# Instruction Manual

# RS-5322

# 174-9558

# PM2.5 AIR QUALITY MONITOR

EN  FR  IT

# CONTENTS

## 1. SAFETY INFORMATION

❑ Read and keep the instruction manual.

❑ Follow all warnings and instructions.

❑ To avoid any adhesive particle like oil, etc. to gets into the meter.

❑ Do not install or operate the meter close to noise generator, such as electric dust collector, fluorescent lighting, etc.

❑ To avoid the meter under mechanical vibration.

❑ To avoid the meter is moisturized.

❑ Do not use the meter near water, such as a sink, wash basin, or bathtub.

❑ Do not spill any liquids onto or into the meter.

❑ Do not push any objects into the openings of the meter.

❑ Do not use any liquid or spray cleaners on the meter. Clean only with dry cloth.

❑ Do not install or operate near any source of heat.

❑ Do not use the meter in direct sunlight or other bright light source.

❑ Air sampling port shall not be covered when in use.

❑ Place the meter in a flat and safe surface to prevent it from dropping.

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**Health Disclaimer**

While the meter can detect levels of airborne particulates it cannot determine the health impact for any given individual.

Respiratory ailments and allergic symptoms are caused by a variety of factor. The meter is not meant to be used in the treatment or mitigation of any medical condition.

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❑ **Protected by:**

**Taiwan: D170348**

**U.S.A.: US D741,204**

**China: ZL 2014 3 0428394.1**

## 2. INTRODUCTION

Particle pollution comes from many different type of sources. Fine particle (2.5 micrometers in diameter and smaller) include power plants, industrial processes, vehicle tailpipes, wood stoves, and wildfires. Coarse particles (between 2.5 and 10 micrometers) come from crushing and grinding operations, road dust, and some agricultural operations.

Particle pollution is linked a number of health problems, including coughing, wheezing, reduced lung function, asthma attacks, heart attacks and strokes. It also is linked to early death.

**Some people may be at greater risk from particle pollution. They include:**

❑ People with cardiovascular disease (diseases of the heart and blood vessels).

❑ People with lung disease, including asthma and COPD.

❑ Children and teenagers.

❑ Older adults.

❑ Research indicates that obesity or diabetes may increase risk.

❑ New or expectant mothers may want to take precaution to protect the health of their babies.

Volatile organic compounds (VOCs) definitions: A VOCs is any organic compound having an initial boiling point less than or equal to 250℃ (480°F) measured at a standard atmospheric pressure of 101.3 kPa.

VOCs play an important role in indoor and outdoor air pollutants.

Vehicular and industrial emissions are the major sources of outdoor VOCs. Indoor sources are quite numerous including combustion product, cooking, construction materials, furnishings, paints, varnishes and solvents, adhesives and caulks, office equipment and consumer products.

Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors.

VOCs include a variety of chemicals that can cause eye, nose and throat irritation, shortness of breath, headaches, fatigue, nausea, dizziness, and skin problems. Higher concentrations may cause irritation of the lungs, as well as damage to the liver, kidney, or central nervous system.

Some VOCs are suspected to cause cancer in humans and have been shown to cause cancer in animals. The health effects caused by VOCs depend on the concentration and length of exposure to the chemicals.

The meter is a real-time air quality monitor instrument used to monitor the concentration of PM2.5, VOCs, humidity and temperature in the indoor environment.

The meter convert the concentration of PM2.5 and VOCs in the air into visual data, and evaluate the air quality comprehensively. Visual and audio alarm will be actived when the air quality reached a critical or alarm limit values.

## 2-1 Features

❑ **Fine particulate matter (PM2.5) measurement**

❑ **Volatile organic compounds (VOCs) measurement**

❑ **Temperature and Humidity measurements**

❑ **Health index (0 ~ 9) detection and alarm**

❑ **PM2.5 time weighted average reading**

❑ **VOCs time weighted average reading**

❑ **Data hold and MAX/MIN with time stamp function**

❑ **Six-color LED indication Air Quality Index Category**

❑ **Preset warning point of buzzer alarm, LED and alarm output**

❑ **Manual data memory and read function**

❑ **Auto data record and USB interface to PC**

## 2-2 Applications

❑ Sensitive individuals can monitor their personal space at home and work.

❑ Evaluate effectiveness and placement of air filtration devices.

❑ Investigate the effectiveness of different strategies to reduce particulates.

❑ Correlate health related issues to changes in particulate levels.

❑ Indoor air quality investigations.

❑ Evaluate effectiveness of air filtration.

❑ Continuous monitoring of building conditions (continuous commissioning)

❑ Troubleshooting/optimization of filtration methods.

❑ Sales tool for understanding filtration needs.

## 3. SPECIFICATIONS

❑ **Measurement range**:
   **PM2.5**: 0 to 500$\mu$g/m$^3$
   **VOCs**: 0 to 50ppm
   **Humidity**: 1% to 99%R.H.
   **Temperature**: -20℃ to +60℃ (-4℉ to +140℉)

❑ **Resolution**: 1$\mu$g/m$^3$, 1ppm, 0.1% R.H., 0.1℃, 0.1℉

❑ **Accuracy**:
   **PM2.5**: ≦50$\mu$g: ±5$\mu$g
            >50$\mu$g: ±10% of reading
   **VOCs**: ±10% of reading ±1ppm

   **Temperature**: ±0.8℃, ±1.5℉

   **Humidity**: ±3%RH (at 25℃, 30 to 80% RH).
            ±5%RH (at 25℃, 0 to 20% RH and 80 to 100% RH).

❑ **Response time**:

   **PM2.5**: ≦1min

   **VOCs**: ≦10min

   **Humidity**: 45% R.H. to 95% R.H. ≦1min

              95% R.H. to 45%R.H. ≦3min

   **Temperature** : 10℃/2sec.

❑ **Sampling rate**: 1 sample/second.

❑ **Memory data memory capacity**: 39 sets. (Direct reading from LCD
                                   display)

❑ **Auto data record capacity**: Internal micro SD CARD 4GB.
                              Max. 99 blocks can be split.

❑ **Alarm Output**: Open-collect output. Input impedance: 490Ω
                 Maximum applied Voltage: 24V DC
                 Maximum drive current: 50mA DC

❑ **Operating temperature and humidity**: 0℃ to 60℃, below 95% R.H.

❑ **Storage temperature and humidity**: -10℃ to 60℃,below 70% R.H.

❑ **Power supply**: Four 1.5V LR-6/AA size batteries, AC adapter

❑ **Battery life**: Approx. 5.5 hour (LCD backlight ON and DC FAN ON)

❑ **Dimensions**: 165mm(L)×93mm(W)×75mm(T), (6.5"L×3.7"W×3"T)

❑ **Weight**: Approx. 380g (13.4oz)

❑ **Accessories**: Instruction manual, Battery, PC software, USB
                connecting cable, AC adaptor DC6V 1000mA.

# 4. PARTS & CONTROLS

## 4-1 Description of Parts & Control keys:
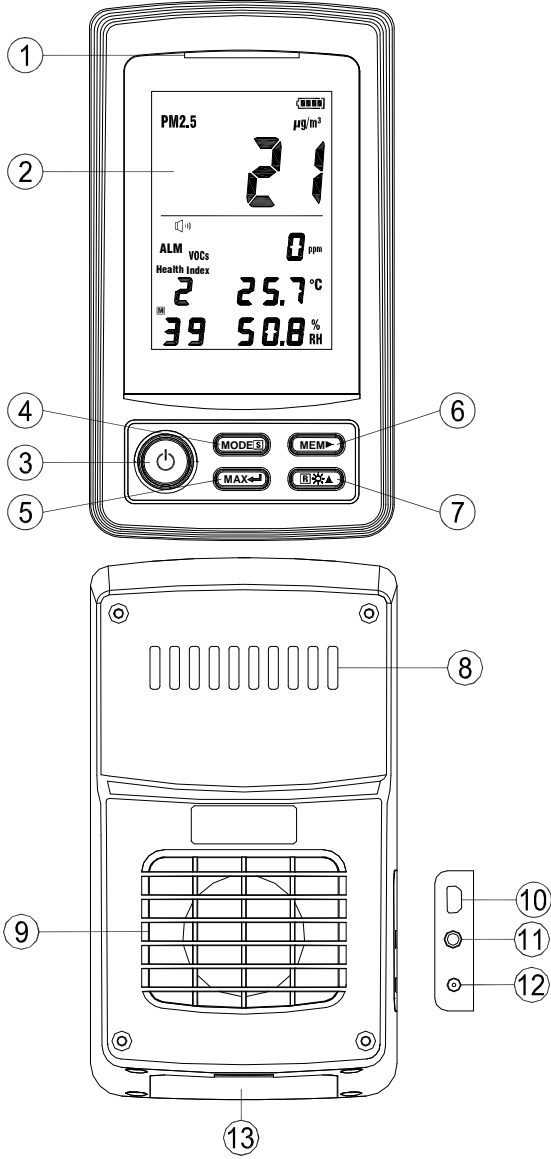
## 1. PM2.5 LED Air quality indicator

| LED Color | Air Quality Index | Who Needs to Be Concerned ? | PM2.5 ($\mu g/m^3$) 24-hour average |
|---|---|---|---|
| **Green** | Good (0 – 50) | No one. Air quality is good for everyone. | 0.0 – 12.0 |
| **Yellow** | Moderate (51 – 100) | Some people may be unusually sensitive to particle pollution and may need to take precautions. | 12.1 – 35.4 |
| **Aqua** | Unhealthy for Sensitive Groups (101 – 150) | Sensitive groups include people with heart or lung disease, older adults, children and teenagers. | 35.5 – 55.4 |
| **Red** | Unhealthy (151~200) | Everyone can be affected. | 55.5 – 150.4 |
| **Purple** | Very Unhealthy (201 – 300) | Everyone | 150.5 – 250.4 |
| **Blue** | Hazardous (301 – 500) | Everyone | 250.5 – 500 |

## 2. LCD display.

## 3. ⏻ Power and DC FAN control key:

① Press this key to turn on the meter.

② Press this key again to turn on or off the DC FAN.
  When the DC FAN is off, the "**PM2.5- - - -**" mark is displayed.

③ Press this key for 3 seconds to turn off the meter.

## 4. MODE S key:

① **MODE** key: Press this key to circulate the Measurement, PM2.5 VOCs TWA (Time-Weighted Average) and Current Date reading.

② S key: Press this key for 3 seconds to enter the Setting Mode.

  Press ↵ key to exit this mode.

  SET **dAtE**: Real-time setting mode.

  SET **bEEP**: Alarm sound on/off setting mode.

  SET **ALM**: Alarm function on/off setting mode.

  SET **UNit**: Temperature unit ℃/℉ setting mode.

$\boxed{\text{SET}}$ **PM2.5 TWA**: PM2.5 TWA average time setting mode.

$\boxed{\text{SET}}$ **UNit VOCs**: VOCs unit ppm or mg/m$^3$ setting mode.

$\boxed{\text{SET}}$ **cA**: User calibration setting mode.

$\boxed{\text{SET}}$ $\boxed{\text{A}}$ $\boxed{\text{M}}$ **Int-** : Auto data record interval time setting mode.

$\boxed{\text{SET}}$ $\boxed{\text{A}}$ $\boxed{\text{M}}$ **StAt**: Auto data record start time setting mode.

$\boxed{\text{SET}}$ **ALM**: Alarm limit values setting mode.

## 5. MAX ↵ key:

① ↵ key: In the setting mode, press this key to store the setting data and exit.

② **MAX** key:

    a). Press this key to enter the MAX (maximum) / MIN (minimum) Recording Mode.

    b). Press this key to circulate the MAX and MIN reading.

    c). Press this key for 3 seconds to exit this mode and store one set recorded datas to memory.

## 6. MEM ▶ key:

① ▶ key: In the setting mode, press this key to move cursor to the desired position.

② **MEM key**:

    a). **Memory function**: Press this key one time to store a measuring data.

    b). **Clear the stored data**: Press and hold this key, then turn on the meter again. There shows "**rEC CLr no**" mark on LCD. Press ▲ key to select "**YES**" or "**no**" to erase the memory data.

## 7. $\boxed{\text{R}}$ ☀ ▲ key:

① $\boxed{\text{R}}$ **key**: Press this key for 3 seconds 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 ☀ **key**: Press this key to turn on or off the LCD backlight.

③ ▲ **key**: In the setting mode, press this key to increase the parameter.

## 8. Air sampling inlet port.

**9. Air sampling outlet port.**

**10. Mocro-USB:** USB input/output connector for input of control signals and output of measurement data.

**11. Alarm output jack:** Allow output of a alarm signal is available this jack.
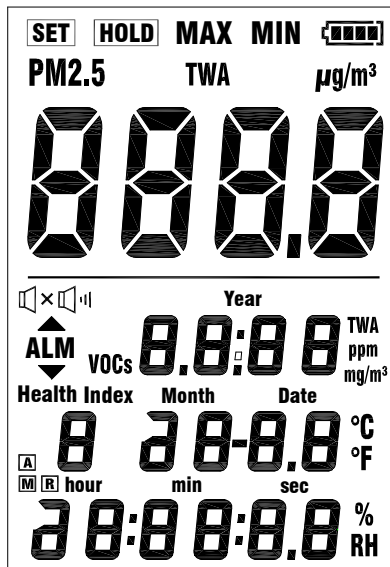
**12. AC adaptor power jack (DC 6V, 1000mA).**
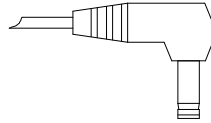
**13. Battery compartment.**

## 4-2 Description of Display:

**SET** : Setting mode indication.

**HOLD** : In the user calibration setting mode, the measuring data hold indication for calibration.

**MAX**: In the MAX/MIN recording mode, maximum value indication.

**MIN**: In the MAX/MIN recording mode, minimum value indication.

**MAX MIN**: In the MAX/MIN recording mode, current value indication.

**▐▌▐▌▐▌▐▌** : Battery capacity indication.

**▭▭▌** : Low battery indication.

**PM2.5**: Fine particulate matter (PM2.5) measurement value indication.

**PM2.5 TWA**: Fine particulate matter (PM2.5) measurement TWA value indication.

**PM2.5- - - -**: DC FAN off indication.

**µg/m$^3$**: PM2.5 measurement unit.

**888** : PM2.5 measurement value.

◻× : Disable alarm sound indication.

◻ⁱⁱ⁾ : Enable alarm sound indication.

**ALM**: Enable the alarm function indication.

**ALM**▲: Measurement value upper to the high limit value or setting the high limit value indication.

**ALM**▼: Measurement value below to the low limit value or setting the low limit value indication.

**VOCs**: volatile organic compounds measurement value indication.

**VOCs TWA**: VOCs measurement TWA value indication.

**ppm, mg/m$^3$** : VOCs measurement units.

**600** : VOCs countdow 600 seconds display.

**8888** : VOCs measurement value.

Health Index

**8** : PM2.5 air particle pollution or VOCs air pollution is based on a scale from 0 – 9 indication.

0: Very good, 1: Good, 2 – 4: Moderate, 5 – 8: Poor, 9: Very poor.

$188.8\ {}^{°C}_{°F}$ : Temperature measurement value.

**A**    : Auto memory indication.

**M**    : Disappeared one time store one sets data into the memory.

**M** **39**: Manual memory address number indication.

**R**    : Read mode indication.

**R** **39**: Recall manual memory address number indication.

**Hour 24**: PM2.5 or VOCs TWA average time indication or setting.

$88.8\ {}^{\%}_{RH}$ : Relative humidity measurement value.

**Year Month Date hour min sec**: Real-time or MAX/MIN recorded stamp time indication.

## 5. BEFORE OPERATION

### 5-1 Power Supply

The meter can be powered by two ways: Four AA-size alkaline batteries or the AC adaptor.

### 5-2 Install the Batteries

Insert 4 AA-size batteries as indicated by the diagram located on the inside of the battery compartment.

The meter is disigned to operate only with alkaline batteries.

When the battery voltage drop below the operating voltage, the " ▭ " mark will be blink displayed, it indicates the batteries need to be changed.

### 5-3 AC Adaptor

The AC adaptor allows you to power the meter from a wall outlet. When using the AC adaptor, the batteries (if installed) will be by passed. The AC adaptor is not a battery charger.

### 5-4 Air Sampling Port

Always ensures that the meter air sampling inlet and outlet port are not blocked and open to the atmosphere.

## 6. OPERATING INSTRUCTIONS

### 6-1 Selecting Temperature Unit ℃ or ℉

1. Press ⏻ key to turn on the meter.
2. Press **S** key for 3 seconds to enter the setting mode, the "**SET**" and "**dAtE**" marks are displayed.
3. Press **S** key 3 times to enter the temperature unit ℃/℉ setting mode, the "**Unit**" mark is displayed.
4. Press ▲ key to select "℃" or "℉" unit now blink on the display.
5. Press ↵ key to store the desired measure unit.

### 6-2 Selecting VOCs unit ppm or mg/m$^3$

1. Press ⏻ key to turn on the meter.
2. Press **S** key for 3 seconds to enter the setting mode, the "**SET**" and "**dAtE**" marks are displayed.
3. Press **S** key 5 times to enter the VOCs unit ppm or mg/m$^3$ setting mode, the "**Unit**" mark is displayed.
4. Press ▲ key to select "**ppm**" or "**mg/m$^3$**" unit now blink on the display.
5. Press ↵ key to store the desired measure unit.

### 6-3 Taking Measurements

1. Press ⏻ key to turn on the meter (The VOCs need waiting 600 seconds countdown then display the measured values).
2. The display will shows the PM2.5 reading (PM2.5 μg/m$^3$), VOCs reading (ppm or mg/m$^3$), temperature reading (℃ or ℉), Humidity reading (%RH), PM2.5 or VOCs air particle pollution (Health Index 0 – 9 ). The Health Index 5 – 9 will be blink display for warning.
3. The LED air quality indicator in a color format, the Red, Purple and Blue colors will be blink.
4. Press **MODE** key to circulate the Measurement, PM2.5 TWA, VOCs TWA and Real-time display. If the measurement time arrive ahead of the TWA average setting time, the "**hour - -:**" will be displayed.
5. Press ⏻ key again to turn on or off the DC FAN.
6. Press ⏻ key for 3 seconds to turn off the meter.

## 6-4 Setting the TWA Average Time

1. Press ⏻ key to turn on the meter.

2. Press **S** key for 3 seconds to enter the setting mode, the "**SET**" mark is displayed.

3. Press **S** key 4 times to enter the PM2.5 TWA average time setting mode, the "**SET** **PM2.5 TWA hour**" mark is displayed.

4. Press ▲ key to select the desired average time from 1 to 24 hours.

5. Press ↵ key to store the setting value and to enter the VOCs TWA average time setting mode, the "**SET** **TWA VOCs hour**" mark is displayed.

6. Press ▲ key to select the desired average time from 1 to 24 hours.

7. Press ↵ key to store the setting value and to enter the sampling time setting mode, the "**SET** **TWA St min sec**" mark is displayed.

8. Press ▲ key to select the desired sampling time 1 minute, 5 minutes or 10 minutes.

9. Press ↵ key to store the setting value and exit this mode.

## 6-5 Setting the Real-Time

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

1. Press ⏻ key to turn on the meter.

2. Press **S** key for 3 seconds to enter the real-time setting mode, the "**SET** **dAtE**" mark is displayed.

3. Using ▶ key to position the cursor on the date or time element to adjust.

4. Press ▲ key to change the selected date or time element value.

5. Press ↵ key to complete the action.

## 6-6 Taking Maximum (MAX) and Minimum (MIN) Recorder Measurements

1. Press ⏻ key to turn on the meter.

2. Press **MAX** key to enter the read previous recorded data mode, the "**rEAd OLd dAtA**" mark is displayed.

3. If you will read previously recorded data, press $\boxed{\text{R}}$ key to circulate display the recorded data, then press **MAX** key for 3 seconds to exit this mode. Otherwise press **MAX** key again to enter the recorder mode and auto clear the previous recorded data.

4. Press **MAX** key to cycle through the

 a). Current measurement reading, the "**MAX MIN**" mark is displayed.

 b). **MAX.** reading for PM2.5, VOCs, temperature and humidity, the "**MAX**" mark is displayed.

 c). **MAX.** reading for PM2.5 TWA, VOCs TWA, temperature and humidity, the "**MAX TWA**" mark is displayed.

 d). **MIN.** reading for PM2.5, VOCs, temperature and humidity, the "**MIN**" mark is displayed.

 e). **MIN.** reading for PM2.5 TWA, VOCs TWA, temperature and humidity, the "**MIN TWA**" mark is displayed.

 f). **MAX.** PM2.5 reading with its VOCs, temperature and humidity reading, the "**PM2.5**" mark is blinks.

 g). **MIN.** PM2.5 reading with its VOCs, temperature and humidity reading, the "**PM2.5**" mark is blinks.

 h). **MAX.** VOCs reading with its PM2.5, temperature and humidity reading, the "VOCs" mark is blink.

 i). **MIN.** VOCs reading with its PM2.5, temperature and humidity reading, the "**VOCs**" mark is blink.

 j). **MAX**. temperature reading with its PM2.5, VOCs and humidity reading, the "℃ or ˚F" mark is blink.

 k). **MIN.** temperature reading with its PM2.5, VOCs and humidity reading, the "℃ or ˚F" mark is blink.

 l). **MAX.** humidity reading with its PM2.5, VOCs and temperature reading, the "**%RH**" mark is blink.

 m). **MIN.** humidity reading with its PM2.5, VOCs and temperature reading, the "**%RH**" mark is blink.

 Under **f** to **m** steps, users also can get its occurred time by press **MODE** key to display the occurred time, press **MODE** key again to exit time display.

 Under **b** to **m** steps, the "$\boxed{\text{R}}$" mark is displayed.

5. Press **MAX** key for 3 seconds to exit this mode and store the recorded data to memory.

## 6-7 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 in 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 setpoints.

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.
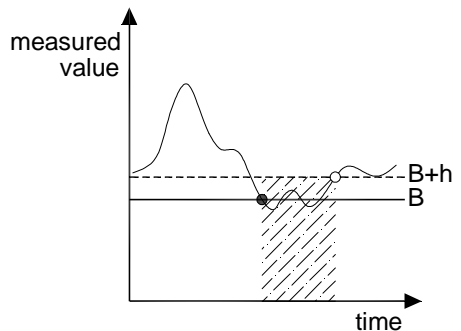
**The following figure for illustrative examples of the different measurement-based alarm output modes.**
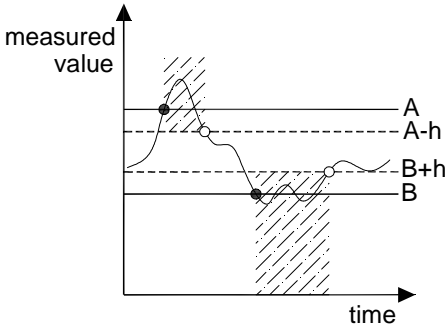
**Mode 1: Only "high" setpoint set.**      **MODE 2: Only "low" setpoint set.**
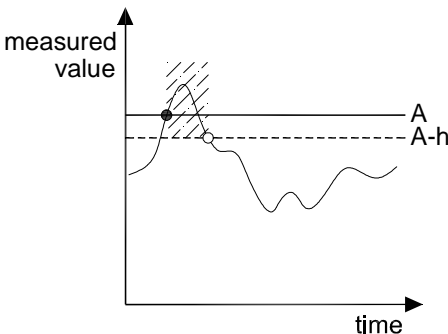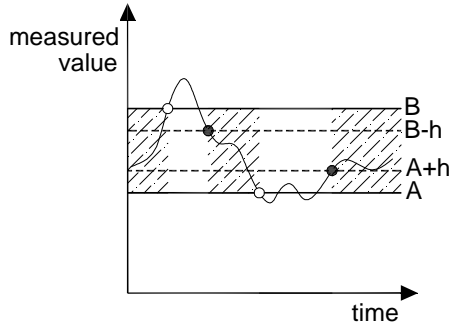


**Alarm is ON when value is above the setpoint.**      **Alarm is ON when value is below the setpoint.**

**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 | o Alarm is OFF |

## 2. Setting the alarm limit values

a). Press ⏻ key to turn on the meter.

b). Press **S** key for 3 seconds to enter the setting mode, the "**SET**" mark is displayed.

c). Press **S** key 9 times to enter the PM2.5 alarm mode select, the "**PM2.5 ALM**" and "**no-x**" marks are displayed.

d). Press ▲ key to select the desired alarm mode from 1 to 4, then press ↵ key to select and to enter the alarm limit values setting mode.

e). The "**ALM▼**" mark indication setting the low limit value, the "**▲ALM**" mark indication setting the high limit value, and the "**▲ALM▼**" mark indication setting the hysteresis value. Press ▲ key to set the desired value, the ▲ key can be held down to increase the speed.

Press ↵ key to move to the next setting value or to enter the VOCs alarm mode select, the "**VOCs ALM**" and "**no-x**" marks are displayed.

f). Repeat step ④ and ⑤ above to complete the VOCs limit value setting, and to enter the temperature alarm mode select, the "℃ or ℉ **ALM**" and "**no-x**" marks are displayed.

g). Repeat step ④ and ⑤ above to complete the temperature limit value setting, and to enter the humidity alarm mode select, the "**%RH, ALM**" and "**no-x**"marks are displayed.

h). Repeat step ④ and ⑤ above to complete the humidity limit value setting, and exit the alarm limit values setting mode.

## 3. Setting the alarm sound ON/OFF

a). Press ⏻ key to turn on the meter.

b). Press **S** key for 3 seconds to enter the setting mode, the "**SET**" mark is displayed.

c). Press **S** key 1 times to enter this mode, the "**bEEP**" and "◁× ◁»)" marks are displayed.

d). Press ▲ key to select "◁×" for disable the alarm sound or select "◁»)" for enable the alarm sound.

e). Press ↵ key to exit this mode.

## 4. Setting the alarm function ON/OFF

a). Press ⏻ key to turn on the meter.

b). Press **S** key for 3 seconds to enter the setting mode, the "**SET**" mark is displayed.

c). Press **S** key 2 times to enter this mode, the "**ALM on**" or "**ALM OFF**" mark is displayed.

d). Press ▲ key to select "**on**" or "**OFF**".

e). Press ↵ key to exit this mode.

## 6-8 Clearing Memorized data

1. Press ⏻ key to turn off the meter.

2. Press and hold down **MEM** key then press ⏻ key to turn on the meter and to enter the clear the manual memorized data mode, the "**rEC CLr M no**" mark is displayed.

3. Press ▲ key to select "**YES**" or "**no**", then press ↵ key to enter the clear auto memorized data mode, the "**Sd CLr no**" mark is displayed.

   If you select "YES" the manual memorized data will be cleared.

4. Press ▲ key to select "**YES**" or "**no**", then press ↵ key to exit.

   If you select "**YES**" the memorized SD card data will be cleared, the "**Sd init**" and "**DEL**" mark are displayed.

## 6-9 Manual data Memory and Read Mode

### 1. To memorized the reading

a). Press **MEM** key each time will store one set of the measured value into the memory. At this moment, LCD will show the memory address number and the "**M**" mark will be disappear one time. Total memory size is 39 sets.

b). When the memory is full, LCD will show "**rEC FULL**" mark.

### 2. To recall the manual memorized data.

a). Press **R** key for 3 seconds to enter the READ mode, the LCD will show "**R**" mark and the memory address number.

b). Press **R** key to select the desired memory address number data for display.

c). Press **MODE** key to display the stored date and time, press **MODE** key again to exit the date and time display.

d). Press ↵ key to exit.

## 6-10 Auto data record

### 1. Record data without preset start time

a). Press ⏻ key to turn on the meter.

b). Press **S** key for 3 seconds to enter the setting mode, the "**SET**" and "**dAtE**" marks are displayed.

c). Press **S** key 7 times to enter the auto data record interval time selecting mode, the "**int- A M min sec**" mark is displayed.

d). Press ▲ key to cycle select the interval time.

5sec → 10sec → 30sec→ 1min → 2min → 3min → 4min → 5min → 10min → 15min → 20min → 30min → 60min

e). Press ↵ key to store the interval time and exit.

f). Press **MEM** key for 3 seconds to enter the auto data record mode, the "**A**" mark is displayed, when the "**M**" mark is disappeared one time, one set of reading is stored to the memory.

g). When the memory is filled (micro SD CARD 4GB or 99 blocks is full used), the "**Sd FULL**" mark is displayed.

h). Press **MEM** key for 3 seconds to exit this mode, the recorded block number "**rEC xx**" is displayed.

i). The recorded data only download by PC, can not recall display by meter.

### 2. Record data with preset start time

### Perform setting the real time. (refer to 6-5)

a). Press ⏻ key to turn on the meter.

b). Press **S** key for 3 seconds to enter the setting mode, the "**SET**" and "**dAtE**" marks are displayed.

c). Press **S** key 8 times to enter the preset start time selecting mode, the "**StAt A M**" mark and the flicking number of year are displayed.

d). Using ▶ key to position the cursor to the desired date and time element to adjust.

Using ▲ key to setting the selected date or time element value.

e). Press ↵ key for 3 seconds to stored the start time and to enter the stop time setting mode, the "**Stop** A M" mark and the flicking number of year are displayed.

f). Repeat step 4 to complete the end time setting.

g). Press ↵ key for 3 seconds to stored the stop time and to enter the record interval time setting mode, the "**int** A M **min sec**" mark is displayed.

h). Press ▲ key to cycle select the interval time.

5sec → 10sec → 30sec→ 1min → 2min → 3min → 4min → 5min → 10min → 15min → 20min → 30min → 60min

i). Press ↵ key for 3 seconds to stored the interval time and to enter the record data with preset start time mode, the "A" mark is flick displayed.

j). When the start time is reached, the "A" mark is stop flick. When the "M" mark disappeared one time means one set of data has been memorized.

k).When the memory is filled (micro SD CARD 4GB or 99 blocks is full used), the "**Sd FULL**" mark is displayed.

l). Press **MEM** key for 3 seconds to exit this mode, the recorded block number "**rEC xx**" is displayed.

m). The recorded data only download by PC, can not recall display by meter.

## 6-11 User Friendly Calibration Procedure

**1.** Use standard PM2.5 meter for 2-point calibration (first point <15μg/m$^3$, second point >60μg/m$^3$), use standard temperature meter for 1-point calibration, and use standard humidity meter for 1-point calibration.

a). Press ⏻ key to turn on the meter.

b). Press S key for 3 seconds to enter the setting mode, the "**SET**" mark is displayed.

c). Press S key 6 times to enter the calibration mode, "**CA 1**" mark is displayed.

d). Wait about 10 minutes, until the meter and the standard meters all reading are stable, then press ↵ key to hold the meter measured values, the "**HOLD**" mark is displayed and the "**PM2.5 1**" mark is blink.

e). Press and hold down the ▲ key to increase the PM2.5 first point value or press and hold down the ▶ key to decrease the value, until the PM2.5 value is same as the PM2.5 standard meter.

f). Press ↵ key, the "℃ or ℉" mark is displayed, press ▲ or ▶ key until the temperature value is same as the standard temperature meter.

g). Press ↵ key, the "**%RH**" mark is displayed, press ▲ or ▶ key until the humidity value is same as the standard humidity meter.

h). Press ↵ key to enter the PM2.5 second point calibration mode, the "**CA 2**" mark is displayed.

i). Wait about 10 minutes, until the meter and PM2.5 standard meter reading are stable, then press ↵ key to hold the meter measured value, the "**HOLD**" mark is displayed and the "**PM2.5 2**" mark is blink.

j). Press ▲ or ▶ key until the PM2.5 second point value is same as the PM2.5 standard meter.

k). Press ↵ key to complete the calibration procedure and exit this mode.

## 2 Reset to factory calibration

a). Press ⏻ key to turn off the meter.

b). Press and hold down S key then press ⏻ key to turn on the meter, the "**CA Fact no**" mark is displayed.

c). Press ▲ key to select "**YES**" or "**no**", then press ↵ key to exit. If you select "**YES**" will reset to factory calibration.

## 7. MAINTENANCE

### Cleaning:
Periodically wipe the case with a dry or damp cloth and mild detergent.
Do not use abrasives or solvents to clean this instrument.

### Battery Replacement:

When the battery power is not sufficient, LCD will show " ⬜ " mark is blink, the four 1.5V "**AA**" alkaline batteries must be replaced.

1. Turn the meter off.
2. Remove the meter's battery cover.
3. Replace the batteries observing polarity.
4. Affix the battery cover.

### Prevention of Battery Fluid Leakage:
1. When the battery power is low, replace the new battery in order to avoid the further battery fluid leakage possibility.
2. When the meter will not be in use for the long period of time, please remove the batteries out of meter to prevent the possibility of battery fluid leakage damage.

## 8. SOFTWARE INSTALLATION AND OPERATION

1. For the detailed instruction, please refer to the content of attached CD-ROM, which has the complete instruction of software operation and relevant information.

2. Protocol: are enclosed within the content of CD-ROM, please open the CD-ROM for details.

# 9. AIR POLLUTION REGULATION

| | | WHO | | | | European Union | USA | | Canada |
|---|---|---|---|---|---|---|---|---|---|
| | | IT-1 | IT-2 | IT-3 | AQG | | United States | California | |
| **PM2.5 μg/m³** | **Yearly average** | 35 | 25 | 15 | 10 | 25 | 12 | 12 | - |
| | **Daily average (24-hour)** | 75 | 50 | 37.5 | 25 | - | 35 | - | 30 |

| | | Australia | Japan | South Korea | Hong Kong | China | | Thailand | Taiwan |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Class1 | Class2 | | |
| **PM2.5 μg/m³** | **Yearly average** | 8 | 15 | - | 35 | 15 | 35 | 25 | 15 |
| | **Daily average (24-hour)** | 25 | 35 | - | 75 | 35 | 75 | 50 | 35 |