Integrated Airflow/Temperature Sensors

IAT-US Probe

Product Data

Universal Standoff Mount Thermal Dispersion Airflow/Temperature Measurement Probe for Outdoor Intakes, Plenums and Fan Cabinets

- ❑ Compatible with GreenTrol transmitters and controllers that accept IAT integrated sensors
- ❑ Thermal dispersion technology
- ❑ Calibrated from 0 to 3,000 FPM
- ❑ Stable bead-in-glass thermistor sensors
- ❑ NIST traceable airflow and temperature measurement
- ❑ Accurate and repeatable
- ❑ Designed for openings up to 8 square feet
- ❑ Universal mounting design facilitates ordering and installation
- ❑ Three probe lengths available
- ❑ Aluminum probe construction
- ❑ FEP plenum rated cable with terminal DIN connector plug provided

Typical Installations:

- Rooftop air handler outdoor air intakes
- Fan cabinets and powered exhaust boxes
- Unit ventilator outdoor air intakes
- ERV cabinet and wheel intake/exhaust paths

IAT (integrated airflow/temperature) sensors reduce cost by eliminating the redundancy of a separate transmitter for airflow and temperature measurement. The processing circuitry and firmware is integrated into one of GreenTrol's microprocessor-based transmitters or application specific controllers.

The IAT-US airflow/temperature sensor is designed for mounting inside of plenums or other openings where airflow measurement is desired. One or two probes with a single sensor node are typically used. Sensor node airflow accuracy is ±3% of reading to NIST traceable standards. An installed accuracy of ±10% of reading or better can often be achieved without field adjustment. A field adjust wizard built into GreenTrol's transmitters and application specific controllers facilitate field setup when conditions warrant.

The IAT-US sensor probe uses the principal of thermal dispersion to determine the airflow rate. Thermal dispersion is ideal for HVAC applications that typically require measurement of low air velocities. Each sensing node uses two thermistors to determine airflow. One thermistor is self-heated above ambient while a second thermistor determines the ambient air temperature. The power dissipated into the airstream is directly related to the airflow rate.

Each thermistor body is a hermetically sealed bead-in-glass probe. Bead-in-glass thermistors have demonstrated extreme stability and superior performance over chip type thermistors used by other manufacturers. The bead-in-glass sensor used has been time tested for over 35 years by GreenTrol's sister company, EBTRON. Thermistors are potted in a waterproof sensor assembly and are designed for years of trouble-free operation.

Each sensing node is individually calibrated at 7 points in high-performance wind tunnels. Transmitters and controllers measure and process each individual sensor node

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IAT-US Technical Specifications

Functionality

Airflow Measurement: Provides individual sensor node airflow rates to compatible GreenTrol transmitters and controllers

Temperature Measurement: Provides individual sensor node temperatures to compatible GreenTrol transmitters and controllers

Airflow/Temperature Measurement Probe

Type: -US Universal Insertion Mount Thermal Dispersion Airflow and Temperature Measurement Probe

Available Configurations

- Single Probe: 1 probe x 1 sensor node/probe
- Dual Probe: 2 probes x 1 sensor node/probe

Sensing Node Sensors

- Self-heated sensor: Precision, hermetically sealed, bead-in-glass thermistor probe
- Temperature sensor: Precision, hermetically sealed, bead-in-glass thermistor probe

Probe Tube

- Material: Mill finish 6063 aluminum

Probe Mounting Brackets

- Material: 304 stainless steel

Probe Length: 6, 8 or 16 in. [152.4, 203.2 or 406.4 mm] (adjustable)

Sensing Node Housing

- Material: Glass-filled Polypropylene
- Sensor Potting Materials: Waterproof marine epoxy

Sensing Node Internal Wiring

- Material: Kynar® coated copper

Probe to Transmitter Cables

- Material: FEP jacket, plenum rated CMP/CL2P, UL/cUL listed, -67 to 392 ^{0}F [-55 to 200 ^{0}C], UV tolerant
- Standard Lengths: 10, 25 and 50 ft. [3.1, 7.6 and 15.2 m]
- Connecting Plug: 0.60" [15.24 mm] nominal diameter

Airflow Measurement

- Sensor Accuracy: ±3% of reading to NIST-traceable airflow standards
- Averaging Method: Independent, arithmetic average
- Installed Accuracy: Typically better than ±10% of reading in ducts/openings ≤ 8 sq ft [0.74 sq m]
- Calibrated Range: 0 to 2,000 fpm [0 to 10.16 m/s]
- Calibration Points: 7

Temperature Measurement

- Averaging Method: Independent, velocity weighted
- Accuracy: ±0.15^{0}F [0.08 ^{0}C]

Environmental Limits & Power Requirements

Environmental Limits

- Temperature: -20 to 160 ^{0}F [-28.9 to 71.1 ^{0}C]
  Note: Temperature limits for operation may be limited by the transmitter or controller selected
- Humidity: 0 to 100%

Power Requirement: Power is provided by the transmitter or controller and is included in the transmitter/controller power requirement specification