AV-MPS

Multi-Point Velocity Probe

Overview

A multi-point air velocity sensor for use in larger ducts or where turbulent airflow is likely to be encountered. Stainless steel construction is used for the tubing and all gaskets are provided.

Using a PS-DPA air differential pressure sensor of an appropriate range, the output of the sensor represents the velocity pressure and is defined by the following equation:

$$\text{Velocity} = \sqrt{(2 \times \text{Velocity Pressure}) / 1.2}$$

Features & Benefits

- Mounting plate to suit flat ducts
- Double gasket seals the probe to the duct
- Push on connectors to suit AV-TUBE-8mm

Model Selection

AV-MPS-700	Multi-point Air Velocity Sensor (S/S) 700 mm
AV-MPS-800	Multi-point Air Velocity Sensor (S/S) 800 mm
AV-MPS-1000	Multi-point Air Velocity Sensor (S/S) 1000 mm
AV-MPS-1250	Multi-point Air Velocity Sensor (S/S) 1250 mm
AV-MPS-1500	Multi-point Air Velocity Sensor (S/S) 1500 mm
AV-MPS-1750	Multi-point Air Velocity Sensor (S/S) 1750 mm
AV-MPS-2000	Multi-point Air Velocity Sensor (S/S) 2000 mm
Accessory	
AV-TUBE-8MM	Duct probe adjustment flange

Product Specifications

Probe:
- Material — 316 Stainless steel
- Dimensions — 26mm dia.

Connectors:
- Material — Plated brass
- Connections — To suit 6mm ID PVC tubing

Duct flange:
- Material — Stainless steel
- Dimensions — 52mm dia.

Country of origin — UK

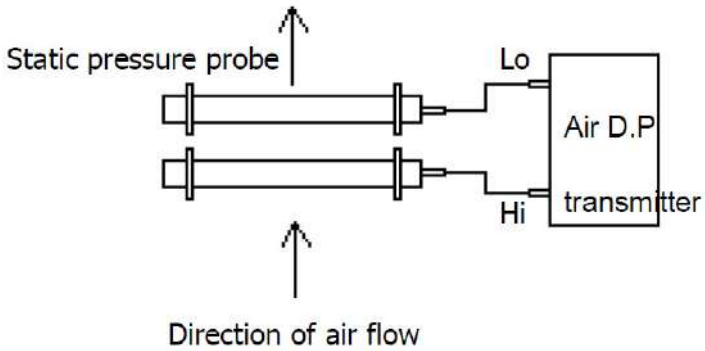
Installation

- The ductwork needs to be straight for at least 2m either side of the probes, where possible.
- The ductwork needs to be a consistent diameter or sectional area for at least 2m either side of the probes, where possible.
- Do not install near dampers.
- Do not install where condensation is likely (it can block the probe holes).
- Ensure that when the probes are mounted that ALL the holes are either inside the duct or blocked up.
- One probe should be fixed with the holes pointing directly into the airflow
- The other probe can be rotated to achieve the correct reading (via a D.P. sensor) when compared to a reference probe used for commissioning.
- All the above is to try to ensure that the probes are sited in laminar airflow rather than turbulent airflow, to achieve maximum accuracy and repeatability.
- If the probes are to be installed in a round duct mount them side-by-side approx. 100mm apart. If the probes are to be mounted near a bend or branch in the duct mount them above each other approx. 100mm apart.

Using a flange as a template, mark the duct work and drill the mounting holes.

1. Turn the total pressure probe so that the holes face directly into the air flow. Lock in position using the pan-head screws on the flanges.
2. If possible, adjust the speed of the fan to give a known air velocity. Turn the static pressure probe so that a differential pressure corresponding to the known air velocity is measured across the 2 probes. Lock in position using the panhead screws on the flanges.
3. Where fan speed adjustment is not possible measure the air velocity with a vane anemometer (or similar). Turn the static pressure probe so that a differential pressure corresponding to the measured air velocity is measured across the 2 probes. Lock in position using the pan-head grub screw.

Connections to D.P Transmitter



Calculation

The AV-EP can be connected to a differential pressure sensor of an appropriate range. The output of the sensor represents the air velocity, and is defined by the following equation:

Velocity = $\sqrt{(2 \times \text{Velocity Pressure}) / 1.2}$

This calculation should be performed in a controller's strategy, to give air velocity in m/s.

Air velocity vs Differential Pressure Chart

Velocity (m/s)	Velocity (m/s)									
	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	0	0.01	0.02	0.05	0.1	0.15	0.22	0.29	0.38	0.49
1	0.6	0.73	0.86	1.01	1.18	1.35	1.54	1.73	1.94	2.17
2	2.4	2.65	2.9	3.17	3.46	3.75	4.06	4.37	4.7	5.05
3	5.4	5.77	6.14	6.53	6.94	7.35	7.78	8.21	8.66	9.13
4	9.6	10.09	10.58	11.09	11.62	12.15	12.7	13.25	13.82	14.41
5	15	15.61	16.22	16.85	17.5	18.15	18.82	19.49	20.18	20.89
6	21.6	22.33	23.06	23.81	24.58	25.35	26.14	26.93	27.74	28.57
7	29.4	30.25	31.1	31.97	32.86	33.75	34.66	35.57	36.5	37.45
8	38.4	39.37	40.34	41.33	42.34	43.35	44.38	45.41	46.46	47.53
9	48.6	49.69	50.78	51.89	53.02	54.15	55.3	56.45	57.62	58.81
10	60	61.21	62.42	63.65	64.9	66.15	67.42	68.69	69.98	71.29
11	72.6	73.93	75.26	76.61	77.98	79.35	80.74	82.13	83.54	84.97
12	86.4	87.85	89.3	90.77	92.26	93.75	95.26	96.77	98.3	99.85
13	101.4	102.97	104.54	106.13	107.74	109.35	110.98	112.61	114.26	115.93
14	117.6	119.29	120.98	122.69	124.42	126.15	127.9	129.65	131.42	133.21
15	135	136.81	138.62	140.45	142.3	144.15	146.02	147.89	149.78	151.69
16	153.6	155.53	157.46	159.41	161.38	163.35	165.34	167.33	169.34	171.37
17	173.4	175.45	177.5	179.57	181.66	183.75	185.86	187.97	190.1	192.25
18	194.4	196.57	198.74	200.93	203.14	205.35	207.58	209.81	212.06	214.33
19	216.6	218.89	221.18	223.49	225.82	228.15	230.5	232.85	235.22	237.61
20	240	242.41	244.82	247.25	249.7	252.15	254.62	257.09	259.58	262.09
21	264.6	267.13	269.66	272.21	274.78	277.35	279.94	282.53	285.14	287.77
22	290.4	293.05	295.7	298.37	301.06	303.75	306.46	309.17	311.9	314.65
23	317.4	320.17	322.94	325.73	328.54	331.35	334.18	337.01	339.86	342.73
24	345.6	348.49	351.38	354.29	357.22	360.15	363.1	366.05	369.02	372.01
25	375	378.01	381.02	384.05	387.1	390.15	393.22	396.29	399.38	402.49
26	405.6	408.73	411.86	415.01	418.18	421.35	424.54	427.73	430.94	434.17
27	437.4	440.65	443.9	447.17	450.46	453.75	457.06	460.37	463.7	467.05
28	470.4	473.77	477.14	480.53	483.94	487.35	490.78	494.21	497.66	501.13
29	504.6	508.09	511.58	515.09	518.62	522.15	525.7	529.25	532.82	536.41
30	540	543.61	547.22	550.85	554.5	558.15	561.82	565.49	569.18	572.89
31	576.6	580.33	584.06	587.81	591.58	595.35	599.14	602.93	606.74	610.57
32	614.4	618.25	622.1	625.97	629.86	633.75	637.66	641.57	645.5	649.45
33	653.4	657.37	661.34	665.33	669.34	673.35	677.38	681.41	685.46	689.53
34	693.6	697.69	701.78	705.89	710.02	714.15	718.3	722.45	726.62	730.81
35	735	739.21	743.42	747.65	751.9	756.15	760.42	764.69	768.98	773.29
36	777.6	781.93	786.26	790.61	794.98	799.35	803.74	808.13	812.54	816.97
37	821.4	825.85	830.3	834.77	839.26	843.75	848.26	852.77	857.3	861.85
38	866.4	870.97	875.54	880.13	884.74	889.35	893.98	898.61	903.26	907.93
39	912.6	917.29	921.98	926.69	931.42	936.15	940.9	945.65	950.42	955.21
40	960	964.81	969.62	974.45	979.3	984.15	989.02	993.89	998.78	1003.69

Using the chart to determine the range of the differential pressure sensor

From the left hand column (velocity, in 1 m/s increments) and the top row (velocity, in 0.1 m/s increments), read across and down to find the corresponding differential pressure.

Example:

Air velocity is 6.2m/s - Read across from the left to 0.2m/s and down from the top to 6m/s. Where the column and row meet gives a differential pressure of 23.06Pa.

Therefore a differential pressure sensor, with a range of 0 - 25Pa would be selected.