AIRFLOW MEASUREMENT WITH TEMPERATURE AND ALARM CAPABILITY

TYPICAL APPLICATIONS

- Smaller openings (≤ 8 sq ft [0.74 sq m]) for outdoor air delivery monitoring where 10% installed accuracy is acceptable
- ERV/HRV outdoor air & exhaust air monitoring
- Classroom unit ventilator outdoor air delivery monitoring

PRODUCT HIGHLIGHTS

- *"Plug and Play"* operation
- EBTRON exclusive bead-in-glass thermistor sensors
- NIST traceable calibration
- 0 to 3,000 FPM calibrated range with percent-of-reading accuracy
- Airflow and status alarm
- Single or dual airflow output
- Two mounting styles
- Analog and RS-485 output models
- Dry contact relay
- Remote transmitter with LCD display
- 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
- Three-year warranty
- Toll-free customer support for the lifetime of the product

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 EF-x2000-U is a cost effective measurement solution for smaller rooftop packaged units, fan coils and classroom ventilators. Available with adjustable standoff or insertion mount universal probes. Dual airflow output capability makes it ideal for outdoor air and exhaust airflow measurement in RTUs with powered exhaust and in energy/heat recovery ventilators.

EF-x2000-U TECHNICAL SPECIFICATIONS

General

Probe and Sensor Node Configurations
  1 probe x 1 sensor node
  2 probes x 1 sensor node/probe

Installed Airflow Accuracy[1]
  ≤ 8 sq.ft. [0.74 sq.m.]: ±(3% to 15%), typical (increases with increasing opening size). May be improved by field adjustment using the Field Adjust Wizard (FAW) to a reliable reference.
  > 8 sq.ft. [0.74 sq.m.]: Not recommended.

Sensor Node Averaging Method
  Airflow: Independent (arithmetic average on 2 sensor configurations installed at a single measurement location)
  Temperature: Independent, velocity weighted average on 2 sensor configurations installed at a single measurement location

Listings and Compliance
  UL: 60730-1, 60730-2-9; CAN E60730-1, E60730-2-9 (EF-A2000-U Only)
  FCC: This device complies with Part 15 of the FCC rules
  RoHS: This device is RoHS2 compliant

Environmental Limits
  Temperature:
    Probes 0 to 2,000 fpm [0 to 10.16 m/s]**:**
     -20 to 160 ºF [-28.9 to 71.1 ºF]
    Probes 0 to 3,000 fpm [0 to 15.24 m/s]**:**
    0 to 160 ºF [-17.8 to 71.1 ºC]
    Transmitter: -20 to 120 ºF [-28.9 to 48.9 ºC]
  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

Sensing Node Internal Wiring
  Type: Kynar® coated copper

Airflow Measurement
  Accuracy: ±3% of reading (typical), 4% max. to NIST-traceable airflow standards (includes transmitter uncertainty)
  Calibrated Range: 0 to 3,000 fpm [0 to 15.24 m/s]
  Calibration Points: 7

Temperature Measurement
  Type: Velocity-weighted average
  Accuracy: ±0.15 ºF [0.08 ºC] to NIST-traceable temperature standards (includes transmitter uncertainty)

Sensor Probe Assembly

Tube
  Material: Mill finish 6063 aluminum

Mounting Brackets
  Material: 304 stainless steel

Mounting Options & Overall Probe Length
  Insertion: 6, 8 or 16 in. [152.4, 203.2 or 406.4 mm] (adjustable)
  Stand-off: 6, 8 or 16 in. [152.4, 203.2 or406.4 mm] (adjustable)

Probe to Transmitter Cables
  Type: FEP jacket, plenum rated CMP/FT6/CL2P, UL/cUL listed, -67 to 302 ºF [-55 to 150 ºC], 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

Transmitter

Power Requirement: 24 VAC (22.8 to 26.4 under load) @8V-A
User Interface: 16-character LCD display and 4 button interface

B.A.S. Connectivity Options
  EF-A2000 Transmitter: Two field selectable (0-5/1-5/0-10/2-10 VDC*), scalable and protected analog output signals (AO1 = airflow, airflow1, airflow1-2, or airflow2-1, AO2 = airflow2, airflow1-2, airflow2-1, temperature, or alarm)
  * The VDC output circuit of the EF-A2000 transmitter can drive the input circuit of devices designed to measure 4-wire current loops with a resistive load ≥250 ohms.
  EF-N2000 Transmitter: One field selectable (BACnet MS/TP or Modbus RTU) and non-isolated RS-485 network connection - Individual sensor node airflow rates and temperatures are available via the network (provide individual 24 VAC transformers for each EF-N2000 transmitter for applications requiring isolated RS-485)

Relay
  Type: Dry Contact w/ onboard jumper to drive a remote LED (R1=alarm)
  Status: N.O. or N.C. via user setup configuration
  Rating: 30 VDC or 24 VAC @ 3 amp. max.

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 (EF-N2000 only)
  Analog Signal Indication: Yes, on AO2 assignment (EF-A2000 only)
  Contact Closure Relay: Yes, on R1 assignment

System Status Alarm
  Type: Sensor diagnostic system trouble indication
  Visual Indication: Yes, LCD display
  Network Indication: Yes (EF-N2000 only)
  Analog Signal Indication: Yes, on AO2 assignment (EF-A2000 only)
  Contact Closure Relay: Yes, on R1 assignment

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[1] Installed airflow accuracy is the actual system accuracy expected and includes sampling uncertainty of the sensor probes when installation meets or exceeds placement guidelines.