ELECTRA-flo/SD

Thermal Airflow & Temperature
With BACnet® MS/TP or MODBUS® RTU Output

Air Monitor
Precision Airflow Measurement
An ONICON Brand

SAFETY INFORMATION

This meter was calibrated at the factory before shipment. To ensure correct use of the meter, please read this manual thoroughly.

Regarding this Manual:

- This manual should be passed on to the end user.
- Before use, read this manual thoroughly to comprehend its contents.
- The contents of this manual may be changed without prior notice.
- All rights reserved. No part of this manual may be reproduced in any form without Air Monitor's written permission.
- Air Monitor makes no warranty of any kind with regard to this material, including, but not limited to, implied warranties of merchantability and suitability for a particular purpose.
- All reasonable effort has been made to ensure the accuracy of the contents of this manual. However, if any errors are found, please inform Air Monitor.
- Air Monitor assumes no responsibilities for this product except as stated in the warranty.
- If the customer or any third party is harmed by the use of this product, Air Monitor assumes no responsibility for any such harm owing to any defects in the product which were not predictable, or for any indirect damages.

SAFETY PRECAUTIONS:

The following general safety precautions must be observed during all phases of installation, operation, service, and repair of this product. Failure to comply with these precautions or with specific WARNINGS given elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Air Monitor Incorporated assumes no liability for the customer's failure to comply with these requirements. If this product is used in a manner not specified in this manual, the protection provided by this product may be impaired.

The following messages are used in this manual:

WARNING: Messages identified as "Warning" contain information regarding the personal safety of individuals involved in the installation, operation or service of this product.

CAUTION: Messages identified as "Caution" contain information regarding potential damage to the product or other ancillary products.

IMPORTANT NOTE: Messages identified as "Important Note" contain information critical to the proper operation of the product.

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1.0 INTRODUCTION

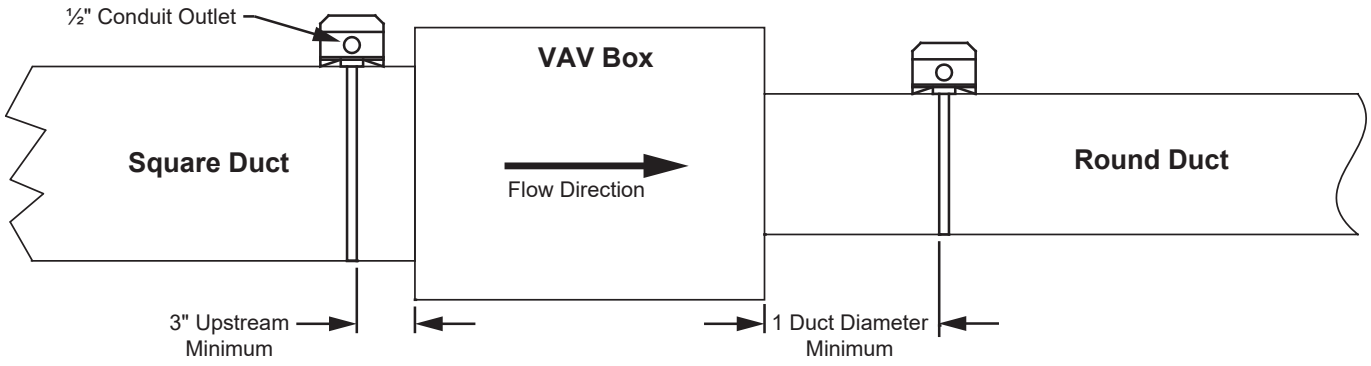
We, at Air Monitor, would like to thank you for purchasing our quality, U.S. made, Thermal Airflow & Temperature Measurement System. As our valued customer, our commitment to you is to provide fast, reliable service and assistance, while continuing to offer you new products to meet your growing flow measurement needs.

1.1 PURPOSE OF THIS GUIDE

We have written this guide to provide the persons responsible for the installation, operation and maintenance of your thermal airflow measurement system with the most specific equipment information they will need. This is NOT an electrical or HVAC trade manual. This guide is the basic reference tool for the ELECTRA-flo/SD with BACnet MS/TP or MODBUS RTU only.

1.2 TYPICAL METER INSTALLATION

Air Monitor's ELECTRA-flo/SD accurately measures the average velocity of flowing air by means of thermal dispersion at the surface-mount thermistor sensor locations in the duct. Temperature is also measured via these thermistors. Microprocessor based circuitry within the enclosure then converts the rate of thermal dispersion into average airflow velocity and temperature analog signals which are transmitted via a BACnet MS/TP or MODBUS RTU with a customer-installed cable to the local BMS.



VAV Installation Option 1: Locate ELECTRA-flo/SD a minimum of 3" upstream of the VAV box, or 3" upstream of the pneumatic flow ring (remove the ring).

VAV Installation Option 2: When mounted downstream of the VAV box, position the ELECTRA-flo/SD a minimum of one duct diameter downstream of the VAV box.

Equivalent Duct Diameter X

Rectangular Duct: $X = \frac{2\,(HxW)}{H+W}$ **Circular Duct: X = Duct Diameter**

SECTION 2.0: SPECIFICATIONS

<table>
<tr><th colspan="2">ELECTRA-flo/SD</th></tr>
<tr><td>ACCURACY</td><td>Sensor Accuracy
Velocity: ±2% of reading from 0 – 3,000 FPM
Temperature: ±0.15ºF</td></tr>
<tr><td></td><td>Overall System Accuracy
Flow: ±3% of actual flow from 0 – 3,000 FPM
Temperature: ±0.15ºF of air temperature</td></tr>
<tr><td>RANGE</td><td>Velocity Range: 0 to 3000 FPM</td></tr>
<tr><td>PROBE ASSEMBLY</td><td>Mounting
Standard mounting bracket: 6063 aluminum with four ¼” holes for fasteners. ¼” thick neoprene gasket
Optional Type 316 stainless steel mounting plate</td></tr>
<tr><td></td><td>Length: 4”, 5”, 6”, 7”, 8”, 9”, 10”, 12”, 14”, and 16”</td></tr>
<tr><td></td><td>Sensors Per Probe
4” probe, one sensor
5”-16” probes, two sensors</td></tr>
<tr><td></td><td>Probe
Type: 6063 anodized aluminum. ½” diameter tubing
Optional: Type 316 stainless steel</td></tr>
<tr><td></td><td>Sensor Housing: Injection molded polycarbonate, UL94 V-0 rated</td></tr>
<tr><td></td><td>Sensor Type: Surface mount precision thermistor</td></tr>
<tr><td>TRANSMITTER</td><td>Enclosure: NEMA 4 rated. Injection molded polycarbonate UL94 V-0 rated</td></tr>
<tr><td></td><td>Electrical Connections: Separate power and signal terminal strips with plug-in connectors</td></tr>
<tr><td></td><td>Outputs
BACnet MS/TP or MODBUS RTU
BAUD Rates: 76800, 38400, 19200 or 9600 available by DIP switch
Termination: 120 Ω termination available by DIP switch
Points List: BACnet/MODBUS
<table>
<tr><th>Name</th><th>Object Type</th><th>Units</th></tr>
<tr><td>Flow Velocity</td><td>Ai/Holding register</td><td>Feet per Minute, Meters per Minute</td></tr>
<tr><td>Flow Velocity Pressure</td><td>Ai/Holding register</td><td>Inches of Water Column, Millimeters of Water Column</td></tr>
<tr><td>Temperature</td><td>Ai/Holding register</td><td>Degrees Fahrenheit, Degrees Celsius</td></tr>
<tr><td>Volumetric Flow</td><td>Ai/Holding register</td><td>Cubic Feet per Minute, Cubic Meters per Minute</td></tr>
<tr><td>Duct Area Scale Factor</td><td>AV/Holding register</td><td>Square Feet, Square Meters</td></tr>
</table></td></tr>
<tr><td></td><td>Configuration: Via two 8-position DIP switches</td></tr>
<tr><td></td><td>Filter: User selectable via DIP switch – none, light, medium, and heavy</td></tr>
<tr><td></td><td>Temperature Limits
–20ºF to 120ºF Transmitter
–20ºF to 120ºF Airflow</td></tr>
<tr><td></td><td>Humidity Limits: 0 to 99% RH, non-condensing</td></tr>
<tr><td>POWER</td><td>Power Supply: 24 VAC (20-28 VAC) or 24 VDC (20-40 VDC), automatically selected</td></tr>
<tr><td></td><td>Power Consumption: 5 VA or 5 W</td></tr>
<tr><td></td><td>Circuit Protection: Power input is isolated, fused, and reverse polarity protected</td></tr>
</table>

IMPORTANT NOTE: Specifications subject to change without notice.

3.0 INSTALLATION

3.1 INSTALLATION

The ELECTRA-flo/SD is intended for use in 4" to 16" ducts and in VAV terminal box applications in an environment between -20°F to 120°F where it will not be exposed to rain or snow. The ELECTRA-flo/SD electronics enclosure is designed to be mounted to the exterior of the duct or VAV box with the sensor probe inserted through the side of the duct or VAV box.

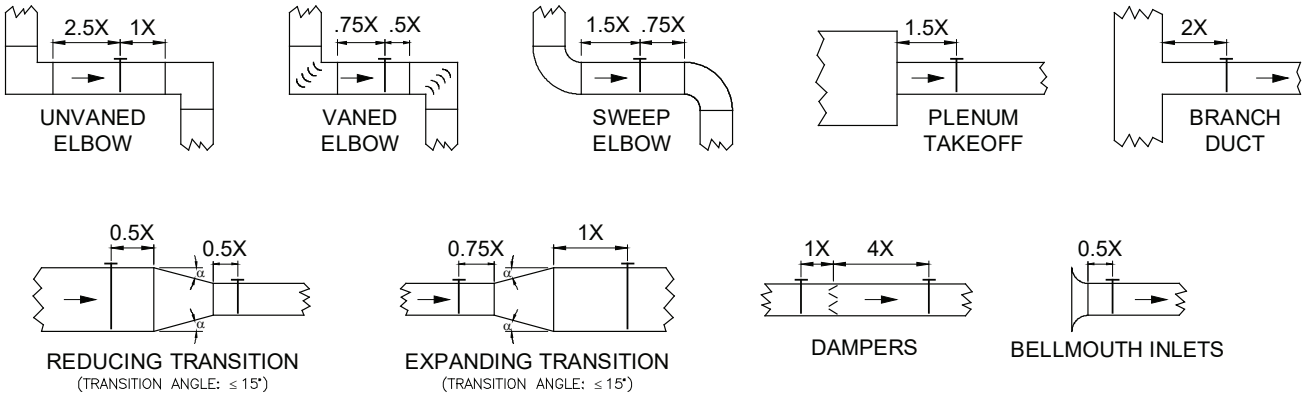
3.2 RECEIVING & INSPECTION

Carefully remove the ELECTRA-flo/SD from the shipping container and inspect for any damage. If damaged, contact Air Monitor's Service Department. Verify that the shipping container includes the four self-tapping mounting screws in addition to this manual.

3.3 PLACEMENT GUIDELINES

Location of the ELECTRA-flo/SD is critical for proper operation and accuracy of the airflow measurement. The typical installation diagrams below show the minimum distance between a source of airflow disturbance (elbow, transition, duct take-off, etc.) and the meter.

- If more than the minimum clearances are available, proportionally adjust the upstream and downstream distances.
- Avoid locating the ELECTRA-flo/SD where it will be subjected to condensing moisture from a coil.
- Contact Air Monitor's Applications Engineering Department to discuss any sub-minimal installation.



Equivalent Duct Diameter X

Rectangular Duct: $X = \frac{2(HxW)}{H+W}$ Circular Duct: X = Duct Diameter

3.4 MOUNTING

1. Determine the measurement location based upon the engineer's plans and the ELECTRA-flo/SD's minimum placement guidelines.

IMPORTANT NOTE: It may be necessary to remove a portion of external duct insulation to allow the ELECTRA-flo/SD to be securely mounted to the exterior of the duct wall.

2. Remove the four screws (8-32 x 0.325) that attach the mounting bracket to the enclosure. Place the mounting bracket against the duct wall where the ELECTRA-flo/SD is to be mounted and trace the large probe insertion hole in the center of the bracket onto the duct. See Figure 2.
3. Using a ¾" hole saw, cut the insertion hole.

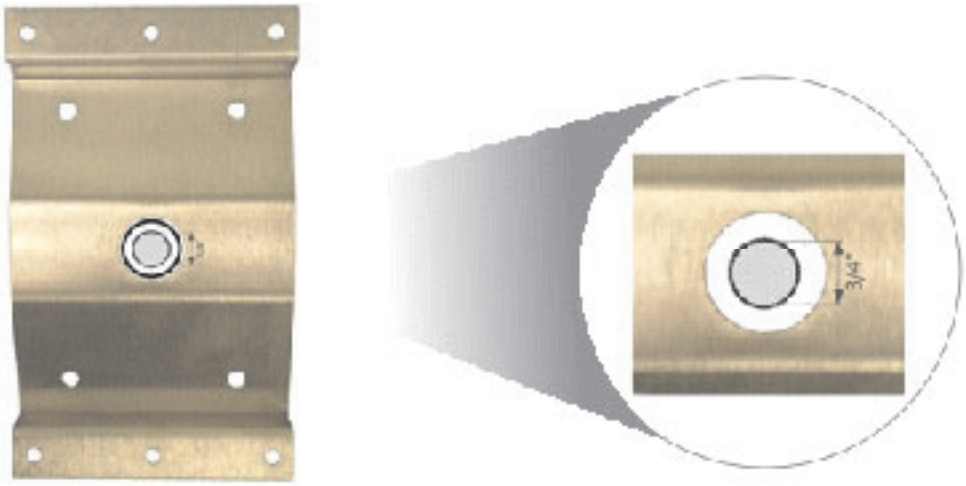


Figure 2

4. Place the mounting bracket centered over the insertion hole. Align the edge of the mounting bracket parallel with the axis of the duct, then attach the mounting bracket to the duct using the provided sheet metal screws (8-32 x 0.75").
5. Place the probe through the mounting hole, center the gasket in the hole in the bracket so it makes contact with the duct. Then attach the enclosure to the mounting bracket at the four mounting holes using the four screws (8-32 x 0.325") previously removed in Step 3 above.

3.5 POWER/SIGNAL CONNECTIONS

The ELECTRA-flo/SD provides a field selectable BACnet MS/TP or MODBUS RTU output for airflow velocity, equivalent velocity pressure, temperature, and volumetric flow which is scaled based on the present value set to the BACnet Analog Value 0 (MODBUS Holding Register 8) object.

Power wiring is done at terminal strip J1, and RS485 signal wiring is done at terminal strip J2. Both terminal strips are located in the lower corners of the transmitter and are accessible by removing the enclosure cover. See Figure 3. One ½" conduit opening is provided in the bottom of the enclosure for power and signal wiring.

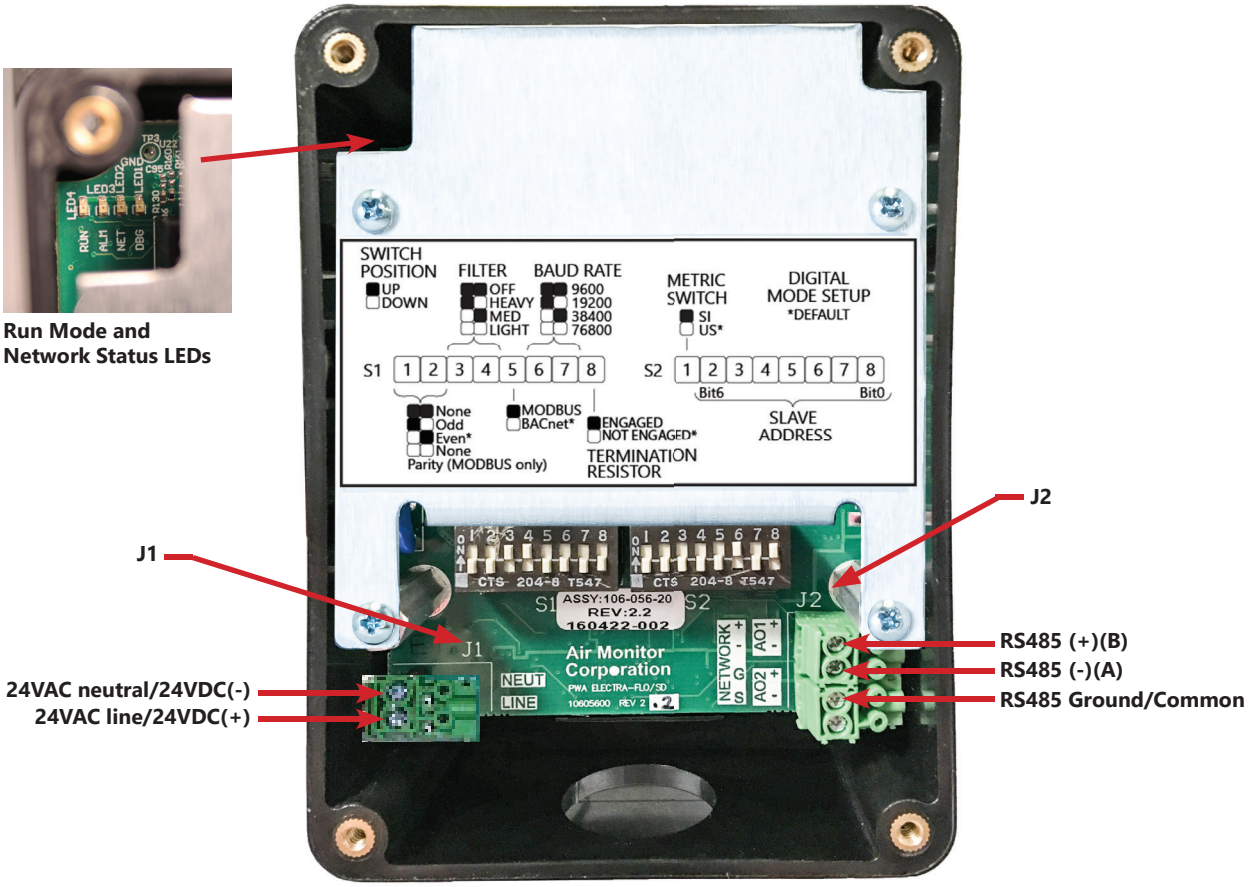


Figure 3

It is recommended that power wiring be 18 awg and signal wiring be 18 awg to 22 awg. 16 awg is the maximum wire gauge that the terminals can accommodate. To aid the wiring process, terminals J1 and J2 are removable by pulling the terminal strip straight up and off the circuit board. Once wiring has been completed replace the terminals by aligning with the receptacle and pressing firmly.

CAUTION: To prevent damage to the ELECTRA-flo/SD, the 24 VAC/VDC power source must be turned off before making the power and signal connections.

CAUTION: Incoming and outgoing RS485 cable shield wires should be connected together, but must not be connected to the RS485 ground.

The ELECTRA-flo/SD can be powered by either 24 VAC providing 20-28 VAC or 24 VDC providing 20-40 VDC.

3.6 CONFIGURATION

All device configuration is done using two 8-switch DIP packages labeled S1 and S2 that can be accessed by removing the enclosure cover. The protective shield over the circuit board also has a reference guide for setting all device configurations. See Figure 4.

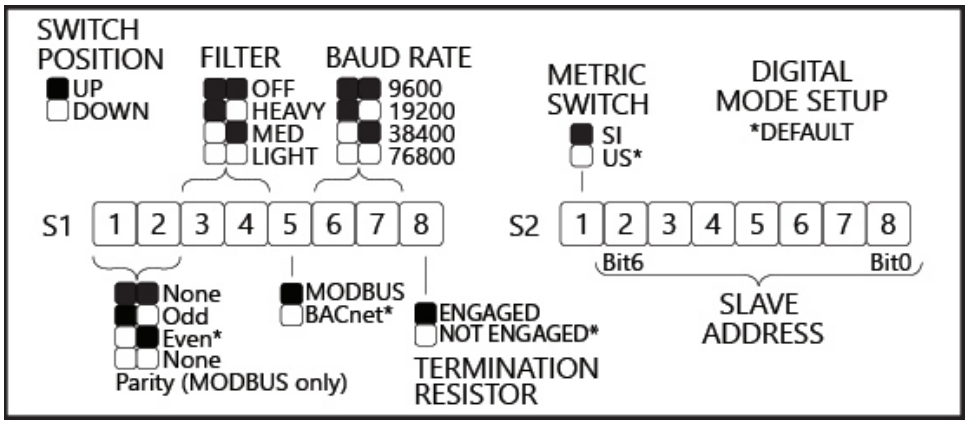


Figure 4

IMPORTANT NOTE: * denotes the default setting. All configuration settings are shipped from the factory in default mode.

S1 Bank, SW1 & SW2 Parity (Modbus only)
Down - Down = None
Up - Down = Odd
Down - Up = Even
Up - Up = None

S1 Bank, SW3 & SW4 Filter
Down Down = Light
Up - Down = Heavy
Down - Up = Medium
Up - Up = Off

S1 Bank, SW5 Modbus/BACnet
Up = Modbus
Down = BACnet

S1 Bank, SW6 & SW7 Baud Rate
Down - Down = 76800
Down - Up = 38400
Up - Down = 19200
Up - Up = 9600

S1 Bank, SW8 Termination
Down = Not Engaged
Up = Engaged

S2 Bank, SW1 US/SI Units
Down = US units
Up = SI units

S2 Bank, SW2 – SW8 Slave Address
SW8 = Bit0 (Decimal 1)
SW7 = Bit1 (Decimal 2)
SW6 = Bit0 (Decimal 4)
SW5 = Bit0 (Decimal 8)
SW4 = Bit1 (Decimal 16)
SW3 = Bit0 (Decimal 32)
SW2 = Bit0 (Decimal 64)

3.7 START-UP/OPERATION

1. After completion of all power and signal wiring, activate the 24 VAC/24 VDC power source
2. Observe the Run Mode indicator located in the upper left corner of the board. See Figure 3 on page 8. After a brief initialization period the Run Mode LED will begin blinking on/off in ½ second intervals indicating normal operation.
3. Confirm the BACnet or MODBUS output is being correctly received by the BMS.
4. Replace the cover of the ELECTRA-flo/SD making sure not to pinch any wires and secure in place with the four screws. Do not over tighten.

3.8 LEDs

	RUN	ALARM	NET	DBG	
Flash On/Off	☒	☐	☒	☒	Normal Mode
Flash On/Off	☒	☒	☒	☒	Alarm Mode

☒ Denotes Flashing LED

Alarm Flash Sequence – Error Codes
One Flash = Cal Error
Two Flashes = Sensor 1 Bad
Three Flashes = Sensor 2 Bad
Four Flashes = No Cal Data
Six Flashes = Unknown Error

NET and DBG LEDs will blink with network traffic when network communication is established with the ELECTRA-flo/SD.

4.0 BACnet MS/TP or MODBUS RTU

4.1 CHANGING THE MAC ADDRESS AND DEVICE INSTANCE NUMBER

To communicate with the network, the BACnet MS/TP interface requires a MAC address (Station ID/Slave ID) and a device instance number (Node ID). The MAC address can be set via dip-switches to any number from 0-127. When the ELECTRA-flo/SD is first brought on to the MS/TP network, the device instance number will be identical to the MAC address configured with the dip-switches. Once the ELECTRA-flo/SD is added to the network, the instance number can be configured through the ELECTRA-flo/SD's Device Object in the BACnet system to any number from 0-4,194,303.

To communicate with the network, the MODBUS RTU interface requires a MAC address and a parity setting. The MAC address can be set via dip-switches to any number from 0-127. Parity is also set via dip-switches. It can be set to even (default), odd or none. Refer to section 3.6 for the parity dip switch settings.

The table below lists the available MAC addresses (Device Addresses) which can be set via the S2 bank of switches, SW2 through SW8. ON denotes the switch is in the UP position.

DEVICE ADDRESS	DIP-SWITCH SETTINGS						
	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
1							ON
2						ON	
3						ON	ON
4					ON		
5					ON		ON
6					ON	ON	
7					ON	ON	ON
8				ON			
9				ON			ON
10				ON		ON	
11				ON		ON	ON
12				ON	ON		
13				ON	ON		ON
14				ON	ON	ON	
15				ON	ON	ON	ON
16			ON				
17			ON				ON
18			ON			ON	
19			ON			ON	ON
20			ON		ON		
21			ON		ON		ON
22			ON		ON	ON	
23			ON		ON	ON	ON
24			ON	ON			
25			ON	ON			ON
26			ON	ON		ON	
27			ON	ON		ON	ON
28			ON	ON	ON		

29			ON	ON	ON		ON
30			ON	ON	ON	ON	
31			ON	ON	ON	ON	ON
32		ON					
33		ON					ON
	SW 2	**SW 3**	**SW 4**	**SW 5**	**SW 6**	**SW 7**	**SW 8**
34		ON				ON	
35		ON				ON	ON
36		ON			ON		
37		ON			ON		ON
38		ON			ON	ON	
39		ON			ON	ON	ON
40		ON		ON			
41		ON		ON			ON
42		ON		ON		ON	
43		ON		ON		ON	ON
44		ON		ON	ON		
45		ON		ON	ON		ON
46		ON		ON	ON	ON	
47		ON		ON	ON	ON	ON
48		ON	ON				
49		ON	ON				ON
50		ON	ON			ON	
51		ON	ON			ON	ON
52		ON	ON		ON		
53		ON	ON		ON		ON
54		ON	ON		ON	ON	
55		ON	ON		ON	ON	ON
56		ON	ON	ON			
57		ON	ON	ON			ON
58		ON	ON	ON		ON	
59		ON	ON	ON		ON	ON
60		ON	ON	ON	ON		
61		ON	ON	ON	ON		ON
62		ON	ON	ON	ON	ON	
63		ON	ON	ON	ON	ON	ON
64	ON						
65	ON						ON
66	ON					ON	
67	ON					ON	ON
68	ON				ON		
69	ON				ON		ON
70	ON				ON	ON	
71	ON				ON	ON	ON
72	ON			ON			
73	ON			ON			ON
74	ON			ON		ON	

75	ON			ON		ON	ON
76	ON			ON	ON		
77	ON			ON	ON		ON
78	ON			ON	ON	ON	
79	ON			ON	ON	ON	ON
80	ON		ON				
81	ON		ON				ON
82	ON		ON			ON	
83	ON		ON			ON	ON
	SW 2	**SW 3**	**SW 4**	**SW 5**	**SW 6**	**SW 7**	**SW 8**
84	ON		ON		ON		
85	ON		ON		ON		ON
86	ON		ON		ON	ON	
87	ON		ON		ON	ON	ON
88	ON		ON	ON			
89	ON		ON	ON			ON
90	ON		ON	ON		ON	
91	ON		ON	ON		ON	ON
92	ON		ON	ON	ON		
93	ON		ON	ON	ON		ON
94	ON		ON	ON	ON	ON	
95	ON		ON	ON	ON	ON	ON
96	ON	ON					
97	ON	ON					ON
98	ON	ON				ON	
99	ON	ON				ON	ON
100	ON	ON			ON		
101	ON	ON			ON		ON
102	ON	ON			ON	ON	
103	ON	ON			ON	ON	ON
104	ON	ON		ON			
105	ON	ON		ON			ON
106	ON	ON		ON		ON	
107	ON	ON		ON		ON	ON
108	ON	ON		ON	ON		
109	ON	ON		ON	ON		ON
110	ON	ON		ON	ON	ON	
111	ON	ON		ON	ON	ON	ON
112	ON	ON	ON				
113	ON	ON	ON				ON
114	ON	ON	ON			ON	
115	ON	ON	ON			ON	ON
116	ON	ON	ON		ON		
117	ON	ON	ON		ON		ON
118	ON	ON	ON		ON	ON	
119	ON	ON	ON		ON	ON	ON
120	ON	ON	ON	ON			

121	ON	ON	ON	ON			ON
122	ON	ON	ON	ON		ON	
123	ON	ON	ON	ON		ON	ON
124	ON	ON	ON	ON	ON		
125	ON	ON	ON	ON	ON		ON
126	ON	ON	ON	ON	ON	ON	
127	ON	ON	ON	ON	ON	ON	ON

4.2 BACnet PIC Statement

BACnet Standardized Device Profile (Annex L)

- [ ] BACnet Operator Workstation (B-OWS)
- [ ] BACnet Building Controller (B-BC)
- [X] BACnet Advanced Application Controller (B-AAC)
- [ ] BACnet Application Specific Controller (B-ASC)
- [ ] BACnet Smart Sensor (B-SS) BACnet Smart Actuator (B-SA)

List of all BACnet Interoperability Building Blocks supported (Annex K in BACnet Addendum 135d)

– DS-RP-B	Read Property
– DS-WP-B	Write Property
– DM-DDB-B	Dynamic Device Binding
– DM-DOB-B	Dynamic Object Binding
– DM-DCC-B	Device Communication Control
– DS-RPM-B	Read Property Multiple
– DM-RD-B	Re-initialize Device

Which of the following device binding methods does the product support?

- [ ] Send Who-Is, receive I-Am (BIBB DM-DDB-A)
- [X] Receive Who-Is, send I-Am (BIBB DM-DDB-B)
- [ ] Send Who-Has, receive I-Have (BIBB DM-DOB-A)
- [X] Receive Who-Has, send I-Have (BIBB DM-DOB-B)
- [ ] Manual configuration of recipient device's network number and MAC address
- [ ] None of the above

Standard Object Types Supported
Analog Input
Analog Value
Device Object

4.3 AVAILABLE BACnet OBJECTS

BACnet Object	Object Description	Units	Notes
Analog Input 1	Velocity	Feet per Minute, Meters per Minute	
Analog Input 2	Velocity Pressure	Inches of Water Column, Centimeters of Water Column	
Analog Input 3	Temperature	Degrees Fahrenheit, Degrees Celsius	
Analog Input 4	Volumetric Flow	Cubic Feet per Minute, Cubic Meters per Minute	Value is equal to Velocity (AI1) times the Duct Area Scale Factor (AV0)
Analog Value 0	Duct Area Scale Factor	Square Feet, Square Meters	Write area of duct to the present-value property

4.4 ADDITIONAL BACnet OBJECT INFORMATION

BACnet Object Type and Number of Objects Implemented
Device – 1
Analog Input – 4
Analog Value – 1

4.4.1 Device Object

Property	Default Value	Read-only or Writable	Comment
Object Identifier	Device-0	Writable	0-4,194,303
Object Name	ElectraFlo/SD0	Read-only	
Object Type	Device	Read-only	
System Status	OPERATIONAL	Read-only	
Vendor Name	Air Monitor Corporation	Read-only	
Vendor Identifier	58	Read-only	
Model Name	ELECTRA-flo/SD	Read-only	
Firmware Rev.	0.8.3	Read-only	
Protocol Version	1	Read-only	
Protocol Revision	9	Read-only	
Services Supported	readProperty, readPropertyMultiple, writeProperty, deviceCommunicationControl, reinitializeDevice, who-Has, who-Is	Read-only	
Object Types Supported	analog-input, analog-value, device	Read-only	
Object List	Device-5, Analog Input-1, Analog Input-2, Analog Input-4, Analog Value-0	Read-only	
Max ADPU Length	206	Read-only	
Segmentation Supported	NO_SEGMENTATION (3)	Read-only	
APDU Timeout	3000	Read-only	
# of APDU Retries	3	Read-only	
Max Master	127	Read-only	
Device Address Binding		Read-only	Active
Database Revision	1	Read-only	

4.4.2 Analog Input Objects

Property	Default Value	Read-only or Writable
Object Identifier	Analog Input-(1, 2, 3 or 4)	Read-only
Object Name	Various	Read-only
Object Type	Analog Input	Read-only
Present Value	REAL	Writable
Status Flags	(F,F,F,F)	Read-only
Event State	NORMAL	Read-only
Out-of-Service	FALSE	Writable
Description	Various	Read-only
Units	Various	Read-only

BACnet engineering units for Analog Inputs **(Defaults):**

Velocity: **FPM (ft/min),** MPM (m/min)
Velocity Pressure: **in H2O,** cm H2O
Temperature: **Deg. F,** Deg. C
Volumetric Flow Rate: **CFM (ft^3/min),** CMM (m^3/min)

Analog Input Objects	
Object Identifier	**Function**
Analog input 1	Velocity
Analog input 2	Velocity Pressure
Analog input 3	Temperature
Analog input 4	Volumetric Flow Rate

4.4.3 Analog Value Objects

Property	Default Value	Read-only or Writable
Object Identifier	Analog Value-0	Read-only
Object Name	AV-0	Read-only
Object Type	Analog Value	Read-only
Present Value	REAL	Writable
Status Flags	(F,F,F,F)	Read-only
Event State	NORMAL	Read-only
Out-of-Service	FALSE	Writable
Units	Various	Read-only

Analog Value Objects	
Object Identifier	**Function**
Analog Value 0	Duct Area Scaling

Analog Value 0 is used to scale the velocity to a volumetric flow rate. Mind the flow rate and the units of measurement the ELECTRA-flo/SD is currently set for. When in US units, the AV-0 present value should be set to square feet. When in SI units, the AV-0 present value should be set to square meters. Examples:

US Units, 500 FPM velocity, 12" x 12" square duct:
If AV-0 = 0, then AV-4 Volumetric Flow = 0 CFM
If AV-0 = 1 square foot, then AV-4 Volumetric Flow = 500 CFM

SI Units, 500 MPM velocity, ¼ meter x ¼ meter square duct:
If AV-0 = 0, then AV-4 Volumetric Flow = 0
If AV-0 = 0.0625 square meters, then AV-4 Volumetric Flow = 31.25 CMM

4.5 MODBUS RTU MEMORY MAP

Transceiver: 3-wire, half-duplex (¼ unit load)
Recommended maximum units per segment: 32
MODBUS address range: 1 - 127 (Default: 1)
Data Format: 8 bit
Stop Bits: 1
Parity: None, Odd, or Even (Default)
Byte Order: ABCD (Big Endian)
Baud Rate: 9600, 19200, 38400, 76800 (Default: 19200)
Termination: Dip-switch selectable 120Ω resistor

Function Codes Supported:

03 - Read Holding Registers
06 - Write Single Register
16 - Write Multiple Registers
23 - Read/Write Multiple Registers

Address	Description	Data Type	Units	Read/Write
40000	Velocity	Float	Ft/min, m/min	Read Only
40002	Velocity - Pressure	Float	Inches of Water Column, mm of Water Column	Read Only
40004	Temperature	Float	Fahrenheit, Celsius	Read Only
40006	Volumetric Flow	Float	Ft^3/min, m^3/min	Read Only
40008*	Duct Area Scale Factor	Float	Ft^2, m^2	Write Only

*Register 40008 is used to scale the velocity to the volumetric flow rate. Data is entered in the units of measurement the ELECTRA-flo/SD is currently set for. When in US units, the register value should be set to square feet. When in SI units, the present value should be set to square meters

Examples:
US Units, 500 FPM velocity, 12" x 12" square duct:
If 40008 = 0, then 40006 Volumetric Flow = 0 Ft^3/min
If 40008 = 1 square foot, then 40006 Volumetric Flow = 500 CFM

SI Units, 500 MPM velocity, ¼ meter x ¼ meter square duct:
If 40008 = 0, then AV-4 Volumetric Flow = 0
If 40008 = 0.0625 m2, then 40006 Volumetric Flow = 31.25 m^3/min

SECTION 5.0: MAINTENANCE/INSPECTIONS

The ELECTRA-flo/SD has been designed to operate in most HVAC applications without the need for periodic maintenance or calibration. In some applications it may be necessary to perform a visual inspection of the probe and sensors, and if necessary clean them using a soft, small brush and/or compressed air to remove any accumulated particulate or debris.

5.1 TROUBLESHOOTING

The ELECTRA-flo/SD is intended to provide long-term, trouble-free operation. In the event the BMS or controller ceases to receive valid airflow and/or temperature signal(s), check the following at the device after removing the cover:

1. The power wiring is securely connected and providing the intended 24V AC/DC power.
2. The signal wiring is securely connected.
3. The Run Mode light is blinking on/off in ½ second intervals indicating normal operation.

If, after checking the above items, normal operation is not restored, contact the Service Department.

TECHNICAL SUPPORT

service@airmonitor.com

(707) 544-2706, Ext 3

Hours: 8:00am – 5:00pm Pacific, Monday – Friday

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