



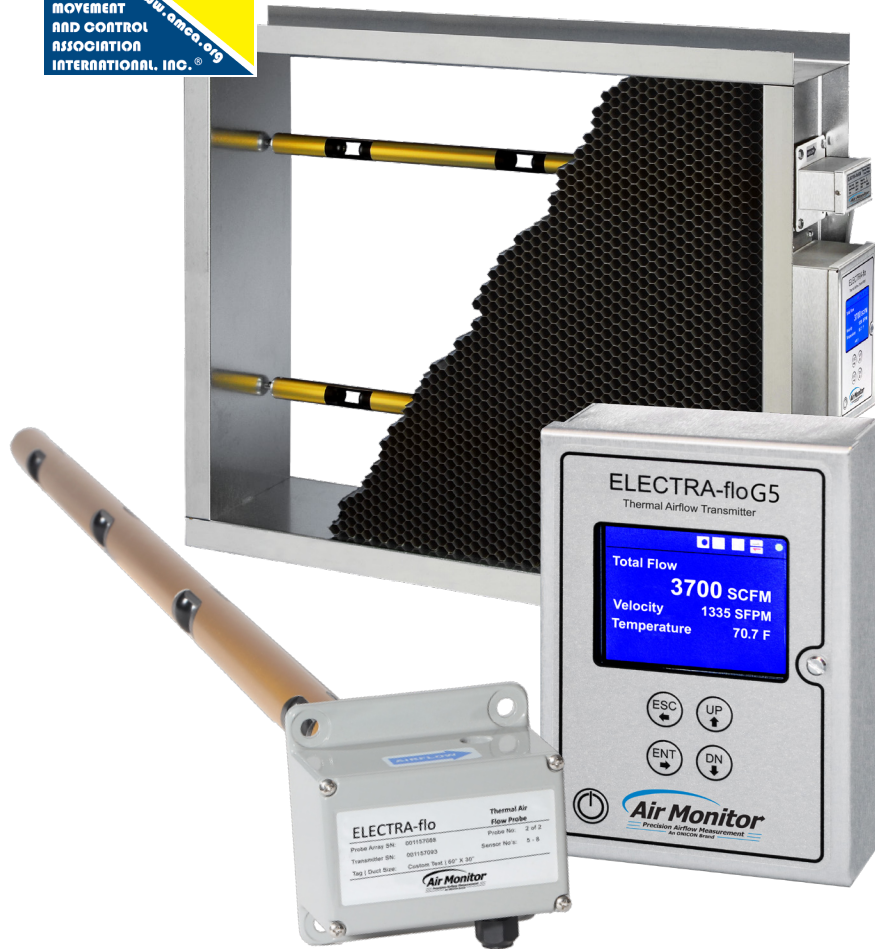
Air Monitor

Precision Airflow Measurement
An ONICON Brand

ELECTRA-flo 5 Series

THERMAL AIRFLOW
MEASUREMENT
SYSTEM

The ELECTRA-flo 5 Series represents the state-of-the-art in electronic airflow measurement and has the features and performance required by the challenging applications found in today's complex HVAC systems.



FACTORY CONFIGURED



ON TIME DELIVERY



BEST CUSTOMER SERVICE

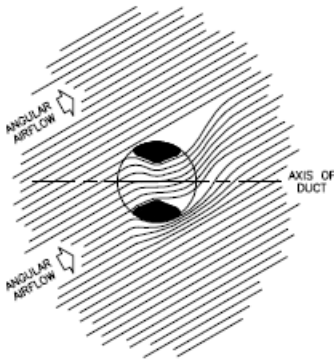
ELECTRA-flo 5 Series

THERMAL AIRFLOW MEASUREMENT SYSTEM



Air Monitor's ELECTRA-flo 5 Series thermal dispersion airflow measurement instruments accurately measure airflow in a wide variety of commercial HVAC installations.

At the heart of each ELECTRA-flo/S5 thermal probe array are pairs of precision matched thermistors installed in aerodynamic apertures. These sensor aperture assemblies are specifically designed to reduce the effects 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 measurement system.



The aperture's injection molded shape has been engineered to provide robust sensor protection and minimize the angular flow effects naturally present in any duct. The flared aperture captures a representative sample of the ducted airflow, while the contoured leading edges prevent the creation of vortices. The center cross section of the aperture

functions in the same manner as a venturi. It stabilizes and flattens the velocity profile at the point of measurement ensuring the airflow maintains full contact with the sensing thermistors. The flow conditioning characteristic of the aperture compensates for turbulent airflow with pitch and/or yaw angles up to ± 30 degrees and produces an accuracy of $\pm 2\%$ of reading for each ELECTRA-flo sensor.

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.

APPLICATIONS

Building Airflow Distribution Systems - Including supply, return, exhaust, relief and dedicated outdoor air systems (DOAS).

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.

FEATURES

Accommodates (32) Thermal Sensing Points per Array

More sensing points means more accurate measurements in challenging real world duct configurations.

Serial Communication Bus Between Individual Sensors and Transmitter

Allows for individual probes to be daisy chained together in the field and have a **single straight run to the transmitter** - saving time & 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. The transmitter outputs airflow, velocity, and temperature over BACnet, MODBUS, and analog signal.

True Dual Channel Version Available

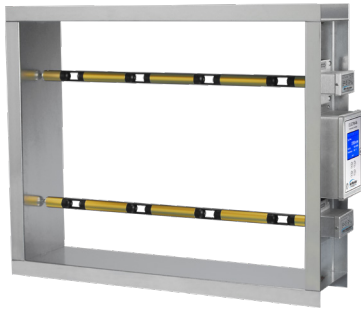
The ELECTRA-flo G5 Dual Transmitter provides two separate airflow measurements in one transmitter. Duct size and sensor allocation is set independently for each channel.



*National Institute of Standards and Technology

ELECTRA-flo 5 Series Thermal Airflow Measuring Stations

ELECTRA-flo/MM Thermal Airflow Measurement Station



ELECTRA-flo/MM Thermal Airflow Measurement Station
 0-5000 FPM

The ELECTRA-flo/MM consists of S5 Series probe arrays mounted in prefabricated stations. The use of prefabricated stations simplifies the installation process and guarantees the configuration and level of performance specified is installed. Stations mount directly to ducts via flange connections.

The stations feature S5 probes externally mounted and pre-wired, simplifying the installation process. The G5 transmitter can be mounted directly on the station or located remotely.

Air Monitor Corporation certifies that the ELECTRA-flo/MM Thermal Airflow Measuring Station shown herein is licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 611 and comply with the requirements of the AMCA Certified Rating Program.



The following table show the accuracy of the ELECTRA-flo/MM Station in an AMCA laboratory test rig providing reference velocities and airflows in a duct.

ELECTRA-flo/MM Airflow Monitor Results at Standard Conditions per AMCA 610-16, Duct				
Point	V (fpm)	Qref* (CFM)	Qams** (CFM)	% Diff.
1	3,950	35,547	35,638	0.25%
2	2,960	26,636	26,998	1.33%
3	1,975	17,775	17,868	0.52%
4	998	8,982	9,010	0.31%
5	493	4,441	4,406	-0.79%
6	246	2,212	2,257	1.98%

ELECTRA-flo/MM Airflow Monitor Resistance at Standard Conditions per AMCA 610-16, Duct		
Point	V (fpm)	Delta P (in w.c.)
1	3,950	0.106
2	2,960	0.062
3	1,975	0.031
4	998	0.005
5	493	0.001
6	246	0.002

*Qref – AMCA Reference Measurement

**Qams – Air Monitor ELECTRA-flo/MM Thermal Airflow Measuring Station 36" x 36"

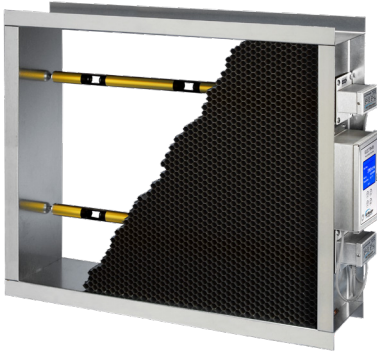
Test Set up: AMCA Standard 610 Figure 1.

Applicable Sizes Rated: Rectangular stations or probe arrays with cross-section areas between 4.5 and 18.0 square feet.

AMCA Certified accuracy of +/-2 % or better in the velocity range of 246 to 3,950 FPM.

ELECTRA-flo 5 Series Thermal Airflow Measuring Stations (Continued)

ELECTRA-flo/CM Thermal Airflow Measurement Station



ELECTRA-flo/CM Thermal Airflow Measurement Station
0-4000 FPM

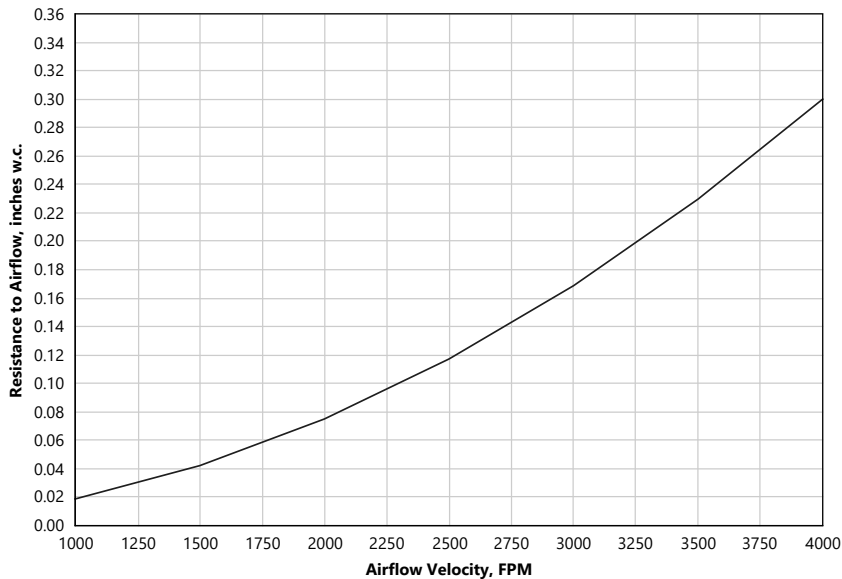
The ELECTRA-flo/CM consists of S5 Series probe arrays mounted in a prefabricated station with air straightening cell.

The aluminum cell features honeycomb construction, providing a robust, corrosion resistant air flow straightening system, allowing unsurpassed performance in difficult installation configurations.

The cell design also provides extremely low airflow resistance while maximizing its' flow conditioning ability.

The G5 transmitter can be mounted directly on the station or located remotely.

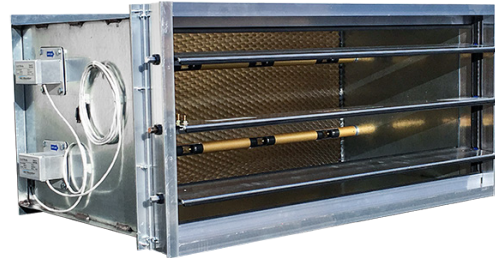
ELECTRA-flo/CM Station Airflow Resistance



ELECTRA-flo 5 Series Thermal Airflow Measuring Stations (Continued)

ELECTRA-flo/CD Thermal Measurement and Control Station

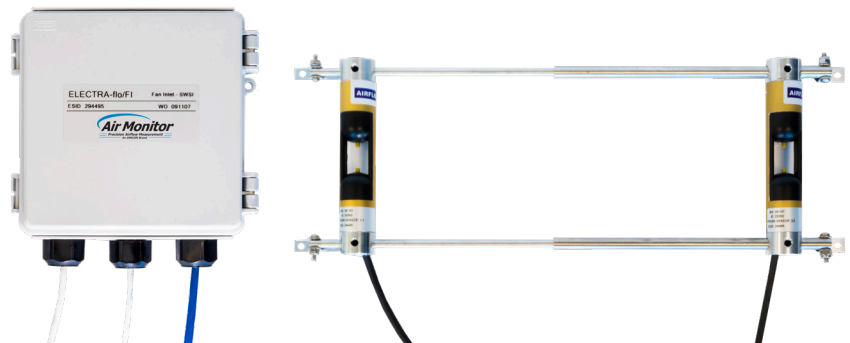
The ELECTRA-flo/CD utilizes thermal dispersion sensing technology with an integrated damper to continuously measure and control ducted airflow. The ELECTRA-flo/CD features aluminum dampers with blade seals certified to Class 1A leakage rates as defined by AMCA. The ELECTRA-flo/CD is well suited for many VAV applications.



ELECTRA-flo/CD

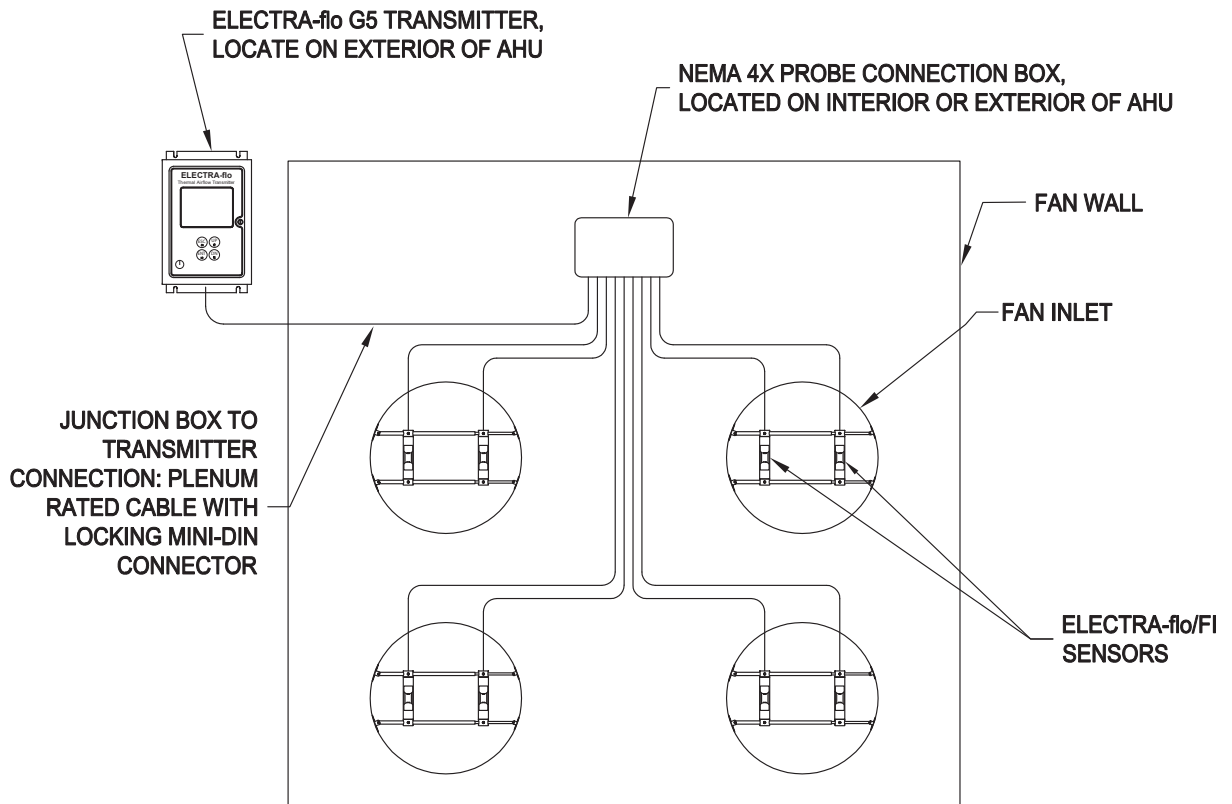
ELECTRA-flo/FI Probe Array for Fan Inlet Installations

The ELECTRA-flo/FI is 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 Fan Wall
(Array) for Multiple Fan Inlet
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**



The ELECTRA-flo/SD provides thermal dispersion airflow measurement for small duct applications from 4" to 16". It is ideal for direct VAV control in critical space applications.

ELECTRA-flo/SD Thermal Airflow Probe and Transmitter

ELECTRA-flo 5 Series
THERMAL AIRFLOW MEASUREMENT SYSTEM



SPECIFICATIONS*

ELECTRA-flo G5 Transmitter		
PERFORMANCE	SYSTEM CONFIGURATION	Single or dual channel operation Supports up to 32 individual thermal dispersion airflow sensors Provides airflow velocity, flow and temperature Supports multiple airflow measurement system types Provides three (3) field characterization methods
OPERATING CONDITIONS	AMBIENT TEMPERATURE	-20°F to 180°F (Storage), -20°F to 140°F (Operating)
	HUMIDITY	0 to 99% RH, non-condensing
INPUT POWER	24 VAC	20 - 28 VAC, 16 - 90 VA, Total VA = 15 VA + (# of sensors x 1.1 VA)
	24 VDC	20 - 28 VDC, 16 - 50 W, varies based on # of sensors
I/O SIGNALS	Two (2) analog outputs, selectable based on configuration	
ELECTRONICS ENCLOSURE	AVAILABLE OPTIONS	<ul style="list-style-type: none"> Aluminum, NEMA 1 Stainless steel, NEMA 4X without viewing window Aluminum, NEMA 1 with conduit connection box Fiberglass, NEMA 4X with viewing window
	DISPLAY	2.75" x 2" TFT color LCD
PROGRAMMING	Menu driven user interface via four (4) push buttons	
ELECTRICAL CONNECTIONS	POWER	Removable terminal block for use with 14 to 18 AWG wire
	COMMUNICATIONS	Removable terminal block for use with 14 to 22 AWG wire
	I/O	Removable terminal block for use with 14 to 22 AWG wire
PROCESS CONNECTIONS	AVAILABLE OPTIONS	<ul style="list-style-type: none"> NEMA 1 enclosure, two (2) mini-DIN connectors XMTR to probes and two (2) ½" conduit openings NEMA 4X enclosure, two (2) liquid tight cord grips and two (2) ½" conduit openings
NETWORK CONNECTIONS	RS485, BACnet MS/TP or MODBUS RTU	
APPROVALS	UL	60730
	BTL	Certified to BACnet standard ISO 16484-5 rev. 1.12
	FCC	Meets part 15 Subpart B, Class A device requirements
ELECTRA-flo/S5 Thermal Dispersion Probe Array		
PERFORMANCE	SENSOR ACCURACY	Individual sensor accuracy: ±2% of reading from 0-5000 FPM
	SYSTEM ACCURACY	Complete system accuracy: ±3% of reading over published velocity range
	VELOCITY RANGE	Ducted mounted installations: 0-5000 FPM Station mounted probe arrays: 0-5000 FPM (0-4000 FPM with straightening cell) Fan inlet installations: 0-10,000 FPM
SENSOR DESIGN	Precision matched, hermetically sealed thermistors with laser trimmed resistive heating element Dedicated 16 bit A/D processing of each sensor signal Sensor node consists of two (2) thermistors mounted in a dedicated flow conditioning aperture	
	TEMPERATURE ACCURACY	±0.1°F over operating range of -20°F to 140°F
SENSOR CAPACITY	TRANSMITTER	Maximum of 32 sensors per transmitter, shared between both channels
	PROBE	Maximum of 8 sensors per probe

* SPECIFICATIONS subject to change without notice.

SPECIFICATIONS CONTINUED*

ELECTRA-flo/S5 Thermal Dispersion Probe Array (Continued)		
SENSOR DENSITY	DUCT & STATION MOUNTED	Three (3) sensor density levels specifiable based on configuration
	FAN INLET	Single or dual sensor configuration per inlet available
PROBE MATERIALS OF CONSTRUCTION	AVAILABLE OPTIONS	<ul style="list-style-type: none"> • 6063 anodized aluminum, 1 1/8" diameter with NEMA 1 enclosure • 6063 anodized aluminum, 1 1/8" diameter with NEMA 4 enclosure and IP68 liquid tight cord grips • 6063 anodized aluminum, 1 1/8" diameter with NEMA 4 enclosure and 1/2" conduit connections
OPERATING CONDITIONS	FLUID TEMPERATURE	-20°F to 140°F
	HUMIDITY	0 to 99% RH, non-condensing
WIRING CONNECTIONS	AVAILABLE OPTIONS	<ul style="list-style-type: none"> • Mini-DIN, NEMA 1 only • Conduit opening with terminal blocks • IP68 liquid tight cord grip
DUCT MOUNTED PROBE ARRAYS	MOUNTING OPTIONS	<ul style="list-style-type: none"> • Rectangular duct, external or internally mounted • Rectangular duct, standoff mount • Circular duct, external or internally mounted
STATION MOUNTED PROBE ARRAYS	CONSTRUCTION OPTIONS	<ul style="list-style-type: none"> • 14 ga. galvanized steel with 1 1/2" flange • 18 ga. stainless steel with 1 1/2" flange • Aluminum honeycomb airflow straightening cell
ELECTRA-flo/FI Thermal Dispersion Fan Inlet Probe Array		
PERFORMANCE	SENSOR ACCURACY	Individual sensor accuracy: $\pm 2\%$ of reading from 0-5000 FPM
	SYSTEM ACCURACY	Complete system accuracy: $\pm 3\%$ of reading over published velocity range ¹
	VELOCITY RANGE	Fan inlet installations: 0-10,000 FPM
SENSOR DESIGN	Precision matched, hermetically sealed thermistors with laser trimmed resistive heating element Each sensor node consists of two (2) thermistors mounted in a dedicated flow conditioning aperture Each sensor node is completely sealed and impervious to water	
	TEMPERATURE ACCURACY	$\pm 0.1^\circ\text{F}$ over operating range of -20°F to 140°F
SENSOR CAPACITY	TRANSMITTER	Maximum of 32 sensors per transmitter
SENSOR DENSITY	FAN INLET	Single or dual sensor configuration per inlet available
PROBE MATERIALS OF CONSTRUCTION	6063 anodized aluminum, 1 1/8" diameter with remote NEMA 4X poly enclosure	
OPERATING CONDITIONS	FLUID TEMPERATURE	-20°F to 140°F
	HUMIDITY	0 to 100% RH, condensing
WIRING CONNECTIONS	AVAILABLE OPTIONS	<ul style="list-style-type: none"> • Watertight integral plenum rated cable attached to probe • Conduit opening with terminal blocks
FAN INLET	Stainless steel tube in tube telescoping support struts and stainless steel mounting brackets	

Note¹ Field characterization required to achieve $\pm 3\%$ system accuracy

* SPECIFICATIONS subject to change without notice.

MODEL SELECTION GUIDE



Model Number Coding = E-flo G5-AB-CDEF-(SPC)

ELECTRA-flo 5 Series Thermal Airflow Measurement System, G5 Transmitter only

A= Channel

- 1 = Thermal dispersion airflow transmitter with graphical LCD, two (2) programmable analog outputs and RS485 serial communications.
- 2 = Dual channel thermal dispersion airflow transmitter with graphical LCD, two (2) programmable analog outputs and RS485 serial communication.

B= Enclosure*

- 1 = NEMA 1 enclosure with cord grips
- 2 = NEMA 4X SS enclosure w/o viewing window w/ cord grips
- 3 = NEMA 4X non-metallic enclosure w/ viewing window & cord grips
- 4 = NEMA 1 enclosure with conduit connection box
- 5 = NEMA 4X SS enclosure w/o viewing window w/ conduit conn.
- 6 = NEMA 4X non-metallic enclosure w/ viewing window & conduit conn.

*Conduit connections required for outdoor transmitter installations

C= Outputs

- 2 = Two (2) analog outputs and one (1) alarm output

D = Communications

- 1 = RS485

E = Input Power

- 1 = 24 V AC/DC (Up to 24 sensors)
- 2 = 24 V AC/DC (25 to 32 sensors)

F=Wiring Connection (A=1 use 1-4, A=2 use A-J)

- 1 = Mini-DIN, XMTR to probe, 10ft
- 2 = Mini-DIN, XMTR to probe, 25ft
- 3 = Mini-DIN, XMTR to probe, 50ft
- 4 = Mini-DIN, XMTR to probe, 100ft
- A = Mini-DIN, XMTR to probe, 10ft & 10ft
- B = Mini-DIN, XMTR to probe, 10ft & 25ft
- C = Mini-DIN, XMTR to probe, 10ft & 50ft
- D = Mini-DIN, XMTR to probe, 10ft & 100ft
- E = Mini-DIN, XMTR to probe, 25ft & 25ft
- F = Mini-DIN, XMTR to probe, 25ft & 50ft
- G = Mini-DIN, XMTR to probe, 25ft & 100ft
- H = Mini-DIN, XMTR to probe, 50ft & 50ft
- I = Mini-DIN, XMTR to probe, 50ft & 100ft
- J = Mini-DIN, XMTR to probe, 100ft & 100ft

SPC=Special Config

- 000 = None
- 101 = SS Tags

MODEL SELECTION GUIDE CONTINUED



Model Number Coding = E-flo/S5-AABC-DDEF-GGHH-(SPC)

ELECTRA-flo 5 Series Thermal Airflow Measurement System, Probe Array Only

AA = Probe Mounting Style

- R1 = External mount, rectangular
- R2 = Internal mount, rectangular
- R3 = Internal stand-off mount, rectangular²
- C1 = External mount, circular
- C2 = Internal mount, circular

B = Maximum Probe Length (in inches)

Max Probe Length - Rectangular

- | | | |
|----------------|----------------|------------------|
| A = Up to 18 | F = 44 to < 48 | K = 72 to < 84 |
| B = 18 to < 24 | G = 48 to < 54 | L = 84 to < 96 |
| C = 24 to < 30 | H = 54 to < 60 | M = 96 to < 108 |
| D = 30 to < 36 | I = 60 to < 66 | N = 108 to < 120 |
| E = 36 to < 44 | J = 66 to < 72 | O = 120 to < 132 |

Max Probe Length - Circular

- | | |
|----------------|-----------------|
| 1 = 18 to < 26 | 5 = 48 to < 66 |
| 2 = 26 to < 36 | 6 = 66 to < 84 |
| 3 = 36 to < 42 | 7 = 84 to < 120 |
| 4 = 42 to < 48 | |

C = Adjacent Side (in inches)

- | | | |
|----------------|----------------|------------------|
| A = Up to 18 | G = 48 to < 54 | M = 96 to < 108 |
| B = 18 to < 24 | H = 54 to < 60 | N = 108 to < 120 |
| C = 24 to < 30 | I = 60 to < 66 | O = 120 to < 132 |
| D = 30 to < 36 | J = 66 to < 72 | 9 = Circular |
| E = 36 to < 44 | K = 72 to < 84 | |
| F = 44 to < 48 | L = 84 to < 96 | |

DD = Probe Level (Based on Straight Run)

- L0 = Level 0 (Between 2 & 3)
- L1 = Level 1 (Minimum Straight Run Requirements)
- L2 = Level 2
- L3 = Level 3 (Maximum Straight Run Requirements)
- LC = Custom Density

E = Material of Construction Probes

- 1 = 6063 Anodized Al., 1 1/8" dia. with NEMA 1 cast aluminum enclosure.
- 2 = 6063 Anodized Al., 1 1/8" dia. with NEMA 4 cast aluminum enclosure.

F= Wiring Connections Probe to Probe*

- 1 = Mini-DIN, NEMA 1 (**For E = 1 only**)
- 3 = Conduit w/ terminal blocks (**Optional for E=2**)
- 4 = IP68 liquid tight cord grips (**Optional for E = 2**)

*Conduit connections required for outdoor probe installations

GG = Number of Sensors¹

- 01 - 32

HH = Number of Probes

- 01 - 08

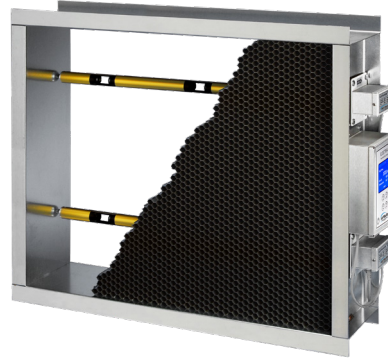
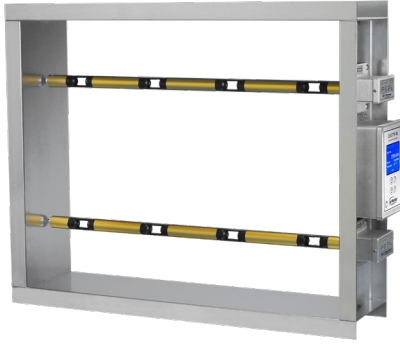
SPC=Special Config

- 000 = None
- 101 = SS Tags

Notes

1. **Maximum number of sensors (nodes) / probe is 8**
2. **Internal stand off mount in circular ducts is NOT allowed**

MODEL SELECTION GUIDE CONTINUED



Model Number Coding = E-flo/AB-CD-EFG-(SPC)

ELECTRA-flo 5 Series Thermal Airflow Measurement System, Stations Only

A = Probe Mounting Style

- M = External mount in casing only, no cell
- C = External mount in casing with cell

B = Damper

- M = No Damper
- D = With Damper

C = Long Opening Dimension (in inches)

- A = 8 to 12
- B = > 12 to 24
- C = > 24 to 36
- D = > 36 to < 45
- E = 45 to 60
- F = > 60 to 72
- G = > 72 to 84
- H = > 84 to 96
- I = > 96 to 108
- J = > 108 to 120
- K = > 120 to 132

D = Short Opening Dimensions (in inches)

- A = 8 to 12
- B = > 12 to 24
- C = > 24 to 36
- D = > 36 to < 45
- E = 45 to 60
- F = > 60 to 72
- G = > 72 to 84
- H = > 84 to 96
- I = > 96 to 108
- J = > 108 to 120
- K = > 120 to 132
- 9 = Circular

E = Casing Material of Construction

14ga = Rectangle, 18ga = Circular

- 1 = 14ga. galvanized steel
- 2 = 18ga. galvanized steel

F = Casing Width (depth) Dimension (in inches)

- 1 = 8 (Default for Rect. or Circ. with 1 probe)
- 2 = 10 (Default for Circ. with 2 probes)
- 3 = 12 (Default for Circ. with 3 probes)
- 4 = 14 (Default for Circ. with 4 probes)
- 6 = 24 (Required for ELECTRO-flo/CD)

G = Flange Connection

- 1 = 1½" 90 deg., Formed (required for rectangular)
- 2 = 1" flange, 14ga., Welded (Circ up to 24")
- 3 = 1½" flange, 14ga., Welded (Circ >24" to <45")
- 4 = 3/16" x 2" bar stock, Welded (Circ ≥45")
- 5 = Beaded edge, 18ga. C configuration (Circ 8" to 24")
- N = Non-standard flange

SPC = Special Configuration

- 000 = None
- 101 = SS Tags



November 2024