RTD Sensor Probes

Overview

The RT series RTD sensor probes come in various styles unique to different applications. Each style consists of a RTD element protected by a sheath with a termination option.

Features:
- Styles are customizable to almost any application.
- Manufactured from high quality raw materials that meet industry recognized standards.
- Fast lead time on styles that utilize standard Aircom materials.

Application:
RTD sensor probes are used widely across almost any and every commercial and industrial temperature process control application.

Configuration Considerations

When configuring the RT series RTD sensor probe models to suit your application it is important to consider the following:

- Hazardous location approval rating
- Sensor probe construction options
- Number of RTD elements
- Sheath OD
- Sheath material (316/L stainless steel standard)
- Sensor probe length
- Lead wire length
- Lead wire type
- Lead wire termination
- Process fitting options
- Process fitting size
- Minimum and maximum temperature of the process
- Process conditions and effect on the sensor probe
- Maximum pressure (if any)

1. **Lead Wire Termination** is how the sensor will connect and terminate to the instrument or electrical interface.

2. **Lead Wire Insulation Type** and length are selected to suit each application. The temperature rating varies depending on the material of lead wire used.

3. **Transition** is where the sensing probe is transitioned to lead wires. This piece is crimped or brazed onto the probe and potted with an epoxy rated to 150°C. For high temperature, and low moisture applications, a ceramic cement potting material is available on special request.

4. **Fitting options** are available to fasten the sensor into the process or optional thermowell.

5. **Sensor** length, outer diameter, and material are very important variables when designing a RTD sensor probe. The sheath is commonly constructed from tubing or mineral insulated cable (MI cable). 316/L stainless steel is the standard alloy Aircom uses to construct RTD sensors. Other alloys are available on special request. Material compatibility is always the end users responsibility.

6. **RTD element** is located in the tip of the sensor. This is where the temperature sensing takes place. RTD elements may be a thin-film or wire-wound style depending on RTD construction options.

Temperature Limiting Factors of RTD sensor probes will depend on the RTD construction option of the model code in addition to the rating of each component used in the sensors construction. Continuous temperature ratings of the components are listed in the model number selection.
# RT4 RTD Sensor Probe Model Code

<table>
<thead>
<tr>
<th>RT4</th>
<th>RTD Sensor Probe</th>
</tr>
</thead>
</table>

### T1: Probe Style
- **GP**: General purpose
- **EI**: Electrically isolated
- **TS**: Tip sensitive
- **BP**: Bayonet style
- **TE**: Tip sensitive & electrically isolated
- **BT**: Bayonet style & tip sensitive

### T2: Element Type
- **A**: 100Ω Pt. 385 Class A³
- **B**: 100Ω Pt. 385 1/10 Class B
- **C**: 100Ω Platinum 392
- **D**: 120Ω Nickel 627 0.806Ω°C
- **E**: 10Ω Copper 427 0.039Ω°C
- **F**: 1000Ω Pt. 385 Class A³

### T3: Number of Elements
- **S**: Single element
- **D**: Dual element

### T4: Lead Wire Configuration
- **2**: 2 Wire
- **3**: 3 Wire
- **4**: 4 Wire

### T5: Sensor Probe Diameter
- **18**: 0.125” (1/8”)
- **36**: 0.188” (3/16”)
- **21**: 0.215”
- **14**: 0.250” (1/4”)
- **38**: 0.375” (3/8”)

### T6: Sensor Probe “L” Length (inches)³
- "inches" Specify length in inches for straight probe length
- "N”inches” Specify "N" and length in inches for 90° bend

### T7: Lead Wire Type³
- **TE**: Teflon (260°C)
- **ST**: Teflon with SS over braid (260°C)
- **AT**: Flex armor over Teflon (260°C)
- **PT**: Poly jacketed flex armor over Teflon (102°C)
- **AF**: Flex armor over fiberglass (482°C)

### T8: Lead Wire “A” Length (inches)³
- "inches” Specify length in inches

### T9: Lead Wire Termination³
- **BE**: Bare ended lead wire
- **SC**: Standard male connector (205°C)
- **MC**: Miniature male connector (205°C)
- **SL**: Spade lugs
- **RL**: Ring lugs
- **Pi**: Pins
- **CG**: 1/2” NPT cord grip electrical fitting
- **Other**: Consult factory

### T10: Fitting Options
- **X**: No fitting required
- **CF**: Compression fitting - SS ferrule
- **CT**: Compression fitting - Teflon ferrule
- **FX**: Fixed hex instrument plug 1/2” NPT
- **FS**: Fixed bushing 1/2”x1/2” NPT
- **TX**: Spring loaded bushing 1/2”x1/2” NPT
- **OS**: Oil seal spring loaded 1/2”x1/2” NPT
- **SG**: Self gripping spring
- **Other**: Consult factory

### T11: Fitting Size
- **X**: No fitting
- **18**: 1/8” NPT
- **14**: 1/4” NPT
- **38**: 3/8” NPT
- **12**: 1/2” NPT

### T12: Sensor Probe Construction³
- **LT**: Low temperature (-50 to 260°C)
- **HT**: High temperature³ (-50 to 482°C)
- **ET**: Extreme temperature³ (-50 to 850°C)
- **VT**: Vibration construction³ (-50 to 482°C)
- **CT**: Cryogenic temperature (-200 to 260°C)

### Sensor Probe Sheath Material
- Standard default material is 316/316L stainless steel. Other alloys are available on special request.

**NOTES:**
1. Part number example: RT4-GP-A-S-3-14-6-AT-36-BE-X-X-LT or RT4-GP-A-S-3-14-N9-TE-48-CF-12-LT
2. Reference page C-6 for further detail on probe style, C-7 for part outline, and C-8 for part dimensions
3. Class A tolerance definitions will only be applicable for temperatures under 300°C, Class B tolerance will apply to over 300°C
4. Only available for sensor probe construction (T12) LT option
5. Temperature values given are for maximum continuous rating for specific component of the configuration
6. Bold text indicates most common part selections

---

Aircom Instrumentation Ltd.
9328 - 37 Avenue NW
Edmonton, AB T6E 5K3
Ph: (780) 434-8916
Sales@AircomInstrumentation.com
www.AircomInstrumentation.com

Section: RTD Sensor Probes & Assemblies
File: RTD-Sensor-Probes-RT4-C5-0
RT4 RTD Sensor Probe Style

**Probe Style**

- **GP**
  - General Purpose - Standard RTD sensor probe construction.

- **EI**
  - Electrically Isolated - Sensor sheath is isolated 2.5" back from tip. Typically used on electric motor bearings.

- **TS**
  - Tip Sensitive - Copper sensor probe tip is silver soldered on to probe for enhanced thermal conductivity. Typically used on electric motors.

- **BP**
  - Bayonet Style - Spring loaded construction by means of standard bayonet cap. Designed to install into bayonet adapter fitting. Spring length is 1.625".

- **TE**
  - Tip Sensitive & Electrically Isolated - Combination of both sensor styles noted above.

- **BT**
  - Bayonet Style & Tip Sensitive - Combination of both sensor styles noted above.

**Sheath Materials** - Standard Aircom RTD sensor probes are manufactured with 316/316L stainless steel. Other materials are available upon request.
<table>
<thead>
<tr>
<th>Termination</th>
<th>Lead Wire Type</th>
<th>Transition</th>
<th>Fittings</th>
<th>Sensor Sheath (OD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td></td>
<td></td>
<td>X</td>
<td>18 (0.125&quot;)</td>
</tr>
<tr>
<td>SC</td>
<td></td>
<td>Standard Transition</td>
<td>CF</td>
<td>36 (0.188&quot;)</td>
</tr>
<tr>
<td>MC</td>
<td></td>
<td></td>
<td>CT</td>
<td>21 (0.215&quot;)</td>
</tr>
<tr>
<td>SL</td>
<td></td>
<td>Small Transition</td>
<td>FX</td>
<td>14 (0.250&quot;)</td>
</tr>
<tr>
<td>CG</td>
<td>AF</td>
<td></td>
<td>FS</td>
<td>38 (0.375&quot;)</td>
</tr>
</tbody>
</table>
Section: RTD Sensor Probes & Assemblies
File: RTD-Sensor-Probes-RT4-C8-0

Lead Wire

Transition

Sensor Probe

Standard 1.875” transition is used with lead wire options: AF, AT, PT

Small 0.625” transition is used only with lead wire options: TE, ST where VT, ET sensor probe construction is used

No transition is used only with lead wire options TE, ST where LT, HT, CT construction is used

No transition is used with fitting options FX, FS unless lead wire options are armoured (AT, AF, PT)

Bayonet sensor spring length is a constant dimension of 1.625”

Standard distance to transition will be minimum allowable length (Typ. 1.5”)

Option for length below 90° specified: "N" length

Bend radius is a function of tube (MI cable) OD

Standard Sensor Probe

Fitting option CF, CT (supplied loose)

Fitting option FX

Fitting option FS

Fitting option TX, OS

BP, BT

Bend radius is a function of tube (MI cable) OD