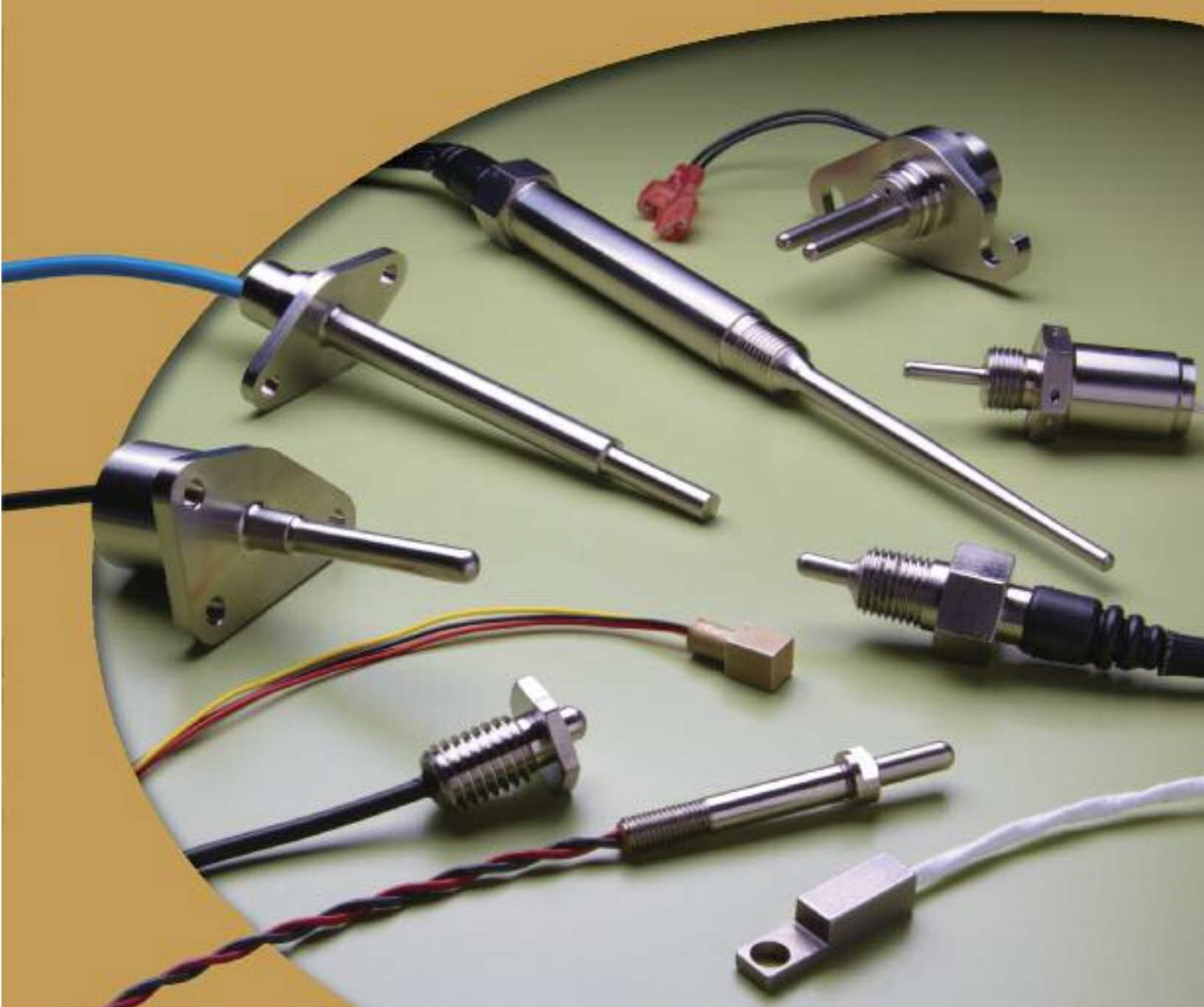


# Precision Temperature Sensors & Probe Assemblies

HI-REL • HI-TEMP • MOISTURE RESISTANT

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# A World of High Reliability Temperature Sensing Solutions

For many years, customers have counted on Spectrum Sensors & Controls for temperature sensors that reliably perform under demanding environmental conditions. We design and manufacture a wide range of products for surface, fluid immersion, and ambient air & gas sensing applications.

Spectrum Sensors & Controls designs and manufactures custom application specific temperature sensors and assemblies for...

## Military & Aerospace

- Cabin & Inlet Air
- Engine Fluids
- Brake Systems
- Transmission/Gear Fluid
- Fuel Systems
- Climate Control
- Hydraulic Systems
- Surface De-icing Systems

## Medical, Industrial & Instrumentation

- Medical Diagnostic and Imaging Equipment
- Laboratory Grade Temperature Chambers and Baths
- Pediatric and Patient Care Equipment
- Process Control and Monitoring
- Food Processing Equipment

## Off Highway/ Rail Transportation

- Climate Controls
- Engine Fluids
- Fuel Systems
- Brake Systems



# Customize Your Precision Temperature Sensor Probe



## 1 Sensing Elements

- Thermistor
- RTD
- Thermocouple
- IC
- Digital

## 2 Housing Styles and Materials

- Immersion
- Surface
- Air/gas
- Stainless
- Inconel
- Brass
- Aluminum
- Plastic, etc.

## 3 Wire Insulation

- Teflon
- Kynar
- Fiberglass
- PVC
- And more

## 4 Sleeve Insulation

- Steel braided
- Polyolefin
- Fiberglass

## 5 Connector Systems

- Molex
- AMP
- Packard
- Deutsch
- JST

## 6 Optional Overmolded Strain Relief

*ustomize*

- 1 Sensing Elements** - We will recommend the temperature sensor based upon the application and other factors including operating temperature range, accuracy required, stability, cost, ease of use, ability to package efficiently and the available circuitry.
- 2 Housing Style and Materials** - The primary purpose of the housing is to protect the sensing element. The selection of the housing will affect the response time of the sensor but can also affect the accuracy of the entire system. It is important the housing be matched with the sensor to allow for good thermal transfer between the two. The material used for the housing will be dependent upon the temperature range needed, response time, cost and special considerations such as UL, FDA or NSF requirements, or for the need to survive in high vibration or extremely noisy environments.
- 3 Wire Insulation** - Spectrum Sensors carries a large inventory of wire and cable ranging from low cost PVC insulated hookup wires to UL/CSA rated plenum cables to high temperature, shielded Teflon insulated wire with 3 or more conductors and drain wires. The insulation around the conductor affects the temperature range as well as the cost and the ease of use.
- 4 Sleeve Insulation** - Additional sleeving can be added to the leadwires either to add additional protection from vibration or abrasion or to add additional electrical isolation.
- 5 Connector Systems** - Spectrum Sensors carries a wide range of terminals and connectors manufactured by many of the leading suppliers in the industry. Specialized connectors for high vibration and/or noise immunity are readily available.
- 6 Overmolded Strain Relief** - Ideal for high flex applications or for additional abrasion resistance.



## Immersion Sensor Assemblies



Spectrum immersion sensor assemblies are designed for fast response times in liquid applications. These probe assemblies are very rugged and can be designed to meet requirements for IP or NEMA ratings, military standards, as well as other high reliability requirements.

The sensors are sealed from the environment using a number of different types and styles of housings. Various styles and types of threads are available including NPT, SAE, BSP, metric and others.

A wide range of sensing elements are available including NTC thermistors, RTDs, IC elements, silicon PTCs, thermocouples and others. All sensors are calibrated to NIST standards and packaged to provide exceptional stability, accuracy and reliability in the harshest environments.

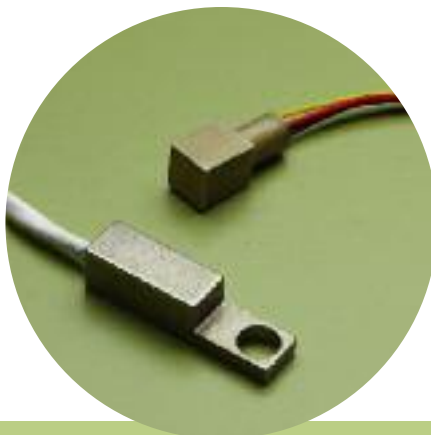
### Features:

- Easy mounting – variety of threaded and unthreaded styles
- Operating temperatures from -50°C to +500°C
- Precision machined housings from stainless steel, brass, aluminum, inconel and other materials
- Fast thermal response and excellent thermal tracking
- Sturdy construction – sensor sealed from the environment
- Special moisture and freeze/thaw resistant designs available
- Suitable for sensing a wide range of liquids
- Dedicated design, prototype and manufacturing team

### Options:

- Sensor types include thermistor, RTD and other solid-state elements
- Range of sensor accuracies and values
- Cable lengths, insulation materials, number of conductors
- Wide range of connector styles and terminations
- Special testing including dielectric, MIL-STD, IP, NEMA and others

## Surface Sensor Assemblies



Spectrum surface temperature sensor assemblies are designed to attach easily to flat or curved surfaces. These assemblies provide for fast response times yet their rugged construction allows them to be used in a wide range of markets and applications. The probe assemblies can be designed to meet requirements for IP or NEMA ratings, military standards, as well as other high reliability requirements.

The sensors are sealed from the environment using a range of different types and styles of housings. Special styles have been developed to allow for easy mounting to various shapes and sizes, including clips for tube mounting.

A wide range of sensing elements are available including NTC thermistors, RTDs, IC elements, silicon PTCs, thermocouples and others. All sensors are calibrated to NIST standards and packaged to provide exceptional stability, accuracy and reliability in the harshest environments.

### Features:

- Easy mounting – variety of clips and other fasteners
- Operating temperatures from -50°C to +500°C
- Fast thermal response and excellent thermal tracking
- Sturdy construction – sensor sealed from the environment
- Precision machined housings from stainless steel, brass, aluminum, inconel and other materials
- Suitable for sensing a wide range of surfaces
- Special moisture and freeze/thaw resistant designs available
- Dedicated design, prototype and manufacturing team

### Options:

- Sensor types include thermistor, RTD and other solid-state elements
- Range of sensor accuracies and values
- Cable lengths, insulation materials, number of conductors
- Wide range of connector styles and terminations
- Special testing including dielectric, MIL-STD, IP, NEMA and others

## Air/Gas Sensor Assemblies



These sensor assemblies are designed to measure the temperature of air or other gases in an open environment. Spectrum assemblies are designed for extremely fast response times yet their rugged construction allows them to be used in a wide range of markets and applications.

The probe assemblies can be designed to meet requirements for IP or NEMA ratings, military standards, as well as other high reliability requirements. Special styles and fasteners have been developed to allow for easy mounting and to isolate the sensor from the outside ambient temperature.

A wide range of sensing elements are available including NTC thermistors, RTDs, IC elements, and silicon PTCs and others. All sensors are calibrated to NIST standards and packaged to provide exceptional stability, accuracy and reliability in the harshest environments.

### Features:

- Easy mounting – variety of housings and fasteners
- Operating temperatures from -50°C to +500°C
- Fast thermal response and excellent thermal tracking
- Sturdy construction – sensor sealed from the environment
- Precision housings from stainless steel, brass, aluminum, inconel, plastic and other materials
- Suitable for sensing a wide range of gases
- Special moisture and freeze/thaw resistant designs available
- Dedicated design, prototype and manufacturing team

### Options:

- Sensor types include thermistor, RTD and other solid-state elements
- Range of sensor accuracies and values
- Cable lengths, insulation materials, number of conductors
- Wide range of connector styles and terminations
- Special testing including dielectric, MIL-STD, IP, NEMA and others

# Advanced Thermal Products

## Serving OEMs Since 1985

The Advanced Thermal Products Operation of Spectrum Sensors & Controls offers a world of high reliability temperature sensing products specifically designed for environmentally demanding applications. For more than 20 years we've been a preferred supplier to many of the world's leading OEMs. We've engineered a family of rugged, easy-to-install temperature sensing probes and assemblies that have proven extremely effective in difficult to monitor applications. Our temperature sensors can be found in many military, aerospace, off-highway vehicle, rail, medical, instrumentation, and industrial products.

### Custom Application Specific Solutions

Rarely does a 100% Off-the-shelf temperature probe satisfy the unique measurement and environmental demands found in many OEM applications. Although we specialize in the design of NTC thermistor sensors, our engineering team is thoroughly experienced in packaging RTD elements, silicon PTCs, IC temperature to voltage transducers, and digital temperature sensors. Our sensor solutions cover a temperature range from -50°C to over 500°C in both heating and cooling applications. In addition, the ATP family of products have been designed to be completely compatible with most electronic control systems in the market.



Now **customizing your temperature probe** is easier than ever... just **click** on the **Probe Configurator** on **SpecSensors.com** and we'll lead you through a range of variations and options to help us build a temperature sensor that is best suited for your application and unique requirements.

### Responsive Engineering & Customer Service

We understand the need for speed in today's fast paced product development world. Our engineers are prepared to either modify an existing sensor product or design a new "clean sheet" solution within a timeline that meets your requirements. Once a design is agreed upon, we'll often produce a prototype within 48 hours. And following production release, our customer service group will work with you for complete global logistical support, including schedule sharing programs.

### World Class Quality

**ISO 9001:2000**

As a business unit of Spectrum Control, Inc., ISO9001:2000 certified Spectrum Sensors & Controls adheres to world class manufacturing techniques ensuring each customer receives the Six Sigma reliability they demand. This commitment to quality has produced a reputation for dependability and resulted in preferred supplier status at many leading OEMs in the industry.

### Low Cost Manufacturing Centers

Complementing our temperature sensor design and manufacturing facility in St. Mary's, PA are low cost production centers in Mexico and China. These highly efficient plants provide additional capacity and flexibility allowing us to schedule production globally and ramp-up to meet fast-track delivery requirements. Whether your requirement is for a small number of sensors or a high volume application, Spectrum is your source.



 **SPECTRUM** <sup>U</sup>  
**SENSORS & CONTROLS** <sub>Z</sub>

*A Spectrum Control Business*

**Advanced Thermal Products Operation**

**[www.SpecSensors.com](http://www.SpecSensors.com)**

## Position Sensor & Control Products



### Motorized Potentiometers & Position Sensors

- Smaller size, greater reliability & longest life
- Smooth motor operation & infinite resolution
- Linear & rotary potentiometers & position sensors



### Fader & Hollow Shaft Potentiometers

- Smooth velvet feel & excellent output smoothness for fader
- Smooth motor installation, infinite resolution and longest life for hollow shaft



### Element Segments & Wiper Assemblies

- Custom configurations & assemblies
- Greater reliability & longest life
- Various non-linear tapers, taps & electrical angles

**ISO 9001:2000**  
CERTIFIED

**RoHS**  
COMPLIANT



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- Filters and Components
- High Power Amplifiers
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- Position Sensors
- Temperature Sensors
- NTC and PTC Ceramic Components
- PTC Heater Assemblies
- Panel Input Controls

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