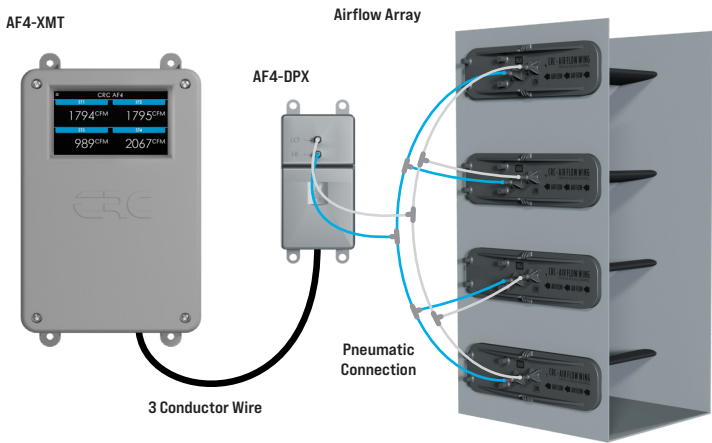


The AF4 Airflow Measurement System provides multi-station airflow measurement using CRC's patented WING airfoil technology. A single AF4 Transmitter supports up to four independent airflow measurement stations, with local touchscreen configuration, analog output scaling, and BACnet® MS/TP integration.

PRODUCT HIGHLIGHTS

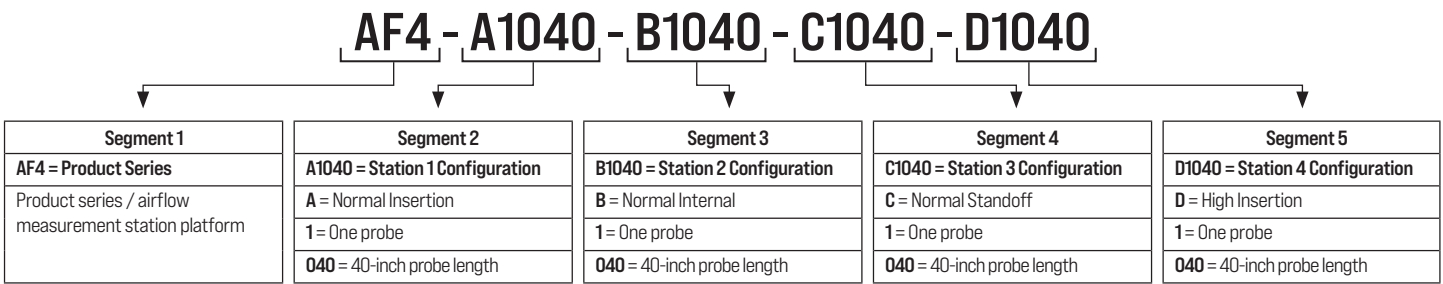
- One transmitter supports up to four airflow measurement stations.
- WING airfoil probes provide passive airflow sampling with low-maintenance operation.
- Built-in 4.3 in color capacitive touchscreen for setup, commissioning, diagnostics, and live values.
- Configurable 0-10 V analog outputs by station for CFM or FPM feedback.
- BACnet MS/TP communication with dynamic device and station naming.
- Station-level flow calibration, low-flow lockout, and advanced commissioning.



CORE PRODUCT DATA

Item	Item Specification
Measurement Stations	1 base airflow station; up to 3 additional stations per AF4-XMT
Velocity Range	AF4-DPX-P5: 50 to 2500 FPM; AF4-DPX-02: 50 to 5000 FPM
Commissioned Accuracy	+/-2%
Display	4.3 in full-color resistive touchscreen
Communication	BACnet MS/TP
Analog Outputs	One 0-10 V analog output per station; selectable CFM or FPM scaling
Applications	Outside air intakes, exhaust systems, return air paths, fan inlets/plenums, small/medium ducts, large distribution ducts, variable and constant volume systems

AF4 PART NUMBER NOMENCLATURE [AIRFLOW MEASUREMENT STATION CONFIGURATION MATRIX]



Each station segment follows the format: [Configuration Letter][Number of Probes][Probe Length]

Up to four station segments may be included.

Base configuration may include only Station 1, for Example: AF4-A1040

REFERENCE MATRIX

Configuration Letter	Number of Probes	Probe Length
A = Normal Insertion	1 = One probe	010 = 10 inches
B = Normal Internal	2 = Two probes	040 = 40 inches
C = Normal Standoff	3 = Three probes	054 = 54 inches
D = High Insertion	4 = Four probes	
E = High Internal		
F = High Standoff		

ADDITIONAL FORMAT EXAMPLES

Example	Description	Breakdown
AF4-A1040	Single-station configuration	A = Normal Insertion, 1 = One probe, 040 = 40-inch probe length
AF4-C2054-D1040	Multi-station configuration	C2054 = Station 1: Normal Standoff, 2 probes, 54-inch probe length D1040 = Station 2: High Insertion, 1 probe, 40-inch probe length

Station segments repeat as required for Stations 1-4.

Refer to the AF4 manual for installation, setup, commissioning, and troubleshooting instructions. Selected options, probe sizes, and station quantities should be shown in the project submittal schedule.

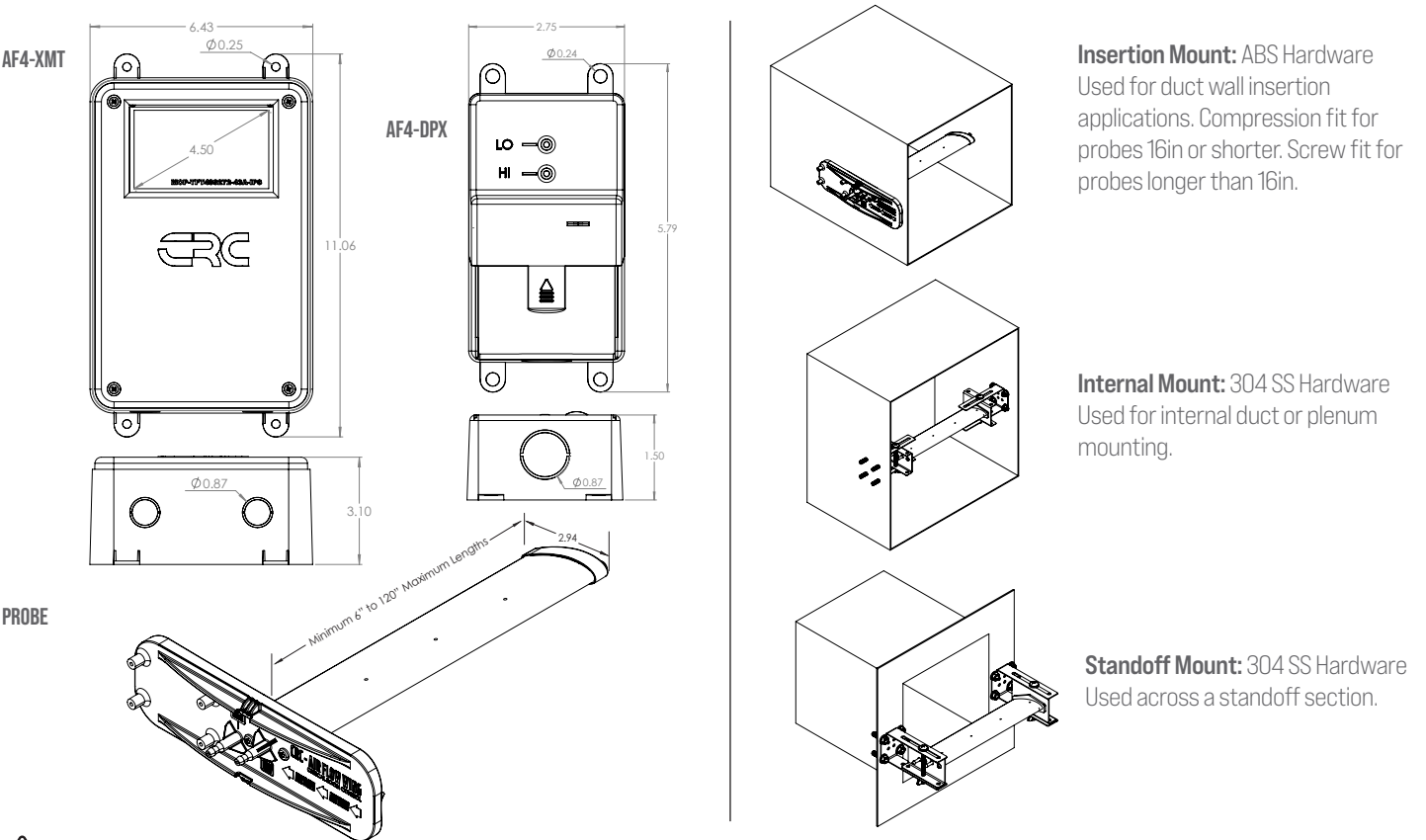
SYSTEM COMPONENTS AND CONFIGURATION

The AF4 system is organized around one AF4 Transmitter and one to four airflow measurement stations. Each station consists of one AF4 Airflow Sensor connected pneumatically to one or more WING airfoil probes.

Term	Meaning
AF4 Transmitter / AF4-XMT	The main AF4 enclosure with touchscreen display, configuration interface, power input, analog outputs, and BACnet® MS/TP communication. One transmitter supports up to four airflow measurement stations.
AF4 Airflow Sensor / AF4-DPX	The remote pressure sensor connected to an airflow measurement station. Each sensor receives pneumatic pressure signals from the airfoil probe array and sends the measurement signal to the AF4 Transmitter.
Airfoil Probe	The WING sensing element installed in the duct, plenum, hood, louver, or intake path. One or more airfoil probes may be used for a single measurement station.
Airflow Measurement Station	One complete measurement point consisting of an AF4 Airflow Sensor and the associated airfoil probe or probe array. Each station reports one airflow/velocity value.
Airfoil Probe Array	A group of one or more airfoil probes pneumatically connected together and assigned to one AF4 Airflow Sensor.
Station 1-4	The four configurable measurement channels supported by the AF4 Transmitter. Each enabled station corresponds to one sensor input, one calculated airflow/velocity value, and one associated analog output.

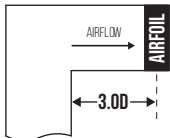
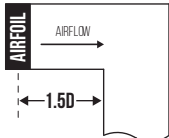
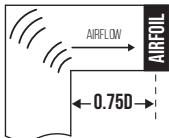
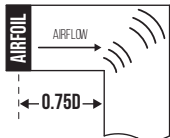
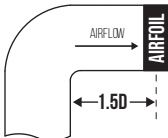
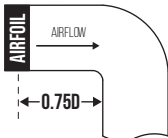
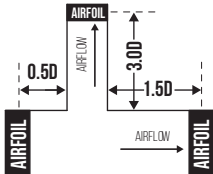
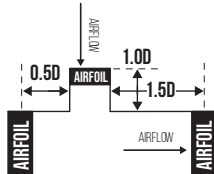
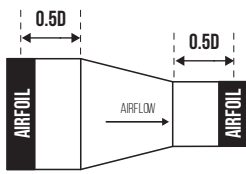
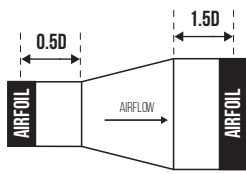
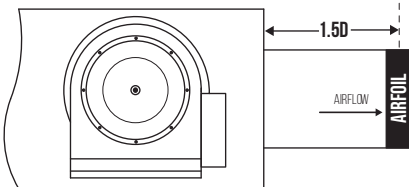
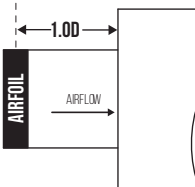
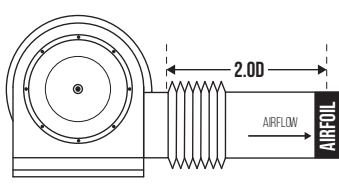
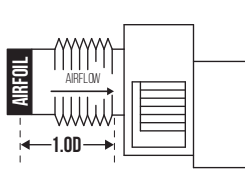
PRODUCT SPECIFICATIONS

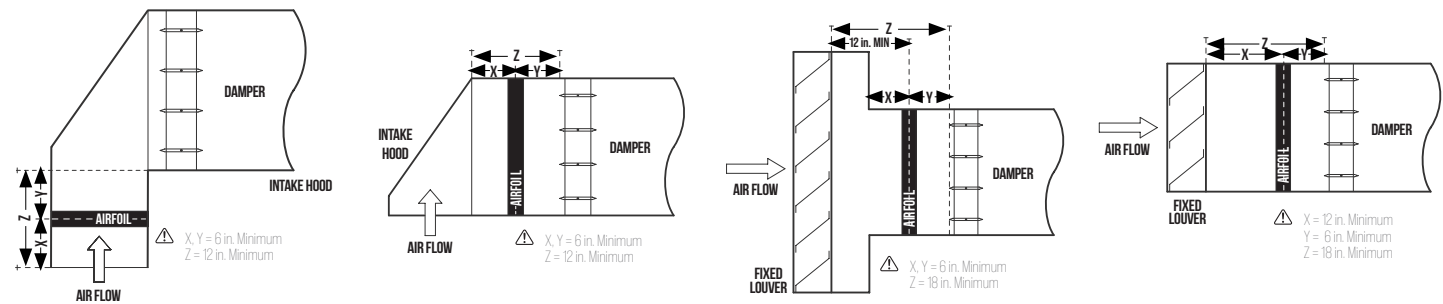
Category	AF4-XMT	AF4-DPX	Airfoil Probes / Mounting
Material	ABS plastic	ABS plastic	Anodized aluminum airfoil
Operating Temperature	32 to 158 deg F (0 to 70 deg C)	-4 to 140 deg F (-20 to 60 deg C)	-30 to 200 deg F (-34 to 93 deg C)
Storage Temperature	-22 to 158 deg F (-30 to 70 deg C)	-40 to 158 deg F (-40 to 70 deg C)	-30 to 200 deg F (-34 to 93 deg C)
Operating Humidity	10 to 70% RH non-condensing	10 to 90% RH non-condensing	0 to 95% RH non-condensing
Input Power	24 VAC +/-10%, 50/60 Hz, 30 VA maximum, 10 VA typical, Class 2	24 VDC supplied from AF4-XMT	N/A
Pneumatic Connection	N/A	1/4in OD between airfoil probe array and AF4-DPX	
Sensor Wiring	3-conductor wire, 22 AWG recommended, between AF4-XMT and AF4-DPX		N/A



⚠ Refer to the AF4 manual for installation, setup, commissioning, and troubleshooting instructions. Selected options, probe sizes, and station quantities should be shown in the project submittal schedule.

AIRFOIL PROBE ARRAY APPLICATIONS AND PLACEMENT

Duct and Plenum Applications	Locate probes where airflow is as uniform as practical. Target at least 1 duct diameter upstream and 1/2 duct diameter downstream where available.	For strong turbulence downstream of elbows, dampers or transitions, additional straight run up to 3D upstream is recommended.			
ELBOWS					
					
TEES & TRANSITIONS					
					
FANS & PLENUMS					
					
Hoods	Provide at least 12 in downstream of the intake hood when space allows.	Ducted placement is preferred when possible.			
Louvers	Provide at least 18 in downstream of the louver when space allows.	Install probes perpendicular to louver or blade orientation to sample multiple flow passages.			
Dampers	Avoid placement immediately downstream of modulating or partially open dampers.	Damper blade position can cause uneven velocity profiles and measurement instability.			



-  All measurements in inches
-  X= Distance to upstream interface
- Y= Distance to downstream interference
- Z= Distance between interferences

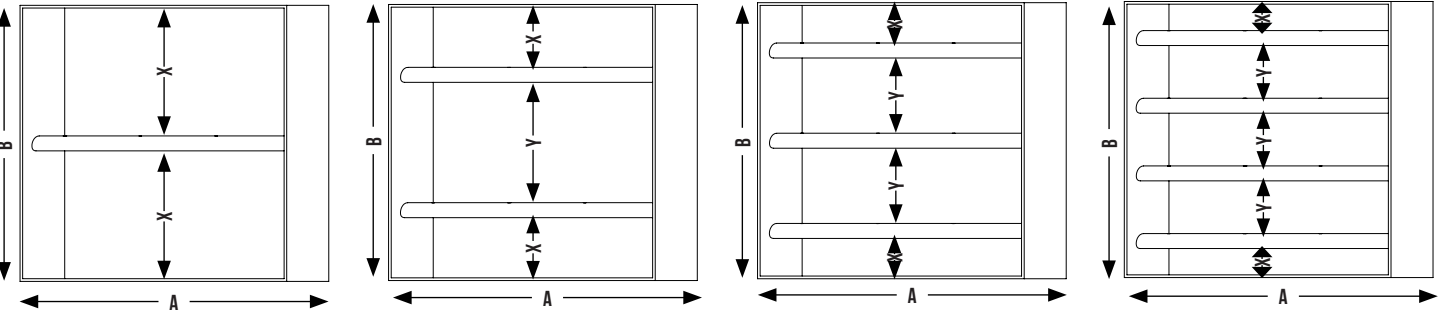
 Refer to the AF4 manual for installation, setup, commissioning, and troubleshooting instructions. Selected options, probe sizes, and station quantities should be shown in the project submittal schedule.

AIRFOIL PROBE ARRAY QUANTITY AND POSITIONING

SQUARE DUCT

Square and Rectangular Duct	Airfoil probe quantity is based on the selected probe direction and the perpendicular duct dimension. Probe direction is typically selected along the smaller duct dimension to minimize hardware.
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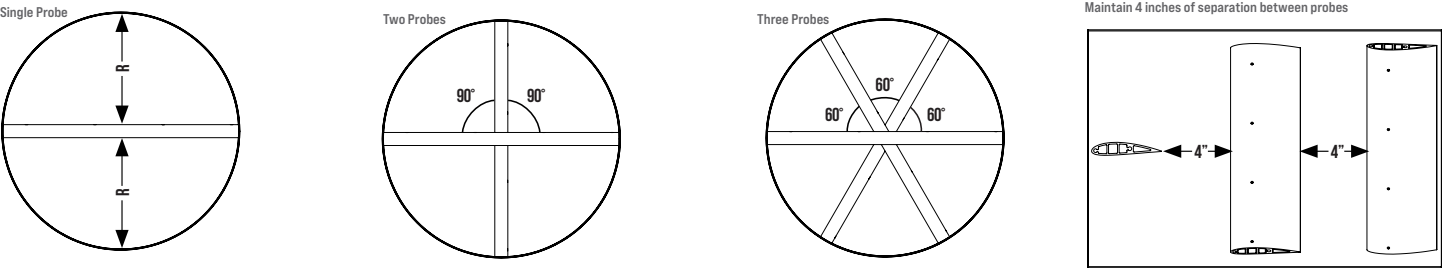
		Airfoil Probe Direction (A)	Probe Spacing	
		6 to 120in	X	Y
Perpendicular Direction (B)	6 to 23.9in	1 Probe	$\frac{B}{2}$	N/A
	24 to 39.9in	2 Probes	$\frac{B}{4}$	$\frac{B}{2}$
	40 to 77.9in	3 Probes	$\frac{B}{6}$	$\frac{B}{3}$
	78 to 120in	4 Probes	$\frac{B}{8}$	$\frac{B}{4}$



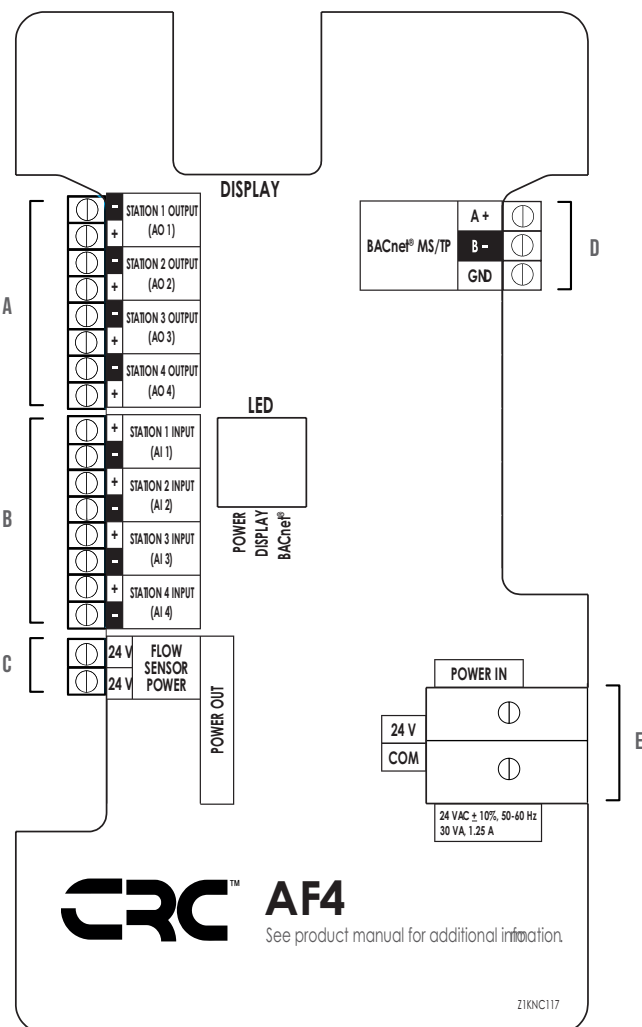
CIRCULAR DUCT

Circular	Probe quantity is based on duct diameter. Probes are installed through the duct centerline at equal angular spacing.
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Duct Diameter	6 to 25.9in	26 to 71.9in	72 to 120in
Radius	3 to 12.9in	13 to 35.9in	36 to 60in
Probes	1 Probe	2 Probes	3 Probes
Probe Spacing	Centerline	90° apart	60° apart



⚠ Refer to the AF4 manual for installation, setup, commissioning, and troubleshooting instructions. Selected options, probe sizes, and station quantities should be shown in the project submittal schedule.

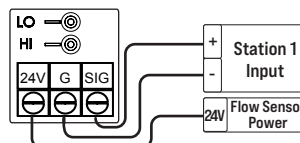


A: Station Outputs



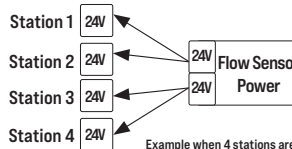
- Station Outputs used to send FPM/CFM scaled voltage signal.
- Configure output units and range at AF4-XMT.
- Repeat as needed for each station.

B: Station Inputs (AF4-DPX)



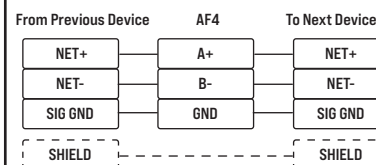
- Station 1 shown. Repeat for each required station.
- AF4-DPX-P5: Normal Flow | 50-2500 FPM
- AF4-DPX-Q2: High Flow | 50-5000 FPM
- Station 1 --> AI 1 Station 2 --> AI 2
- Station 3 --> AI 3 Station 4 --> AI 4

C: Flow Sensor Power



- Each AF4-DPX is powered from 24V Flow Sensor Power
- Two Flow Sensor Power terminals are provided.
- When more than 2 stations are used, distribute conductors properly across both terminals

D: BACnet MS/TP



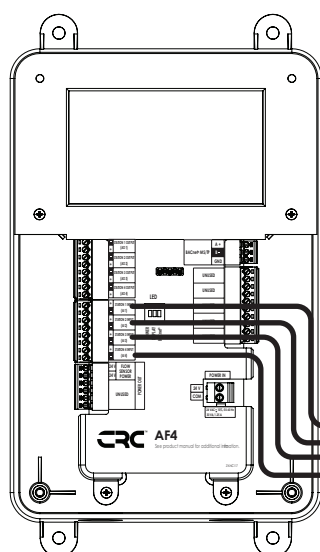
- Daisy-chain only. Do not star-wire or T-tap.
- Install 120 Ohm termination at both physical ends of the MS/TP trunk.
- Maintain shield continuity. Earth-ground shield at one location only. Do not land shield on AF4.
- AF4 does not provide onboard MS/TP biasing

E: Transmitter Power

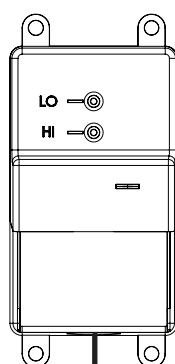


- 24 VAC +/-10%, 50/60 Hz, 30 VA max (10 VA typical)
- Maintain transformer secondary orientation when devices share a common reference

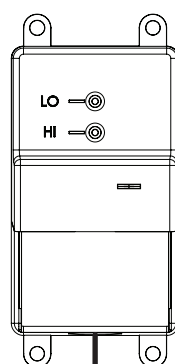
AF4-XMT



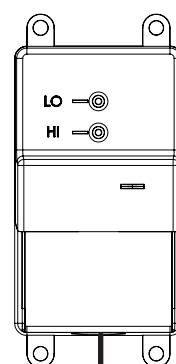
Station 1



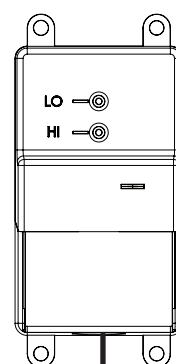
Station 2



Station 3



Station 4



Stations 2-4 repeat the same 24V / G / SIG wiring pattern using the assigned station input.

⚠ Refer to the AF4 manual for installation, setup, commissioning, and troubleshooting instructions. Selected options, probe sizes, and station quantities should be shown in the project submittal schedule.

BACNET MS/TP REQUIREMENTS

Item	Requirement
Cable	3-conductor cable, A/B/Signal Ground, 22-24 AWG twisted pair, shielded
Topology	Daisy-chain only; no star wiring or T-taps
Segment Limits	Maximum 32 devices per segment; 4000 ft (1200 m) total length
Termination	120 ohm end-of-line termination at both physical ends of the MS/TP trunk
Biasing	AF4 does not provide onboard MS/TP biasing. Biasing must be provided once per segment by the router, supervisory controller, or another approved device.
Addressing	MAC address 1-126; BACnet Device Instance 0-4,194,303; all addresses must be unique
Baud Rates	9600, 19200, 38400, 57600, 76800; default 38400

BACNET INTEGRATION SUMMARY

The AF4 supports dynamic device and station names. Device name changes at the touchscreen update over the network. Station name changes update associated dynamic BACnet point names. Factory reset returns station names to default values.

Station	Dynamic Object IDs
ST1	1200-1206, 1260, 1261
ST2	1207-1213, 1262, 1263
ST3	1214-1220, 1264, 1265
ST4	1221-1227, 1266, 1267

STATION OBJECT PATTERN

Point Type	ST1 Objects	ST2 Objects	ST3 Objects	ST4 Objects	Description
Airflow	1200	1207	1214	1221	Measured airflow in CFM
Velocity	1201	1208	1215	1222	Measured duct velocity in FPM
Duct Area	1202	1209	1216	1223	Configured duct area used to calculate CFM
Lockout FPM	1203	1210	1217	1224	Velocity threshold below which airflow reports 0
Flow Adj %	1204	1211	1218	1225	Balance correction; 100% equals no adjustment
Smooth Factor	1205	1212	1219	1226	Averaging behavior, 1-5
Max Flow Out	1206	1213	1220	1227	Maximum station measurement output range

 Complete BACnet Points List can be found in the AF4 Manual.

 Refer to the AF4 manual for installation, setup, commissioning, and troubleshooting instructions. Selected options, probe sizes, and station quantities should be shown in the project submittal schedule.