

## Analog Output Airflow/Temperature Transmitter Module w/Contact Closure Airflow Alarm



- Compatible with GreenTrol IAT integrated thermal dispersion airflow/temperature sensors
- LCD with pushbutton user interface standard
- Measures airflow and temperature
- Airflow and system status notification alarms
- Two analog outputs and one dry contact relay
- Analog outputs can be assigned to one or two airflow locations, temperature and/or notification alarms.
- Contact closure relay can be assigned to notification alarms
- “Plug and play” operation
- Field adjust wizard facilitates airflow adjustment when conditions warrant
- Fully field configurable

- √ Provide continuous verification of airflow rates
- √ Ideal for monitoring applications
- √ Connect to an application controller to maintain airflow rates and/or temperature
- √ Demonstrate compliance with ASHRAE Standards 62.1, 90.1 and 189.1
- √ Satisfy LEED prerequisites and document code compliance
- √ Improve indoor air quality and thermal comfort
- √ Save energy

The GF-A2000 can be provided with a single integrated IAT-DI duct probe or, one or two integrated IAT-UI or IAT-US universal mount probes.

The GF-A2000 provides a linear analog output signal for the

average airflow of one or two probes on analog output AO1. A second analog output, AO2, can be configured to output the airflow of the second probe for applications where two probes are installed in separate locations. Analog output AO2 can also be assigned to temperature or one of the notification alarms. A contact closure relay is provided that can be assigned to the notification alarms. The GF-A2000 can be configured for I-P or SI units of measure.

Although the transmitter is “plug and play” and operates on power up, it is fully configurable in the field using the pushbutton interface and LCD.

# GF-A2000 Transmitter Module Technical Specifications

## Functionality

**Airflow Measurement:** Provides the average airflow rate in FPM [m/s] or CFM [LPS] on the LCD and to analog output AO1 and optionally AO2 when two probes are provided

**Temperature Measurement:** Provides the velocity weighted or arithmetic average temperature in °F [°C] on the LCD and to analog output AO2 when AO2 is assigned to temperature

### Notification Alarms

High/Low Airflow Alarm

System Trouble Alarm

*Note: Alarms can be assigned to the contact closure relay or analog output AO2*

## User Interface

**Display:** 16-character alpha-numeric LCD

**Navigation:** 4-button interface

## Integrated Sensor Capability

**Type:** Accepts GreenTrol IAT-DI, IAT-UI and IAT-US Thermal Dispersion Airflow and Temperature Measurement Probe (required). See appropriate IAT product data sheet for probe information.

### Available Configurations: IAT-DI Probes

**Single Probe:** 1 probe x 1 or 2 sensor nodes/probe

### Available Configurations: IAT-UI and IAT-US Probes

**Single Probe:** 1 probe x 1 sensor node/probe

**Dual Probe:** 2 probes x 1 sensor node/probe

## Analog Outputs

### AO1

**Assignment:** Average airflow output signal of connected probes (P1 and/or P2) or P1 if AO2 is assigned to P2

**Configurable Ranges:** 0-5V, 0-10V or 2-10V

### AO2

**Assignment:** Airflow output signal of P2, average temperature output signal of connected probes or notification alarm

**Configurable Ranges:** 0-5V, 0-10V or 2-10V

*Note: The VDC output circuit can drive the input circuit of devices designed to measure 4-wire, 4-20 mA, current loops with a resistive load  $\geq 250$  ohms*

## Contact Closure Relay

### R1

**Type:** Dry contact w/ onboard jumper to drive a remote LED

**Assignment:** Notification alarms

**Status:** Normally Open (N.O.)

**Rating:** 30 VDC or 24 VAC @ 3 amp. max.

## Environmental Limits, Power Requirements & Dimensions

### Environmental Limits

**Temperature:** -20 to 120 °F [-28.9 to 48.9 °C]

**Humidity:** 5 to 95%

*Important: Provide a weather-proof enclosure if the transmitter module is mounted outdoors*

**Power Requirement:** 24 VAC (22.8 to 26.4 under load) @8.5V-A

**Dimensions:** 3.57H x 6.00W x 1.50D in. [90.7 x 152.4 x 38.1 mm]

## 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  $\pm 3\%$  of reading to NIST traceable standards. An installed accuracy of  $\pm 10\%$  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

# 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 °F [-55 to 200 °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°F [0.08 °C]

## Environmental Limits & Power Requirements

### Environmental Limits

**Temperature:** -20 to 160 °F [-28.9 to 71.1 °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