GENERAL®

WDCFM8912

USER'S MANUAL

DIGITAL AIR FLOW METER WITH CFM, BTU, TEMP, HUMIDITY, DP, FPM, MPH, KPH, MPS, KNOTS & WET BULB

INTRODUCTION

Thank you for purchasing this digital Anemo-Psychrometer.

This unique meter is designed with 7 H.V.A.C &R that must have parameters in 1. The meter is designed as battery operated for Humidity, Air Temp., Dew Point, Wet Bulb, Air Velocity, Air Volume and BTU.

The sensor is built in the remote fan and is specially protected by tunable cap. While in operation, please turn on the cap to get accurate temperature and humidity readings.

The psychrometer is a micro processor based design. A must device for HVAC engineers use. No need to whirl the meter or refer to charts. Easy to get wet bulb, dew point and BTU measurements quickly!

FEATURES:

- Tunable cap to protect sensor
- Big LCD digit display
- Professional remote vane
- Metric & Imperial selectable
- Handheld size, easy to carry
- Low battery indication
- Fast response & Accurate reading
- Tripod mountable for long time use
- Dew Point calculated in seconds
- Wet Bulb calculated in seconds
- Microprocessor circuitry for reliability
- Sleep and non-sleep selectable
- Powered by 4 “AAA” batteries or 9VDC adaptor
- Back light for dark places

MATERIAL SUPPLIED

THIS PACKAGE CONTAINS:

- The meter
- Remote vane
- Battery 4 “AAA”
- Operation manual
- Hard carry case

OPTIONAL ACCESSORY:

- ASFT KIT includes RS232 cable & CD

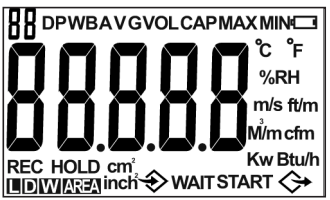
REMINDER

IMPORTANT:

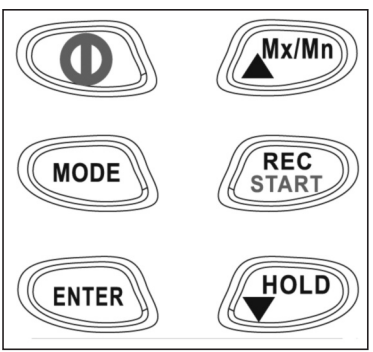
1. Rotate the cover before measurement to ensure the measured data is correct.
2. The fan and meter are sold as a kit and are calibrated together.
   When you need to replace the fan, please see page 11 for details on fan replacement.

CONTROLS AND INDICATORS LCD DISPLAY

LCD DISPLAY



KEY PAD



1. Power: ⏻
   - Turn on the meter with auto-sleep mode.
   - Turn off the meter at any mode.
   - When the meter is off, pressing ⏻ more than two sec. to enter units selection.

2. MODE:
   - Pressing to select different modes.
     Temp. →DP →WB →RH →Velocity.
   - Pressing longer to select VOL and CAP.

3. ENTER:
   - To confirm the setting & calibration.

4. Mx/Mn/Up ▲Mx/Mn:
   - Pressing to view MAX/MIN/AVG value.
   - Press to select the value of each digit in cycle.

5. REC/START:
   - To start measuring volume or capacity without waiting.

6. HOLD/Down ▲HOLD:
   - In basic modes pressing this key to hold the current reading, then pressing this key again to unlock the holding.
   - Pressing to select the setting digit.

7. Power + ▲Mx/Mn :
   - When the meter is off, pressing more than two sec. to enter non-sleep mode.

8. Power + ▲Mx/Mn + ▼HOLD:
   - Pressing more than two seconds to enter RH calibration mode.

9. ENTER + ▲HOLD:
   - Pressing to turn on/off the backlight.

POWER ON/OFF & UNIT SELECTION

Press ⏻ to turn on the meter with auto-sleep mode. Press again to turn off the meter at any mode.

When the meter is off, pressing ⏻ more than two seconds to enter units selection mode.

When in unit selection mode, press ▲Mx/Mn or ▼HOLD to select the unit then, press **ENTER** to save and meter will be powered on automatically.

BASIC MEASUREMENT

Basic measured parameters of this model:

BASIC MEASUREMENTS

- Air temp.
- Humidity
- Dew Point
- Wet Bulb
- Air Velocity

EXTENDED MEASUREMENTS

- Air Volume
- Sum of Volume
- Capacity
- Sum of Capacity

When powered on, the air temperature is the default value to show on the LCD. To review the other basic parameters, just press the **MODE** key then each parameter will be displayed in turn.

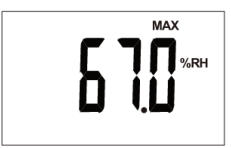
While in basic mode, press **MODE** for over 2 seconds to enter extend measurement mode. You can also press mode key to switch between volume and capacity.

MAX, MIN & AVG.

When the meter is powered on, air temp., dew-point, WBT, humidity & velocity is temporarily saved in meter, so, to press ▲Mx/Mn could view the average value minimum value and maximum value in turns. Press ▲Mx/Mn again to back to normal mode. The data will be re-counted once the meter is powered off and turned on again.

When in Max/Min/Avg **MODE**, press the **MODE** key to display the parameters you need. (Fig. A, Fig. B)

(Fig. A)



(Fig. B)

AIR VOLUME: OUTLET SIZE

While in normal **MODE**, long pressing **MODE** key to enter air volume mode.

To measure the volume, the outlet size needs to be input first. There are three choices to enter the size:

- Length & Width:
  This is the default choice. Press ▼HOLD key to select the setting digit first, then press ▲Mx/Mn key to select the appropriate value (0-9). When selecting the value, the value will show from 0 to 9 in cycle. After entering the length, short press **ENTER** to enter width setting. Repeat the procedure of length setting, then short press **ENTER** again to finish the size setting and enter next step. (Fig. C)
- Diameter:
  While in default outlet setting mode (length), press the **ENTER** key for over two seconds to choose the diameter setting. Press ▼HOLD KEY to select the setting digit first, then press ▲Mx/Mn key to select the appropriate value (0-9)
  After selection, short press enter again to finish the size setting and enter next step. (Fig. D)
- Area:
  While in diameter setting mode, press the **ENTER** key for over two seconds to enter the area setting.
  Press ▼HOLD KEY to select the setting digit first, then press ▲Mx/Mn key to select the appropriate value (0-9)
- After selection, short press **ENTER** again to finish the size setting and enter next step. (Fig. E)

(Fig. C)

(Fig. D) (Fig. E)

NOTE: Refer to page 9 for the range of each size input mode.

AIR VOLUME: MEASUREMENT

After short pressing **ENTER** to finish and leave size setting, there are 20 second waiting time for you to put the vane to the grill.

During the 20 second waiting time, the count down number

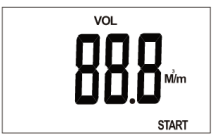
displayed on top left corner and meter also beeps when time is up. (Fig. F)

If no need to wait for 20 seconds, just press **REC/START** key to start measuring the volume right away.

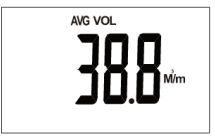
(Fig. F)

After starting measuring the volume, the meter will automatically count the volume for 60 seconds to give a average value. (Fig. G) During this 60 second time, the vane should move along the whole outlet to cover each area so the measured data could be more accurate. The count down number displayed on the top-left corner as a reminder and meter also beeps when 60 seconds is up.

After time is up, 60 seconds average volume will display on the LCD as Fig H.



(Fig. G)



(Fig. H)

If there are more than one outlet, you could press **ENTER** key again to repeat the procedure from outlet size input. You could measure outlet as many times as you need.

After measuring more than one outlet volume, you could press ▲Mx/Mn key to review the sum of all outlets. Pressing or ▼HOLD to review the last outlet volume.

CAPACITY: OUTLET SIZE

While in normal mode, long pressing **MODE** to enter air volume, then short press **MODE** to enter capacity mode. To measure the capacity, put the vane on the Inlet, then press **ENTER** to count the 60 second average Temp. & RH% (Fig. I) countdown will show on left-top corner of LCD and meter beeps after 60 second is up. Then, the meter enters outlet size setting automatically. (Note 1)

There are three choice to enter the size:

- Length & Width:
  This is the default choice. Press ▼HOLD key to select the setting digit first, then press ▲Mx/Mn key to select the appropriate value (0-9). When select the value, the value will show from 0 to 9 in cycle. After entering length, short press **ENTER** to enter width setting. Repeat the procedure of length setting, then short press **ENTER** again to finish the size setting and enter next step. (Flg. J)

• Diameter:
While in default outlet setting mode (length), pressing **ENTER** key for over two seconds to choose diameter setting. Press ▼HOLD key to select the setting digit first, then press ▲Mx/Mn key to select the appropriate value (0-9)

(Fig. I)

(Fig. J)

• Area:
While in diameter setting mode, pressing **ENTER** key for over two seconds to enter area setting. Press ▼HOLD key to select the setting digit first, then press ▲Mx/Mn key to select the appropriate value (0-9)
After selection, short press **ENTER** again to finish the size setting and enter next step. (Fig. L)

(Fig. K)

(Fig. L)

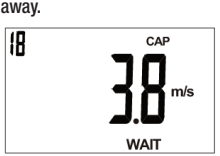
CAPACITY: MEASUREMENT

After short pressing **ENTER** to finish and leave size setting, there are 90 or 20 second (note 1) waiting time for you to put the vane to the grill.

During above waiting time, the count down number displayed on top-left corner and meter also beeps when time is up. (Fig. M)

If no need to wait for 90 or 20 seconds, just press **REC/START** key to start measuring the capacity right away.

Note 1: If you have many outlets to measure, while you start to measure the second one, the waiting time will adjust to 20 sec automatically. 90 sec. is the buffer for sensor to stable. No matter in inlet or outlet, suggest to move the vane along the grill to get accurate values.

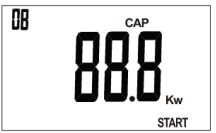


(Fig. M)

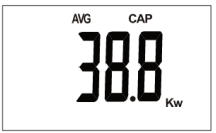
After starting measuring the capacity, the meter will automatically count the capacity for 60 seconds to give an average value. (Fig. N)

During this 60 second time, the vane should move along the whole outlet to cover each area so the measured data could be more accurate. The count down number displayed on the top-left corner as a reminder and meter also beeps when 60 seconds is up.

After time is up, 60 seconds average volume will display on the LCD as Fig 0.



(Fig. N)



(Fig. 0)

If there are more than one outlet, you could press **ENTER** key again to repeat the procedure from outlet size input. You could measure outlet as many as you need.

After measuring more than one outlet volume, you could press ▲Mx/Mn key to review the sum of all outlets. Pressing ▼HOLD key to review the last outlet capacity.

If you would like to measure more than 1 inlet, please wait for 10 minutes and allow the humidity sensor to return to the room humidity or help it by home ventilation.

LOW-BATTERY

Two level low battery indication:

- Level 1: Battery indicator will flash when at level 1. In this situation, the meter will work normal however users should prepare new batteries.
- Level 2: Battery indicator will always display on the LCD while at level 2. In this situation, users need to change batteries immediately.

1. Open the battery cover on the rear side.
2. Remove the expired batteries.
3. Insert new "AAA" batteries and make sure the batteries are inserted with correct polarity, replace the cover.

AC TO DC ADAPTOR

The compatible AC to DC adaptor is 9V and at least 200mA.

AVAILABLE SIZE RANGE

Please refer to below input size range. Please be reminded that in metric L/W/D, the value after decal is not selectable.

	L/W/D	AREA
cm	000.0-999.0	00000-99999
inch	000.0-999.9	00000-99999

RS232 SOFTWARE

SOFTWARE

We have compatible software and cable which is design for the meter, please contact your supplier for details.

INTERFACE OF RS232

A. 9600 bps, 8 data bits, no parity.

B. Format: Tx. ASCII code by every sec. while meter is on

VXXX.XMPS(FTM):TXXX.XC(F):HXX.X%:
dXXX.XC(F):wXXX.XC(F):
vXXXXX.XCMM(CFM):
UXXXXX.XKW(BTU)

Where: The 1" value is velocity, the 2nd value is Air temp., the 3" value is Humidity, the 4th value is Dew Point, the 5th value is Wet bulb, the 6th value is AIR Volume, the 7th value is Capacity. The x here means one of {0|1|2|l|9|-}

C. Format for error value:

E01 Probe is not connected; E02 Under flow;

E03 Over flow. See more in page The unit for error code is Nul.

EX:

V010.5MPS: TE02Nul: H66. 7%: dE04Nu:wE04Nul:v00020.5CMM.

TROUBLESHOOTING

1. Power on but no display
   a) Make sure the time of pressing key is more than 0.1 second.
   b) Check that the batteries are in place and in good contact with correct polarity.
   c) Replace a new battery and try again.
   d) Remove the battery for one minute and put back again.
2. Display disappear
   a) Check whether the low battery indicator was displayed before Display faded, if yes, replace with new batteries.
   b) Turn on the meter by pressing ⏻ + ▲Mx/Mn key to disable auto power off function for longtime using.
3. E 1
   a) The probe is disconnected or damaged.
4. E 2
   a) The value is underflow.
5. E 3
   a) The value is overflow.
4. E 4
   a) The original data that is relative to this value error.
5. E 5
   a) Out of meter display range.

6. E 6
   a) the value is not calculated completely.
7. E 11
   a) Humidity Calibration error.

SPECIFICATION

TEMPERATURE: -4º to 140ºF (-20º to 60ºC)
Accuracy: ±1ºF (±0.6ºC),
Resolution: 0.1ºF (0.1ºC)
RELATIVE HUMIDITY: 0 to 100% RH
Accuracy: ±3% at 10 to 90%RH (cal. temp.)
±5% at other range Resolution: 0.1 %
DEW POINT: -90º to 158ºF (-68º to 70ºC)
Resolution: 0.1ºC
WET BULB TEMPERATURE: -7.6º to 158ºF (-22º to 70ºC)
Resolution: 0.1ºC
AIR VELOCITY: 1 to 114 ft/s (0.3 to 35 m/s)
Accuracy: ±5%
Resolution: 0.1
AIR VOLUME: 0 to 99999 cfm (0 to 99999 m3/s) Accuracy: ±5%
Resolution 0.1 (0 - 9999.9) or 1 (10000 - 99999)

ADDITIONAL FEATURES:

BTU CAPACITY: 0 to 99999 BTU/H (KW)
Resolution. 0.1 (0 -9999.9) or 1 (10000 99999)
Dimension: (HxWxD)
Vane. 6.7" x 3" x 1.6" (170 x 77 x 40mm)
Meter. 6.9" x 2.8" x 1.3" (175 x 70 x 33mm)
Power: 4 “AAA” batteries or 9V >200mA adaptor.

FAN REPLACEMENT

If users have more than one set anemometers or users change a new fan for his old meter, user should input the RH% calibration data which enclosed with each fan. The data will be recorded in a slip of paper and ship with fan, please keep the paper well for future use.

There are two calibration data need to be inputted. First value is “Slope, S” and the second value is “Intercept, Z”

SLOPE (VALUE S)

1. While the meter is off, press ⏻ + ▲Mx/Mn + **REC/START** at the same time for 2 seconds to enter humidity slope calibration mode. LCD will display current saved S value and the last digit will flash to indicate the value is ready for edit.

2. If the saved S value is different from your paper, press ▼HOLD key to move to the digit which you want to edit and then use ▲Mx/Mn key to change the value.

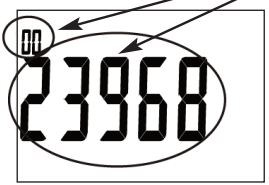
3. Press **ENTER** key to save new input S value and then meter will enter second value input automatically.

IMPORTANT NOTE: While setting the slope, only input 5 digits after decimal point, so user need to round off the 6th digit.

User should also input two digits before decimal.

Example:

1. If the S value is 8.239678, user should input 08 23968
2. If the S value is 11.23968, user should input 11 23968
3. If the S value is 0.2396838, user should input 00 23968 (Fig. S)



(Fig. S)

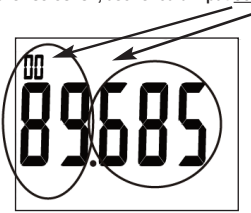
INTERCEPT (VALUE Z)

1. While press **ENTER** key save the S setting, the meter will enter intercept input automatically. The last digit will flash to indicate the Z value is now ready for edit.
2. If the last saved Z value is different from your paper, press ▼HOLD key to move to the digit which you want to edit and then use ▲Mx/Mn key to change the value.
3. Press **ENTER** key to save new input Z value and then meter will be back to normal RH value mode.

IMPORTANT NOTE: While setting Z value, only input 3 digits after decimal point, so user need to round off the 4th digit.

User should also input four digits before decimal. All the Z is a negative value but LCD will not appear the negative icon. Example:

1. If the Z value is -928.8683, user should input 09 28868
2. If the Z value is -1928.868, user should input 19 28868
3. If the Z value is -89.68482, user should input 00 89685 (Fig. T)



(Fig. T)

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 returned along with good packing to prevent any damage in shipment and insured against possible damage or loss.

NOTES

GENERAL®

Specialty Tools & Instruments™

WDCFM8912 User's Manual
Specifications subject to change without notice

MAN#WDCFM8912 7/08