

## RS-485 BACnet/Modbus 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
- RS-485 network connection can be field configured for BACnet MS/TP or Modbus RTU
- Airflow can be assigned to one or two airflow locations when more than one probe is provided
- 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-N3000 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-N3000 provides a network connection for the average

airflow of one or two probes. It can also be configured to output the airflow of the second probe for applications where two probes are installed in separate locations. Temperature and notification alarms are available via the network. The airflow and temperature of individual sensor nodes are available via the network, if desired. A contact closure relay is provided that can be assigned to the notification alarms. The GF-N3000 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-N3000 Transmitter Module Technical Specifications

## Functionality

**Airflow Measurement:** Provides the average airflow rate of one or two probes, or optionally of individual probes, in FPM [m/s] or CFM [LPS] on the LCD and via the network.

**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*

## 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 unless an external MS/TP airflow measurement device is provided). 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

## Network Connection

N1

**Type:** Non-isolated, field selectable MS/TP BACnet master or Modbus RTU connection (provide separate transformer to each GF-N1000-DI or an RS-485 network isolator if isolation is required)

**B.A.S. Object/Register Read/Write Access:** Yes

**Device Load:** 1/8 load

**Supported Baud Rates:** 9.6, 19.2, 38.4 and 76.8 kbaud

## Contact Closure Relay

R1

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

**Assignment:** OAC alarms or Control Mode

**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]

## Insertion Mount Thermal Dispersion Airflow/Temperature Measurement Probe for Round 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
- Calibrated to volumetric airflow standards
- Accurate and repeatable
- Field calibration is not required
- Fits standard 4 to 16 inch round ducts
- Easy to install insertion probe design
- Available in aluminum or stainless steel
- FEP plenum rated cable with terminal DIN connector plug provided

### Typical Installations:

- Hospital, laboratory and clean room ducts
- Terminal boxes
- Outdoor air intakes to fan coils
- Makeup air ducts to air handlers

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-DI airflow/temperature sensor is designed for duct insertion applications. Probes are available with one or two sensor nodes. Installed airflow accuracy is  $\pm 4\%$  of reading to NIST traceable standards when installed in accordance to published placement guidelines.

The IAT-DI sensor probe uses the principle 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-DI 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:** -DI Duct Insertion Thermal Dispersion Airflow and Temperature Measurement Probe

### Available Configurations

**4 inch [102 mm]:** 1 probe x 1 sensor node

**5 to 16 inch [127 to 406 mm]:** 1 probe x 2 sensor nodes

### 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 (optional: 316 SS)

### Probe Mounting Brackets

**Material:** 304 stainless steel

### Probe Mounting: Insertion

### 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:** 3, 10, 25 and 50 ft. [0.91, 3.1, 7.6 and 15.2 m]

**Connecting Plug:** 0.60" [15.24 mm] nominal diameter

### Airflow Measurement

**Averaging Method:** Independent, arithmetic average

**Installed Accuracy:** Better than ±4% of reading to NIST traceable airflow standards

**Calibrated Range:** 0 to 3,000 fpm [0 to 15.24 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