

EBTRON®

Thermal Dispersion Airflow Measurement
Electronic Low Flow ELF



ELF SERIES FAMILY

EBTRON's low cost electronic low flow ELF thermal dispersion airflow measurement station provides precise airflow or equivalent velocity pressure (and temperature measurement with /N and /D models) in challenging variable air volume (VAV) boxes and small duct applications up to 16 inches. Flow velocities of less than 500 FPM are typical in VAV applications, while velocities of up to 3,000 FPM are typical in small duct applications. The ELF is factory calibrated from 0 to 3,000 FPM (0 to 15.24 m/s) in highly accurate wind tunnels to NIST traceable volumetric airflow standards to provide typical air flow accuracy of 3% of reading over the entire flow range, and temperature accuracy of $\pm 0.15^\circ$ from 30 to 160°F. A powerful flow integration flow filter is available on selected models to minimize the effects of transient flows within your system as a result of wind gusts.

ELF models are available with single or dual analog outputs, RS-485 output and even Staefa-equivalent output with or without the flow integration filter option. The ELF is a complete low cost turn-key factory calibrated precision airflow measurement solution with integrated universal mounting bracket, probe and enclosure ready 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 the EBTRON ELF on your next HVAC project!

ELF Standard ELF/F Single Analog Airflow Output

Accurate, economical and simple

The ELF/F versions provide an economical turnkey solution for air flow measurement in VAV box and small duct applications up to 16 inches. All are available with a single airflow output and with or without the flow integration filter as follows:

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|---------------------------|--|
| ELF/F00 (ELF Standard) | 0-10/2-10VDC Output with Flow Integration |
| ELF/F01 | 0-5/1-5VDC Output with Flow Integration |
| ELF/F02 | Staefa-equivalent Output with Flow Integration |
| ELF/F03 | 0-10/2-10VDC Output without Flow Integration |
| ELF/F04 | 0-5/1-5VDC Output without Flow Integration |

ELF/N RS-485 Network Output

Airflow and temperature measurement with RS-485 compatible network output. . .

The ELF/N features a robust RS-485 network interface for communication with modern BAS infrastructures while maintaining its low cost, simplicity and accuracy.

ELF/D Dual Analog Airflow + Temperature Output

Now with separate analog outputs for both air flow AND temperature!

The ELF/D provides two separate 0-10/2-10VDC analog outputs corresponding to air flow and temperature, while maintaining its low cost, simplicity and accuracy.

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|---------|--|
| ELF/D00 | 0-10/2-10VDC Dual Analog Output with Flow Integration |
| ELF/D01 | 0-5/1-5VDC Dual Analog Output with Flow Integration |
| ELF/D02 | Staefa-equivalent Dual Analog Output with Flow Integration |
| ELF/D03 | 0-10/2-10VDC Dual Analog Output without Flow Integration |
| ELF/D04 | 0-5/1-5VDC Dual Analog Output without Flow Integration |



UL Listing applies to
ELF Standard and
ELF/F models only

Technical Specifications

Output Protocols Supported

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|-------------------------|---|
| ELF/F00 (ELF Standard): | 0-10/2-10VDC analog Airflow Output with Flow Integration Filter |
| ELF/F01: | 0-5/1-5VDC analog Airflow Output with Flow Integration Filter |
| ELF/F02 | Staeafa-equivalent Airflow Output with Flow Integration Filter |
| ELF/F03 | 0-10/2-10VDC Airflow Output without Flow Integration Filter |
| ELF/F04 | 0-5/1-5VDC Airflow Output without Flow Integration Filter |
| ELF/N: | RS-485 Network Airflow + Temperature Output (with option to enable/disable Flow Integration Filter) |
| ELF/D00: | 0-10/2-10VDC Dual analog Airflow + Temperature outputs with Flow Integration Filter |
| ELF/D01: | 0-5/1-5VDC Dual analog Airflow + Temperature outputs with Flow Integration Filter |
| ELF/D02: | Staeafa-equivalent Airflow + Temperature outputs with Flow Integration Filter |
| ELF/D03: | 0-10/2-10VDC Dual analog Airflow + Temperature outputs without Flow Integration Filter |
| ELF/D04: | 0-5/1-5VDC Dual analog Airflow + Temperature outputs without Flow Integration Filter |

Sensor Probe Specifications

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| Sensor Probe Configuration (probes x sensors/probe): | 1x2 maximum (independent sensors) |
| Accuracy: Airflow Rate: | ± 3% of reading typical, ±0.25% repeatability |
| Accuracy: Temperature: | ± 0.15° F (± 0.08° C) |
| Airflow Range: | 0 to 3,000 fpm (0 to 15.2 m/s) |
| Sensor Temperature Range: | 30° F to 160° F (-1.1° C to 71.1° C) |
| Sensor Humidity Range: | 0 to 99% rh, non-condensing |
| 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) |
| Sensor Potting Material: | Marine grade, waterproof epoxy |
| Internal Wiring: | Kynar coated copper |
| Standard Size Ranges: | 4 in. (101.6 mm) to 16 in. (406.4 mm) (1-inch increments from 4-10 in.; 2-inch increments from 10-16 in.) |
| Custom Size Ranges: | Consult Factory |
| Construction: | Mill finish tube, 6063 aluminum alloy (316 SS w/SS option) with 304 SS mounting brackets |
| Connecting Cable Type (analog output models): | UL plenum rated plenum cable, 10 ft standard (no cable on ELF/N) |

Transmitter Specifications

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| Maximum Number of Sensing Points: | 2 (1 airflow + 1 temperature) |
| Maximum Number of Sensors per Transmitter: | 2 (per location) |
| Transmitter Design: | High speed microprocessor based design architecture with multiplexer and industrial rated components |
| Input Voltage Requirement: | 24 VAC (22.8 to 26.4 VAC) |
| Input Power Requirement: | 5 VA max (8 VA max for ELF /N) |
| Enclosure: | Durable UL94-5VA electronic housing with removable cover |
| Measurement Available: | Airflow and Temperature (Airflow only on ELF/F) |
| Measurement Type: | Airflow velocity or equivalent velocity pressure (on ELF/N, airflow velocity or volumetric flow) |
| Flow Integration Filter: | Reduce the effects of transient air flows (Not included on ELF model /D03, /D04, /F03 or /F04) |
| Transmitter 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) |

Listings & Warranty

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|--------------------|--|
| UL Listings: | UL 873 Airflow & Temperature Indicating Devices (ELF Standard, ELF/F only) |
| Standard Warranty: | 36 months from shipment (see Terms & Conditions of Sale for details) |