INDOOR AIR QUALITY DEVICE WITH TEMP. SENSOR

GLENSTORMS

Model : GL-IAQD-T

Introduction

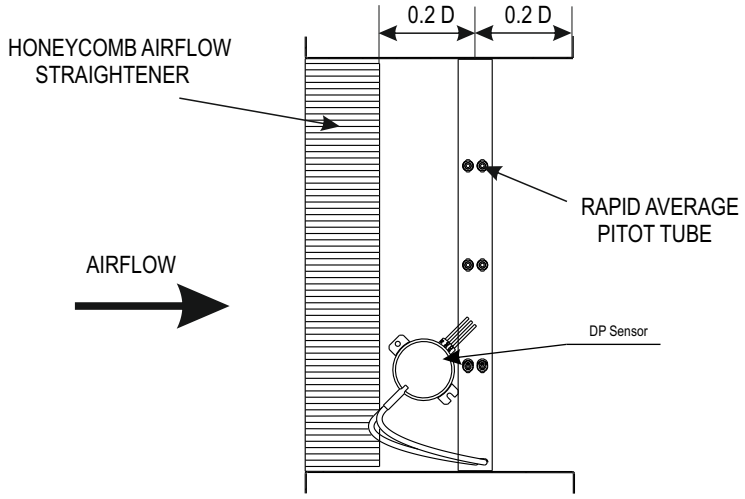
VAV

Temp. sensor

THE IAQD device has honeycomb pattern airflow straightner at the intake which enables the airflow to become laminar or atleast uniform. The purpose of honeycomb airflow straightner is to convert the minimum straight length requirement ie 2D (diagonal) to 0.2D. The pitot tubes are place at a minimum distance of 0.2D from honeycomb to increase performance. This is followed for aluminium extruded VCD for modulation of air.

Rating:

DPSensor	:	Signal - 0-10 VDC
Velocity	:	300 to 2000 fpm
Leakage	:	3 cfm/ft2 @ 1 in. wg.
Temperature	:	-20°F to 180°F
Accuracy	:	3% of F.S.



Options:

- Frame can be made in extruded aluminium.
- Controller will enable output in bacnet.
- AMS can be made in SS
- Available with C02 sensor or both.

Applications:

1. For zone temperature control the user selects a set point temperature, thermostat transmits actual room temperature. The delta temperature fed to controller runs algorithm to recalculate desired cfm & with help of modulating damper we are able to achieve desired room temperature.

2. To maintain adequate positive / negative pressure in zone / building the Cynor's IAEQ device can have flexible programming to suit design parameters. It can be used in master / slave combination or with DP sensor in return air to achieve desired set point.

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Temperature Sensor

This line of communicating sensors with backlit precise environmental zone control.

Appealing User Interface and Design

Slim, compact style, and clean lines are well received by architects and building owners. Furthermore, the clear and bright LCD display provides real-time access to temperature and other system information such as setpoint.

Product Specifications

Power Supply Input

Voltage	16 VDC maximum, Class 2
Power Consumption	At the connected controller.

Communications

Rate	38 400 bps
Communications	RS-485
Wiring	Cable length: 600 ft (180 m) maximum
Cable Type	T568B Cat 5e network cable, 4 twisted pairs

Connectors:

- ☐ IN — RJ-45
- ☐ OUT — RJ-45 (pass-through for daisy chain connection to other room devices)
- ☐ Network Access Jack — ⅛” (3.5 mm) stereo plug connector

For ECL & ECB series controllers only (excluding PTU Series controllers)

See the controller’s hardware installation guide

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Temperature Sensor

Type	10 kΩ NTC Thermistor
Range	41°F to 104°F (5°C to 40°C)
Accuracy	± 0.9°F (± 0.5°C)
Resolution	0.18°F (0.1°C)
Temperature Dependence	±0.11% FS per°F (0.2% FS per °C)
Stability	<2% of FS over life of sensor (15 years)
Pressure Dependence	0.135% of reading per mm Hg; software adjustable
Sensing Method	Non-dispersive infrared (NDIR) absorption
	Gold-plated optics

Controller:

Overview

The ECB-VAVS controllers are microprocessor-based programmable variable air volume (VAV) controllers designed to control cooling only and cooling with reheat single duct variable air volume boxes.

Each controller uses the BACnet® MS/TP LAN communication protocol and is BTL®-Listed as BACnet Application Specific Controllers (B-ASC).

Applications

- Cooling Only VAV Boxes
- Cooling with Reheat VAV Boxes
- Room Pressurization

Features and Benefits

Flexible Inputs and Outputs

This controller has various input types including resistance, voltage, and digital-based ones. Moreover, it provides digital, floating, pulse width modulation, and proportional control outputs for valves, heating elements, fans, and lighting applications. This controller covers all industry-standard HVAC unitary applications.

Integrated VPACC

Integrated VAV Performance Assessment Control Charts (VPACC) control sequences, provides a means of automatically detecting when the VAV is operating outside of its design parameters including: Persistent High/Low Space Temperature, Persistent High/Low Discharge Temperature, Persistent High/Low Air Flow, and Unstable Air Flow.

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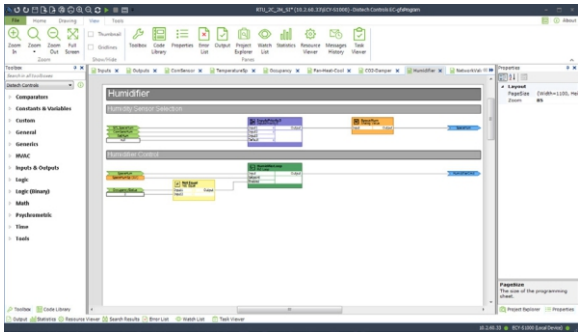
Preloaded Applications

Factory preloaded applications allow these controllers, straight out of the box, to operate standard VAV equipment with a proven energy-efficient sequence of operation thereby eliminating the need for programming.

The preloaded application can be selected using an Allure EC-Smart-Vue sensor even before the network has been installed for rapid deployment or through the EC-Net™ solution using Distech Controls' *dcgfx*Applications.

Programmability

Supports Distech Controls' EC-*gfx*Program, which makes Building Automation System (BAS) programming effortless, by allowing you to visually assemble building blocks to create a custom control sequence for any HVAC / building automation application.



Increased Energy Efficiency

Improves energy efficiency when combined with optional Allure sensors:

- £ Motion detectors to automatically adjust a zone's occupancy mode from standby to occupied when presence is detected.
- £ CO_2 sensors as part of a demand-controlled ventilation strategy that adjusts the amount of fresh air intake according to the number of building occupants.

On-Board Air Flow Sensor

This controller is equipped with an accurate on-board air flow sensor for precise air flow monitoring and control at low and high air flow rates, allowing the design for maximum energy efficiency while maintaining an optimal comfort level

The on-board air flow sensor has a range of ±2 inches of water column (±500 Pascal) and is polarity free.

Built-in Actuator

A built-in actuator with a brushless motor and integrated position feedback system eliminates periodic damper re-initialization and ensures worry-free operation, providing increased occupant comfort and extended service life.

The built-in actuator for precise damper positioning used for loads requiring up to 45 inch-pounds (5 Newton-meters) of torque.

Robust Hardware Design

This Controller features durable pitot terminal barbs which help prevent damage when connecting and disconnecting the pitot tubes. The anchor point and mounting bracket are metallic, making the mounting of the VAV very solid.

Optimized Air Balancing

Optimized air balancing process saves time during commissioning: the flow sensor requires no zero flow calibration, and its variable-speed motor goes to minimum and maximum flow position in half the time of typical VAV actuators.

Open-to-Wireless™ Solution

Open-to-Wireless™

The controllers are Open-to-Wireless™ ready, and when paired with the Wireless Receiver, work with a variety of wireless battery-less sensors and switches, to reduce the cost of installation and minimize the impact on existing partition walls. For supported frequencies in your area, refer to the Open-to-Wireless Solution Guide.

Available with an optional Wireless Receiver that supports up to 18 wireless inputs to create wire-free installations.

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Allure™ Series Communicating Sensor Support

These controllers work with a wide range of sensors, such as the Allure Series Communicating Sensors that are designed to provide intelligent sensing and control devices for increased user experience and energy efficiency.

- Allure EC-Smart-Vue sensors feature a backlit-display and graphical menus that provide precise environmental zone control, with any combination of the following: temperature, humidity, CO_2, and motion sensor.
- Allure EC-Smart-Comfort sensors feature colored LED indicators to provide user feedback, rotary knobs to adjust the setpoint offset and fan speed, and an occupancy override push button. This sensor can also be expanded with a combination of up to 4 add-on push button modules for lighting and shade/ sunblind control.
- Allure EC-Smart-Air sensors combine precise environmental sensing in a discreet and alluring enclosure for temperature, humidity, and CO_2.

Supported Platforms

EC-Net Solution

The EC-Net multi-protocol integration solution is web-enabled and powered by the Niagara Framework, establishing a fully Internet-enabled, distributed architecture for real-time access, automation and control of devices. The EC-Net open framework solution creates a common development and management environment for integration of LonWorks®, BACnet® and other protocols. Regardless of manufacturer and protocol, the EC-Net system provides a unified modeling of diverse systems and data, providing one common platform for development, management and enterprise applications.

Model Selection

Model	**ECB-VAVS**
Points	9-Point VAV
Universal Hardware Inputs	3
Built-in flow sensor (±500Pa, ±2.0” w.c.)	■
Wireless inputs[1]	18
Digital (triac) outputs	3
Universal Outputs	1
Integrated damper actuator (45 in-lb, 5 Nm)	■
Allure™ Series Communicating Sensors[2]	4

1. Available when an optional Wireless Receiver is connected to the controller. Some wireless sensors may use more than one wireless input from the controller.
2. A controller can support a maximum of two Allure Series Communicating Sensor models equipped with a CO_2 sensor. The remaining connected Allure Series Communicating Sensor models must be without a CO_2 sensor.

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Accessories

Terminal covers	Terminal cover designed to conceal the controller's wire terminals. Required to meet local safety regulations in certain jurisdictions.

BACnet Objects List

BACnet Objects List	
BACnet Calendar Objects	1
£ Special events per calendar	25
BACnet Schedule Objects	2
£ Special events per schedule	5
BACnet PID Loop Objects	8
BACnet BV Objects:	
£ Commandable	10
£ Non-Commandable	40
BACnet MSV Objects:	
£ Commandable	10
£ Non-Commandable	40
BACnet AV Objects:	
£ Commandable	25
£ Non-Commandable	75

Product Specifications

Power Supply Input

Voltage Range[1] — 24VAC/DC; ±15%; Class 2

Frequency Range — 50/60Hz

Overcurrent Protection — Field replaceable fuse

Fuse Type — 3.0A

Power Consumption — 4 VA typical plus all external loads[2], 75 VA max. (including powered triac outputs)

1. 24VDC does not support DO (triac outputs).
2. External loads must include the power consumption of any connected modules such as subnet devices, wireless module (1VA) and triac outputs. Refer to the respective module's datasheet for related power consumption information.

Communications

Communication Bus — BACnet MS/TP

BACnet Profile — B-ASC[1]

EOL Resistor — Built-in, selectable

Baud Rates — 9600, 19 200, 38 400, or 76 800 bps

Addressing — Dip switch or with an Allure EC-Smart-Vue Series Communicating Sensor

1. Refer to Distech Controls' Protocol Implementation Conformity Statement for BACnet.

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Hardware

Processor	STM32 (ARM Cortex™ M3) MCU, 32 bit
CPU Speed	68 MHz
Memory	384 kB Non-volatile Flash (applications) 1 MB Non-volatile Flash (storage) 64 kB RAM
Real Time Clock (RTC)	Built-in Real Time Clock without battery Network time synchronization is required at each power-up cycle before the RTC become available
Status Indicator	Green LEDs: power status & LAN Tx Orange LEDs: controller status & LAN Rx

Subnetwork[1]

Communication	RS-485
Cable	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Connection Topology	Daisy-chain Configuration
Maximum number of supported room devices per controller	4

1. A controller can support a maximum of two Allure Series Communicating Sensor models equipped with a CO_2 sensor. The remaining connected Allure Series Communicating Sensor models must be without a CO_2 sensor.

Wireless Receiver[1]

Communication Protocol	EnOcean wireless standard
Number of Wireless Inputs[2]	18
Supported Wireless Receivers	Refer to the Open-to-Wireless Solution Guide

Integrated Damper Actuator

Motor	Belimo brushless DC motor
Torque	45 in-lb, 5 Nm
Degrees of Rotation	95º adjustable
Shaft Diameter	5/16 to 3/4”; 8.5 to 18.2mm
Acoustic Noise Level	< 35 dB (A) @ 95º rotation in 95 seconds

Environmental

Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	-4 to 122°F (-20 to 50°C)
Relative Humidity	0 to 90% non-condensing
Ingress Protection Rating	IP20
Nema Rating	1

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Standards and Regulations

CE:

- ☐ Emission — EN61000-6-3: 2007; A1:2011; Generic standards for residential, commercial and light-industrial environments
- ☐ Immunity — EN61000-6-1: 2007; Generic standards for residential, commercial and light-industrial environments

FCC — This device complies with FCC rules part 15, subpart B, class B

UL Listed (CDN & US) — UL916 Energy management equipment

CEC Appliance Database — Appliance Efficiency Program[1]

1. California Energy Commission's Appliance Efficiency Program: The manufacturer has certified this product to the California Energy Commission in accordance with California law.

Specifications – On-Board Air-Flow Sensor

Differential Pressure Range — ±2.0 in. W.C. (±500 Pa)

Polarity-free high-low sensor connection

Input Resolution — 0.00007 in. W.C. (0.0167 Pa)

Air Flow Accuracy — ±4.0% @ > 0.05 in. W.C. (12.5 Pa)

±1.5% once calibrated through air flow balancing @ > 0.05 in. W.C. (12.5 Pa)

Pressure Sensor Accuracy — ±(0.2 Pa +3% of reading)

Specifications - Universal Inputs (UI)

General

Input Type — Universal; software configurable

Input Resolution — 12-bit analog / digital converter

Contact

Type — Dry contact

Counter

Type — Dry contact

Maximum Frequency — 1Hz maximum,

Minimum Duty Cycle — 500milliseconds On / 500milliseconds Off

0 to 10VDC

Range — 0 to 10VDC (40kΩ input impedance)

0 to 20mA

Range — 0 to 20mA

165Ω external resistor wired in parallel

Resistance/Thermistor

Range — 0 to 350 KΩ

Supported Thermistor Types — 10KΩ Type 2, 3 (10KΩ @ 77ºF; 25ºC)

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Specifications - Universal Outputs (UO)

General

Output Type	Universal; software configurable
Output Resolution	10-bit digital to analog Converter
Output Protection	Built-in snubbing diode to protect against back-EMF, for example when used with a 12VDC relay Output is internally protected against short circuits
Load Resistance	Minimum 600 Ω for 0-10VDC and 0-12VDC outputs
Auto-reset fuse	Provides protection from accidental 24VAC connection

0 or 12VDC (On/Off)

Range	0 or 12VDC
Source Current	Maximum 10 mA at 12VDC or 20 mA at 11VDC

PWM

Range	Adjustable period from 2 to 65seconds
Thermal Actuator Management	Adjustable warm up and cool down time

Floating

Minimum Pulse On/Off Time	500milliseconds
Drive Time Period	Adjustable

0 to 10VDC

Voltage Range	0 to 10VDC linear
Source Current	Maximum 20 mA at 10VDC (minimum load resistance 600 Ω)
Sink Current	Maximum 2.5mA at 1 VDC (minimum load resistance 4KΩ)

Specifications - Digital Output (DO)

General

Output Type	24VAC Triac; software configurable
Maximum Current per Output	0.5A continuous 1A @ 15% duty cycle for a 10-minute period
Power Source	Internal power supply

0 or 24VAC (On/Off)

Range	0 or 24VAC

PWM

Range	Adjustable period from 2 to 65seconds

Floating

Minimum Pulse On/Off Time	500milliseconds
Drive Time Period	Adjustable
Power Source	Internal power supply

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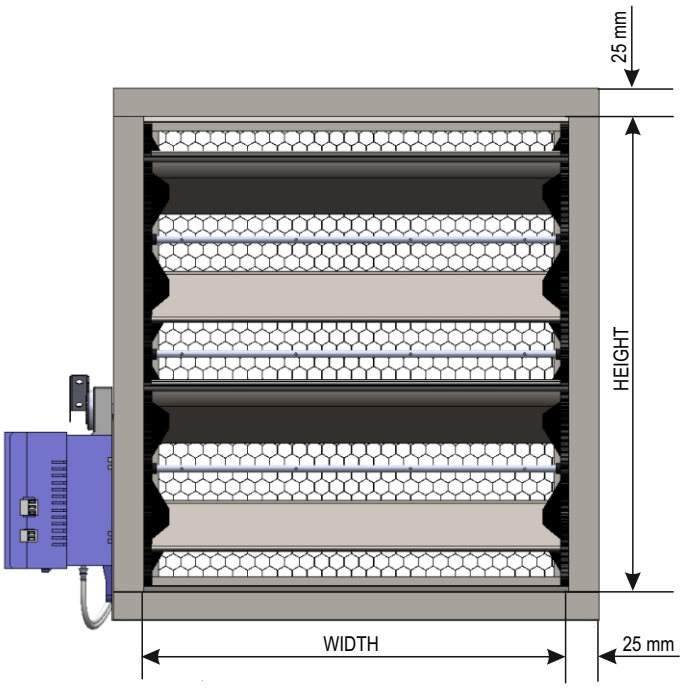
Dimensional Data and Construction.



AMS Frame	:	16 G,GI
VCD Frame	:	Heavy gauge extruded aluminium 4.5 in. C Section
VCD Blades	:	Heavy gauge extruded aluminium, airfoil shape, 4 in.[centre] X 0.625 in.
Linkage	:	Exposed Nylon Gear
Seals	:	EPDM blade seals
Axles	:	3/8 in. [] plated steel
Air Straightener	:	Honeycomb patterned air straightener contained in extruded aluminium section attached to damper
Actuator	:	24VAC 50/60 Hz
Velocity	:	300 to 2000 fpm
Leakage	:	3 cfm/ft2 @ 1 in. w.g.
Temperature	:	-20°F to 122°F
Accuracy	:	2% of F.S
DPSensor	:	Range : 0-1 in. w.g Accuracy : ±1%
Airflow	:	Static.

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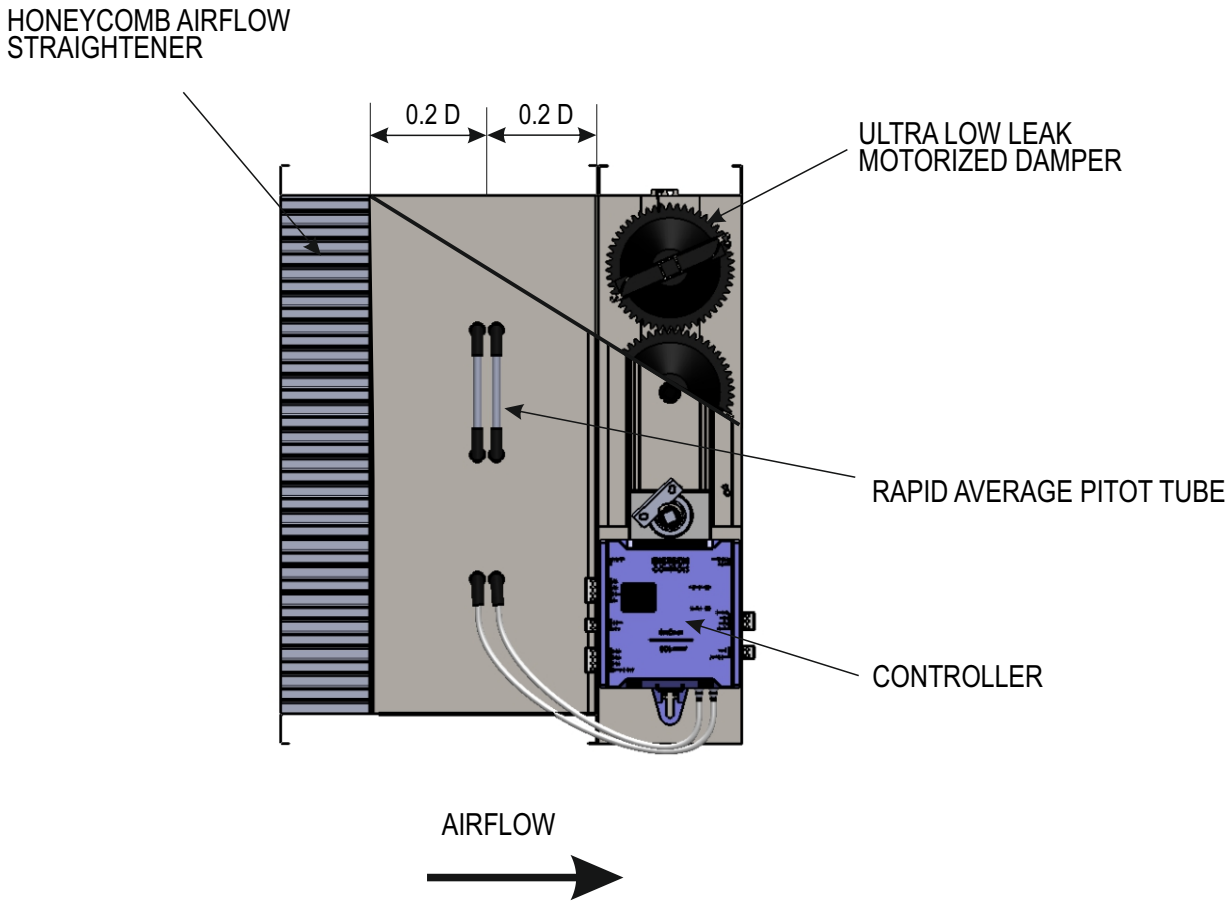

Size Limitations.

Minimum Size : 6 in. W x 6 in. H
Maximum Size: 48 in. W x 48 in. H

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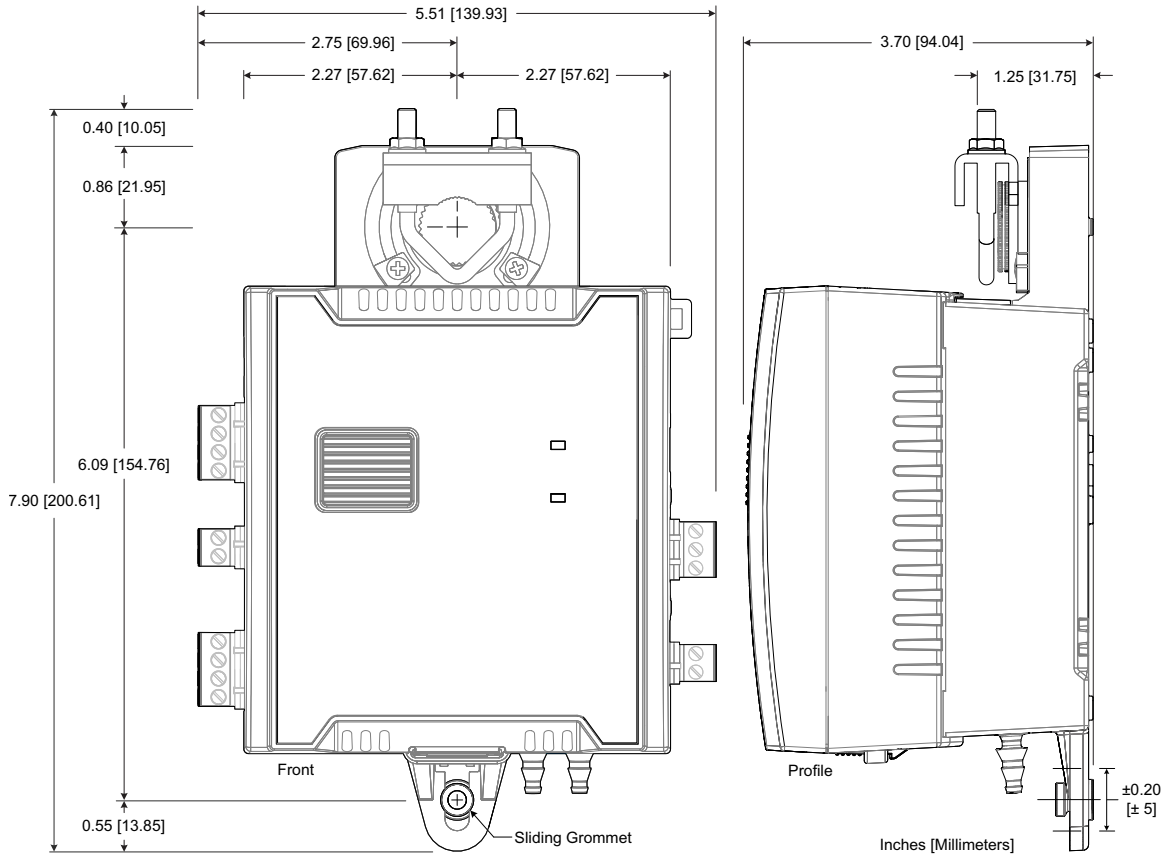
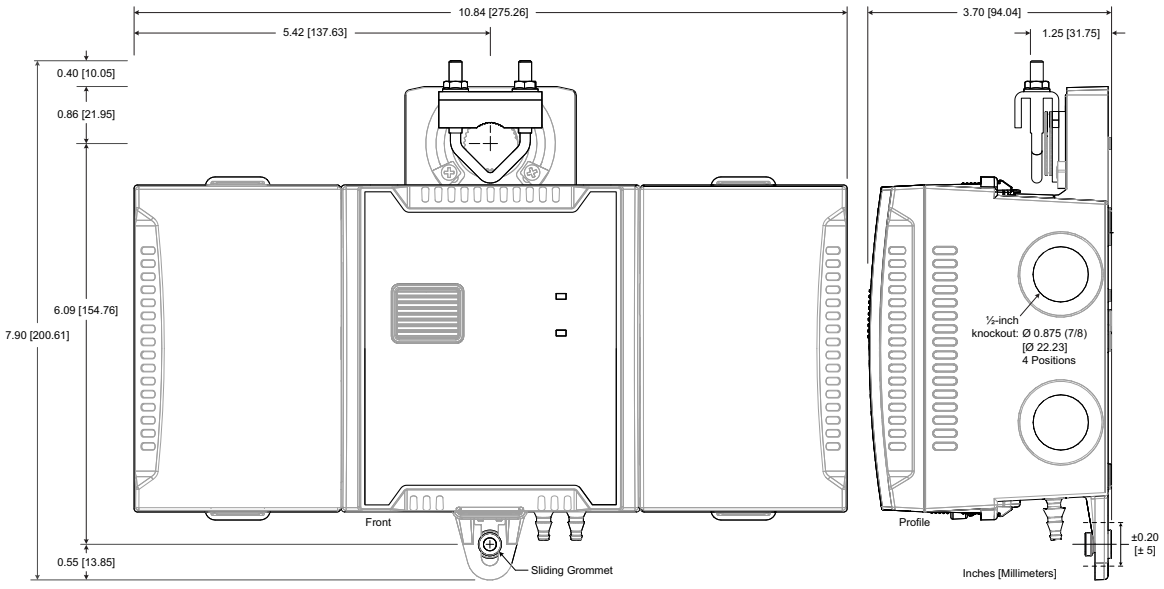
Dimensions:

☐ Without Terminal covers (H x W x D) ——— 7.90 × 5.51 × 3.70" (200.61 × 139.93 × 94.04 mm)



☐ With Terminal covers (H x W x D) ——— 7.90 × 10.84 × 3.70" (200.61 × 275.26 × 94.04 mm)



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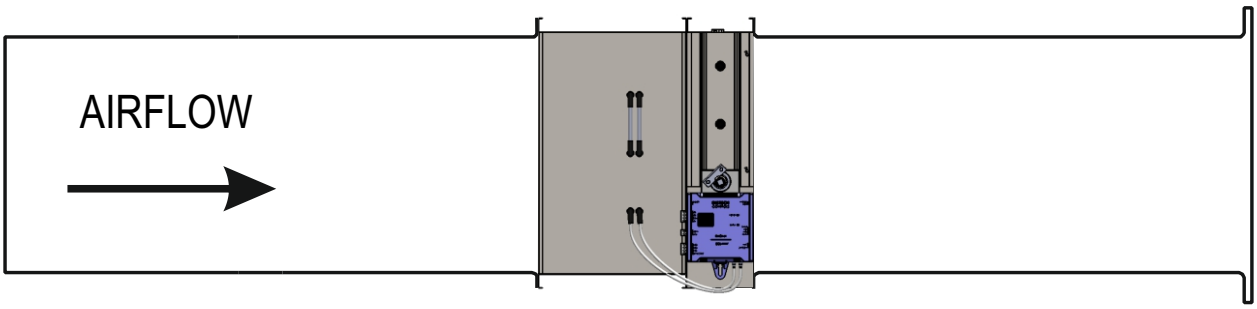
Performance Data



Damper size - 305 x 305	
Velocity (ft/m)	Press. Drop(Pa)
492	7.9
985	31.4
1476	73.2
1967	128.2
2461	201.4
2953	290.3
3445	394.9
3937	517.9

Damper size - 610 x 610	
Velocity (ft/m)	Press. Drop(Pa)
492	2.6
985	7.9
1476	15.6
1967	28.8
2461	44.4
2953	62.8
3445	86.3
3937	112.5

Damper size - 914 x 914	
Velocity (ft/m)	Press. Drop(Pa)
492	2.6
985	5.3
1476	13.1
1967	20.9
2461	34
2953	49.7
3445	68
3937	88.9

Damper size - 305 x 1219	
Velocity (ft/m)	Press. Drop(Pa)
492	2.6
985	10.5
1476	23.5
1967	41.9
2461	65.4
2953	94.2
3445	128.2
3937	167.4

Damper size - 1219 x 305	
Velocity (ft/m)	Press. Drop(Pa)
492	5.3
985	15.6
1476	36.6
1967	65.4
2461	102
2953	149.1
3445	201.4
3937	264.2