

# Mineral Insulated RTDs



## Special Assemblies

### Skin temperature RTDs:

Combines a precision element with low cost, easily installable accessories and flexible thermal cable with an ability to produce fast response surface sensing.

### Bearing temperature measurement RTDs :

Miniature detector for embedment in thrust pads-spring loaded holder with fluid seal easily adjustable for a proper loading at any hole depth. These are installed in babbit layer of large bearing for immediate warning of possible failure.

### Room temperature measuring RTDs:

RTD assemblies with a suitable protecting tube and surface mounted junction box are available for temperature measurement in cold storages installations, textile factories, air conditioned environment.

### RTD with local indication:

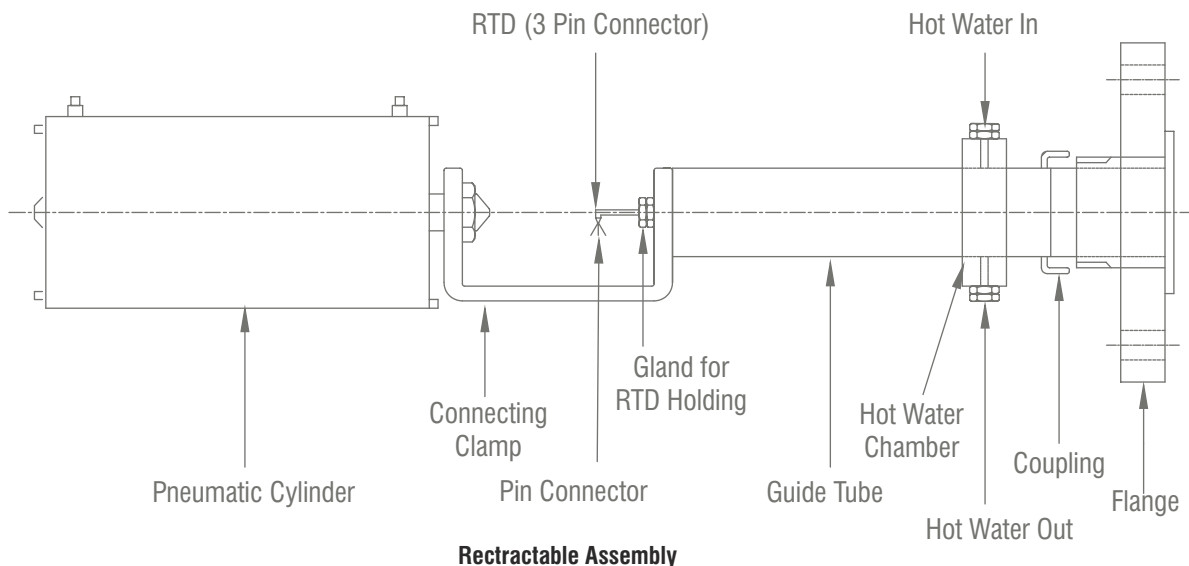
Refer our detailed section

### Multipoint RTD assembly:

Multi elements are located at different heights in a reactor or storage tanks (e.g. Ammonia storage). Fully tailor-made designs are available to suit the specific requirement.

### Retractable telescopic assembly:

Special assembly design has been developed for polymer manufacturing units as import substitution. The system comprise of a RTD assembly, actuator, solenoid valve and another hardware (contact our design department for details).



# Mineral Insulated RTDs



Accurate temperature monitoring and control begins with a properly designed sensor. RTD - Resistance Temperature Detector used for temperature measurement (-) 200°C to 500°C (upto 800°C on request), must have the physical configuration necessary for optimum thermal response to the process fluid it is sensing and the resistive element compatible with instrumentation.

The system accuracy begins with proper primary sensor selection. The integrity of any temperature measuring device depends upon proper traceability.

Our fully equipped measurement and testing laboratory maintains primary reference standard calibrated and duly certified to national standards. These are used for the calibration of all RTDs we manufacture.

Various considerations apply to the design of RTD assemblies. The element should be protected from shock and vibration, yet free of expansion stresses that may shift the reading. The element assembly needs to be isolated without obstructing heat flow. The outer sheath has to withstand pressure, erosion and vibration, yet it should be small enough for easy installation and rapid response to temperature changes.

## Features

- State-of-the-art Laser Welding adopted to weld element to transducer case and bulb to sheath.
- High integrity construction.
- High accuracy, repeatability.
- High insulation resistance (> 100 M ohm @ 500 VDC at 25°C)
- Wide operating range i.e. (-) 200°C to 800°C
- Fast response
- Mineral insulated construction enables the sheath to be bent / routed to suit installation without affecting performance.
- Available in variety of sheath diameters.
- Two, three and four wire configuration
- Calibration in accordance with IEC 751
- Class A type or 1/3<sup>rd</sup> DIN with special limits of error optional#.
- Suitable for head mounted transmitters.

# Refer our precision RTD section.



**Laser Welding Machine**

# Mineral Insulated RTDs

*General*

## Specifications

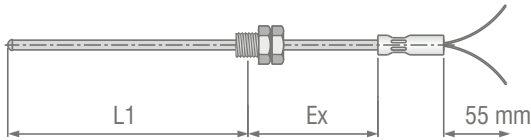
|                        |   |
|------------------------|---|
| <b>Element</b>         | : 1 Pt 100 or 2 Pt 100 - single or duplex (triplex on request)  |
| <b>Element OD</b>      | : 3.2 mm, 6 mm, 8 mm, for the elements portion of 60 mm, with leadout MI cable of 2.8 mm, 5 mm respectively<br>Straight construction with continuous OD of 6 mm, 8 mm, 10 mm also available.  |
| <b>Sheath material</b> | : SS316   |
| <b>Insulation</b>      | : Mineral, compact MgO (over 99% purity)  |
| <b>Calibration</b>     | : In accordance with IEC-751 / DIN 43760 (class B or A)   |
| <b>Conductor</b>       | : Copper (Nickel on request*)   |
| <b>Configuration</b>   | : Two wire, three wire or four wire   |
| <b>Open end</b>        | : Pot seal or quick connect-disconnect plug and jack or terminal block with PTFE insulated copper conductor flexible tails.<br>(Terminal block- ceramic spring loaded 41mm OD, 33 PCD with two M4 screws, silver plated brass terminals).                 |
| <b>Head</b>            | : Diecast aluminium (LM6 Gr.) / SS304 / SS316, single or double entry with ¾" ET (F) cable entry as standard, ½" NPT (F) for well or nipple.  |
| <b>Protection</b>      | : Weatherproof to IP-67 (IS :13947 Part I)<br>: Flameproof to Gr. I, IIA IIB (equivalent to NEC class I Div II Gr. C & D)<br>: Flameproof to IIC (equivalent to NEC class I Div II Gr. B, C & D)<br>: Increased safety<br>: ATEX certified<br>: CE Marked |
| <b>Extension</b>       | : Nipple or Nipple - Union - Nipple standard 150 mm long, 1/2" sch. 40 /80 in A106 Gr. B, Cd plated or SS304 or SS316 or adjustable compression fitting.  |
| <b>Optional</b>        | : a) Thermowell (refer - section on Thermowell )<br>b) Head mounted temperature transmitter   |
| <b>Routine tests</b>   | : a) Calibration<br>b) Nitrogen leak test<br>c) Dimensional check<br>d) Insulation resistance (>100 M ohm @ 500VDC at 250C)<br>e) Continuity  |
| <b>Type tests</b>      | : a) Vibration test<br>b) Drop / Shock test<br>c) Self heating error test<br>d) Response time test (In situ-water flowing @ 20 ltr. per second)<br>e) Autoclave test<br>f) Hot IR   |



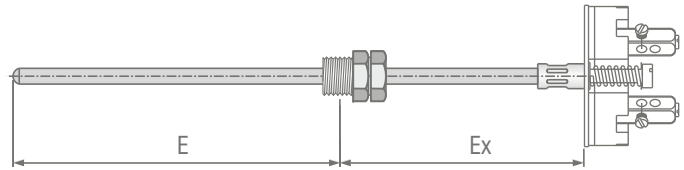
# Mineral Insulated RTDs

*General*

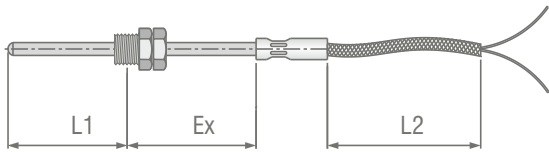
## How to Order



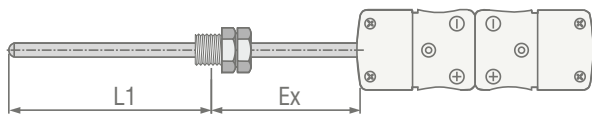
**TYPE : RTD IA**



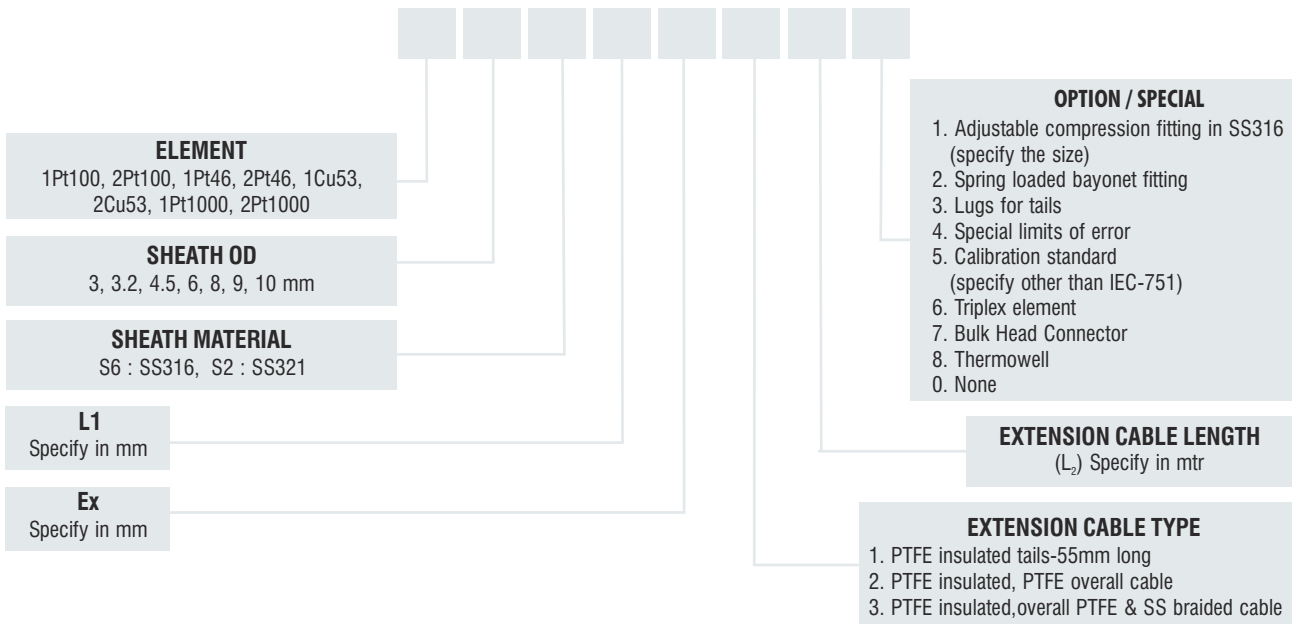
**TYPE : RTD-I-TB**



**TYPE : RTD IB**

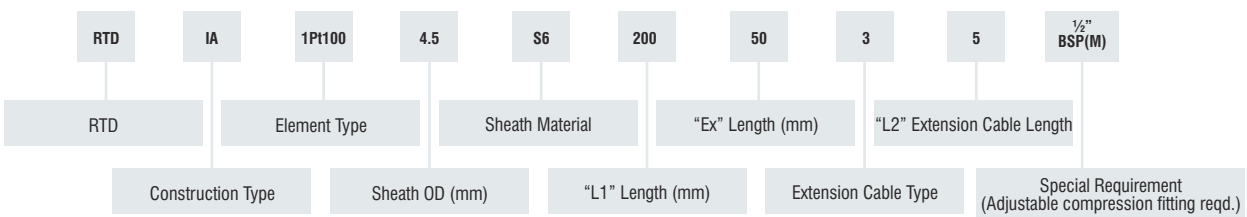


**TYPE : RTD-I-PJ**



**Standard Features** : a - Mineral insulated (compact MgO) construction  
b - 3 Wire System  
c - Reference standard IEC 751 Class 2

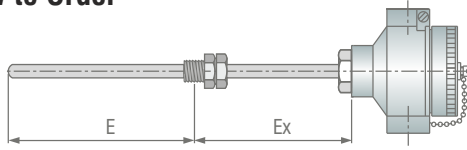
**Typical Model No** : RTD-I-B-1Pt100-4.5-S6-200-50-3-5-1/2" BSP(M)



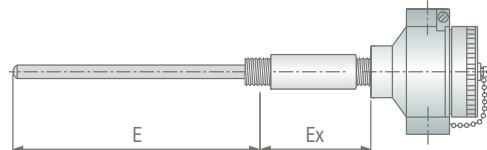
# Mineral Insulated RTDs

# General

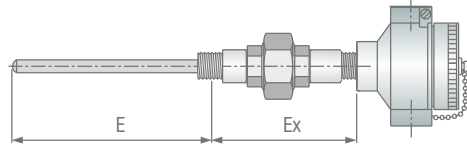
## How to Order



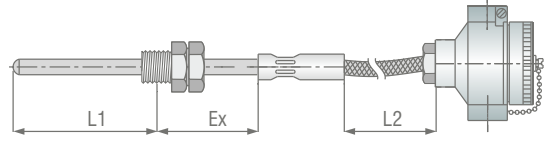
TYPE : RTD-H-A



TYPE : RTD-H-B



TYPE : RTD-H-C



TYPE : RTD-H-D

|   |   |  |
|---|---|--|
| <p><b>ELEMENT</b><br/>1Pt100, 2Pt100, 1Pt46, 2Pt46, 1Cu53,<br/>2Cu53, 1Pt1000, 2Pt1000</p>  |   |  |
| <p><b>SHEATH OD</b><br/>4, 5, 6, 8, 9, 10 mm</p>  |   |  |
| <p><b>SHEATH MATERIAL</b><br/>S6 : SS316, S2 : SS321</p>  |   |  |
| <p><b>HEAD</b><br/> <b>WAL</b> Aluminium (LM6 Gr.), Weatherproof (IP-66)<br/> <b>WS4</b> SS304, Weatherproof (IP-66)<br/> <b>WS6</b> SS316, Weatherproof (IP-66)<br/> <b>FLAL</b> Aluminium (LM6 Gr.), Flameproof (IIA, IIB)<br/> <b>FLS4</b> SS304, Flameproof (IIA, IIB)<br/> <b>FLS6</b> SS316, Flameproof (IIA, IIB)<br/> <b>FCAL</b> Aluminium (LM6 Gr.), Flameproof (IIC)<br/> <b>FCS4</b> SS304, Flameproof (IIC)<br/> <b>FCS6</b> SS316, Flameproof (IIC)<br/> <b>FCCAL</b> Aluminium (LM6 Gr.), Flameproof (IIC+CCOE)<br/> <b>ATAL</b> Aluminium (LM6 Gr.), ATEX certified<br/> <b>FMAL</b> Aluminium (LM6 Gr.), FM/UL certified</p> |   |  |
| <p><b>CABLE ENTRY</b><br/> <b>15N</b> 1/2" NPT(F)<br/> <b>20E</b> 3/4" ET(F)<br/> <b>15M</b> M20 x 1.5(F)<br/> <b>15B</b> 1/2" BSP(F)</p>   |   |  |
|   | <p><b>OPTION / SPECIAL</b><br/>         1. Cable gland (specify material)<br/>         2. Two cable entries<br/>         3. Head mounted transmitter<br/>         4. Plug for cable entry (specify material)<br/>         5. Connection (other than specified)<br/>         6. FG/FG, SS braided cable<br/>         (specify length e.g. 6(3) i.e. 3 Mtr cable)<br/>         7. Special limits of error<br/>         8. Thermowell<br/>         0. None</p> |  |
|   | <p><b>Ex</b><br/>Specify in mm</p>  |  |
|   | <p><b>CONNECTION MATERIAL</b><br/> <b>C</b> Cd plated CS<br/> <b>S4</b> SS304<br/> <b>S6</b> SS316</p>  |  |
|   | <p><b>E</b><br/>Specify in mm</p>   |  |

- Standard Feature** : a - Reference standard IEC 751 Class 2  
 b - Mineral insulated (compact MgO) construction  
 c - 1/2" NPT(M) connection  
 d - 3 Wire System

**Typical Model No** : RTD-H-B-2Pt100-8-S2-WS4-15N-250-C-75-2

