

Installation Considerations for Surface Platinum Resistance Thermometers

Important Installation Considerations for Surface Platinum Resistance Thermometers

There are a variety of platinum resistance thermometers (PRTs) designed for measuring surface temperature. The accuracy of the temperature measurement that can be achieved with any of these sensors is highly dependent on the installation method and conditions to which the sensor will be exposed. There are a few general rules that should be followed to achieve the best accuracy possible from these sensors.

Applying an appropriate conductive grease or adhesive capable of the temperature range of exposure between the surface of the PRT and the surface to be measured will improve the heat transfer between the surface and the sensor resulting in a more accurate and faster responding measurement. Test data shows that the presence of a thermally conductive material can reduce the measurement error by up to 50%.(1.)

Insulating over the sensor after it is installed will prevent heat loss around the sensor and help isolate the sensor from the ambient conditions which can exacerbate the heat loss when unfavorable conditions exist. Test data shows that the presence of insulation over the surface sensor can reduce the measurement error by up to 70%.(1.)

Combining both the conductive material at the interface and the insulation over the top of the sensor can reduce the measurement error by a whopping 90%.(1.)

1. Based on test data using 50°C water flowing through a .5 inch SST tube at 3 feet per second. Ambient conditions varied between still air and forced airflow over the installation location.

