Mini Vane

ANEMOMETER

Model : AM-4213

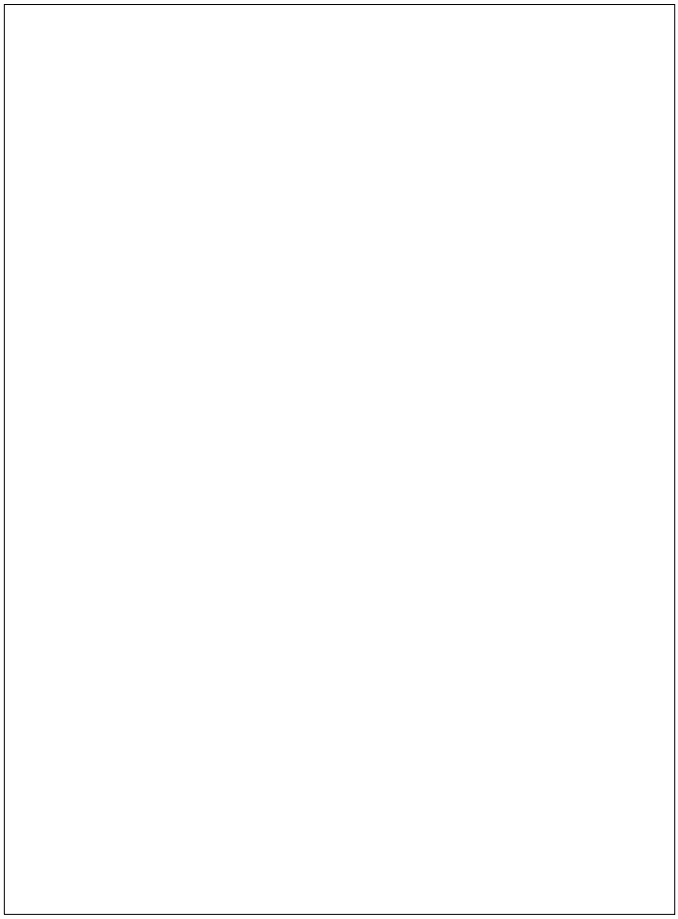


TABLE OF CONTENTS

1. FEATURES

* 13 mm dia heavy duty mini vane with telescope probe available for high temp. air velocity measurement.
* Microprocessor circuit provides special functions and offer high accuracy. and features.
* Low-friction ball vane wheels is accurate in both high & low velocities.
* Multi-functions for air flow measurement : m/s, km/h, ft/min, knots. mile/h.
* Build in temperature 蚓, 蚌 measurement.
* Thermistor sensor for temp. measurement, fast response time.
* Large LCD display.
* Dual function meter's display.
* Heavy duty & compact housing case.
* Record maximum and minimum reading with recall.
* Data hold.
* Auto shut off saves battery life.
* Operates from 006P DC 9V battery.
* RS 232 PC serial interface.
* Separate probe, easy for operation of the different measurement environment.
* Used the durable, long-lasting components, including a strong, light weight ABS-plastic housing case.
* Wide applications: use this anemometer to check air conditioning & heating systems, measure air velocities, wind speeds, temperature...etc.

2. SPECIFICATIONS

2-1 General Specifications

Circuit	Exclusive one-chip of microcomputer LSI circuit.
Display	* 13 mm (0.5") Super large LCD display. * Dual display.
Measurement	m/s (meters per second), km/h (kilometers per hour), ft/min (feet/per minute), knots (nautical miles per hour), mile/h (miles per hour), Temp.- 蚓, 蚌., Data hold.
Sensor Structure	*Air velocity :* Conventional twisted van arm and low friction ball bearing design. *Temperature :* Thermistor.
Memory Recall	Record maximum & minimum reading value with recall.
Power off	Auto shut off saves battery life or manual off by push button.
Sampling Time	Approx. 0.8 sec.
Operating Humidity	Less than 80% RH.
Operating Temperature	*Meter :* 0 蚓 to 50 蚓 (32 蚌 to 122 蚌).
	Probe : 0 蚓 to 80 蚓 (32 蚌 to 176 蚌).
Data Output	RS 232 PC serial interface.

Power Supply	Alkaline or heavy duty type DC 9V battery, 006P, MN1604 (PP3) or equivalent.
Power Consumption	Approx. DC 8.3 mA.
Weight	270 g/0.6 LB, main instrument
Dimension	*Main instrument:* 180 x 72 x 32 mm (7.1 x 2.8 x1.3 inch).
	Probe : Vane - 13 mm dia. Telescope probe length - Max. 600 mm.
Accessories Included	Instruction manual..... 1 PC. Sensor probe..... 1 PC. Carrying case.....1 PC.
Optional Accessories	RS232 cable.....UPCB-01

2-2 Electrical Specifications

A. Air velocity

Measurement	Range	Resolution	Accuracy
m/s	0.8 - 12.00 m/s	0.01 m/s 0.1 m/s,≧10 m/s	± (2%+0.2m/sec)
km/h	2.8 - 43.2 km/h	0.1 km/h	± (2%+0.2km/h)
mile/h	1.8 - 26.8 mile/h	0.1 mile/h	± (2%+0.2mile/h)
knots	1.6 - 23.3 knots	0.1 knots	± (2%+0.2knots)
ft/min	160 - 2358 ft/min	1 ft/min	± (2%+20 ft/min)

B. Air temperature

Measuring Range	0 ℃ to 80 ℃/32 ℉ to 176 ℉
Resolution	0.1 ℃/0.1 ℉
Accuracy	0.8 ℃/1.5 ℉ (< 60 ℃)

3. FRONT PANEL DESCRIPTION

Fig. 1

3-1 Display
3-2 Power Off/On Button
3-3 Hold Button
3-4 蚓/ 蚌 conversion Button
3-5 " MAX./MIN. " Button
3-6 Unit(m/s, km/h, ft/min, knots, mile/h) button
3-7 Vane Probe Head
3-8 Telescope Probe
3-9 Vane Probe Plug
3-10 Vane Probe Input Socket
3-11 RS-232 Output Terminal
3-12 Battery/Compartment /Cover

4. MEASURING PROCEDURE

1) Install the " Probe Plug " (3-10, Fig. 1) into the " Input Socket " (3-11, Fig.1).
2) Power on the meter by pressing the " Power Off/On Button " (3-2, Fig. 1).
3) Select the desired temperature units, using the "C/蚌 Conversion Button " (3-4, Fig. 1).
4) Select the desired air velocity measurement units, using the " Unit Button " (3-6, Fig. 1).
5) **Data Hold**

* During the measurement, pressing the " Hold Button " (3-6, Fig. 1) will freeze the measured value & the LCD will show " HOLD " symbol.
* Press the " Hold Button " again to cancel the data hold function.

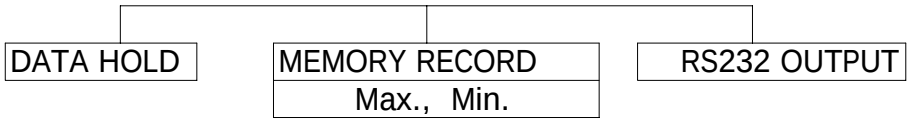
6) **Data Record (Maximum, Minimum reading)**

* The DATA RECORD function displays the maximum and minimum readings. To start the DATA RECORD function, press the " MAX./MIN. Button " (3-5, Fig. 1) once. " REC " symbol will appear on the LCD display.
* With the " REC " symbol on the display :
  (a) Press the " MAX./MIN. Button " (3-5, Fig. 1) once, the " Max " symbol along with the maximum value will appear on the display.
  (b) Press the " MAX./MIN. Button " again, the " Min " symbol along with the minimum value will appear on the display.
  (c) To exit the memory record function, press the " MAX./MIN. Button " continuously for at least 2 seconds. The display will revert to the current reading.

7) **For quick measurement, follow the procedures shown below :**

Main procedures :

Optional measuring procedures :



Power management

AUTO POWER OFF (Not activated during Memory Record Selection) or MANUAL POWER OFF

5. AUTO POWER OFF DISABLE

The instrument has built-in " Auto Power Shut-off " in order to prolong battery life. The meter will switch off automatically if none of the buttons are pressed within 10 min.
To de-activate this feature, Select the memory record function during measurement, by pressing the " MAX./MIN. Button " (3-5, Fig.1).

6. RS232 PC SERIAL INTERFACE

The instrument features an RS232 output via 3.5 mm Terminal (3-11, Fig. 1).
The connector output is a 16 digit data stream which can be utilized to the user's specific application.
An RS232 lead with the following connection will be required to link the instrument with the PC serial input.

Meter (3.5 mm jack plug)	PC (9W 'D" Connector)
Center Pin.....	Pin 2
Ground/shield.....	Pin 5

The 16 digit data stream will be displayed in the following format :

D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0

Each digit indicate the following status :

D0	End Word		
D1 to D8	Display reading, D1=LSD, D8=MSD *For example : If the display reading is 1234, then D8 to D1 is 00001234*		
D9	Decimal Point (DP) for Upper display. 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP		
D10	Polarity	0 = Positive	1 = Negative
D11 & D12	Annunciator for Display		
	01 =C	09 = Knot	12 = mile/h
	02 =F	10 = Km/h	84 = CMM
	08 = m/s	11 = ft/min	85 = CFM
D13	***When send the upper display data = 1*** ***When send the lower display data = 2***		
D14	4		
D15	Start Word		

6. BATTERY REPLACEMENT

1) When the left corner of LCD display show " LBT ", it is necessary to replace the battery. However, in-spec measurement may still be made for several hours after low battery indicator appears before the instrument become inaccurate.
2) Slide the Battery Cover (3-12, Fig. 1) away from the instrument and remove the battery.
3) Install a 9 V battery (PP3 type) and replace the cover.