



Instruction Manual

RS-1161

127-8297

Datalogger Thermo-Hygro-Barometer

(EN) (FR) (IT) (DE) (ES)





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1. INSTRUCTION

The meter is designed for measurement of temperature, relative humidity, atmospheric pressure and pressure tendency. Measured values can be stored in programmable interval into internal microSD CARD 4GB and transferred anytime to a PC.

Measured values are displayed on a three line LCD display. The meter compares all measured values (temperature, humidity, air pressure and dew point temperature) with two adjustable levels for each measured quantity. Breaking the level is indicated by the correct values flashing on the display and by audio indication (switchable). Meter is equipped with maximum and minimum with time stamp memory function.

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2. FEATURES AND APPLICATIONS

Features:

- Triple LCD displays Barometric pressure, Temperature, and Relative humidity.
- Dew point and Wet bulb temperature reading.
- Absolute humidity, Mixing ratio and Enthalpy reading.
- Water vapor pressure and Water saturation pressure reading.
- Pressure trend and tendency (P_{3h}) reading.
- Heat Index and Humidex reading.
- MAX/MIN with Time Stamp.
- Comparator function.
- Alarm output function.
- Auto power off function.
- Data Hold function.
- Manual data memory and read function.
- Auto data logger function.
- USB Interface.

Applications:

- Mobile weather station.
- Clean rooms, computer rooms, HVAC systems.
- Pharmaceutical and food processing and storage.
- Hospitals, laboratories, semiconductor fabs, electronic assembly.
- Warehousing, museums, gallery, churches.
- Manufacturing, green-houses, farm animal shelters.
- Cooling and climate technology.
- Construction, building physics, loss assessment.



3. SPECIFICATIONS

Measurement range:

Humidity: 0% to 100%RH

Temperature: -40°C to +100°C (-40°F to +212°F)

Atmospheric pressure: 300 to 1200hPa

Resolution: 0.1% RH, 0.1°C, 0.1°F, 0.1hPa

Accuracy:

Temperature: ±0.4°C (at +5°C to +60°C)

±0.8°C (at -20°C to 5°C and +60°C to +80°C)

±1.2°C (at -40°C to -20°C and +80°C to +100°C)

±0.8°F (at +41°F to +140°F)

±1.6°F (at -4°F to 41°F and +140°F to +176°F)

±2.4°F (at -40°F to -4°F and +176°F to +212°F)

Humidity: ±3%RH (at 25°C, 20 to 80% RH)

±4%RH (at 25°C, 10 to 20% RH and 80 to 90% RH).

±5%RH (at 25°C, 0 to 10% RH and 90 to 100% RH).

Atmospheric pressure: ±2hPa at 25°C, ±4hPa at -20 to 85°C

Response time (at 1m/s air flow):

Humidity: τ63% < 10s (from 33 to 75% RH)

Temperature: τ63% < 10s (from 15°C to 45°C)

Display refresh rate: 1s in FAST mode, 1s to 5s in dynamic mode

Data memory capacity: 99 sets. (Direct reading from LCD display)

Data logger capacity: microSD CARD 4GB (Maximum 99 blocks)

Alarm output:

Open-collect output. Input impedance: 490Ω

Maximum applied Voltage: 24V DC

Maximum drive current: 50mA DC

Operating temperature and humidity: 0°C to 60°C, below 95% RH

Storage temperature and humidity: -10°C to 60°C, below 70% RH

Power supply: 006P 9V or IEC6F22, NEDA 1604 battery

Battery life: Approx. 2 months

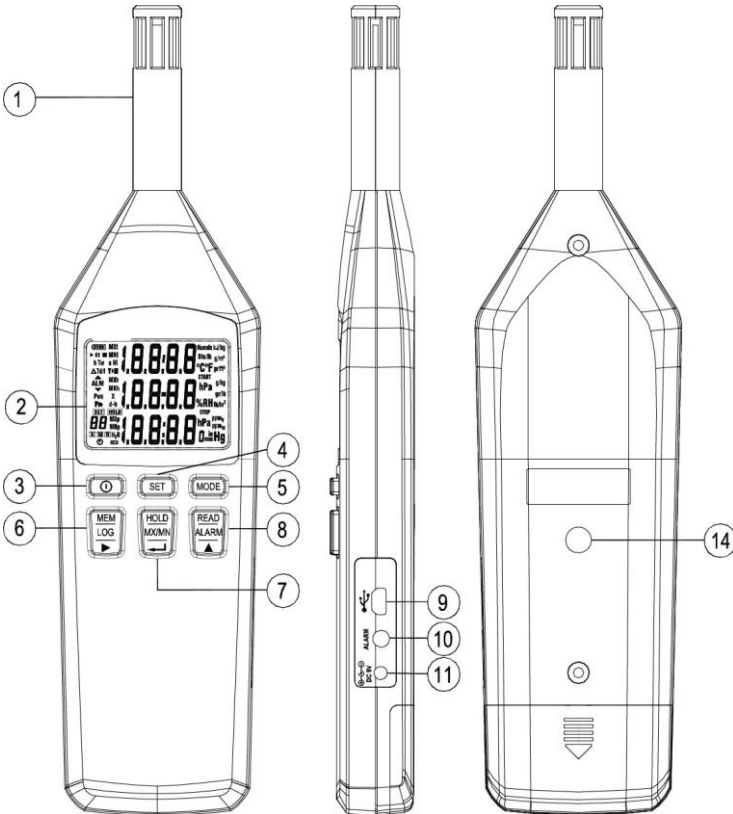
Dimensions / Weight: 249×64×26mm (9.8"×2.52"×1.02") / Approx. 178g (6.3oz)

Accessories: Instruction manual, Battery, Carrying case, CD software,
Micro-USB cable

Optional accessory: AC adaptor DC 9V

4. PARTS & CONTROLS

4-1 Description of Parts & Control keys:



(1) Humidity, Temperature and Pressure Sensor tube.

(2) Display

(3) **ⓘ** Power key : Press **ⓘ** Power key to turn the meter on or off.

(4) **SET** key: Press **SET** key to enter the setting mode. Press **↵** key to exit this mode or press **SET** key for 3 seconds to exit setting mode.

SET 01: Measurement units setting mode.

SET 02: Display refresh rate setting mode.

SET 03: Real time setting mode.

SET 04: Alarm limit values setting mode.

- SET 05:** Alarm sound on/off setting mode.
- SET 06:** Auto power off time setting mode.
- SET 07:** Auto datalogging interval time setting mode.
- SET 08:** No-cycle timer datalogging setting mode.
- SET 09:** Auto-cycle timer datalogging setting mode.
- SET 10:** Clear the manual memorized data mode.
- SET 11:** Clear the auto memorized data mode.
- SET 12:** Data averaging time setting mode.
- SET 13:** User calibration setting mode.

(5) MODE key:

- ① Press this key to circulate the reading of ($^{\circ}\text{C}$, %RH, hPa), (Td, P_{3h} , hPa), (Td/f, x, H_2O ppmv), (ΔT , Pw, H_2O ppmw), (Tw, Pws, hPa), (a, %RH, hPa), (h, %RH, hPa), (HI, %RH, hPa), (Humdx, %RH, hPa) and (YIM, d-h, m:s).
- ② Press this key for 3 seconds to exit the circulate reading.

(6) MEM/LOG/▶ key :

- ① **MEM** key: Press this key one time to store a measuring data.
- ② **LOG** key: Press this key for 3 seconds to enter or exit the datalogging mode.
- ③ **▶** key: In the setting mode, press this key to move cursor to the desired position.

(7) HOLD/MX/MN/⌵ key :

- ① **HOLD** key: Press this key momentarily to freeze or unfreeze the displayed reading.
- ② **MX/MN** key: Press this key for 3 seconds to enter the MX (maximum) / MN (minimum) reading mode.
Press this key again to circulate the MX and MN reading.
Press this key for 3 seconds to exit this mode and store one set recorded data to memory.
- ③ **⌵** key: In the setting mode, press this key to store the setting data and exit.

(8) READ/ALARM/▲ key:

- ① **READ** key: Press this key to enter the READ mode, then press this key again to select the desired stored number of data to read.
Press **⌵** key to exit.
- ② **ALARM** key: Press this key for 3 seconds to turn on or off the alarm function.
- ③ **▲** key: In the setting mode, press this key to change the parameter.

(9) Micro-USB

(10) Alarm output jack: Allow output of a alarm signal is available from this jack.

(11) AC adaptor power input jack (DC 9V).

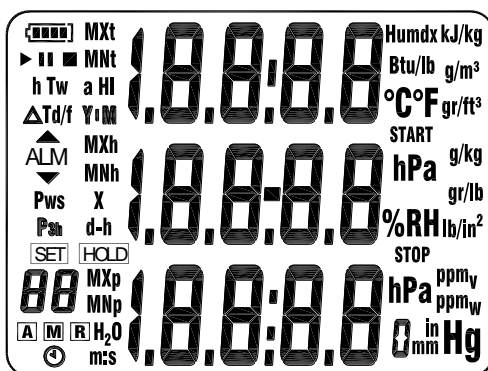


(12) Battery cover.

(13) microSD CARD 4GB.

(14) Tripod mounting: 1/4"-20 unc-female thread.

4-2 Description of Display:



A : Datalogging mode indication.

M : Appears once data is stored into the memory.

M 00: Manual memory address number indication.

R : Read mode indication.

R 00: Recall manual memory address number indication.

MXt: Temperature maximum value indication.

MNt: Temperature minimum value indication.

YIM d-h m:s : Real-time or MX/MN recorded stamp time indication.

Td: Dew point temperature indication.

If air is cooled and gaseous water vapor begins to condense in the liquid phase, the temperature at which condensation occurs is defined as the dew point temperature.

Td/f: Dewpoint / Frostpoint Temperature indication.

When the dew point falls below freezing it is called the frost point temperature. Where air is cooled enough to become saturated, but forms ice instead of dew.



ΔT : Difference of T and Td/f ($\Delta T = T - Td/f$) indication.

Tw: Wetbulb temperature indication.

Traditionally, the wet bulb temperature is the temperature indicated by a thermometer wrapped in a wet cotton sheath.

a: Absolute humidity indication.

Absolute humidity refers to the mass of water in a unit volume of moist air at a given temperature and pressure.

h: Enthalpy indication.

Enthalpy is the amount of energy required to bring air to its current state from a dry air at 0°C.

HI: Heat Index indication.

The Heat Index is determined by using the dry bulb temperature and relative humidity.

It is based upon charts available from the U.S. National Weather Service.

The Heat Index represents how an average person feels relative to climate conditions. For a given temperature, the higher the humidity, the higher the heat index.

The Heat Index is defined over a temperature range of 70°F to 120°F (21°C to 49°C) and a relative humidity range of 30% to 99%. Outside of this range, the meter will show dashes in the display for the Heat Index.

Humdx: Humidex indication.

The Humidex, used primarily in Canada, works on the same concept as the Heat Index. The values are slightly different. The Humidex is defined over a temperature range of 70°F to 109°F (21°C to 43°C) and a relative humidity range of 20% to 99%. Outside of this range, the meter will show dashes in the display for the Humidex.

g/m³, gr/ft³: Absolute humidity units.

kJ/kg, Btu/lb: Enthalpy units.

°C, °F: Temperature units.

P_{3h}: Pressure tendency indication.

Pressure tendency is the difference between actual pressure and pressure 3 hours before. If the meter is not turned ON for at least 3 hours, the meter will show dashes in the display for the P_{3h}. Interval of refresh of pressure tendency display is 5 minutes.

X: Mixing ratio indication.

Mixing ratio is the ratio of water vapor mass to the mass of dry gas.

Pw: Water vapor pressure indication.

Water vapor pressure is the pressure exerted by the water vapor present in air.

Pws: Saturation vapor pressure indication.

Saturation vapor pressure temperature dictates the maximum partial pressure of water vapor.

g/kg, gr/lb: Mixing ratio units.

hPa, lb/in²: Water vapor pressure units.

%RH: Relative humidity units.

Relative humidity (RH) is defined as the ratio of the partial water vapor pressure (Pw) to the water vapor saturation pressure (Pws) at a particular temperature: $\%RH = 100\% \times Pw/Pws$

hPa, inHg, mmHg: Air pressure units.

H₂O ppmv: It is defined as the ratio of water vapor to total (moist) gas, and is expressed by volume.

H₂O ppmw: It is defined as the ratio of water vapor to total (moist) gas, and is expressed by weight/weight.

MXp: Pressure maximum value indication.

MNp: Pressure minimum value indication.

MXh: Humidity maximum value indication.

MNh: Humidity minimum value indication.

HOLD : Data hold mode indication.

START: Timer datalogging start-time setting mode indication.

STOP: Timer datalogging stop-time setting mode indication.


SET : Setting mode indication.

▶ : No-cycle timer datalogging mode indication.


|| : Auto-cycle time datalogging mode indication.


■ : No-cycle timer datalogging stop indication.


 : Battery capacity indication.

: Auto power off indication.

ALM: Enable the alarm function indication.

 **ALM** : Setting the high limit value indication.

 **ALM** : Setting the low limit value indication.

 **ALM** : Setting the hysteresis value indication.



5. OPERATING INSTRUCTIONS

5-1 Selecting Measurement units

1. Press **ⓘ** key to turn on the meter.
2. Press **SET** key one time to enter the units setting mode, the “**SET 0 1 Unit**” mark is displayed.
3. Press **▲** key to select “°C” or “°F” this will now flash on the display.

If “°C” is selected, the quantities measured and calculated will use a metric unit, if “°F” is selected, it will use non-metric unit.

Quantity	Abbreviation	Metric Unit	Non-Metric Unit
Dewpoint/Frostpoint Temperature	Td/f	°C	°F
Dewpoint temperature	Td	°C	°F
Absolute humidity	a	g/m ³	gr/ft ³
Mixing ratio	x	g/kg	gr/lb
Wetbulb temperature	Tw	°C	°F
Humidity air volume/moist air volume (by volume or by weight)	H ₂ O	ppmv/ppmw	ppmv/ppmw
Water vapor pressure	Pw	hPa	lb/in ²
Water vapor saturation pressure	Pws	hPa	lb/in ²
Enthalpy	h	kJ/kg	Btu/lb
Difference of T and Td/f	ΔT	°C	°F

4. Press **↓** key to store the desired unit and to enter the air pressure unit setting mode.
5. Press **▲** key to select “hPa”, “inHg” or “mmHg”.
6. Press **↓** key to store the desired unit and exit this mode.

5-2 Setting the Real-Time

The meters internal clock is used in the display and for time-stamping recorded measurements.

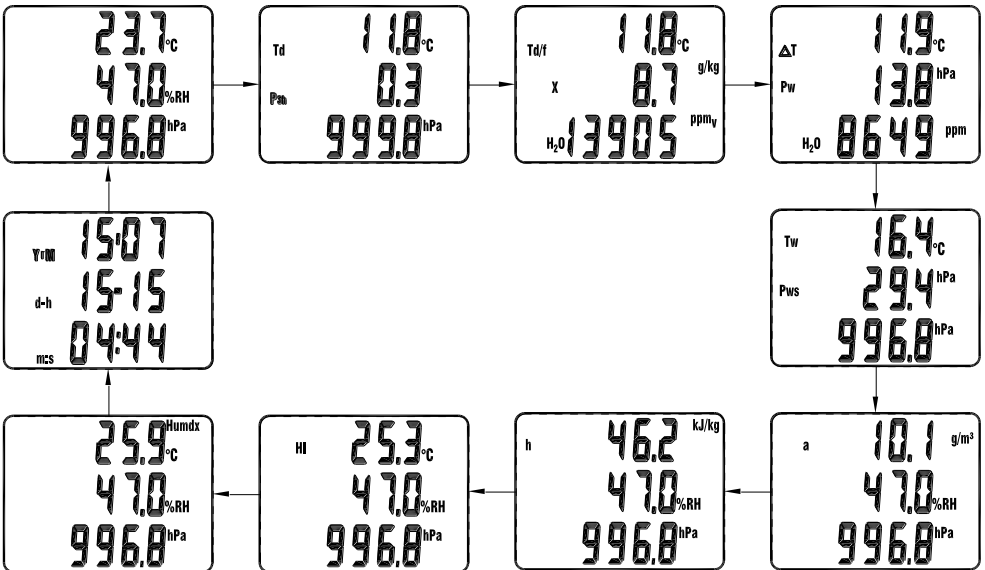
1. Press **ⓘ** key to turn on the meter.
2. Press **SET** key 3 times to enter the real-time setting mode, the “**SET 03 YIM d-h m:s**” mark is displayed.

3. Using ► key to position the cursor on the date or time element to adjust.
4. Using ▲ key to change the selected date or time element value.
5. Press ↵ key to complete the action and exit this mode.

5-3 Taking Measurements

1. Press **ⓘ** key to turn on the meter.
2. The display will show the quantities measured air temperature, relative humidity and pressure reading.
3. Press **MODE** key to switch display to the following quantities calculated reading.

Press **MODE** key for 3 seconds to exit the calculated reading.



4. Press **HOLD** key, if the displayed value needs to be held. In **HOLD** mode, press **MODE** key to switch the display to the other calculated values and to display the held date and time. Press **HOLD** key again to exit the data hold mode, the **HOLD** mark disappears.

5-4 Taking Maximum (MX) & Minimum (MN) Recorder Measurements




1. Press **ⓘ** key to turn on the meter.
2. Press **MX/MN** key for 3 seconds to enter the previous recorded data mode, the “r E R d d L d d R t R” mark is displayed.
3. To read previously recorded data, press **READ** key to enter read mode, the “**R**” mark is displayed, then press **MX/MN** key to cycle through the recorded data, and press **MX/MN** key for 3 seconds to exit this mode. Otherwise press **MX/MN** key again to enter the recorded mode and auto clear the previous recorded data.
4. Press **MX/MN** key to cycle through the
 - a). Maximum reading for temperature (MXt), humidity (MXh) and pressure (MXp).
 - b). Minimum reading for temperature (MNt), humidity (MNh) and pressure (MNp).
 - c). Maximum reading for temperature (MXt) with its humidity and pressure reading.
 - d). Maximum temperature (MXt) occurred date and time.
 - e). Minimum reading for temperature (MNt) with its humidity and pressure reading.
 - f). Minimum temperature (MNt) occurred date and time.
 - g). Maximum reading for humidity (MXh) with its temperature and pressure reading.
 - h). Maximum humidity (MXh) occurred date and time.
 - i). Minimum reading for humidity (MNh) with its temperature and pressure reading.
 - j). Minimum humidity (MNh) occurred date and time.
 - k). Maximum reading for pressure (MXp) with its temperature and humidity reading.
 - l). Maximum pressure (MXp) occurred date and time.
 - m). Minimum reading for pressure (MNp) with its temperature and humidity reading.
 - n). Minimum pressure (MNp) occurred date and time.

Under c, e, g, i, k and m steps, user also can press **MODE** key to display the calculated reading.
5. Press **MX/MN** key for 3 seconds to exit this mode and store the recorded data to memory.

5-5 Setting the Display Refresh Mode

Battery life depends on select display refresh mode.

In FAST mode, display is refreshed in shortest possible interval with highest current consumption. In dynamic mode display is refreshed in intervals up to 5s in case measured values remain stable. Refresh interval is shortened to 1s only if measured values change. Current consumption in this mode in usual operation is lower, battery life is up to 4 times longer. The FAST mode is recommend to use only in cases when slower display response is not acceptable.

1. Press  key to turn on the meter.
2. Press **SET** key 2 times to enter the display refresh setting mode, the **SET** *02 dr EF* mark is displayed.
3. Press  key to select “FAST” or “dyn” mode.
4. Press  key to store the desired mode and exit.

5-6 Taking Alarm Operation

1. Quantity for alarm operation

Alarm setpoints:

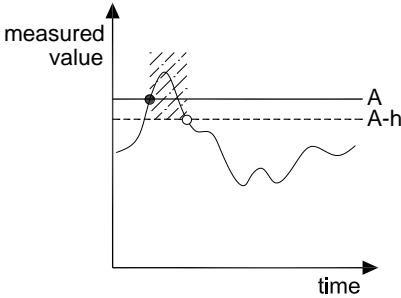
A alarm monitors the quantity chosen for the alarm operation. When the measured value is between the “**high**” and “**low**” limit values, the alarm is OFF. When choosing low value as “**high**” value and higher value as “**low**” value, the alarm is OFF when the measured value is not between the setpoints. You can also set only one setpoint.

The figure for illustrative examples of the different measurement-based alarm operation modes.

Hysteresis function is to prevent the alarm operation back and forth when the measured value is near to the setpoint values. Hysteresis value should be smaller than difference of the setpoints.

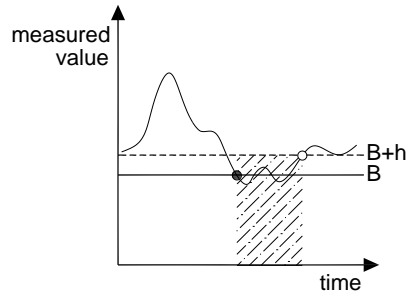
The following figure is for illustrative examples of the different measurement-based alarm output modes.

Mode 1: Only “high” setpoint set.



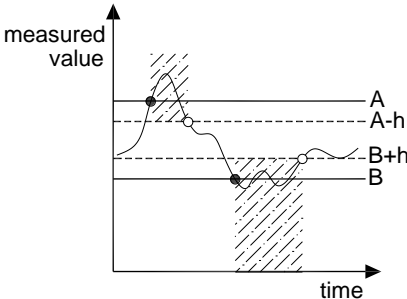
Alarm is ON when value is above the setpoint.

MODE 2: Only “low” setpoint set.



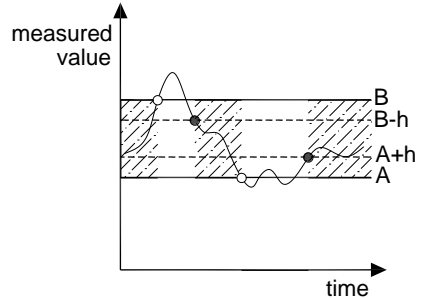
Alarm is ON when value is below the setpoint.

**Mode 3: Both setpoints set
“high” > “low”.**




Alarm is ON when value is outside the setpoints.

**Mode 4: Both setpoints set
“high” < “low”.**



Alarm is OFF when value is outside the setpoints.

Legend	
A: “high” setpoint value	 Alarm is ON
B: “low” setpoint value	● Alarm is ON
h: Hysteresis value	○ Alarm is OFF

2. Setting the alarm limit values

The temperature, humidity, pressure and dewpoint quantities available can be chosen.

- a). Press  key for 3 seconds to turn on the meter.

- b). Press **SET** key 4 times to enter the alarm limit values setting mode, the “**SET** 04 ALM ” mark appears for 2 seconds then to enter the temperature limit value setting mode, the “**SET** ALM T °C 00 or 0F ” mark and the temperature previous limit values are displayed, press ▲ key to check the temperature, humidity, pressure and dewpoint of previous limit setting values.
- c). To change the temperature limit setting value, press ▲ key to select the temperature limit value setting mode, the “**SET** ALM T °C 00 or 0F ” is displayed.
- d). Press **MODE** key to select the desired alarm mode from mode 1 (01) to mode 4 (04) then press ↵ key to confirm.
- e). Use ▶ key to position the cursor on the limit value element to adjust. Use ▲ key to change the selected element value. Press ↵ key to confirm.
- ▲
“ALM” mark indication setting the high limit value.
- ▲
ALM
▼
“ALM” mark indication setting the hysteresis value, the maximum setting values is 10°C, 10%RH and 100 hPa.
- ▲
▼
“ALM” mark indication setting the low limit value.
- Press ▲ key to select the alarm ON (00) or OFF (0F).
- f). Press ↵ key to store the temperature setting data.
- g). To change the humidity limit setting value, press ▲ key to select the humidity limit value setting mode, the “**SET** ALM %RH 00 or 0F ” mark and the humidity previous limit values are displayed.
- h). Repeat step d and e above to complete the humidity limit values setting.
- i). Press ↵ key to store the humidity setting data.
- j). To change the pressure limit value, press ▲ key to select the pressure limit value setting mode, the “**SET** ALM hPa 00 or 0F ” mark and the pressure previous limit values are displayed.
- k). Repeat step d and e above to complete the pressure limit values setting.
- l). Press ↵ key to store the pressure setting data.
- m). To change the dewpoint temperature limit value, press ▲ key to select the dewpoint temperature limit value setting mode, the “**SET** ALM Td/f °C 00 or 0F ” mark and the dewpoint previous limit values are displayed.
- n). Repeat step c and d above to complete the dewpoint limit values setting.



- o). Press \downarrow key to store the dewpoint setting data.
- p). Press \downarrow key again to exit the alarm limit values setting mode.

3. Setting the alarm sound ON/OFF

- a). Press ⓘ key to turn on the meter.
- b). Press **SET** key 5 times to enter the setting mode, the “**SET** 05 bEEP” mark is displayed.
- c). Press \blacktriangle key to select “00” or “0FF”.
- d). Press \downarrow key to exit.

4. To turn-on or turn-off alarm function

- a). Press **ALARM** key for 3 seconds to turn on the alarm function, the “**ALM**” mark is displayed.
- b). Press **ALARM** key for 3 seconds to turn off the alarm function, the “**ALM**” mark disappears.

5-7 Taking Data Filtering Measurements

Data filtering for pressure:

Set the averaging time during which the individual pressure measurement samples are integrated to get an average reading. A minimum of 1s default averaging time is recommended, the averaging time 60s is WMO averaging time for barometric pressure measurement.

Data filtering for humidity & temperature: There are three levels of filtering available. The lowest measurement noise is achieved with the factor filtering.

Setting	Filtering Level
OFF	No filtering (default setting)
STANDARD	Standard filtering. Approximately 13s moving average.
FACTOR	Weighted average filtering. Approximately 1 minute average by default (0.030), but configurable by changing the factor (0.001 ~ 1.000)

- 1. Press ⓘ key to turn on the meter.
- 2. Press **SET** key 12 times to enter the pressure data filter setting mode, the “**SET** 12 F 1.1 hPa” mark is displayed.
- 3. Press \blacktriangle key to set the desired average time from 1s to 1 minute.
- 4. Press \downarrow key to store the average time and to enter the humidity and temperature data filter setting mode, the “**SET** 12 F 1.1 °C %RH” mark is displayed.

5. Press ▲ key to select the desired filter mode “OFF”, “Std” (Standard), or “FRC” (Weighted average).

6. Press ↓ key to exit.

If “FRC” is selected, press ► key to position the cursor on the factor value element to adjust and press ► key to change the selected element value. Press ↓ key to complete the action and exit.

5-8 Setting the Auto Power off Time

1. Press **SET** key 6 times to enter the auto power off setting mode, the “**SET** 06 APO” mark is displayed.
2. Press ▲ key to select “ON” or “OFF” then press ↓ key to confirm.
3. If “ON” is selected, press ► key to position the cursor on the time (m:s) element to adjust and press ▲ key to change the selected time element value from 30s to 59m59s. Press ↓ key to store the auto power off time and exit, the auto power off mark “🕒” is displayed.

In the maximum/minimum recorder mode, alarm mode, datalogging mode and auto-cycle timer datalogging the auto power off function is disabled, the auto power off mark disappears.

5-9 Manual data Memory and Read Mode

1. To clear the manual memorized data

- a). Press **SET** key 10 times to enter this mode, the “**SET** 10 CLR 100” mark is displayed.
- b). Press ▲ key to select “YES” or “NO”, then press ↓ key to exit.
If “YES” is selected, then memorized data will be cleared.

2. To memorized the reading

- a). By pressing **MEM** key each time, it will store one set of the measured value into the memory. At this moment the LCD will show the memory address number and the “**M**” mark will disappear one time. Total memory size is 99 sets.
- b). When the memory is full, the LCD will show “**M** 99 FULL” mark.

3. To recall the memorized data.

- a). Press **READ** key to enter the READ mode, the LCD will show “**R**” mark and the memory address number.
- b). Press **READ** key to select the desired memory address number data for display.

- c). Press **MODE** key to display the measured and calculated reading and the stored date and time.
- d). Press \downarrow key to exit the READ mode.

5-10 Auto Datalogging

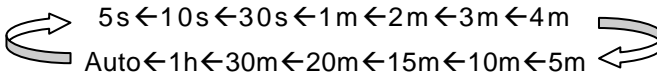
Only microSD CARD 4GB can be used.

1. To clear the auto memorized data

- a). Press **SET** key 11 times to enter this mode, the “**SET 11 AM CLR 2 Sd NO**” is displayed.
- b). Press \blacktriangle key to select “**YES**” or “**NO**”.
- c). If “**YES**” is selected, press \downarrow key to perform a clear of the auto memorized data, the “**dEL Sd CRd**” mark is displayed, when the “**dEL Sd CRd**” mark disappears, the clear is complete. If there is no SD CARD in the meter, the “**NO Sd CRd**” mark is displayed for 2 seconds.

2. Setting the interval time

- a). Press **SET** key 7 times to enter this mode, the “**SET 07 AM Int - d-h m:s**” mark is displayed.
- b). Press \blacktriangle key to cycle select the desired interval time.



- c). Press \downarrow key to complete the action.

The “**Auto**” sampling means when the measuring value is changed (>±1%RH, >±1°C or >±1hPa) data will be saved one time only.

3. To auto datalogging

- a). Press **LOG** key for 3 seconds to record the measuring data automatically, the “**A**” mark is displayed. When the “**M**” mark appears, one set of reading is stored to the memory.
- b). If there is no SD CARD in the meter, the “**NO Sd CRd**” mark is displayed for 2 seconds.
- c). If memory is full, the “**Sd FULL**” mark is displayed. The maximum capacity is 4GB.
- d). Press **LOG** key for 3 seconds to exit.

4. Download the recorded data to PC, by connecting the USB cable to PC and the meter.

5-11 Auto-Cycle Timer Datalogging

The auto cycle timer means the start-time and the record time is valid at all times.

1. Perform setting the Real-Time. (refer to 5-2)
2. Press **SET** key 9 times to enter the ON/OFF selecting mode, the **SET 09 A** **|| CYCL OFF** mark is displayed.
3. Press **▲** key to select **"ON"** or **"OFF"**.
4. If **"OFF"** is selected then press **↓** key to exit.
5. If **"ON"** is selected then press **↓** key to enter the Start-Time setting mode, the **"START d-h m:s"** is displayed.
6. Use **▶** key to position the cursor on the time element to adjust.
Use **▲** key to set the selected time element value.
7. Press **↓** key to enter the Record-Time setting mode, the **"r E L L"** mark is displayed.
8. Repeat step 6 above to complete the record-time setting.
9. Press **↓** key to enter the Interval-Time setting mode, the **"i n t -"** mark is displayed.
10. Press **▲** key to select the desired Interval-Time. (refer to 5-10-2-b)
11. Press **↓** key to complete the action and to enter the auto-cycle timer datalogging mode, the **" || "** mark will flicker on the display.
12. When the Start-Time is reached, the **" || "** mark will stop flickering and the **" A "** mark is displayed. When the **" M "** mark appears this means one set of data has been memorized.
13. In no SD CARD is in the meter, the **"NO Sd Card"** mark is displayed for 2 seconds.
14. If memory is full, the **"Sd FULL"** mark is displayed. The maximum capacity is 4GB.
15. Press LOG key for 3 seconds to exit.

5-12 No-Cycle Timer Datalogging

The no cycle timer means the Start-Time and the Stop-Time is valid for only one time.

1. Perform setting the Real-Time. (refer to 5-2)
2. Press **SET** key 8 times to enter the Start-Time setting mode, the **SET 08 A** **START ▶ YIM d-h m:s** mark is displayed.
3. Use **▶** key to position the cursor on the date or time element to adjust.
Use **▲** key to setting the selected date or time element value.

4. Press \downarrow key to enter the Stop-Time setting mode, the “STOP■” mark is displayed.
5. Repeat step 3 above to complete the stop-time setting.
6. Press \downarrow key to enter the Interval-Time setting mode, the “Int-” mark is displayed.
7. Press \blacktriangle key to select the desired Interval-Time. (refer to 5-10-2-b)
8. Press \downarrow key to complete the action and to enter the no-cycle timer datalogging mode, the “▶” mark will flicker on the display.
9. In this datalogging mode, if Auto-power off function is enabled, the meter will enter a battery save mode if a key is not pressed. The battery saved mode will shutdown circuits not necessary, including the display.
10. When the Start-Time is reached, the “▶” mark will stop flickering and the “A” mark is displayed. When the “M” mark appears this means one set of data has been memorized.
11. If no SD CARD is in the meter, the “NO SD CARD” mark is displayed for 2 seconds.
12. If memory is full, the “SD FULL” mark is displayed.
13. When the Stop-Time is reached, the “A” mark disappears and the “■” mark is displayed.
14. Press LOG key for 3 second to exit.

5-13 User Friendly Calibration Procedure

1. User calibration

Use standard Temperature meter, Humidity meter and Barometer for 1-point a simple offset calibration or 2-point offset and gain calibration.

- a). Press \odot key to turn on the meter.
- b). Press SET key 13 times to enter the calibration mode, the “SET 13 CAL 1 0 0 0” mark is displayed.
- c). Press \blacktriangle key to select “1” or “2” point calibration.
- d). Press \downarrow key to enter the first point calibration mode, the “P 1” mark will blink on the display.
- e). Wait about 10 minutes, until the meter and the standard meters readings are stable, then press \downarrow key to hold the meter measured values, the “HOLD” is displayed.
- f). Use \blacktriangleright key to position the cursor on the desired element to adjust and use \blacktriangle key to adjust the selected element value, until the temperature, humidity and pressure values are same as the standard meters.

- g). Press \downarrow key to complete the first point calibration and exit (1-point calibration) or to enter the second point calibration mode (2-point calibration), the “ ρ_2 ” mark is will blink on the display.
- h). Repeat step e and f above to complete the second point adjustment.
- i). Press \downarrow key to exit.

2. Reset to factory calibration


- a). Press I key to turn off the meter.
- b). Press and hold down **SET** key then press I key to turn on the meter, the “**FACTORY**” mark is displayed.
- c). Press \blacktriangle key to select “**YES**” or “**NO**” then press \downarrow key to exit. If you select “**YES**” this will reset to factory calibration.

6. MAINTENANCE

6-1 Cleaning :

Regularly wipe the case with a damp cloth and mild detergent.
Do not use abrasives or solvents. Clean and dry as required.

6-2 Battery Replacement :

When the battery power is not sufficient, the “” mark will flash on the display. At this moment, replace with new 9V battery in the battery compartment.

7. SOFTWARE INSTALLATION and OPERATION

- For detailed instructions, please refer to the content of attached CD-ROM, which has the complete instruction of software operation and relevant information.
- Protocol: are enclosed within the content of CD-ROM, please open the CD-ROM for details.