

3. **FIELD CHARACTERIZATION**

The FAN IV is equipped with a field characterization (K-factor) feature which allows for the introduction of gain and/or bias factors into the transmitter’s flow calculations. This feature is intended to be used in two types of applications:

- I. To adjust for flow measurement error as a result of highly distorted airflow induced by upstream or downstream flow disturbances.
- II. To adjust the transmitter’s output to bring it into close correlation with field measured flow data.

The K-Factor gain and bias values can be entered directly or the FAN IV can calculate these values based on measured and reference values from a 1, 2, or 3 point airflow traverse.

For best results, Air Monitor recommends at least 2 flow points be used to characterize the installation, with one flow reading taken in the bottom 1/3 of the operating range. When making this measurement, it is essential that the flow measurement be within the operating range of the FAN IV and airflow sensor.

Field characterization is performed with all fans running (NOT by individual Fans) and the total sum is entered into the GUI for both Reference and FAN IV data points. The offset curves are applied to adjust the total.

Number of Points

The number of data points (1-3) to be used for field characterization.

Characterization Calculator

Number of Points 3

Fan IV

	Reference	Vel III Points
Point 1	0.0	0.0
Point 2	0.0	0.0
Point 3	0.0	0.0

ENT - Accept ESC - Leave UP/DN - Change

3 Points Example: For point 1, enter the total flow rate that is in the bottom third of the operating range.

For point 2, enter the total flow rate that is in the middle third of the operating range.

For point 3, enter the total flow rate that is in the upper third of the operating range.

Example:

	Point 1	Point 2	Point 3
Fan1	1975	3950	5925
Fan2	2000	4000	6000
Fan3	2025	4050	6075
Fan4	2000	4000	6000
Total	8000	16000	24000
Reference	8100	16200	24300

Manual Characterization

Exponent 0.500

Gain 1837.0

ENT - Accept ESC - Leave UP/DN - Change

If you select the manual option in the field characterization menu, you will be provided with data entry fields for manually entering exponent and gain values. This data will be calculated and provided by the balancer or others.



Visit the FAN IV product page for more information.

QUICK START GUIDE

FAN IV - Fan Array Transmitter



INSTALLATION PROCEDURE

STEP 1: UNPACKING

PACKING LIST

- FAN IV Transmitter
- RTD Temperature Sensor (If selected upon ordering)
- Quick Start Guide
- Factory Setup Sheet

INSPECTION & HANDLING

FAN IV should be carefully inspected for damage prior to Installation. Report damage to your freight department or contact the delivery carrier.

WARRANTY

Air Monitor Corporation (Hereinafter referred to as “Seller”) warrants that at the time of shipment, products sold pursuant to this contract will be free from defects in materials and workmanship, and will conform to the specifications furnished or approved in writing by the Seller. Please refer to Conditions of Sale on the Air Monitor website for more information.

STEP 2: MECHANICAL INSTALLATION

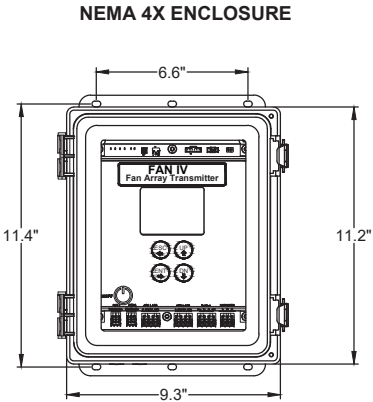
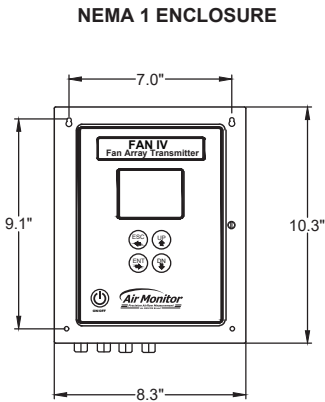
Find an easily accessible location where electrical connections can be made and display readings can be taken from the floor level. The mounting surface must be structurally sound and capable of withstanding a minimum weight of 10lbs (4.5kg). Use the following screws for mounting.

For NEMA 1 Enclosure:

- (4) Machine screws - #8-32 x 1.5”
- (4) Wood screws - #8 x 1.5”
- (4) Concrete screws - 0.1875” x 1.5”

For NEMA 4X Enclosure:

- (4) Machine screws - HHMS 0.25-20 x 1.5”
- (4) Wood screws - FHLS 0.25 x 1.5”
- (4) Concrete screws - HHCS 0.25 x 1.5”



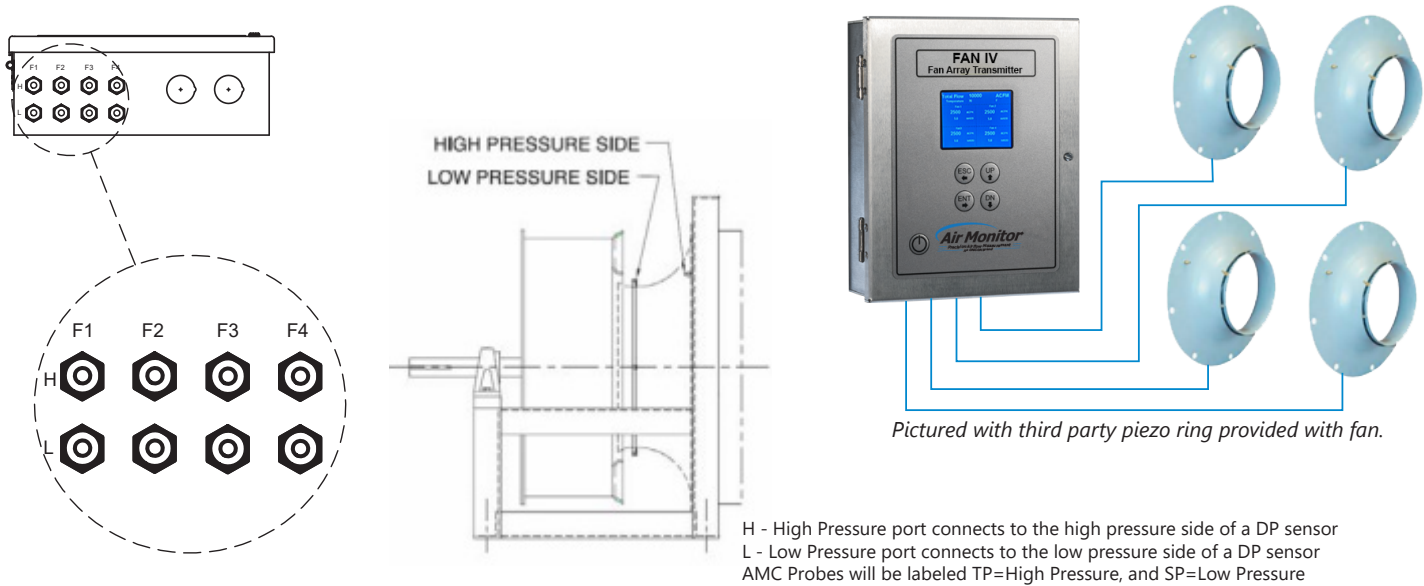
Install the pressure or flow sensor per manufacturer recommendations. Use the table below to determine the appropriate sensor tubing diameter based on the distance from the enclosure to the airflow sensors. Contact Air Monitor for assistance if longer tubing lengths are required.

Nominal/Min Tubing Internal Diameter (in)	Tube Length Total (ft)	Sensor Max Distance from Transmitter (ft)
1⁄8 (0.125)	30	15
3⁄16 (0.1875)	200	100
1⁄4 (0.25)	500	250
3⁄8 (0.375)	1000	500

FAN IV
QUICK START GUIDE

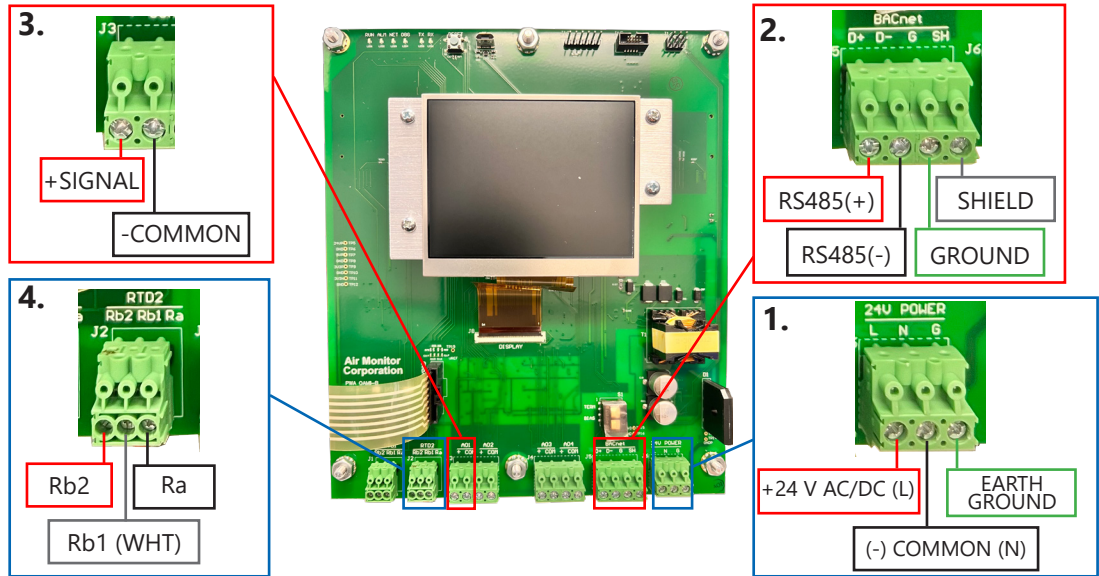


Air Monitor recommends that signal tubing between the transmitter enclosure and all sensors be stainless steel or copper of the appropriate size. Use tees or manifolds to combine multiple sensors into single high and low pressure lines running to the transmitter's channel fittings for each channel. UV resistant, flexible, plastic tubing specifically designed for outdoor use, such as Tygon R-3400 or equivalent, may also be used. Use brass inserts with the plastic tubing as required to ensure a leak free connection. The connection types can be either compression fittings which are recommend with metal tubing or barb fittings which are recommended for plastic tubing.



*If the high pressure port doesn't exist, a port might need to be drilled and installed on the intake face of the fan.

STEP 3: ELECTRICAL INSTALLATION



1. POWER
 - I. Verify that correct AC/DC voltage is available at the power supply input terminals per its wiring diagram.
 - II. Input voltages should be supplied via one of the two methods below:
 - 24 VAC, 15VA @ 24 VAC (40 VA with heater)
 - 24 VDC, 10W @ 24 VDC (35W with heater)

FAN IV
QUICK START GUIDE



2. CONNECTING VIA BACNET MS/TP
 - I. Power on unit to verify it is functioning properly. After verifying, power down the unit.
 - II. Wire RS485 Cables to the unit. Please note the following:
 - The RS485 network cable connections are polarity sensitive and must be connected the same way on every device (i.e. + to + and - to -).
 - Shield drain connections should be daisy chained in the same manner as the signal cables for RS485. The shield drain wire should be left unterminated at the end of the cable and connected to earth only at the network master controller. Shield wires must not be connected to the RS485 connector on the FAN IV.
 - The maximum number of devices allowed on an RS485 network segment without a repeater is 32. Adding more than 32 devices to a single segment may reduce the transceiver output voltage to a level that is too low to be distinguished from back ground noise on the cable.
 - III. Navigate to the FAN IV network configuration. Select Main Menu→Network Configuration→BACnet or MODBUS.
 - IV. Configure the Baud Rates, Device Address Range, Device Instance Range, and Max Master.
 - V. Power cycle the device and it is now ready to connect to the controller or next device in the trunk.

Note: If connected to an active network, a voltage check of RS485 can be performed by setting a Multimeter to DC and verifying the reading between A- and B+ lead is 0.2 VDC. If not, the network connections may need to be investigated.

3. ANALOG OUTPUT
 - I. For each analog output wire in the two wires for the signal and the common for the device to provide 4-20mA, 0-5V, or 0-10V signal for each output.
 - II. Analog loop should not have power supplied to it or it will damage the analog output.
4. RTD (IF SELECTED)
 - I. Remove the RTD from the transmitter enclosure (taped in bag at bottom).
 - II. Select a convenient mounting location(s) near the inlet or inside the air handler/duct to mount the RTD(s).
 - III. Use the supplied sheet metal screws to mount the RTD(s).
 - IV. Wire the RTD to the unit.

STEP 4: PROGRAMMING

1. ZERO PRESSURE SENSORS

Units will need to set the DP zero baseline prior to usage. To do this:

 - I. Confirm the mechanical connections are made to the fan pressure sensing device.
 - II. Ensure the fans are off and there is no flow going to the flow sensors.
 - III. Navigate to the Set Zero Baseline by Selecting Main Menu→Set Zero DP Baseline.
 - IV. Hit ENT button to activate, the device will prompt you to hit ENT when it's ok to finish and baseline has been performed.
2. TEMPERATURE FIELD CHARACTERIZATION

To navigate to the Temp Field Characterization menu. Select Main Menu→Temp Field Characterization.

 - I. If the device was configured for an RTD, the user will be prompted to enter a reference temperature to calibrate the RTD in the field.
 - II. If the device was configured without an RTD, the temperature will manually be entered into the Process Temperature screen.