TDP05K-E **Advanced Thermal Dispersion Airflow** And Temperature Measuring Probe



APPLICATION

Ruskin model TDP05K-E is a highly accurate thermal dispersion airflow and temperature measuring solution that utilizes Economical sensor densities well suited for larger systems and for ideal installations. Velocity and temperature points on one or two probes installed in the duct or plenum are averaged to arrive at air measurements. The TDP05K-E is capable of measuring a velocity range from 0 to 5,000 fpm and displaying the flow and temperature at each sensing point. Within each low pressure drop, airfoil-shaped anodized probe are up to 4 moisture resistant flex sensor pairs reporting both velocity and temperature. Volume or Velocity readings can be displayed in Imperial/USCS or International System of Units (SI). The TDP05K-E hinged cover and vented enclosure utilize convenient captive screws and offer tool-free access to the menu through the surface membrane label.

Contact Ruskin for assistance selecting the options and features for the TDP05K-E to fit your applications!

STANDARD CONSTRUCTION

Probe MaterialLow profile $2'' \ge 3/4''$ (51 ≥ 19) 6063T6 high yield extruded alumiwith acid etch clear anodized finish.	num
Accuracy Airflow: $\pm 3\%$ of reading for duct/plenum ≤ 2.0 sq.ft. and $\pm 0.25\%$ repeatability. Temperature: $\pm 0.10^{\circ}$ F (0.06° C).	0
Product Performance RangeAirflow: 0-5000 FPM (0-25 m/s). Transmitter Temperature: -20°F to 120°F (-29°C to 49°C). Sensor Temperature: -20°F to 120°F (-29°C to 49°C). Humidity: 0-99% RH, non-condensing.	
Power Requirements 24 VAC or VDC (+/- 15%); 15VA.	
Probe/Sensor Configurations 1 probe with max 4 sensors; 2 probes with max 2 sensors per pro-	robe.
Calibrated Metered U.L. 94 flame rated, high impact ABS. Orifice	
Sensor Circuit Conformal coated, water resistant flexible polyimide circuit, heated and ambient thermistors.	with
Master Control CircuitField configurable, solid state, circuit board robotically assem Production includes high pressure deionizing wash, solder re wave solder, secondary deionizing wash final assembly, four inspection, conformal coating, retest and calibration. Two individ configurable outputs for Velocity or Temperature. Velocity Output: 4-20mA or 2-10 VDC with 500 ohm resistor. 	bled. flow, step lually tor.
AgencyAll components are U.L. Listed and compliant with Part 15 of thListingsFCC rules and RoHS directive 2002/95/EC.	е
Duct/ Width: 8" to 120" (203 to 3050). Plenum Size Height: 8" to 120" (203 to 3050).	



- ► membrane label.
- Stainless Steel mounting hardware.

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- Standard cabling, no proprietary cables.
- Third party verified FCC, UL, BTL, AMCA and ISO Þ 9001.
- Airfoil shaped acid-etch clear anodized sensing ► probes featuring lower pressure drop and less noise.
- Economical Sensor Density for performance monitoring of larger systems.

NOTE:

Values shown in () indicate metric units. 1.

Refer to Installation Instructions for additional details: http://www.ruskin.com/doc/ld/6766 2.

VARIATIONS

Ruskin model TDP05K-E is available with the following Optional Variations.

- Wired Primary Controller, mounted remotely.
- NEMA 4 hinged, weather-resistant enclosure with liquid tight construction.
- Internal Mount for duct sizes of 14" to 120" width.

INSTALLATION DETAILS

Probe kit comes with Primary Control Probe and utilizes thermal dispersion technology to calculate the airflow and average the temperature. Two thermistors at multiple sensing points measure ambient temperature and velocity. Temperature and velocity thermistors at each sensing point are housed in a high impact, ABS, calibrated metered orifice that is mechanically fastened to the airfoil probe. The probe and sensor density are shown for duct or plenum size on corresponding TDP05K-E density chart. Number of probes and number of sensor per probe are based on the OD dimensions where "A" is the duct or plenum width* and "B" is the duct or plenum height. The sensor readings are digitally communicated to the primary probe.

* Stand-off mounts and Internal mounts are ID; Insertion is OD

TYPICAL WIRING DETAIL

- Recommended cable is Connect Air W24182P-2306BL.
- Daisy chain cable length included based on 1/2 duct height plus 10 inches per enclosure.
- Connections are 2 part pluggable Phoenix terminals.
- Primary/Ancillary probe design facilitates quick daisy chain wiring (probe to probe).
- Hinged enclosure with dust tight or weather resistant construction comes pre-drilled with four connection access points (NEMA1 dust caps or optional NEMA 4 plugs).
- For use with outdoor rated cable, NEMA 4 Cord Grips can be ordered to facilitate a sealed cable connection.





The optional remote wired primary can be purchased with any TDP05K-E system. All probes become Ancillary, and the separate remote wired primary can be mounted up to 500 feet from the air measurement station.



ECONOMICAL SENSOR DENSITY

The model TDP05K-E probe assembly may be installed in square, round, or oval ducts and plenums. Hardware required for the insertion style mounting configuration (as depicted in the DETAILS shown below) is provided as standard with the TDP05K-E. Stand-off mounting hardware is available as an option for applications that require probes mounted onto the upstream side of a Ruskin model CD50, CD60 or insulated TED50 control damper (damper sold separately). For specific installation and operation details, and for round or oval applications, refer to the TDP05K Installation and Maintenance Instructions. The information on this data sheet is for general reference and is subject to correction or modification.



TDP05K-E Probe/Sensor Count per Duct Size																				
Duct Height "B"		Rectangular Duct width "A" = Probe Length																		
	8" (203)	12'' (305)	14" (356)	16'' (406)	18'' (457)	20'' (508)	22'' (559)	24'' (610)	30" (762)	36'' (914)	42'' (1067)	48'' (1219)	54'' (1372)	60'' (1524)	66'' (1676)	72'' (1829)	84'' (2134)	96" (2438)	108'' (2743)	120'' (3048)
8" (203)	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
12" (305)	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
14" (356)	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
16" (406)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
18" (457)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
20" (508)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	1/4	1/4	1/4	1/4	2/2	2/2	2/2	2/2	2/2	2/2	2/2
22" (559)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	1/4	1/4	1/4	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
24" (610)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	1/4	1/4	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
30" (762)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2				
36" (914)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2						
42" (1067)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2							
48" (1219)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2									
54" (1372)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2									
60" (1524)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2										
66" (1676)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2											
72" (1829)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2											
84" (2134)	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2												
96" (2438)	2/2	2/2	2/2	2/2	2/2															
108" (2743)	2/2	2/2	2/2	2/2	2/2															
120" (3048)	2/2	2/2	2/2	2/2	2/2															

Consult Ruskin for Applications with Sizes not Shown.

SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans or as in accordance with schedules, an electronic thermal dispersion type airflow and temperature measuring station. The AFTMS shall be capable of monitoring and reporting the airflow and temperature at each measuring location utilizing a maximum of 4 sensor points effectively positioned onto 1 or 2 probes. AFTMS shall include a primary probe 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. Primary probe 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.

Production of all circuits shall include primary and secondary deionizing wash and include conformal coating.

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. Primary Control Probe shall be capable of processing up to 4 independent sensing points per AFTMS and shall operate on a Class 2 24VAC/VDC low-voltage supply. Primary Control Probe shall feature a 16 character x 2 line alphanumeric backlit LCD display, digital offset/gain adjustment, continuous performing sensor/transmitter diagnostics and a visual alarm to detect malfunctions. Display shall be field adjustable to display either I.P. or S.I. units. Primary Control Probe 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.

AFTMS shall be in all respects equivalent to Ruskin model TDP05K-E, advanced thermal dispersion airflow and temperature measuring probe.

UINKS TO IMPORTANT DOCUMENTS

Document Title

Limited Warranty Document



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