UV Energy Meter

Code: 86138

User Manual V1.01

Please read this manual carefully before using and reserve it for reference.

I. Product Introduction

UV energy meter can measure UV energy, UV intensity and temperature at the same time. It is suitable for UV energy, UV intensity and temperature detection of UV curing machines, UV dryers, mobile phone UV coating machines, exposure machines, printing machines and other equipment. This meter is suitable for measuring the UV intensity and UV energy of UV LED light sources.
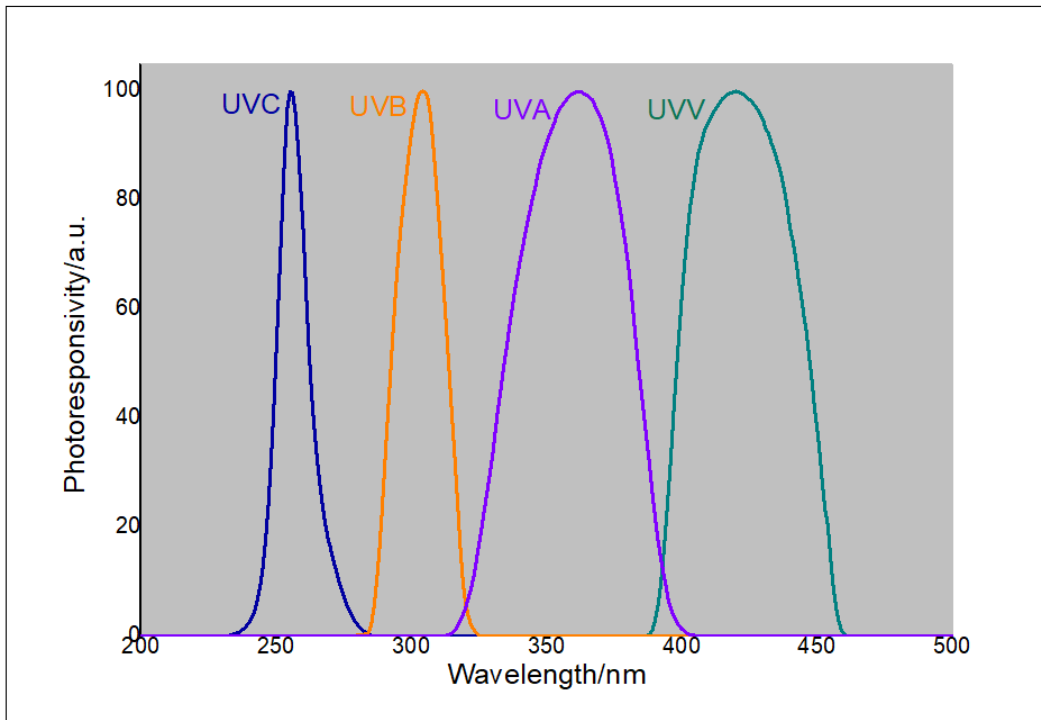
Standards for the product

JJG 879-2015 Verification Regulation of Ultraviolet Radiometers

QB/T 2826-2017 Ultraviolet curing offset ink

II. Parameters

1. Spectral Range:
    UVC: 230nm-280nm λ p = 254nm;
    UVB: 280nm-315nm λ p = 310nm;
    UVA: 315nm-400nm λ p = 365nm;
    UVV: 395nm-445nm λ p = 420nm;

2. Irradiance Measuring Range: 0 ~ 2,000mW/cm^2

3. Irradiance Resolution: 0.01mW/cm^2

4. Energy Measuring Range: 0 ~ 999999mJ/cm^2

5. Energy Measuring Accuracy(H is the Standard Value):

    H<5mW/cm^2:$\pm$0.5mW/cm^2

    H>=5mW/cm^2:$\pm$10%H, $\pm$5% (Typical)

6. Temperature Measuring Range: -55°C ~ +125°C

7. Sampling Speed: 2048 times/second

8. Irradiance Data Storage Interval: 32 times/second

9. Temperature Data Storage Interval: 2 times/second

10. Recording Period: 32 minutes

11. Power Supply: 2 AAA alkaline dry batteries

12. Display: 240*160 Dot matrix LCD

13. Dimension: Diameter 120mm * thickness 13 mm

14. Weight: 248g

15. Supply Voltage: DC3V

16. Operating Current: 39mA

17. Operating Power Consumption: 117mW

III. Spectral response curve

IV. Characteristics

1. The instrument simultaneously measures UV power and energy in four bands: UVA, UVB, UVC and UVV.

2. It is the real smart UV energy meter with a large LCD to display the temperature and irradiance curve directly.

3. It is equipped with a USB port and the computer software can read the detailed record data, generating data curve and print out test reports.

4. It is with a high precision fast response temperature sensor and can measure the real temperature in the curing machine dynamically.

5. It is with a built-in heat resisting sheet, can resist high temperature and operate at 100℃ for long time.

6. The meter is with a built-in large memory and can record irradiance data up to 60,000 and temperature data up to 3800.

7. The stored data will not be lost when the power is off and the last test data will be displayed automatically when power is on; the test data can only be deleted manually.

8. It is with a built-in timer and can record the UV curing time accurately.
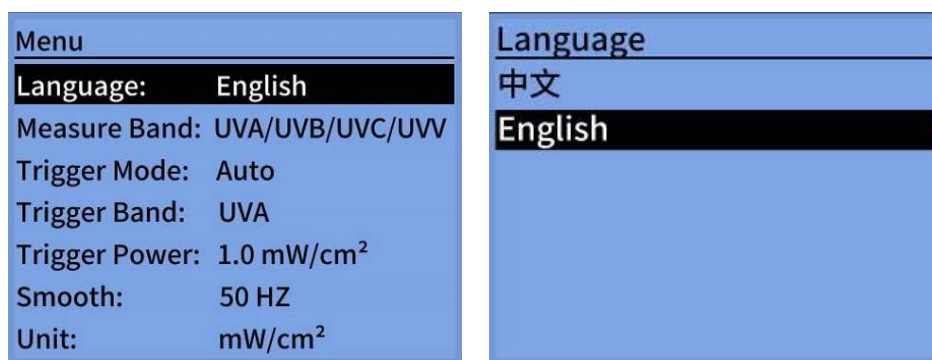
V. Operation

1. Parameter setting

In OFF mode, long press the "POWER" button and go to the setting mode: In the setting mode, "SELECT" button is for selection and "POWER" button is for confirmation.
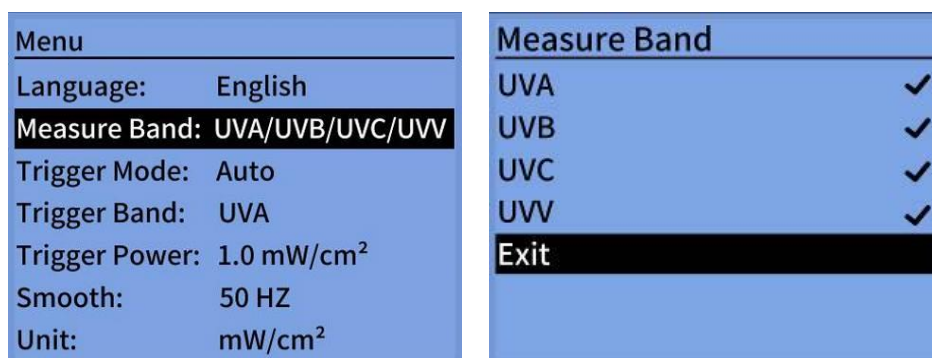
A. Language: Chinese/English

Select "Language" to enter the language menu, choose the desired language and confirm. The meter will then automatically return to the main menu, displaying text in the selected language. The chosen language will appear next to the "Language" option.

Menu		Language	
Language:	English	中文	
Measure Band:	UVA/UVB/UVC/UVV	English	
Trigger Mode:	Auto		
Trigger Band:	UVA		
Trigger Power:	1.0 mW/cm²		
Smooth:	50 HZ		
Unit:	mW/cm²		

B. Measure Band: UVA/UVB/UVC/UVV

Select the "Measure Band" to enter the measurement band selection menu. Choose or deselect the desired bands (all four bands are selected by default). A checkmark "√" will appear next to selected bands. Select "Exit" to go back to the main menu, where the selected measurement bands will be displayed next to the "Measure Band" option.

Note: Select up to four measurement bands, and at least one band must be selected.

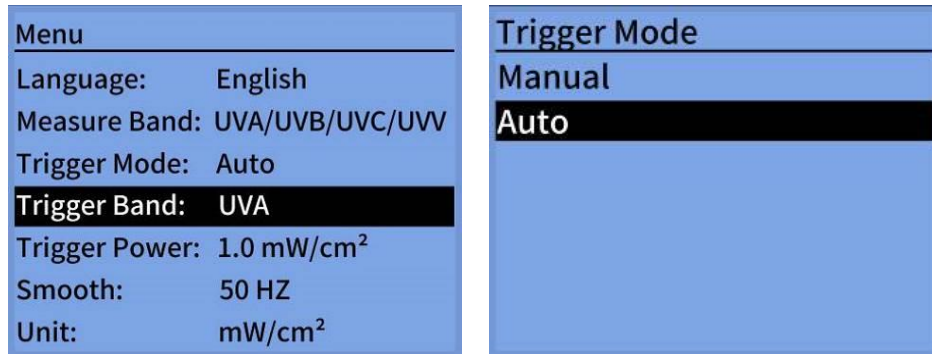| Menu		Measure Band	
Language:	English	UVA	✔
Measure Band:	UVA/UVB/UVC/UVV	UVB	✔
Trigger Mode:	Auto	UVC	✔
Trigger Band:	UVA	UVV	✔
Trigger Power:	1.0 mW/cm²	Exit	
Smooth:	50 HZ		
Unit:	mW/cm²		

C. Trigger Mode: Manual/Auto

Select the "Trigger Mode" to enter the trigger mode menu. Choose the desired mode (Auto/Manual) and confirm. The meter will then automatically return to the main menu, where the selected trigger mode will be displayed next to the "Trigger Mode" option.

Select Auto, the automatic trigger mode, when the power value is greater than the selected trigger value, the measurement is automatically started.
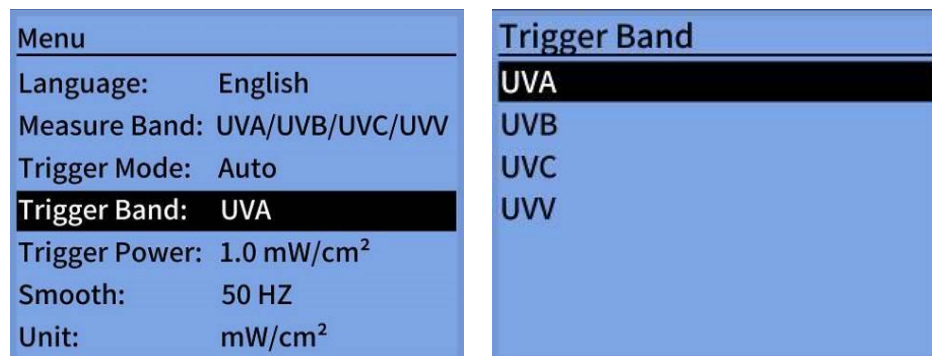
Select Manual, short press the "POWER" button start a measurement and end a measurement.

Note: *For the recording time is only 32 minutes, if the production line is very long and need a long time to reach the UV Lamp position, the "AUTO" mode must be selected.*

Menu		Trigger Mode	
Language:	English	Manual	
Measure Band:	UVA/UVB/UVC/UVV	**Auto**	
Trigger Mode:	Auto		
Trigger Band:	**UVA**		
Trigger Power:	1.0 mW/cm²		
Smooth:	50 HZ		
Unit:	mW/cm²		

D. Trigger Band: Available options depend on the selected measure band

Select "Trigger Band" to enter the trigger band menu. Choose the desired trigger band (options are based on the selected measure band; if UVA/UVB/UVC/UVV is selected, the trigger band can be one of these). After selection, the meter will automatically return to the main menu, displaying the selected trigger band next to the "Trigger Band" option.

Menu		Trigger Band	
Language:	English	**UVA**	
Measure Band:	UVA/UVB/UVC/UVV	UVB	
Trigger Mode:	Auto	UVC	
Trigger Band:	**UVA**	UVV	
Trigger Power:	1.0 mW/cm²		
Smooth:	50 HZ		
Unit:	mW/cm²		

E. Trigger power: 0.1-50mW/cm² can be set

Select "Trigger Power" to enter the trigger power setting interface. Short press the "SELECT" button to reduce the trigger power, short press the "POWER" button to increase. After setting the required trigger power, long press the "POWER" button to confirm. The meter will automatically exit to the main menu interface. The trigger power just set will be displayed after the "Trigger Power" option.

F. Smooth: OFF/50HZ/60HZ

If the UV light source uses AC power supply, the frequency of the AC power will affect the accuracy of the power measurement. The accuracy of power measurement can be improved by selecting the power frequency of the light source.

Select "Smooth" to enter the smooth menu. Choose the desired processing method and confirm. The meter will then automatically exit to the main menu, where the selected smooth method will be displayed next to the "Smooth" option.

OFF: this option can be selected if no smooth processing will be performed and the UV lamp is powered with direct current

50HZ: this option must be selected if frequency of the alternating current is 50HZ

60HZ: this option must be selected if frequency the alternating current is 60HZ

G. Unit：µW/cm² , mW/cm² , W/m²

Select "Unit" to enter the unit selection menu. Choose the desired unit and confirm. The meter will then automatically exit to the main menu, where the selected unit will be displayed next to the "Unit" option.

Menu		Unit
Measure Band:	UVA/UVB/UVC/UVV	μW/cm²
Trigger Mode:	Auto	**mW/cm²**
Trigger Band:	UVA	W/m²
Trigger Power:	1.0 mW/cm²	
Smooth:	50 HZ	
Unit:	**mW/cm²**	
Reset		

H. Reset

Select the "Reset" option to enter the restore menu. Choose "Yes" or "No" and confirm to exit to the main menu. If "Yes" is selected, the factory settings will be restored (language settings will not be reset).

Default factory settings:

Measure Band: UVA/UVB/UVC/UVV
Trigger Mode: Manual
Smooth: 50HZ
Unit: mW/cm²

Menu		Reset to Defaults?
Trigger Mode:	Auto	YES
Trigger Band:	UVA	**NO**
Trigger Power:	1.0 mW/cm²	
Smooth:	50 HZ	
Unit:	mW/cm²	
Reset		
Exit		

I. Exit

After the parameter setting is completed, select the "Exit" option and confirm. The set parameters will be automatically saved and the last measurement result interface (STOP interface) will be entered.

Menu	
Trigger Mode:	Auto
Trigger Band:	UVA
Trigger Power:	1.0 mW/cm²
Smooth:	50 HZ
Unit:	mW/cm²
Reset	
Exit	

2. ON/OFF

1) In POWER OFF state, short press "POWER" button to power on the meter. After turning on the meter, the meter displays the version number, serial number, calibration coefficient and then enters the last measurement interface (STOP interface).

   In the "STOP" interface, long press the "POWER" button to power off the meter.

2) In the "STOP" interface, the meter will automatically power off in 3 minutes without any operation.

3) In the automatic trigger measurement "Ready" state, the longest waiting time is 50 minutes. If the measurement cannot be triggered within 50 minutes, it will automatically turn off.

3. Measurement

In the measurement mode, three operation states exist:

READY: Ready state; in the auto trigger mode, this means the meter is waiting for triggering to begin a measurement.

RUN: Measuring state; this means the meter is collecting data.

STOP: Stop state, this means the data measurement finished.

In measurement mode, 4 kinds of display modes can be selected by using the "SELECT" button:
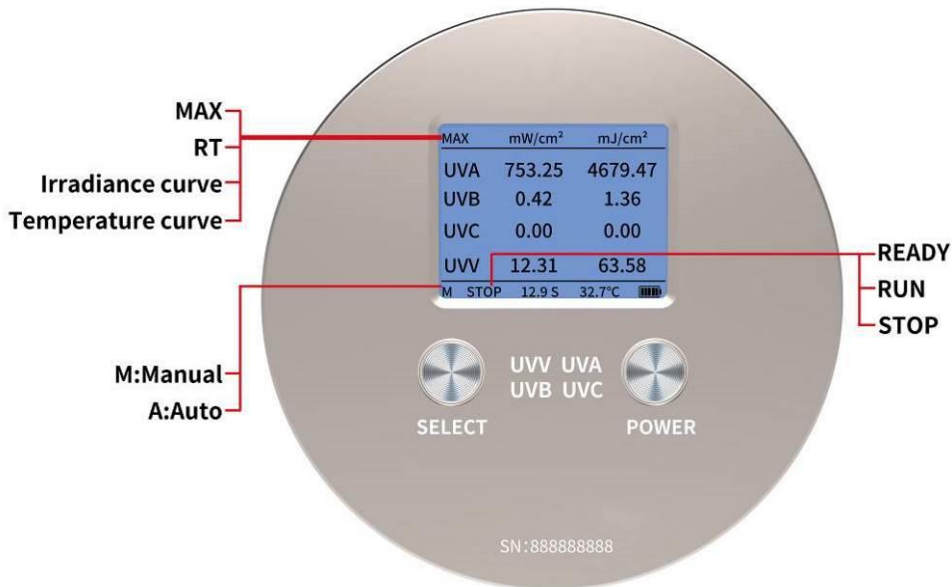
MAX: Maximum value (including the maximum value of energy, irradiance and temperature)

RT: Real-time value (including real-time value of energy, power, time, and temperature; can only be viewed in RUN and READY status)

Irradiance curve: (Can only view in the "STOP" state)
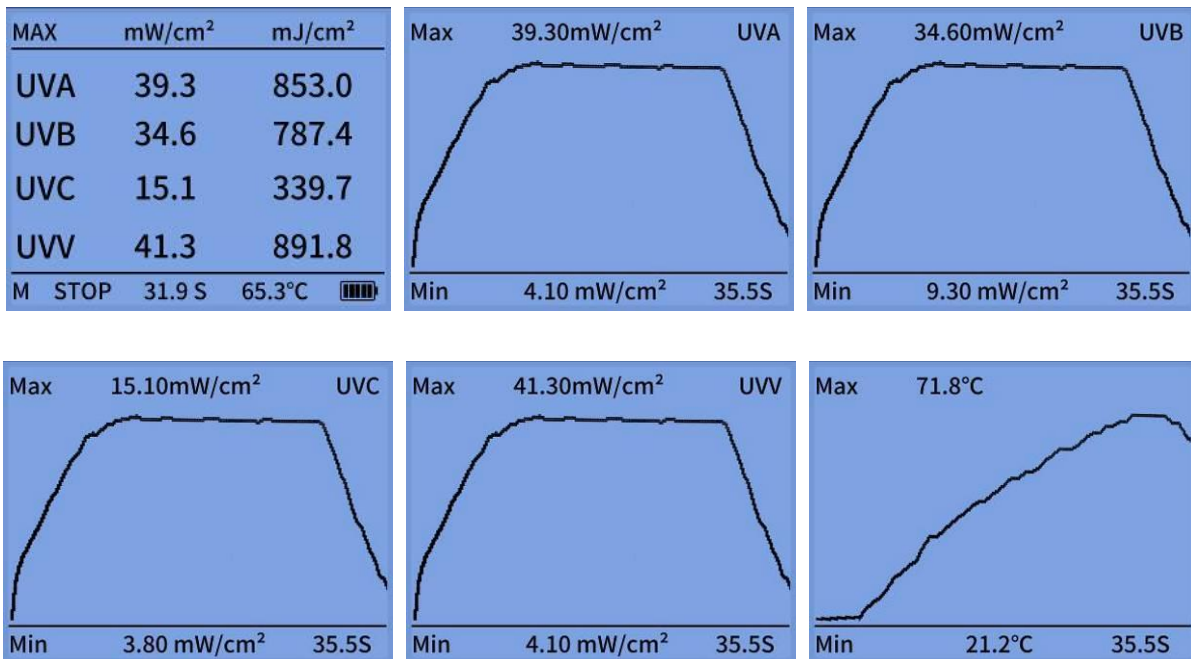
Temperature curve: (Can only view in the "STOP" state)

1) **Manual measurement mode:** in the STOP interface. Short press the "POWER" button and then short press the "SELECT" button to confirm the new measurement, clear the historical data (display "-----"), automatically enter the measurement interface (RUN state) after 1s. Short press the "POWER" button or after 32 minutes, the measurement is over and enter the STOP interface.

2) **Automatic mode:** After pressing the button to confirm the new measurement, the meter enter the READY state to clear the historical data and wait for the trigger condition (Trigger Power) to be met, the energy and time display "----" and flashing, and the measurement data of other non-trigger bands display "----". When the power value is greater than the set trigger power, the trigger condition is met, enter the measurement interface (RUN state). When the recording time reaches 32 minutes or the power value is less than the set trigger power, the measurement is automatically ended and enters the STOP interface.

4. The last measurement data view

In the stop status, the interface displays the maximum value of the last measurement.

The maximum value, each band power curve and temperature curve can be viewed by short pressing "SELECT" button.

In the stop status, long press the " SELECT " key to clear the current test data. After the data is cleared, "----" is displayed.

5. USB communication

This meter has the function of 32-minutes data recording.

> **Recording Period:** 32 minutes
>
> **Irradiance Data Storage Interval:** 32 times /s, up to 61440 irradiance record data.
>
> **Temperature Data Storage Interval:** 2 times/s, up to 3840 temperature data

In the "STOP" mode, all recording data in the meter can be read, the curves can be displayed, data can be exported into EXCEL and reports can be printed with the PC software.

VI. PC Software

The meter is equipped with a USB communication port and it can be connected to the computer with plugging in the USB cable and starting the special PC software, and the data in the meter can be read. The software has various functions, such as parameter configuration, data reading, each UV irradiance curve and temperature curve display, data irradiance export into EXCEL, temperature data export into EXCEL and report generation.

The report generation and printing function should be specially explained. For test data, the software can generate a report automatically and print, and if a PDF printer is installed, the electronic version report can be printed in PDF format. This is convenient for the recording and archiving of test data.

Record data can be read by connect USB cable with computer directly (when the meter is connected to the computer with USB port for the first time, you will be prompted to restart the computer so as to PC load the driver automatically). Currently, the software supports Windows system.

UV Energy Meter V3.4

Device information

SN: 138000105

Firmware Version: 1.00

Data

	Energy mJ/cm²	Max Power mW/cm²
UVA	85.30	3.93
UVB	78.74	3.46
UVC	33.97	1.51
UVV	89.18	4.13

Max temperature: 30.6 °C   Time: 25.5 S

Setup

General Setup

Language: ○ Chinese ● English

Measure Band: ☑ UVA ☑ UVB ☑ UVC ☑ UVV

Smooth: ○ OFF ● 50Hz ○ 60Hz

Unit: ○ μW/cm² ● mW/cm² ○ W/m²

Trigger Setup

Trigger Mode: ○ Manual ● Auto

Trigger Band: ● UVA ○ UVB ○ UVC ○ UVV

Trigger Power: 1.0 mW/cm²

[Read] [Setup]

[Get Data] [UV Power Curve] [Temperature Curve]

[Report] [Save UV Power] [Save Temperature]

[English] [中文]

Report

[Information] [Print]

Test Report

Device: UV Energy Meter   SN: 138000105

Machine No: No.1   Date: 2024-12-20

Company:

Test Data

Item	Value	Unit	Item	Value	Unit
UVAPower(Max)	3.93	mW/cm²	UVAEnergy	85.30	mJ/cm²
UVBPower(Max)	3.46	mW/cm²	UVBEnergy	78.74	mJ/cm²
UVCPower(Max)	1.51	mW/cm²	UVCEnergy	33.97	mJ/cm²
UVVPower(Max)	4.13	mW/cm²	UVVEnergy	89.18	mJ/cm²
Time	25.5	S	Temperature(Max)	30.6	°C

UV Power Curve

mW/cm²

—— UVA – – UVB ······ UVC –·–· UVV

Max:4.13

Min:0.38

Temperature Curve

°C

Max:30.6

Min:27.1

Tester: John   Auditor: Amy

VII. Notes

1. The meter sensor is at the back of meter.

2. When not in use, please turn off the meter.

3. Avoid contact with corrosive materials and keep away from high humidity.

4. Please put it in the specialized package after power-off and keep properly.

5. The suggested calibrating period is one year and our company has the standard light source and provides calibration service.

6. For the UV sensor is very sensitive to humidity, the storage environment is very important. For a long time storage, please be sure to keep the meter in dry environment.

VIII. Packing list

No.	Description	Quantity	Unit
1	UV Energy Meter	1	pcs
2	USB Cable	1	pcs
3	AAA Battery	2	pcs
4	Anti-static Gloves	1	pcs
5	Small Cross Screwdriver	1	pcs
6	User Manual	1	pcs
7	Calibration Report	1	pcs
8	Certificate/Warranty Card	1	pcs
9	Plastic Case	1	pcs

IX. Service

1. The meter has one-year warranty. If the meter works abnormally, please send the whole meter to the company for maintenance.

2. Provide users with spare parts and lifelong maintenance services.

3. Provide the users with the meter inspection service for free.

4. Free technical support for long term.