EB-Flow II
Airflow Measurement with Temperature and Alarm Capability

Series 2000
EF-x2000-T
OVERVIEW

- Thermal Dispersion Technology
- Cost Effective Single Probe
- NIST-traceable Calibration
- %-of-reading Accuracy
- Airflow and Status Alarm
- Temperature Output Capability
- Analog and RS-485 Output Models
- Dry Contact Relay
- Remote Transmitter with LCD Display
- 3-year Warranty

The EF-x2000-T is EBTRON’s top-of-the-line measurement solution for round ducts between 4 and 16 inches in diameter. Ideal for most small duct airflow measurement and volumetric airflow tracking applications. More features than the EF-x1000-T make this the best choice for all small duct measurement applications.

Typical Applications
- High Performance CV/VAV Terminal Box Measurement
- Small Duct Outdoor Air Delivery Monitoring
- Small Duct Airflow Tracking
- Hospital Pressurization
- Laboratory Pressurization

Benefits
- Improve Terminal Box Performance with Turndown
- Comply with ASHRAE Standards
- Satisfy LEED Prerequisites and Credits
- Provide Acceptable IAQ
- Save Energy
- Reduce Liability
- Improve Performance

Product Highlights
- Accurate & Repeatable
- Low Airflow Capability
- Volumetric or Mass Airflow Measurement
- Long-term Stability
- “Plug-and-Play” Operation
- Intuitive User Interface
- Waterproof Sensor Assembly
- FEP Plenum Rated Cable
**SPECIFICATIONS: EF-x2000-T**

### General
- **Probe and Sensor Node Configurations**
  - 1 probe x 1 sensor node/probe (4 inch [101.6 mm] probe)
  - 1 probe x 2 sensor nodes/probe (5 to 16 inch [127.0 to 406.4 mm] probes)

- **Installed Airflow Accuracy**
  - ±3% of reading

- **Sensor Node Averaging Method**
  - Airflow: Independent arithmetic average
  - Temperature: Independent, velocity weighted average

### Mounting Options & Size Limits
- **Mounting Brackets**
  - Material: Mill finish 6063 aluminum (316 stainless steel with /SS option)

- **Sensor Probe Assembly**
  - **Tube**
    - Material: Mill finish 6063 aluminum (316 stainless steel with /SS option)
  - **Mounting Brackets**
    - Material: 304 stainless steel
  - **Mounting Options & Size Limits**
    - **Insertion**: 4, 5, 6, 7, 8, 9, 10, 12, 14, and 16 inch round [101.6, 127.0, 152.4, 177.8, 203.2, 228.6, 254.0, 304.8, 355.6 & 406.4 mm]

### 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%

### Environmental Limits
- **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: ±3% of reading to NIST-traceable volumetric airflow standards (includes transmitter uncertainty)
  - Calibration 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)
  - Calibration Range: -20 to 160 °F [-28.9 to 71.1 °C]
  - Calibration Points: 3

- **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, AO2 = 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.

### Relay
- **Type**: Dry Contact w/ on board 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)

### System Status Alarm
- **Type**: Sensor diagnostic system trouble indication

### 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, AO2 = 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 at each EF-N2000 transmitter for applications requiring isolated RS-485)

### Contact Closure Relay
- **Type**: Yes, on R1 assignment
- **Rating**: 30 VDC or 24 VAC @ 3 amp. max.

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- **Type**: Yes, on R1 assignment

### Analog Signal Indication
- **Type**: Yes, on AO2 assignment (EF-A2000 only)
- **Rating**: 30 VDC or 24 VAC @ 3 amp. max.

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*installed airflow accuracy is the actual system accuracy expected and includes sampling uncertainty of the sensor probes when installation meets or exceeds placement guidelines.*