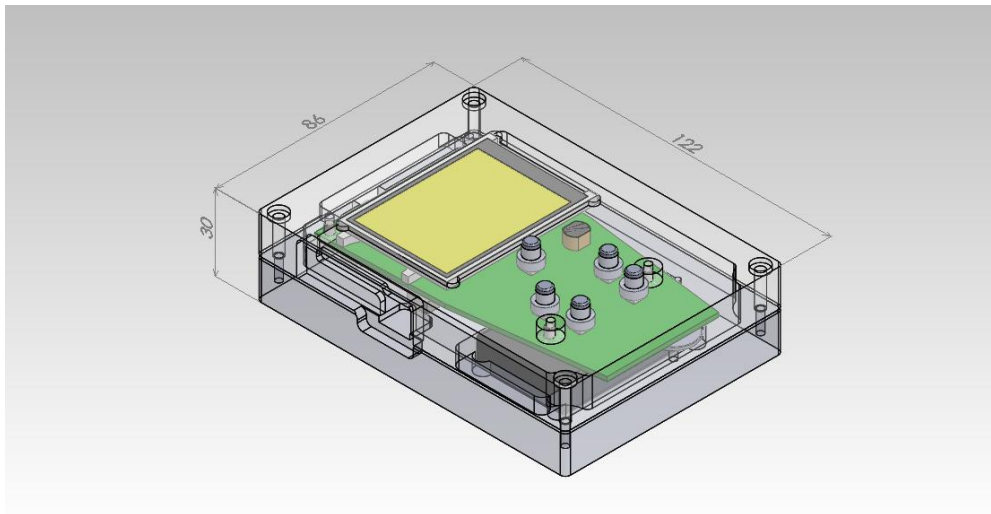


# SH1200 User Manual

## Description

SH1200 is a lightweight, portable, and easy-to-operate light meter with a 2.4" LCD display. This product has basic features for fast and easy measurements for illumination applications.

- Measuring Capabilities: Dominant Wavelength, Peak Wavelength, Center Wavelength, Color Purity, Illuminance, Irradiance, Full Width at Half Max (FWHM), Color Temperature, CIE x, CIE y, CIE 1931, CIE 1976, CRI, CQS.
- Six kinds of measuring modes: Measure, Spectrum, CIE 1931, CIE 1976, CRI, and CQS.
- All-in-one light meter: no other equipment necessary. (e.g. PC or power supply etc.)
- Can be used with the Spectrasmart PC software to interface with PCs.



※ You have to buy additional parts (such as a cosine corrector) and to do standard illuminance calibrations for ensuring “**Illuminance**” and “**Irradiance**” values correctly.

### Overview

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# Overview

## 1.1 Specifications

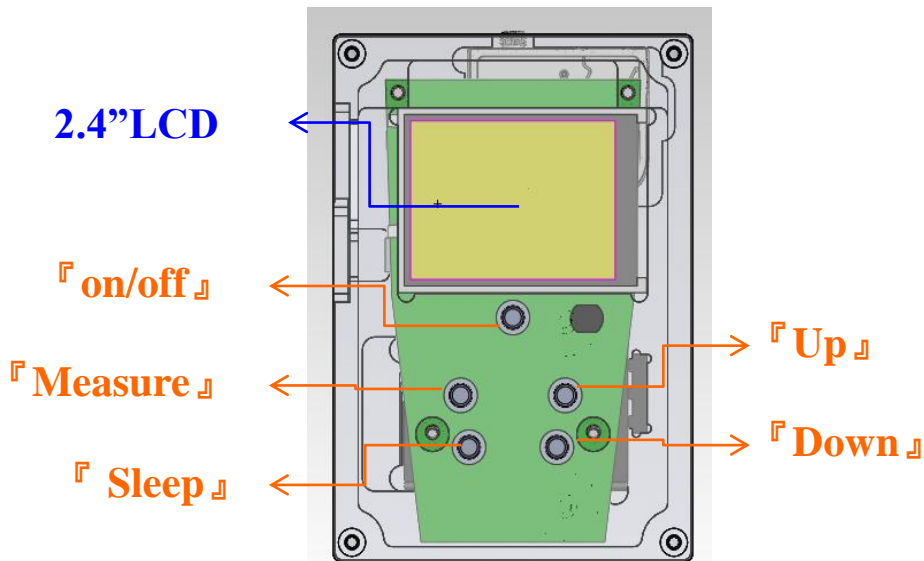
Model	Spectral response range (nm)						Slit size (μm)	Resolution (nm)	CCD type	SNR	A/D	Dark noise	Stray light	
	300	400	500	600	700	800								
UM1280-V		380nm – 780nm						25	5.5	Sony 563	150	16	52	0.5
UM1280-V2		340nm – 850nm						25	5.5	Sony 563	150	16	52	0.5

## 1.2 Features

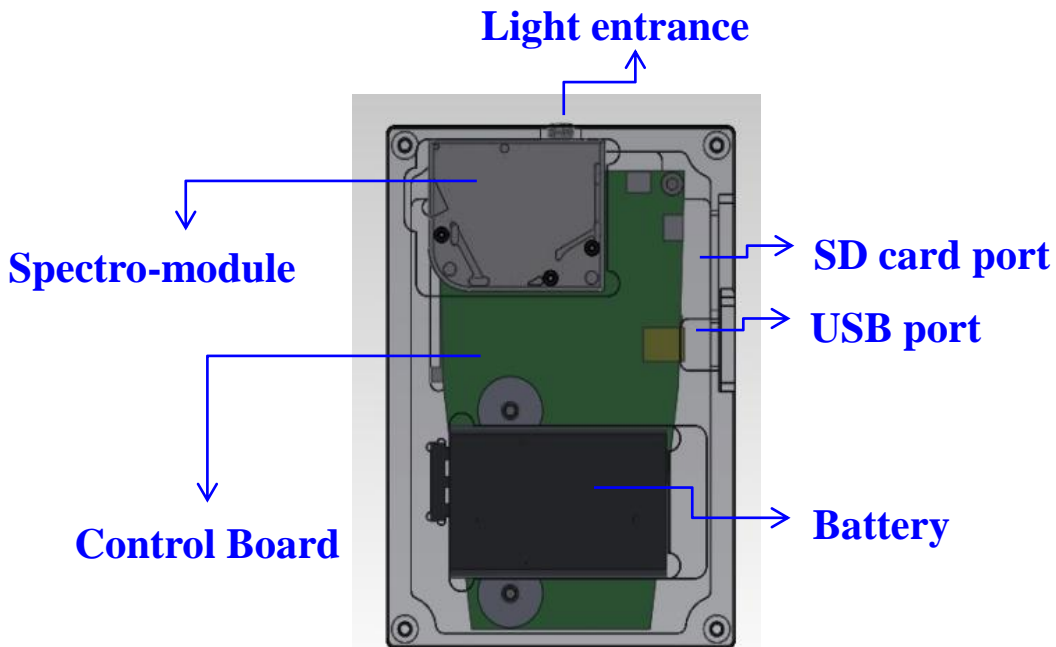
Items	SH1200
<b>Spectro-module</b>	UM1280
<b>Display</b>	2.4 inch LCD Panel
<b>Dimensions</b>	122mm (L) X 86mm (W) X 30mm (H)
<b>Battery</b>	Rechargeable Li-ion Battery (1700mAh)
<b>Storage</b>	SD Card (FAT16/32 type)
<b>Measuring mode</b>	Measure /Spectrum / CIE 1931 / CIE 1976 / CRI / CQS
<b>Measuring Capabilities</b>	Dominant Wavelength / Peak Wavelength / Center Wavelength / Color Purity / Illuminance / Irradiance / Full Width at Half Max (FWHM) / Color Temperature / CIE x / CIE y / CIE 1931 / CIE 1976 / CRI / CQS
<b>Language</b>	English / Traditional Chinese / Simplified Chinese

# Interface Introduction

## 2.1 Product Description



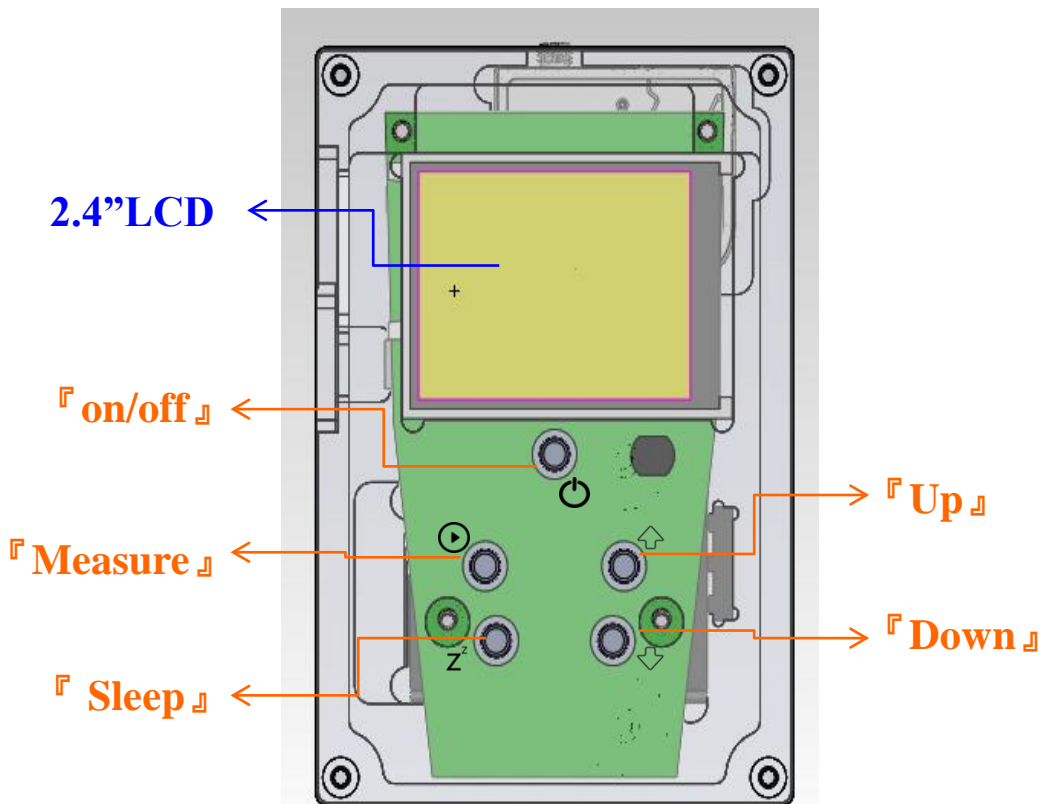
**Fig.1: SH1200 Front view**



**Fig.2: SH1200 Back view**

**□ Operating Description**

- 『on/off』 : Power key. Turn on / Turn off the system.
- 『Measure』 : Start a measurement or confirm selections.
- 『Sleep』 : Enter power saving state. (Press any key to wakeup it.)
- 『Up』 : Change the menu selection for previous.
- 『Down』 : Change the menu selection for next.



**Fig.3: SH1200 Front view**

2.2

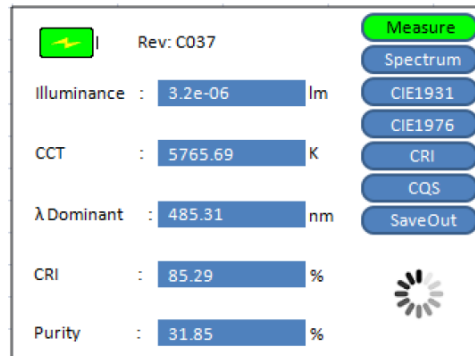
**Getting Start**

**□ Power ON / Power OFF**

- 『**Power ON**』 : Press the “on/off” button to turn on the SH1200. An OtO splash screen will display. (Fig.4)
- After Splash screen, the first screen will display the Illuminance, CCT, Dominant wavelength, CRI, and Purity. (Default screen: “**Measure**”) (Fig.5)
- 『**Power OFF**』 : Press the “on/off” button again, the SH1200 will be turned off.



**Fig.4: Power ON screen**



**Fig.5: Default screen (Measure)**

**□ Power Save**

- 『**Power Save: ON**』 : Press the “Sleep” button to enter power saving status.
- 『**Power Save: OFF**』 : Press any key to wakeup SH1200 immediately.
- Default: Idle 60 seconds to entry Power save mode.

**□ Take a Measurement**

- Press the “**Measure**” button to measure the light source.
- It will take about 3 seconds to measure the light source.
- Press the “**Up**” or the “**Down**” button to change the display mode.

**□ Display Mode**

Mode	Display Information	Figure
<b>Measure (Default)</b>	Illuminance / Color Temperature / Dominant wavelength / CIR (Ra) / Color Purity	Fig.6
<b>Spectrum</b>	Picture: spectrum waveform Information: Integration time / Illuminance / Color Temperature / CIE <sub>x_y</sub> / Irradiance / Full Width at Half Maximum / Dominant wavelength / Peak wavelength / Color Purity.	Fig.7
<b>CIE1931</b>	Picture: CIE x, y and plot the coordinate of x and y. Information: Color Temperature / duv / x and y.	Fig.8
<b>CIE1976</b>	Picture: CIE u, v and plot the coordinate of u and v. Information: Color Temperature / duv / u' / v'.	Fig.9
<b>CRI</b>	Picture: R1~R15 and Ra histogram. Information: R1~R15 and Ra values.	Fig.10
<b>CQS</b>	Picture: Q1~Q15 and Qa histogram. Information: Q1~Q15 and Qa values.	Fig.11

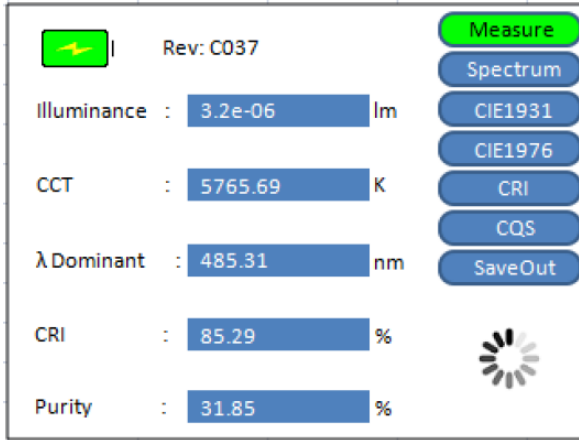


Fig.6: Measure

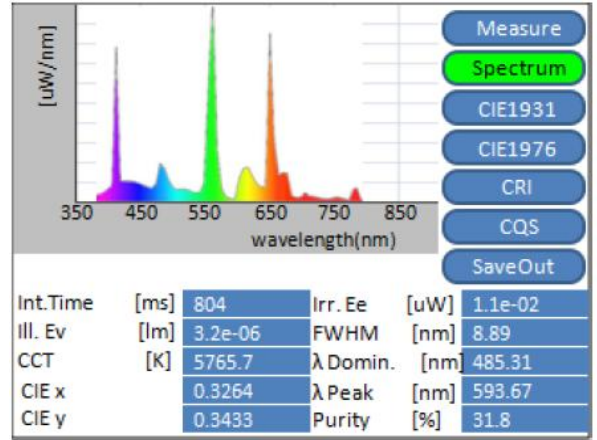


Fig.7: Spectrum

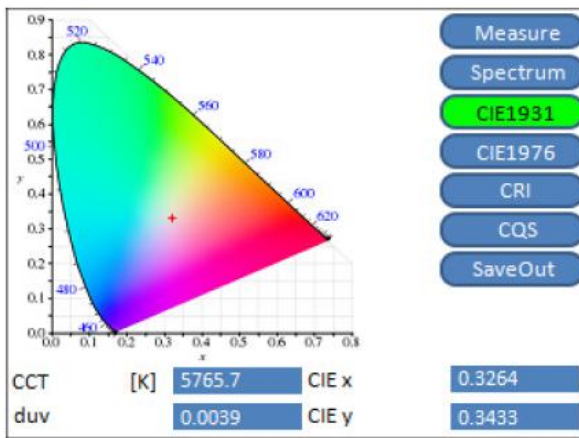


Fig.8: CIE1931

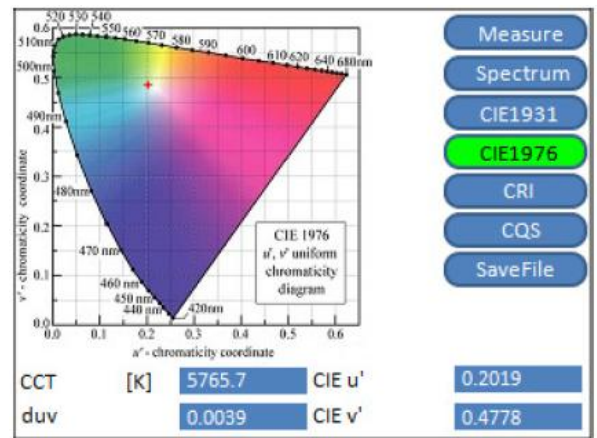


Fig.9: CIE1976

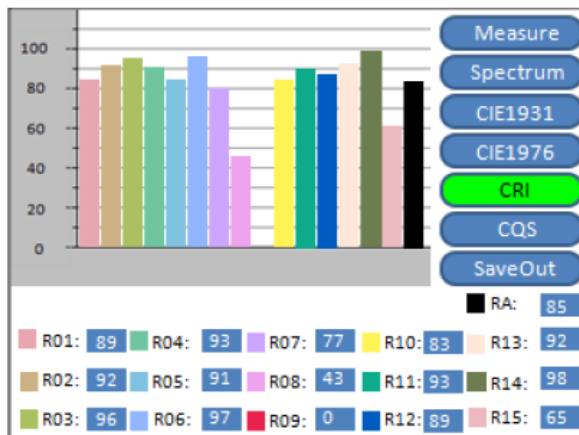


Fig.10: CRI

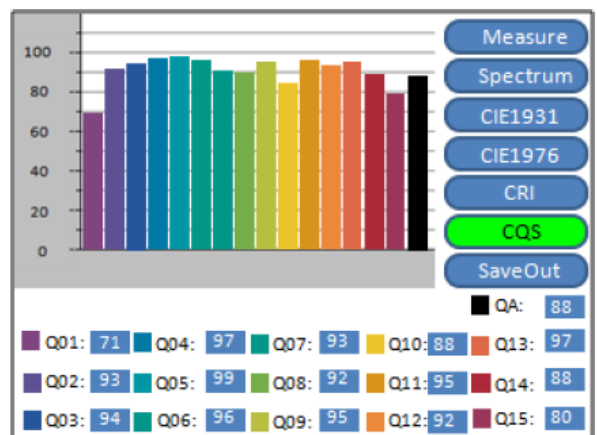






Fig.11: CQS

**2.3 Additional Setup and Notes**

**□ Save a measurement data**

- 『SaveOut』 : Write current measurement data onto SD card (only support for FAT16/32 type)
- It is written to “text format” (.spc) and “Spectrasmart PC software format” (.sps).
- Description of “SaveOut” page conditions:

Message	Figure	Description
Save?		Press “Measure” button to save current measurement data
Saving		Recording data, please do not remove the SD card or power down the machine.
Save success		Complete record, then you can do other measurement or power down the SH1200.
Save fail		Cannot record the data. Please check the SD card status.



## □ File saving format

- Construct a 『SPECXXX』 folder automatically during saving process.
- Record 『XXX.SPC』 and 『XXX.SPS』 for each measurement sequentially.



Fig.12: a sample of file saving format

- 『.SPC』 text file format sample:

```

//*****//
Model Name: OTO_PORTABLE_2p4in_SPECTROMETER
FW Revision: C035-C035
***Measure Data***
Integration Time: 675 ms
Color Temperature: 5222.72 K
CRI_RA: 85.52 %
Lux: 1.86e-06 lm
Peak Wavelength: 544.50 nm
CIE1931(x,y): (0.3399,0.3626)
CIE1976(u,v): (0.2038,0.4892)
----- Color Information All -----
Model Name : UM2220S3-V2
Serial Number : OS361AC55002771
Type : Absolute Emission
Observer : 2 degree
Illuminate : A
X : 1.7467e-06
Y : 1.8630e-06
Z : 1.5285e-06
CIE_x : 0.33994
CIE_y : 0.36258
CIE_z : 0.29748
CRI_R1 : 96.20
...
CRI_R15 : 97.92
CRI_RA : 85.52
CCT : 5222.72
DominantWavelength(nm) : 487.50
Purity : 0.2756
CIE1976u : 0.2038
CIE1976v : 0.4892
CIE1976w : 0.3070
Luminous flux(lm) : 1.8630e-06
//*****//
    
```

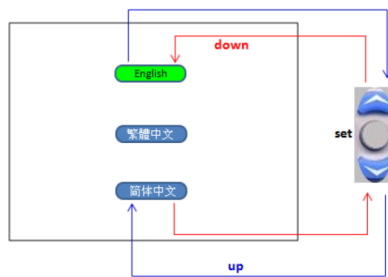
➤ 『.SPS』 text file format sample:

```

//*****//
SpectraSmart Spectrum 0.0.0.0
----- Device Information -----
Saving Time : 2013/01/01 00:00:00
Spectro-Module Model Name : UM2220S3-V2
Spectro-Module Serial Number : OS361AC55002778
Wavelength Start : 380
Wavelength End : 780
Spectrum Unit : Intensity
-----Spectrum Setting -----
Integration Time : 13 ms
Average : 1
Boxcar : 0
Background removal : enabled
linearity correction : enabled
Intensity correction : enabled
savitzky-golay : disabled
-----BEGIN-----
Wavelength Intensity(uW/nm)
380.0 1.18e-05
380.5 1.08e-05
381.0 1.18e-05
381.5 1.36e-05
382.0 1.38e-05
382.5 1.37e-05
383.0 1.08e-05
...
779.0 9.42e-06
779.5 1.03e-05
780.0 9.25e-06
//*****//
    
```

**□ Language Selection**

- Press 『on/off』 button to boost the SH1200 system.
- Press 『UP』 button and 『Done』 button simultaneously about 10 seconds during “power on screen” page (as Fig.4) then enter the “Language Selection” page.
- Select the language you need by 『UP』 button or 『Done』 button.
- Press 『Measure』 button to confirm language settings and enter the system.



**Fig.13: Language selection**