

AiQ-TD-50

Electronic Airflow Measuring Station
Class 1A Aluminum Control Damper
Airflow-IQ Series



APPLICATION

The AiQ-TD-50 offers accurate airflow measurement and control through electronic thermal dispersion technology utilized in Ruskin model TDP05K Airflow & Temperature Measuring probes(s) with the inclusion of Ruskin model CD50 control damper factory configured as one compact assembly. 24VAC modulating actuators (spring return or fail-in-place) can be supplied and mounted at the factory (optional) or field installed by others. When the AiQ-TD-50 is supplied with an actuator and properly wired to the Building Automation System, it provides effective airflow measurement and control from 0 to 5000 FPM (0 to 25 m/s). The ultra low-leak, Class 1A rated model CD50 airflow control damper meets leakage requirements of the International Energy Conservation Code.

STANDARD CONSTRUCTION

Frame	Air Measuring Station: 0.080" thick aluminum sleeved assembly. 15" (381) deep (d) for standard single section units without optional honeycomb airflow straightener. 18" (457) deep (d) for single section unit with optional honeycomb airflow straightener.
Sensor Circuit	Conformal coated, water resistant flexible polyimide circuit, with heated and ambient thermistors.
Sensor Distribution	Max 128 sensing points, up to 16 probes.
Probe Material	Low profile 2" x 3/4" (51x19) 6063T6 extruded aluminum with acid etch clear anodized finish.
Automation Interface	The TDP05K Primary interfaces with the Building Automation System (BAS) using BACnet protocol or through two (2) 4-20mA analog outputs that are proportional to the flow and temperature.
Accuracy	+/- 3% over measuring range when installed per Ruskin installation guidelines.
Frame	Damper: 5" X 1" (127 x 25) 6063T5 extruded aluminum hat channel.
Blades	6" (152) 6063T5 heavy gauge extruded aluminum, airfoil shaped. Parallel blade configuration is Standard.
Axles	1/2" (13) plated steel hex with molded synthetic bearings.
Seals	Blade: Santoprene. Jamb Seals: flexible metal, compressible.
Linkage	Plated steel, concealed in frame.
Actuator (Optional)	Any 24VAC modulating, spring return or "fail in place" type, factory or field installed, sized for the damper area. Refer to specific actuator information, provided on a separate submittal, for power requirements, input signal and output signal information.
Velocity Requirements	Product Range - 0 to 5000 FPM (0 m/s to 25 m/s) (Measured through face area).
Operating Temperature	-20°F to 120°F (-29°C to 50°C)
Minimum Size	12"w x 12"h (305 x 305)
Maximum Size	Single section - 60"w x 72"h (1524 x 1829) Multi-Section - 120"w x 144"h (3048 x 3657)



AiQ-TD-50 above is shown with optional front and rear flanges.

AiQ-TD-50 shown above depicts a **Right Hand (RH)** Mounting Configuration; where the airflow enters through the probe(s) and exits through the Control Damper.



FEATURES

- ▶ Thermal Dispersion flow and temperature sensors.
- ▶ Factory calibrated Primary in nonvolatile EPROM.
- ▶ BACnet & Analog Output standard for TDP05K Primary.
- ▶ AMCA Class 1A Rated Ultra-Low Leak model CD50 aluminum airflow control damper with 6" external operating shaft.
- ▶ Temperature and altitude compensated.
- ▶ INSERTION mounted TDP05K probes (control boxes secured to exterior of sleeve).
- ▶ Right Hand (RH) mounting configuration is standard.

Ruskin's AiQ-TD-50 helps satisfy the requirements for minimum outside air as recommended by the following.

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

NOTE:

1. Values shown in () are millimeters unless otherwise indicated.
2. Refer to installation manual for additional details.
3. Units are furnished actual size ordered.

Consult factory for special considerations.

VARIATIONS

The AiQ-TD-50 is available with options to satisfy your specific application.

- ▶ Custom density probe/sensor array.
- ▶ NEMA 4 weather-resistant enclosures.
- ▶ Opposed damper blade action.
- ▶ Silicone damper blade seals.
- ▶ Stainless steel damper linkage & bearings.
- ▶ Factory supplied & mounted 24VAC modulating actuator(s). Mounted to the exterior of the sleeve or in the airstream.
- ▶ Honeycomb Airflow Straightener.
- ▶ Custom sleeve materials (Galvanized, 304SS, 316SS) and gauges.
- ▶ Internal Mounted TDP05K. When selected, the assembly will be provided with a Remote Wired Primary as Standard.
- ▶ Available with Remote Wired Primary, Wired Graphic User Interface, or Wireless Graphic User Interface.
- ▶ 1.5" tall Mounting Flanges on inlet, outlet or both ends of the sleeve. Mounting holes in flanges available upon request.
- ▶ Left Hand (LH) mounting configuration.

PRODUCT FEATURES AND DATA

TDP05K Airflow and Temperature Measurement Probe Features

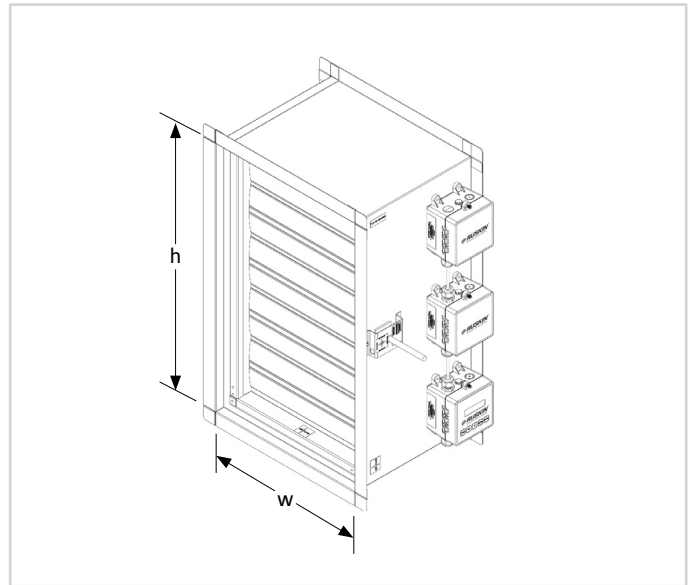
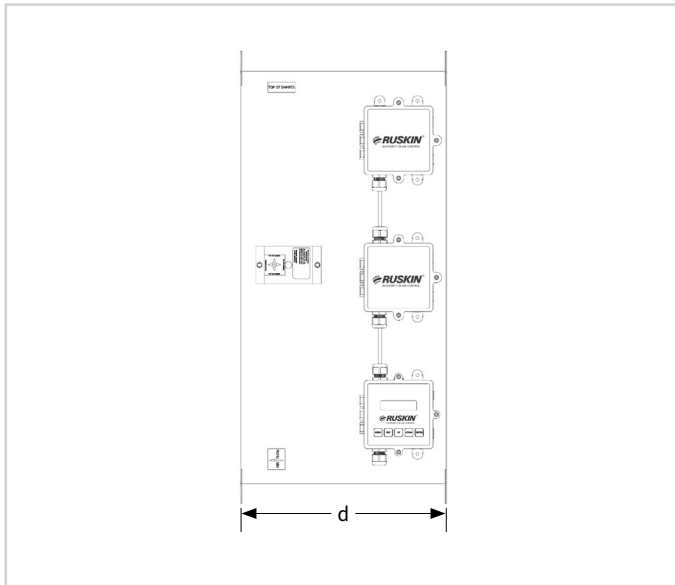
- ▶ BACnet and analog outputs standard.
- ▶ Lowest power consumption thermal dispersion device available.
- ▶ Tool-free one touch setup through surface membrane label.
- ▶ Standard cabling, no proprietary cables.
- ▶ Third party verified FCC, UL, BTL, AMCA, and ISO 9001.
- ▶ Airfoil shaped acid-etch clear anodized sensing probes featuring lower pressure drop and less noise.
- ▶ Highest density thermal dispersion sensing array up to 128 sensing points.
- ▶ Up to 8 moisture resistant flex sensor pairs per probe.
- ▶ BACnet low and high flow alarms.
- ▶ 16x2 character LCD (airflow, temperature, setup & diagnostics).
- ▶ Self-diagnostics utilizing artificial intelligence.
- ▶ The highest accuracy over the entire range of airflows results from probe sensing elements that are factory tested and calibrated at 20 points.

Damper Model CD50 Features

- ▶ The CD50 is a low leak, extruded aluminum damper designed with airfoil blades for higher velocity and pressure HVAC systems.
- ▶ It meets the leakage requirements of the International Energy Conservation Code by leaking less than 3 cfm/sq. ft. at 1" of static pressure and is AMCA licensed as a Class 1A damper.
- ▶ Airfoil blade design for low pressure drop and less noise generation. Blades have an integral structural reinforcing tube running full length of each blade.
- ▶ Positive locking hexagonal axles, non-corrosive molded synthetic bearings and shake proof link-age for low maintenance operation.
- ▶ Blade edge seals are extruded double edge design and mechanically lock into the blade for superior sealing.



DIMENSIONAL DETAILS (Shown with Extended Axle and Optional Front/Rear Flanges)



NOTE: For this example, three (3) probes are shown in the dimensional details above.
Refer to the TDPO5K Product Data sheet for the actual number of probes and sensors supplied for site specific installation.

SUGGESTED SPECIFICATION

Furnish and install an electronic, thermal dispersion airflow measuring station with integral damper and controls. Airflow measuring assembly shall include a Class 1A leakage rated control damper with 6" (152) wide, 6063T5 heavy gauge extruded aluminum, airfoil shaped blades. Damper bearings shall be molded synthetic. Damper frame shall be 6063T5 extruded aluminum hat channel. Damper shall be supplied with stainless steel compression jamb seals and Santoprene blade edge seals that are mechanically fastened.

The electronic thermal dispersion type airflow and temperature measuring station (AFTMS) shall be capable of monitoring and reporting the airflow and temperature at each measuring location with up to 16 measuring probes containing 1 to 8 sensor points per probe. AFTMS shall include a Primary that interfaces with the building automation system (BAS) using BACnet protocol or 4-20mA analog outputs reporting velocity and temperature measurements. Probe(s) shall be constructed of an airfoil shaped acid-etch clear anodized 6063T6 aluminum extrusion containing the sensor circuit(s) for low pressure drop and low noise in installed applications. Each moisture resistant flexible polyimide sensor circuit shall consist of thermistors for velocity and temperature. The Primary user interface shall feature tool-free touch setup through surface membrane label on a hinged enclosure with dust tight or weather resistant construction. Factory calibration of thermal dispersion sensors shall be at 20 points between 0 and 5,000 FPM. Complete assembly shall be constructed and calibrated in an ISO 9001 certified facility following strict ISO calibration test procedures.

Proprietary cables are not acceptable. For ease of installation, a composite 4 wire cable similar to Connect Air W24182P-2306BL with communications and power in one cable is recommended. Alternatively, communications cable shall be a TSP (Twisted Shielded Pair) 24AWG low capacitance wire and power shall be an 18AWG Pair. The Primary shall be capable of processing up to 128 (16 probes, 8 sensors/probe each) independent sensing points per AFTMS and shall operate on a Class 2 24VAC/VDC low voltage supply. The Primary shall feature a 16 character x 2 line alphanumeric backlit LCD FP display, digital offset/gain adjustment, continuous performing sensor/transmitter diagnostics and a visual alarm to detect malfunctions. The display shall be field adjustable to read either imperial system (IP) or metric system (SI) units. The Primary's output shall be BACnet compatible and also supply a field adjustable 4-20 mA, or 2-10 VDC across a 500 ohm resistor. All electronic components of the assembly shall be lead-free RoHS compliant. Accuracy shall be based on tests and procedures performed in accordance with AMCA publications 610 and 611.

Airflow Measuring Stations shall be, in all respects, equivalent to Ruskin model AiQ-TD-50.

LINKS TO IMPORTANT DOCUMENTS

Document Title

Airflow-IQ Spec Sheet

Limited Warranty Document



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