

Resistance Temperature Detectors (RTDs) are high-accuracy, stable, and repeatable sensors that measure temperature based on the principle that metal resistance increases with rising temperature. Commonly made from platinum (e.g., Pt100, Pt1000), they offer a linear, predictable response, typically ranging from -50°C to 600°C. They are extensively used in industrial, medical, and laboratory applications.



### Operating Principle:

RTDs (Resistance Temperature Detectors) operate as passive devices with a positive temperature coefficient; as temperature rises, metal atoms vibrate more, creating higher resistance to electron flow.

### Materials:

Platinum is standard due to its high accuracy, stability, and broad temperature range. Other materials include nickel and copper for specific, lower-cost applications.

### Configurations:

RTDs are available in 2-wire (lowest accuracy), 3-wire (industry standard for lead-length compensation), and 4-wire (highest precision) configurations.



### Advantages:

Compared to thermocouples, RTDs offer higher accuracy, better linearity, and excellent long-term stability.

### Element Types:

Thin-film RTDs are smaller with faster response times, while wire-wound RTDs are robust and used for extreme temperatures.

### Measurement:

RTDs are typically connected to bridge circuits or transmitters (PLC/DCS) that convert resistance into temperature readings.

### Different type of RTD

- Head type RTD
- Bearing RTD
- Cable type RTD
- Mineral Insulated RTD
- RTD with Temp. Transmitter



According to the application and need, head type RTD comes with various sizes of head with ceramic terminal block and nickel plated brass terminal pin to ensure secure electrical contact.



## Key Feature

- Available both in Spring Loaded and Fixed types.
- Use high accuracy Thin Film or Wire Wound element
- Use special insulating material to ensure good dielectric strength
- Vibration and Shock proof design
- Smooth surface finish

## General Specification



|                        |                                                                                                         |
|------------------------|---------------------------------------------------------------------------------------------------------|
| Type :                 | PT 100 / PT 1000 / PT 10 / Cu 50                                                                        |
| Element :              | SIMPLEX / DUPLEX / MULTIPOINTS                                                                          |
| Protective Sheath :    | SS 304 / SS 316 / SS 310                                                                                |
| Temperature Range :    | -50°C TO 600 °C                                                                                         |
| Calibration Standard : | IEC 60751 : 2022 $\alpha = 0.003850$ / $\alpha = 0.003920$                                              |
| Accuracy Class :       | A / B / 1/3 DIN                                                                                         |
| Sensing Current :      | 10 mA (Max.)                                                                                            |
| Dielectric Strength :  | 1.0 kV to 2.0 kV for 60 Sec.                                                                            |
| Numbers of Wire :      | 2 Wire / 3 Wire / 4 Wire / 6 Wire                                                                       |
| Terminal Head :        | WEATHER PROOF , FLAME PROOF ,<br>CAST ALUMINUM, SS-304, SS-316<br>HEAD WITH SINGLE ENTRY OR DUAL ENTRY. |
| ACCESSORIES :          | TEMPERATURE TRANSMITTER (OPTIONAL)                                                                      |



## Application

- Steel Industry
- Power Industry
- Cement Industry
- Chemical Industry
- Petrochemical Industry
- Motor Industry
- Sponge Iron Industry
- Glass Industry
- Atomic Energy

Bearing RTD's are designed for areas where there are space limitations. They are small, compact and are often used to detect temperature increases in bearing, thrust bearing plates, shafts and motor windings. They are miniature low mass sensors which are fast responding. Bearing sensors are manufactured using thin film technology and by design are tip sensitive and vibration resistant. They can be spring loaded into a bearing housing or held in position with a high temperature epoxy resin. Condition monitoring has proven important in the installation and maintenance of all types of turbo machinery. Bearing temperature is primary important because bearings are the critical links between the rotating and stationary components in a machine. If temperatures are taken in the correct location, then Babbitt metal temperature can be the best indicators of a bearing's operating condition.

## Key Feature



- Available both in Metal & Non Metal Protection Sheath(Teflon , Nylon etc.)
- Use high accuracy thin film element
- Lead wire pull test , Tap test , Drop test carried out on 100 % sensors
- Use special insulating material to ensure good dielectric strength
- Vibration and Shock proof design
- Smooth surface finish

## General Specification

|                        |                                                                        |
|------------------------|------------------------------------------------------------------------|
| Type :                 | PT 100 / PT 1000 / PT 10 / Cu 50                                       |
| Element :              | SIMPLEX / DUPLEX / MULTIPOINTS                                         |
| Protective Sheath :    | SS 304 / SS 316                                                        |
| Temperature Range :    | -50°C TO 200 °C                                                        |
| Calibration Standard : | IEC 60751 : 2022 $\alpha = 0.003850$ / $\alpha = 0.003920$             |
| Accuracy Class :       | A / B / 1/3 DIN                                                        |
| Sensing Current :      | 10 mA (Max.)                                                           |
| Dielectric Strength :  | 1.0 kV to 2.0 kV for 60 Sec.                                           |
| Numbers of Wire :      | 2 Wire / 3 Wire / 4 Wire / 6 Wire                                      |
| Wire Construction :    | PTFE insulated Silver Plated Copper Wire with following construction - |
|                        | 1.TEFLON /TEFLON                                                       |
|                        | 2.TEFLON / TEFLON / SS BRAIDED                                         |
|                        | 3.TEFLON / FG / SS BRAIDED                                             |
|                        | 4.TEFLON /TEFLON /SS or SPC BRAIDED / TEFLON                           |
|                        | 5.TEFLON / SILICON RUBBER                                              |
|                        | ** For other construction please specify us                            |



Mineral Insulated RTD are used where the length of the RTD is required in a long size. This type of RTDs' are very flexible so that to adapt the shape as per customers requirement. This RTDs' can be used in high temperature upto 700Deg.C.

## Key Feature



- High Temperature Rating up to 700°C
- Mineral MgO packing protects element from shock and contamination
- Field bendable
- Inconel or stainless steel sheath
- High precision RTD elements for stable, repeatable measurement
- Dual sensing element model is excellent for redundancy and failure protection

## General Specification

|                        |                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------|
| Type :                 | PT 100 , PT-1000, Wire Wound or Thin Film Type                                             |
| Element :              | SIMPLEX / DUPLEX / MULTIPOINTS                                                             |
| Protective Sheath :    | SS 304 / SS 316 / INCONEL-600                                                              |
| Temperature Range :    | UPTO 700°C                                                                                 |
| Calibration Standard : | IEC 60751 : 2022 $\alpha = 0.003850$ / $\alpha = 0.003920$                                 |
| Accuracy Class :       | A / B / 1/3 DIN                                                                            |
| Sensing Current :      | 10 mA (Max.)                                                                               |
| Dielectric Strength :  | 1.0 kV to 2.0 kV for 60 Sec.                                                               |
| Numbers of Wire :      | 2 Wire / 3 Wire / 4 Wire / 6 Wire                                                          |
| LEAD WIRE :            | PTFE INSULATED COPPER WIRE<br>PTFE INSULATED / SS BRAIDED<br>(PLEASE SPECIFY US FOR OTHER) |



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