GF-A2000 Transmitter

Product Data

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 $^\circ$F [$^\circ$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 ≥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 $^\circ$F [-28.9 to 48.9 $^\circ$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 Insertion Mount Thermal Dispersion Airflow/Temperature Measurement Probe for Ducts

- ❑ 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:

- • Rectangular, round and oval interior supply, return, exhaust and outdoor air intake ducts

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-UI airflow/temperature sensor is designed for insertion mounting into interior ducts (ducts protected from rain and/or snow). 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-UI 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 independently. The result is the true average airflow rate and temperature when more than one sensing node is applied.

IAT-UI 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 or406.4 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 $^{\circ}$F [-55 to 200 $^{\circ}$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 $^{\circ}$C]

Environmental Limits & Power Requirements

Environmental Limits

Temperature: -20 to 160 $^{\circ}$F [-28.9 to 71.1 $^{\circ}$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