CI300 Color Analyzer

I Product Overview

CI300 is a cost effective luminance meter. The instrument uses XYZ filter+CMOS detector to collect the three stimulus values XYZ of the light source, and then calculates the luminance and chromaticity coordinates of the light source. The instrument has a measuring angle of 1 ° , a minimum measuring area of Φ6mm and a maximum measuring range of 100,000 cd/㎡.

The instrument is equipped with a 1.14-inch TFT screen, 800 mAh Li-ion battery, Bluetooth / WIFI multi-function chip, Mass storage device.

The instrument can measure the luminance(Lv), color temperature, chromaticity coordinates, main wavelength, display gamut, panel uniformity, and other parameters.

The instrument is equipped with single measurement, continuous measurement, easy to operate. The instrument has rich interfaces, compact structure and high cost performance, which is very suitable for embedding into other equipment as a light detection module.

Figure 1

II Product Characteristics

1. The instrument uses XYZ filter+CMOS detector to collect the three stimulus values XYZ of the illumination light source or display in the range of 400-700nm, and then calculates the luminance(Lv), chromaticity coordinates, and color temperature of the sample to be tested, which is cost-effective.

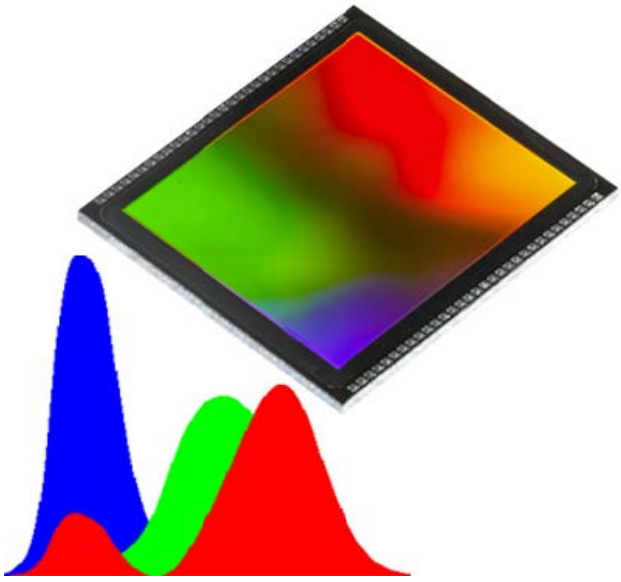


Figure 2

2. The instrument adopts Internet of things MCU processor, configuration 1.14 inch TFT color screen, can store 99 records of data, simple operation, easy to expand and secondary development.

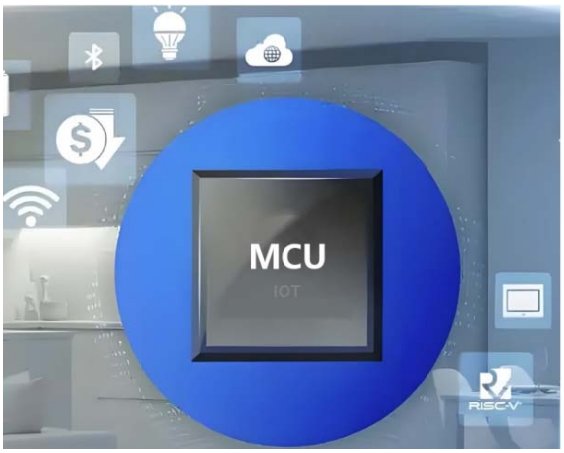


Figure 3

3. The instrument is equipped with a 800 mAh lithium-ion battery. It is also equipped with Type-C and Bluetooth 5.0 interfaces, with a reserved WIFI interface. These rich expansion interfaces are highly suitable for secondary development and have a wide range of application scenarios.

Figure 4

4. The instrument has compact appearance design, convenient interface design, and is easy to be used as a link of Internet of things and embedded in other modules.

Figure 5

5. The instrument is widely applied in LED lighting industry, engineering lighting, display screens, TV multimedia, and so on.

6. The instrument has M5 metric stainless steel nuts, and supports serial port, Modbus, Bluetooth communication, and has a rich SDK development kit, can be quickly deployed in C++ , C # , Python, LabVIEW platform to run, make it widely used in the automatic industry.

Figure 6

7. The instrument has professional PC software, android mobile app, Rich SDK (support C # , C + + , Python, LabView and other platforms) .

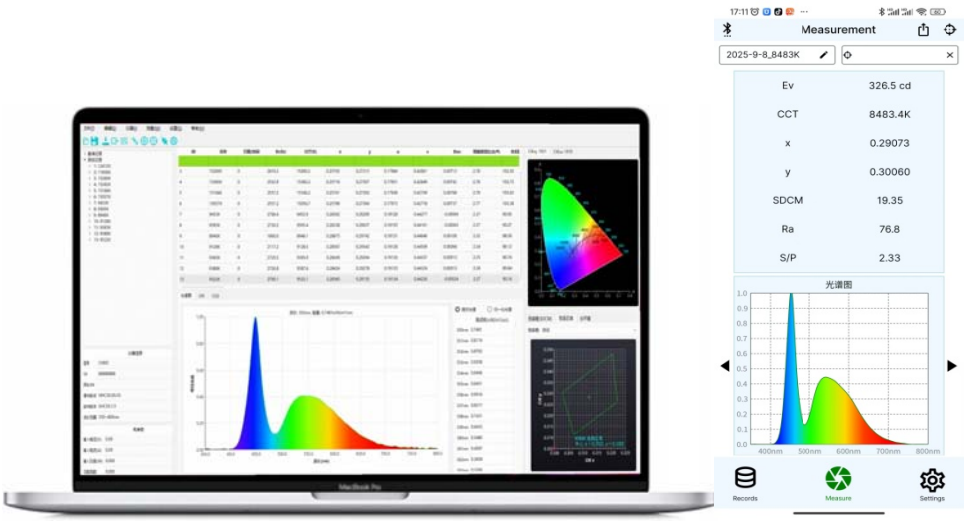


Figure 7

III Applications

3.1 Lv and chromaticity coordinates measurement of Display panel/LCD

In a darkroom environment, the display/LCD panel is powered on and warmed up for half an hour. The CI300 is fixed on a mounting fixture, ensuring its optical axis is perpendicular to the display surface, with the probe positioned approximately 30mm from the display surface (or the measurement port is pressed tightly against the screen). The display panel is controlled to show different colors, and the CI300 captures the Lv, chromaticity coordinates, and spectral radiance of the screen at a 1° measurement angle. Based on this data, the display's color gamut and uniformity can be calculated, and functions such as GAMMA/DICOM/color calibration can be performed.

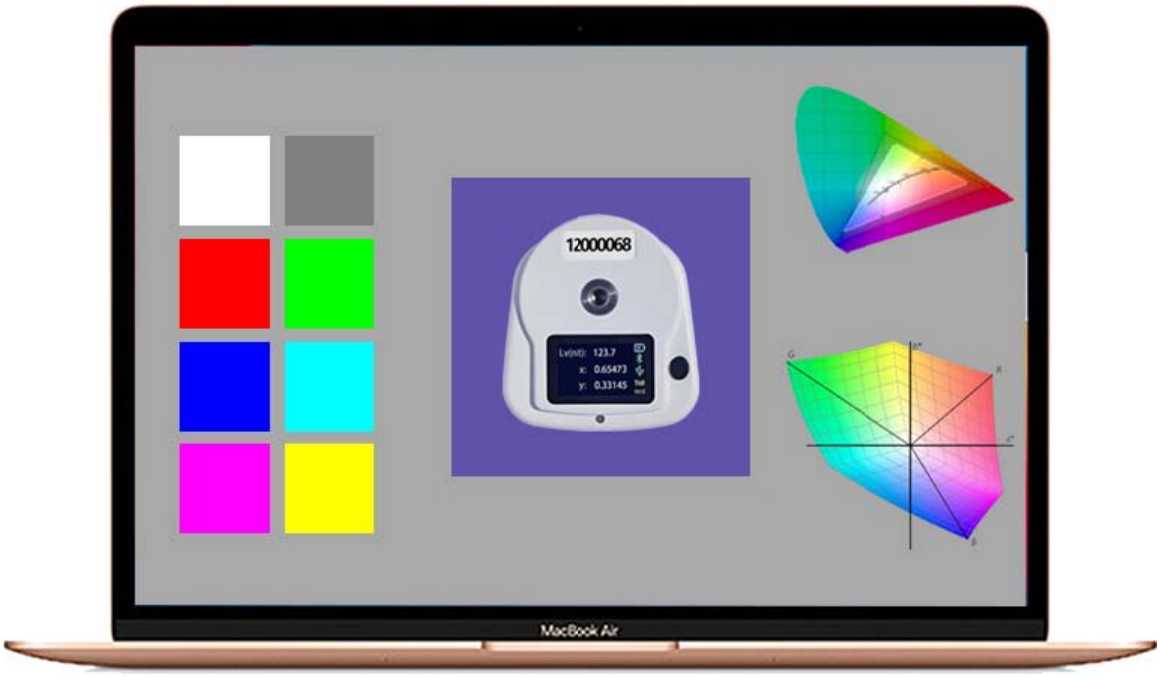


Figure 8

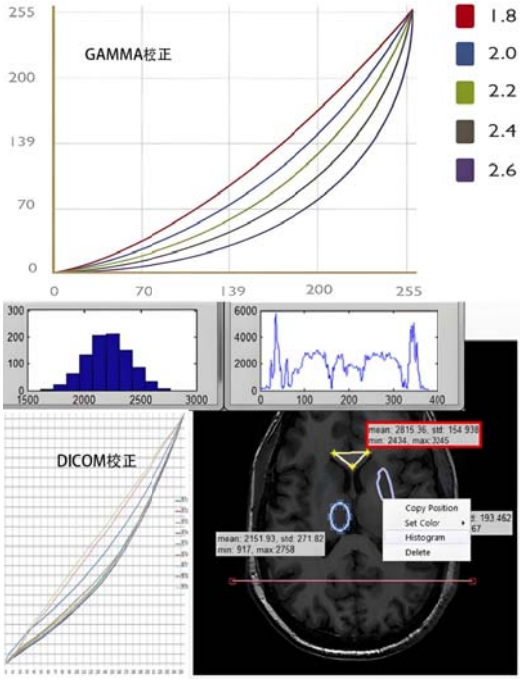


Figure 9

3.2 LED and solid-state lighting source spectrum, Lv, color temperature, dominant wavelength, and other parameters test

CI300 luminance colorimeter stand-alone instrument can easily realize Lv, color temperature, dominant wavelength, and other parameters measurement.

The luminous flux can be measured by integrating sphere. With the help of professional HIQC software, the chromaticity coordinate measurement and classification of LED solid-state light source can be easily realized.

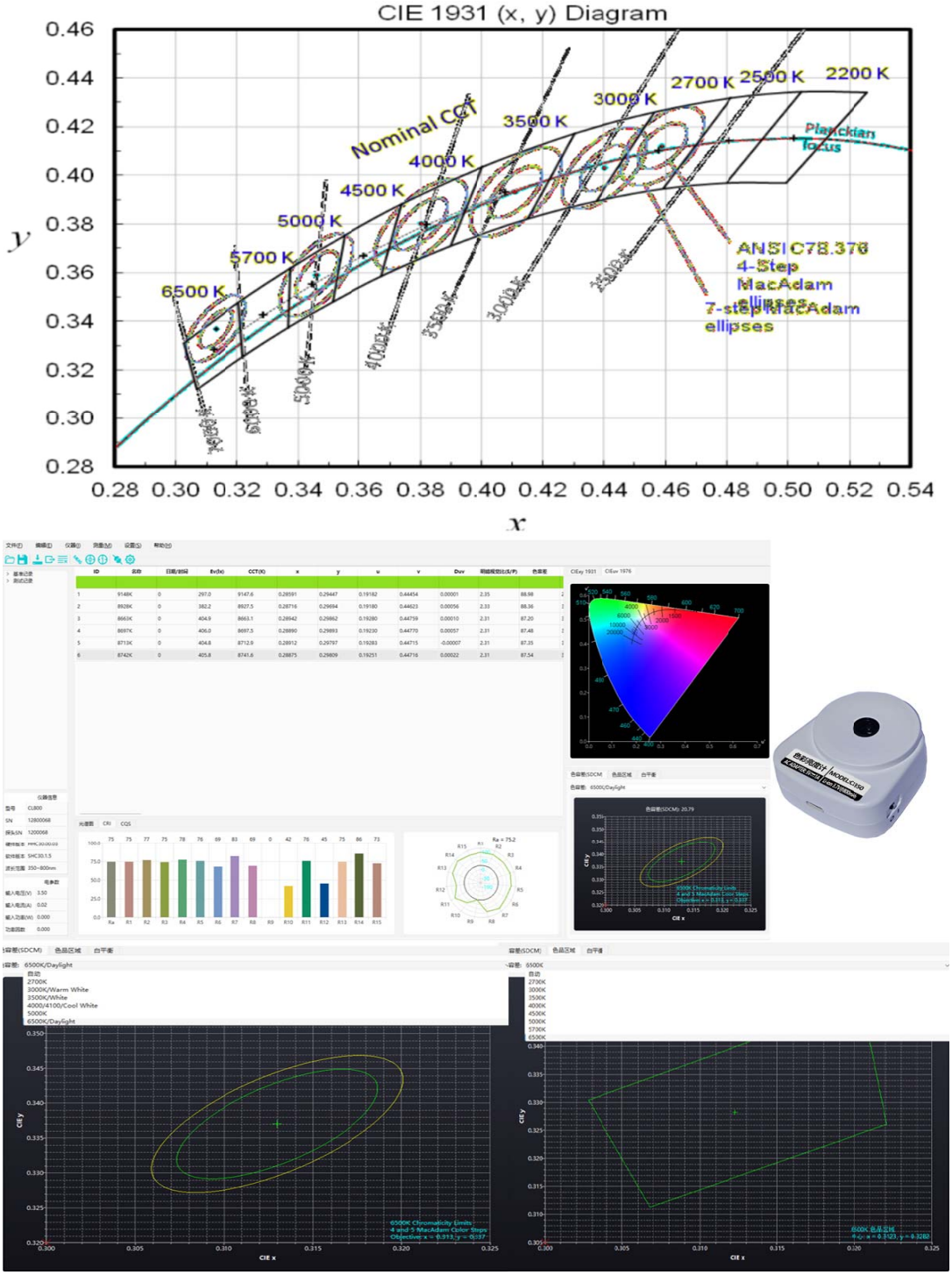
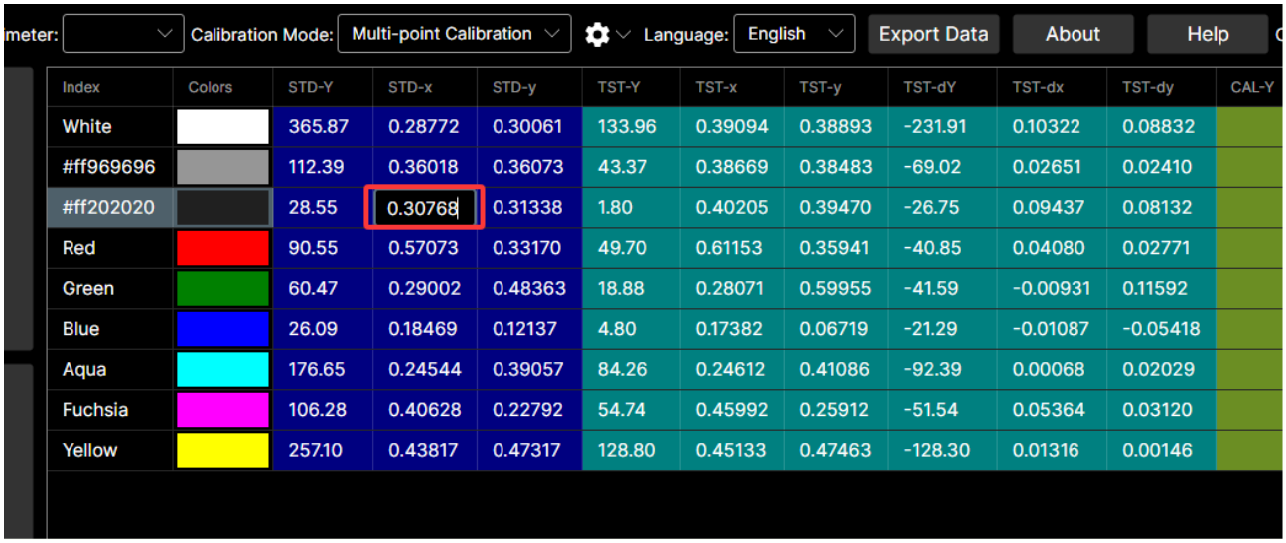


Figure 10

3.3 A cost-effective testing solution for luminance and color coordinates of displays

The LCD panel/OLED panel/miniLED panel industry requires high testing accuracy for luminance, and color coordinates, and must be consistent with data from specific brand instruments (standard machines). The testing principle of irradiance/ luminance colorimeter using coated filter plates+CMOS/PD silicon photovoltaic cell detectors usually has CIEXYZ adaptation errors, which can result in slightly lower testing accuracy and data consistency for this type of irradiance/ luminance colorimeter.

In this case, HCAL software can be used to calibrate this type of irradiance/ luminance colorimeter. If the calibration is reasonable and compared with standard machine test data, the calibrated irradiance/ luminance colorimeter usually has a luminance accuracy of 3% and an average chromaticity coordinate xy error of 0.003.



Index	Colors	STD-Y	STD-x	STD-y	TST-Y	TST-x	TST-y	TST-dY	TST-dx	TST-dy	CAL-Y
White		365.87	0.28772	0.30061	133.96	0.39094	0.38893	-231.91	0.10322	0.08832	
#ff969696		112.39	0.36018	0.36073	43.37	0.38669	0.38483	-69.02	0.02651	0.02410	
#ff202020		28.55	0.30768	0.31338	1.80	0.40205	0.39470	-26.75	0.09437	0.08132	
Red		90.55	0.57073	0.33170	49.70	0.61153	0.35941	-40.85	0.04080	0.02771	
Green		60.47	0.29002	0.48363	18.88	0.28071	0.59955	-41.59	-0.00931	0.11592	
Blue		26.09	0.18469	0.12137	4.80	0.17382	0.06719	-21.29	-0.01087	-0.05418	
Aqua		176.65	0.24544	0.39057	84.26	0.24612	0.41086	-92.39	0.00068	0.02029	
Fuchsia		106.28	0.40628	0.22792	54.74	0.45992	0.25912	-51.54	0.05364	0.03120	
Yellow		257.10	0.43817	0.47317	128.80	0.45133	0.47463	-128.30	0.01316	0.00146	

Figure 11

IV Dimensions

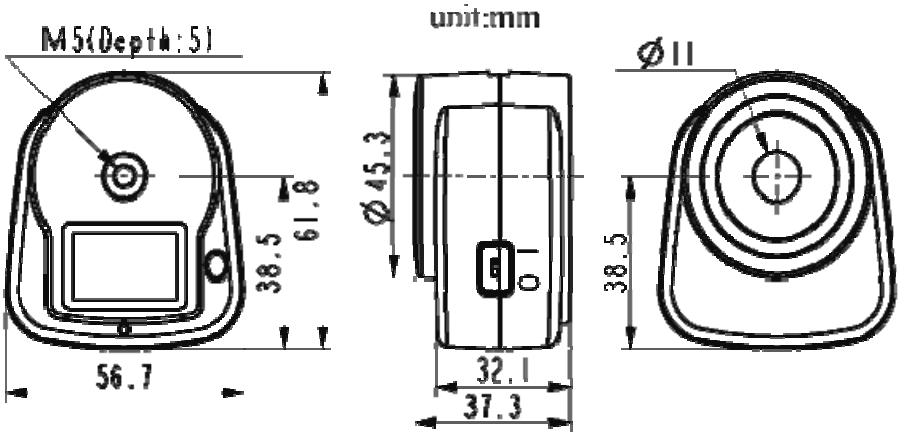


Figure 12

V Technical Parameter

COLOR LUMINANCE COLORIMETER		
Model	CI350	CI300
Wavelength Range	400～700nm	
Sensor Mode	Multichannel Filter/CIE XYZ Filter+CMOS	
Measure Angle	1°	
Measurement Area	minimum Φ6mm; Distance=100mm, minimum area Φ6mm; Distance=200mm, minimum area Φ14mm;	
Lv Range	0.1～100000cd/㎡	
Accuracy (Light source A)	Lv:±6%±1 display value xy:±0.008(>5cd/㎡)	
Repeatability (Light source A)	Lv:0.2%±1 display value xy:0.0015(>10cd/㎡) xy:0.0025(5～10cd/㎡)	
Measurement Mode	Auto mode, Continuous mode	
Measuring Time	Auto mode:0.1~5 s	
Observer Angle	2° (CIE1931)	
Color Space	CIE Yxy, CIE XYZ, Lv xy, Lv u'v', EvCCTDuv, λdPePc, EvDuvSDCM	
Colorimetric Index	Lv, CCT(K); CIE31x, y; CIE76u', v'; CIE31X, Y, Z; Duv, SDCM; λd, PE; CRI, Peak, S/P, Lrgb, CQS-Qa, Qf, Qg(no function in CL700) (More functions are implemented by PC or APP)	
Data Storage	Sample 99	
Dimension	L*W*H=62X56X37mm	
Weight	about 70g	
Battery	Li-ion battery, 3.7V, 800mAh(800 times within 4 hours)	
Display	1.14-inch TFT color LCD	
Data Port	Type C USB, Bluetooth 5.0(Customizable WIFI)	
Language	English, Chinese	
Operating Environment	-10~40℃(0~85%RH/no condensing)	
Storage Environment	-20~50℃(0~85%RH/no condensing)	
Standard Accessory	USB cable, manual, PC Software, Protective Cover, Wrist strap, Wiping cloth	

Figure 13

VI About Huicolor

Shenzhen HUICOLOR Technology Co., Ltd. was established in Nanshan District, Shenzhen，P.R.China. in 2015, it is a high-tech enterprise focusing on the research and dLvelopment and manufacturing of precision optical detection instruments.

HUICOLOR Company adheres to the concept of "continuous innovation", aspires to build a well-known brand in the precision optical detection instrument industry, contributes to China 's intelligent manufacturing.HUICOLOR Company has obtained multiple national technology patents, and hold the trademarks "HUICLOR", simultaneously possessing multiple software copyrights.

HUICOLOR Company adheres to independent R&D, design, production and manufacturing. Since the establishment of the company, it has successfully launched multiple high-precision optical products with independent intellectual property rights, such as CI800 series spectral LUMINANCE COLORIMETER, CL500 series LUMINANCE COLORIMETER, CI800 series spectral Luminance Colorimeter, CL300 series spectrometer / UV energy meter and CI350 Display Calibration system, which are widely used in LED lighting, spectral analysis, liquid crystal display, intelligent agriculture, scientific research and other fields.

Shenzhen HUICOLOR Technology Co., Ltd. adheres to the concept of "continuous innovation"，manufactures "excellent quality" precision optical equipment, provides professional technical services, and "creates value" for users to achiLve a win-win situation.

VII Contact Huicolor

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