EBTRON exclusive bead-in-glass thermistor sensors

0 to 5,000 FPM calibrated range with percent-of-

Actual (CFM) or mass (SCFM) airflow measurement

Optional velocity-weighted humidity/enthalpy and

Smart Sensor Detection System (SDS) continuously

Independent test data demonstrates resistance to

Standard FEP plenum rated cable between sensor

EB-Link BLE interface to phone or tablet provides real

Toll-free customer support for the lifetime of the

No compromise construction uses gold plated

monitors for sensor and transmitter faults

saltwater and chemical exposure

Unsurpassed connectivity options

-time monitoring and diagnostics

Velocity-weighted temperature measurement

Sensor nodes are individually calibrated at 16 airflow



HIGH SENSOR DENSITY MULTI-POINT AIRFLOW AND TEMPERATURE MONITORING DEVICE WITH ALARM AND OPTIONAL INTEGRAL HUMIDITY SENSOR

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PRODUCT HIGHLIGHTS

reading accuracy

"Plug and Play" operation

between -20° F to 160° F

dewpoint measurement

probes and transmitter

Three-year warranty

interconnects

product

rates to NIST traceable standards



PATENTS

- US Patent Nos.: 12,066,199; 12,066,205
- CA Patent Nos.: 3,069,531; 3,169,641
- EP Patent No.: 4081741
- MX Patent No.: 417881

TYPICAL APPLICATIONS

- Outdoor airflow monitoring and control
- Advanced CO2-DCV airflow reset and limit control
- Population-based DCV control
- Air change verification and control
- Differential airflow tracking and pressure control
- System performance monitoring
- Economizer switchover and fault detection

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 GTx116e-P is EBTRON's top-of-the-line airflow monitoring system that also provides velocity-weighted temperature and optional velocity-weighted psychrometric measurements, thus providing a turn-key solution for today's high-performance buildings. Multiple sensor nodes provide accurate measurements of critical airstream parameters. Unsurpassed connectivity options and a "no-compromise" design makes this your best choice for today's high-performance buildings.



GTx116e-P TECHNICAL SPECIFICATIONS

General

Probe and Sensor Node Configurations (max.) Type A Transmitter: 2 probes x 8 sensor nodes/probe Type B Transmitter: 4 probes x 4 sensor nodes/probe Installed Airflow Accuracy Ducts/Plenums: ±3% of reading Non-ducted OA Intakes: better than or equal to ±5% of reading Sensor Node Averaging Method Airflow: Independent, arithmetic average Temperature: Independent, velocity weighted average Listings & Compliance UL: 60730-1; CAN/CSA-E60730-1 CE: Yes UKCA: Yes BACnet International: BTL Listed (GTC116e and GTM116e 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 (Kynar® with /SS option) Sensor Potting Materials: Waterproof marine epoxy

Sensing Node Internal Wiring

Type: Kynar® coated copper

Airflow Measurement

Accuracy: ±2% of reading to NIST-traceable airflow standards (includes transmitter uncertainty) Calibrated Range: 0 to 5,000 fpm [25.4 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 ⁶F [-28.9 to 71.1 ^oC]

Optional Relative Humidity Sensor (/H Option)

Type: Ruggedized capacitive polymer RH sensor Accuracy @ 77 ºF [25 ºC] 20 to 80 %RH: ±2% RH 0 to 20 and 80 to 100 %RH: ±3.5% RH Temperature Coefficient: 0.07%/⁰F [0.13%/⁰C] Long Term Drift: 0.5% RH/year

Calculated Measurements: Velocity weighted relative humidity, velocityweighted enthalpy and dew point using measured RH, velocity-weighted temperature and on-board barometric pressure sensor.

Tube Material: Gold anodized 6063 aluminum (316 stainless steel with /SS option) Mounting Brackets Material: 304 stainless steel **Mounting Options & Size Limits** Insertion: 6 to 191in. [152.4 to 4851 mm] Stand-off: 6 to 190 in. [152.4 to 4826 mm] Internal: 10 to 194 in. [254.0 to 4928 mm] Note: The /H option is only available on probes >18 in.[457.2 mm] **Probe to Transmitter Cables** Type: FEP jacket, plenum rated CMP/FT6/CL2P, UL/cUL listed, -67 to 302 $^{\rm o}F$ [-55 to 150 $^{\rm o}C$], UV tolerant Standard Lengths: 10, 15, 20, 25, 30, 40 and 50 ft. [3.1, 4.6, 6.1, 7.6, 9.1, 12.2, and 15.2 m] Connecting Plug: 13/16" [20.63 mm] nominal diameter

Transmitter

Power Requirement: 24 VAC (22.8 to 26.4 under load) @20V-A max. PCB Connections: Gold-plated 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

Sensor Probe Assembly

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=%RH, enthalpy or dew point when /H option is provided).

GTA116e Transmitter: No additional connectivity to B.A.S. GTC116e 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

GTB116e Transmitter: One additional field selectable (BACnet MS/TP or Modbus RTU) and isolated RS-485 network connection and 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

GTM116e 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

GTF116e Transmitter: One additional isolated Lonworks Free Topology network connection

GTU116e Transmitter: One additional USB connection for thumb drive data-logging of sensor node airflow rates and temperatures

Alarms

Airflow: Low and/or high user defined setpoint alarm

System Status: Sensor diagnostic system trouble indication EB-Link Bluetooth® low energy Interface for Android® and iPhone®: Display real-time airflow, velocity-weighted temperature, humidity, enthalpy, dew point, individual sensor node airflow/temperature data, settings and diagnostics1.



SENSOR DENSITY

Sensor density refers to the number of sensor nodes located in the sensing plane where the probes are mounted. Typical HVAC applications have limited straight run between up and downstream disturbances. Those disturbances can create a significant velocity profile. As a result, the installed accuracy is based not only on the sensor node accuracy, but the ability sensor nodes to average the velocity profile sufficiently. Most instrumentation manufacturers dismiss the effect of sampling error and only publish laboratory sensor accuracy.

The number of sensor nodes provided depends on the sensor density suffix C or + that follows the probe type description of "P" in the model code. A custom sensor density, Z, is also available for applications that do not fall into standard installation tables. The transmitter provides the average velocity of the sensor nodes for the true volumetric or mass airflow of the airstream. When installed in accordance with EBTRON placement guidelines, the GTx116e-PC provides a measurement accuracy of better than or equal to $\pm 3\%$ of reading ($\pm 5\%$ of reading on close-coupled outdoor air intakes) without field adjustment. The GTx116e-P can be configured for up to sixteen independent sensor nodes for unsurpassed measurement accuracy.

EBTRON placement guidelines are based on tests conducted on C sensor density (i.e., GTx116e-PC) probes. Although EBTRON recommends its C sensor density for most applications, it can provide alternate sensor density when less probes are desired for the same sensor density (+). Refer to the sensor density tables below for the specific information on the number of probes and sensors per probe for a given sensor density designation.



PC SENSOR DENSITY TABLE

PC	SENSOR	R DEN	ISITY ⁻	TABLE	E (# Pi	robes	/# Sei	nsor r	nodes	per p	robe)	- /H r	not av	vailab	le wit	h /SS	optio	n					
									1		Probe	2 Leng	th (inc	hes)									
				/H No	ot Ava	ilable																	
		Inse	ertion	/Stanc	doff																		
				Inter	nal 1																		
		6	8	10	12	14	16	18	20	22	24	30	36	42	48	54	60	66	72	84	96	108	120 ¹
Ro	und ≻	1/1	1/1	1/1	1/2	2/2	2/2	2/2	2/2	2/2	2/4	2/4	2/4	2/6	2/6	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Fla	t Oval ≻		All flat ovals are custom. Contact EBTRON or your representative for information on flat ovals.																				
	6	1/1	1/1	1/1	1/1	1/2	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/8
	8	1/1	1/1	1/1	1/2	1/2	1/2	1/2	1/3	1/3	1/3	1/4	1/4	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/8	1/8	1/8
	10	1/1	1/1	1/1	1/2	1/2	1/3	1/4	1/3	1/3	1/3	1/4	1/5	1/6	1/6	1/6	1/8	1/8	1/8	1/8	1/8	1/8	1/8
	12	1/1	1/1	1/1	1/2	1/2	1/3	1/4	1/3	1/3	1/3	1/4	1/5	1/6	1/6	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
	14	2/1	2/1	2/1	2/2	2/2	2/2	2/2	2/2	2/3	2/3	2/3	2/3	2/4	2/4	1/8	1/8	1/8	1/8	2/6	2/6	2/6	2/6
Squ	16	2/1	2/1	2/1	2/2	2/2	2/2	2/2	2/3	2/3	2/3	2/3	2/3	2/4	2/4	1/8	1/8	1/8	1/8	2/6	2/6	2/6	2/8
iare,	18	2/1	2/1	3/1	2/2	2/2	2/2	2/3	2/3	2/3	2/3	2/3	2/4	2/4	2/4	1/8	1/8	2/6	2/6	2/6	2/6	2/8	2/8
'Rec	20	2/1	3/1	3/1	2/2	2/2	2/3	2/3	2/3	2/3	2/3	2/4	2/4	2/4	2/4	1/8	2/6	2/6	2/6	2/6	2/8	2/8	2/8
tang	22	2/1	3/1	3/1	2/2	3/2	2/3	2/3	2/3	2/3	2/3	2/4	2/4	2/4	2/4	2/6	2/6	2/6	2/6	2/8	2/8	2/8	2/8
șle /	24	2/1	4/1	4/1	2/2	3/2	2/3	2/3	2/3	2/3	2/3	2/4	2/4	2/4	2/4	2/6	2/6	2/6	2/6	2/8	2/8	2/8	2/8
Adja	30	4/1	4/1	4/1	3/2	3/2	3/2	3/2	3/3	3/3	3/3	2/4	2/4	2/6	2/6	2/6	2/7	2/8	2/8	2/8	2/8	2/8	2/8
cent	36	4/1	4/1	4/1	3/2	3/2	3/2	4/2	4/2	4/2	3/3	2/4	2/5	2/6	2/6	2/7	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Sid	42	4/1	4/1	4/1	3/2	4/2	4/2	4/2	4/2	4/2	4/2	3/4	3/4	3/4	2/7	2/8	4/4	2/8	2/8	2/8	2/8	2/8	2/8
e Lei	48	4/1	4/1	4/1	3/2	4/2	4/2	4/2	4/2	4/2	4/2	3/4	3/4	3/4	4/4	4/4	4/4	4/4	4/4	2/8	2/8	2/8	2/8
ngth	54	4/1	4/1	4/1	4/2	4/2	4/2	4/2	4/2	4/3	4/3	3/4	3/4	4/4	4/4	4/4	4/4	4/4	4/4	2/8	2/8	2/8	2/8
(inc	60	4/1	4/1	4/1	4/2	4/2	4/2	4/2	4/3	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	2/8	2/8	2/8
hes	66	4/1	4/1	4/1	4/2	4/2	4/2	3/4	4/3	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	2/8	2/8
	72	4/1	4/1	4/1	4/2	4/2	4/2	3/4	4/3	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	2/8
	84	4/1	4/1	4/1	4/2	4/2	4/3	3/4	4/3	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
1	96	4/1	4/1	4/1	4/2	4/2	4/3	3/4	4/3	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
	108	4/1	4/1	4/1	4/2	4/2	4/3	4/4	4/3	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
	120	4/1	4/1	4/1	4/2	4/2	4/3	4/4	4/3	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4

NOTE

1. Probe lengths greater than 120 in. will be PZ custom sensor density.



P+ SENSOR DENSITY TABLE

P+	SENSOR	ENSOR DENSITY TABLE (# Probes/# Sensor nodes per probe)																					
											Probe	e Leng	th (inc	ches)									
		6	8	10	12	14	16	18	20	22	24	30	36	42	48	54	60	66	72	84	96	108	120 ²
Round >		<u>1/1</u>	1/1	1/1	<u>1/2</u>	2/2	2/2	2/2	2/4	2/4	2/4	2/4	2/4	2/6	2/8	2/8	2/8	2/8	4/4	4/4	4/4	4/4	4/4
Fla	t Oval ≻	All flat ovals are custom. Contact EBTRON or your representative for information on flat ovals.																					
	6	<u>1/1</u>	1/1	1/1	1/1	1/2	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/8
	8	<u>1/1</u>	1/1	1/1	<u>1/2</u>	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/8	1/8	1/8
	10	<u>1/1</u>	1/1	1/1	<u>1/2</u>	1/2	1/3	<u>1/4</u>	1/4	1/4	1/4	1/6	1/6	1/6	1/6	1/6	1/8	1/8	1/8	1/8	1/8	1/8	2/6
	12	<u>1/1</u>	1/1	1/1	<u>1/2</u>	<u>1/3</u>	1/3	<u>1/4</u>	1/4	1/4	1/4	1/6	1/6	1/6	1/6	1/8	1/8	1/8	1/8	1/8	1/8	2/6	2/6
	14	<u>2/1</u>	2/1	2/1	<u>2/2</u>	2/2	2/2	2/2	2/2	2/3	2/3	1/6	1/6	1/8	1/8	1/8	1/8	1/8	1/8	2/6	2/6	2/6	2/6
Squ	16	<u>2/1</u>	2/1	3/1	<u>2/2</u>	2/2	2/2	2/2	2/3	2/3	2/3	1/6	1/6	1/8	1/8	1/8	1/8	1/8	1/8	2/6	2/6	2/6	2/7
are/	18	<u>2/1</u>	2/1	3/1	<u>2/2</u>	2/2	2/2	2/3	2/3	2/3	2/3	1/6	1/8	1/8	1/8	1/8	1/8	2/6	2/6	2/6	2/6	2/7	2/8
Rec	20	<u>2/1</u>	3/1	3/1	<u>2/2</u>	2/2	2/3	2/3	2/3	2/3	2/3	2/4	1/8	1/8	1/8	1/8	2/6	2/6	2/6	2/6	2/7	2/8	2/8
tang	22	<u>2/1</u>	3/1	3/1	<u>2/2</u>	3/2	2/3	2/3	2/3	2/3	2/3	2/4	1/8	1/8	1/8	2/6	2/6	2/6	2/6	2/7	2/8	2/8	2/8
;le /	24	2/1	4/1	4/1	2/2	3/2	2/3	2/3	2/3	2/3	2/3	2/4	2/4	1/8	1/8	2/6	2/6	2/6	2/6	2/7	2/8	2/8	2/8
Àdja	30	4/1	4/1	4/1	3/2	3/2	3/2	3/2	2/4	2/4	2/4	2/4	2/4	2/6	2/6	2/6	2/7	2/7	2/8	2/8	2/8	2/8	2/8
cent	36	4/1	4/1	4/1	3/2	3/2	3/2	4/2	4/2	4/2	2/4	2/4	2/6	2/6	2/6	2/7	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Sid	42	4/1	4/1	4/1	3/2	4/2	4/2	4/2	4/2	4/2	4/2	2/6	2/6	2/7	2/7	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8
e Le	48	4/1	4/1	4/1	3/2	4/2	4/2	4/2	4/2	4/2	4/2	3/4	2/6	2/7	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8
ngth	54	4/1	4/1	4/1	4/2	4/2	4/2	4/2	4/2	3/4	3/4	3/4	2/7	2/8	2/8	2/8	2/8	2/8	4/4	2/8	2/8	2/8	2/8
) (in	60	4/1	4/1	4/1	4/2	4/2	4/2	4/2	3/4	3/4	3/4	4/4	. 4/4	2/8	2/8	2/8	4/4	4/4	4/4	4/4	2/8	2/8	2/8
ches	66	4/1	, 4/1	, 4/1	4/2	, 4/2	, 4/2	, 3/4	3/4	3/4	3/4	, 4/4	4/4	4/4	2/8	2/8	, 4/4	, 4/4	, 4/4	, 4/4	4/4	2/8	2/8
<u> </u>	72	4/1	4/1	, 4/1	4/2	, 4/2	, 4/2	3/4	3/4	3/4	3/4	, 4/4	, 4/4	, 4/4	2/8	4/4	, 4/4	, 4/4	, 4/4	, 4/4	, 4/4	4/4	2/8
	84	4/1	4/1	4/1	4/2	4/3	4/3	3/4	3/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
	96	4/1	4/1	4/1	4/2	4/3	4/3	3/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
	108	4/1	4/1	4/1	4/2	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
	120	4/1	4/1	4/1	4/2	4/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4

NOTE

1. **<u>UNDERLINED</u>** items cannot be manufactured as internal mount due to manufacturing limitations.

2. Probe lengths greater than 120 in. will be PZ custom sensor density.



SENSOR PROBE PLACEMENT

Determine the location where the sensor probes will be mounted. Refer to the O&M Manual for Duct and Plenum Probe Placement or contact EBTRON or your local EBTRON representative for assistance. A selection software tool is available at EBTRON.com that creates a placement schedule.

SENSOR PROBE INSTALLATION

Detailed installation guidelines for probes are provided in the O&M Manual for the following duct configurations.

Install sensor probes at location (if provided) indicated on probe hang tag to optimize implementation of the EB-Link Reader and IAQ Enforcer[®] accessories.

Sensor Probe Installation Diagrams

-P Probe Installation (Insertion Mounting—Rectangular Ducts)



-P Probe Installation (Standoff Mounting—Rectangular Ducts)



RECTANGULAR & OVAL TYPE C DUCTS

Number of Probes	а	b
01110000		
1	c/2	
2	c/4	c/2
3	c/6	c/3
4	c/8	c/4

-P Probe Installation (Internal Mounting—Rectangular Ducts)





-P Probe Installation (Insertion Mounting-Round Ducts)



ROUND DUCTS							
Number	2	h	∠from				
of Probes	d	a	previous				
1							
2	2" [50mm]	0.79c	90°				
3	2" [50mm]	0.52c	60°				
4	2" [50mm]	0.39c	45°				

-P Probe Installation (Insertion Mounting—Oval Ducts—Type A)



-P Probe Installation (Insertion Mounting—Oval Ducts—Type C)



-P Probe Installation (Insertion Mounting—Oval Ducts—Type B)







TRANSMITTER INSTALLATION AND WIRING

Detailed installation guides for transmitters are provided in the O&M Manual for the connectivity options that follow. All GTx116e 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



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



TRANSMITTER CONNECTIONS

Der	wor	1	Analo	Tuno								
20	wer		(isol	ated)		туре						
L1	L2	A1	A2	A3	С	Α	В					
24 VAC (hot)	24 VAC (neutral)	Airflow +	Temperature or Alarm +	Psychrometric Property+	Signal Common	2 probes x 8 sensors/probe	4 probes x 4 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.
- 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.

GTC116e-P - RS-485 Connections



GTX116e-P DataSheet (R1H)



GTC116e-P - 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.

- (i) 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							

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

GTB116e-P - RS-485 and Ethernet Connections



If RS-485, 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.
- (i) 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.

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

 ${rak U}$ 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 GTB116e-P supports simultaneous operation of all protocols.

F (is	RS-48 solate	5 d)	Ethernet
N+	N-	NC	E
Network +	Network -	Network Common	RJ-45 CAT5 or greater

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		

 $^{(\}mathbf{i})$



GTM116e-P - Ethernet Connection





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

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

(i) BACnet Ethernet, BACnet IP, Modbus TCP or TCP/IP protocols are set during network configuration. The GTM116e-P supports simultaneous operation of all protocols.





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

 ${iold U}$ The network termination is polarity insensitive.

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





GTU116e-P - 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:

- $\sqrt{}$ Service: SA, RA, OA, EA, Other (specify)
- $\sqrt{-}$ Duct or opening size where the probes will be installed
- $\sqrt{}$ Minimum and maximum expected airflow rates
- Minimum and maximum expected airstream temperatures
- Immediate up and downstream disturbance and the distance between disturbances
- $\sqrt{}$ Mechanical drawings or sketches
- $\sqrt{}$ Sequence of operation
- √ 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 and IAQ Enforcer[®] accessories. The location name is displayed on the EB-Link Reader and IAQ Enforcer er Smart Display Panel SDX-1000 in lieu of the transmitter serial number.



 ${\sf F}~$ = isolated analog outputs plus Lonworks Free Topology U = isolated analog outputs plus USB thumb drive datalogged