



## Series MVT- Mini Vane Thermo-Anemometer

### Specifications– Installation and Operating Instructions



#### INTRODUCTION

Sense air velocity, air flow and temperature with the Series MVT Mini-Vane Thermo-Anemometer. The meter uses a 1/2" (12.7 mm) diameter metal telescoping antenna sensor to detect air flows up to 2358 ft/min and temperatures to 176°F (80°C). High accuracy is ensured with the low friction ball-bearing mini-vane. Air flow can be measured in CMM (m<sup>3</sup>/min) or CFM (ft<sup>3</sup>/min) and temperature is selectable °F or °C. The MVT features a 4-digit LCD display, data hold, record/recall maximum and minimum, RS232 output, averaging up to 20 measurements, 2/3 the measured value and auto shut-off to prolong life.

Air Velocity Measurements	Range	Resolution	Accuracy % rdg
m/s	0.80-12.00 m/s	0.01 m/s	± (2% + 0.2 m/s)
km/h	2.8-43.2 km/h	0.1 km/h	± (2% + 0.2 km/h)
ft/min	160-2358 ft/min	1 ft/min	± (2% + 20 ft/m)
mph	1.8-26.8 mph	0.1 mph	± (2% + 0.2 mph)
knots	1.6-23.3 knots	0.1 knots	± (2% + 0.2 knots)
Air Flow Measurements	Range	Resolution	Area
CMM	0-999, 900 m <sup>3</sup> /min	0.001 to 100	0 to 9,999 m <sup>2</sup>
CFM	0-999, ft <sup>3</sup> /min	0.001 to 100	0 to 9,999 ft <sup>2</sup>
Air Temperature	Range	Resolution	Accuracy
	32-176°F (0-80°C)	0.1°F/°C	1.5°F (0.8°C)

#### AIR VELOCITY MEASUREMENTS

1. Connect the sensor to the sensor input jack on top of the meter.
2. Turn on the meter using the Power button.
3. Select the VELOCITY function using the VEL/FLOW button. The LCD will display VEL when the velocity mode is selected.
4. Select the desired temperature units using the C/F select button. The LCD will reflect the current unit selection.
5. Select the desired air velocity units using the UNIT button. The LCD will reflect the current unit selection.
6. Open the antenna to the desired length.
7. Place the sensor in the air current to be measured. Have the air flow meet the sensor head in the direction of the word IN

#### SPECIFICATIONS

**Air velocity ranges:** 160 to 2358 ft/min; 1.8 to 26.8 mph; 1.6 to 23.3 knots; 0.8 to 12.00 m/s; 2.8 to 43.2 km/h.

**Temperature Ranges:** 32 to 176°F (0 to 80°C).

**Resolution:** 1 ft/min; 0.1 mph; 0.1 knots, 0.01 m/s; 0.1 km/h; 0.001 to 100 CMM/CFM; 0.1 °F/°C.

**Accuracy:** Air velocity: ±2%; Temperature: 1.5°F (0.8 °C).

**Sampling rate:** Approx. 1 second.

**Temperature Sensor:** Thermistor.

**Operating Temperature:** Meter: 32 to 122°F (0 to 50°C); Sensor: 32 to 176°F (0 to 80°C).

**Operating Humidity:** Maximum 80% RH.

**Display:** Dual function 0.5" (13mm) 4-digit LCD.

**Output:** RS232 PC serial interface with 16-bit data stream output.

**Power Supply:** 9V battery (included).

**Auto Shut-off:** 15 minutes to preserve battery life.

**Housing:** ABS Housing.

**Telescoping Sensor Length:** 23.6" (600 mm) max. with 39" (1 m) cable.

**Weight:** 1.6 lbs (700 g) including battery and probe.

printed on the sensor head.

8. View the air velocity and temperature readings on the LCD display. The large main LCD display shows the Air Velocity reading. The lower LCD sub-display shows the temperature reading.

#### DATA HOLD FEATURE

1. While taking measurements, press the HOLD button to freeze the LCD reading for later viewing.
2. The DH indicator will appear on the LCD when the display is in Data Hold mode.
3. Press HOLD again to return to normal operation.

#### MAXIMUM AND MINIMUM RECORDING

The meter allows the user to record and view the highest (MAX) and lowest (MIN) readings.

1. Press the MAX/MIN button once. The REC indicator will appear on the display and the meter will begin keeping track of the MAX and MIN values.
2. To view the MAX reading, press MAX/MIN again. The MAX indicator along with the maximum reading will appear on the LCD display.
3. Press MAX/MIN again to view the minimum value, the MIN indicator along with the minimum reading will appear on the LCD display.
4. To return to normal operation, press and hold the MAX/MIN button for approx. 3 seconds. The display indicators REC, MAX, and MIN will disappear.

## AIR FLOW MEASUREMENTS (CMM/CFM)

1. Connect the sensor to the sensor input jack on top of the meter.
2. Turn on the meter using the power button.
3. Select the FLOW mode using the VEL/FLOW button. The LCD will display FLOW when the flow function has been properly selected.
4. Select the desired air flow units: CMM (cubic meters per minute) or CFM (cubic feet per minute) using the UNIT button. The LCD will reflect the selection.
5. Press the SAMPLE AREA button to begin entering the area in m<sup>2</sup> or ft<sup>2</sup>. Use the  $\rightarrow$  button to increment the flashing digit, use the  $\leftarrow$  button to decrement the flashing digit, use the  $\rightarrow$  button to select the next digit, and use the MAX/MIN button to set the decimal point. Press the ENTER/RESET button when the area has been entered. The bottom display (normally used for the temperature display) will indicate the area entered in ft<sup>2</sup> or m<sup>2</sup>. The main LCD displays the air flow in CFM or CMM.
6. For air flow measurements, three modes apply: The normal, default mode, where the actual flow is indicated, and the two modes described below. Press the FLOW/MODE button to select one of the two modes listed below:  
2/3V MAX MODE: LCD displays 2/3 the measured value.  
AVG MODE: Up to 20 readings can be taken separately and averaged. Select the AVG mode via the FLOW/MODE button and then press the AVG/START button to take a reading. Up to 20 readings can be taken and averaged. The lower LCD display provides a 1 to 20 counter that increments each time a reading is taken. The main LCD displays the averaged air flow.
7. Note that the temperature function is not active in the AIR FLOW mode.

## RS-232 INTERFACE

The meter is equipped with a 3.5 mm phone jack (meter top) for connection to a PC for data acquisition purposes. To obtain PC interface cabling and Windows™ data acquisition software, contact Dwyer. Instructions for use are provided with the optional data acquisition software/hardware kits.

## BATTERY REPLACEMENT

When the LBT icon appears on the LCD, the 9V battery must be replaced.

1. Remove the rubber holster that surrounds the entire meter.
2. Slide off the rear battery compartment.
3. Replace the 9V battery.
4. Affix the battery compartment cover and the meter holster.

## USEFUL EQUATIONS AND CONVERSIONS

### Area

Area of a rectangle:

$$A = wh$$

w= width

h= height

Area of a circle:

$$A = \pi r^2$$

$$\pi \approx 3.14$$

r = radius of circle

## Cubic Equations

$$\text{CFM (ft}^3/\text{min)} = \text{Air Velocity (ft/min)} \times \text{Area (ft}^2\text{)}$$

$$\text{CMM (m}^3/\text{min)} = \text{Air Velocity (m/sec)} \times \text{Area (m}^2\text{)} \times 60$$

## Units Conversion Table

	m/s	ft/min	knots	km/h	MPH
1 m/s	1	196.87	1.944	3.6	2.24
1 ft/min	0.00508	1	0.00987	0.01829	0.01138
1 knot	0.5144	101.27	1	1.8519	1.1523
1 km/h	0.2778	54.69	0.54	1	0.6222
1 MPH	0.4464	87.89	0.8679	1.6071	1