ACCUTROL® LLC

IAQ-TEK®

Outdoor Air Volume Measuring System

MADE IN U.S.A.

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12.4.25

Summary

One of the most important components of indoor air quality is the volume of outdoor air being drawn into a building through the rooftop ventilation system.

Accurately measuring outdoor air intake is equally important in creating a well-managed, energy efficient HVAC system. However, due to low airflow velocities and high turbulence associated with outdoor air intakes, it is very challenging to obtain accurate and reliable readings with basic air flow measurement tools typically used within indoor supply and exhaust ductwork.

Accutrol's IAQ-TEK Outdoor Air Volume Measuring System utilizes a unique measurement probe designed specifically for hard-to-measure outdoor air to deliver readings you can trust so you can optimize your HVAC infrastructure.

Outdoor Air Measurement

Whether a custom air handler installed in a penthouse or a commercial rooftop unit, outdoor air typically passes through an intake louver, a modulating air damper, and then into a return air mixing plenum.

The short distance between these components causes highly turbulent airflow, making conventional pitot and thermal sensors unreliable and ineffective. Different air intake configurations including louvers, rain hoods, and inlet screens make it difficult to obtain accurate and reliable outdoor airflow measurement readings.

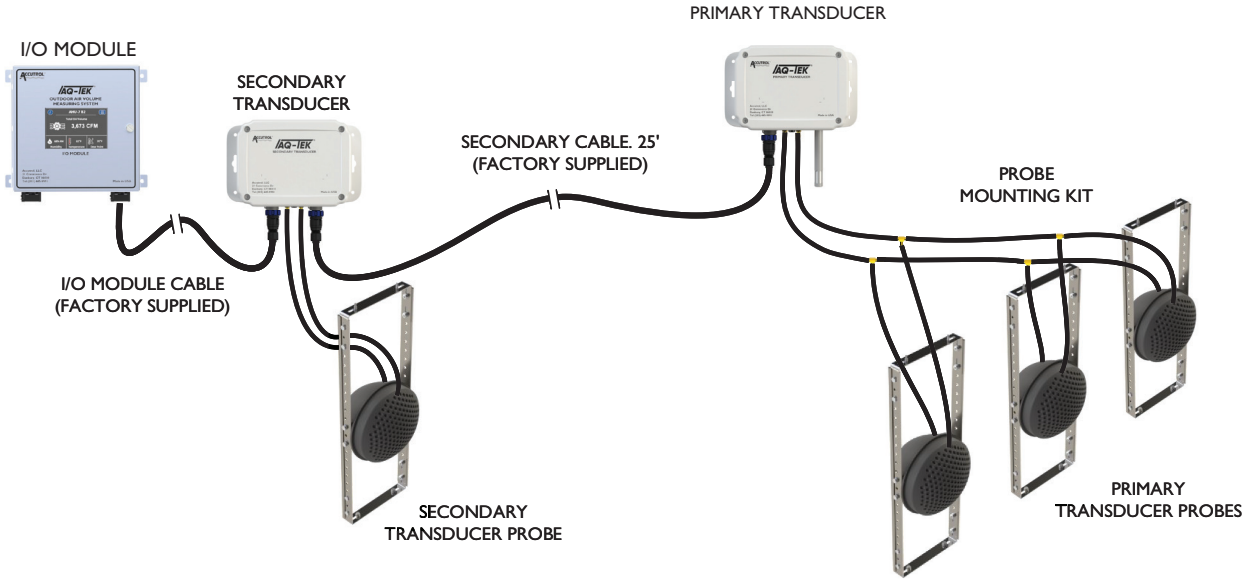
Outdoor Air Probe

Accutrol's outdoor air measurement probe addresses these challenges to deliver precise airflow data. Its unique design features front dimples and large internal chambers that create a stable velocity pressure for truer readings that are unaffected by turbulence or lazy air flow.

Probes are installed as a standalone or in multiples, and are positioned between the intake louvers and the outdoor air damper. The probe's unique design and strategic positioning enable the IAQ-TEK to deliver best-in-class airflow measurement readings.

IAQ-TEK Transducer

The velocity pressure developed by the probe(s) is connected to a high accuracy HPIS® differential pressure transducer assembly. The assembly includes a NEMA-4 enclosure which is suitable for mounting outdoors or in the intake plenum. The transducer assembly has no need for an auto-zero and includes a temperature stabilization circuit to ensure maintenance-free operation. The transducer assembly also includes a temperature/humidity probe which is used to compensate for changes in air inlet conditions and provide the outside air temperature to the building management system. Each system may have a primary transducer which is used to read the main plenums airflow, and a secondary transducer which is used to read the economizers airflow. These signals are summed together on the display and in Accutrol's Insight software.



IAQ-TEK I/O Module with Touchscreen Display

The IAQ-TEK I/O Module includes a 3.5" color touchscreen display that enables basic balancer configuration and diagnostics. The IAQ-TEK transducer(s) are wired to the central I/O Module which accepts the incoming pressure, temperature and humidity signals. This unit is configured to calculate the outside air volume based on the specific conditions of the installation such as altitude, area and probe flow coefficient. Two analog outputs and two relay outputs are included, each configurable with Accutrol's free Insight software.

Intuitive Insight™ Software

Users can easily configure the IAQ-TEK to their specific requirements with Accutrol's free Insight software. The Insight dashboard is installed on a PC and enables true owner independence. Users are not required to contact the manufacturer to make changes in the field or for maintenance.

BACnet® Option

The optional BACnet MS/TP allows direct communication to the building automation system (BAS) where desired.

Bluetooth® Configuration Option

The IAQ-TEK is available with a Bluetooth option which provides wireless connectivity between the IAQ-TEK and the computer hosting companion Insight software.

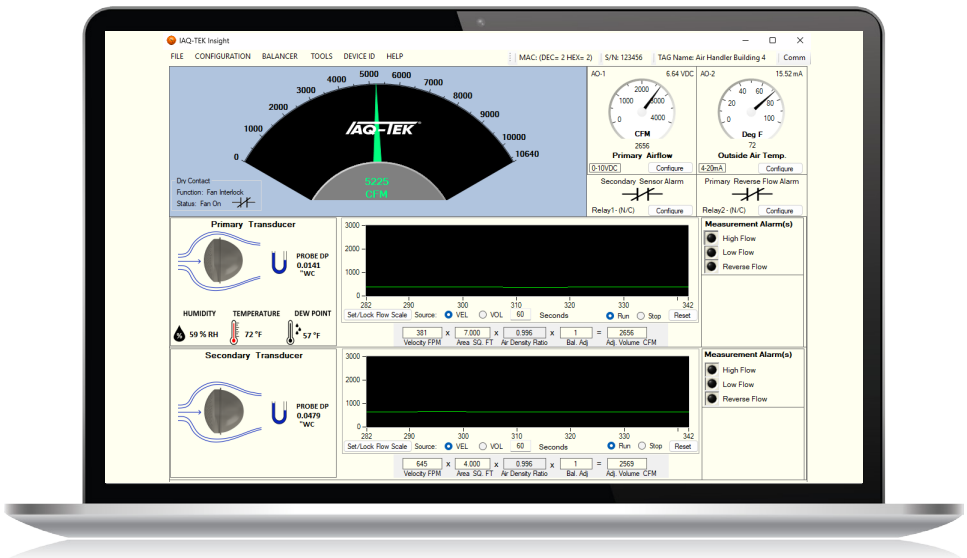
How Many Probes to Use

To determine the number of probes, use the chart below. Calculate the aspect ratio first by dividing the longer dimension of the width or height, by the shorter of the two. Then calculate the area in square feet by multiplying the width by height (inches), and dividing by 144 square inches to convert to square feet.

Proceed down the aspect ratio column and compare the area shown to the area calculated. When the calculated area falls between the lowest and highest area in the box, read the number of probes required in the left most column.

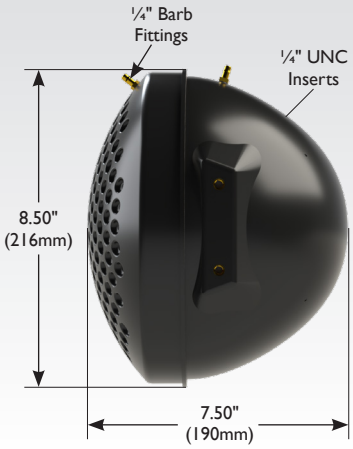
# of Probes	Aspect Ratio*		
	1 to 1.5	>1.5 to 2.5	>2.5 to 5
1	to 12 sq. ft.	to 9 sq. ft.	to 6 sq. ft.
2	>12 to 24 sq. ft.	>9 to 22 sq. ft.	>6 to 18 sq. ft.
3	✖	✖	>18 to 24 sq. ft.
4	>24 to 48 sq. ft.	>22 to 45 sq. ft.	>24 to 30 sq. ft.
5	✖	✖	>30 to 36 sq. ft.
6	>48 to 64 sq. ft.	>45 to 58 sq. ft.	>36 to 42 sq. ft.
7	✖	✖	>42 to 48 sq. ft.
8	>64 sq. ft.	>58 sq. ft.	>48 sq. ft.

***NOTE:** For areas >100 sq. ft. or for sizes not covered in the chart above, please consult the factory.

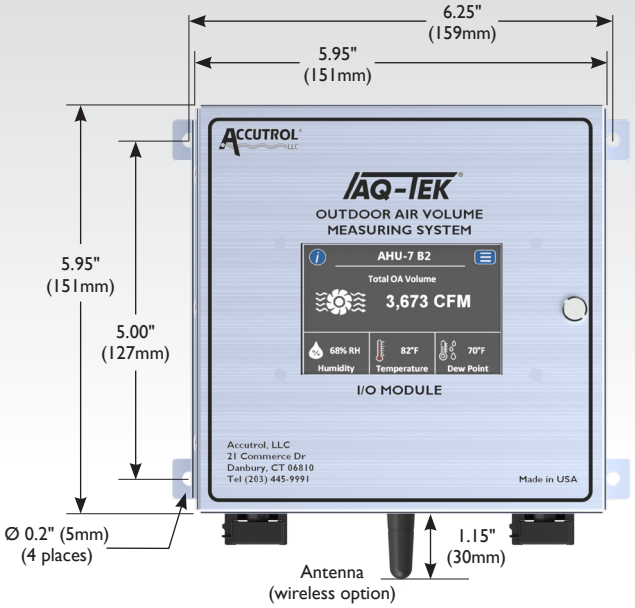


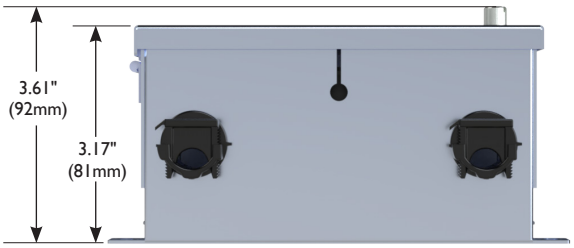
The IAQ-TEK Insight Software

Probe Dimensions and Mounting

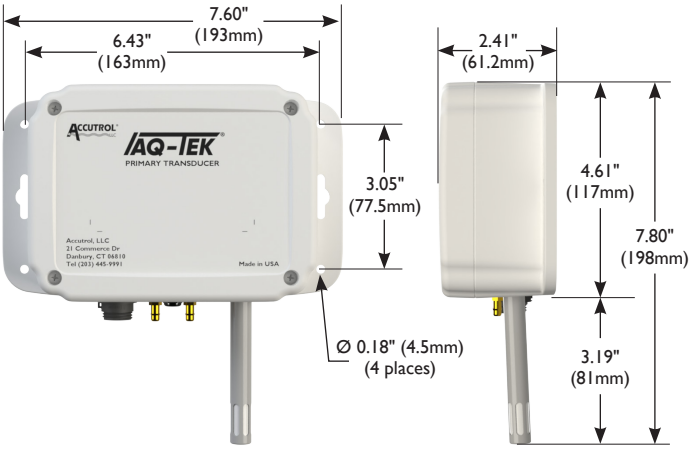


I/O Module Dimensions

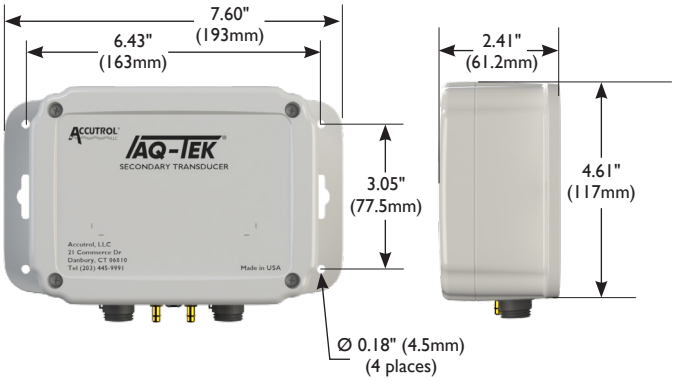




Primary Transducer Dimensions



Secondary Transducer Dimensions



Specifications

SYSTEM		
System Input Power	24VAC ±20%, 22VA, 50-60Hz (class 2 power source) or 24VDC ±20%, 10W	
Velocity Range (Standard Accutrol Probe)	0-973 fpm (0.1"wc FS)	0-1945 fpm (0.4"wc FS)
Accuracy	±3% of reading above 75 fpm	
Compliance	RoHS	
TRANSDUCER		
Pressure Measurement		
Full Scale Range	0.1"wc (25Pa)	0.4"wc (100Pa)
Resolution	0.00000335"wc (0.00083Pa)	0.00001338"wc (0.00333Pa)
Zero Offset (max)	±0.00001"wc (0.00025Pa)	
Span Accuracy	±1.5% of reading	
Static Error Band	±3% of reading (includes linearity, hysteresis, and repeatability)	
Long Term Stability	±0.00008"wc (±0.02Pa) per year max	
Temperature Measurement	Range: -35° to 158° F (-37° to 70° C) Accuracy: ±1.0° F (±0.56° C) Response Time: 10 seconds Long Term Stability: <0.054° F/year (<0.03° C/year)	
Relative Humidity Measurement	Range: 0% to 100% Accuracy: ±2% (10% to 90% RH non-condensing) Response Time: 10 seconds Long Term Stability: <0.25% RH/year	
Environmental	Operating Temp Range: -40° to 120° F (-40° to 49° C) Storage Temp Range: -40° to 150° F (-40° to 66° C) Humidity: 0% to 95% non-condensing	
Enclosure	IP65; NEMA 4X	
Cable Assembly	Plenum-rated communications cable assembly for harsh environments Operating Temp Range: -40° to 176° F (-40° to 80° C) IP68 connection to transducer	
Construction Materials	Enclosure: Polycarbonate plastic, silicone gasket, stainless steel hardware Temp/RH Probe: AISI 316SS with sintered polyethylene 100-micron filter Cable Assembly: PL-PVC plenum rated cable with polyamide UL94V-0 connector	

I/O MODULE (INTEGRAL DISPLAY)	
System Input Power	24VAC ±20%, 22VA, 50-60Hz (class 2 power source) or 24VDC ±20%, 10W
Configuration Port	USB 2.0, isolated, Type C connector, connect PC with Insight
Relay Outputs	2 independent SPST relay contacts (software configurable) Contact Rating: 2A @ 30VDC, 0.5A @ 60VDC, 0.3A @ 125VAC
Analog Outputs	2 analog outputs (software configurable) 0-5v, 1-5v, 0-10v, 2-10v, 0-20mA or 4-20mA Capable of driving 1 K-ohm load
Transducer Connection	5-position pluggable screw terminal (use factory cable only)
Touchscreen Display	Type: 3.5" LCD-TFT resistive touch display with LED backlight Color: RGB 65K colors Active Area: 2.91" x 1.91" (73.44mm x 48.96mm) Resolution: 480 x 320 pixel
BACnet® MS/TP (optional)	EIA 485 2-wire, BACnet MS/TP, galvanically isolated 1/8 unit load transceiver impedance Full master node state machine Data Rates: 9600, 19200, 38400, 76800 and 115200 MAC address is software configurable
BACnet IP (optional)	Future product release
Status Indicators	LED indicators for power, pressure sensor, display, BACnet, & Bluetooth®
I/O Terminal Blocks	Removable vertical plugs, wire size range 12-30 AWG
Bluetooth (optional)	Bluetooth Version 4.2 or later, connect to PC with IAQ-TEK Insight
Environmental	Operating Temp Range: -4° to 120° F (-20° to 49° C) Storage Temp Range: -22° to 176° F (-30° to 80° C) Humidity: 10% to 90% non-condensing
PROBE KIT	
Probe	Kydex® T Fire Rating: UL 94 V-0
Pneumatic Tubing	Polyethylene plastic, plenum rated, UL 94 V-2
Tubing Connections	¼" barb fittings, brass
Mounting Brackets	304 stainless steel
Hardware	18-8 stainless steel

IAQ-TEK Ordering Guide

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Primary Transducer Pressure Range*

1 = 0.1" WC (973 FPM)
2 = 0.4" WC (1945 FPM)

Primary Transducer Probe Type

0 = No Accutrol Probes
1 = Standard Accutrol Probe

Primary Transducer Probe Quantity**

0 = 0 Probes
1 = 1 Probe
2 = 2 Probes
3 = 3 Probes
4 = 4 Probes
5 = 5 Probes
6 = 6 Probes
7 = 7 Probes
8 = 8 Probes

Cable Length to I/O Module

1 = 25' Cable
2 = 50' Cable

Options

W = Wireless Bluetooth

Communications

0 = No Communication
1 = MS/TP BACnet

Secondary Transducer Probe Quantity**

0 = 0 Probes
1 = 1 Probe
2 = 2 Probes
3 = 3 Probes
4 = 4 Probes
5 = 5 Probes
6 = 6 Probes
7 = 7 Probes
8 = 8 Probes

Secondary Transducer Probe Type

0 = No Accutrol Probes
1 = Standard Accutrol Probe

Secondary Transducer Pressure Range*

0 = No Secondary Transducer
1 = 0.1" WC (973 FPM)
2 = 0.4" WC (1945 FPM)

* All velocities for transducer range shown at standard conditions for standard Accutrol probe.
** For additional probe kits, consult the factory.

Your representative is: