**Performance Characteristics**

Maximum measured error (Pt100 / IEC 60751)

<table>
<thead>
<tr>
<th>Class</th>
<th>Tolerances (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>± (0.15 + 0.002 ·</td>
</tr>
<tr>
<td>B</td>
<td>± (0.3 + 0.005 ·</td>
</tr>
</tbody>
</table>

* |t| = absolute value °C. For measurement errors in °F, calculate using equation above in °C, then multiply the outcome by 1.8.

**Dielectrical strength**
The units are factory tested with 850 V DC for one second between live parts (leads/terminals) and exposed non-current-carrying metal parts (e.g. insert sheath).

**Supplementary documentation**
All important Temperature Operating Instructions, particularly with regard to head and field transmitters are available on CD–ROM, find enclosed or order by order number: SONDTT-AG.

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**Compact Instructions**

**Explosion proof RTD assembly in Thermowell T13**

**Measuring System**
Explosion proof RTD assembly in Thermowell with spring loaded insert and enclosure for process industry.

The Pt100 RTD is specifically designed for use in two different process temperature ranges:
- Low range RTD: -58 °F to 392 °F
- High range RTD: -328 °F to 1112 °F

**Performance Characteristics**

- **Maximum measured error (Pt100 / IEC 60751)**
  - Class A: ± (0.15 + 0.002 · |t|) °C, temperature range: -100 °C to 450 °C
  - Class B: ± (0.3 + 0.005 · |t|) °C, temperature range: -200 °C to 600 °C

  * |t| = absolute value °C. For measurement errors in °F, calculate using equation above in °C, then multiply the outcome by 1.8.

**Dielectrical strength**
The units are factory tested with 850 V DC for one second between live parts (leads/terminals) and exposed non-current-carrying metal parts (e.g. insert sheath).

**Supplementary documentation**
All important Temperature Operating Instructions, particularly with regard to head and field transmitters are available on CD–ROM, find enclosed or order by order number: SONDTT-AG.

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**Important Notice**

Electrical shock could cause death or serious injury. If the sensor is installed in a high voltage environment and a fault or installation error occurs, high voltage may be present on the connection terminals or the probe itself.

Safe and secure operation of the temperature sensor can only be guaranteed if the operating instructions of the used transmitters and all included safety notes are read, understood and followed. For Endress+Hauser temperature transmitters see enclosed CD–ROM.

**Correct use**
The manufacturer cannot be held responsible for damage caused by misuse of the unit. The installation conditions and connection values indicated in the operating instructions and control drawings must be followed!

**Installation Guidelines and Safety Instructions**

1. Install the unit according to the relevant NEC Code and local regulations.
2. Avoid any spark due to impact, friction and installation. Anti-sparking wrenches should be utilized.
3. Approved apparatus must be installed in accordance with manufacturer's instructions, see corresponding Control Drawing:
   - XP DIP Class I, II, III Div. 1+2 CSAZD053R/09/en
   - XP NI DIP Class I, II, III Div. 1+2 CSAZD055R/09/en
   - XP DIP Class I, II, III Div. 1+2 FMZD057R/09/en
   - XP NI DIP Class I, II, III Div. 1+2 FMZD062R/09/en

The accessories for pipe connections and the appropriate gaskets and sealing rings are not supplied with the sensors. These are the customer's responsibility. Depending on temperature and pressure operating conditions, the gaskets, the sealing and the applicable torques must be selected by the user.

For further information regarding connections, please refer to the corresponding endress.com.

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www.endress.com
**Installation**

**Installation locations**

Examples of pipe installation. In pipes of a small section the axis line of the duct must be reached and if possible slightly exceeded by the tip of the probe (=U).

- **A**: Socket weld installation
- **B**: Threaded, tilted installation

For installation proceed as follows:
1. Attach thermowell to pipe (see A and B) or process container wall. Install and tighten the Thermowell before applying process pressure.
2. Make sure that the process fitting matches the maximum specified process pressure.
3. Seal the extension nipples with TFE tape before screwing the sensor into the thermowell.
4. Thermowells are used in measuring the temperature of a moving fluid in a conduit, where the stream exerts an appreciable force. The limiting value for the thermowells is governed by the temperature, the pressure and the speed of the medium, the immersion length, the materials of the thermowell and the medium, etc.

For operating conditions, a stress calculation should be carried out.

**Dimensions**

with spring loaded insert and self contained nipple (dimensions in inches).

- **Spring loaded sensor assemblies must be used with thermowell**
- **Weld in Thermowell (Tapered)**
- **Threaded Thermowell (Stepped)**
- **Socket weld Thermowell (Tapered)**
- **XP certified union**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U</strong></td>
<td><strong>E (nom. dimension)</strong></td>
<td><strong>Process connection</strong></td>
<td><strong>Shape of Thermowell</strong></td>
</tr>
<tr>
<td>2½&quot;, 4½&quot;, 7½&quot;, 10¼&quot;, 13½&quot;, 16¼&quot;, 22½&quot; specified length 2&quot; to 18&quot; in ½&quot; increments</td>
<td>Hex nipple = 1&quot; or Nickel Union Nipple (NUM) = 4&quot; or 7&quot; Material: Steel or 316SS</td>
<td>Stepped (Standard duty) Stepped (Heavy duty)</td>
<td>1¼&quot; NPT 7/8&quot; 3/4&quot; NPT 7/8&quot; 7/8&quot; 3/4&quot; NPT 7/8&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tapered (Heavy duty)</td>
<td>3/4&quot; 3/4&quot; 3/4&quot; 3/4&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1&quot; NPT 7/8&quot;</td>
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<td>1&quot; NPT 7/8&quot;</td>
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<td>1¼&quot; NPT 7/8&quot;</td>
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<td>1¼&quot; NPT 7/8&quot;</td>
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<tr>
<td></td>
<td></td>
<td>1¼&quot; Tapered Weld (Heavy duty) 1.050&quot;</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1¼&quot; Tapered Weld (Heavy duty) 1.315&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Electrical connection-wiring diagrams**

**Head or field transmitter mounted (3" or 5½" flying leads - crimped sleeves)**

**Installation**

**Installation locations**

Examples of pipe installation. In pipes of a small section the axis line of the duct must be reached and if possible slightly exceeded by the tip of the probe (=U).

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For installation proceed as follows:
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For operating conditions, a stress calculation should be carried out.

### Wire specifications

24AWG, 19 strand silver plated copper with 0.010" TFE extruded outer

**Recommended minimum immersion for thermowell:**

**Stepped TW = 2½"**

**Tapered TW = 4½"**

**Weld in TW = 4½"**

**Technical data**

- **Weight**: From 1 to 10 lbs
- **Material**: 316SS (Wetted parts)
- **Shock and vibration resistance**: 4g/2 to 150 Hz as per IEC 60 068-2-6
- **Ambient temperature limits**:
  - **Housing without head-mounted transmitter**
    - Aluminium pressure die-cast housing: -58°F to 212°F (-50 to 100°C)
    - Stainless steel housing: -58°F to 212°F (-50 to 100°C)
  - **Housing with head-mounted transmitter**
    - All types of housing: -40 to 185°F (-40 to 85°C)
- **Field transmitter**
  - **with display**: -40 to 158°F (-40 to 70°C)
  - **without display**: -40 to 185°F (-40 to 85°C)

For hazardous areas refer to the transmitter control drawing.