

ELECTRA-flo Series

Thermal Dispersion Airflow Measurement



• **ELECTRA-flo™ SERIES** •
THERMAL DISPERSION MEASUREMENT SYSTEM



FEATURES AND BENEFITS

Accommodates the Highest Number (32) of Thermal Sensing Points Per Array in the Industry - More sensing points means more accurate measurements in challenging “real world” duct configurations.

Serial Communication Bus Between Individual Sensors and Transmitter - Allows individual probes to be daisy chained together in the field - Saves time and money by simplifying the installation!

Ruggedized, Hermetically Sealed Sensors - Precision thermistors and heating circuit are fully encapsulated - Provides a high degree of protection from the environment and allows the sensor assembly to be cleaned without damage.

Dedicated ELECTRA-flo G5 Transmitter with Display - Each airflow measurement system comes complete with a transmitter that is factory matched and configured, guaranteeing system performance.

Optional True Dual Channel Version - The ELECTRA-flo G5 Dual Transmitter provides two separate airflow measurements in one transmitter. Duct size and sensor allocation is set independently for each channel.



DESCRIPTION

Air Monitor’s ELECTRA-flo series of thermal dispersion airflow measurement instruments accurately measures airflow in a wide variety of commercial HVAC applications and installations.

At the heart of each ELECTRA-flo airflow measurement system is a pair of precision matched thermistors which are installed in an aerodynamic sensor aperture. This aperture assembly is specifically designed to reduce the affects of angular flow distortions found within ducted air distribution systems. The design, construction, and calibration of each thermistor sensor pair ensures the accuracy and long term reliability of the ELECTRA-flo measurement system.

APPLICATIONS

Permanently installed airflow measurement systems provide the real time, actionable information required for the safe, code compliant and efficient operation of today’s high performance buildings.

Building Airflow Distribution Systems - Including supply, return, exhaust, relief and dedicated outdoor airflow monitoring installations

Fan Inlet Airflow Measurement - Single inlet, dual inlet or fan wall installations

CALIBRATION

Individual Sensors receive a multi-point, NIST* traceable calibration of air velocity and temperature across the entire operating range.

* National Institute of Standards and Technology

GENERAL SPECIFICATIONS

ACCURACY

- $\pm 2-3\%$ of system airflow from 0 to 5000 FPM
- $\pm 0.1^{\circ}\text{F}$ of air temperature from -20°F to 140°F

SENSING METHOD

- Thermal dispersion utilizing a pair of precision matched thermistors and dedicated processor per sensor pair

MOUNTING CONFIGURATIONS

- Individual probe mounting for field installation in ducted systems
- Factory mounted probe arrays in airflow stations or fan inlet installations utilizing single or multiple sensor arrays connected to a single transmitter

INPUT POWER OPTIONS

- 24 VDC or 24 VAC

OUTPUT / COMMUNICATIONS

- Dual analog outputs, serial communications, and user defined alarm output

PROBE ASSEMBLY

INDIVIDUAL SENSOR ACCURACY

- Velocity: $\pm 2\%$ of reading from 0-5000 FPM
- Temperature: $\pm 0.1^\circ\text{F}$
- Multi-point NIST traceable calibration of both temperature and velocity

SENSOR TYPE

- Hermetically sealed, matched thermistors with laser trimmed resistive heating element mounted in flow conditioning aperture
- Maximum number of sensors per probe: 8

SENSOR SIGNAL PROCESSING

- Dedicated microprocessor per each sensor node; all calibration data is stored in non-volatile memory

MOUNTING CONFIGURATIONS

- Individual probe mounting via 4" x 4" aluminum plate, 0.25" closed cell neoprene gasket and end support stud for probes longer than 18"
Optional: Internal mounting configuration available
- Complete airflow station array consisting of individual probes factory mounted in 14 gauge (minimum) sheet metal casing
- Sensor pattern is based on equal area distribution
Optional: Log-Tchebycheff sensor distribution pattern
- Fan inlet mounting consisting of adjustable stainless steel brackets

CONSTRUCTION MATERIALS

- 1.125" diameter anodized aluminum probe with aluminum probe connection box
Optional: Stainless Steel probe with stainless steel or polycarbonate connection box
- Probe to transmitter connection via a single, shielded plenum rated cable with mini-DIN snap & lock connector
- Cable length: standard 10'
Optional: Cable lengths up to 100'

RECTANGULAR DUCT SIZE RANGE

- 8"-120" typical, 144" maximum long dimension length



ELECTRA-flo G5 TRANSMITTER SERIES

NUMBER OF SENSORS PER TRANSMITTER

- Maximum number of sensors per transmitter: 32, shared between both channels for true dual transmitters

DISPLAY

- Backlit ¼ VGA color TFT LCD, 2.75" x 2.0"
- **Configuration Access:**
Field programmable menu driven user interface accessed via four-button keypad
Field selectable in U.S. or S.I. units for velocity/flow and temperature

POWER SUPPLY

- 24 VAC (20-28 VAC) or 24 VDC (20-40 VDC), isolated and fused with reverse polarity protection
- 16-90 VA, varies based on the quantity of sensors (1-32) in the probe array or station

OUTPUT SIGNALS PROVIDED

- Dual analog outputs, field selectable via menu for 0-5 VDC, 0-10 VDC, or 4-20 mA DC
- Field adjustable scaling of airflow velocity and temperature
Velocity range:
0 to 5,000 FPM in ducted applications
0 to 10,000 FPM in fan inlet applications
Temperature range: -20°F to 140°F
- Network Output Communication
BACnet® MS/TP or MODBUS® RTU

AMBIENT CONDITIONS

- Temperature limits: -20°F to 180°F storage, -20°F to 140°F operating
- Humidity: 0 to 99.5% RH, non-condensing

ENCLOSURE

- NEMA 1 aluminum with hinged cover
Optional: NEMA 4 or NEMA 4X

APPROVALS

- UL 60730
- BTL Certified to ANSI/ASHRAE 135.1-2013
- FCC Part 15 Subpart B, Class A Device



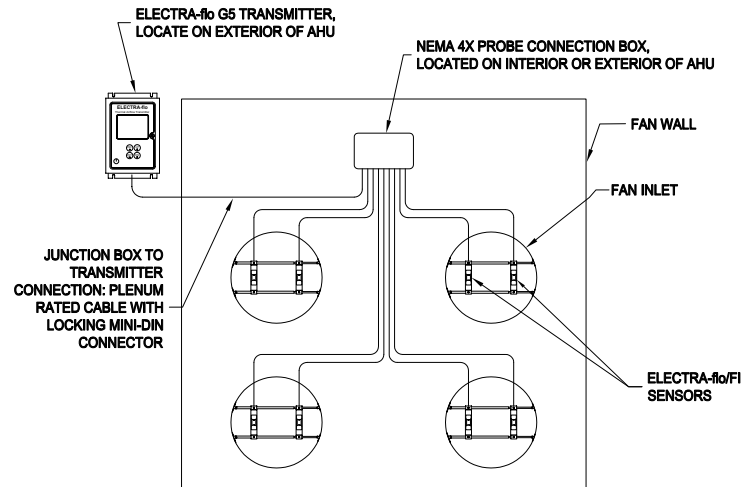
ELECTRA-flo/FI PROBE ARRAY for FAN INLET INSTALLATIONS

The ELECTRA-flo family also includes the ELECTRA-flo/FI, a system of thermal probes and the associated hardware specifically designed for use in both single and dual inlet fan applications. The adjustable mounting brackets allow for easy installation of the sensors, and the transmitter interface provides a simple field characterization routine, allowing quick system set up in the field.



ELECTRA-flo/FI PROBE ARRAY for FAN WALL (ARRAY) INSTALLATIONS

The ELECTRA-flo/FI is designed to be installed in the environment found within the AHU itself, allowing for an easy and clean installation in fan wall (array) applications. Due to the ELECTRA-flo/FI's sensor architecture, up to 32 individual fans can be measured by simply daisy chaining all of the fan inlet sensors back to a single transmitter. Utilizing the native BACnet serial communication capability found in the ELECTRA-flo G5 Transmitter, individual fan performance information can be brought back to the BMS.



Additional Products in the ELECTRA-flo Family:

ELECTRA-flo/SD - Thermal Dispersion airflow measurement for use in small duct applications, from 4" to 16"



ELECTRA-flo/CM - Air Monitor can also provide a complete, pre-fabricated airflow measurement station. Utilizing a flow conditioning station in conjunction with a thermal probe array will reduce the required straight run requirements.



VOLU-trol/E Thermal Measurement and Control Station - Utilizes ELECTRA-flo Thermal Dispersion sensing technology with an integrated damper to continuously measure and control ducted airflow. The VOLU-trol/E is well suited for many VAV applications.