

Airflow Measurement with Temperature and Alarm Capability

OVERVIEW



- Thermal Dispersion Technology
- Single or Dual Airflow Output
- NIST-traceable Calibration
- %-of-reading Accuracy
- Airflow and Status Alarm
- Temperature Output Capability
- Analog and RS-485 Output Models
- Two Universal Mounting Styles
- Remote Transmitter with LCD Display
- 3-year Warranty

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.

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

Benefits

- ◆ Demonstrate Proper Outdoor Air Delivery
- ◆ Maintain Pressurization
- ◆ Satisfy LEED Prerequisites and Credits
- ◆ Provide Acceptable IAQ
- ◆ Save Energy
- ◆ Reduce Liability
- ◆ Improve Performance

Product Highlights

- ◆ Universal Mounting
- ◆ Adjustable Brackets
- ◆ Low Airflow Capability
- ◆ Long-term Stability
- ◆ Unsurpassed Quality
- ◆ “Plug-and-Play” Operation
- ◆ Intuitive User Interface
- ◆ Waterproof Sensor Assembly
- ◆ FEP Plenum Rated Cables

EF-x2000-U_Overview_r14a

General

Probe and Sensor Node Configurations

- 1 probe x 1 sensor node
- 2 probes x 1 sensor node/probe

Installed Airflow Accuracy¹

Typically better than $\pm 10\%$ of reading when installed in openings ≤ 8 sq ft [0.74 sq m]

Sensor Node Averaging Method

Airflow: Independent (arithmetic average on 2 sensor configurations installed at a single measurement location)

Temperature: Independent (velocity weighted or arithmetic average on 2 sensor configurations installed at a single measurement location)

Listings

UL: 60730-1; UL 60730-2-9 (HVAC Controls)

Environmental Limits

Temperature:

Probes 0 to 2,000 fpm [0 to 10.16 m/s]:
-20 to 160 °F [-28.9 to 71.1 °C]

Probes 0 to 3,000 fpm [0 to 15.24 m/s]:
0 to 160 °F [-17.8 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: High-performance encapsulated chip thermistor with parylene coating

Sensing Node Housing

Material: Glass-filled Polypropylene

Sensor Potting Materials: Waterproof marine epoxy

Sensing Node Internal Wiring

Type: Kynar[®] coated copper

Airflow Measurement

Accuracy: $\pm 3\%$ 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

Accuracy: $\pm 0.36^\circ\text{F}$ [0.2 °C]

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 or 406.4 mm] (adjustable)

Probe to Transmitter Cables

Type: FEP jacket, plenum rated CMP/CL2P, UL/cUL listed, -67 to 392 °F [-55 to 200 °C], 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 or airflow 1, AO2=airflow 2, 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

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.