

TECH NOTES

OAM II Outdoor Airflow Measurement System



LOUVER MOUNT INSTRUCTIONS

OVERVIEW

This Tech Note covers the procedure for field set up of the OAM II on louver applications.



LOUVER CALCULATION REQUIREMENTS

To determine if the OAM II can be used for a specific louver application, three things must be known:

- Designed minimum CFM
- Free area
- Static pressure drop of the louver

CALCULATING LOUVER PRESSURE DROP

1. Determine the Free Area. Your louver manufacturer should have included a free area table. An example is shown below where the Free Area of a 48”H by 48”W louver is 8.52 ft².

Width – Inches and Meters

	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
	0.30	0.46	0.61	0.76	0.91	1.07	1.22	1.37	1.52	1.68	1.83	1.98	2.13	2.29	2.44
12 0.30	0.24 0.02	0.39 0.04	0.53 0.05	0.68 0.06	0.82 0.08	0.96 0.09	1.11 0.10	1.25 0.12	1.40 0.13	1.54 0.14	1.69 0.16	1.83 0.17	1.98 0.18	2.12 0.20	2.27 0.21
18 0.46	0.54 0.05	0.86 0.08	1.18 0.11	1.50 0.14	1.83 0.17	2.15 0.20	2.47 0.23	2.79 0.26	3.11 0.29	3.44 0.32	3.76 0.35	4.08 0.38	4.40 0.41	4.73 0.44	5.05 0.47
24 0.61	0.78 0.07	1.24 0.12	1.71 0.16	2.18 0.20	2.65 0.25	3.11 0.29	3.58 0.33	4.05 0.38	4.51 0.42	4.98 0.46	5.45 0.51	5.91 0.55	6.38 0.59	6.85 0.64	7.31 0.68
30 0.76	1.09 0.10	1.74 0.16	2.39 0.22	3.04 0.28	3.70 0.34	4.35 0.40	5.00 0.46	5.65 0.52	6.30 0.59	6.96 0.65	7.61 0.71	8.26 0.77	8.91 0.83	9.57 0.89	10.22 0.95
36 0.91	1.31 0.12	2.10 0.20	2.89 0.27	3.68 0.34	4.47 0.42	5.26 0.49	6.05 0.56	6.84 0.64	7.63 0.71	8.42 0.78	9.20 0.85	9.99 0.93	10.78 1.00	11.57 1.07	12.36 1.15
42 1.07	1.64 0.15	2.62 0.24	3.60 0.33	4.58 0.43	5.57 0.52	6.55 0.61	7.53 0.70	8.51 0.79	9.49 0.89	10.48 0.97	11.46 1.06	12.44 1.16	13.42 1.25	14.41 1.34	15.39 1.43
48 1.22	1.85 0.17	2.96 0.27	4.07 0.38	5.18 0.48	6.30 0.59	7.41 0.69	8.52 0.79	9.63 0.89	10.74 1.00	11.85 1.10	12.96 1.20	14.07 1.31	15.18 1.41	16.30 1.51	17.41 1.62
54 1.37	2.19 0.20	3.50 0.33	4.81 0.45	6.12 0.57	7.44 0.69	8.75 0.81	10.06 0.93	11.37 1.06	12.68 1.18	14.00 1.30	15.31 1.42	16.62 1.54	17.93 1.67	19.25 1.79	20.56 1.91
60 1.52	2.43 0.23	3.88 0.36	5.34 0.50	6.80 0.63	8.25 0.77	9.71 0.90	11.17 1.04	12.62 1.17	14.08 1.31	15.54 1.44	16.99 1.58	18.45 1.71	19.91 1.85	21.36 1.98	22.82 2.12
66 1.68	2.74 0.25	4.38 0.41	6.02 0.56	7.66 0.71	9.31 0.86	10.95 1.02	12.59 1.17	14.23 1.32	15.87 1.47	17.52 1.63	19.16 1.78	20.80 1.93	22.44 2.08	24.09 2.24	25.73 2.39

2. Reference the Designed Minimum CFM for the system. For this example we will be using 2,500 CFM.
3. Calculate the Free Area Velocity using the formula below. This value is needed to look up the Static Pressure Drop.

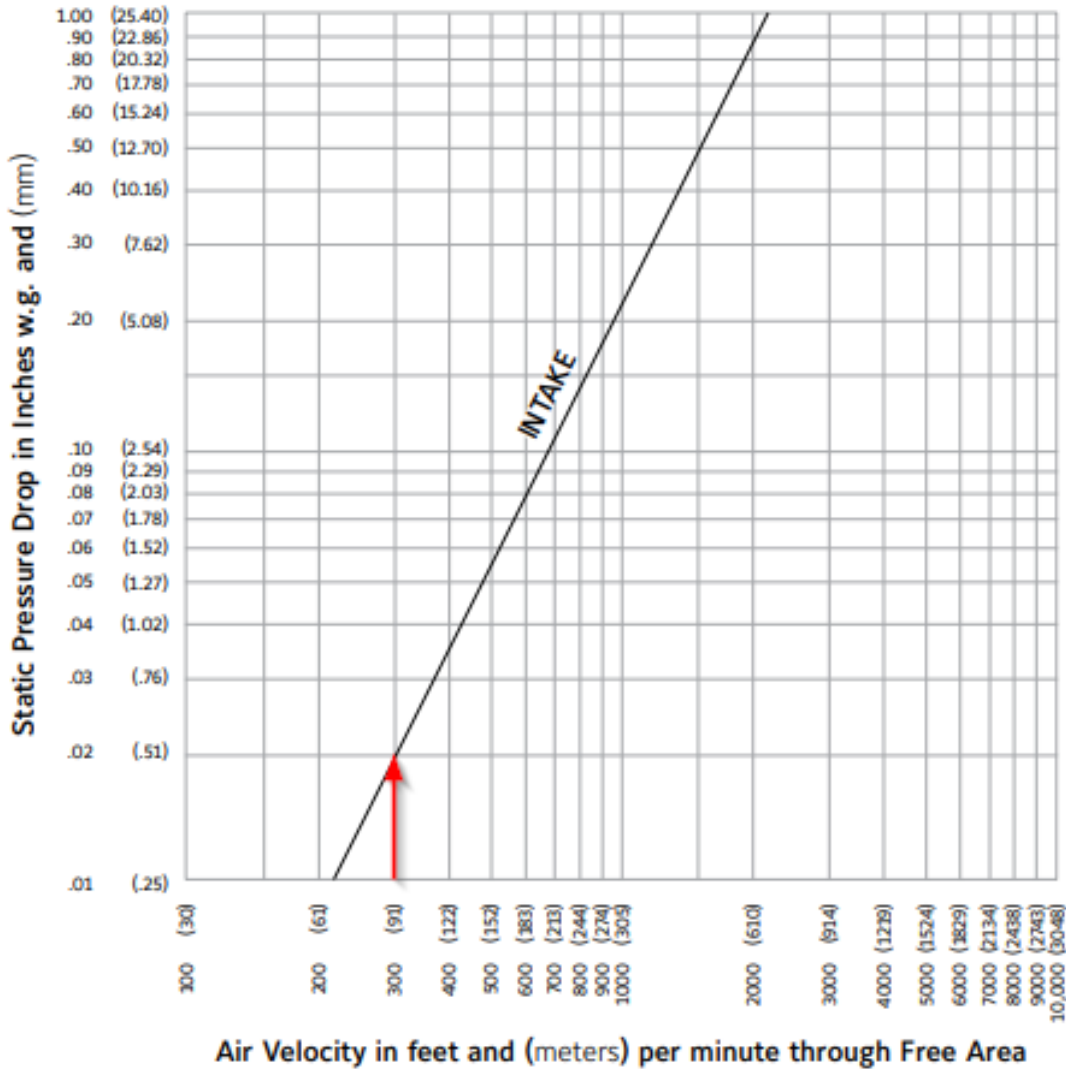
$$\frac{\text{Designed Minimum CFM}}{\text{Free Area}} = \text{Free Area Velocity}$$

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LOUVER MOUNT INSTRUCTIONS



- Use the Free Area Velocity calculated in step 3 to determine the Static Pressure Drop (DP) based on the louver manufacturer's DP chart. If DP > 0.003, the OAM is suitable for this application. In the example below, A Free Area Velocity of 293.42 ft/min has a DP of 0.02 which is greater than 0.003 so the OAM II is suitable for this application.



- Calculate the Face Velocity using the formula below:

$$\frac{\text{Designed Minimum CFM}}{\text{Face Area (Width x Height of louver)}}$$

This number must be greater than 100 ft/min for the OAM II to operate properly. In the example, the Face Velocity is determined to be 156.25 ft/min (2,500 ft²/min / 16 ft²) making the OAM II suitable.

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FIELD SET UP OF OAM II FOR LOUVER APPLICATIONS

While OAM II Stations do not need to be field characterized, if you are using an OAM II without an Air Monitor station, we recommend field characterization to ensure proper calibration. 1, 2, or 3 point characterization are the standard options for field calibrations.

Using a handheld device, get the Reference flow to compare it to the OAM II readings. Whether you opt for 1, 2, or 3 point characterization, you will enter these readings on the Characterization Calculator screen shown below and hit Enter. This will calibrate the OAM II.

Characterization Calculator

3 ▼

Data Points must be Act. Velocity Only!

	Reference	OAMII 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

If you desire more than a 3-point calibration, you must determine the Exponent and Gain by creating a power curve in excel when graphing DP versus SPFM. Please note you will need to gather the DP at each flow reading, you cannot use the OAM II readings versus reference velocities. When Exponent and Gain have been determined, they can be entered on the Manual Characterization screen of the OAM II shown below.

Manual Characterization

Exponent	0.500
Gain	1837.0

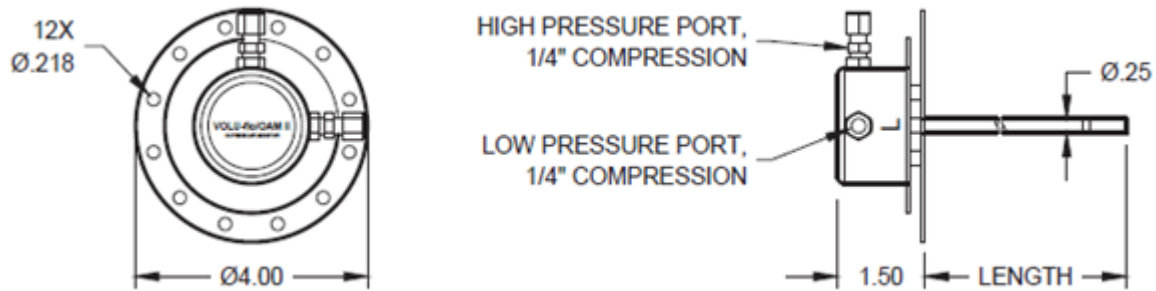
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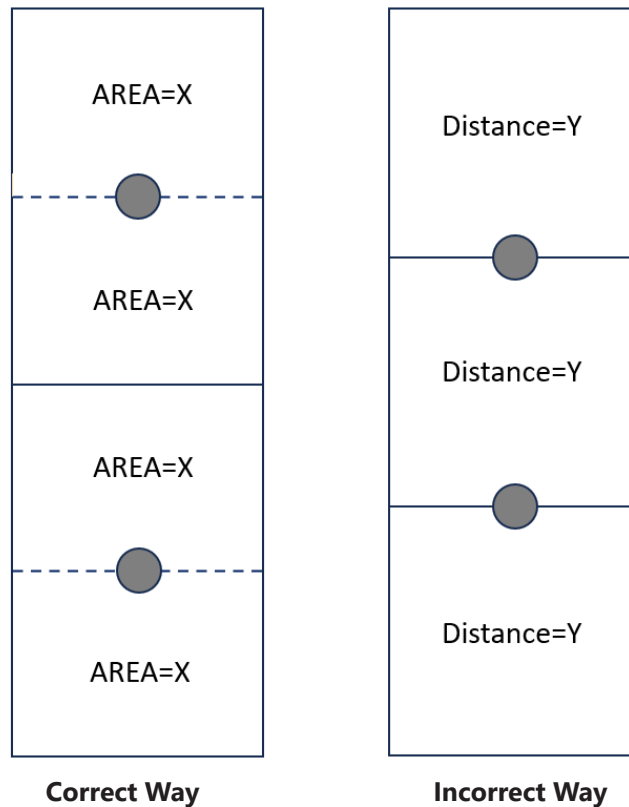
LOUVER MOUNT INSTRUCTIONS

UNI-SENSOR INSTALLATION GUIDELINES

When mounting the Uni-Sensor onto a louver, ensure the High Pressure port orientation is at the 12 o'clock position and the Low Pressure port at the 3 o'clock position.



When installing multiple sensors, space them by equal area apart (not equal distance) to ensure equal area coverage per sensor.



If you have any questions or concerns about this procedure, please contact technical support at (727) 447-6140 or via email at hvacsales@airmonitor.com.

