**OAM II Master Specification**

1. Product:

	1. Subject to compliance with requirements for pressure and flow meters in heating, ventilation, and air conditioning systems. American Made, Buy America Act FAR 52.225.1, ASHREA 62, field serviceable.
	2. The basis of the design is the OAM II outdoor airflow measurement system. Manufacturers approved to bid, must adhere to requirements listed below.
2. Description:

The Airflow Measurement System shall utilize the uniform static differential pressure field created by air moving across a fixed inlet that has a factory calibrated and AMCA certified flow equation. The system shall use the actual air stream temperature and absolute pressure to provide Actual and Standardized instantaneous airflow rate information.

1. Application Range:

Provide where indicated, a complete, dedicated Outdoor Airflow Measurement System capable of directly measuring the airflow through an outside air inlet / opening and providing the measured airflow values via a local display, multiple analog outputs and a single serial output for BACnet or Modbus.

1. Design:

The Outdoor Airflow Measurement System shall consist of a dedicated monitor / transmitter and flow sensing element(s) combined to create a complete system. The System shall be factory calibrated and configured based on the application and type of installation. The Airflow Measurement System shall be tested in accordance with ANSI/AMCA standard 610 and licensed to bear the AMCA Certified Ratings program seal for airflow measurement accuracy in accordance with AMCA Publication 611.

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1. Transmitter:

The transmitter shall be housed in a NEMA 1 enclosure (optional NEMA 4X enclosure or NEMA 4X enclosure with heater and insulation for outside environment installs), with an integral color graphic display and four button keypad for use during the configuration and field characterization process. The display shall be configurable to indicate four (4) measured process variables (volume, velocity, temperature, pressure) during normal operation. The transmitter shall utilize up to 4 transducers, a pair of stacked transducers for each channel. The transmitter shall incorporate an absolute pressure sensing system in order to provide automatic airflow compensation at the installed elevation. The transmitter shall incorporate temperature sensor input(s) as required to perform continuous airflow density compensation for each channel. The transmitter shall be capable of measuring two systems and come preconfigured to measure: split configurations for a Minimum/Economizer configuration or dual systems. The transmitter shall be able to add up the total airflow for the Minimizer/Economizer. For dual systems the user shall be able to get the total flow or subtracted flow between the two systems. The Transmitter shall provide BACnet MS/TP, MODBUS RTU, and four (4), field configurable analog outputs designed to interface with the building automation system (BAS). The ability to perform configuration changes and field characterization shall be accomplished via the user interface/display, the need for additional utility software shall not be required.

1. Uni-Sensor: Flow Sensing Elements (for use with Louvers and Rain Hoods):

The flow sensing element(s) shall be constructed of 316 SS and only materials that are designed to resist corrosion due to the presence of salt or chemicals in the airstream. The flow sensing element(s) shall not be affected by the presence of moisture, dirt or debris in the airstream by gusting wind. Flow sensing element types adversely affected by moisture in the airstream, such as thermal dispersion, shall not be allowed. Flow measurement requires a delta pressure to be created from either a louver, screen, or expanded metal type material in order to detect airflow. The flow sensing element(s) shall be the Air Monitor uni-sensor type.

1. Airflow Station (AFS)- Flow sensing elements mounted in a factory constructed frame (for use in ducts, plenum openings, and downstream rain hood inlets):

The flow sensing element(s) shall be constructed of 316 SS and other materials that resist corrosion due to the presence of salt or chemicals in the airstream. Sensors shall be factory mounted in an airflow station constructed of 14 ga. (18 ga. for circular units) galvanized steel, 8" deep casing with 90º connecting flanges and a galvanized expanded metal sheet. The airflow station shall have the flow elements manifolded together with ¼” SS tubing and ¼” compression fittings for field installation. The reference airflow temperature sensor shall be mounted in the Airflow Station.

1. Transmitter Construction:

Electronic enclosure shall be constructed of aluminum for rust protection against outdoor mounting. NEMA 4X enclosures shall be selected when a superior level of protection from corrosion and extreme environment is needed.

1. Pressure sensing method: Transducer pair for high and low pressure range
2. Process Air Temperature Rating: -40 to 120°F
3. Ambient Conditions Transmitter: 0°F to 120°F, -40°F to 120°F with heater
4. Process Connections: 1/4” compression or 3/16” Hose barb for both high and low signal connections
5. Display: 3.5” Diagonal color LCD display
6. Keypad: Menu driven interface via four push buttons
7. Transmitter Input Power:

15 VA @ 24 VAC; 40 VA with heater and 10 W @ 24 VDC; 35 W with heater

1. Transmitter Analog Outputs:

Four (4) analog outputs, selectable based on configuration for airflow volume, velocity, temperature, and differential pressure (DP).

1. Measurement Range and Accuracy:

The Outdoor Airflow Measurement System shall provide airflow measurement accuracy of ±5% of reading within the factory calibrated velocity range. The system shall be capable of measuring outdoor airflow velocities from 100 to 3000 SFPM. The system’s readings shall not be affected by the presence of moisture, dirt or debris in the airstream, or by gusting wind. The measured airflow shall be density corrected for ambient temperature variances and atmospheric pressure due to site altitude.

1. Calibration:

Each transmitter will go through a NIST traceable calibration bench to verify the accuracy of the analog outputs. An optional NIST certificate can be provided.

1. Certifications:

	1. AMCA - Air performance
	2. FCC CFR 47 PART 15 compliance Part 15.107(b) and Part 15.109(g) Limits Industry Canada, ICES-003, Issue 5
2. Warranty:

Each flowmeter shall be covered by a one-year no-fault warranty and three-year manufacturing warranty.

1. Installation:

Transmitters shall be installed per the manufacturer’s recommendations. Air flow stations preferred installation location is between the RTU or AHU and the Rain hood for optimal performance.

1. Model Code:

Preferred Model code for project \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is OAM II-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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