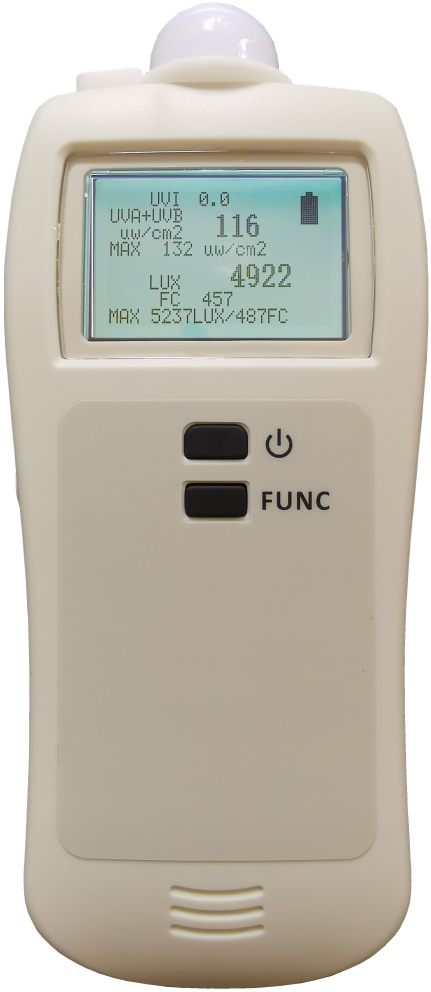
User Manual R1.0
Santacary Technology Co. Ltd.
XAR-UL02 UV AB & Illuminance Meter



INTRODUCTION

Congratulations on your purchase of this Santacary XAR-UL02 UV AB & Illuminance Meter. XAR-UL02 is a precise meter that measures ultraviolet UVA and UVB radiation and illuminance (lux, footcandle) simultaneously in the field.

MEASUREMENT PRINCIPLE

XAR-UL02 has two types of sensors. One is UVA+B sensor, and another is illuminance photo sensor. UVA+B sensor is a schottky photodiode based on gallium nitride material to detect UVA and UVB radiation. It has the characteristics of high sensitivity and high stability.

The illuminance photo sensor is meet CIE (International Commission on Illumination) photopic spectral response. It consists of a very stable, long life silicon photodiode and filter.

FEATURES

UVA+B radiation measurement:

- ✧ Gallium Nitride Based Material Photovoltaic Mode
- ✧ High-precision detection, rapid response and operation
- ✧ Display UVI (Ultraviolet Index) and UVA+UVB radiation intensity simultaneously
- ✧ Display the maximum UVA+UVB radiation intensity for all-time

Illuminance measurement:

- ✧ Light-measuring levers ranging from 0 to 600,000 lux, 0 to 55,740 fc (footcandle) repeatedly
- ✧ Spectral sensitivity close to CIE photopic curve
- ✧ Accurate and instant response
- ✧ Simultaneously display the measured values of lux and fc illuminance
- ✧ Display the maximum illuminance (lux and fc) for all-time

General:

- ✧ Data-Hold function for holding measuring values.
- ✧ Easy to read large backlight display
- ✧ Only two buttons and easy to operate
- ✧ Telescopic wand with tripod
- ✧ Four AA alkaline batteries

APPLICATION

UVA+UVB radiation measurement:

- ✧ Monitoring xeroderma pigmentosum UV (ultraviolet) 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.

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.

Illuminance measurement:

- ✧ Lighting engineers and specifiers
- ✧ R&D at light products manufacturers
- ✧ Inspection of light sources at construction sites, government, educational facilities, stage, nightclub and theater etc.
- ✧ Maintenance of lights in factories, offices, and hospitals
- ✧ Electrical product manufacturers
- ✧ Quality control of light sources at home
- ✧ Agricultural and forestry industries

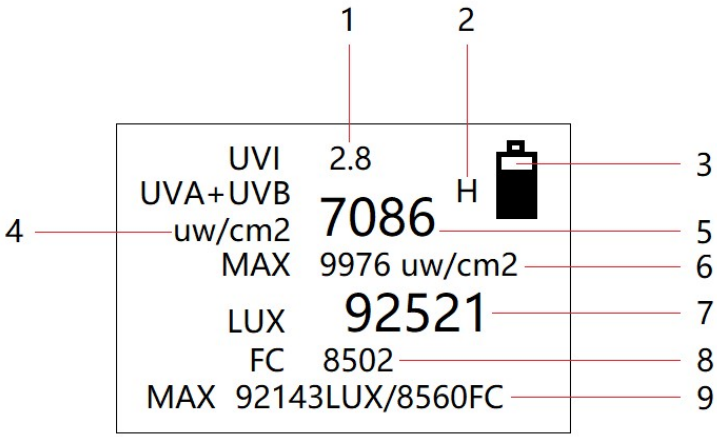
DEVICE

1. UVA+B sensor
2. Illuminance photo sensor
3. LCD display
4. Power button
5. Function button
6. Battery compartment back cover

DISPLAY

1. UVI (Ultraviolet Index)
2. Data-Hold icon
3. Battery gauge
4. UVA+UVB radiation intensity unit
5. UVA+UVB radiation intensity
6. Maximum UVA+UVB radiation intensity
7. Illuminance value in lux
8. Illuminance value in fc

9. Maximum illuminance in lux and fc



OPERATING INSTRUCTIONS

1. When the meter is turned off, press to turn on the meter.

When the unit is first turned on, it performs 1 second countdown for meter warm up, then displays current UVA+UVB, UVI, and illuminance readings. The meter starts taking measurements when power on and updates readings every 2 seconds. The unit of UVA+UVB radiation is **μW /cm² or mW/cm²** (1mW/cm²=1000μW/cm²). The unit of illumination is lux and fc (footcandle), which are displayed at the same time.

2. Place the meter so the light falls squarely on the sensors. Read the UVA+UVB, UVI, and illuminance readings from the LCD display. The maximum values are recorded during the measurement and updated in real time.

3. Reset Maximum Records: Press ⏻ shortly to clear and reset the maximum records of UVA+UVB radiation intensity and illuminance reading.

4. Data-Hold mode: Press the Function button FUNC shortly to freeze readings. The meter stops all further measurements. Press the Function button FUNC again to resumes normal operation.

5. Press any button to turn on the backlight.

Note:

- LCD backlight will turn off automatically after 2 minutes of inactivity.
- When LCD backlight is off, press any button to turn on the backlight.

6. When the measurement is completed, press power button ⏻ for 2 seconds to turn off the meter.

ULTRAVIOLET INDEX (UVI)

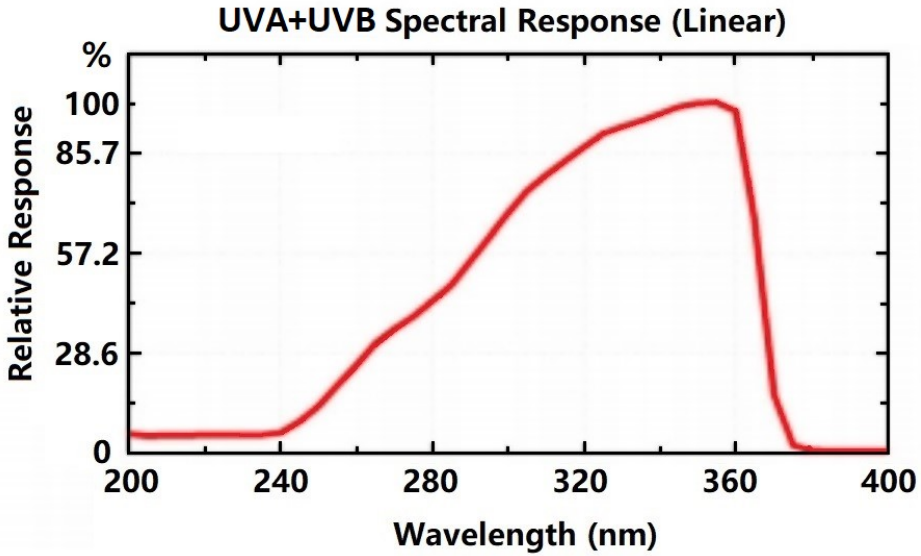
This meter displays the Ultraviolet Index (UVI) in real time. Following table list the risk of UVI level.

UVI	0-2.9	3.0-5.9	6.0~7.9	8.0~10.9	11+
Description	Low danger from the sun's UV rays for	Moderate risk of harm from unprotec	High risk of harm from unprotec ted sun	Very high risk of harm from unprotect	Extreme risk of harm from unprotect ed sun

	the average person	ted sun exposure	exposure	ed sun exposure	exposure

SPECTRAL RESPONSE

1. UVA+UVB Spectral Response



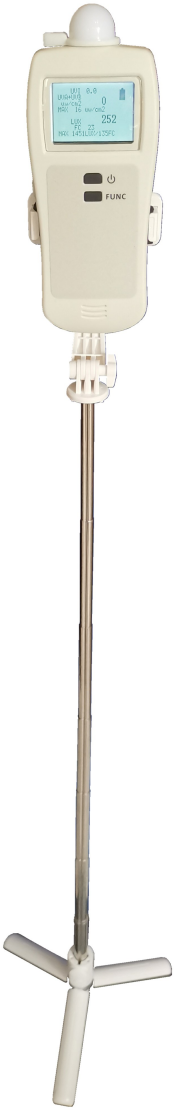
The peak point (calibration point) of UVA+B sensor spectral response is at 352 nm.

2. Illuminance Spectral Sensitivity Characteristics

To the Illuminance photo sensor, the applied photo diode with filter makes the spectral sensitivity characteristic almost meet CIE (International Commission on Illumination) Photopic curve.

TELESCOPIC WAND WITH TRIPOD

The extendable telescopic wand accessory incorporates a mounting fixture at the end of the wand. With the telescopic wand with tripod, the user can let XAR-UL02 measure ultraviolet UVA and UVB radiation and illuminance at a fixed position.



SPECIFICATIONS

UV Specification

UVA+UVB Measurement Range	0 to 50,000 µW/cm² (50 mW/cm²)
UV Index Measurement Range	0 to 130
Spectral Detection Range	240 to 370 nm
Peak point	352 nm
Measurement accuracy	±4% or ±1 digits
Resolution	1.0 µW/cm2
Temperature Range	-10 to 50°C (14 to 122°F)
Humidity Range	0 to 90%RH

Illuminance Specification

Measuring Range	0 to 600,000 lux, 0 to 55,740 fc
Spectral Response	CIE Photopic (CIE human eye response curve)
Accuracy	±5% reading, ±1 digit (<10,000Lux) ±10% reading, ±10 digit (>10,000Lux)
Repeatability	±3%
Photo Detector	One silicon photo diode and spectral response filter

General

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	Four AA Alkaline Batteries
Dimensions	75x185x25 mm (2.95x7.28x0.98”)
Weight	128 grams (4.52 oz.) without batteries

MATERIALS SUPPLIED

- ✧ Santacary XAR-UL02 UV AB & Illuminance Meter
- ✧ Telescopic Wand with Tripod
- ✧ Plastic Toolbox
- ✧ 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.

Do not store the instrument where temperature or humidity is excessively high.

RECOMMENDED ILLUMINATION

1fc=10.76Lux

Locations		Lux	fc
Office	Conference, Reception room	200~750	18~70
	Clerical work	700~1,500	65~140
	Typing drafting	1,000~2,000	93~186
Factory	Visual work at production line	300~750	28~70
	Inspection work	750~1,500	70~140
	Electronic parts assembly line	1,500~3,000	140~279
	Packing work, Entrance passage	150~300	14~28
Hotel	Public room, Cloak room	100~200	9~18
	Reception	200~500	18~47

	Cashier	750~1,000	70~93
Store	Indoors Stairs Corridor	150~200	14~18
	Show window, Packing table	750~1,500	70~140
	Forefront of show window	1,500~3,000	140~279
Hospital	Sickroom, Warehouse	100~200	9~18
	Medical Examination Room	300~750	28~70
	Operating room, emergency treatment	750~1,500	70~140
School	Auditorium, Indoor Gymnasium	100~300	9~28
	Class room	200~750	18~70
	Laboratory, Library, Drafting room	500~1,500	47~140

WARRANTY

The XAR-UL02 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

Santacary Technology Co., Ltd.
Zhaobei Building B, the 7th Industrial Road 75#,
Shekou, Shenzhen, 518067,
Guangdong, China
Email: info@santacary.com

www.santacary.com