OPERATION MANUAL

RS232
REMOTE VANE
DIGITAL ANEMOMETER

CE

Model: 8901

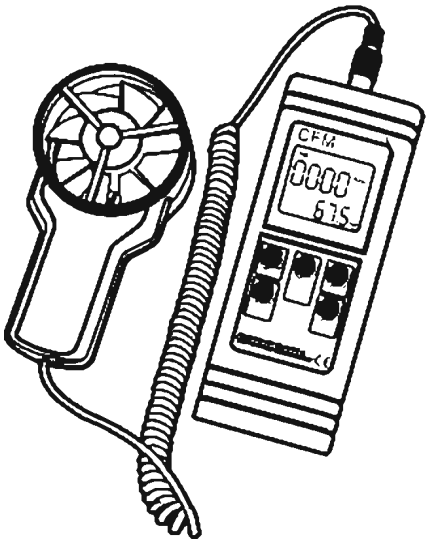
INTRODUCTION

◆ Congratulations on your purchase of the remote vane Anemometer. The meter features versatile functions, use it to check air velocity FPM (Feet per minute) and air volume CFM (Cubic feet per minute) in residential , light commercial and standard commercial systems.

◆ Thank you for selecting the meter. Please read this operation manual throughly before operating your meter, it has many user-friendly features , all of which are accessible through the keypad .

◆The meter is most ideal for HVAC/R technicians measuring Heat / Ventilation / Air conditioning / Refrigerating wind flow and temperature.

CAUTION: Objects striking the fan may damage meter.



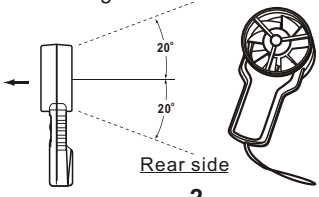
FEATURES

A. Measuring Air Velocity (Single point) Feet per Minute (FPM).
B. Continuous Moving Average.
C. MIN/MAX/AVG reading on a single point.
D. Air Velocity average for multiple points .
E. Non Sleep Mode(Bypass auto power off).
F. Default setting (Imperial/ Metric)
G. RS232 interface setting.
H. Auto power off function.
I. Direct measuring of air flow (Single point) CFM
J. Obtain air flow (CFM) average for multi-point

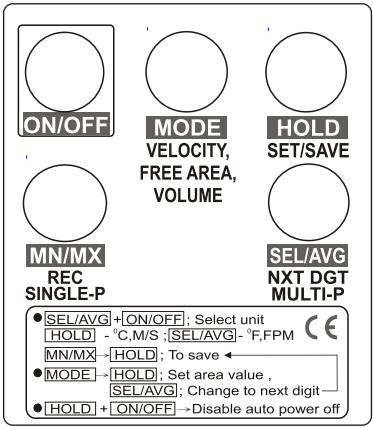
Typical Measurement

a) Please place the meter in the airstream. Make sure that the airstream and the sensor are aligned as shown (± 20 degrees maximum).

b) 3 seconds for the reading to stabilize.



FRONT PANEL DESCRIPTION



BUTTON / DISPLAY

1. **ON/OFF**. Power on or off .
2. **HOLD SET/SAVE.** Freezs the reading. Adjust the digit to the value needed.
3. **SEL/AVG ,NXT DGT-> MULTI-P.**
   AVERAGE . Display the average of all the measurements. Select the next digit for editing.
4. **MN/MX REC SINGLE-P**
   View the minimum or maximum , average or record value .
5. **MODE :**
   VELOCITY . Air Velocity in FPM .
   FREE AREA. Enter area value .
   VOLUME. Air Volume mode.

INDICATORS

1.vel. Air velocity measurement.
2.FLOW. Air Flow/Air volume.
3.AREA. Free area degault setting.
4.Hold. Freezs the reading.
5.ft/m. Feet per minute.(imperial)
m/s Meter per second.(metric)
6.ft². Feet square.(imperial)
7.m². meter square.(metric)
8.cfm. Cubic feet per minute.
9.cms. Cubic meter per second.
10.C. Celsius unit.
11.F. Fahrenheit unit.
12.REC. Record and saved.
13.AVG. Average data
14.MIN. Minimum data
15.MAX. Maximum data

16. Primary readout-Numerical display for Air Velocity/ Air Volume/Free area digit

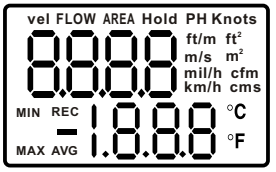
17. Secondary readout -Temperature display or records number.

18. "-" Polarity indicator for negative temperature.

19. Knots. 1850 meters per hour

20. Mil/h. Miles per hour

21. Km/h. Kilometer per hour



A. MEASURING AIR VELOCITY (SINGLE POINT) FEET PER MINUTE (FPM)

1. Press the **ON/OFF** button and turn meter on. Meter will show full display when first powered on in 5 seconds. (See Fig.1)
2. Unit is ready for use when **LCD** display shows **"vel"** at upper left corner and temperature at lower right corner. (See Fig.2)

Fig.1

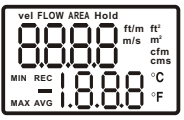


Fig.2

B. CONTINUOUS MOVING AVERAGE

The meter has the ability to display continuous moving average for up to two(2) hours.

1. Turn the power **ON .**
2. Place sensor in front of air flow source.
3. Press **MN/MX** record key once. An **"AVG"** in the lower left corner of the display confirms the meter is in the continuous moving average measurement mode. The display will update once per second. (See Fig.3)

Fig.3

C. MIN/MAX/AVG READING ON A SINGLE POINT

To obtain MIN/MAX/AVG readings on a single point.

1. Power unit **ON.**
2. Place sensor in front of air flow source.
3. Press **MN/MX REC SINGLE-P** key. The unit will begin to record the readings.
   The meter displays the average velocity by default. (See Fig.C-1)
   Each press of the **MN/MX** button cycles the display through:
   * Real-time readings.
   * MIN velocity.(Fig.C-2)
   * MAX velocity.(Fig.C-2)
   * Back to AVG velocity.(Fig.C-1)

Fig.C-1

Fig.C-2

Fig.C-3

Press the HOLD key before removing the unit from the air source.Press the MIN/ MAX REC SINGLE-POINT key to view the stored data which will appear in the following order :

- Instantaneous measurement
- Minimum
- Maximum
- Average

To clear the current **MIN/MAX** average readings, turn off the power or press and hold **MN/MX** key until unit beeps twice, then release.

D. AIR VELOCITY AVERAGE FOR MULTIPLE POINTS

1. Turn the meter on and position the vane at the first point to be measured. soon as the first measurement is completed press the **HOLD** key,(you will hear a single beep), and release. The display will show **HOLD** above the reading. (See Fig.4)

Fig.4

2. Press the **MN/MX** key,(You will hear a single beep), and release,(the display will show a digit 1-8). This number represents the point that is being recorded.(See Fig.5)
Hold anucinator and point at the lower corner will be disappeared in one second.

Fig.5

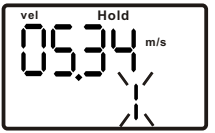


Fig.5-1

※ Repeat this process until all desired points have been measured and recorded, A maximum of 8 points may be recorded at one time.

3. Once all measurements have been recorded press **SEL/AVG** key. The unit will display the average air velocity reading and number of points measured. (See Fig.5-1) as an example of stored 8 points shows average air velocity measurement.

E. NON SLEEP MODE (Bypass auto power off)

Power unit off;press **ON/OFF** & **HOLD** at the same time and then release **ON/OFF** only. An **"n"** appears on the **LCD** then you can release the **HOLD** key. The meter will remain on until the **ON/OFF** button is pressed.(See Fig.6)

Fig.6

F. HOW TO CHANGE THE DEFAULT SETTING/IMPERIAL TO METRIC Vice Versa(METRIC TO IMPERIAL)

— The default measuring units can be changed by following the steps below.
— The unit should be turned off before commencing.

1. Press and hold the **SEL/AVG** key, then press the **ON/OFF** key once to turn the unit on. When the **LCD** displays " **ft/m,ms** " and "**°C,°F**" release the **SEL/AVG** key.(Fig.7)

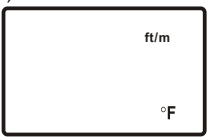
2. To choose metric units press the **HOLD** key. The **LCD** should display " **m/s,°C**". (See Fig.8)

Fig.7

Fig.8

To choose the imperial units press the **SEL/AVG** key. The **LCD** should display "**ft/m,°F**" (See Fig.9).

Fig.9



3. Press the **MN/MX REC** key, the **LCD** should display "**S**" (See Fig.10) . Then press the **HOLD** key. The LCD display **2400 or 1200** (pre-setting). (If Baud rate change is needed, please refer to step G.1) (See Fig.11)

Fig.10

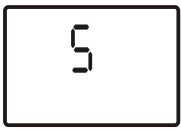
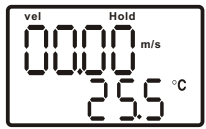


Fig.11

4. Press the **MN/MX REC** key again, the **LCD** should display "**S**" again. (See Fig.10) .Then press the **HOLD** key, the **LCD** will revert to a normal measurement display. The default setting is now completed.(See Fig.12)

Fig.12

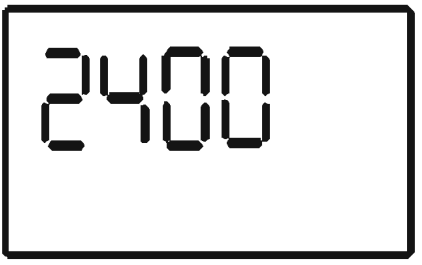


5. Press **HOLD** key for measuring the current air velocity / temperature with pre-setting unit . A "**HOLD"** above the display is disappeared now.
   Note: Without pressing **HOLD** key, display is freezing .

G.SETTING THE RS232 OUTPUT (Optional accessory)

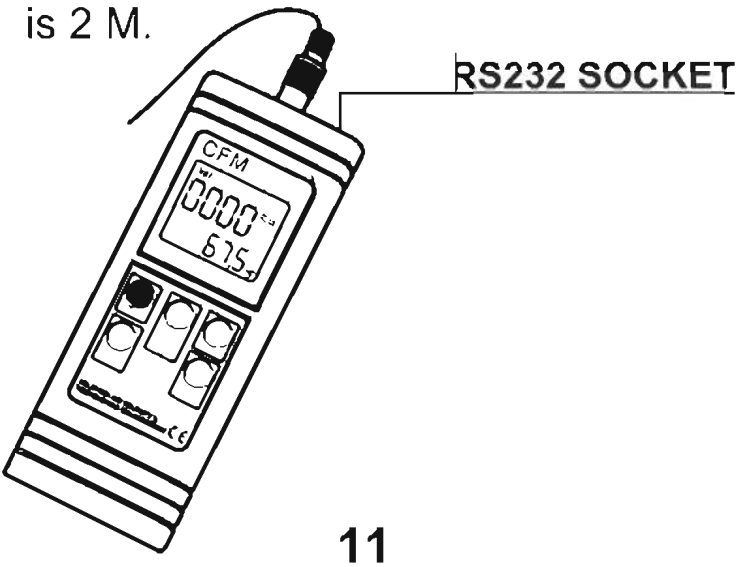
1. Following Step F.2, you will see a **"2400"** (default) number on the screen. The 2400 is the default setting of Baud Rate for RS232 output. You can change the setting to "1200" by pressing **HOLD** Key and change the setting back to "2400" by pressing the **SEL/AVG** key. (See Fig.13)

Fig.13



2. Please remember to save your changes by pressing the **MN/MX** key. An "**S**" displays on the **LCD**. (See Fig.10).
   Press the **HOLD** key to confirm and save the changed value. The meter will return to air velocity mode automatically.

※ Plug the earphone jack of the cable VZRS232M into RS232 socket on the meter and connect 9-pin D-sub to the computer's COM1 or COM2. Press **ON/OFF** key to start measurement. The Length of the cable VZRS232M is 2 M.



H. AUTO POWER OFF

The unit will turn off automatically after 20 minutes to save the battery. Press **ON/OFF** and **HOLD** button to disable Auto Power Off function.

I. DIRECT MEASURING OF AIR FLOW (SINGLE POINT) CFM

Air Velocity measurement is calculated by multiplying the air velocity readings by the free area dimensions. Free area is published by the grill and register manufacturer you are servicing. You must first determine the free area of the air source before entering it into the meter.

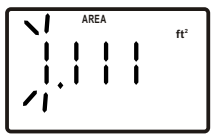


Fig.14

1. Power unit on
2. Press **MODE** once (you will hear one beep). Meter will display"**AREA**" in upper case lettering and "**1.111**" will appear (See Fig.14) .
   The first digit will be flashing.
3. Press the **HOLD** key to increase the number.
4. Press the **SEL/AVG** key to advance to next number. Follow Step 3 and repeat.
5. Press the **MODE** key once all digits have been entered. The word "**flow**" will appear.

The meter is now ready to measure air flow(**CFM**).

TO CLEAR MEMORY OF CURRENT MULTI- POINT AVERAGE READINGS. Press and hold **SEL/AVG** key until unit beeps twice, then release. Unit must be in velocity/FPM mode in order to clear current average readings.

J. TO OBTAIN AIR FLOW (CFM) AVERAGE FOR MULTIPOINTS

Simply complete steps 1~3 in D. Once all the multi-point average is determined:

1. Press **MODE** button once and confirm correct free area setting is locked into instrument. (if free area setting must be adjusted make necessary changes now.)
2. If free area setting is correct press **MODE** button again to enter air flow mode.
3. Unit will now display average air flow reading and number of points measured.

The meter's free area dimension has been set to **1.111** square feet, a most commonly used free area dimension in the U.S.A. If you want to measure the air flow for a single point without changing the area dimension, please power on the meter, position the fan and then press the **MODE** key twice, you will be into the air flow(CFM) mode and the air flow(CFM) displayed is equal to the current air velocity reading **(FPM x FREE AREA = CFM)** times the 1.111 square feet.

We would suggest to set the free area dimension before you start measuring the air velocity so after you measure the air velocity, you can jump to the air flow mode to view the cubic feet per minute without further changing the free area dimension.

Cubic equations:

CFM (ft^3/min)
= Air Velocity (ft/min)xArea (ft^2)

CMM (m^3/min)
= Air Velocity (m/sec)xArea (m^2) x 60

Units Conversion Table:

	m/s	ft/min	knots
1 m/s=	1	196.87	1.944
1 ft/min=	0.00508	1	0.00987
1 knots=	0.5144	101.27	1
1 km/hr=	0.2778	54.69	0.54
1 mph=	0.4464	87.89	0.8679

	km/hr	mph
1 m/s=	3.6	2.24
1 ft/min=	0.01829	0.01138
1 knots=	1.8519	1.1523
1 km/hr=	1	0.6222
1 mph=	1.6071	1

Note:
On initial start up the unit will display pH, knots. (See Fig.15)

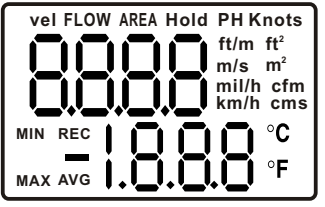


Fig.15

TROUBLE SHOOTING

? LOW BATTERY

When the reading of display is flashing, or no display , please change the 9 volt battery in the meter .

Replace battery procedure:

Remove the screw from the lower back of the meter. Lift the panel out and remove the battery .Reverse the process to install a new battery and replace the cover .

? E6

Indicates the related circuits or parts of thermistor are failed. Send them back to the store you have bought for repairing.

? SENSOR'S FAN WILL NOT TURN

Indicates the sensor fan is damaged , purchase new sensor probe .

Note:

Manufacturer's part number is VY890PAZ.

MATERIAL SUPPLIED

This standard package contains:

1.The meter x 1
2.Battery x 1 (9.0 volt)
3.Operation manual x 1
4.Hard carry case x 1

Optional accessory:

a) RS232 software CD-R.
b) D-sub connector.

GENERAL SPECIFICATION

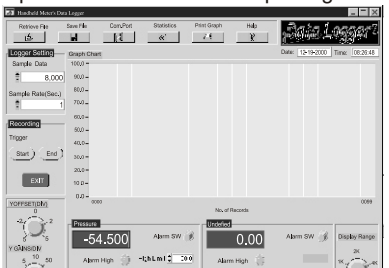
SPECIFICATIONS		Resolu-tion	Accuracy
Airflow Range	80-6900 ft/min	1	±2%FS
	0.4-35 m/sec	0.01	±2%FS
Temperature	-10°C to 50°C	0.1	±0.6°C
	+14°F to 122°F	0.1	±1.0°F
Battery Life	100 Hours		
Display Type	LCD		
Display Size	37mm x 42mm(1-1/4" x 1- 5/8")		
Max Reading	9999		
Dimensions	181mm(L)x71mm(W)x38mm(D)		
Fan Diameter	70mm(2-7/8")		
RS232 output FORMAT	: TXXX.XF, VXXXXFTM TXXX.XC, VXXXXMPS		
Auto power off	: Approx. 20 minutes		
Operating Humidity : Max. 90% RH(0~35°C)			

RS232 OUTPUT:

The meter can link with personal computer to capture on-line datas ,display pressure records with real-time output, you can retrieve file , save the datas for operating data analysis, records statistic ,multi-files display in the screen, ...versatile functions for your choice.

Connection procedures:

1.Plug the optional accessory RS232 cable onto the DC jack port (at the right side of the meter)
2.Instert the D-sub 9P type connector onto computer's Com.1 or 2 port or....
3.Start to set up RS232 software by inserting the CD-ROM or Floppy diskette.
4.When installing the RS232 software ,please follow the operation manual procedure in the software package.



WARRANTY

The meter is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. This warranty covers normal operation and does not cover battery , misuse , abuse , alteration , tampering , neglect , improper maintenance , or damage resulting from leaking batteries . Proof of purchase is required for warranty repairs . Warranty is void if the meter has been opened .

RETURN AUTHORIZATION

Authorization must be obtained from the supplier before returning items for any reason . When requiring a RA (Return Authorization) , please include data regarding the defective reason, the meters are to be returned along with good packing to prevent any damage in shipment and insured against possible damage or loss .

CE CERTIFICATION

The meter conforms to the following standards:

* EN 50081-1/1992: EN 55022
* EN 50082-1/1997: (EN 61000-4-2/-3/-8 ,ENV 50204)

, the meter complies with the essential protection requirements of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.