





Advanced Thermal Products Serving the Refrigeration Industry Since 1985

The Advanced Thermal Products Operation of Spectrum Sensors & Controls offers a world of high reliability temperature sensing products specifically designed for the refrigeration market. For more than 20 years we've been a preferred supplier to many of the leading OEMs in the refrigeration industry. We've engineered a family of rugged, easy-to-install sensing probes and assemblies that have proven extremely effective in difficult to monitor applications. Our temperature sensors can be found in many supermarket refrigeration systems, walk-in coolers, supermarket controls, defrost controls and many more commercial refrigeration products.

Custom Application Specific Solutions

Rarely does a 100% Off-the-shelf temperature probe or thermistor satisfy the unique measurement and environmental demands of the refrigeration industry. 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 350°C in many refrigeration applications. In addition, the ATP family of products have been designed to be completely compatible with all major energy management and building automation 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 completely compatible with most electronic controls found throughout the industry.

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 refrigeration OEMs.

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.



www.SpecSensors.com

Tube Mount

Sens-A-Coil Temp Sensor

Clip-On Temp['] Sensor C-Style Clip-On Temp Sensor

Clamp-On Temp Sensor



Patented design is the solution for sensing condenser and evaporator return bend temperatures

Monitor Refrigerant Temperatures:

Refrigeration engineers have long searched for cost effective, easy to install sensors capable of monitoring the refrigerant temperature in condenser and evaporator coils. In these applications sensor attachment has been a difficult design problem since the only suitable place to mount the sensor is on the coil return bend.

Plastic Overmolded Copper Clip: Our specially designed clip has an integrated fast response thermistor element and snaps onto 3/8" return bends. The sensor is housed in a small bulb connected to the copper clips, maximizing sensing surface area.

Specifically designed to monitor the temperature of liquids in copper tubing with diameters from 3/8" to 1/2" OD

Monitors Copper Tubing Temperature: Many refrigeration applications require a sensor that can monitor the temperature of a standard 3/8" or 1/2" OD copper tube, and field installation methods can vary widely.

Beryllium Copper Spring Clip: Performs a dual function by holding the sensor rigidly in place on a straight section of 3/8" or 5/8" copper tubing while providing an excellent thermal connection from the copper tube to the sensor. This sensor is ideal for inlet or outlet refrigerant sensing in a variety of applications.

• Quick response and excellent

• Simple installation, attaches

• Rugged construction: 0.25"

OD stainless steel housing

• Moisture resistant internal

AWG #22, PVC insulated

Variety of thermistor curves

and resistances available

Cable lengths and colors

can be specified

assembly available

zipcord cable

Options:

Standard with 10 ft. of

directly to pipe surfaces

Features:

thermal tracking

Low cost sensor

Designed to monitor the temperature of refrigerant or other liquids in copper tubing in sizes ranging from 1/4" to 7/8" OD

Monitors Temperatures

of Liquids in Copper Tubing: Many refrigeration applications require a sensor that accurately monitors temperatures of liquids inside standard copper tubing. Our unique design addresses this need and the extremely rugged, all-metal sensor allows for very quick responses to changes in temperature.

Steel Spring Clip: The steel clip provides a dual function by holding the sensor housing rigidly in place on a straight section of copper tubing while also providing an excellent thermal connection from the copper tube to the sensor. Our sensor is ideal for inlet or outlet refrigerant sensing in a range of applications and installation is fast and simple as the sensor assembly just snaps into place.

Features:

- · Quick response and excellent thermal tracking
- Simple installation, attaches directly to pipe surfaces
- Rugged, all-metal construction **Options:**
- Sensor types including thermistor, RTD and other solid-state temperature sensors
- Range of sensor accuracies and values
- · Cable lengths and styles, connectors and terminations can be specified
- Moisture resistant internal construction

Monitors the temperature of refrigerant or other liquids in return bend or other areas of copper tubing in 3/8" or 1/2" OD

Easy Installation on Copper Tubing: Many refrigeration applications require a sensor that accurately monitors temperatures of liquids inside standard copper tubing and can be installed quickly with minimal tools. Our clamp-on temperature sensor provides an excellent solution and the extremely rugged, all-metal design allows for very quick responses to changes in temperature.

Tin-Plated Copper Housing:

The copper housing protects the sensing element and thermally ties it to the tube. This unique design fits both 3/8" and 1/2" copper tubes and utilizes a standard #4-40 screw with a tinnerman fastener or hex nut. The clamp-on sensor is very easy to install and can be mounted on either the return bend section or straight section of the tubing.

Features:

- Fast thermal response and excellent thermal tracking
- Ideal for inlet or outlet refrigerant sensing in a range of applications
- Simple installation, attaches directly to pipe surfaces
- Rugged, all-metal construction

Options:

- · Sensor types including thermistor, RTD and other solid-state temperature sensors
- Range of sensor accuracies and values
- Cable lengths and styles, connectors and terminations can be specified

Features:

- Easy installation just snaps on
- · Cost effective design
- · Quick response and excellent thermal tracking
- Sturdy construction
- Standard with 10 ft. of AWG#22 PVC jacketed cable
- Well suited for use in refrigeration diagnostic equipment and tools

Options:

- Sensor types including thermistor, RTD and other solidstate temperature sensors
- Range of sensor accuracies and values
- · Cable lengths and styles, connectors and terminations can be specified

specsensors.com/cot

Air/Surface

Ruggedized Temp Sensor **Moisture Resistant Temp Sensor**

Sensor in Molded **Plastic Housing**

Fin Temp Sensor

Ideal for challenging high moisture applications with continuous freeze/thaw cycles

Addresses Ice Build-up:

Continuous freeze/thaw cycles provide ice an opportunity to exert a significant mechanical force on the wire or cable allowing water to breach the end seal of a standard sensor probe, thereby providing a direct path to the thermistor element.

Isolated Thermistor Element:

Features:

Rugged construction

thermal cycles

Waterproof to IP68

thermal tracking

-40°C to 105°C

Options:

PVC jacketed cable

• Tested to 10,000 freeze/thaw

· Quick response and excellent

• Operating temperature range:

Standard with 3 ft. of AWG #22,

• Variety of thermistor curves

Cable lengths and terminals

• Compatible with our Clip-On

for 3/8" and 1/2" copper pipes

and resistance values

can be specified

Our unique, swaged end design provides an excellent moisture seal between the cable and housing, isolating the thermistor element from outside moisture and stresses associated with freezing and thawing.

Provides solution for the primary cause of sensor failure in high moisture environments

Eliminates Exposure to Moisture: Many temperature sensors are mounted in areas subject to moisture due to condensation. Thermistors can be seriously affected by long-term exposure to moisture, which can cause low or erratic resistances. It is imperative that the internal

construction of the probe assembly seals off all moisture paths to the thermistor.

Unique Internal Construction: Our proven design provides an excellent moisture seal between all parts of the system and deters water from entering the assembly.

Moisture Resistant Seal: Created by utilizing a special combination of wire and epoxies to help protect the sensing element and seal out moisture.

General purpose design is cost effective and can be configured to fit the needs of many different applications

Monitors Temperature of Air or Surface: This general purpose design can be used as either a surface or an air temperature sensor. The design is well suited for applications where cost is critical and response time is not as crucial.

Molded Plastic Housing: The molded plastic housing is available in a wide range of diameters and lengths. Custom configurations are available and unique features can be molded in for maximum flexibility. The design can accommodate a wide range of sensing elements and is rated for operation up to 125°C.

General purpose temperature

Ideal for cost critical applications

· Sensor types including thermistor,

RTD and other solid-state

Range of sensor accuracies

connectors and terminations

Cable lengths and styles,

temperature sensors

· Can be used for air or surface

temperature sensing

Rugged construction

Features:

sensing

Options:

and values

can be specified

Specifically designed to install directly into and monitor air temperature at condenser/evaporator fins

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Monitors Air Temperatures at

Fins: Measuring evaporator temperature in refrigeration applications can be tricky because of the difficulty in mounting the sensor on or near the heat exchanger fins. Our square, nickel-plated, brass housed clip-on fin temperature sensors provide the solution. The extremely rugged, all-metal design allows for very quick responses to changes in temperature.

Fin Clip: Our steel fin clip provides a method for securely holding the sensor housing in place for long-term operation in potentially high moisture/freeze thaw environments. This easy-to-install sensor is ideal for fin air temperature sensing in a wide range of refrigeration applications.

Features:

- · Fast thermal response and excellent thermal tracking
- Simple installation, attaches directly to fin surfaces
- Rugged, all-metal construction

Options:

- Sensor types including thermistor, RTD and other solid-state temperature sensors
- Range of sensor accuracies and values
- · Cable lengths and styles, connectors and terminations can be specified
- Moisture resistant internal construction
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Features:

- Excellent for freeze/thaw applications
- Standard housing: 0.25" OD nickel-plated brass
- Wide operating temperature range: -40°C to 125°C
- Accommodates a wide array of thermistor sensing elements
- Standard with 10 ft. of AWG #22, PVC insulated zipcord cable

Options:

- Various termination types of connector pins or lugs
- Variety of thermistor curves and resistances available
- Cable lengths, housing types and wire styles can be specified

specsensors.com/fts

Custom Probe Assemblies

Air Temp Sensor with Flange Brass/Stainless Threaded Sensor Snap-In Air Temp Sensor Bendable Copper Tube Temp Assembly



ow-cost, general pose flanged perature sensor for ts or forced air systems

d Response and Stable nting: The small diameter less steel tube allows for bid response to changes mperature while the rugged e allows for easy installation stable mounting. This sensor excellent choice for any perated system that requires mperature sensing, including ing equipment, refrigerators, chillers, freezers and n more.

patible with Major Control ems: The air temperature or with flange is compatible almost all major control ems on the market today.

ures:

- sy mounting neral purpose flanged sign with 2 mounting holes metal construction for gedness and fast response nple, low-cost sensor erating temperature range: °C to +100°C
- ndard with 10ft. of PVC
- keted cable

ons:

- nsor types including rmistor, RTD and other d-state temperature sensors inge of sensor accuracies I values
- ble lengths and styles, inectors and terminations
- be specified ious insertion lengths,
- ge sizes and styles

Unique design eliminates inconsistent wall thicknesses and leaking housings in long insertion lengths

Consistent Design for

Accurate Responses: The stainless steel tube is manufactured in a unique process that allows for consistent, reliable wall thicknesses allowing for accurate, fast thermal response for the embedded sensing element.

Strength In Design:

The stainless steel tube is brazed to a brass hex body that offers strength to the overall assembly while an integrated connector can be utilized to simplify the installation of the sensor.

Features:

- Unique brass/stainless design allows for rugged, reliable service for long insertion lengths
- Fast thermal response and excellent thermal tracking
- Brass hex provides strength
 Accommodates a wide variety of sensors

Options:

- Variety of housing diameters (English and metric), lengths, wall thicknesses, and grades of stainless steel and brass
- Brass hex sizes
 Sensor types including thermistor, RTD and other
- solid-state temperature sensorsRange of sensor accuracies and values
- Cable lengths, styles and connectors can be specified
 - specsensors.com/bst

Unique sensor mounting for accurate monitoring of air temperature in an enclosure

Designed for Accuracy: Previously, air temperature sensors for enclosures had to be surface mounted, which meant they tended to measure the temperature of the sheet metal they were attached to instead of the air temperature of the enclosure.

Special Clip Design: Our unique design allows the sensor housing to be easily and securely

snapped into a 0.30" diameter pre-drilled hole. This isolates the sensing element from the sheet metal allowing for an accurate air temperature reading.

Sturdy Construction: Our special clip design is added to our air temperature sensor that features a potted metal housing and a plastic molded body that thermally isolates the assembly from the environment while adding a degree of strain relief.

Features:

- Easy installation just snaps into 14 to 18 gauge sheet metal
- Extremely accurate and responsive
- Low cost sensor assembly
- Standard with 10ft. of PVC insulated leads

Options:

• Variety of thermistor curves and resistances available

Unique surface temperature sensor that can be bent to fit into tight spaces or wrapped around long surfaces

Odd-Shaped or Long Surface Sensing: Our unique design allows for accurate temperature sensing in a low-cost package. The time response of the copper tube is extremely fast and the design can accommodate a number of different sensor values as well as either flying leads or jacketed cable. A molded handle or strain relief can be added to provide a degree of moisture resistance and to isolate the sensing element mechanically from the extension leads.

Annealed Copper Housing: The copper used for the sensor housing has been specially annealed to ensure flexibility so that it can be bent to fit the contours of the surface that needs to be monitored. A variety of tube lengths are available.

Features:

- Flexible surface temperature sensor
- Can be bent to fit the contours of a wide range of surfaces
- Rugged construction

Options:

- Housing lengths
- Range of sensor values and accuracies
- Cable type and lengths and styles, connectors and terminations can be specified



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Position Sensor & Control Products



Motorized Potentiometers & Position Sensors

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

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Smooth velvet feel & excellent output smoothness

for fader • Smooth motor installation, infinite resolution and longest life for hollow shaft

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

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