

OPERATION MANUAL

Wet Bulb Hygrometer



CE

MODEL: ■ 8760

■ 87601

■ 8762

INTRODUCTION

Thank you for purchasing the wet bulb hygrometer. This meter is designed with combined the traditional dry-wet bulb method and modern electronic circuit technology. There is no humidity sensor in it, so you don't have to worry about condensation & dust scratch problems. It's excellent to use in greenhouse, high humidity & harsh environment .

Features:

- ▲ Easy-to-read big LCD display
- ▲ Designed with two thermistors to get accurate and quick temp.& humidity readings
- ▲ Build-in fan to speed up the response time
- ▲ Auto logging memories (8760&8762: 100 records /87601 :8000 records)
- ▲ Auto logging sampling rate selectable
- ▲ Temp. and humidity high/low alarm settings available
- ▲ Dual color LED indicator for logging and alarm
- ▲ Maximum/Minimum functions available
- ▲ Temperature units C/F selectable
- ▲ Battery low indicator
- ▲ PC link for data transmission(87601 only)
- ▲ Relay output for ventilation control (8762only)

	8760	87601	8762
Auto memories records	100	8000	100
Temp.and humidity alarm(LED)	✓	✓	
Low humidity alarm (Relay)			✓
PC link for date transmission		✓	
Recall check	✓		✓

MATERIAL SUPPLIED

This package contains :

- ✓ Meter x 1, Water tank x 1, Cotton Thread x 2
- ✓ Battery(AAA) x 4
- ✓ Operation Manual x 1
- ✓ Plain white box
- ✓ USB/RS232 cable & software x 1 (87601 only)
- ✓ 5V Adaptor x1(optional)

POWER SUPPLY

The meter is powered by either 4pcs AAA batteries or a 5V adaptor. It is suggested to use adaptor when doing long time monitoring, since the built in fan is high power consuming.

When the battery icon appears on the screen, it indicates low voltage and required to replace with new batteries. The battery compartment is at the bottom of the meter. Do take the water tank out before changing the batteries to prevent water spillage. Use a screw driver to open the battery cover, and replace the batteries with correct polarity. Don't mix use new , old batteries.

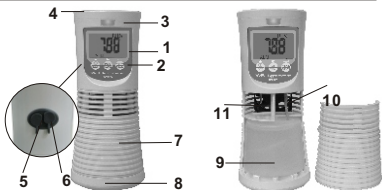
REFILL THE WATER TANK

1. Open the water tank cover
2. Take the water tank out, and pull out the stopper on the water tank.
3. Refill the water tank to 80% full.
4. Replace the water tank, and put the cotton thread back to the sensor.
(**make sure that the cotton thread is wet**)
5. Put the water tank cover back.

NOTE:

A water tank is used in the meter for wet bulb temperature measurement. Do not incline the meter during operation in case of water spillage. It is suggested to refill the water tank every 2 to 3weeks.

METER HOUSING



1. LCD display
2. Operation keypad
3. ALM & REC LED indicator
4. Hanger hole
5. PC port on rear side (87601 only) or Relay port (8762 only)
6. Adaptor port on rear side
7. Water tank cover
8. Battery cover
9. Water tank
10. Cotton thread
11. Fan

LCD DISPLAY




Symbols:

Fc : Full content. Indicating the memory storage is full.

RH%: Relative humidity

°C/ F : Temperature units (Celsius/ Fahrenheit)

 : Low battery

ALM : Alarm

REC : Recording mode

Mx : Maximum reading

Mn : Minimum reading

Lx, WT, DP (vain icons in this meter)

KEYPAD

POWER/SET/▲:

- Turns the meter on and off
- Press more than 2 seconds to enter set up mode
- Selects setting options or increases value in set up mode

FAN/RECALL/▶:

- Starts the fan
- Press more than 2 seconds to review stored data (not available in 87601)
- Selects digit in alarm setting mode

MX/MN/MEMO/↵:

- Displays the Maximum/Minimum readings(temp./RH)
- Press more than 2 seconds to start data logging
- Enters next step in set up mode.

OPERATION

Press the power key to turn on the meter. A full display shows on the screen for 3 seconds and it enters measurement mode. Press the key again to turn it off. Temp. & RH% display on LCD in turns.(Fig 1.1 & 1.2)

The meter starts running the fan for 2 mins after power on. Only while the fan is activated, meter updated temperature & humidity measurements.



Fig1.1

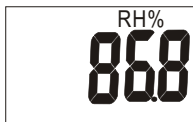


Fig1.2

Start the fan

Meter takes measurement only while the fan is activated. If you are not in "CON" mode, anytime you want to see updated measurement, just press "Fan" key to start and It will last for 2 minutes by each press. When the environment condition changed, start running the fan to speed up the response time and get the latest readings.

Maximum/Minimum readings

Press MX/MN key to review the maximum and minimum readings. The display will cycle through the maximum (Fig2.1), minimum (Fig2.2) readings and return to normal measurement mode by each press.



Fig2.1



Fig2.2

Switch temperature units

When LCD display shows the temperature readings, press and hold SET and RECALL keys simultaneously and release it. The meter will switch temperature units between °C and F.

Alarm

The meter features temperature and humidity alarm for giving warnings to the abnormal conditions. Please see page 8 to set preferred alarm threshold. When the measurement falls into the alarm range for over 30 seconds, the meter starts to alarm. And it stops auto-matically when the measurement goes out of the alarm range for over 30 sec.

Relay output- model 8762 only

When humidity readings under setting low value. After 5 seconds. The relay picks up automatically.

When the alarm starts, the LED light blinks and beeper sounds. After alarming for 1 minute, the beeper stops but the LED is still blinking to show the alarm status.

Users can stop the beeper manually by pressing any key. But the blinking LED will not stop until the measurement goes out of the alarm range.

Datalogging

The meter can do auto data recording for long time monitoring. The memory capacity for 8760&8762 is 100 records and for 87601 is 8000 records. Please refer to page 10 to set up preferred sampling rate before recording.

Press MEMO key for 2 seconds, the display shows "START" and it starts to record the temperature and humidity readings.

Meanwhile REC icon blinks on the lower side of the screen to indicate the recording status. (Fig3.1 & 3.2)



Fig3.1



Fig3.2

The 8760&8762 meter will show reminder when memory is full.

It displays "FuLL" on the screen for some seconds and leave "Fc" icon on the top

until the memory is cleared. (Fig 4). Follow the instructions below to delete all the saving data and start a new recording.

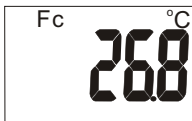


Fig4

Recall and delete data

Memory recall function is available for model 8760 & 8762 to review all 100 readings recorded. Press **RECALL** key over 2 seconds and it enters Recall Mode. The display shows 『 r 1 』 with the first recorded reading (Fig 5). Press ▲ to review all other data. Press **RECALL** key over 2 seconds again to escape from Recall Mode or it will also return to normal mode automatically after 30 seconds silence in this status.

To delete the recorded data, press and hold **ENTER** key in Recall Mode until the LCD display shows "-----" and all the data in memory is deleted.



Fig 5

SETUP

Press Set key for more than 2 seconds to enter set up mode. Then press ← again to select setting parameters.

	8760	87601	8762
t OFF: temp.(high /low) limit	✓	✓	
rh OFF:humidity(high /low)limit	✓	✓	
REC 15: record sampling rate	✓	✓	✓
Eco: fan operation mode	✓	✓	✓
RL OFF Relay operation mode			✓
rtc: real time clock mode		✓	

NOTE:

It will escape automatically without saving when no operation in set up mode for 10 seconds. Do complete your setup and proceed the whole session to save your new settings.

1. Temperature alarm limit (high/low)
- Temperature high limit (HI)

Press SET key over 2 seconds to enter set up mode and it is in temp. alarm setting with "t OFF" on the screen (Fig6). Press ▲ to select 「t ON」 and press ← to set up HI temperature limit. Press ← again for temperature value adjustment: "▶" key is to select the digit you want to adjust, and "▲" key is to increase the number. After finishing the adjustment, press ← and move to 「LO」 limit setting. The adjustment range for HI temperature limit is 1.0°C~49.9°C or 33.8F~121.9F.



Fig 6

- Temperature low limit (LO)

When it displays 「LO」 on the screen, press ← for temperature low limit adjustment: "▶" key is to select the digit you want to adjust, and "▲" key is to increase the number. After finishing the adjustment, press ← and move to 「rh OFF」 and it completes the temp. low limit setting.

NOTE:

The setting range of the low limit is depended on the high limit. It is always 1.0°C(1.8F) lower than the high limit. For example, when the temp. High limit is set as 32.7°C, then the low limit has to be set below 31.7°C.

2. Humidity alarm limit (high/low)

- Humidity high limit (HI)

While in set up mode, press \leftarrow key to go into RH alarm setting (Fig7). Press \blacktriangle key to select 『rh ON』 and press \leftarrow to set up HI humidity limit.

Press \leftarrow again for humidity value adjustment: “ \blacktriangleright ” key is to select the digit you want to adjust, and “ \blacktriangle ” key is to increase the number. After finishing the adjustment, press \leftarrow and move to 『LO』 limit setting. The adjustment range for HI humidity limit is 3.0%~99.9%.

- Humidity low limit (LO)

When it displays 『LO』 on the screen, press \leftarrow for humidity low limit adjustment: “ \blacktriangleright ” key is to select the digit you want to adjust, and “ \blacktriangle ” key is to increase the number. After finishing the adjustment, press \leftarrow and move to 『REC 15』 and it completes the humidity low limit setting.

NOTE: The setting range of the low limit is depended on the high limit. It is always 3% lower than the high limit. For example, when the humidity high limit is set as 62.9%, then the low limit has to be set below 59.9%



Fig.7

3. Sampling rate

While in set up mode, press \leftarrow key twice to go into record sampling rate setting (Fig 8). In 『REC 15』 step, press key to select the preferred time rate:

15/20/25/30/35/40/45/50/55/60 minutes, then press ← when completed and move to 『Eco』 .

NOTE: When in Eco mode, the fan auto turn on per the sampling rate no matter the logging function is activated or not.



Fig 8

4. Fan operation mode

Since the working fan is high power consuming, the meter is designed with two fan operation modes for users who needs to save battery power.

『Con』 means continuous mode. The fan will be working all the time since power on.

『Eco』 mode is an electricity saving operation. While in normal measurement, the fan will be moving periodically. The cycle time is the same as the logging sampling rate. However, if user need to check updated measurement immediately, they can press “fan” key to activate the fan operation. And in datalogging mode, the fan will only work at 2 mins before each data sampling.

It is suggested to select Eon mode when using battery as power supply, and select Continuous mode when powered by an adapter.

While in set up mode, press ←key to switch the parameters until 『Eco』 shows up (Fig9). Then press ▲ key to select 『Eco』 or 『Con』 fan operation mode.

**The meter default operation is Eco mode. After finishing the setting, press ← key to return to the normal mode and completed all settings.



Fig 9

NOTE:

“Eco” mode will be changed to “Con” mode automatically when alarm function is activated.

Relay output setup (8762 only)

5. While in set up mode, press ← key to switch the parameters until 『RL off』 shows, press ▲ key to select 『RL On』 then press ← key when completed and move to 『Relay』 operation mode.

Press ► key to select the preferred rate, ▲ key is to increase the number. After finishing the adjustment, press ←. When humidity reading is below low threshold, after 5 seconds, the relay picks up automatically and sends output.

Real time clock setup (87601 ONLY)

6. Real time clock setup

While in set up mode, press ← key to switch the parameters until 『y』 shows, press ▲ key is to increase the number to set actual year, press ← key to switch month, press ▲ key is to increase the number to set actual month, press ← key to switch date, press ▲ key is to increase the number to set actual date, press ← key to switch hour, press ▲ key is to increase the number to set actual hour, press ← key to switch minute, press ▲ key is to increase the number to set actual minutes, press ←, it completes real time clock setting.

TROUBLE SHOOTING

1. Please always check first the wet condition of cotton thread and water container while seeing any abnormal high humidity readings.

2. Error Code

ERROR CODE	ROOT CAUSE
E_2	Temperature reading is under range. ($< 0^{\circ}\text{C}$)
E_3	Temperature reading is over range. ($> 50^{\circ}\text{C}$)
E_4	Components damaged.
E_5	Original data error causes the faulty humidity.
E_33	Humidity circuit damaged

PC LINK (87601 ONLY)

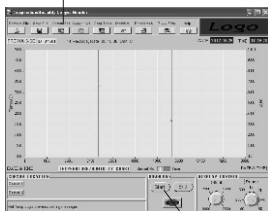
Model 87601 can link with personal computer to capture on-line or stored data. You can retrieve file, save the data for further analysis, check record statistics etc.

Follow below for connections.

1. Plug USB/RS232 cable onto the PC jack port at the rear side of the meter.
2. Insert the software CD-ROM and run the software set up.
3. Enclosed software are only used for downloading data.

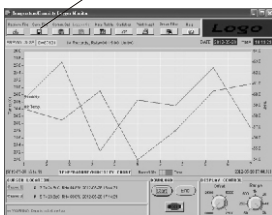
Sampling rate & realtime clock setting should be done through meter keypad directly.

4 (1) Auto com. port searching

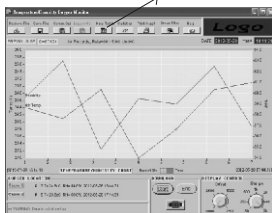


(2) Download

(3) Save file



(4) Press data table to check data.



No.	Date	Time	Air Temp	Pressure
1	2012-02-02	09:00	29.4	29.4
2	2012-02-02	09:05	29.5	29.5
3	2012-02-02	09:10	29.3	29.3
4	2012-02-02	09:15	29.5	29.5
5	2012-02-02	09:20	29.2	29.2
6	2012-02-02	09:25	29.4	29.4
7	2012-02-02	09:30	29.5	29.5
8	2012-02-02	09:35	29.3	29.3
9	2012-02-02	09:40	29.4	29.4
10	2012-02-02	09:45	29.5	29.5
11	2012-02-02	09:50	29.3	29.3
12	2012-02-02	09:55	29.4	29.4
13	2012-02-02	10:00	29.5	29.5
14	2012-02-02	10:05	29.3	29.3
15	2012-02-02	10:10	29.4	29.4
16	2012-02-02	10:15	29.5	29.5
17	2012-02-02	10:20	29.3	29.3
18	2012-02-02	10:25	29.4	29.4
19	2012-02-02	10:30	29.5	29.5
20	2012-02-02	10:35	29.3	29.3
21	2012-02-02	10:40	29.4	29.4
22	2012-02-02	10:45	29.5	29.5
23	2012-02-02	10:50	29.3	29.3
24	2012-02-02	10:55	29.4	29.4
25	2012-02-02	11:00	29.5	29.5
26	2012-02-02	11:05	29.3	29.3
27	2012-02-02	11:10	29.4	29.4
28	2012-02-02	11:15	29.5	29.5
29	2012-02-02	11:20	29.3	29.3
30	2012-02-02	11:25	29.4	29.4
31	2012-02-02	11:30	29.5	29.5
32	2012-02-02	11:35	29.3	29.3
33	2012-02-02	11:40	29.4	29.4
34	2012-02-02	11:45	29.5	29.5
35	2012-02-02	11:50	29.3	29.3
36	2012-02-02	11:55	29.4	29.4
37	2012-02-02	12:00	29.5	29.5
38	2012-02-02	12:05	29.3	29.3
39	2012-02-02	12:10	29.4	29.4
40	2012-02-02	12:15	29.5	29.5
41	2012-02-02	12:20	29.3	29.3
42	2012-02-02	12:25	29.4	29.4
43	2012-02-02	12:30	29.5	29.5
44	2012-02-02	12:35	29.3	29.3
45	2012-02-02	12:40	29.4	29.4
46	2012-02-02	12:45	29.5	29.5
47	2012-02-02	12:50	29.3	29.3
48	2012-02-02	12:55	29.4	29.4
49	2012-02-02	13:00	29.5	29.5
50	2012-02-02	13:05	29.3	29.3

SPECIFICATION

Temp range. : 5 ~ +50°C

Humidity range : 0 ~100%RH

Accuracy : Humidity: +/-3%(10~90%RH@25°C)
+/-5% (The rest range)

Temp. : +/-0.6°C

Response time : 120second

Memory : 100 records(8760&8762)

8000 records (87601)

LCD size(mm) : 24(H)X40(W)

Dimensions(mm): 70.8(top cover)X77.6
(bottom cover) X177(H)

Weight: 250g

Power supply: AAAX4pcs, 5V universal
adaptor

WARRANTY

The meter is warranted to be free from defects in material and workmanship for one year.

The warranty covers normal operation and does not cover battery, misuse, abuse, alteration, 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 delivery and insured against possible damage or loss.

Accuracy, the Zenith of Measuring / Testing Instruments !

- ▲ Hygrometer/Psychrometer
- ▲ Thermometer
- ▲ Anemometer
- ▲ Sound Level Meter
- ▲ Air Flow meter
- ▲ Infrared Thermometer
- ▲ K type Thermometer
- ▲ K.J.T. type Thermometer
- ▲ K.J.T.R.S.E. type Thermometer
- ▲ pH Meter
- ▲ Conductivity Meter
- ▲ T.D.S. Meter
- ▲ D.O. Meter
- ▲ Saccharimeter
- ▲ Manometer
- ▲ Tacho Meter
- ▲ Lux / Light Meter
- ▲ Moisture Meter
- ▲ Data logger
- ▲ Temp./RH transmitter
- ▲ Wireless Transmitter

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