
# OAM II

## OUTDOOR AIRFLOW MEASUREMENT SYSTEM

**Accurate, reliable outdoor airflow measurement that requires no straight run and is unaffected by windborne moisture and debris.**

We believe in our products, so should you.
**1 YEAR NO FAULT WARRANTY**
3 YEAR MANUFACTURER WARRANTY


FACTORY CONFIGURED

ON TIME DELIVERY

BEST CUSTOMER SERVICE

amca WORLDWIDE CERTIFIED RATINGS
AIRFLOW MEASUREMENT STATION
AIR PERFORMANCE
AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.
www.amca.org

## DESCRIPTION

The OAM II Airflow Measurement System provides accurate airflow measurement in challenging outdoor air applications, as well as other airflow applications with limited straight ducts. The system consists of a dedicated multi-function transmitter with precision ultra-low differential pressure transducers and our proprietary uni-sensor airflow sensor.

Four analog outputs and native BACnet® or MODBUS® are included standard. Displayed data includes flow, temperature, velocity, dP, absolute pressure and operating status. This data is also provided to the network.

## APPLICATIONS

The OAM II system is factory configurable for a variety of common applications, including:

**Single Channel, Single System Airflow Measurement -** The single channel configuration provides outdoor airflow measurement from 150 to 3000 FPM - Excellent solution for accurate flow measurement from minimum outdoor air through economizer operation.

**Min/Economizer (Split) Airflow Measurement -** The Min/Econ configuration provides combined airflow measurement for separate minimum and economizer inlets – An effective tool for measuring this commonly used inlet configuration.

**Dual Channel, Dual System Airflow Measurement -** Dual channel operation provides two separate airflow measurements in one transmitter - Great for built up systems that provide outdoor air to multiple locations.

## FEATURES

**Extended Flow Range Capability -** All OAM II measurement configurations provide a 24:1 range of measurement - Well suited for variable flow applications.

**Multiple BAS Interface Options -** The OAM II includes four field configurable analog outputs and one RS485 interface for native BACnet MS/TP or MODBUS RTU.

**Color Graphic Display with Interface -** The backlit flow display can also provide temperature, velocity or dP data. The user interface has easy-to-use menu pages that eliminate the need for special tools.

**Air Density Correction -** The OAM II is provided with a temperature sensor and an internal absolute pressure sensor for air density correction, enabling it to perform active density compensation and output actual or standard volumetric flow.

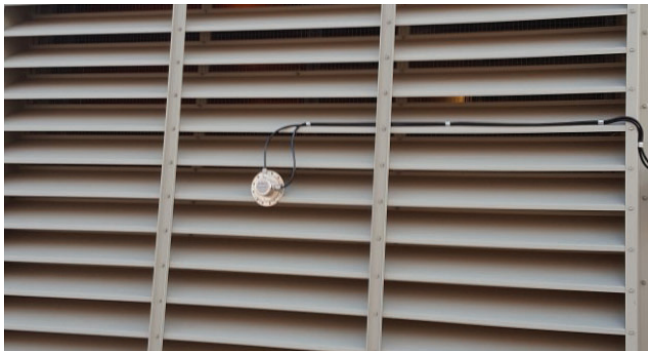
**Field Characterization -** The OAM II has the capability to improve the overall performance of the system for each individual application.

## IDEAL SOLUTION FOR OUTDOOR AIRFLOW MEASUREMENT

The OAM II has been specifically engineered to overcome the challenges associated with other methods of measuring outdoor air.

Airflow measurement across a fixed inlet minimizes the effects of limited straight duct runs typical of outdoor airflow applications.

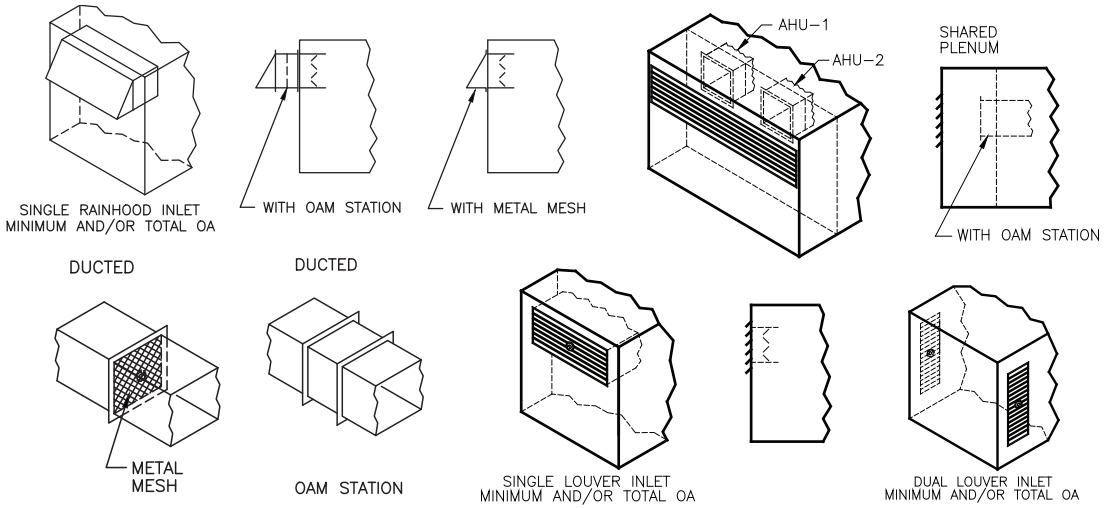
The uni-sensor significantly reduces the effects of airborne particulates and condensing moisture as well as varying directional wind loads and gusts. Particulate and moisture contamination will dramatically impair the functionality and accuracy of other technologies.



## TYPICAL APPLICATION GUIDE

The OAM II System can be used with most single, dual, and split inlets found on air handlers and built-up systems. Depicted below are the most commonly encountered inlet configurations.

Visit the website at www.airmornitor.com/hvac/ for more details on the extended applications.

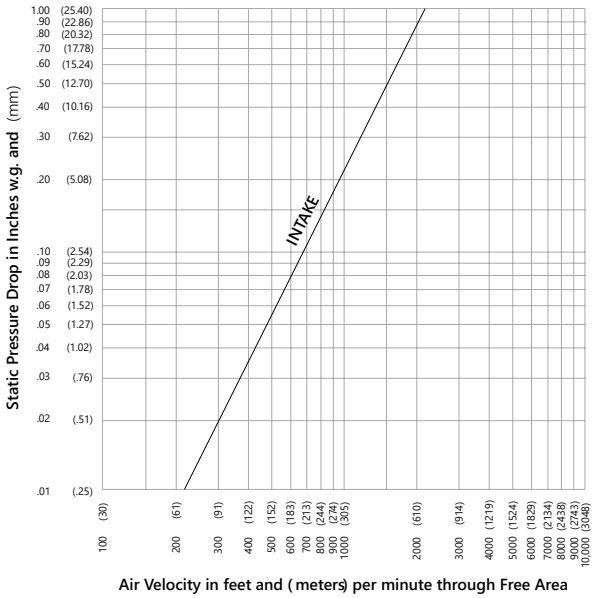



## MINIMUM INSTALLATION REQUIREMENTS

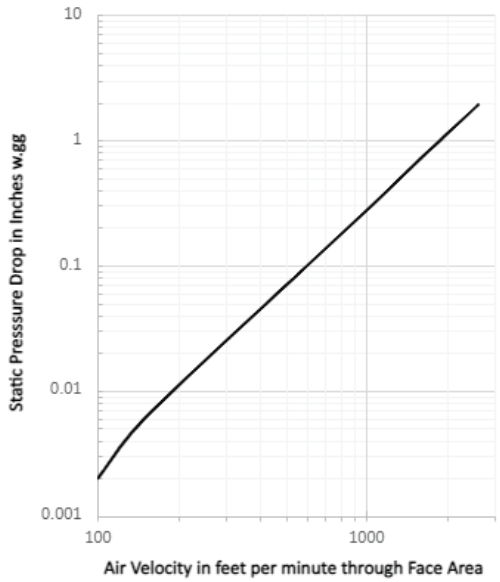
The OAM II Airflow Measuring System is suitable for use on most packaged air handlers and built up systems. The OAM II calculates airflow by measuring the pressure drop across the Air Monitor OAM II Air Flow Station, Air Monitor perforated metal screen, or most standard rain louvers and bird screens. The OAM II provides accurate airflow measurements for differential pressures from 0.003 to 5.0 in W.C. (typically 150 to 3000 FPM).

- When using louvers or screens as the fixed resistance, the Uni-sensor(s) should be mounted in the center of the louver or screen.
- The OAM II station must be positioned upstream of the outside air intake control damper.
- Refer to the louver manufacturer's data for their associated pressure drop curves to confirm the flow velocity at the minimum pressure drop. Please reference *OAM II Louver Mount Application* Submittal for more information.

**Example of a louver pressure drop**




**OAM II Air Flow Station**



## UNI-SENSOR

The patent-pending design of the uni-sensor system is unaffected by gusting wind. This enables an accurate measurement of the differential pressure created by the airflow entering and moving through the inlet, eliminates measurement instability caused by the presence of moisture, and prevents accuracy degradation due to the build-up of deposits that can affect other sensing systems.

The uni-sensor is constructed of type 316 stainless steel and is resistant to corrosion caused by salt and most other airborne corrosives. It combines an outside reference (high pressure) sensor and an inlet airflow (low pressure) sensor into one assembly. They are provided with probe lengths that match the clearance requirements of the louver or screen where they will be installed. This simplifies installation on both new and retrofit applications.

## OAM II AIRFLOW STATION

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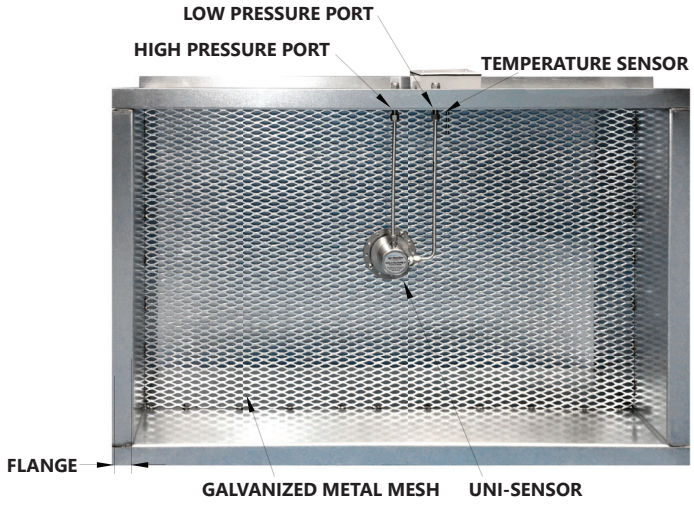
Air Monitor Corporation certifies that the VOLU-flo OAM II Outdoor Airflow Measurement System shown herein is licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 611 and comply with the requirements of the AMCA Certified Rating Program.

OAM II Airflow Stations consist of factory mounted sensors on a layer of metal mesh that is welded into a galvanized sheet metal casing. The flow and pressure drop characteristics of the metal mesh is fully defined. This simplifies installation and commissioning as the airflow station is provided fully characterized from the factory.




The following tables show the accuracy of the OAM II Station in an AMCA laboratory test rig providing reference velocities and airflows in two configurations: Table 1 (outside air type, open inlet) and Table 2 (in a duct)

**Table 1**

| OAM II Airflow Monitor Test Results at Standard Conditions per AMCA 610-16, Inlet | | | | |
|---|---|---|---|---|
| Point | V (fpm) | Qref (cfm) | Qams (cfm) | % Diff. |
| 1 | 2608 | 23475 | 23733 | 1.09% |
| 2 | 2379 | 21411 | 21547 | 0.63% |
| 3 | 1934 | 17407 | 17525 | 0.67% |
| 4 | 1489 | 13399 | 13430 | 0.23% |
| 5 | 1045 | 9402 | 9316 | -0.92% |
| 6 | 593 | 5334 | 5338 | 0.08% |
| 7 | 149 | 1342 | 1317 | -1.88% |
| 8 | 100 | 902 | 898 | -0.46% |

**Table 2**

| OAM II Airflow Monitor Test Results at Standard Conditions per AMCA 610-16, Duct | | | | |
|---|---|---|---|---|
| Point | V (fpm) | Qref (cfm) | Qams (cfm) | % Diff. |
| 1 | 2669 | 24024 | 23949 | -0.31% |
| 2 | 2364 | 21280 | 21183 | -0.46% |
| 3 | 1925 | 17327 | 17220 | -0.62% |
| 4 | 1478 | 13305 | 13268 | -0.28% |
| 5 | 1039 | 9348 | 9347 | -0.01% |
| 6 | 593 | 5337 | 5251 | 1.64% |
| 7 | 149 | 1337 | 1345 | 0.58% |
| 8 | 97 | 876 | 903 | 2.99% |

Qref – AMCA Reference Measurement
Qams – Air Monitor OAM II Airflow Measurement System with 36" x 36" OAM II Airflow Station

## SPECIFICATIONS*

| **OAM II TRANSMITTER** | | |
|---|---|---|
| PERFORMANCE | SYSTEM ACCURACY | AMCA certified accuracy of ±5% or better in the velocity range of 150 to 2400 feet per minute[1] |
| | VELOCITY RANGE | 100 to 3000 SFPM |
| | TEMPERATURE SENSOR ACCURACY | ±0.1°F at 32°F |
| | DIFFERENTIAL PRESSURE RESOLUTION | ±0.0004 in W.C. |
| | ABSOLUTE PRESSURE ACCURACY | ±0.015 psi from 32°F to 120°F |
| OPERATING CONDITIONS | AMBIENT TEMPERATURE | -20°F to 180°F (storage)<br>0°F to 120°F without heater<br>-40°F to 120°F with heater |
| | HUMIDITY | 0 to 99% RH, non-condensing |
| INPUT POWER | 24 VAC | 15 VA @ 24 VAC; 40 VA with heater |
| | 24 VDC | 10 W @ 24 VDC; 35 W with heater |
| TRANSDUCER DESIGN | AVAILABLE OPTIONS | • Single channel, one (1) transducer pair<br>• Dual channel, two (2) transducer pairs |
| I/O SIGNALS | ANALOG OUTPUTS | Four (4) analog outputs, selectable based on configuration |
| | SERIAL COMMUNICATION | RS485, BACnet® MS/TP or MODBUS® RTU |
| | TEMPERATURE INPUT(S) | 100Ω 3-wire RTDs, qty provided (one or two) based on configuration |
| | PRESSURE (BAROMETRIC) | Built-in barometric (absolute) pressure sensor for automatic elevation compensation |
| ELECTRONICS ENCLOSURE | AVAILABLE OPTIONS | • Aluminum, NEMA 1<br>• Poly, NEMA 4X with window<br>• Poly, NEMA 4X, no window<br>• Poly, NEMA 4X, no window with heater |
| | DISPLAY | 3.5" diagonal color graphical FTF LCD |
| PROGRAMMING | Menu driven user interface via four (4) push buttons | |
| ELECTRICAL CONNECTIONS | POWER | Removable terminal block for use with 16 to 24 gauge wire |
| | COMMUNICATIONS | Removable terminal block for use with 16 to 24 gauge wire |
| | I/O | Removable terminal blocks for use with 16 to 24 gauge wire |
| PROCESS CONNECTIONS | AVAILABLE OPTIONS | • ⅛" FNPT, both High and Low signal connections<br>• ¼" compression, both High and Low signal connections<br>• 3⁄16" hose barb, both High and Low signal connections |
| APPROVALS | FCC | Part 15 Subpart B, Class A device |
| | BTL | Certified to BACnet standard ISO 16484-5 rev. 1.12 |
| | AMCA | Airflow Resistance and Performance Capability |

***Note[1]*** AMCA certified accuracy for 4.5ft² to 18ft² airflow stations.

**Test Configuration**
Manufacturer: Air Monitor Corporation
Model: VOLU-flo OAM II
Size: 36x36 inch square
Face area: 9ft²
Damper type: AMS (OAM II Airflow Station)
Flow direction: Intake
Mounting position: Vertical

**Test Method**

ANSI / AMCA 610-16 (Airflow Resistance and Performance Capability), Figure 4 (Airflow inlet)

ANSI / AMCA 610-16 Airflow (Resistance and Performance Capability), Figure 1 (Duct)

***** SPECIFICATIONS subject to change without notice.

## SPECIFICATIONS CONTINUED*

| **OAM II FLOW ELEMENT: UNISENSOR** | | |
|---|---|---|
| FLOW SENSOR DESIGN | UNI-SENSOR | Integral outside reference and inlet airflow sensor, proprietary design |
| PERFORMANCE | FREE INLET (HOOD) | 150 to 3000 SFPM flow range based on configuration |
| | DUCTED | 150 to 3000 SFPM flow range based on configuration |
| | LOUVER | 100 to 3000 SFPM flow range based on configuration |
| MATERIALS OF CONSTRUCTION | 316 SS | |
| OPERATING CONDITIONS | AIRFLOW VELOCITY | 0 - 3000 SFPM |
| | PRESSURE DROP | 0.003 to 5.0 in W.C. |
| | PROCESS TEMPERATURE RANGE | -40°F to 120°F |
| | HUMIDITY | 0 to 100% RH, condensing |
| | ENVIRONMENT | Impervious to airborne dirt, debris and moisture |
| PROCESS CONNECTIONS | AVAILABLE OPTIONS | • ⅛" FNPT, both High and Low signal connections<br>• ¼" compression, both High and Low signal connections<br>• 3⁄16" hose barb, both High and Low signal connections |

| **AIRFLOW STATION** | | |
|---|---|---|
| FLOW ELEMENT | FLOW SENSOR DESIGN | Uni-sensor(s), 3" length, 316 SS |
| MATERIALS OF CONSTRUCTION | AVAILABLE OPTIONS | • 14 gauge sheet metal casing, galvanized with 1.5" flange<br>• Metal mesh, galvanized |
| PERFORMANCE | FREE INLET (HOOD) | ±5% of reading from 150 to 2400 SFPM |
| | DUCTED | ±5% of reading from 150 to 2400 SFPM |
| OPERATING CONDITIONS | FLUID TEMPERATURE RANGE | -40°F to 120°F |
| PROCESS CONNECTIONS | AVAILABLE OPTIONS | • ⅛" FNPT, both High and Low signal connections<br>• ¼" compression, both High and Low signal connections<br>• 3⁄16" hose barb, both High and Low signal connections |

***** SPECIFICATIONS subject to change without notice.

## MODEL SELECTION GUIDE

### Model Number Coding = OAM II-AFS-ABCD-EEFFG-HHIIJ (-HHIIJ only for dual channel configs)

**A = Model Configurations**
- 2 = Single Channel
- 6 = Dual Channel (Split for Single System Min/Economizer)
- 8 = Dual Channel (Separate Systems)

**B = Enclosure**
- 1 = NEMA 1 (default)
- 2 = NEMA 4X with window
- 3 = NEMA 4X
- 4 = NEMA 4X with heater

**C = Feature Set (Based on model configuration)**
- 2 = 24V AC/DC power, four (4) analog outputs, RS485 serial communications, one (1) 100Ω 3-wire RTD
- 3* = 24V AC/DC power, four (4) analog outputs, RS485 serial communications, two (2) 100Ω 3-wire RTDs

**D = Process Connection**
- 2 = 1/4" compression fittings
- 3 = 3/16" hose barb fittings

***C = 3 when A = 8**

**EE = Ch 1: Flow Range**
- 1B = Flow range 150 to 2400 SFPM

**FF = Ch 1: Number of Uni-Sensors**

| | |
|---|---|
| 01 = One (1) | 07 = Seven (7) |
| 02 = Two (2) | 08 = Eight (8) |
| 03 = Three (3) | 09 = Nine (9) |
| 04 = Four (4) | 10 = Ten (10) |
| 05 = Five (5) | MM = Station Mounted Sensors |
| 06 = Six (6) | |

**G = Ch 1: Unit-Sensor Design**
- 3 = 3" 316 SS Sensor(s) (Default)
- M = Station (Required for FF = MM)

**HH = Ch 2: Flow Range**
- 2B = Flow range 150 to 2400 SFPM

**II = Ch 2: Number of Uni-Sensors**

| | |
|---|---|
| 01 = One (1) | 07 = Seven (7) |
| 02 = Two (2) | 08 = Eight (8) |
| 03 = Three (3) | 09 = Nine (9) |
| 04 = Four (4) | 10 = Ten (10) |
| 05 = Five (5) | MM = Station Mounted Sensors |
| 06 = Six (6) | |

**J = Ch 2: Unit-Sensor Design**
- 3 = 3" 316 SS Sensor(s) (Default)
- M = Station (Required for FF = MM)

### Airflow Station Model Number Coding = OAM II-AFS-ABC-DEF-GGH

**OAM II AFS = Outdoor Airflow Measuring Station**

**A = Long Dimension (in)**

| | |
|---|---|
| A = 8" to 12" | G = >72" to 84" |
| B = >12" to 24" | H = >84" to 96" |
| C = >24" to 36" | I = >96" to 108" |
| D = >36" to 48" | J = >108" to 120" |
| E = >48" to 60" | K = >120" to 132" |
| F = >60" to 72" | L = >132" to 144" |

**B = Short Dimension (in)**

| | |
|---|---|
| A = 8" to 12" | G = >72" to 84" |
| B = >12" to 24" | H = >84" to 96" |
| C = >24" to 36" | I = >96" to 108" |
| D = >36" to 48" | J = >108" to 120" |
| E = >48" to 60" | K = >120" to 132" |
| F = >60" to 72" | L = >132" to 144" |
| | R = Round duct |

**C = Casing Width (in)**
- A = 8" depth (Default)
- C = Up to 16" depth
- D = Up to 24" depth

**D = Materials of Construction**
- 1 = 14 ga Galvanized steel, 1½" 90 degree flanges

**E = Screen Material of Construction**
- 1 = Perforated Metal, 51% FA

**F = Process Connections**
- 2 = ¼" comp fittings
- 3 = 3/16" hose barb fittings

**GG = Number of Sensors**

| | |
|---|---|
| 01 = 1 | 06 = 6 |
| 02 = 2 | 07 = 7 |
| 03 = 3 | 08 = 8 |
| 04 = 4 | 09 = 9 |
| 05 = 5 | 10 = 10 |

**H = Uni-Sensor Design**
- 3 = 3" Uni-Sensor, typical

***Notes***
1. Uni-sensor qty is based on type and size of installation
2. Options selected may impact price.

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