

**FAN AIRFLOW MEASUREMENT WITH TEMPERATURE AND ALARM CAPABILITY**



**PRODUCT HIGHLIGHTS**

- “Plug and Play” operation
- EBTRON exclusive bead-in-glass thermistor sensors
- Sensor nodes are individually calibrated at 16 airflow rates to NIST traceable standards
- 0 to 10,000 FPM calibrated range with percent-of-reading accuracy
- Actual (CFM) or mass (SCFM) airflow measurement
- Velocity-weighted temperature measurement between -20° F to 160° F
- Smart *Sensor Detection System (SDS)* continuously monitors for sensor and transmitter faults
- Standard FEP plenum rated cable between sensor probes and transmitter
- No compromise construction uses gold plated interconnects and connector pins
- Unsurpassed connectivity options
- Five mounting styles
- *EB-link* BLE interface to phone or tablet provides real-time monitoring and diagnostics
- Three-year warranty
- Toll-free customer support for the lifetime of the product

**TYPICAL APPLICATIONS**

- Fan airflow tracking
- Air change verification and monitoring
- Individual fan performance monitoring and fault detection
- Air change verification and control

**EBTRON ADVANCED THERMAL DISPERSION TECHNOLOGY**

EBTRON pioneered bead-in-glass thermistor based thermal dispersion over 40 years ago. EBTRON’s thermal dispersion technology relates the power dissipated by a self-heated thermistor to the airflow rate at one or more sensor nodes in an airstream. All EBTRON airflow monitoring systems use this time-tested thermal dispersion technology.

**MODEL DESCRIPTION**

The GTx108e-F/SI and GTx108e-F/DI are EBTRON’s solution for accurate and repeatable airflow measurement in SWSI and DWDI fans. The GTx108e-F/An is EBTRON’s solution for accurate and repeatable airflow measurement in fan arrays. One to eight fans are supported. Airflow, temperature and/or airflow alarming are available on all models. The GTx108e-F/An provides individual fan airflow rates and fan alarming with combination analog output/network models. Does not affect fan performance.

## GTx108e-F TECHNICAL SPECIFICATIONS

### General

#### Probe and Sensor Node Configurations

**Fan Arrays (less than or equal to 4 fans):** 2 probes x 1 sensor node per probe or 1 probe x 1 sensor node per probe in each fan

**Fan Arrays (greater than 4 fans):** 1 probe x 1 sensor node per probe in each fan (8 probe maximum)

**SWSI and DWDI fans:** 2 probes x 1 sensor node per probe in each fan inlet

#### Installed Airflow Accuracy<sup>1</sup>

±(3% to 10%) of reading, depending on fan type and installation. May be improved by field adjustment using the Field Adjust Wizard (FAW) to a reliable reference

#### Sensor Node Averaging Method

**Airflow:** Independent, arithmetic average per fan

**Temperature:** Independent, velocity weighted average

#### Listings & Compliance

**UL:** 60730-1; CAN/CSA-E60730-1

**CE:** Yes

**UKCA:** Yes

**BACnet International:** BTL Listed (GTC108e and GTM108e transmitters)

**FCC:** This device complies with Part 15 of the FCC rules

**RoHS:** This device is RoHS2 compliant

#### Environmental Limits

##### Temperature:

**Probes:** -20 to 160 °F [-28.9 to 71.1 °C]

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

##### Humidity: (non-condensing)

**Probes:** 0 to 100%

**Transmitter:** 5 to 95%

### Individual Sensing 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

#### Sensing Node Housing

**Material:** Glass-filled Polypropylene

**Sensor Potting Materials:** Waterproof marine epoxy

#### Airflow Measurement

**Accuracy:** ±2% of reading to NIST-traceable airflow standards (includes transmitter uncertainty)

**Calibrated Range:** 0 to 10,000 fpm [0 to 50.8 m/s]

**Calibration Points:** 16

#### Temperature Measurement

**Type:** Velocity-weighted average

**Accuracy:** ±0.15°F [0.08 °C] to NIST-traceable temperature standards (includes transmitter uncertainty)

**Calibrated Range:** -20 to 160 °F [-28.9 to 71.1 °C]

**Calibration Points:** 3

### Sensor Probe Assembly

#### Mounting Rods

**Material:** Zinc plated steel

#### Mounting Brackets (Throat, Forward, Face, Flare)

**Material:** 304 stainless steel

#### Mounting Brackets (Cantilever)

**Material:** Zinc plated steel

#### Mounting Options & Size Limits

**Throat:** 6 to 66 inches [152.4 to 1676.4 mm] (throat diameter)

**Face:** 11 to 77 inches [279.4 to 1955.8 mm] (diameter at inlet entrance)

**Forward:** 6 to 64 inches [152.4 to 1625.6 mm] (diameter at inlet entrance)

**Cantilever:** 11 to 82 inches [279.4 to 2082.8 mm] (diameter at inlet entrance)

**Flare:** 6 to 57 inches [152.4 to 1447.8 mm] (opening size at backdraft damper inlet)

#### Probe to Transmitter Cables

**Type:** FEP jacket, plenum rated CMP/FT6/CL2P, UL/cUL listed, -67 to 302 °F [-55 to 150 °C], UV tolerant

**Standard Lengths:** 10, 25, and 50 ft. [3.1, 7.6, and 15.2 m]

**Connecting Plug:** 9/16" [14.29 mm] nominal diameter with gold-plated connector pins

### Transmitter

**Power Requirement:** 24 VAC (22.8 to 26.4 under load) @16V-A

**Connector Receptacle Pins and PCB Connections:** Gold-plated receptacle pins, PCB interconnects, PCB edge fingers, and test points

**User Interface:** 2 line x16-character backlit LCD display and 4 button interface

#### B.A.S. Connectivity Options

**All Transmitters:** Three field selectable (0-5/0-10 VDC or 4-20mA), scalable and isolated analog output signals (AO1=airflow, AO2=temperature or alarm, AO3=Not Used).

**GTA108e Transmitter:** No additional connectivity to B.A.S.

**GTC108e Transmitter:** One additional field selectable (BACnet MS/TP or Modbus RTU) and isolated RS-485 network connection - Individual sensor node airflow rates and temperatures are available via the network

**GTM108e Transmitter:** One additional isolated Ethernet (simultaneously supported BACnet Ethernet or BACnet IP, Modbus TCP and TCP/IP) network connection - Individual sensor node airflow rates and temperatures are available via the network

**GTF108e Transmitter:** One additional isolated Lonworks Free Topology network connection

**GTU108e Transmitter:** One additional USB connection for thumb drive data-logging of sensor node airflow rates and temperatures

#### Airflow Alarm

**Type:** Low and/or high user defined setpoint alarm

**Tolerance:** User defined % of setpoint

**Delay:** User defined

**Zero Disable:** Alarm can be disabled when the airflow rate falls below the low limit cutoff value (unoccupied periods)

**Reset Method:** Manual or automatic

**Visual Indication:** Yes, LCD display

**Network Indication:** Yes (GTM108e and GTC108e only)

**Analog Signal Indication:** Yes, on AO2 assignment

#### Fan Alarm (An models)

**Type:** Minimum airflow, % deviation from median airflow, or % deviation from maximum airflow stored in memory

**Tolerance:** User defined % of setpoint

**Delay:** User defined

**Zero Disable:** Alarm can be disabled when the airflow rate falls below the low limit cutoff value (unoccupied periods)

**Reset Method:** Manual or automatic

**Visual Indication:** Yes, LCD display

**Network Indication:** Yes (GTM108e and GTC108e only)

**Analog Signal Indication:** Yes, on AO2 assignment

#### System Status Alarm

**Type:** Sensor diagnostic system trouble indication

**Visual Indication:** Yes, LCD display

**Network Indication:** Yes

**Analog Signal Indication:** Yes, on AO2 assignment

**EB-Link Bluetooth® low energy Interface for Android® and iPhone®:** Download individual sensor node airflow/temperature data, settings and diagnostics.

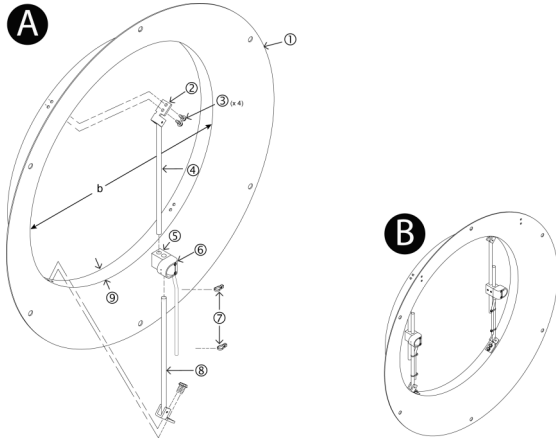
<sup>1</sup> Installed airflow accuracy is the actual system accuracy expected and includes sampling uncertainty of the sensor probes.

**SENSOR PROBE INSTALLATION**

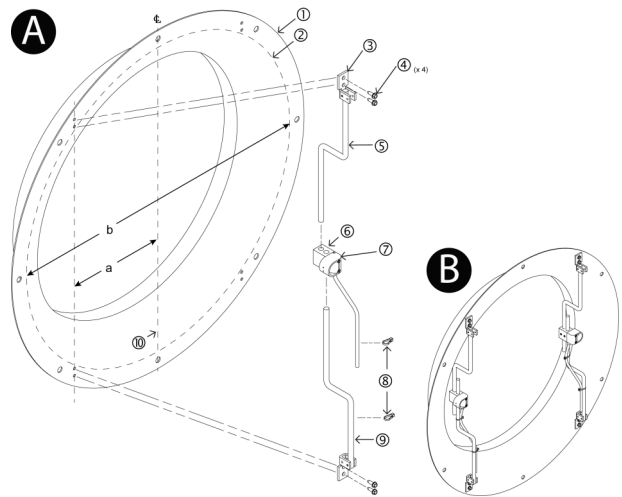
Detailed installation guidelines for probes are provided in the O&M Manual for the following mounting styles.

**Sensor Probe Installation Diagrams**

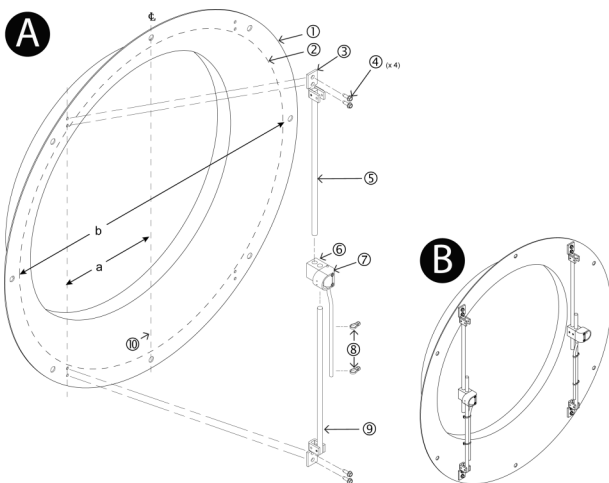
**-F Probe Installation (Throat Mounting Rods)**



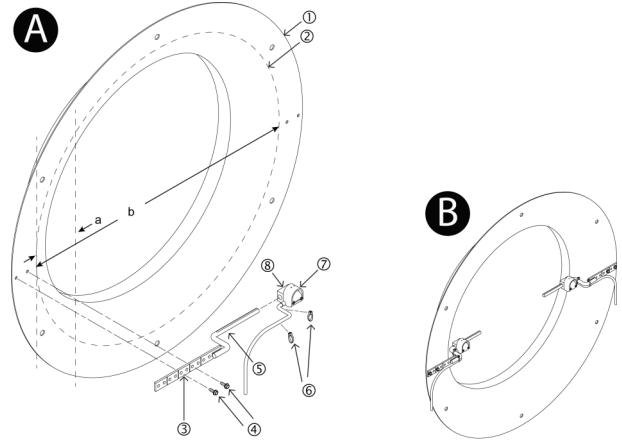
**-F Probe Installation (Face Mounting Rods)**



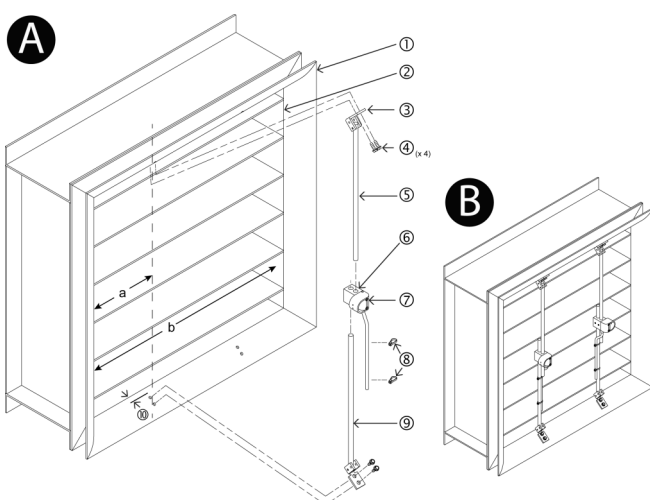
**-F Probe Installation (Forward Mounting Rods)**



**-F Probe Installation (Cantilever Mounting Rods)**



**-F Probe Installation (Flare Mounting Rods)**



### Inlet Probe Size and Mounting Style

	Inlet Size Range (Diameter at mounting location)								Damper Opening	
	Throat		Face		Forward		Cantilever		Flare	
Size Code	Min. (inches)	Max. (inches)	Min. (inches)	Max. (inches)	Min. (inches)	Max. (inches)	Min. (inches)	Max. (inches)	Min. (inches)	Max. (inches)
000	≥ 6	≤ 7	NA	NA	NA	NA	NA	NA	NA	NA
00	≥ 7	≤ 8	NA	NA	NA	NA	NA	NA	NA	NA
0	≥ 8	≤ 12	NA	NA	≥ 6	≤ 9	NA	NA	≥ 6	≤ 9
1	≥ 10	≤ 15	≥ 11	≤ 13	≥ 7	≤ 13	≥ 11	≤ 50	≥ 8	≤ 11
2	≥ 14	≤ 23	≥ 13	≤ 18	≥ 10	≤ 18	≥ 50	≤ 82	≥ 10	≤ 15
3	≥ 18	≤ 32	≥ 18	≤ 25	≥ 14	≤ 25	NA	NA	≥ 12	≤ 20
4	≥ 27	≤ 49	≥ 25	≤ 35	≥ 19	≤ 35	NA	NA	≥ 16	≤ 27
5	≥ 35	≤ 66	≥ 34	≤ 50	≥ 27	≤ 50	NA	NA	≥ 21	≤ 38
6	NA	NA	≥ 47	≤ 77	≥ 40	≤ 64	NA	NA	≥ 31	≤ 57

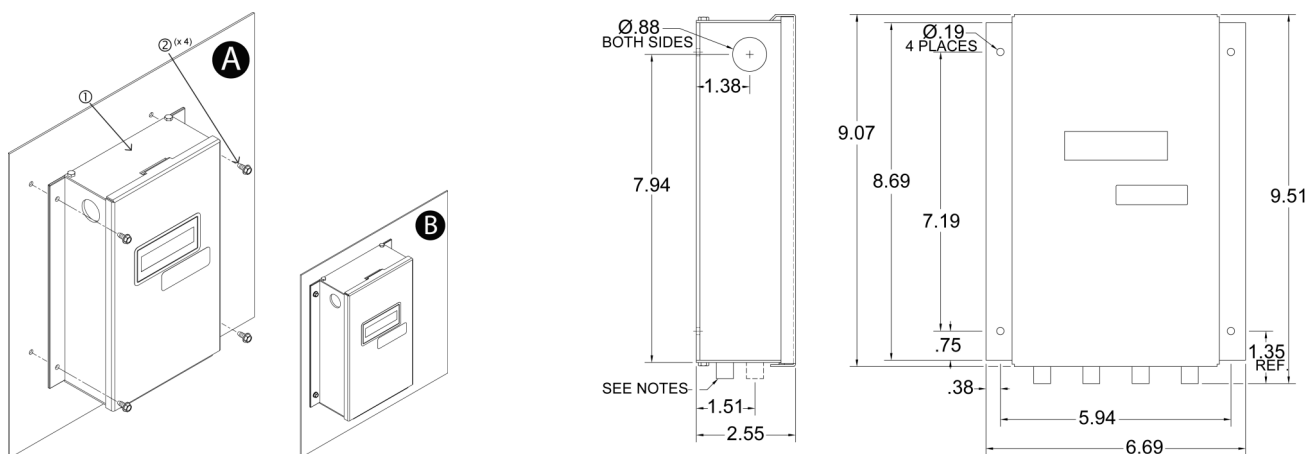
### TRANSMITTER INSTALLATION AND WIRING

Detailed installation guides for transmitters are provided in the O&M Manual for the connectivity options that follow. All GTx108e transmitters are provided with the base analog output configuration (x = A). Additional connectivity may be obtained by an additional output card located below the display on the main circuit board.

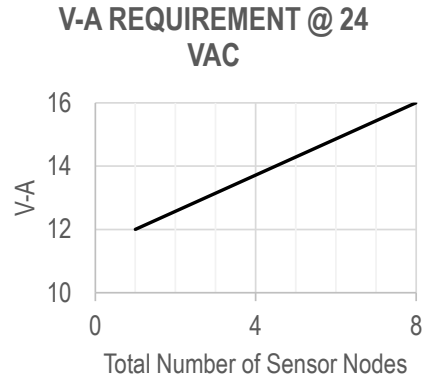
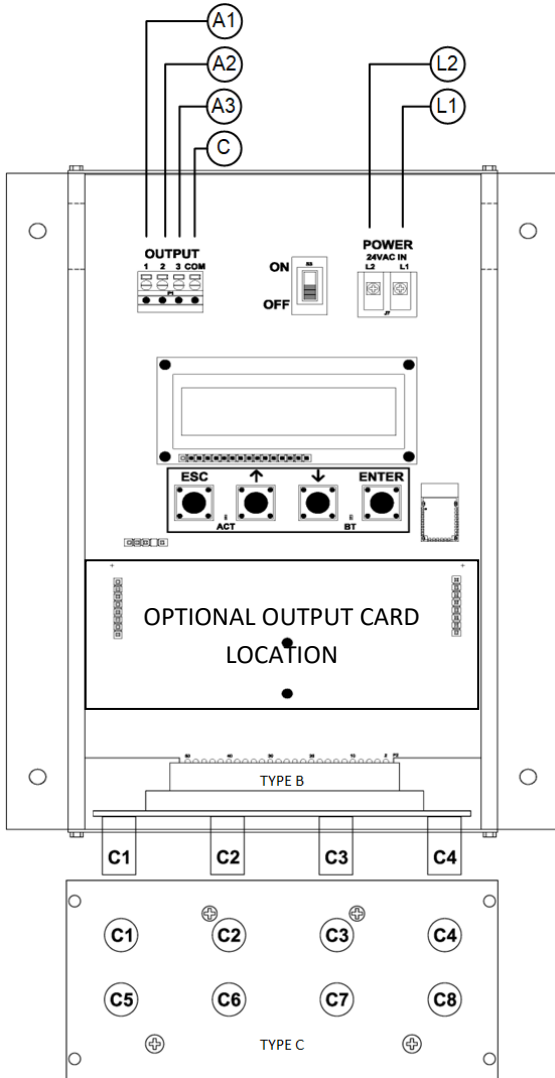
Locate the transmitter where all of the sensor probe connecting cables will reach the transmitter and it is protected from moisture, rain, and snow.

### Transmitter Mounting Diagram and Dimensions

#### Advantage IV Gold Series Transmitter Installation



**All Models - Power Requirement, Probe Connections, and Analog Output Connections**



**TRANSMITTER CONNECTIONS**

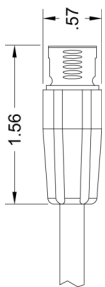
Power	Analog Out (isolated)					Type	
	L1	L2	A1	A2	A3	C	C
24 VAC (hot)			Airflow +	Temperature or Alarm +	N/A	Signal Common	
24 VAC (neutral)							4 probes x 1 sensors/probe
							8 probes x 1 sensors/probe

Connect each analog output signal required to the host B.A.S. using shielded twisted-pair wire. Properly terminate the shield (typically at the B.A.S.).

**!** If twisted pair wire and/or shielded cable is not used, extraneous electrical noise can be picked up between the transmitter and host control panel.

**i** Analog output signals are electrically isolated from the main circuit board and power supply.

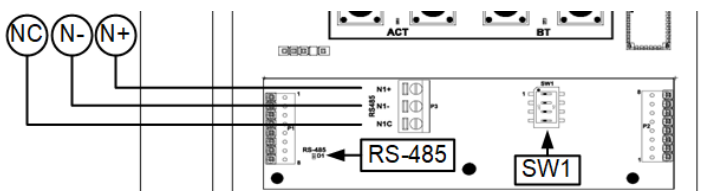
**i** Transmitters are preconfigured for 4-20mA. Consult the Startup Guide for the appropriate model to change the output to either 0-5 VDC or 0-10 VDC.



**!** Push in **keyed** connector plugs (sensor data is stored in serial memory chip in connector plug). **DO NOT TWIST!**

**i** Cables have an FEP plenum rated jacket that are UV tolerant and suitable for operation over the entire operating temperature range of the device.

**GTC108e-F - RS-485 Connections**



RS-485 (isolated)		
N+	N-	NC
Network +	Network -	Network Common

**GTC108e-F - RS-485 Connections (continued)**

Use a 3-conductor network cable meeting the corresponding BACnet or Modbus standards. Ensure that all three connections, N+, N- and NC are connected.

*Refer to the O&M Manual for information regarding network configuration, BACnet objects, and Modbus registers.*

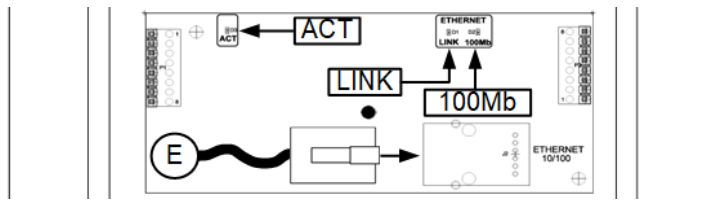
*Transmitters are preconfigured for BACnet MS/TP. Consult the Startup Guide for the appropriate model to change the output to Modbus RTU network protocol.*

*If a 2-conductor network cable or other non-conforming cable is used, network speed, length and reliability may be compromised or network failure may occur.*

**SW1—RS-485 TERMINATION DIP SWITCH POSITIONS**

1	2	3	4	TERMINATION
OFF	OFF	OFF	OFF	No termination (default)
OFF	ON	ON	OFF	End of Line
ON	OFF	OFF	ON	Fail-Safe Bias

**GTM108e-F - Ethernet Connection**



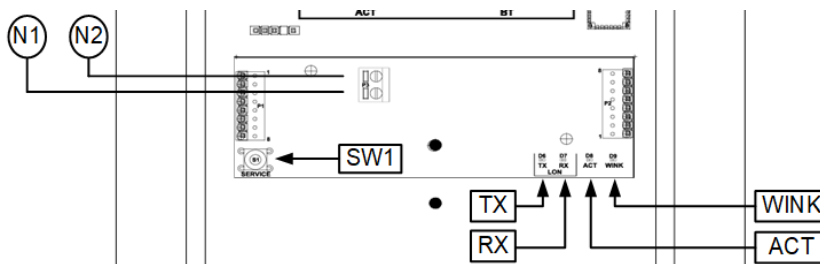
Ethernet
RJ-45 CAT5 or greater

Use a standard RJ-45 Ethernet connection (T-568A or T-568B) and CAT-5 cable or higher.

*Refer to the O&M Manual for information regarding network configuration, BACnet objects, and Modbus registers.*

*BACnet Ethernet, BACnet IP, Modbus TCP or TCP/IP protocols are set during network configuration. The GTM108e-F supports simultaneous operation of all protocols.*

**GTF108e-F - LON Connection**



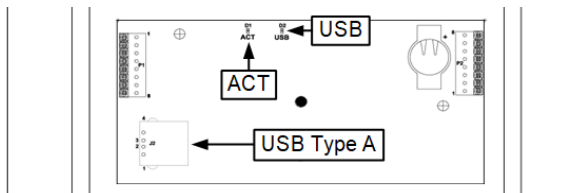
Lon Network	
N1	N2
Network Pair (1 of 2)	Network Pair (2 of 2)

*Refer to the O&M Manual for information regarding network configuration and LON objects.*

*The network termination is polarity insensitive.*

*Use the network cable specified by Echelon (typically Beldon 8471 cable or equivalent).*

### GTU108e-F - USB Datalogger



Transmitters with a USB data logger log the average airflow, average temperature, individual sensor node airflow and the individual sensor node temperature at 5-minute intervals using Universal Time Coordinated (UTC) based on an onboard real-time clock, whenever power is applied to the transmitter. Data files are automatically appended on power-up.

Enable the USB WRITE parameter to start logging data.

Disable the USB WRITE parameter stop logging data.

**⚠** *Always set the USB WRITE parameter to "OFF" before removing the USB memory device to avoid data loss/and or damage.*

#### STARTUP

Detailed startup guides are provided in the O&M Manual.

#### VERIFICATION, TROUBLESHOOTING, AND MAINTENANCE

Verification and troubleshooting is discussed in detail in the O&M manual.

EBTRON airflow monitoring devices are factory calibrated and should not require periodic maintenance or recalibration in most HVAC environments. If the sensor probes are installed in a location that is subject to excessive dust, lint, or other airborne debris accumulation, filtration at the source or access for cleaning should be provided. Please note that this issue is not specific to EBTRON or EBTRON technology. Consult EBTRON to discuss specific concerns or suggested remedies if airborne particulates are a concern.

**APPLICATION REVIEW REQUESTS**

EBTRON and/or your local representative will review the application and make recommendations on the proper use of this device prior to requesting a quotation or placing an order. Provide as much of the following information as possible to facilitate the review process:

- |   |   |
|---|---|
| √ Service: SA, RA, OA, EA, Other (specify)                | √ Immediate up and downstream disturbance and the |
| √ Duct or opening size where the probes will be installed | distance between disturbances                     |
| √ Minimum and maximum expected airflow rates              | √ Mechanical drawings or sketches                 |
| √ Minimum and maximum expected airstream                  | √ Sequence of operation                           |
| temperatures  | √ Control schematic                               |

**QUOTATIONS AND ORDERING**

Use the model code below to request a quote or place an order. Quotations and orders are provided by your local EBTRON representative. Provide a location name up to sixteen characters to facilitate use of the EB-Link Reader phone/tablet application. The location name is displayed on the EB-Link Reader in lieu of the transmitter serial number.

GT 108e-F / / :

