



TEMPERATURE SPECIALISTS, INC.

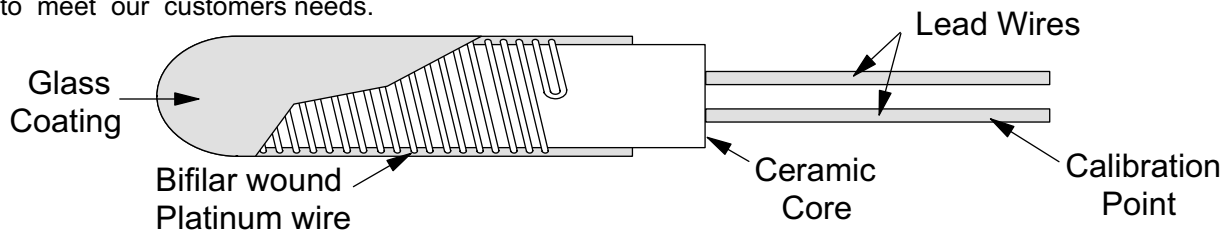
# Resistance Temperature Detectors - RTD's

## Platinum Wirewound Sensors

Platinum wire wound Resistance Temperature Detectors (RTD) construction consists of very fine high purity Platinum wire wound onto a ceramic core and then hermetically sealed with a glassed coating. The wire used is 99.99% pure platinum which gives excellent mechanical and electrical stability, provides close interchangeability and very little drift with age. Platinum offers a wide temperature range from -250 Degrees C to +750 Degrees C. Below are standard curves that are commonly used:

European (Din) or (IEC 751)	Alpha = .00385 Ohms/ Ohm/ Degree C
U.S. Industrial Standard	Alpha = .00391 Ohms/ Ohm/ Degree C
Japanese (JIS)	Alpha = .003916 Ohms/ Ohm/ Degree C

We manufacture our RTD's to meet these standard temperature curves and will also produce them with special temperature coefficients to meet our customers needs.



The calibration point of the RTD is close to the end of the lead wire, if you are adding extension leads the connections should be made at this point to maintain the accuracy (special lead length and calibration points are available). When encapsulating the RTD's into a protection tube or some kind of enclosure we recommend using a type of protection around the element to help avoid the pressures that can be caused by different coefficients of expansion. There are types of tubing's in different temperature ranges such as, Polyolifin shrink tubing, Teflon shrink tubing, and Fiberglass braid that can be used. These materials are thin and soft to help keep the element from being crushed by the pressures exerted on the RTD .

## Thin Film Sensors

Thin Film Resistance Temperature Detectors consist of a very thin layer of metal deposited onto an Aluminum Oxide ceramic substrate. The metal film is laser etched into a grid to form a resistive circuit and coated with a thin layer of glass. Larger lead wires are attached to the film and the attachment point is sealed in place with glass followed by a coating of glass over the etched surface of metal. This type of construction has a quick response time due to the low mass and large surface area. The metal films used provide sensors to meet various standard resistance curves as listed below. The base resistance value of the sensors has a wide range from 20 Ohms to 20,000 Ohms. The temperature range that these sensors can be used over varies by the type of resistance curve but can be from -200 Degrees C up to 850 Degrees C.

### Platinum curves :

- .00385 ohms/ohm/degree C (DIN 43760)
- .00375 ohms/ohm/degree C
- .00391 ohms/ohm/degree C

### Base resistances :

- 20, 100, 500, 1K, 2K, 5K, 10K Ohms
- Temperature Range
- 200 Degrees C to +850 Degrees C

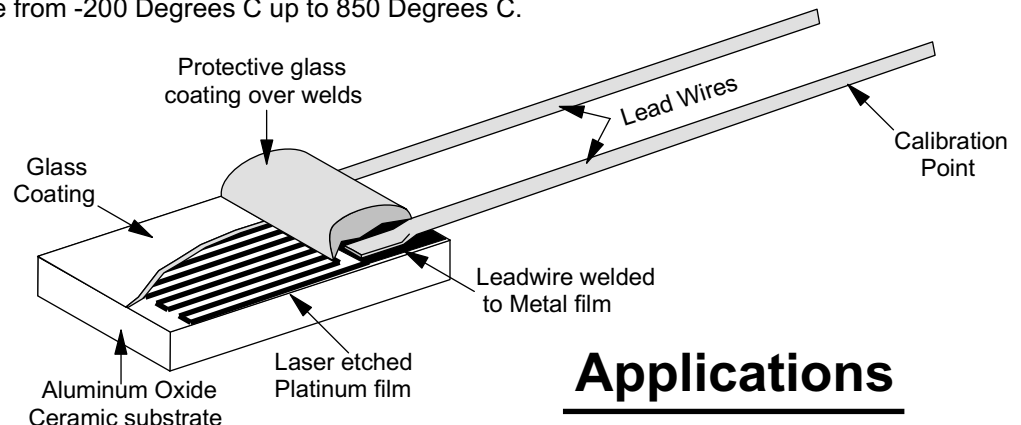
### Nickel curves :

- .00672 ohms/ohm/degree C
- .00637 ohms/ohm/degree C
- .00618 ohms/ohm/degree C (DIN 43760)
- .00500 ohms/ohm/degree C

### Base resistances :

- 100, 120, 500, 1K, 2K, 5K, 10K, 20K Ohms
- Temperature Range
- 60 Degrees C to +300 Degrees C

Others also available, please inquire.



## Applications

Home Appliances: Oven, Air Conditioning, Refrigeration  
Industrial Equipment: Temperature Control of processes  
Automotive: Air Flow Sensor, Fan controller  
Medical: Precision Thermometer  
Electronics: Over-temperature protection