

# OPERATION MANUAL

## POCKET PSYCHROMETER



Model: ■ 8706N  
■ 8706  
■ 8716



## INTRODUCTION

Thank you very much for purchasing this psychrometer!

This unique meter is designed as pocket size, battery operated for Humidity, Dry Bulb, Dew Point, Wet Bulb, External Temperature & Temperature Differential measurement. The sensor is also specially protected by tunable cap.

The psychrometer is a micro processor-based design. A must device for HVAC engineers use. No need to whirl the meter or refer to the chart. Easy to get Wet Bulb/ Dry Bulb and Dew Point temperature quickly!

### Features :

- **Tunable cap** to protect sensor.
- **External Temp.** probe.
- **Triple LCD** digital display.
- **T1-T2 & T2-DP** function.(Model:8716)
- **Data Hold** to capture readings.
- **Pocket size**, easy to fit in pocket.
- **Low** battery indication.
- **Fast** response .
- **Accurate** reading .
- **Maximum** record function .
- **Minimum** record function.
- **Dew Point** calculated in seconds.  
(Model:8706, 8716)
- **Wet Bulb** calculated in seconds.  
(Model:8706, 8716)
- **Microprocessor** circuitry for reliability.
- **Auto power off** time frame selectable.
- **Disable power off.**

## MATERIAL SUPPLIED

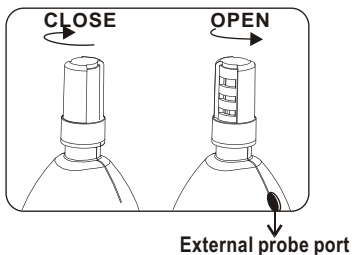
This package contains:

- ✓ The meter x 1
- ✓ Battery x 2 (AAA size )
- ✓ Operation manual
- ✓ White plain box / gift box

Optional accessory :

- ✓ External temperature probe :  
P/N: VZ87P6AZ
- ✓ Calibration salt bottles :  
(33% and 75%)  
P/N: VZ0033AZ1 , VZ0075AZ1
- ✓ Hard carry case :  
P/N: VM68706B

## WARNING



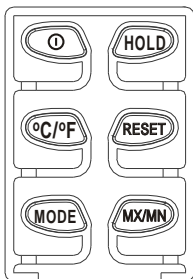
### **IMPORTANT:**

BE SURE TO OPEN THE SENSOR PROTECTION CAP BEFORE STARTING THE MEASUREMENT IN ORDER TO GET ACCURATE VALUE FOR ALL MODELS.

# CONTROLS AND INDICATORS

Model:8706N

LCD DISPLAY

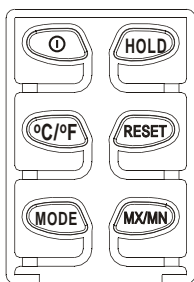
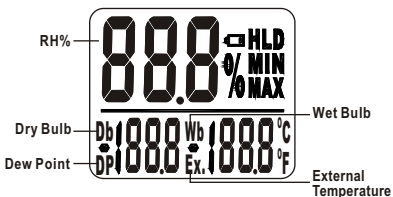


- 1) ① Key  
- Power on/off
- 2) °C/°F Key  
- Switch between display of °C and °F
- 3) MODE key  
- N/A

- 4) HOLD Key  
- Hold display  
- ①+ HOLD = Non-Sleep mode (The default setting is auto-sleep in 5 min.)
- 5) RESET Key  
- Reset Min/Max memory
- 6) MN/MX Key  
- Display minimum value of memory from power on to the moment.  
- Display maximum value of memory from power on to the moment.

## Model:8706

### LCD DISPLAY

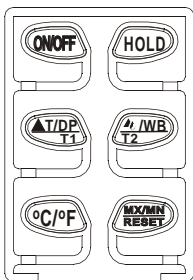
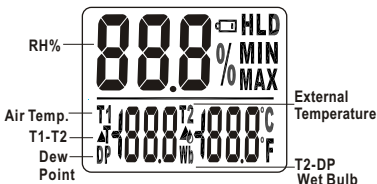


- 1) ⓐ Key  
- Power on/off
- 2) °C/°F Key  
- Switch between display of °C and °F
- 3) MODE key  
- Switch between display of Db & DP (Db=Air Temp.)

- 4) HOLD Key  
- Hold display  
- ⓐ+ HOLD = Non-Sleep mode (The default setting is auto-sleep in 5 min.)
- 5) RESET Key  
- Reset Min/Max memory  
- Wb and Ex mode switch (Press to display only while external probe is plugged.)
- 6) MN/MX Key  
- Display minimum value of memory from power on to the moment.  
- Display maximum value of memory from power on to the moment.

# Model:8716

## LCD DISPLAY



- 1) ON/OFF key  
-Power on/off
- 2)  $\Delta T/DP$  T1 key  
-Switch between  $\Delta T$ , DP and T1.  
( $\Delta T$ =T1-T2,  
T1=Air Temp.  
T2=ExternalTemp.)
- 3) °C/°F key  
-Switch between °C and °F

- 4) HOLD Key  
- Hold display  
- ON/OFF + HOLD = Non-Sleep mode.  
Non-sleep time is selectable from 2, 5, 10, 20, 40 to 60 min. (The default setting is auto-sleep in 10 min.)
- 5)  $\Delta T/WB$  T2 key  
-Switch between  $\Delta T$ , WB and T2.  
( $\Delta T$ =T2-DP, T2=ExternalTemp.)
- 6) MX/MN RESET key  
- Reset Min/Max memory.  
- Display minimum value of memory from power on to the moment.  
- Display maximum value of memory from power on to the moment.

## AUTO POWER OFF (SLEEP FUNCTION)

Unit will turn itself off after 5 minutes (8706N, 8706) or 10 minutes (8716). To override Auto Power Off function, press **⓪** + HOLD (8706N, 8706) or **ON/OFF** + HOLD(8716) while the meter is off. When "n" appears (See Fig.A), release **HOLD** button. Meter is now in Non-Sleep Mode.

For 8716, the auto power off time frame could be selectable from 2, 5, 10, 20, 40 to 60 minutes.

Fig. A →



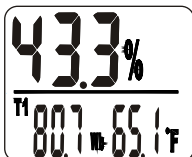
## MODE OPTIONS

- (1) Turning on the protective sensor cap in counterclockwise direction.
- (2) Turn meter on by pressing **⓪** (8706N, 8706) or **ON/OFF**(8716) button. (See Fig.B)
- (3) Press **C/F** key more than 1 sec. to convert reading to desired unit. Both temperature and relative humidity measurement will display simultaneously. (See Fig.C)



8706

↑  
Fig. B



8716

↑  
Fig. C

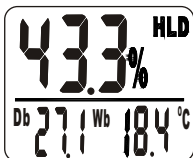
## DATA HOLD FUNCTION

Press "**HOLD**" button until (**HLD**) appears in display.

The current reading is now held and will not change until Hold function cancelled. (See Fig.D).

Press "**HOLD**" button again to cancel Hold function. Hold function can be used on humidity, dew-point, dry bulb/T1, Ext. Temp./T2, wet bulb and temp. Difference.

8706  
Fig. D →



## PARTIAL HOLD FUNCTION FOR 8716

While in normal mode, press "HOLD" +  $\frac{\Delta T/DP}{T1}$ , only the T1, RH will be held. Press "HOLD" again to release.

While in normal mode, press "HOLD" +  $\frac{W/WB}{T2}$ , only the T2 will be held. Press "HOLD" again to release.

## DEW POINT FUNCTION

8706N isn't equipped with this function.

8706:

Press **MODE** button until "**DP**" appears on display. Select to display dew point or dry bulb (air temp.) in any mode while the unit is on. See Fig. E



8716:

Press  $\Delta T/DP_{T1}$  button until "DP" appears on display. Select to display dew point, T1( air temp.) or delta T(T1-T2) in any mode while the meter is on. See Fig. E1.

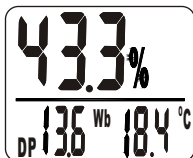


Fig. E↑



Fig. E1↑

### WET BULB FUNCTION

8706N isn't equipped with this function.

8706

Turn the meter on by pressing  $\odot$  button. User will see "Wb" temperature indicated on the display. See Fig.E

8716

Press  $\Delta/WB_{T2}$  until Wb appear on the LCD. User will see "Wb" temperature indicated on the display. See Fig.E1

### Ex. TEMPERATURE FUNCTION

8706N

Plug the external probe into the meter. Unit will now display external probe temperature. See Fig.F1

8706

Plug the external probe into the meter. Short press **RESET** button until "Ex" appears on display. Unit will now display external probe temperature. See Fig.F2

## 8716

Plug the external probe into the meter.  
Press  $\frac{\mu}{T2}/WB$  button until "T2" appears on display. Unit will now display external probe temperature. See Fig.F3

Remark: For 8706 and 8716, If the probe isn't plugged in meter, "Ex" or "T2" won't appear on display even pressing the RESET or  $\frac{\mu}{T2}/WB$  key.

Fig. F1→

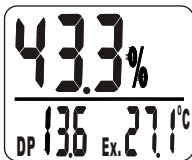
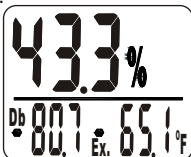


Fig. F2↑

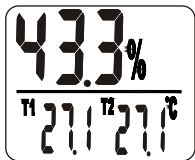


Fig. F3↑

## MIN./MAX. FUNCTION

- (1) Press and hold **MN/MX (8706N, 8706)** or **MX/MN RESET (8716)** button until (**MIN**) appears on display. (See Fig.G)  
Display is now showing minimum humidity and temperature readings in memory.
- (2) Press and hold **MN/MX (8706N, 8706)** or **MX/MN RESET (8716)** button again until (**MAX**) appears on display. (See Fig.H)  
Display is now showing maximum humidity and temperature readings in memory.

- (3) To return to current temperature and humidity readings press and hold **MN/MX** or **MX/MN RESET** button until Min or Max disappear from display.
- (4) Press **RESET** or **MX/MN RESET** button more than two seconds to clear current reading from memory.

**WARNING:** While checking MIN/MAX value for EX, T2,  $\Delta T$  and  $\Delta \theta$ , don't replace probe otherwise you will get error code displayed.

If you don't plug the probe into socket before turning the meter on, the error code will also appear when you check MIN/MAX value.

**Note:** Remember Low Batteries will tend to give inaccurate readings, so make sure you have enough power.

Fig. G →  
8706

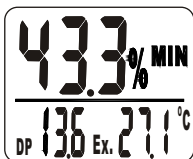


Fig. H →  
8716





These functions are only for 8716 model.

is calculated by subtracting the T2 (Ex.temp.) from T1(Air temp.).

is calculated by subtracting the DP (dewpoint) from T2(Ex. temp.).

(1) Press  $\frac{\Delta T/DP}{T_1}$  button until appears on display.(See Fig.J)

(2) Press  $\frac{\Delta t/WB}{T_2}$  button until appears on display. (See Fig.K)

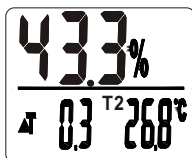


Fig. J

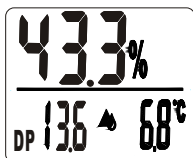
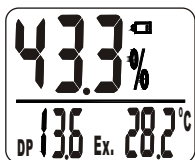


Fig. K

## LOW-BATTERY

Battery symbol will appear on display at right top corner when the power is low. Failure to replace batteries will have an effect on the accuracy of the readings.



1. Open the battery cover on the rear side.
2. Remove the expired batteries.
3. Insert new 2pcs AAA batteries and make sure the batteries are in correct polarity. Then, put on the cover.

## CALIBRATION

1. Turn the meter off and plug the sensor into 33% salt bottle. Press **"ON/OFF + C/F"** keys more than one sec. to enter calibration mode.
2. **"32.8%"** will flash on LCD and DP, WB is displayed as **"---.-"** that means the values are invalid in the calibration process. After 30 min, the flashing will stop to indicate the procedure is finished.
3. Move the sensor to 75% salt bottle and press **"MN/MX"** (8706), **"MX/MN RESET"** (8716) more than one sec. to enter 75.3% calibration. **"75.3%"** will flash on LCD.
4. Flashing stops after 30 mins, up to now the whole calibration is completed and the calibration data has been saved in memory.

### Note:

- a. You can exit calibration procedure without saving by pressing **"ON/OFF"** key before step 4. At step 4, pressing **"ON/OFF"** key to exit calibration.
- b. Auto power off is disabled in calibration mode.
- c. To get high accuracy, calibration should be operated at 23 degree C.
- d. If the reading is out of  $75.3\% \pm 0.5\%$  at step 4, it means the calibration is failed. See troubleshooting 3.

## TROUBLESHOOTING

### Power on but no display

- A) Make sure the time of pressing ① **ON/OFF** key is more than 0.1 sec.
- B) Check the batteries are in place and making good contact and correct polarity.

- C) Replace a new battery and try again.
- D) Remove the batteries for one min. And then put back for second try.

### **No Display**

- A) Check whether the low battery indicator displayed before display disappears, if yes, replacing a new battery.
- B) Check whether sleep mode is active. If yes, pressing **Ⓞ + HOLD** or **ON/OFF+HOLD** key to disable auto power off function.

### **Er 1**

Circuit error in RH measurement channel, return the meter to the store for repairing.

### **Er 2**

Circuit error in Internal temperature measurement channel, return the meter to the store for repairing.

### **Er 3**

Circuit error in reference resistor channel, return the meter to the store for repairing.

### **Er 4**

Internal temperature is out of the range.

### **Er 5**

External temperature is out of the range.



**Note:**

- a. Dry Bulb temperature means air (Internal) temperature.  
Dew point & Wet Bulb are calculated from internal temperature.
- b. When the meter is on, plugging in an external probe might cause "ER 5" error in min. or max mode of ext. Temperature, T2-T1 and T2-dp. pressing "RESET" key could solve above question.

<b>SPECIFICATION</b>
----------------------

**Temp. range:** -20~ +50°C (-4~ 122°F)

**RH% range :** 0~100%RH

**Wet bulb range : (8706, 8716)**

-21.6 ~ 50.0°C (-6.88~122°F)

**Dew point range : (8706, 8716)**

-78.7 ~50.0°C (-109.7~122°F )

**External temp. range :**

-20~ 70°C (-4~158°F)

**Accuracy:** RH%: ±3% at 25°C

Temperature: ±1°F (0.6°C)

**Response time :** 60 seconds typical.

**Pocket size :**

24.7(H) x 48.4(W) x 178.5mm(L)

**Extension cable length:**

Approx. 1.2M (with phone jack 2.5 mm)

**Probe (with handle):** 15cm (approx.)

**Power:** 2 x 1.5V AAA battery

**Optional accessory:** External temp.

**Probe VZ87P6 AZ**

## **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.

## **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 .



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