Littelfuse offers a broad range of thermistors, resistance temperature detectors (RTDs), probes and assemblies for demanding temperature sensing applications worldwide. Recognized for their accuracy and long-term reliability, Littelfuse thermistors and RTDs are the sensor of choice for diverse markets such as industrial controls and equipment, HVAC/R, renewable energy, energy storage and power conversion, food service, appliances, and transportation.

**Thermistor Probes and Assemblies**
Littelfuse probe assemblies are invaluable for sensing temperature in a variety of industries. Standard and customized probe assemblies offer very precise and extremely reliable thermal monitoring in the most demanding applications.

**NTC and PTC Thermistors**
Littelfuse leaded thermistor options include the highly accurate precision interchangeable thermistors as well as high temperature axial leaded glass encapsulated thermistors and glass coated radial leaded chip thermistors.

**Chip and MELF Style Thermistors**
Littelfuse surface mount thermistors are manufactured using the most advanced equipment and technology available. They are available in a variety of sizes and configurations suitable for mounting using solder, wire bond or epoxy.

**RTD Elements and Probe Assemblies**
Littelfuse RTDs exhibit a nearly linear temperature-resistance curve as well as high accuracy over a very wide temperature range. Their unique characteristics result in a device especially suitable for use in extreme environmental conditions.

**Capabilities**
- Custom probe assemblies
- High precision thermistors
- R-T curve matching
- Moisture resistant sensors
- Prototyping
- Extensive quality testing
  - Salt water immersion
  - Freeze/thaw temperature cycling
  - Thermal shock
  - Sinusoidal vibration

**Key Considerations**
- Operating temperature
- Operating environment
- Base resistance value
- Tolerance/accuracy
- Interchangeability
- Thermal response time
- R-T characteristics
- Beta

**Are You Sensing Temperature?**
- What is your application?
- Are you currently using a temperature sensor?
- Do you have a drawing or part number to cross?
- What style part do you require (SMT, Leaded, Probe)?
- What type of environment will the sensor be exposed to?
- What is the operating temperature range of your application?
- What base resistance does the application require?
- What accuracy and tolerance does the application need?
## Selection Information

<table>
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<tr>
<th>Sensor Element Type</th>
<th>Characteristics</th>
<th>Typical Operating Temperature Range</th>
<th>Typical Resistance Value Options</th>
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<td>NTC Thermistors</td>
<td>Exhibit a decrease in electrical resistance when subjected to an increase in their body temperature</td>
<td>-80 °C to +300 °C</td>
<td>100Ω up to 5MΩ @ 25 °C</td>
<td>±0.10 °C to ± 1.0 °C over wide temperature ranges ±1% to ± 10% at 25 °C or other specified temperature</td>
<td>Leaded: Glass-encapsulated axial leads Epoxy-coated radial leads Glass-coated radial leads Encapsulated in a probe assembly SMT: End-banded Chip Top/bottom-terminated chip Glass-encapsulated MELF</td>
<td>Cost-efficient Excellent long-term stability Fast thermal response Wide-range of styles available Metal oxide ceramic compounds</td>
</tr>
<tr>
<td>Pt-RTDs</td>
<td>Exhibit a positive, predictable and nearly linear change in resistance when subjected to a corresponding change in their body temperature</td>
<td>-50 °C to +500 °C</td>
<td>100Ω, 500Ω, 1000Ω @ 0 °C</td>
<td>±0.06 % to ±0.24 % at 0 °C</td>
<td>Radial-leded SMT Encapsulated in a probe assembly</td>
<td>Nearly linear output High accuracy High temperature capability</td>
</tr>
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## Typical Applications

<table>
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<th>Alternative Energy</th>
<th>Medical</th>
<th>Appliances</th>
<th>Industrial</th>
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<td>• Residential &amp; Commercial A/C</td>
<td>• Commercial Coffee Makers</td>
<td>• Hydrogen Fuel Cell Sensors</td>
<td>• Blood Analysis Equipment</td>
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<td>• Hot/Cold Beverage Dispensers</td>
<td>• Battery Fuel Gauges</td>
<td>• Infant Incubators</td>
<td>• Consumer Refrigerators/Freezers</td>
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<td>• Food Thermometers</td>
<td>• Solar Panel</td>
<td>• Skin Temperature Monitors</td>
<td>• Washing Machines</td>
<td>• Welding Equipment</td>
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<tr>
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<td>• Walk-in &amp; Reach-in Refrigerators/Freezers</td>
<td>• Geothermal</td>
<td>• Battery Energy Storage Systems</td>
<td>• Clothes Dryers</td>
<td>• Industrial Process Controls</td>
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<tr>
<td>• Instant Water Heaters</td>
<td>• Temperature Controlled Display Cases</td>
<td>• Solar Inverters</td>
<td>• Solar Dialysis Equipment</td>
<td>• Water Heaters</td>
<td></td>
</tr>
</tbody>
</table>