

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 ( $\leq 8$  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\_r7b

## General

### Probe and Sensor Node Configurations

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

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

- ≤ 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 °F [-28.9 to 71.1 °F]
- 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:** 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<sup>®</sup> 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

- Accuracy:** ±0.15 °F [0.08 °C] 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 or 406.4 mm] (adjustable)

## Probe to Transmitter Cables

- Type:** FEP jacket, plenum rated CMP/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:** 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

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