

User Manual R1.0  
Santacary Technology Co. Ltd.  
MHK-U28 UVA and UVB Light Meter



## INTRODUCTION

Congratulations on your purchase of this Santacary MHK-U28 UVA and UVB Light Meter. MHK-U28 is a precise meter that measures ultraviolet UVA and UVB radiation.

UVA wavelength is 320-400nm, and the center value is 365nm. UVA light is usually used in industrial glue curing, tungsten ore identification, fluorescence detection, biopolymerization, oil pollution detection, ore exploration, criminal detective, textile industry, archaeology, medical treatment, stage, nightclub, theater and signal lighting.

UVB wavelength is 275-320nm, also known as medium wave erythema effect ultraviolet, which is mainly used in medical treatment, aging test, spectral analysis, etc.. UVB light has erythema effect on human body, can promote mineral metabolism in vivo and the formation of vitamin D. Reptile pets, such as tortoises, green iguanas, chameleons also need to take UVB.

Most of the natural UV light people encounter comes from the sun. Of the solar UV energy that reaches the equator, 95 percent is UVA and 5 percent is UVB.

## FEATURES

- ✧ Gallium Nitride Based Material Photovoltaic Mode
- ✧ High-precision detection, rapid response and operation
- ✧ Display UVI, and UV (UVA, UVB, UVA+UVB) radiation intensity simultaneously
- ✧ Trend chart display showing the past readings for UVA+UVB intensity
- ✧ Only two buttons and easy to operate
- ✧ Three AA Alkaline Batteries

## APPLICATION

For UVA:

- ✧ Monitoring xeroderma pigmentosum UV exposure
- ✧ Testing window film / tint transmission
- ✧ Monitoring low level UV from household lamps
- ✧ Testing ground level UV from stadium lighting
- ✧ Testing ground level UV from stage, nightclub and theater lighting
- ✧ Monitoring artwork UV exposure
- ✧ Monitoring archaeological UV exposure
- ✧ Measuring outdoor UV including shady area UV
- ✧ Monitoring UVA lamp intensity and aging
- ✧ Monitoring UV LED (< 360nm)
- ✧ Monitoring PUVA therapy lamp intensity and aging
- ✧ Testing UVA in industrial glue curing, tungsten ore identification, fluorescence detection, biopolymerization, oil pollution detection, ore exploration, criminal detective, and textile industry.

For UVB:

- ✧ Monitoring UVB phototherapy lamp intensity & aging
- ✧ Testing general UV health lamp
- ✧ Testing plant growth UV lights
- ✧ Testing eyewear UVB blocking capabilities
- ✧ Measuring outdoor UVB including shady area UVB
- ✧ Testing window film / tin transmission
- ✧ Testing acrylic shield transmission
- ✧ Testing UVB for aging and spectral analysis

## DEVICE



1. UVA and UVB sensors
2. TFT display
3. Power button
4. Select button
5. Enter button
6. Battery compartment cover

## OPERATION

### 1. Proper usage of meter

- Wear eye protection and gloves when checking UV lamps
- Allow lamps to warm up at least 15 minutes prior to taking readings

## 2. Power Button

### 2.1 Turn On/Turn Off Meter

1) When the meter is turned off, press Power button  to turn on the unit.

2) When the meter is turned on, press Power button  for 2 seconds to turn off the unit.

When the unit is first turned on, it performs 1 second countdown for meter warm up, then enters normal display with current UVI, and UV (UVA, UVB, UVA+UVB) radiation intensity readings displayed. The meter starts taking measurements when power on and updates readings every 2 seconds. The UV radiation Units are  $\mu\text{W}/\text{cm}^2$ .

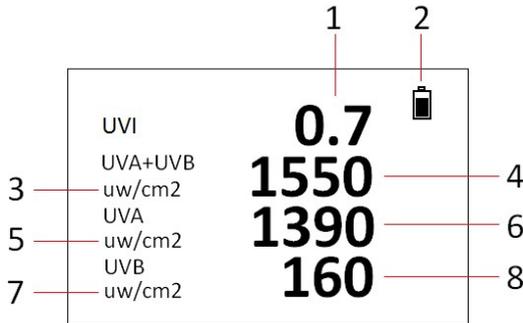
### 2.2 Hold function

Hold function keeps a reading on the display. In normal measurement state, press the Power button  shortly to select Hold function. The meter then stops all further measurements and the display will display “Hold” on screen. Press the Power button  shortly to exit Hold function. It will resume normal operation.

## 3. Select button

Press Select button  shortly to switch Normal Display, Trend Chart Display and Log Display.

### 3.1 Normal Display



1. UVI (Ultraviolet Index)
2. Battery gauge
3. UVA+UVB Radiation intensity unit
4. UVA+UVB radiation intensity
5. UVA Radiation intensity unit
6. UVA radiation intensity
7. UVB Radiation intensity unit
8. UVB radiation intensity

**Note:** If the UVs radiation intensity exceeds 9,999uw/cm2, the units will switch to mw/cm2. 1mw/cm2=1000uw/cm.

### 3.2 Trend Chart Display

MHK-U28 has a data log function that provides up to 12 hours history of UVA+UVB intensity.

The trend chart displays the past readings for UVA+UVB intensity. The time per division (indicates the chart's time per unit division) is 60 min / div. Trend chart contains a maximum of 13 recorded data at one time. The time span is 12 hours. After the chart is full the data is FIFO (first-in, first-out). Below is the example of Trend Chart Display.

1. Vertical bar of UVA+UVB intensity (The higher the bar, the greater the value)
2. Time scale (farther to the right, longer time in the past)



1

UVA+B	uw/cm2	
0h	392	7h 1261
1h	602	8h 1152
2h	751	9h 1001
3h	900	10h 600
4h	1052	11h 323
5h	1254	12h 122
6h	1360	

2      3

#### 4. Enter Button **ENTER**

##### 4.1 Menu operations

By pressing the Enter button **ENTER** shortly, the meter enters into Menu operation. There are two menu items by pressing the enter button **ENTER** shortly to loop. The menu items are described in table 1.

Table 1 Menu Operations

Menu Items	Description and Operation
<b>Zero the sensor offset</b>	<ol style="list-style-type: none"> <li>1) Keep the sensor completely dark (such as covering the sensor with a black opaque object)</li> <li>2) Pressing Select button <b>SELECT</b> shortly to reset the sensor offset and exits the MENU operation. Return to the normal measurement state.</li> </ol>
<b>EXIT</b>	<ol style="list-style-type: none"> <li>1) User presses Select button <b>SELECT</b> to exit the MENU operation and return to the normal</li> </ol>

	<p>measurement state.</p> <p>2) Or pressing the Enter button <b>ENTER</b> shortly to loop back to the first menu item: Zero the sensor offset.</p>
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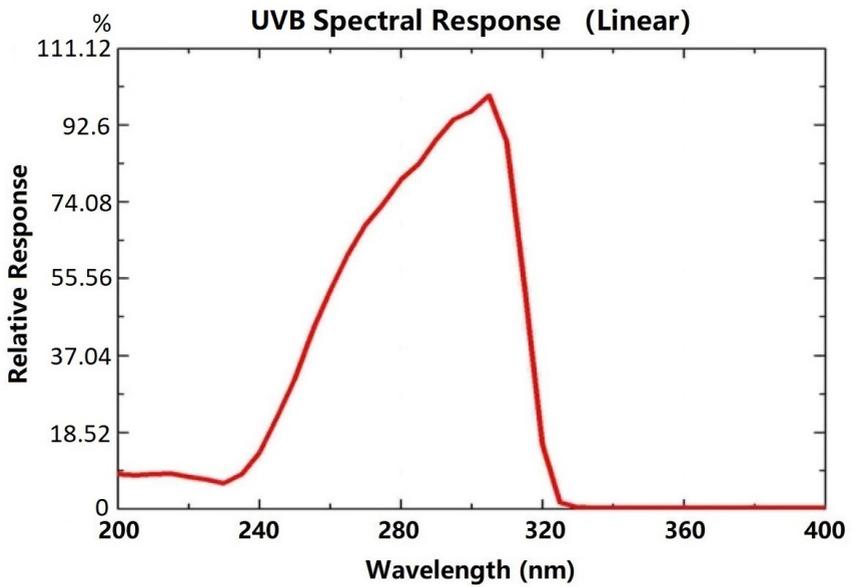
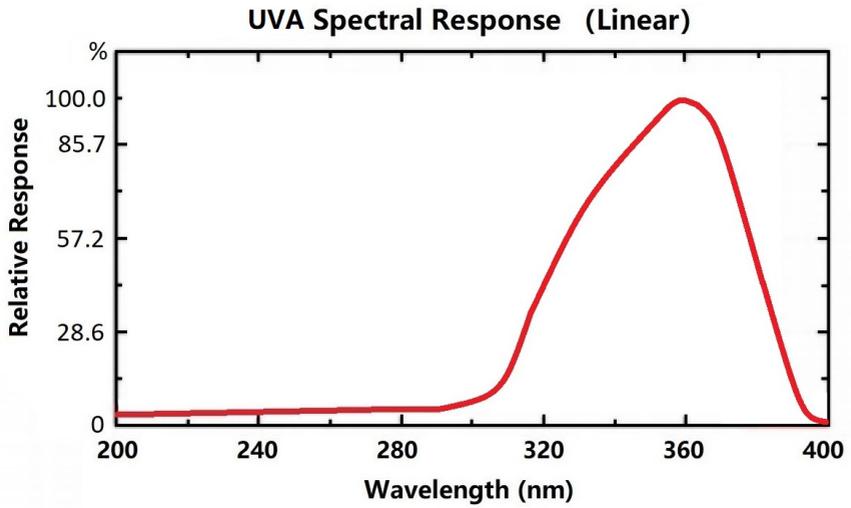
## ULTRAVIOLET INDEX (UVI)

This meter displays the Ultraviolet Index (UVI) in Normal Display. Table 2 lists the risk of UVI.

Table 2 UVI risk

UVI	0-2.9	3.0-5.9	6.0~7.9	8.0~10.9	11+
<b>Description</b>	Low danger from the sun's UV rays for the average person	Moderate risk of harm from unprotected sun exposure	High risk of harm from unprotected sun exposure	Very high risk of harm from unprotected sun exposure	Extreme risk of harm from unprotected sun exposure

## SPECTRAL RESPONSE



## SPECIFICATIONS

### UV Specification

UVA+UVB Measurement Range	0 to 50,000 $\mu\text{W}/\text{cm}^2$ (50 $\text{mW}/\text{cm}^2$ )
UVI Measurement Range	0 to 130
Spectral Detection Range	240 to 395 nm
Peak point	360nm
Measurement accuracy	$\pm 4\%$ or $\pm 1$ digits
Resolution	1.0 $\mu\text{W}/\text{cm}^2$
Temperature Range	-10 to 50°C (14 to 122°F)
Humidity Range	0 to 90%RH

### UVA Specification

UVA Measurement Range	0 to 50,000 $\mu\text{W}/\text{cm}^2$ (50 $\text{mW}/\text{cm}^2$ )
Spectral Detection Range	320 to 395 nm
Peak point	360 nm
Measurement accuracy	$\pm 4\%$ or $\pm 1$ digits
Resolution	1.0 $\mu\text{W}/\text{cm}^2$
Temperature Range	-10 to 50°C (14 to 122°F)
Humidity Range	0 to 90%RH

### UVB Specification

UVB Measurement Range	0 to 25,000 $\mu\text{W}/\text{cm}^2$ (0 to 25 $\text{mW}/\text{cm}^2$ )
Spectral Detection Range	240 to 320 nm
Peak point of Spectrum	305 nm
Measurement accuracy	$\pm 4\%$ or $\pm 1$ digits
Resolution	1.0 $\mu\text{W}/\text{cm}^2$
Temperature Range	-10 to 50°C (14 to 122°F)
Humidity Range	0 to 90%RH

### General

Display	2.2" TFT LCD
Operating	-10°C to 50°C (14°F to 122°F), 0~90% RH non-condensing
Storage	-10°C to 60°C (14°F to 140°F), <99% RH non-condensing
Power Supply	Three AA Alkaline Batteries
Dimensions	74x148x26.5mm (2.91x5.83x1.04")
Weight	120 grams (4.23 oz.) without batteries

## BATTERIES REPLACEMENT

1. When the batteries power is low, the low voltage symbol  appears on the display. It indicates that the batteries need to be replaced. If they are not replaced in time, the accuracy of measurement will be affected.
2. Open the battery compartment cover and take out the batteries.
3. Install 3 new AA batteries correctly according to the diagram of positive and negative poles in the battery compartment.
4. If the meter is not used for a long time, please take out the batteries to prevent the batteries from leaking and damaging the meter.

## MATERIALS SUPPLIED

- ✧ Santacary MHK-U28 UVA and UVB Light Meter
- ✧ Carry case
- ✧ English User Manual

## CLEANING AND STORAGE

The front panel and case can be cleaned carefully with a soft wet cloth. Allow drying completely before using. Do not use aromatic hydrocarbons or chlorinated solvents for cleaning.

## **WARRANTY**

The MHK-U28 is warranted to be free from defects in material and workmanship for a period of two year from the date of purchase. This warranty covers normal operation and does not cover misuse, abuse, alteration, neglect, improper maintenance.

## **CONTACT US**

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