

## AMS050 AIR MEASURING STATION WITH INTEGRAL DAMPER

### APPLICATION

The AMCA certified AMS050 combines an air measuring station with an ultra low-leak, high performance control damper. The complete assembly is tested to provide effective setpoint monitoring and adjustment. The unit is class 1A leakage and performance rated and includes a honeycomb airflow straightener, pressure sensing station and a high performance glass-on-silicone pressure transducer. The sensing blades are extruded aluminum with a clear anodize finish. The AMS050 can be used with any building automation system. Multiple control options are available.

### STANDARD CONSTRUCTION

#### SLEEVE

15" (381mm) long x 16 gauge (1.6) galv. G60 (for slip-fit duct connection).

#### AIR FLOW STRAIGHTENER

.50" (13mm) Honeycomb Cell x 3" (76mm) 3000 series aluminum alloy.

#### SENSOR BLADE

6063T6 extruded aluminum, clear anodize finish.

#### SENSOR PORT FITTINGS

Brass.

#### PRESSURE TRANSDUCER:

RU-274-R2-VDC, 0-5 or 0-10 VDC output (field selectable). Output signal is proportional to flow.

#### ACCURACY

3% Deviation Average Across Measurement Range.

#### POWER REQUIREMENTS

12-40 VDC or 12-35 VAC.

#### DAMPER BLADES

6" (152mm) wide, 6063T6 extruded aluminum, airfoil shape.

#### SEALS

Ruskiprene blade edge seals and stainless jamb seals.

#### BEARINGS

Molded synthetic.

#### LINKAGE

Plated steel, concealed in frame.

#### AXLES

.50" (13mm) plated steel hex.

#### MINIMUM SIZE

Single-6"w x 6"h (152mm x 152mm).

#### MAXIMUM SIZE

Single section - 60"w x 72"h (1524mm x 1829mm). Multiple section assembly - unlimited.

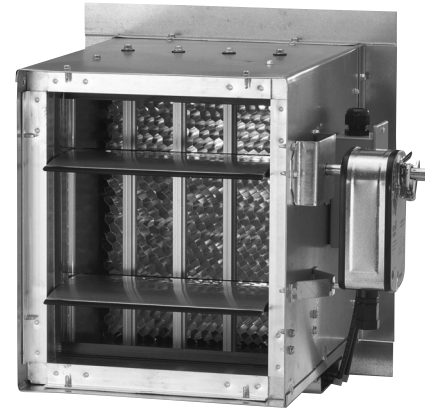
#### VELOCITY REQUIREMENTS

Product Range - 300 to 5000 FPM (1.5 to 25 m/s).  
 Operating Range - 300 to 2,000 FPM (1.5 to 10.2 m/s).  
 -Standard units with RU274-R2-VDC (1.5 to 25 m/s).  
 Operating Range - 300 to 5,000 FPM.  
 -Units with Ruskin's VAFB24-BAC RAMS Air Measurement BACnet actuator/controller and/or AMS810 or AMS810 (high pressure) transducer.

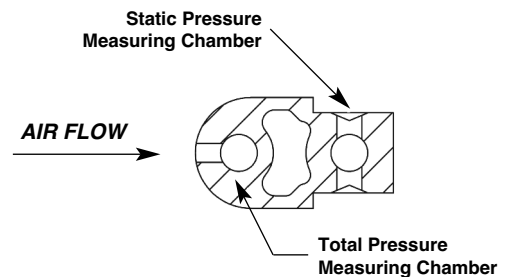
#### OPERATING TEMPERATURE

-22° F to +140° F standard (-30°C to 60°C).

Ruskin Company certifies that the AMS050 Air Monitoring Station shown herein is licensed to bear the AMCA Certified Rating Seal - Airflow Measuring Station Performance. The ratings shown are based on tests and procedures performed in accordance with AMCA publication 611 and comply with requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to airflow measurement performance only.



AMS050 shown with External Right Hand Construction (Standard)



### FEATURES

- Low-leak Class 1A Damper
- Honeycomb airflow straightener
- Anodized aluminum sensing blades
- Factory piped low pressure transducer with 0-10 VDC output

Ruskin AMS050 helps satisfy the requirements for minimum outside air as required by the following.

- ASHRAE 62.1, 90.1 and 189.1.
- California Title 24
- International Mechanical Code (IMC)
- International Energy Conservation Code (IECC)

### VARIATIONS

The AMS050 is available with several options to fit your specific application.

- Stainless steel axle bearings
- Stainless steel linkage (includes axles, tie bars & control arms)
- Special material, flanged or extended sleeve
- AMS810 pressure transducer with LCD display
- Ruskin's VAFB24-BAC RAMS Air Measurement BACnet actuator/controller

Package includes factory calibration of control module and air measuring station in a complete turnkey assembly (reference VAFB24-BAC RAMS data sheet)

#### Notes:

1. Values shown in ( ) indicate metric units.
2. Refer to installation manual for additional details
3. To order, send completed Order Process Sheet with purchase order.

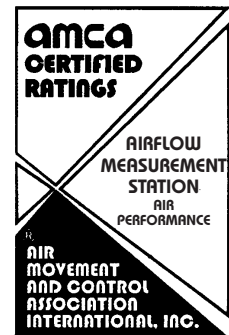
# AIR PERFORMANCE

| AMCA TEST FIGURE 1                                    |       |                  |        |                    |       |                  |        |                             | AMCA TEST FIGURE 2 |        |                  |        |                    |       |                  |        |                             |
|---|-------|------------------|--------|--------------------|-------|------------------|--------|-----------------------------|--------------------|--------|------------------|--------|--------------------|-------|------------------|--------|-----------------------------|
| PAMS  |       | Reference Volume |        | Reference Velocity |       | Indicated Volume |        | % Deviation Average = 2.09% | PAMS               |        | Reference Volume |        | Reference Velocity |       | Indicated Volume |        | % Deviation Average = 2.09% |
| In. W.G.  | Kpa   | CFM              | l/s    | FPM                | m/s   | CFM              | l/s    | 2.09%                       | In. W.G.           | Kpa    | CFM              | l/s    | FPM                | m/s   | CFM              | l/s    | -0.759%                     |
| <b>AIR PERFORMANCE SIZE 12" x 12" (305mm x 305mm)</b> |       |                  |        |                    |       |                  |        |                             |                    |        |                  |        |                    |       |                  |        |                             |
| 4.190   | 1.004 | 5,070            | 2,393  | 5,070              | 25.76 | 5,199            | 2,454  | 2.55%                       | 4.040              | 1.006  | 5,008            | 2,364  | 5,008              | 25.44 | 5,104            | 2,049  | 1.93%                       |
| 2.010   | 0.501 | 3,563            | 1,682  | 3,563              | 18.10 | 3,585            | 1692   | 0.62%                       | 2.260              | 0.563  | 3,791            | 1,789  | 3,791              | 19.26 | 3,804            | 1,795  | 0.35%                       |
| 0.650   | 0.162 | 2,074            | 979    | 2,074              | 10.54 | 2,025            | 956    | -2.37%                      | 0.670              | 0.167  | 2,163            | 1,021  | 2,163              | 10.99 | 2,056            | 970    | -4.94%                      |
| 0.150   | 0.037 | 995              | 470    | 995                | 5.05  | 964              | 455    | -3.12%                      | 0.190              | 0.047  | 1,085            | 512    | 1,085              | 5.51  | 1,087            | 513    | 0.14%                       |
| 0.045   | 0.011 | 498              | 235    | 498                | 2.53  | 524              | 247    | 5.25%                       | 0.040              | 0.010  | 548              | 25     | 548                | 2.78  | 494              | 233    | -9.89%                      |
| 0.005   | 0.001 | 143              | 67     | 143                | 0.73  | 172              | 81     | 20.55%                      | 0.005              | 0.001  | 143              | 67     | 143                | 0.73  | 172              | 81     | 20.6%                       |
| <b>AIR PERFORMANCE SIZE 24" x 24" (610mm x 610mm)</b> |       |                  |        |                    |       |                  |        |                             |                    |        |                  |        |                    |       |                  |        |                             |
| 4.070   | 1.014 | 20,030           | 9,453  | 5,008              | 25.44 | 20,669           | 9,755  | 3.19%                       | 3.75               | 0.934  | 20,174           | 9,521  | 5,044              | 25.62 | 19,924           | 9,403  | -1.24%                      |
| 1.905   | 0.475 | 13,888           | 6,554  | 3,472              | 17.64 | 13,902           | 9,894  | 0.10%                       | 1.77               | 0.441  | 14,094           | 6,652  | 3,524              | 17.90 | 13,659           | 6,446  | -3.09%                      |
| 0.610   | 0.152 | 7,925            | 3,740  | 1,981              | 10.06 | 7,669            | 3,619  | -3.23%                      | 0.54               | 0.135  | 8,056            | 3,802  | 2,014              | 10.23 | 7,518            | 3,518  | -6.67%                      |
| 0.170   | 0.042 | 4,017            | 1,896  | 1,004              | 5.10  | 3,934            | 1,857  | -2.06%                      | 0.14               | 0.035  | 4,006            | 1,891  | 1,002              | 5.09  | 3,813            | 1,800  | -4.81%                      |
| 0.100   | 0.025 | 3,004            | 1,418  | 751                | 3.82  | 2,982            | 1,407  | -0.74%                      | 0.13               | 0.032  | 3,983            | 1,880  | 996                | 5.06  | 3,674            | 1,734  | -7.77%                      |
| 0.018   | 0.004 | 1,183            | 558    | 296                | 1.50  | 1,217            | 574    | 2.90%                       | 0.04               | 0.0101 | 1,996            | 942    | 499                | 2.53  | 2,031            | 959    | 1.75%                       |
| <b>AIR PERFORMANCE SIZE 36" x 36" (914mm x 914mm)</b> |       |                  |        |                    |       |                  |        |                             |                    |        |                  |        |                    |       |                  |        |                             |
| 3.790   | 0.944 | 45,485           | 21,467 | 5,054              | 25.67 | 48,031           | 22,668 | 5.60%                       | 0.894              | 1.006  | 45,100           | 21,285 | 5,011              | 25.46 | 46,707           | 22,043 | 3.56%                       |
| 1.780   | 0.443 | 31,557           | 14,893 | 3,506              | 17.81 | 32,532           | 15,353 | 3.09%                       | 0.428              | 0.563  | 31,650           | 14,937 | 3,517              | 17.87 | 31,962           | 15,084 | 0.99%                       |
| 0.570   | 0.142 | 18,158           | 8,570  | 2,018              | 10.25 | 18,086           | 8,536  | -0.40%                      | 0.135              | 0.167  | 18,193           | 8,586  | 2,021              | 10.27 | 17,589           | 8,301  | -3.32%                      |
| 0.150   | 0.037 | 9,052            | 4,272  | 1,006              | 5.11  | 9,087            | 4,289  | 0.39%                       | 0.032              | 0.047  | 8,774            | 4,141  | 975                | 4.95  | 8,441            | 3,984  | -3.79%                      |
| 0.140   | 0.05  | 8,757            | 4,133  | 973                | 4.94  | 8,770            | 4,139  | 0.15%                       | 0.010              | 0.010  | 4,491            | 2,120  | 499                | 2.53  | 4,597            | 2,170  | 2.37%                       |
| 0.015   | 0.004 | 2760             | 1,303  | 307                | 1.56  | 2,773            | 1309   | 0.46%                       | 0.004              | 0.001  | 2,763            | 1,304  | 307                | 1.56  | 2,773            | 1,309  | 0.35%                       |

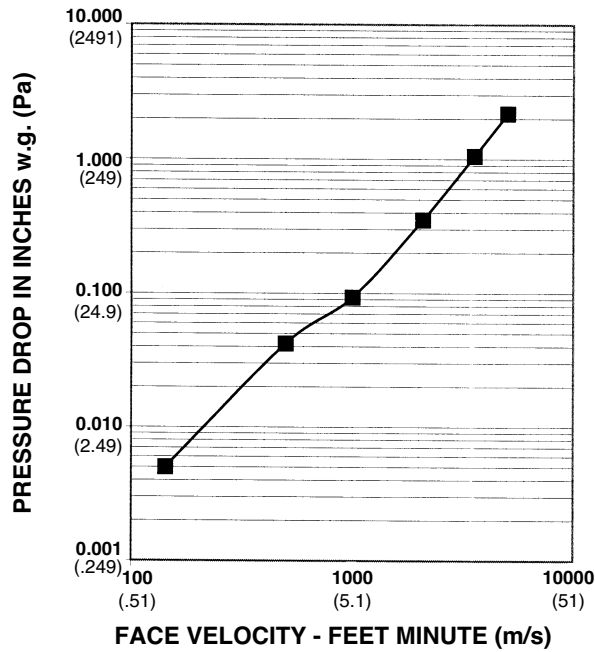
| Pressure Drop  |       | VolumeCFM |        | Velocity |       |
|--|-------|-----------|--------|----------|-------|
| in WG  | Pa    | CFM       | l/s    | FPM      | m/s   |
| <b>AIR FLOW RESISTANCE 12" x 12" (305mm x 305mm)</b> |       |           |        |          |       |
| 2.174  | 541.5 | 5,040     | 2,378  | 5,040    | 25.60 |
| 1.052  | 148.2 | 3,562     | 1,681  | 3,562    | 18.10 |
| 0.352  | 51.1  | 2,082     | 982    | 2,082    | 10.58 |
| 0.093  | 17.4  | 1,000     | 472    | 1,000    | 5.08  |
| 0.042  | 10.0  | 500       | 236    | 500      | 2.54  |
| 0.005  | 2.5   | 144       | 68     | 144      | 0.73  |
| <b>AIR FLOW RESISTANCE 24" x 24" (610mm x 610mm)</b> |       |           |        |          |       |
| 1.235  | 307.6 | 20,762    | 9,799  | 5,191    | 26.37 |
| 0.595  | 148.2 | 14,173    | 6,689  | 3,543    | 18.00 |
| 0.205  | 51.1  | 7,994     | 3,773  | 1,999    | 10.15 |
| 0.070  | 17.4  | 4,204     | 1,984  | 1,051    | 5.34  |
| 0.040  | 10.0  | 3,220     | 1,520  | 805      | 4.09  |
| 0.010  | 2.5   | 1,359     | 641    | 339      | 1.73  |
| <b>AIR FLOW RESISTANCE 36" x 36" (914mm x 914mm)</b> |       |           |        |          |       |
| 0.643  | 160.2 | 45,176    | 21,320 | 5,020    | 25.50 |
| 0.307  | 76.5  | 31,469    | 14,851 | 3,497    | 17.76 |
| 0.113  | 28.   | 18,153    | 8,567  | 2,017    | 10.25 |
| 0.036  | 9.0   | 9,051     | 4,272  | 1,006    | 5.11  |
| 0.031  | 7.7   | 8,763     | 4,136  | 974      | 4.95  |
| 0.010  | 2.5   | 4,486     | 2,117  | 498      | 2.53  |
| 0.005  | 1.2   | 2,760.    | 1,303  | 307      | 1.56  |
| 0.000  | 0.0   | 1,372     | 647    | 152      | 0.77  |

| $CFM = (K) \times (PAMS^M)$  |                   |         |
|------------------------------|-------------------|---------|
| SIZE                         | K                 | M       |
| 12" x 12"<br>(304mm x 305mm) | 2518<br>(784.05)  | 0.5061  |
| 24" x 24"<br>(610mm x 610mm) | 9928<br>(2825.5)  | 0.5224  |
| 36" x 36"<br>(914mm x 914mm) | 24166<br>(7142.2) | 0.51555 |

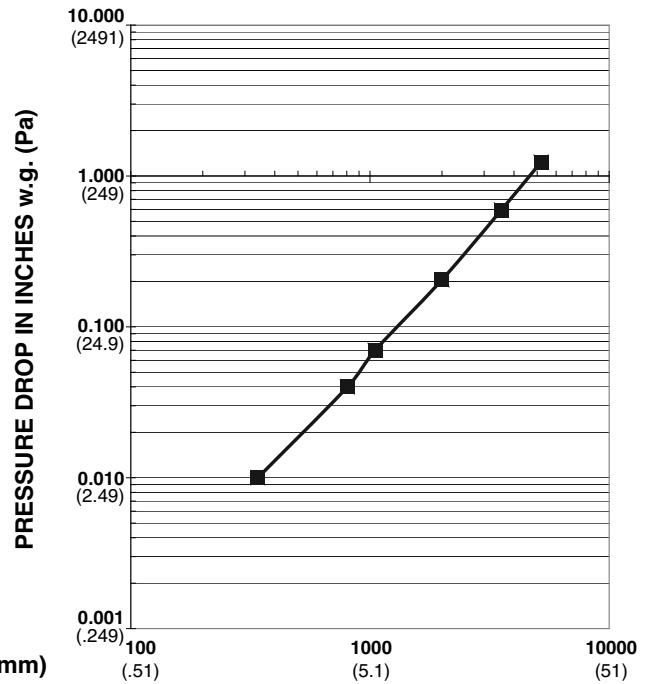
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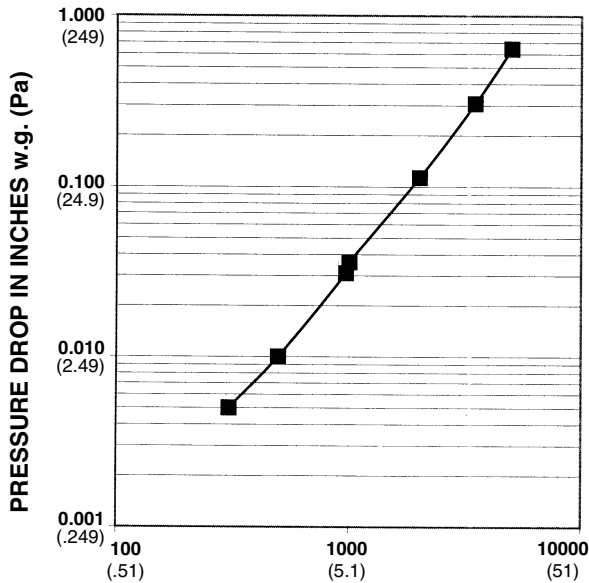
# AIR PERFORMANCE



FACE VELOCITY - FEET MINUTE (m/s)  
PRESSURE DROP of AMS050 SIZE 12" x 12" (305mm x 305mm)

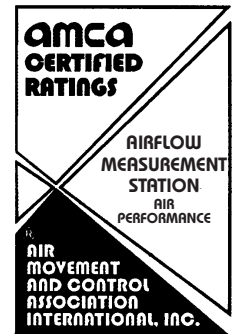


FACE VELOCITY - FEET MINUTE (m/s)  
PRESSURE DROP of AMS050  
SIZE 24" x 24" (610mm x 610mm)



FACE VELOCITY - FEET MINUTE (m/s)  
PRESSURE DROP of AMS050 SIZE 36" x 36" (914mm x 914mm)

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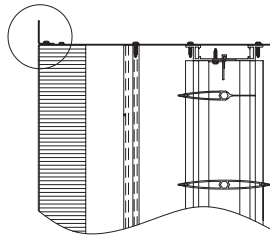


## NOTES

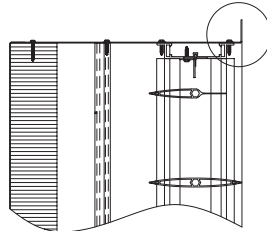
1. Ratings are based on AMCA Standard 610-93 Test Setup figure 1 using differential pressure output.
2. Performance of the AMS050 will be  $\pm 3\%$  of curve shown for AMCA 610-93 Test Fig. 1 applications.

3. Size and shape tested include 12" x 12", 24" x 24" (305mm x 305mm, 610mm x 610mm) and 36" x 36" (914mm x 914mm) rectangular. Rated sizes from .5 square feet to 18 square feet (1.67m<sup>2</sup>).
4. Indicated volumes = (K) (PAMS<sup>m</sup>)

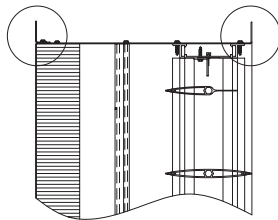
## MOUNTING FLANGE OPTIONS



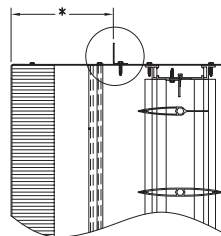
FRONT FLANGE



REAR FLANGE

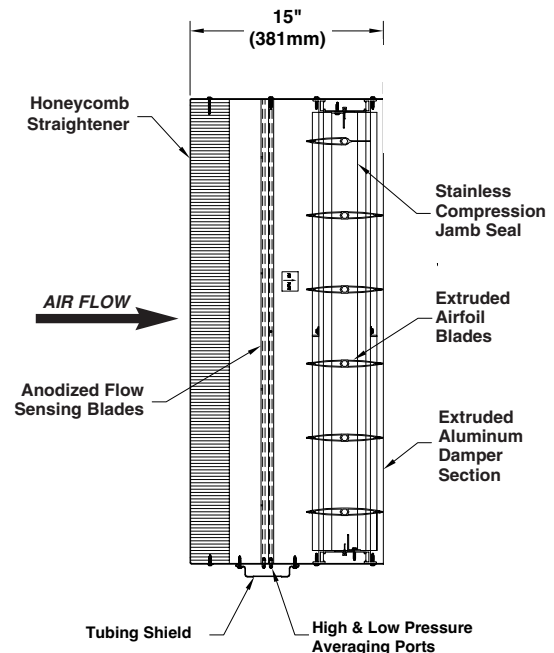
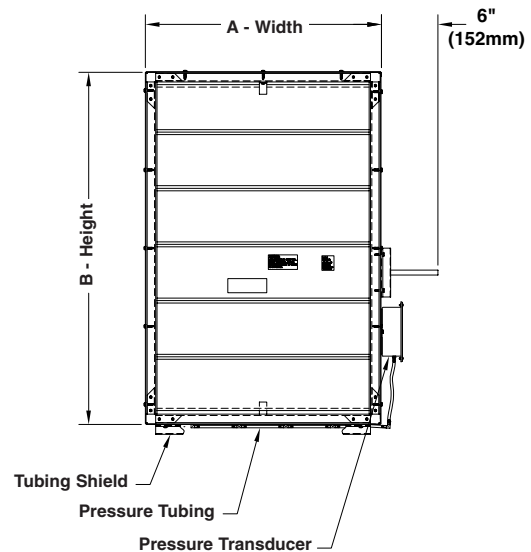


DOUBLE (FRONT & REAR) FLANGE



OFFSET FLANGE

\*Specify Dimensions



## SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans or as in accordance with schedules, an air measuring station with integral pressure transducer and class 1a leakage extruded aluminum control damper. The complete air measuring package shall be factory assembled into one turnkey product and calibrated for the specific job requirements. Unit shall have a measuring range from 300 to 2,000 FPM (1.5 to 10.2 m/s). The Air measuring station shall consist of .50" x 3" (13mm x 76mm) 3000 series aluminum alloy honeycomb, 6063T6 extruded aluminum sensing blades with anodized finish and a glass-on-silicone GL-Si capacitance sensor pressure transducer capable of measuring up to six field selectable pressure ranges up to 1" water column (249 Pa). The transducer shall be accurate to  $\pm 1\%$  of full scale and be contained in a NEMA 4 (IP-65) painted steel enclosure.

Transducer shall be factory mounted and piped to high and low brass pressure fittings from the sensor averaging ports. All sensor tubing shall terminate in solid brass barbed fittings. Tubing and

associated fittings to be contained in a formed steel protective tubing shield to protect pressure station during transit. The damper section shall consist of 6063T6 extruded aluminum frame and blades. Blade edge seals shall be extruded TPR double edge design with inflatable pocket to enable air pressure to assist in seal-off and shall be mechanically locked in extruded blade slots. Adhesive or clip-on type seals are not acceptable. Axle bearings shall be non-corrosive molded synthetic and shall be molded to fit the hexagonal damper shaft to reduce leakage. Linkage shall be concealed in a linkage chase with dust cover to prevent collection of airborne particles to accumulate on the mechanical parts. Complete assembly shall be constructed, piped and commissioned in an ISO 9001 certified facility. Air Measuring Stations accuracy shall be 3% deviation average across the entire range. The damper and measuring station assembly shall be tested as a complete assembly and shall be licensed to bear the AMCA Certified Ratings Seal for Airflow Measurement Stations. Turnkey assembly shall be, in all respects, equivalent to Ruskin Model AMS050.



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