

## IAQ350XL WIND DRIVEN RAIN LOUVER WITH INTEGRAL AIR MEASURING STATION AND LOW LEAKAGE DAMPER

### APPLICATION

Ruskin model IAQ350XL was specifically designed to save space in tight mechanical rooms and air handling units. The model combines a class A wind-driven rain louver with integrated flow measurement station and a class 1A rated damper in a common sleeve that is only 12 inches in the direction of airflow. When compared to typical air measurement installation requirements, this compact design reduces the space requirement by as much as 93 inches. The integral damper satisfies the leakage requirements of the International Mechanical Code (IMC) and International Energy Conservation Code (IECC), while providing accurate flow measurement to within  $\pm 3\%$  accuracy.

### STANDARD CONSTRUCTION

#### SLEEVE

12" (305) long X .125" (3.2) aluminum (for slip-fit connection).

#### LOUVER FRAME

3" (76) deep, 6063T6 high yield extruded aluminum with .062" (1.6) nominal wall thickness.

#### LOUVER BLADES

6063T6 extruded aluminum with .040" (1) nominal wall thickness. Blades are mounted vertically and spaced approximately  $\frac{3}{4}$ " (19) center to center.

#### LOUVER FINISH

Mill.

#### SENSOR BLADE

6063T6 high yield extruded aluminum, clear anodize finish.

#### SENSOR PORT FITTINGS

Brass.

#### PRESSURE TRANSDUCER

DPT-IQ 0-5, 0-10 VDC or 4-20mA output (field selectable) with 2 line LCD display for flow and pressure.

#### ACCURACY

$\pm 3\%$  Deviation Average Across Measurement Range.

#### POWER REQUIREMENTS

24 VAC or VDC  $\pm 10\%$

#### DAMPER CONSTRUCTION

Refer to Model CD50.

#### OPERATING TEMPERATURE

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

#### MINIMUM SIZE

12"w x 20"h x 12"d (305 x 508 x 305).

#### MAXIMUM SIZE

Multiple section assembly - unlimited. Maximum single section not to exceed 48"w x 72"h (1219 x 1829). Louvers larger than 48"w x 72"h (1219 x 1829) will require field assembly of smaller sections.

#### VELOCITY REQUIREMENTS

Minimum 275 FPM (1.4 m/s) Free Area Velocity.  
Maximum 2,024 FPM Free Area Velocity.

#### NOTES:

1. All variations are available at additional cost.
2. Consult Ruskin for other special requirements and additional information.
3. Dimensions in parenthesis ( ) indicate millimeters.
4. \*The AMCA certified ratings seal applies to the individual models (but does not apply to the combination Model IAQ350XL.)



Shown with optional rear flange and optional RU274 R2VDC transducer.



### FEATURES

- Mill finish aluminum louver with all welded construction.
- Anodized aluminum sensing blades for low maintenance and high resistance to corrosion.
- Factory installed and piped low pressure transducer (DPT-IQ).
- Airfoil damper blade for low pressure drop and less noise generation.
- Damper blade edge seals lock into the blade for superior sealing
- AMCA Class 1A damper (CD50)\*
- AMCA Class A louver (AML3)\*
- AMCA Certified Wind Driven Rain louver (AML3)\*
- AMCA Certified Air Performance (CD50)\*
- AMCA Certified Leakage damper (CD50)\*

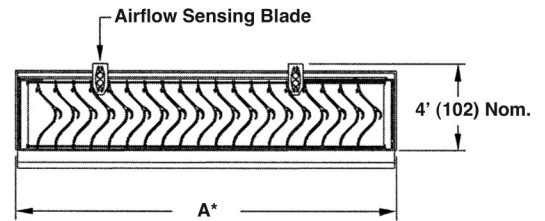
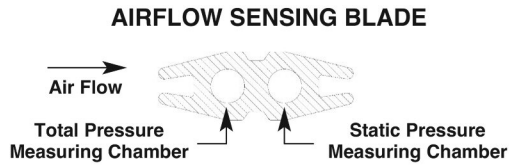
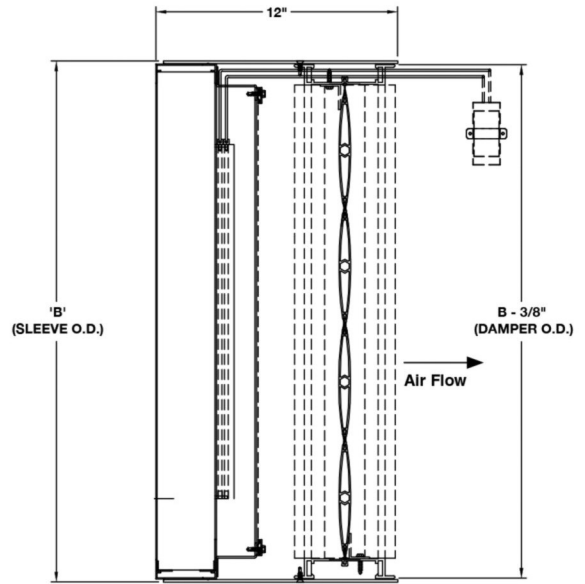
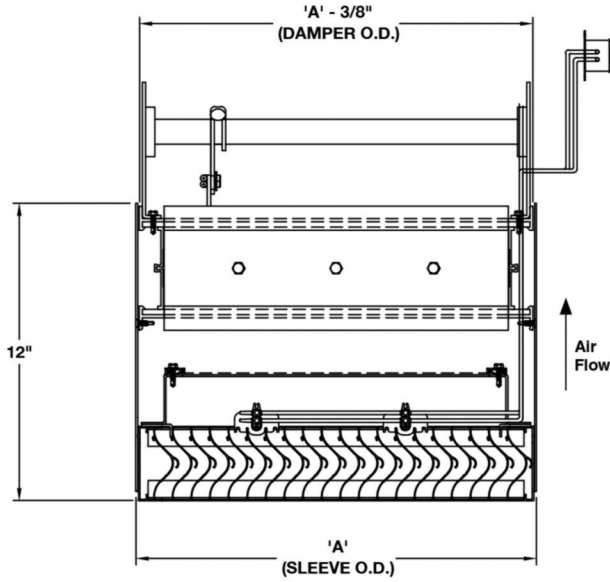
Ruskin IAQ350XL helps satisfy the requirements for minimum outside air as required by the following.

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

### VARIATIONS

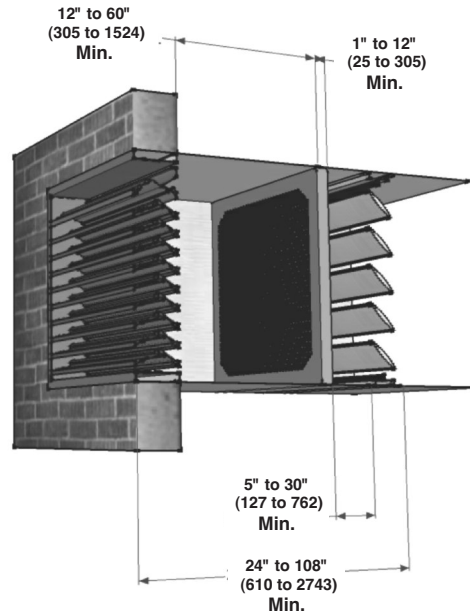
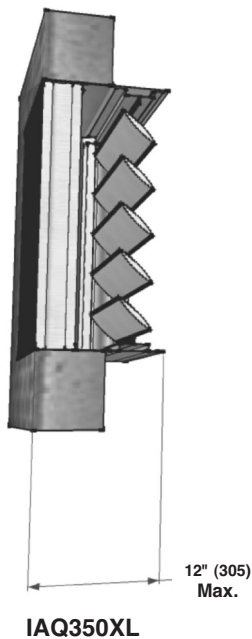
- AMS810 pressure transducer with LCD display or RU274 R2VDC transducer
- Factory mounted and commissioned damper actuators
- Standalone factory calibrated controller, including actuator, transducer and factory programmed controller in NEMA 1 enclosure.
- Selection of finishes: baked enamel (modified fluoropolymer), epoxy, Kynar, Pearledize 50 & 70, prime coat, clear and color anodize.
- Front, Rear or Offset Flanges

# DIMENSIONAL DETAILS



The space saving feature of the IAQ350XL becomes evident when referencing other manufacturer's recommended distances between individually installed louver, airflow measurement station and damper components. The IAQ350XL was developed and tested as a complete assembly on an AMCA registered wind tunnel to ensure

accurate and repeatable results. The compact design ships fully assembled and ready to install in a wall or air handling unit opening, reducing the risk of installation error. Installing one product, rather than three separate components dramatically reduces labor cost.



Typically required minimum dimensions of competing products.

## WIND-DRIVEN RAIN PERFORMANCE DATA

Test size: 39" x 39" (99 x 99) core area, 41" x 41" (1.04 x 1.04) nominal. Free area of test louver is 5.18 ft.<sup>2</sup> (.48m<sup>2</sup>).

WIND VELOCITY mph (kph)	RAIN FALL RATE in./hr. (mm/hr.)	CORE VELOCITY, <sub>1</sub> FPM (m/s)	AIRFLOW cfm (m <sup>3</sup> /min)	FREE AREA VELOCITY, <sub>2</sub> FPM (m/sec)	EFFECTIVENESS RATIO	CLASS <sub>3</sub>	DISCHARGE LOSS CLASS, <sub>4</sub> INTAKE
29 (46.4)	3 (76)	967 (5)	10,412 (294)	2,010 (10.0)	100%	A	1
50 (80.5)	8 (203)	974 (5)	10,484 (296)	2,024 (10.1)	100%	A	1

### NOTES:

- Core area is the open area of the louver face (face area less louver frames). Core Velocity is the airflow velocity through the Core Area of the louver. 5 m/s is the maximum core velocity utilized in this test.
- Free Area of test size is calculated per AMCA standard 500-L.
- Wind-Driven Rain Penetration Classes:

Class	Effectiveness
A	1 to .99
B	0.989 to 0.95
C	0.949 to 0.80
D	Below 0.8

- The AML3 (the louver portion of the IAQ350XL assembly) provides class A performance at all velocities up to and including 5 M/s core velocity.

- Discharge Loss Coefficient is calculated by dividing a louvers' actual airflow rate vs. a theoretical airflow for the opening. It provides an indication of the louvers' airflow characteristics.

Discharge Loss Classes:

Class	Discharge Loss Coefficient
1	0.4 and above
2	0.3 to .399
3	0.2 to 0.299
4	0.199 and below

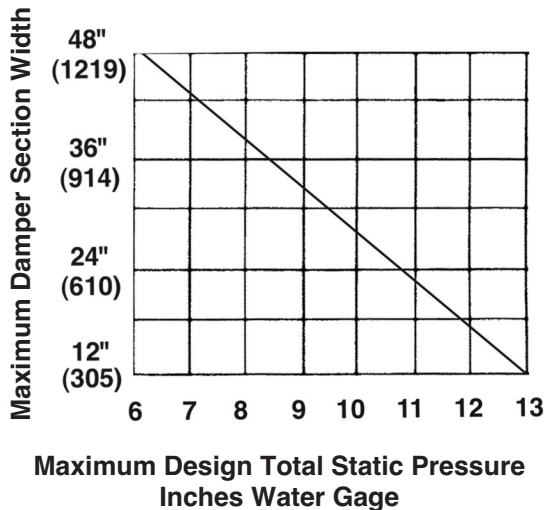
(The higher the coefficient, the less resistance to airflow.)

## DAMPER PERFORMANCE DATA

Pressure/ Class	Leakage, ft <sup>3</sup> /min/ft <sup>2</sup> (L/s/m <sup>2</sup> )			
	Required Rating		Extended Ranges (Opt.)	
	1" (0.25 kPa)	4" (1.0 kPa)	8" (2.0 kPa)	12" (3.0 kPa)
1A	3 (15.2)	N/A	N/A	N/A
1	4 (20.3)	8 (40.6)	11 (55.9)	14 (71.1)
2	10 (50.8)	20 (102)	28 (142)	35 (178)
3	40 (203)	80 (406)	112 (569)	140 (711)

Leakage testing conducted in accordance with AMCA Standard 500-D-98. Torque applied holding damper closed, 5 in. lbs./sq. ft. on opposed blade dampers and 7 in. lbs./sq. ft. on parallel blade dampers. Air leakage is based on operation between 50°F to 104°F. All data corrected to represent standard air density 0.075 lbs/ft<sup>3</sup>.

### CD50 PRESSURE LIMITATIONS

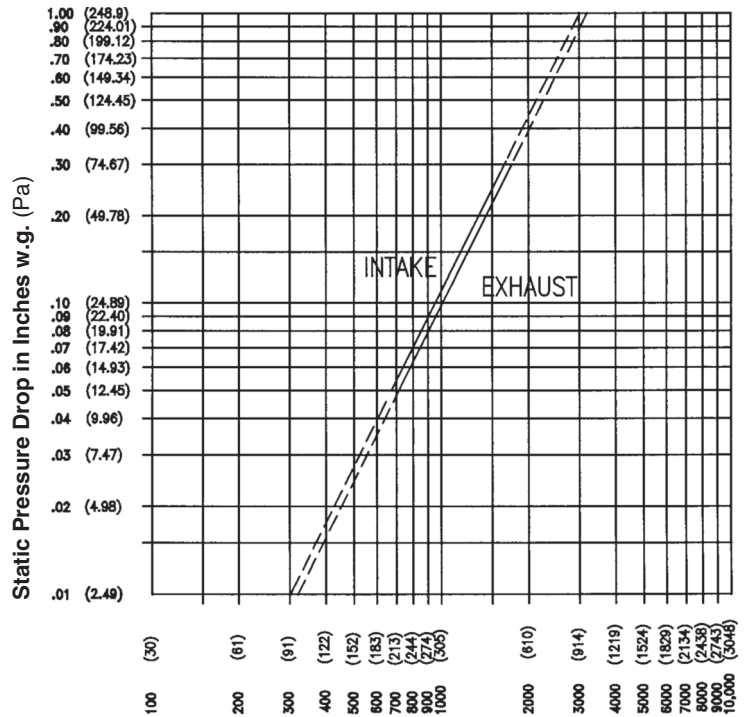


The CD50 may be used in systems with total pressures exceeding 6.0" by reducing damper section width as indicated. Example: Maximum design total pressure of 8.5" w.g. would require CD50 damper with maximum section width of 36" (914). Deflections in damper widths (less than 48" [1219]) at higher pressures shown will result in blade deflection substantially less than 1/180 of span.

Free Area Guide shows free area in ft<sup>2</sup> and m<sup>2</sup>  
for various sizes of ΔMI 3

Free Area Guide shows free area in ft<sup>2</sup> and m<sup>2</sup>  
for various sizes of AML3 and IAQ350XL.

Height – Inches and Me	12	18	24	30	36	42	48
	18	0.30	0.46	0.61	0.76	0.91	1.07
0.46	0.43	0.71	1.00	1.28	1.57	1.85	2.14
30	0.04	0.07	0.09	0.12	0.15	0.17	0.20
0.76	0.84	1.40	1.96	2.52	3.08	3.64	4.20
36	0.08	0.13	0.18	0.23	0.29	0.34	0.39
0.91	1.05	1.74	2.44	3.14	3.84	4.53	5.23
42	0.10	0.16	0.23	0.29	0.36	0.42	0.49
1.07	1.25	2.09	2.92	3.76	4.59	5.43	6.26
48	0.12	0.19	0.27	0.35	0.43	0.50	0.58
1.22	1.46	2.43	3.40	4.38	5.35	6.32	7.29
54	0.14	0.23	0.32	0.41	0.50	0.59	0.68
1.37	1.66	2.77	3.88	4.99	6.10	7.21	8.32
60	0.15	0.26	0.36	0.46	0.57	0.67	0.77
1.52	1.87	3.12	4.37	5.61	6.86	8.11	9.35
66	0.17	0.29	0.41	0.52	0.64	0.75	0.87
1.68	2.08	3.46	4.85	6.23	7.62	9.00	10.39
72	0.19	0.32	0.45	0.58	0.71	0.84	0.97
1.83	2.28	3.81	5.33	6.85	8.37	9.89	11.42
	0.21	0.35	0.50	0.64	0.78	0.92	1.06



Air Velocity in feet (meters) per minute through Free Area

Pressure Drop testing performed on 48" x 48" (1219 x 1219) unit.  
Ratings do not include the effect of a bird screen.

## SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans, or as in accordance with schedules a wind driven rain louver integral with an outside air monitoring station and control damper. Louvers shall possess stationary vertical blades designed to prevent the penetration of wind driven rain. Louver shall be extruded 6063T6 aluminum alloy construction as follows: Frame: .062" (1.6) wall thickness, caulking surfaces provided. Blades: .040" (1) wall thickness, installed vertically on approximately .75" (19) centers. Louver design shall limit single section sizes to 48" x 72" (1219 x 1829) and shall withstand a wind load of 20 lbs. per sq. ft. (.96 kPa) (equivalent of a 90 mph wind [145 kph]). The integral air monitoring station shall incorporate measuring ports built into the monitoring blades and shall control the minimum amount of outside air as recommended by ASHRAE Standard 62.1. 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.

The damper section shall consist of 6063T6 extruded aluminum frame and airfoil blades. Each blade shall contain a structural reinforcing tube, running the full length of the blade. 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. Jamb seals along control damper sides shall be flexible metal compression type. Damper linkage shall be concealed out of the airstream and located within the damper frame to reduce pressure drop and noise. Complete assembly shall be constructed, wired, piped and calibrated in an ISO 9001 certified facility. Air Measuring Station with Integral Louver and Damper shall be in all respects equivalent to Ruskin model IAQ350X.

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