Overview

The RT6 RTD assembly is a resistance temperature detector consisting of a RTD sensor probe, tapered thermowell, conduit nipples, union, spring loading terminal block, and connection head.

Features:

- RTD sensor probe is removable for verification, maintenance and replacement.
- Simple design that is used and accepted across multiple process industries.
- Tapered thermowell profile provides a good strength to response time balance.

Application:

RTD assemblies are used widely across almost any and every industrial process control environment.

Configuration Considerations

When configuring the RT6 model to suit your application it is important to consider the following:

- Hazardous location approval rating
- Connection head type
- Extension length
- RTD element (tolerance)
- RTD construction style
- Number of RTD elements
- Thermowell lengths
- Thermowell material and compatibility with process
- Thermowell NPT connection to process
- Minimum and maximum temperature of the process
- Maximum pressure
- Process conditions and effect on the assembly

Temperature Limiting Factors of RTD assemblies 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.

1. **Connection Head** or Junction box is the electrical enclosure that holds the terminal block for connecting the appropriate signal wires.

2. **Tags** on the connection head will identify the hazardous location approval rating of the enclosure as well the assembly if applicable.

3. **Terminal Block** is where the lead wires are terminated. Standard material is Bakelite. Other terminal block options such as ceramics available.

4. **Spring Loading** can be achieved by a spring attached to the terminal block or a spring loaded fitting in the extension (5) between the connection head and the thermowell.

5. **Connection Extension** is what attaches the connection head to the thermowell. It can be made up of an array of fittings, most common being an electrical conduit nipple-union-nipple.

6. **Thermowells** are optional parts that will protect and allow the sensor to be removed from process. Hazardous location explosion proof certified assemblies must come complete with a thermowell.

7. **RTD Sensor Probe** is housed inside the assembly.

**Temperature Limiting Factors** of RTD assemblies 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.
**RT6 RTD Assembly Model Code**

<table>
<thead>
<tr>
<th>T6</th>
<th>Sensor Probe Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>Low temperature (-50 to 260°C)</td>
</tr>
<tr>
<td>HT</td>
<td>High temperature 3 (-50 to 482°C)</td>
</tr>
<tr>
<td>ET</td>
<td>Extreme temperature 5 (-50 to 850°C)</td>
</tr>
<tr>
<td>VT</td>
<td>Vibration construction 3 (-50 to 482°C)</td>
</tr>
<tr>
<td>CT</td>
<td>Cryogenic temperature (-200 to 260°C)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T7</th>
<th>Thermowell “H” Length (inches)2</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;inches&quot;</td>
<td>Specify length in inches</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T8</th>
<th>Thermowell “U” Length (inches)2</th>
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</thead>
<tbody>
<tr>
<td>&quot;inches&quot;</td>
<td>Specify length in inches</td>
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</table>

<table>
<thead>
<tr>
<th>T9</th>
<th>Threaded Thermowell Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>304</td>
<td>304/304L stainless steel</td>
</tr>
<tr>
<td>316</td>
<td>316/316L stainless steel</td>
</tr>
<tr>
<td>310</td>
<td>310 stainless steel</td>
</tr>
<tr>
<td>600</td>
<td>Inconel 600</td>
</tr>
<tr>
<td>HAC</td>
<td>Hastelloy C276</td>
</tr>
<tr>
<td>Other</td>
<td>Consult factory</td>
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<table>
<thead>
<tr>
<th>T10</th>
<th>Thermowell Process Connection</th>
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<tbody>
<tr>
<td>12</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>34</td>
<td>3/4&quot; NPT</td>
</tr>
<tr>
<td>1</td>
<td>1&quot; NPT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assembly Hazardous Location Approval</th>
<th>Connection Head Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Groups A,B,C,D</td>
<td>Class II Groups E,F,G Class III</td>
</tr>
<tr>
<td>Class I Groups B,C,D Class II Groups E,F,G Class III; Enclosure Type 4</td>
<td>AL, CAL</td>
</tr>
<tr>
<td>Class I Groups B,C,D Class II Groups E,F,G Class III; Enclosure Type 4X</td>
<td>ALT, SS</td>
</tr>
<tr>
<td>General Purpose</td>
<td>0AL, 4AL, 1CI, 2CI, 3CI, 0PY</td>
</tr>
</tbody>
</table>

**NOTES:**

1. Part number example: RT6-2ALT-3-A-S-3-LT-1.75-2.5-316-34
2. Reference page C-11 for part overview and C-12 for dimensions
3. Class A tolerance will only be applicable for temperatures under 300°C, Class B tolerance will apply to over 300°C
4. RT6 configuration includes tapered threaded thermowell
5. RTD probe sheath material is 316/316L stainless steel unless otherwise specified
6. Bold text indicates most common part selections
RT6 RTD Assembly Outline

Connection Head

Connection Extension

Threaded Thermowell

Refer to page C-13 for further connection head styles, options, and details.
RT6 RTD Assembly Dimensions

NOTES:
1. Connection head dimensions on page B-19

<table>
<thead>
<tr>
<th>NPT</th>
<th>“A” (Root OD)</th>
<th>“B” (Tip OD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2”</td>
<td>0.625”</td>
<td>0.500”</td>
</tr>
<tr>
<td>3/4”</td>
<td>0.875”</td>
<td>0.750”</td>
</tr>
<tr>
<td>1”</td>
<td>1.063”</td>
<td>0.750”</td>
</tr>
</tbody>
</table>
## Model, Outline, and Dimensions

<table>
<thead>
<tr>
<th>Outline &amp; Dimensions</th>
<th>Model</th>
<th>Connection (NPT)</th>
<th>Terminal Block Options</th>
<th>Material</th>
<th>Assembly Electrical Approval</th>
</tr>
</thead>
</table>
| 3.7" x 4.0"          | 1ALT  | 1/2" 1/2"        | Bakelite - standard    | Cast aluminum  
epoxy coated  
Buna O-ring  
Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  
Enclosure Type 4X |
|                      | 2ALT  | 1/2" 3/4"       |                        | Cast aluminum  
Buna O-ring  
Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  
Enclosure Type 4X |
|                      | 3ALT  | 3/4" 3/4"       |                        | Cast aluminum  
Buna O-ring  
Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  
Enclosure Type 4X |
| 3.7" x 4.0"          | 1SS   | 1/2" 1/2"        |                        | 316 stainless  
steel  
Buna O-ring  
Class I Groups B,C,D  
Class II Groups E,F,G  
Class III |
|                      | 2SS   | 1/2" 3/4"       |                        |                       |
|                      | 3SS   | 3/4" 3/4"       |                        |                       |
| 3.7" x 4.0"          | 1AL   | 1/2" 1/2"        |                        |                       |
|                      | 2AL   | 1/2" 3/4"       |                        |                       |
|                      | 3AL   | 3/4" 3/4"       |                        |                       |
| 3.7" x 4.0"          | 1CAL  | 1/2" 1/2"        |                        | Cast aluminum  
Buna O-ring  
Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  
Enclosure Type 4 |
|                      | 2CAL  | 3/4" 3/4"       |                        | Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
|                      | 1CCI  | 1/2" 1/2"        |                        | Iron alloy  
Buna O-ring  
Class I Groups A,B,C,D  
Class II Groups E,F,G  
Class III  |
|                      | 2CCI  | 3/4" 3/4"       |                        | Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
| 3.7" x 4.0"          | 4CAL  | 1/2" 2x 1/2"     |                        | Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
|                      | 3CAL  | 3/4" 2x 3/4"     |                        | Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
|                      | 4CCI  | 1/2" 2x 1/2"     |                        | Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
|                      | 3CCI  | 3/4" 2x 3/4"     |                        | Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
| 3.7" x 4.0"          | 4AL   | 1/2" 1/2"        |                        | Cast aluminum  
Buna O-ring  
Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
|                      | 0AL   | 1/2" 3/4"       |                        | Class I Groups B,C,D  
Class II Groups E,F,G  
Class III  |
| 3.7" x 4.0"          | 1CI   | 1/2" 1/2"        |                        | Iron alloy  
Buna O-ring  
General purpose |
|                      | 2CI   | 1/2" 3/4"       |                        | General purpose |
|                      | 3CI   | 3/4" 3/4"       |                        | General purpose |
| 3.7" x 4.0"          | 0PY   | 1/2" 3/4"       |                        | Polypropylene   |

**NOTES:**
1. Electrical approval noted is for the temperature sensor assembly not the connection head itself.
2. May be supplied with an approved reducer bushing.
3. Model connection extension will include a spring loaded fitting in place of one nipple.

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