Temperature Sensing Solutions

Thermistors, RTDs, Probe Assemblies

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.



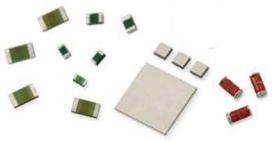
NTC and PTC Thermistors

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?

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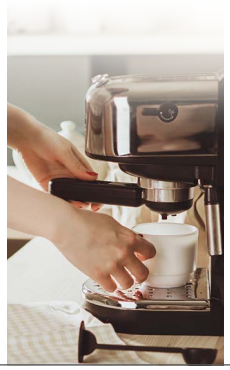
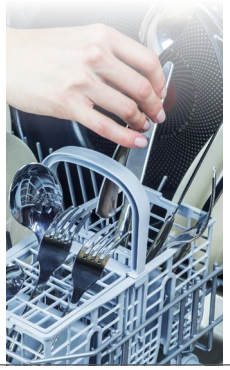
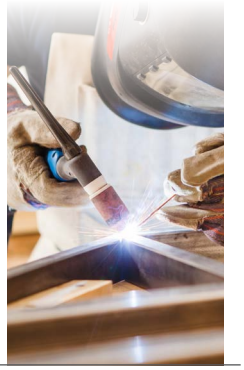
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Selection Information

Sensor Element Type	Characteristics	Typical Operating Temperature Range	Typical Resistance Value Options	Accuracy Options	Package Styles	Key Advantages
NTC Thermistors	Exhibit a decrease in electrical resistance when subjected to an increase in their body temperature	-80 °C to +300 °C	100Ω up to 5MΩ @ 25 °C	±0.10 °C to ± 1.0 °C over wide temperature ranges ±1 % to ± 10 % at 25 °C or other specified temperature	**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	• Cost-efficient • Excellent long-term stability • Fast thermal response • Wide-range of styles available • Metal oxide ceramic compounds
Pt-RTDs	Exhibit a positive, predictable and nearly linear change in resistance when subjected to a corresponding change in their body temperature	-50 °C to +500 °C	100Ω, 500Ω, 1000Ω @ 0 °C	±0.06 % to ±0.24 % at 0 °C	• Radial-leaded • SMT • Encapsulated in a probe assembly	• Nearly linear output • High accuracy • High temperature capability

Typical Applications

HVAC/R	Food Service	Alternative Energy	Medical	Appliances	Industrial
• Residential & Commercial A/C • Chilled Water Systems • Outdoor Temperature Sensors • Condenser, Evaporator & Duct Sensors • Instant Water Heaters	• Commercial Coffee Makers • Hot/Cold Beverage Dispensers • Food Thermometers • Walk-in & Reach-in Refrigerators/Freezers • Temperature Controlled Display Cases	• Hydrogen Fuel Cell Sensors • Battery Fuel Gauges • Solar Panel • Geothermal • Battery Energy Storage Systems • Solar Inverters	• Blood Analysis Equipment • Infant Incubators • Skin Temperature Monitors • Blood Dialysis Equipment • Patient Warming	• Oven Temperature Control • Consumer Refrigerators/ Freezers • Washing Machines • Clothes Dryers • Water Heaters	• Fluid Flow Measurement • Crystal Ovens • Welding Equipment • Industrial Process Controls
					

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