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Patent Pending



KDP2M Series

Differential Pressure / Air Velocity Transducer

Product Overview

The KDP2M transducer can measure either air pressure or velocity with the flip of a switch. The KDP2M is available in three installation configurations: duct, panel or universal. Duct and panel models have two pressure and velocity options: 0-1 in. WC / 0-3,000 ft/min or 1-10 in. WC / 3,000-6,000 ft/min with four field-selectable sub-ranges. The universal model comes in one pressure/velocity range: 0-10 in. WC / 0-6,000 ft/min with seven field-selectable sub-ranges. All variants are available with and without display. The KDP2M has an IP65/NEMA 4 environmental rating and a 5-year limited warranty.

Product Identification

Enclosure

Range

Local Display

NIST

KDP2M

D = Duct  
P = Panel

1 = Pressure: 0 to 1 in. WC / 0 to 250 Pa  
Velocity: 0 to 3,000 ft/min / 0 to 15 m/s  
10 = Pressure: 1 to 10 in. WC/250 to 2,500 Pa  
Velocity: 0 to 6,000 ft/min / 0 to 30 m/s

LCD = LCD Display  
X = No Display

N = NIST  
X = None

Range

Local Display

NIST

KDP2MU

010 = Pressure: 0 to 10 in. WC / 0 to 2,500 Pa  
Velocity: 0 to 7,000 ft/min / 0 to 35 m/s

LCD = LCD Display  
X = No Display

N = NIST  
X = None

Dimensions

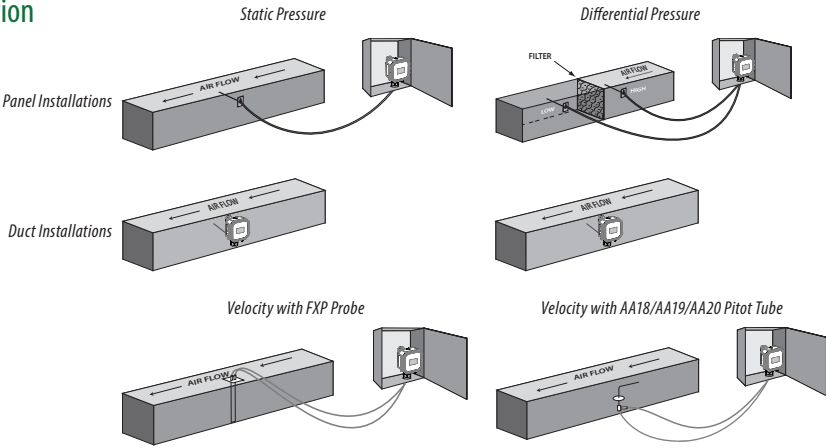
in. (mm)



Media Compatibility		Dry air or inert gas
Input Power		Three-wire Volt mode: 24 Vac or 12-30 Vdc* Two-wire mA mode: 12-30 Vdc*
Output Power		Field-selectable: 2-wire, loop-powered 4-20 mA Minimum input voltage for 4 to 20 mA operation: 250 Ω loop = 12 Vdc; 500 Ω loop = 19 Vdc (DC only, clipped and capped), 24 Vac/dc or 3-wire 0-5V/0-10V Minimum load resistance for Volt operation: 5 kΩ
Pressure Range 1	Pressure Mode	Unidirectional: 0.1/0.25/0.5/1 in. WC FS, switch selectable Bidirectional: ±0.1/±0.25/±0.5/±1 in. WC FS, switch selectable Unidirectional: 25/50/100/250 Pa FS, switch selectable Bidirectional: ±25/±50/±100/±250 Pa FS, switch selectable
	Velocity Mode	500/1,000/2,000/3,000 ft/min 2.5/5/10/15 m/s
Pressure Range 10	Pressure Mode	Unidirectional: 1.0/2.5/5/10 in. WC FS, switch selectable Bidirectional: ±1.0/±2.5/±5/±10 in. WC FS, switch selectable Unidirectional: 250/500/1,000/2500 Pa FS, switch selectable Bidirectional: ±250/±500/±1,000/±2500 Pa FS, switch selectable
	Velocity Mode	3,000/4,000/5,000/6,000 ft/min 15/20/25/30 m/s
Pressure Range 010	Pressure Mode	Unidirectional: 0.1/0.25/0.5/1/2.5/5/10 in. WC FS, switch selectable Bidirectional: ±0.1/±0.25/±0.5/±1/±2.5/±5/±10 in. WC FS, switch selectable Unidirectional: 25/50/100/250/500/1,000/2500 Pa FS, switch selectable Bidirectional: ±25/±50/±100/±250/±500/±1,000/±2500 Pa FS, switch selectable
	Velocity Mode	500/1,000/2,000/3,000/4,000/5,000/6,000/7,000 ft/min 2.5/5/10/15/20/25/30/35 m/s
Response Time		Standard: T95 in 20 sec, Fast: T95 in 2 sec, DIP switch selectable
Mode		Unidirectional or bidirectional, DIP switch selectable
Display (Option)		Pressure mode: Signed 3-1/2 digit LCD, indicates pressure, overrange indicator Velocity mode: Signed 4-1/2 digit LCD, indicates velocity, overrange indicator
Proof Pressure		3 psid (20, 600 Pa)
Burst Pressure		5 psid (34, 500 Pa)
Pressure Mode Accuracy		±1% FS (combined linearity and hysteresis)
Velocity Mode Accuracy		±90 ft/min (±0.45 m/s) plus 5% of measured value**
Temperature Effect		1" (250 Pa) models: 0.05%/°C; 10" (2,500 Pa) models: 0.01%/°C (Relative to 25 °C) 0 to 50 °C (32 to 122 °F)
Zero Drift (1-year)		1" (250 Pa) models: 2.0% max.; 10" (2,500 Pa) models: 0.5% max.
Zero Adjust		Pushbutton auto-zero and digital input (2-position terminal block)
Operating Environment		0 to 60 °C (32 to 140 °F)
Altitude of Operation		0 to 3,000 m
Pollution Degree		2
Humidity Range		100% RH, non-condensing
Mounting Location		For indoor use only.
Fittings		Brass barb; 0.24" (6.1 mm) o.d.
Suggested Cable		Shielded: Belden #9939 (22 AWG) 3-wire multi-conductor (or similar) Belden #9940 (22 AWG) 4-wire multi-conductor (or similar) Belden #9939 (22 AWG) 5-wire multi-conductor (or similar)  Unshielded: Belden #8443 (22 AWG) 3-wire multi-conductor (or similar) Belden #8444 (22 AWG) 4-wire multi-conductor (or similar) Belden #8445 (22 AWG) 5-wire multi-conductor (or similar)
Environmental Rating		IP65, NEMA 4
Flammability Rating		UL 94 5VA fire retardant ABS, plenum rated
Limited Warranty		5 years

### Installation, Wiring & Configuration

1. Plan the installation. Panel or duct mount?



For velocity applications, use the FXP Series air velocity/measurement probe or AA18, AA19 or AA20 velocity pitot tubes. For use with the PX3P (panel) and PX3U (universal) models in Velocity mode only. Sold separately.

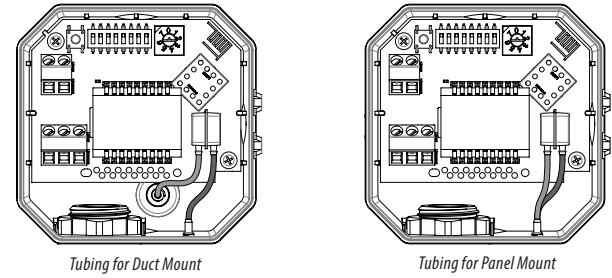
2. For duct mount applications, thread the probe into the back of the device housing, as shown in the dimensional drawing.
3. Configure the internal tubing for the selected installation method as described below.

- Duct mount tubing configuration:
- a. Connect the right-side tube to the rear brass barb marked as “-” on the underside of the device housing.

b. Connect the left-side tube to the probe in the back of the device housing.

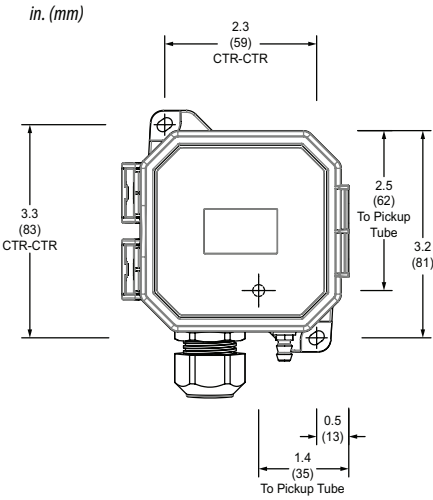
- Panel mount tubing configuration:
- a. Connect the right-side tube to the rear brass barb marked as “-” on the underside of the device housing.

b. Connect the left-side tube to the front brass barb marked as “+” on the underside of the device housing.

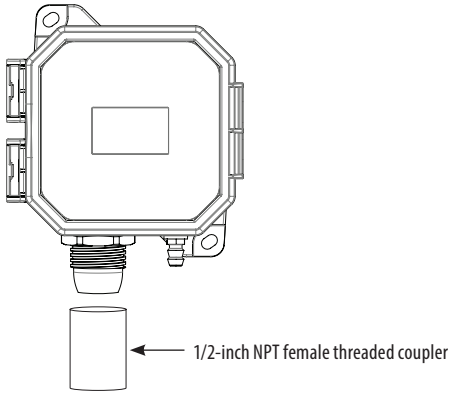


### Installation, Wiring & Configuration (cont.)

4. Mount the transducer (see the screw hole diagram below).



5. For applications using conduit, remove the cable gland nut on the bottom of the unit. Thread a standard 1/2-inch NPT female threaded coupler onto the body of the cable gland. Connect the opposite end of the coupler to the conduit.



### Installation, Wiring & Configuration (cont.)

6. Set DIP switches to desired settings.

DIP Switch 1: Scale ON = Pascal (m/s) OFF = In. WC (ft/min)	DIP Switch 5: Output ON = 4-20 mA OFF = Voltage
DIP Switch 2: Mode ON = Velocity OFF = Pressure	DIP Switch 6: Volt Scale ON = 0-5 Vdc OFF = 0-10 Vdc
DIP Switch 3: Direction* ON = Unidirectional OFF = Bidirectional	DIP Switch 7: Unused DIP Switch 8: Unused
DIP Switch 4: Response ON = Slow OFF = Fast	

\*Velocity mode is unidirectional regardless of DIP switch setting.

DIP Switch Settings								
	Scale	Mode	Direction	Response	Output	Volt Scale	Unused	Unused
ON	Pascal/MPS	Velocity	Uni	Slow	mA	5V	Unused	Unused
OFF	In. WC/FPM	Pressure	Bi	Fast	Volt	10V	Unused	Unused
	1	2	3	4	5	6	7	8

7. Set rotary switch to the desired setting. Align the arrow (not the slot) on the rotary switch to the desired full-scale range. LCD models momentarily indicate the selected range.

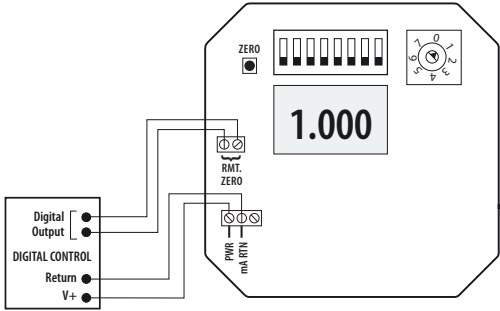
Rotary Switch Settings  
Range 01 Model, Field Selectable (WC / ft/min or Pa / m/s)

	WC / ft/min		Pa / m/s
0	0 to 0.1 in. WC	0	0 to 25 Pa
1	0 to 0.25 in. WC	1	0 to 50 Pa
2	0 to 0.5 in. WC	2	0 to 100 Pa
3	0 to 1 in. WC	3	0 to 250 Pa
4	0 to 500 ft/min	4	0 to 2.5 m/s
5	0 to 1,000 ft/min	5	0 to 5 m/s
6	0 to 2,000 ft/min	6	0 to 10 m/s
7	0 to 3,000 ft/min	7	0 to 15 m/s

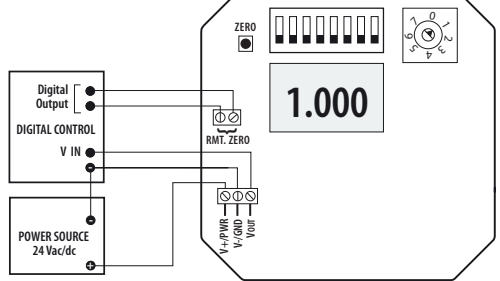
### Installation, Wiring & Configuration (cont.)

8. Connect the transmitter to the control system and power supply as indicated below. Optional: Connect the ZERO terminals to the digital output (contact closure) of the control system.

2-wire, 4-20 mA Current Loop Output



3-wire, 0-5 V/0-10 V Voltage Output



9. Wait five seconds, then press and hold the ZERO pushbutton for two seconds or provide contact closure on the AUX ZERO terminal. This will reset the output and display to zero pressure. For best accuracy, press the ZERO button while both ports are open to atmospheric pressure. To protect the unit from accidental zero, this feature is enabled only when the detected pressure is within about 0.1 in. WC (25 Pa) of factory calibration.
10. Connect desired external tubing to the KDP2M.

### Operation

The KDP2M Series devices employ high performance sensors and sophisticated temperature compensation circuitry. The sensor achieves its best accuracy after an initial warm-up period. During the first few minutes of operation, readings at zero pressure and the lowest pressure ranges appear erroneous. Following this initial warm-up period, the KPDM2 device maintains its specified accuracy and stability.

The LCD momentarily indicates range ‘SET’ when a selection is made. Pressure is normally indicated on the display. Units are in inches water column (in. WC), Pascals (Pa) or kilopascals (kPa) as indicated on the display. The display shows ‘OVER’ when the pressure is over range.

### Installation, Wiring & Configuration (cont.)

Rotary Switch Settings (cont.)

Range 02 Model, Field Selectable (WC / ft/min or Pa / m/s)

	WC / ft/min		Pa / m/s
0	0 to 1 in. WC	0	0 to 250 Pa
1	0 to 2.5 in. WC	1	0 to 500 Pa
2	0 to 5 in. WC	2	0 to 1,000 Pa
3	0 to 10 in. WC	3	0 to 2,500 Pa
4	0 to 3,000 ft/min	4	0 to 15 m/s
5	0 to 4,000 ft/min	5	0 to 20 m/s
6	0 to 5,000 ft/min	6	0 to 25 m/s
7	0 to 6,000 ft/min	7	0 to 30 m/s

Range 05 Model, Field Selectable (P) Pressure or (V) Velocity Mode, Field Selectable (WC / ft/min or Pa / m/s)

	(P) Pressure Mode		(V) Velocity Mode
0	0 to 0.1 in. WC	0	0 to 500 ft/min
1	0 to 0.25 in. WC	1	0 to 1,000 ft/min
2	0 to 0.5 in. WC	2	0 to 2,000 ft/min
3	0 to 1 in. WC	3	0 to 3,000 ft/min
4	0 to 2.5 in. WC	4	0 to 4,000 ft/min
5	0 to 5 in. WC	5	0 to 5,000 ft/min
6	0 to 10 in. WC	6	0 to 6,000 ft/min
7	0 to 10 in. WC	7	0 to 7,000 ft/min

	(P) Pressure Mode		(V) Velocity Mode
0	0 to 25 Pa	0	0 to 2.5 m/s
1	0 to 50 Pa	1	0 to 5 m/s
2	0 to 100 Pa	2	0 to 10 m/s
3	0 to 250 Pa	3	0 to 15 m/s
4	0 to 500 Pa	4	0 to 20 m/s
5	0 to 1,000 Pa	5	0 to 25 m/s
6	0 to 2,500 Pa	6	0 to 30 m/s
7	0 to 2,500 Pa	7	0 to 35 m/s

### China RoHS Compliance Information

Environment-Friendly Use Period (EFUP) Table

有害物质 - Hazardous Substances						
Part Name	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电子件 Electronic	X	O	O	O	O	O

本表格依据SJ/T11364的规定编制。  
O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。  
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。  
(企业可在此处，根据实际情况对上表中打“X”的技术原因进行进一步说明。)

This table is made according to SJ/T 11364.  
O: indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.  
X: indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572

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