

EBTRON®

Thermal Dispersion Airflow Measurement

Advantage II Hybrid Series



HYBRID SERIES FAMILY

The Hybrid Series HTx104 transmitter combines features from the top-of-the-line Gold Series and from the economical Silver Series. EBTRON's Hybrid Series transmitters with advanced design features and a wide range of sensor densities permit more flexible sensor probe placement in more locations than the competition. Whether you're measuring outside airflow for ASHRAE Standard 62.1 compliance, tracking supply and return airflow rates or controlling pressurization, EBTRON's Hybrid Series high performance thermal dispersion airflow measurement systems provide you with the most reliable, accurate and repeatable HVAC measurement devices on the market.

EBTRON systems are factory calibrated to NIST-traceable volumetric flow standards and do not require additional transmitters or transducers to interface to your host Building Automation System. Lower your startup and maintenance costs, reduce energy consumption and improve control of your HVAC system. Specify EBTRON as the basis-of-design on all of your HVAC projects!



HTx104-P
Duct & Plenum Probes

Repeatable Airflow Measurement

Use on duct and plenum applications where accurate, repeatable airflow measurement is required. Selectable sensor densities combined with flexible mounting options provide accurate airflow measurement in locations where other technologies can not be applied.



HTx104-F
Fan Inlet

Fan Inlet Airflow/Temperature Measurement

Accurate and repeatable fan inlet measurement that is ideal for fan tracking. The streamline design of the HTx104-F sensors does not significantly degrade fan performance or increase sound levels. Available three innovative mounting styles and in six standard sizes with adjustable mounting brackets to simplify selection and installation in virtually all types of fan inlets.



HTx104-T
Small Duct Probe

Precision Airflow Measurement for Small Ducts

Accurate and repeatable airflow measurement for VAV boxes or other small ducts 16 inches or smaller. Ideal for laboratory, hospital or clean room applications. Use with outside duct and plenum probes and occupancy counting systems on VAV systems to continuously reset outside airflow setpoints in accordance with the dynamic reset requirements of ASHRAE Standard 62.1-2004.



HTx104-B
"Bleed" Bi-Directional

"Bleed" Airflow/Pressure Measurement

Determine ultra-low differential pressure by measuring the bleed airflow induced through the sensor. When combined with the appropriate mounting kit, the HTx104-B is well suited for building and space pressure applications. This versatile device can also be used to verify airflow direction across control dampers and can be used to indirectly determine airflow rates across fixed orifices such as louvers or fixed position dampers.



Technical Specifications

HTx104-P
Ducts & Plenums

HTx104-F
Fan Inlet

HTx104-T
Small Ducts & Plenums

HTx104-B
Bleed[®] Airflow

Sensor Probe Specifications

Sensor Assembly Model	HP1	HF1	HT1	HB1
Sensor Probe Configurations (probes x sensors/probe)	1x4 or 2x2 (independent sensors)	2x1 or 4x1 (independent sensors)	1x2 (independent sensors)	2x1 (independently wired sensors)
Accuracy: Airflow Rate	± 2% of reading, ±0.25% repeatability			
Accuracy: Temperature	± 0.15° F (± 0.08° C)			
Airflow Range	0 to 5,000 fpm (0 to 25.4 m/s)	0 to 10,000 fpm (0 to 50.8 m/s)	0 to 3,000 fpm (0 to 15.2 m/s)	-3,000 to +3,000 fpm (-15.2 to +15.2 m/s)
Temperature Range	-20° F to 160° F (-28.9°C to 71.1°C)			
Humidity Operating Range	0 to 99% rh, non-condensing			
Sensor Distribution	Equal area (std.) or Log-Tchebycheff	Equal area	N/A	
Thermistor Type (heated and temperature sensor)	Bead-in-glass, hermetically sealed, thermistor probes (1 temperature sensor at each sensing location)			
Sensor Housing	Glass-filled polypropylene (Kynar w/ SS option)	Glass-filled polypropylene		
Sensor Potting Material	Marine grade, waterproof epoxy			
Internal Wiring	Kynar coated copper	N/A	Kynar [®] coated copper	
Standard Size Ranges	8 in. (203.2 mm) to 120 in. (3048 mm)	11 in. (279.4 mm) to 64 in. (1625.6 mm)	4 in. (101.6 mm) to 16 in. (406.4 mm)	N/A
Custom Size Ranges	> 120 in. (3048 mm) to 192 in. (4978.4 mm) [sensor qty. limited]	Consult Factory	N/A	
Construction	Gold anodized tube, 6063 aluminum alloy (316 SS w/SS option) with 304 SS mounting brackets	Adjustable length, Zinc plated steel rods w/304 SS mounting feet and sensor block	Mill finish tube, 6063 aluminum alloy with 5052 aluminum alloy mounting brackets	Glass-filled polypropylene body with 0.5 in. (12.7mm) NPT female pipe connections
Connecting Cable Type	FEP coated cable 0.625 in. (15.9 mm) plug [transmitter end]			
"Plug and Play" Sensor Probes	Probes do not require matching to transmitter			

Transmitter Specifications

Maximum Number of Sensing Points	4 (4 airflow + 4 temperature)	4 (4 airflow + 4 temperature)	2 (2 airflow + 2 temperature)
Maximum Number of Sensors per Transmitter	4 (per location)	4 (2 per inlet)	4 (per location) 2(per location)
Processor	High speed microprocessor based design architecture with 4 channel multiplexer and industrial rated 12-bit A/D converter		
"Plug and Play" Sensor Systems	Probes do not require matching to transmitter		
Input Voltage Requirement	24 VAC (22.8 to 26.4 VAC), isolation not required		
Input Power "Brownout" Protection	"Watchdog" reset circuitry		
Input Power Requirement	6 - 11 VA (dependent on number of sensors)		
Input Power Protection	Over voltage, over current and surge protection		
Enclosure	Aluminum		
User Interface	Pushbutton and LCD display w/user entry password lock		
Display	16 character alpha-numeric display (auto-ranging)		
Standard Output to Host Controls	Airflow (or equivalent Pressure) and Temperature		
Units of Measure	I-P or S.I., Field Selectable		
Velocity Weighted Temperature	N/A		
Field Calibration Wizard:	Automated 1 or 2 point adjustment to factory calibration		
Output Signal/Protocols Supported	HTA104: Isolated 0-5/0-10VDC (resolution 0.010/0.020% of FS) or 4-20mA analog outputs HTN104: RS-485,76.8 Kbps max., BACnet [®] , Modbus, JCI N2-Bus		
Alarm Output features	Programmable low limit, high limit, dead band flow alarms or transmitter/sensor fault alarm (HTA104 only)		
Airflow Output Adjustments	Offset/gain (using pushbuttons & LCD display, must be enabled)		
Airflow Output Signal Filter	Adjustable flow buffer and integration buffer from 0 (off) to 99% (using push-buttons & LCD display)		
Airflow Low Limit Cutoff	Forces output to zero below user defined value (using pushbutton & LCD display)		
System Diagnostics	Sensor/transmitter diagnostic mode with notification		
Operating Environmental Limits	-20° F to 120° F (-28.8° C to 48.8° C) at 0 to 99% rh, non condensing (protect from water)		
Moisture	0 to 99% rh, non condensing (protect from water)		

Listings & Warranty

BTL Listing	BACnet Product Listing March 2011 – BACnet Protocol Revision 4 (135-2004)
UL Listings	UL 873 Airflow & Temperature Indicating Devices
CE Marking	CE (European Union shipments only)
Standard Warranty	36 months from shipment (see Terms & Conditions of Sale for details)