

*SD Card real time data recorder
Humidity/ dew/wet/Temp. , w/o wire*

HUMIDITY RECEIVER METER

Model : HR-3023SD



Your purchase of this HUMIDITY RECEIVER METER marks a step forward for you into the field of precision measurement. Although this Meter is a complex and delicate instrument, its durable structure developed. Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

TABLE OF CONTENTS

1. FEATURES.....	1
2. SPECIFICATIONS.....	2
3. FRONT PANEL DESCRIPTION.....	6
4. MEASURING PROCEDURE.....	8
4-1 Hygro-Thermometer measurement	8
4-2 Change the temperature unit (°C, °F).....	9
4-3 Data Hold.....	9
4-4 Data Record (Max./ Min. reading).....	9
4-5 LCD brightness select.....	10
5. DATALOGGER.....	11
5-1 Preparation before execute datalogger function.....	11
5-2 Auto Datalogger(Set sampling time \geq 1 second).....	12
5-3 Manual Datalogger (Set sampling time = 0 second).....	13
5-4 Check time & sampling time information.....	13
5-5 SD Card Data structure.....	14
6. Saving data from the SD card to the computer.....	15
7. ADVANCED SETTING.....	16
7-1 SD memory card Format.....	17
7-2 Set clock time (Year/Month/Date, Hour/Minute/ Second).....	17
7-3 Set sampling time (Second).....	18
7-4 Auto power OFF management.....	18
7-5 Set beeper sound ON/OFF	19
7-6 Set SD card Decimal character.....	19
7-7 PROBE PATTING.....	20
7-8 Escape Setting.....	20
8. POWER SUPPLY from DC ADAPTER.....	20
9. BATTERY REPLACEMENT.....	21
10. SYSTEM RESET.....	21
11. RS232 PC serial interface.....	22
12. PATENT.....	23

1. FEATURES

- * Meter and probe w/o wire connect.
- * Humidity/Temp. meter,
- * Humidity measurement can show %RH and Temp., Dew , Wet , Temp.
- * Temp. display unit default to °C or °F.
- * Meter can default auto power off or manual power off.
- * Real time SD memory card Datalogger, it Built-in Clock and Calendar, real time data recorder , sampling time set from 1 second to 3600 seconds.
- * Manual datalogger is available (set the sampling time to 0), during execute the manual datalogger function, it can set the different position (location) No. (position 1 to position 99).
- * Innovation and easy operation, computer is not need to setup extra software, after execute datalogger, just take away the SD card from the meter and plug in the SD card into the computer, it can down load the all the measured value with the time information (year/month/date/ hour/minute/second) to the Excel directly, then user can make the further data or graphic analysis by themselves.
- * SD card capacity : 4 GB to 16 GB.
- * LCD with green light backlight, easy reading.
- * Can default auto power off or manual power off.
- * Data hold, record max. and min. reading.
- * Meter power by UM3/AA (1.5 V) x 6 batteries or DC 9V adapter.
- * Probe power by UM4/AAA (1.5 V) x4 batteries and Support type c socket.
- * RS232/USB PC COMPUTER interface.
- * Available for the HVAC applications.

2. SPECIFICATIONS

2-1 General Specifications

Circuit	Custom one-chip of microprocessor LSI circuit.	
Display	TFT LCD size : 2.4 "	
Measurement function	* Humidity/Temp. meter,DEW ,WET	
Datalogger	Auto	1, 2, 5, 10, 30, 60, 120, 300, 600, 1800, 3600 second @ For anemometer measurement, the sampling time setting value should be ≥ 2 seconds. @ Sampling time can set to 1 second, but memory data may loss.
Sampling Time Setting range	Manual	Push the data logger button once will save data one time. @ Set the sampling time to 0 second. @ Manual mode, can also select the 1 to 99 position (Location) no.
Memory Card	SD memory card. 4 GB to 16 GB.	
Advanced setting	<ul style="list-style-type: none"> * Set clock time (Year/Month/Date, Hour/Minute/ Second) * Auto power OFF management * Set beep Sound ON/OFF * Set sampling time * Decimal point of SD card setting * SD memory card Format 	

Data Hold	Freeze the display reading.	
Memory Recall	Maximum & Minimum value.	
Sampling Time of Display	Approx. 1 second.	
Data Output	RS 232/USB PC computer interface. * <i>Connect the optional RS232 cable UPCB-02 will get the RS232 plug.</i> * <i>Connect the optional USB cable USB-01 will get the USB plug.</i>	
Operating Temperature	0 to 50 °C.	
Operating Humidity	Less than 85% R.H.	
Power Supply meter	* <i>Alkaline or heavy duty DC 1.5 V battery (UM3, AA) x 6 PCs, or DC 9V adapter input. (AC/DC power adapter is optional).</i>	
Power Supply probe	* <i>Alkaline or heavy duty DC 1.5 V battery (UM4, AAA) x 4 PCs</i> * Support type c socket	
Power Current Meter	Normal operation (w/o SD card save data) : Approx. DC 55mA. When SD card save the data : Approx. DC 80 mA.	
Power Current Probe	Approx. DC 15 mA.	
Weight	Meter : 232 g/ 0.51 LB. Probe : 93 g/0.204 LB	
Dimension	Meter	181 x 77 x 45 mm.
	Probe	168 x 52 x 28 mm.
Accessories Included	* Instruction manual..... 1 PC * RHP-01 Probe..... 1 PC	

Optional Accessories	<ul style="list-style-type: none"> * SD Card (4 G) * Humidity Probe, RHS-221 * AC to DC 9V adapter. * USB cable, USB-01. * RS232 cable, UPCB-02. * Data Acquisition software, SW-U801-WIN. * Hard carrying case (CA-06)
----------------------	--

2-2 Electrical Specifications (23±5 °C)

Humidity/Temp. meter

A. Humidity

Measuring Range	0 % to 95 % R.H.
Resolution	0.1 % R.H.
Accuracy	$\geq 70\% \text{ RH} : \quad \pm(3\% \text{ reading} + 1\% \text{ RH}).$ $< 70\% \text{ RH} : \quad \pm 3\% \text{ RH}.$

B. Temperature

Measuring Range	0 °C to 50 °C/32 °F to 122 °F
Resolution	0.1 °C/0.1 °F
Accuracy	±0.8 °C/1.5 °F

Dew Point (Humidity)

°C	Range	-25.3 °C to 48.9 °C
	Resolution	0.1 °C
°F	Range	-13.5 °F to 120.1 °F.
	Resolution	0.1 °F.

Remark :

- * Dew Point display value is calculated from the Humidity/Temp. measurement automatically.
- * The Dew Point accuracy is sum accuracy value of Humidity & Temperature measurement..

Wet bulb (Humidity)

°C	Range	-21.6 °C to 50.0 °C
	Resolution	0.1 °C
°F	Range	-6.9 °F to 122.0 °F.
	Resolution	0.1 °F.
<i>Remark :</i> * Wet bulb display value is calculated from the Humidity/Temp. measurement automatically. * The Welt bulb accuracy is sum accuracy value of Humidity & Temperature measurement..		

3. FRONT PANEL DESCRIPTION

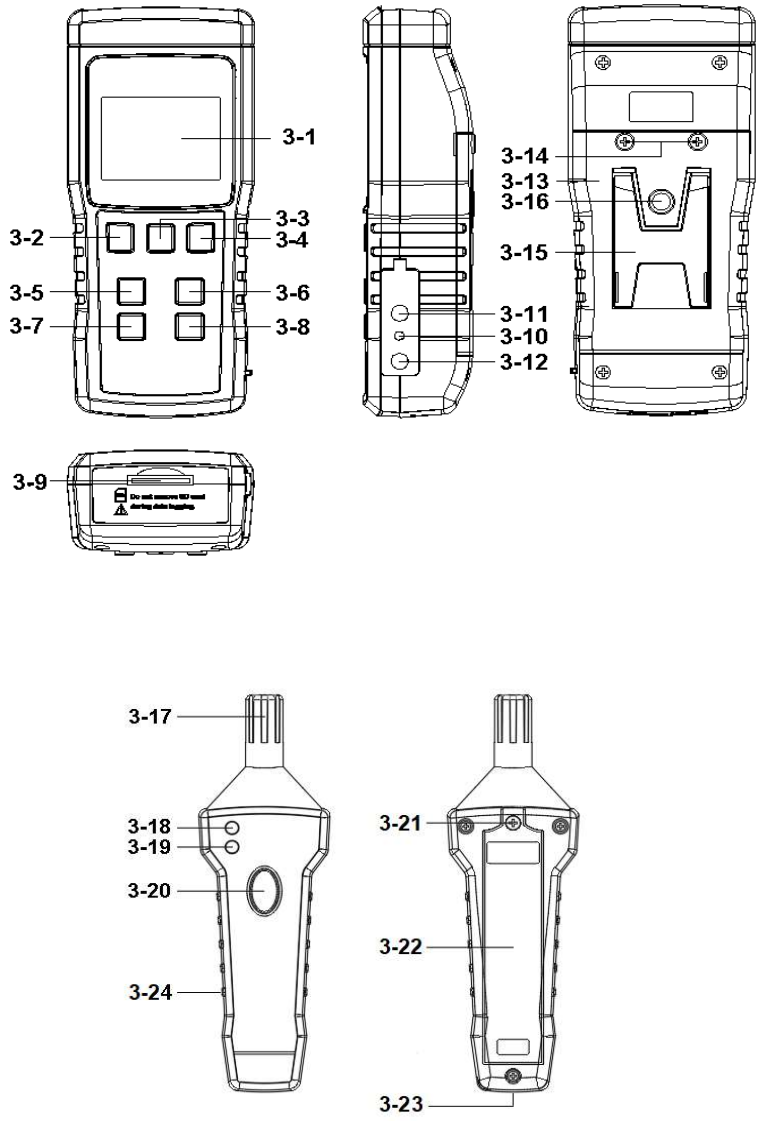


Fig. 1

- 3-1 Display
- 3-2 Power Button (LCD Brightness adjustment)
- 3-3 Hold Button
- 3-4 REC Button
- 3-5 ▲ Button (Unit Button)
- 3-6 ▼ Button (Function Button)
- 3-7 TIME Button (SET Button)
- 3-8 ENTER (LOG Button)
- 3-9 SD card socket
- 3-10 Reset Button
- 3-11 RS-232 Output Terminal
- 3-12 DC 9V Power Adapter Input Socket
- 3-13 Battery Compartment/Cover
- 3-14 Battery Cover Screws
- 3-15 Stand
- 3-16 Meter Tripod Fix Nut
- 3-17 Humidity/Temp. sensor
- 3-18 Probe power indicator
- 3-19 Probe link indicator
- 3-20 Probe power Button
- 3-21 Probe batter cover screws
- 3-22 Probe batter cover
- 3-23 Probe Tripod Fix Nut
- 3-24 Probe power type c socket

4. MEASURING PROCEDURE

4-1 Hygro-Thermometer measurment

- 1) Pressing the " Power Button "(3-2, Fig. 1)
> 2 seconds Turn on the meter.
 - * Pressing the " Power Button " (3-2, Fig. 1)
continuously and > 2 seconds again will turn off the meter.
- 2) Turn on the humidity Probe by pressing the " Power Button "(3-2, Fig.1) .
 - * **Short press " Power Button " Turn on the humidity probe ,
the auto power off (about 10 minitu) function will enable.**
 - * **long press " Power Button " Turn on the humidity probe
the auto power off function will disable**
- 3) *The meter screen will show waiting probe word and
wait a morment the meter will show mesurement value.*

Remark :

when screen keep appearing "waiting probe" word ,Please check probe power ,or press meter" HOLD " key > 2 second or press " SET " key > 2 second to do Around divice scan and divice pairing , wait a morment the screen will display the discovered devices, then select correct divice and press " ENTER " key , wait a morment the meter will link the divice and screen will show measure value.

Pressing the " Function Button " (3-6, Fig. 1) continuously (not release the button), the Display will show the following text in sequence :

(RH+Temp+DEW+WET)--->



(RH+Temp)--->



4-2 Change the temperature unit (°C, °F)

How to change the Temperature unit, select to the Humidity and Temperature measurement function only, then press the "Unit Button " (3-5 Fig.1) continuously, the unit will change from " °C " to " °F " sequence, until the desired unit is present on the Display release the " Unit Button ", the select unit will save into the memory with default.

4-3 Data Hold

During the measurement, press the " Hold Button " (3-3, Fig. 1) once will hold the measured value & the LCD will display a " HOLD " symbol.
Press the " Hold Button " once again will release the data hold function.

4-4 Data Record (Max., Min. reading)

- 1) The data record function records the maximum and minimum readings. Press the " REC Button " (3-4, Fig.1) once to start the Data Record function and there will be a " REC " symbol on the display.
- 2) With the " REC " symbol on the display :
 - a) Press the " REC Button " (3-4, Fig. 1) once, the " REC MAX " symbol along with the maximum value will appear on the display.
 - b) Press the " REC Button " (3-4, Fig. 1) again, the " REC MIN " symbol along with the minimum value will appear on the display.
 - c) To exit the memory record function, just press the " REC " button for > 2 seconds at least. The display will revert to the current reading.

4-5 LCD brightness select

**Depending on the brightness of the environment,
can use the "Backlight Button " (3-2, Fig. 1) select from
3rd-order LCD Backlight brightness.**

5. DATALOGGER

5-1 Preparation before execute datalogger function

a. Insert the SD card

Prepare a " SD memory card " (4 G to 16 G, optional), insert the SD card into the " SD card socket " (3-9, Fig. 1). The front panel of the SD card should face against the down case.

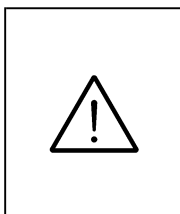
b. SD card Format

If SD card just the first time use into the meter, it recommend to make the " SD card Format " at first. , please refer chapter 7-1 (page 17).

c. Time setting

If the meter is used at first time, it should to adjust the clock time exactly, please refer chapter 7-2 (page 17).

d. Decimal format setting



The numerical data structure of SD card is default used the " ." as the decimal, for example "20.6" "1000.53" . But in certain countries (Europe ...) is used the " ," as the decimal point, for example " 20, 6 " "1000,53". Under such situation, it should change the Decimal character at first, details of setting the Decimal point, refer to Chapter 7-6, page 19.

5-2 Auto Datalogger (Set sampling time ≥ 1 second)

a. Start the datalogger

Press the " LoggerButton (3-8, Fig. 1) > 2 Sec. , the LCD will show the text " LOGGER ", and flashing , at the same time the measuring data along the time information will be saved into the memory circuit.

Remark :

- * *How to set the sampling time, refer to Chapter 7-3, page 19.*
- * *How to set the beeper sound is enable, refer to Chapter 7-5, page 19.*

b. Pause the datalogger

During execute the Datalogger function , if press the " Logger Button " (3-8, Fig. 1) once will pause the Datalogger function (stop to save the measuring data into the memory circuit temporally). In the same time the text of " LOGGER " will stop flashing.

Remark :

If press the " Logger Button " (3-8, Fig. 1) once again will execute the Datalogger again, the text of " LOGGER " will flashing .

c. Finish the Datalogger

During pause the Datalogger, press the " Logger Button " (3-8, Fig. 1) continuously at least two seconds, the " Logger " indication will be disappeared and finish the Datalogger.

5-3 Manual Datalogger (Set sampling time = 0 second)

a. Set sampling time is to 0 second

Press the " Logger Button (3-8, Fig. 1) >2 Sec. , the LCD will show the text " Logger ", then press the " Logger Button " (3-8, Fig. 1) once, the " LOGGER " will flashing once and Beeper will sound once, at the same time the measuring data along the time information will be saved into the memory circuit. The lower Display will show the Position (Location) no. and saved into the SD card too.

Remark :

During execute the Manual Datalogger,

It can use the " ▲ Button " (3-5, Fig. 1) or "

▼ Button " (3-6, Fig. 1) to set the measuring position (1 to 99, for example room 1 to room 99) to identify the measurement location , the lower Display will show P x (x = 1 to 99).

b. Finish the Datalogger

Press the " Logger Button " (3-8, Fig. 1) continuously at least two seconds, the " Logger " indication will be disappeared and finish the Datalogger.

5-4 Check time & Sample information & connected probe number

During the normal measurement (not execute the Datalogger), short press " Time Button " (3-7, Fig. 1) once , the TFT LCD display will present the time information of Year, Month/Date, Hour/Minute & Sampling time & connected probe number information .

5-5 SD Card Data structure

- 1) When the first time, the SD card is used into the meter, the SD card will generate a folder :

HRA01

- 2) If the first time to execute the Datalogger, under the route HRA01\, will generate a new file name HRA01001.XLS.
After exist the Datalogger, then execute again, the data will save to the HRA01001.XLS until Data row reach to 30,000 rows, then will generate a new file, for example HRA01002.XLS
- 3) Under the folder HRA01\, if the total files more than 99 files, will generate a new route, such as HRA02\
- 4) The file's route structure :

```
HRA01\  
    HRA01001.XLS  
    HRA01002.XLS  
    .....  
    HRA01099.XLS  
HRA02\  
    HRA02001.XLS  
    HRA02002.XLS  
    .....  
    HRA02099.XLS  
HRAXX\  
    .....
```

Remark : *XX : Max. value is 10.*

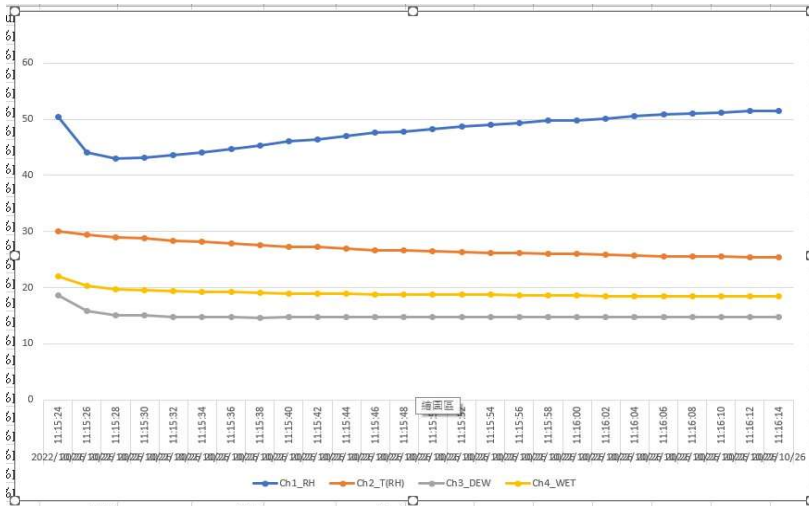
6. Saving data from the SD card to the computer (EXCEL software)

- 1) After execute the Data Logger function, take away the SD card out from the " SD card socket " (3-9, Fig. 1).
- 2) Plug in the SD card into the Computer's SD card slot (if your computer build in this installation) or insert the SD card into the " SD card adapter ". then connect the " SD card adapter " into the computer.
- 3) Power ON the computer and run the " EXCEL software ". Down load the saving data file (for example the file name : HRA01001.XLS, HRA01002.XLS) from the SD card to the computer. The saving data will present into the EXCEL software screen (for example as following EXCEL data screens) , then user can use those EXCEL data to make the further Data or Graphic analysis usefully.

EXCEL data screen (for example)

	A	B	C	D	E	F	G	H	I	J	K
1	Position	Date	Time	Ch1_RH	Ch1_unit	Ch2_T(RH)	Ch2_unit	Ch3_DEW	Ch3_unit	Ch4_WET	Ch4_unit
2	1	2022/10/26	11:15:24	50.4	%RH	30	Degree_C	18.6	Dew_C	22	Wet_C
3	2	2022/10/26	11:15:26	44	%RH	29.4	Degree_C	15.9	Dew_C	20.3	Wet_C
4	3	2022/10/26	11:15:28	43	%RH	28.9	Degree_C	15.1	Dew_C	19.7	Wet_C
5	4	2022/10/26	11:15:30	43.1	%RH	28.8	Degree_C	15	Dew_C	19.6	Wet_C
6	5	2022/10/26	11:15:32	43.6	%RH	28.4	Degree_C	14.8	Dew_C	19.4	Wet_C
7	6	2022/10/26	11:15:34	44.1	%RH	28.1	Degree_C	14.7	Dew_C	19.2	Wet_C
8	7	2022/10/26	11:15:36	44.7	%RH	27.8	Degree_C	14.7	Dew_C	19.2	Wet_C
9	8	2022/10/26	11:15:38	45.3	%RH	27.6	Degree_C	14.6	Dew_C	19.1	Wet_C
10	9	2022/10/26	11:15:40	46.1	%RH	27.3	Degree_C	14.7	Dew_C	19	Wet_C
11	10	2022/10/26	11:15:42	46.4	%RH	27.2	Degree_C	14.7	Dew_C	18.9	Wet_C
12	11	2022/10/26	11:15:44	47	%RH	26.9	Degree_C	14.7	Dew_C	18.9	Wet_C
13	12	2022/10/26	11:15:46	47.6	%RH	26.7	Degree_C	14.7	Dew_C	18.8	Wet_C
14	13	2022/10/26	11:15:48	47.8	%RH	26.7	Degree_C	14.7	Dew_C	18.8	Wet_C
15	14	2022/10/26	11:15:50	48.3	%RH	26.5	Degree_C	14.7	Dew_C	18.7	Wet_C
16	15	2022/10/26	11:15:52	48.7	%RH	26.3	Degree_C	14.7	Dew_C	18.7	Wet_C
17	16	2022/10/26	11:15:54	49	%RH	26.2	Degree_C	14.7	Dew_C	18.7	Wet_C
18	17	2022/10/26	11:15:56	49.3	%RH	26.1	Degree_C	14.7	Dew_C	18.6	Wet_C
19	18	2022/10/26	11:15:58	49.7	%RH	26	Degree_C	14.7	Dew_C	18.6	Wet_C
20	19	2022/10/26	11:16:00	49.8	%RH	26	Degree_C	14.7	Dew_C	18.6	Wet_C
21	20	2022/10/26	11:16:02	50.1	%RH	25.9	Degree_C	14.7	Dew_C	18.5	Wet_C
22	21	2022/10/26	11:16:04	50.6	%RH	25.7	Degree_C	14.7	Dew_C	18.5	Wet_C

EXCEL graphic screen (for example)



7. ADVANCED SETTING

Under do not execute the Datalogger function, press the " SET Button " (3-7, Fig. 1) continuously at least two seconds will enter the " Advanced Setting " mode. then press the " ▲(3-5, Fig. 1)" or " ▼(3-6, Fig. 1)"key ,to select will chang setting mode (text will turn yellow color),in sequence to select the eight main function, as follows:

SD FORMAT	SD memory card Format
CLOCK TIME	Set clock time (Year/Month/Date, Hour/Minute/Second)
SAMPLE TIME	Set sampling time (Second)
AUTO POWER OFF	Auto power OFF management
BEEPER SOUND	Set beeper sound ON/OFF
DECIMAL POINT	Set SD card Decimal character
PROBE PARRING	Select correct device to do parring
ESCAE SETTING	Escape setting function

Remark :

During execute the " Advanced Setting " function,if press " Power Button " (3-2, Fig. 1) once will exit the " Advanced Setting " function, the LCD will return to normal screen.

7-1 SD memory card Format

- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to " SD CARD FORMAT " position then press " ENTER " key.
- 2) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the display text to " YES " or " NO ".

YES - Intend to format the SD memory card

NO - Not execute the SD memory card format

- 3) If select the upper to " yES ", press the " Enter Button " (3-8, Fig. 1) once again, the Display will show text " SURE " to confirm again, if make sure to do the SD memory card format, then press " Enter Button " once will format the SD memory clear all the existing data that already saving into the SD card.

7-2 Set clock time (Year/Month/Date,Hour/Minute/ Second)

- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to " CLOCK DATA TIME " position then press " ENTER " key.
- 2) Press the " Enter Button " (3-8, Fig. 1) once, Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to adjust the value (Setting start from Year value). After the desired value is set, press the " Time Button " (3-7, Fig. 1) once will going to next value adjustment (for example, first setting value is Year then next to adjust Month, Date, Hour,Minute, Second value).
- 3) After set all the time value (Year, Month, Date, Hour, Minute, Second), press the " ENTER Button " (3-8, Fig. 1) once ,will save and Back to " Advanced Setting screen ".

Remark :

After the time value is setting, the internal clock will run precisely even Power off if the battery is under normal condition (No low battery power).

7-3 Set sampling time (SecondsS)

- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to " SAMPLI TIME " position then press " ENTER " key.
- 2) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to adjust the value (1, 2, 5, 10, 30,60, 120, 300, 600, 1800,3600 seconds).
- 3) After the Sampling value is selected, press the " Enter Button " (3-8, Fig. 1) will save the setting function with default and Back to " Advanced Setting screen " .

7-4 Auto power OFF

- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to " AUTO POWER OFF " position then press " ENTER " key.
- 2) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the display text to " YES " or " NO " .

YES - Auto Power Off management will enable.

NO - Auto Power Off management will disable.

- 3) After select the upper text to " YES " or " NO ", press the " Enter Button " (3-8, Fig. 1) will save the setting function with default and Back to " Advanced Setting screen " .

7-5 Set beeper sound ON/OFF

- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to " BEEPER SOUND " position then press " ENTER " key.
- 2) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the display text to " YES " or " NO ".
YES - Meter's beep sound will be ON with default.
NO - Meter's beep sound will be OFF with default.
is power ON.
- 3) After select the upper text to " YES " or " NO ", press the " Enter Button " (3-8, Fig. 1) will save the setting function with default and Back to " Advanced Setting screen " .

7-6 Decimal point of SD card setting

The numerical data structure of SD card is default used the "." as the decimal, for example "20.6" "1000.53" . But in certain countries (Europe ...) is used the ",", as the decimal point, for example " 20,6 " "1000,53". Under such situation, it should change the Decimal character at first.

- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to "DICIMAL CHARAGTER" position then press " ENTER " key.
- 2) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the display text to " USA " or " EURO ".
USA - Use "." as the Decimal point with default.
EURO - Use ",", as the Decimal point with default.
- 3) After select the upper text to " USA " or " EURO ", press the " Enter Button " (3-8, Fig. 1) will save the setting function with default and Back to " Advanced Setting screen " .

7-7 Select the PROBE PATTING

- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to " PROBE PATTING " position then press " ENTER " key.
- 2) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to correct device then press " ENTER " key to do parring.
- 3) wait morment lcd screen will show probe measurement value.

7-8 Escape Setting


- 1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) select to " ESACAPE SETTING " position then press " ENTER " key.
- 2) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) Select to escape Setting station, then press " ENTER " key meter will escape setting function. back to measurement function.

8. POWER SUPPLY from DC ADAPTER

The meter also can supply the power supply from the DC 9V Power Adapter (optional). Insert the plug of Power Adapter into " DC 9V Power Adapter Input Socket " (3-12, Fig. 1).

9. BATTERY REPLACEMENT

Main meter :

- 1) When the left corner of LCD display show "  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) Loose the screws of the " Battery Cover " (3-14, Fig. 1) and take away the " Battery Cover " from the instrument and remove the battery.
- 3) Replace with DC 1.5 V battery (UM3, AA, Alkaline/heavy duty) x 6 PCs, and reinstate the cover.
- 4) Make sure the battery cover is secured after changing the battery.

Probe :

- 1) When the probe power indicator appears flicker, express low battery it is necessary to replace the battery.
- 2) Loose the screws of the " Battery Cover " (3-20, Fig. 1) and take away the " Battery Cover " from the instrument and remove the battery.
- 3) Replace with DC 1.5 V battery (UM4, AAA, Alkaline/heavy duty) x 4 PCs, and reinstate the cover.
- 4) Make sure the battery cover is secured after changing the battery.

10. SYSTEM RESET

If the meter happen the troubles such as :

CPU system is hold (for example, the key button can not be operated...).

Then make the system RESET will fix the problem.

The system RESET procedures will be either following method :

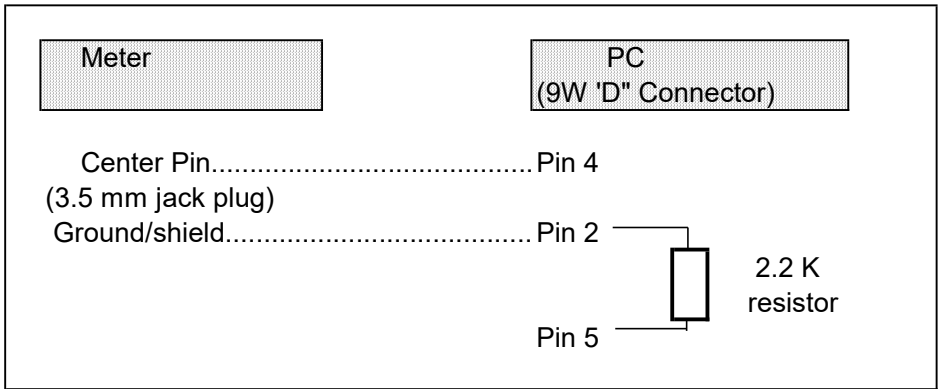
During the power on, use a pin to press the " Reset Button " (3-10, Fig. 1) once a while will reset the circuit system.

11. RS232 PC SERIAL INTERFACE

The instrument has RS232 PC serial interface via a 3.5 mm terminal (3-11, Fig. 1).

The data output is a 16 digit stream which can be utilized for user's specific application.

A RS232 lead with the following connection will be required to link the instrument with the PC serial port.



The 16 digits 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 indicates the following status :

D0	End Word (0D)
D1 & 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), position from right to the left 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP
D10	Polarity 0 = Positive 1 = Negative

D11 & D12	Annunciator for Display		
	°C = 01	°F = 02	% RH = 04
	DEW_C = G5	WET_C = G7	
	DEW_F = G6	WET_F = G8	
D13	When send the upper display data = 1 When send the lower display data = 2		
D14	4		
D15	Start Word (02)		

RS232 FORMAT : 9600, N, 8, 1

Baud rate	9600
Parity	No parity
Data bit no.	8 Data bits
Stop bit	1 Stop bit

12. PATENT

The meter (SD card structure) already get patent in following countries :

Germany	Nr. 20 2008 016 337.4
JAPAN	3151214
CHINA	ZL 2008 2 0189918.5 ZL 2008 2 0189917.0