OAM II

OUTDOOR AIRFLOW MEASUREMENT SYSTEM

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

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

DESCRIPTION

The OAM II Airflow Measuring 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 2400 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 the OAM II to perform active density compensation and output actual or standard volumetric flow.

IDEAL FOR OUTDOOR AIRFLOW MEASUREMENT

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

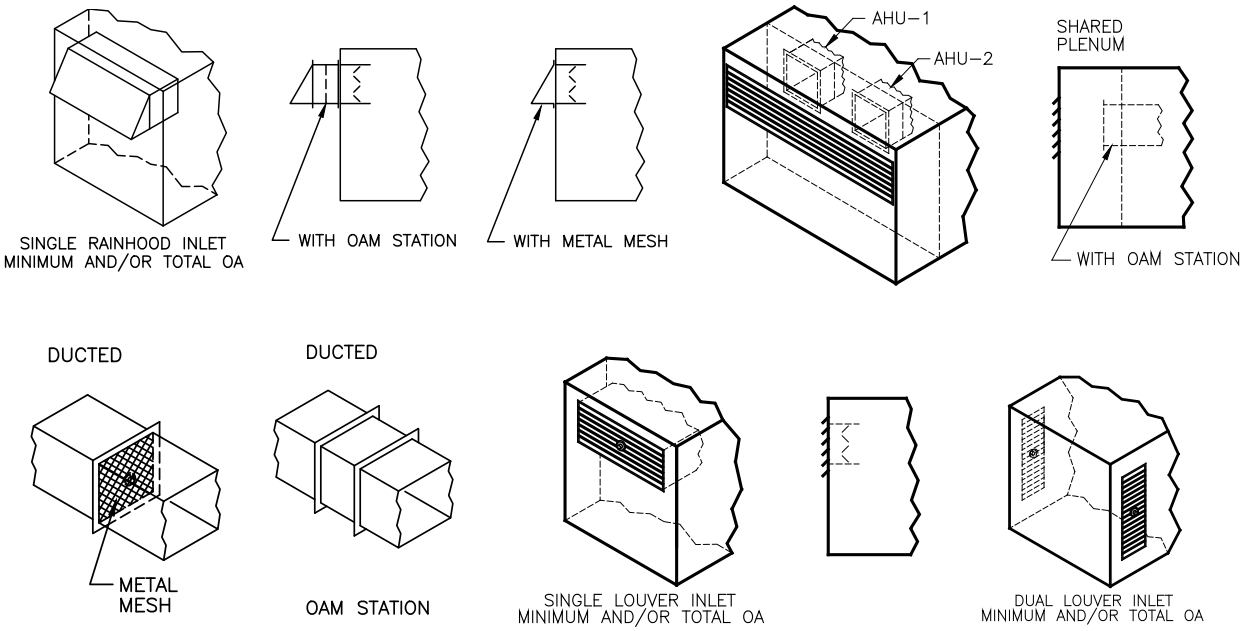
Airflow measurement across a fixed inlet minimizes the effects of limited straight duct runs typical of outdoor airflow applications.

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.

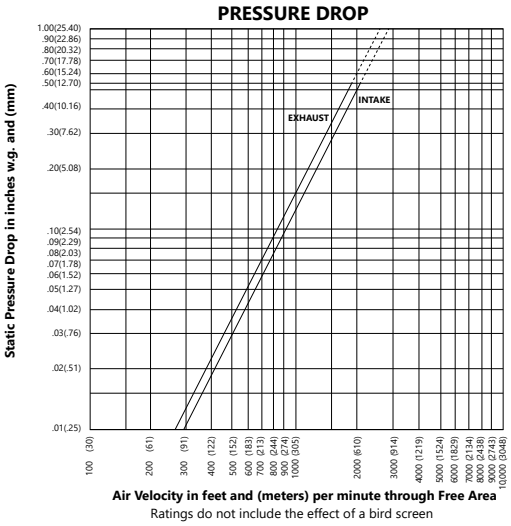
TYPICAL APPLICATION GUIDE

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 for more details on the extended applications.



MINIMUM INSTALLATION REQUIREMENTS



Example of a louver pressure drop graph

The OAM II is suitable for use on most packaged air handlers and built up systems where the outdoor intake is outfitted with an OAM II Airflow Station, inlet louver or any fixed inlet with a minimum pressure drop of at least 0.003 in W.C.

- The uni-sensor should be mounted in the center of the louver or fixed resistance inlet.
- 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.

UNI-SENSOR

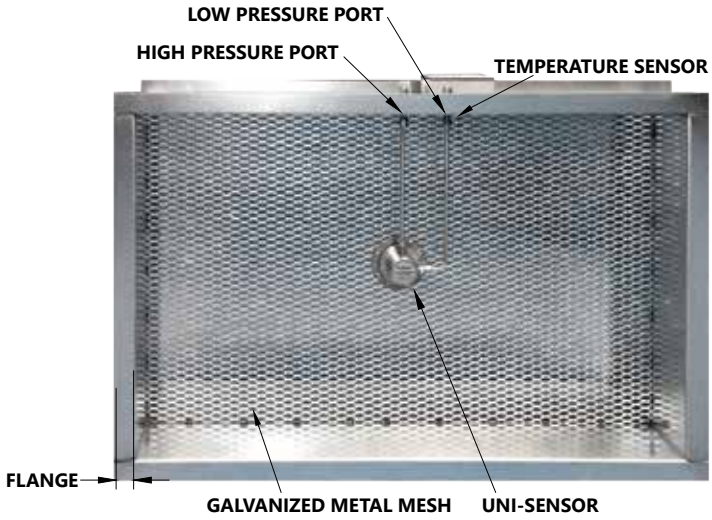
The patent-pending design of the uni-sensor system is unaffected by gusting wind. This allows for an accurate measurement of the differential pressure created by the airflow entering and moving through the inlet, eliminates measurement instability caused by the presence of moisture, and accuracy degradation 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 inlet where they will be installed. This simplifies installation on both new and retrofit applications.

OAM II AIRFLOW STATION

OAM II Airflow Stations simplify installation and commissioning. The station consists 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 as the airflow station is provided fully characterized from the factory.

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 Measurement System with Airflow Station Performance & Airflow Resistance Test Results at Standard Conditions per AMCA 610-16, Figure 4 (Inlet)					
Point	V (fpm)	Qref (cfm)	Qams (cfm)	% Diff.	ΔP (in. wg)
1	2608	23475	23733	1.09%	1.918
2	2379	21411	21547	0.63%	1.595
3	1934	17407	17525	0.67%	1.057
4	1489	13399	13430	0.23%	0.624
5	1045	9402	9316	-0.92%	0.307
6	593	5334	5338	0.08%	0.097
7	149	1342	1317	-1.88%	0.006
8	100	902	898	-0.46%	0.002

OAM II Airflow Measurement System with Airflow Station Performance & Airflow Resistance Test Results at Standard Conditions per AMCA 610-16, Figure 1 (Duct)					
Point	V (fpm)	Qref (cfm)	Qams (cfm)	% Diff.	Δ P (in. wg)
1	2669	24024	23949	-0.31%	1.345
2	2364	21280	21183	-0.46%	1.046
3	1925	17327	17220	-0.62%	0.696
4	1478	13305	13268	-0.28%	0.393
5	1039	9348	9347	-0.01%	0.188
6	593	5337	5251	1.64%	0.063
7	149	1337	1345	0.58%	0.003
8	97	876	903	2.99%	0.002

Qref – AMCA reference measurement
Qams – Air Monitor OAM II Airflow Measurement System with 36" x 36" OAM II Airflow Station
ΔP – OAM II Airflow Station airflow resistance only

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) 0°F to 120°F without heater -40°F to 120°F with heater
	FLUID TEMPERATURE	-40°F to 120°F
	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 • 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 • Poly, NEMA 4X with window • Poly, NEMA 4X, no window • 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 gage wire
	COMMUNICATIONS	Removable terminal block for use with 16 to 24 gage wire
	I/O	Removable terminal blocks for use with 16 to 24 gage wire
PROCESS CONNECTIONS	AVAILABLE OPTIONS	• ⅛" FNPT, both High and Low signal connections • ¼" compression, both High and Low signal connections • 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

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		
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	Operating range from 0.003 to 5.0 in W.C.
MATERIALS OF CONSTRUCTION	316 SS	
OPERATING CONDITIONS	AIRFLOW VELOCITY	0 - 3000 SFPM
	FLUID TEMPERATURE RANGE	-40°F to 120°F
	HUMIDITY	0 to 100% RH, condensing
	ENVIRONMENT	Impervious to airborne dirt, debris and mositure
PROCESS CONNECTIONS	AVAILABLE OPTIONS	• ⅛" FNPT, both High and Low signal connections • ¼" compression, both High and Low signal connections • 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 gage sheet metal casing, galvanized with 1.5" flange • 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 • ¼" compression, both High and Low signal connections • 3⁄16" hose barb, both High and Low signal connections

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

MODEL SELECTION GUIDE

Model Number Coding = OAM II-ABCD

A = Model Configurations
- 2 = Single Channel, Single System
- 6 = Dual Channel, Single System Min/Economizer (Split)
- 8 = Dual Channel, Dual System

B = Enclosure
- 1 = NEMA 1 aluminum enclosure
- 2 = NEMA 4X poly enclosure with window
- 3 = NEMA 4X poly enclosure, no window
- 4 = NEMA 4X poly enclosure, no window 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
- 1 = 1/8" FNPT
- 2 = 1/8" FNPT x 1/4" compression
- 3 = 1/8" FNPT x 3/16" hose barb

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

Notes

1. Number of channels is based on Model Configuration selected
2. Default flow ranges: (Standard Conditions)
   - Single Channel, Single System: 150 to 2400 SFPM
   - Dual Channel, Single System Min/Economizer (split):
     - · Minimum: 150 to 2000 SFPM
     - · Economizer: 150 to 2400 SFPM
   - Dual Channel, Dual System:
     - · Channel 1: 150 to 2400 SFPM
     - · Channel 2: 150 to 2400 SFPM
3. Actual airflow range is determined by minimum and maximum temperatures and altitude
4. Uni-sensor quantity is based on type and size of installation

Please refer to the OAM II Submittals, Application Guide, and the Order Form for additional information regarding flow element/station selection and system operation ranges.

Airflow Station Model Number Coding = OAM II-AFS-LSW-EFG-HHI

OAM II AFS = Outdoor Airflow Measuring Station

L = Casing Long Dimension or Diameter (in)

- A = 8" to 12"
- B = 13" to 24"
- C = 25" to 36"
- D = 37" to 48"
- E = 49" to 60"
- F = 61" to 72"
- G = 73" to 84"
- H = 85" to 96"
- I = 97" to 108"
- J = 109" to 120"
- K = 121" to 132"
- L = 133" to 144"

S = Casing Short Dimension (in)

- A = 8" to 12"
- B = 13" to 24"
- C = 25" to 36"
- D = 37" to 48"
- E = 49" to 60"
- F = 61" to 72"
- G = 73" to 84"
- H = 85" to 96"
- I = 97" to 108"
- J = 109" to 120"
- K = 121" to 132"
- L = 133" to 144"
- R = Round duct

W = Casing Width (in)

- A = 8" casing depth (Default)
- C = Up to 16" casing depth
- D = Up to 24" casing depth
- N = Custom casing depth

E = Casing Material of Construction

- 1 = Galvanized sheet metal casing, 14 gauge with 1.5" 90 degree flanges
- N = Custom material or configuration

F = Screen Material of Construction

- 1 = Galvanized metal mesh, 51% free area
- N = Custom material or configuration

G = Process Connections

- 1 = ⅛" FNPT (Default)
- 2 = ⅛" FNPT X 1/4" compression
- 3 = ⅛" FNPT X 3/16" hose barb

HH = Number of Uni-Sensors

(One (1) sensor required/30 ft^2 of station area)
- nn = Quantity 01 through 10 Uni-Sensors

I = 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.