 * R(\text{loop})$$



**INPUT VOLTAGE vs TEMPERATURE**



**LOOP RESISTANCE vs LOOP SUPPLY VOLTAGE  
 (DERATED ABOVE 85°C AMBIENT TEMPERATURE)**

| Built-in Connector<br>(Top view) | Catalog Code           | Pin Assignments<br>(Supplied mating cable color) |                    |                    |                  |  |
|----------------------------------|------------------------|--|--------------------|--------------------|------------------|--|
|                                  |                        | 1  | 2                  | 3                  | 4                |  |
| <br>Metripack 150                | A, C                   | N/C  | +INPUT<br>(RED)    | -OUTPUT<br>(BLACK) | -                |  |
| <br>M12 X 1                      | D, E, F, G,<br>H, P, R | +INPUT<br>(BROWN)                                | N/C<br>(WHITE)     | -OUTPUT<br>(BLUE)  | N/C<br>(BLACK)   | For connector kit options (F,G):<br>Conductor size: 18 AWG MAX<br>Cable outlet: 6-8 mm |
| <br>9.4mm                        | J, K                   | +INPUT<br>(BLACK)                                | -OUTPUT<br>(BLACK) | N/C                | N/C<br>(GRN/YEL) | Inquire about connector kit option   |
| <br>18mm DIN                     | L, M                   | +INPUT<br>(BROWN)                                | -OUTPUT<br>(BLUE)  | N/C                | N/C<br>(GRN/YEL) | Inquire about connector kit option   |