



KEY FEATURES

- Luminance and chromaticity measurement of Color Display
- 0.005 cd/m² low luminance measurement (A712301)
- Wide range of luminance display: 0.0001 to 25,000 cd/m² (A712301) 0.01 to 200,000 cd/m² (A712302) 0.01 to 6000 cd/m² (A712200)
- High accuracy measurement
- Maximum 9 display modes: xyY, TΔuvY, u'v'Y, RGB, XYZ, Contrast, Program
- Able to control Video Pattern Generator and UUT (Unit Under Test)
- Built-in contrast measurement function to calculate the contrast ratio directly
- Equipped with programmable test items that can complete the planned tests with one single button
- Support USB flash disk that can copy the test procedures to other station for use
- Judgment function embedded to judge the test result automatically with one single button
- Calibration period setting and reminding function
- Memory for storing 100 channels of standard color data and calibration data
- Built-in flat display calibration data LCD-D65 & LED-D65* to be applied for chromaticity measurement instantly
- Optional display white balance alignment system can be used to integrate all optical test stations to one single station

* It uses the typical fluorescent excited white light LED display

Chroma 7123 Display Color Analyzer adopts the design of contact and non-contact type measurements based on the probe selected to measure the luminance and chromaticity of display panels. Developed with the most advanced digital signal processor and the technology of optoelectronic transfer as well as precision optical parts and circuit design, the 7123 Display Color Analyzer is capable of performing high speed, accurate and stable color tests.

The configuration of Chroma 7123 complies with the color matching function sensor of CIE 1931 and CIE1976 UCS that can measure the luminance and chromaticity of display panel accurately. Users can switch to various types of chromaticity coordinates freely including xyY, TΔuvY, u' v' Y, RGB, XYZ, Contrast and Program 9 modes in total. The A712301 that is designed to test the LCD characteristics with LED backlight is able to meet the low luminance test requirements of 0.005cd/m². In addition, the A712302, designed for small size display in particular can solve the problem of color analyzer measurement area larger than the display area with its 5mm measurement area.

To satisfy the needs for automation, the 7123 is equipped with the function to control the video pattern generator and the UUT without using a personal computer to cut down the acquisition and management cost. The 7123 also has the functions of contrast measurement, result judgment and programmable test items that can fulfill the auto test requirements to enhance the production efficiency.

The Optical Measurement Software incorporated by Chroma 7123 is able to do chromaticity, luminance, and Gamma measurements on PC, and then show the measured data on CIE 1931 and CIE1976 UCS chromaticity coordinate chart directly. Besides the function of drawing Gamma curve, the measured data can also be stored on PC and exported to EXCEL® for process. The example programs enclosed in optical measurement software allow users to develop the test programs that suit their needs.

Chroma 7123 Display Color Analyzer has 100 channels of built-in memory for storing the value of standard colors and calibrated data. In addition, Chroma 7123 also provides many friendly user interfaces for operation such as the way test data shows, the position set for push buttons, the positioning projector, USB and RS-232 interfaces for data transmission, calibration period setting as well as reminding function and etc. to satisfy the requirements for actual measures. Using the USB flash disk, the test procedures can be copied to other stations for use and reduce the time for repeated editing considerably.

As the technology and products of flat displays have become the mainstream in the market today, every manufacturer is seeking for high value-added and low cost measurement solutions to raise its competitiveness; Chroma 7123 Display Color Analyzer is the excellent tool to assist in achieving that purpose.

Software Development Kit (SDK)

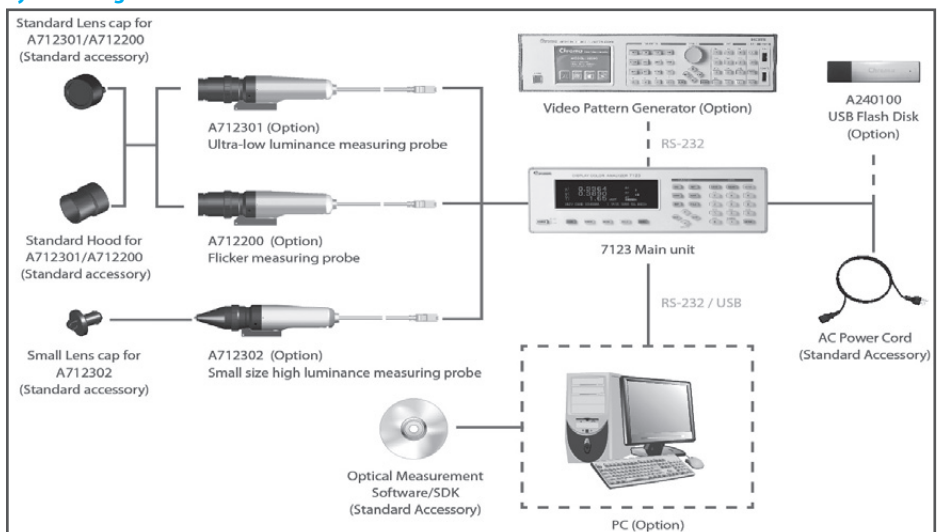
- Example Program:
 - Color Measurement
 - Multiple Control
 - Gamma Measurement
 - Color Calibration
- API Development Library

System Requirements

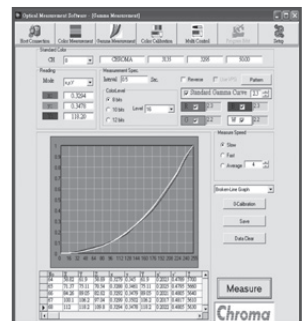
Operating System: Windows® XP/7

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System Diagram



Color Measurement



Gamma Measurement



Flicker Measurement

Video & Color
Flat Panel Display
LED/Lighting
Optical Devices
Photovoltaic Test & Automation
Automated Optical Inspection
Power Electronics
Battery Test & Automation
Passive Component
Electrical Safety
Semiconductor/IC
Measurement
PXI Test & General Purpose
Manufacturing System
Intelligent Automation
Turnkey Test & Automation

SPECIFICATIONS				
Model		7123		
Probe Model		A712301 (Ultra-Low luminance measuring probe)	A712302 (Small size high Luminance measuring probe)	A712200 (Flicker measuring probe)
Measurement Area		Ø27 mm / Ø1.06 inch	Ø5 mm / Ø0.20 inch	Ø27 mm / Ø1.06 inch
Measurement Distance		30 ± 10mm	0~10mm	30 ± 10mm
Acceptance Angle		± 2.5°	± 5°	± 2.5°
Display Range	Luminance	0.0001 to 25,000 cd/m ²	0.01 to 200,000 cd/m ²	0.01 to 6,000 cd/m ²
	Chromaticity	4 or 3 digits display		
Luminance unit		cd/m ² or fL, selectable via button on the front panel		
Display Mode	Digital	xyY ; TΔuvY; u' v' Y ; RGB ; XYZ ; Contrast; Program		xyY; TΔuvY; u' v' Y; RGB; XYZ; FMA; FLVL; Contrast; Program
	Analog	Δx Δy ΔY; ΔR ΔG ΔB; ΔR G/R B/R; R/G ΔG B/G		Δx Δy ΔY; ΔR ΔG ΔB; ΔR G/R B/R; R/G ΔG B/G; FMA
Luminance *1	Meas. Range	0.0050 to 6,000cd/m ² (0.001 to 1751fL)	0.30 to 6,000 cd/m ² (0.09 to 1751 fL)	0.10 to 6,000 cd/m ² (0.03 to 1751 fL)
	Accuracy	0.0050 to 0.0199 cd/m ² : ± 0.0005cd/m ² 0.020 to 0.099 cd/m ² : ± 4% ± 2 digits 0.100 to 6,000 cd/m ² : ± 2% ± 1 digit	0.30 to 6,000 cd/m ² : ± 2% ± 1 digit	0.10 to 6,000 cd/m ² : ± 2% ± 1 digit
	Repeatability	0.0050 to 0.0199 cd/m ² : ± 0.0003cd/m ² 0.020 to 0.099 cd/m ² : 1% + 2 digits(2 σ) 0.100 to 0.999 cd/m ² : 0.2% + 1 digit(2 σ) 1.00 to 6,000 cd/m ² : 0.1% + 1 digit (2 σ)	0.30 to 2.99cd/m ² : 0.2% + 1 digit(2 σ) 3.00 to 6,000 cd/m ² : 0.1% + 1 digit(2 σ)	0.10 to 0.99 cd/m ² : 0.2% + 1 digit (2 σ) 1.00 to 6,000 cd/m ² : 0.1% + 1 digit (2 σ)
Chromaticity *1	Accuracy	0.100 to 2.99 cd/m ² : ± 0.008 3.00 to 4.99 cd/m ² : ± 0.005 5.00 to 9.99 cd/m ² : ± 0.003 10.00 to 6,000 cd/m ² : ± 0.002	0.30 to 14.99 cd/m ² : ± 0.008 15.00 to 119.9 cd/m ² : ± 0.005 120.0 to 6,000 cd/m ² : ± 0.003	0.1 to 2.99 cd/m ² : ± 0.008 3.00 to 4.99 cd/m ² : ± 0.005 5.00 to 9.99 cd/m ² : ± 0.003 10.00 to 6,000 cd/m ² : ± 0.002
	Repeatability	0.100 to 0.199 cd/m ² : 0.015(2 σ) 0.200 to 0.499 cd/m ² : 0.008(2 σ) 0.500 to 1.99 cd/m ² : 0.003(2 σ) 2.00 to 6,000 cd/m ² : 0.001(2 σ)	0.30 to 0.59 cd/m ² : 0.015 (2 σ) 0.60 to 1.49 cd/m ² : 0.008 (2 σ) 1.50 to 7.99 cd/m ² : 0.003 (2 σ) 8.00 to 6,000 cd/m ² : 0.001 (2 σ)	0.10 to 0.19 cd/m ² : 0.015 (2 σ) 0.20 to 0.49 cd/m ² : 0.008 (2 σ) 0.50 to 1.99 cd/m ² : 0.003 (2 σ) 2.00 to 6,000 cd/m ² : 0.001 (2 σ)
Flicker -Contrast Method(FMA)	Range	---	---	5 cd/m ² or higher
	Display Range	---	---	0.0 to 100%
	Accuracy	---	---	± 1% (Flicker frequency: 30 Hz AC/DC10 % sine wave) ± 2% (Flicker frequency: 60 Hz AC/DC 10 % sine wave)
	Repeatability	---	---	1% (2 σ) (Flicker frequency: 20 to 65 Hz AC/DC 10 % sine wave)
Flicker -JEITA/ VESA Method (FLVL)	Range	---	---	5 cd/m ² or higher
	Display Range	---	---	6-240Hz
	Accuracy	---	---	± 0.5dB (Flicker frequency: 30 Hz AC/DC10 % sine wave)
	Repeatability	---	---	0.3dB (2 σ) (Flicker frequency: 30 Hz AC/DC 10 % sine wave)
Measurement Speed	xyY	Y:0.0050 to 0.0199 cd/m ² : 1 time/sec (Low luminance Mode) Y:0.020 to 1.99 cd/m ² : 4 times/sec. (Auto mode) ; 2.00 cd/m ² and above: 15 times/sec.	0.3 to 7.99 cd/m ² : 1 time/sec. 8.00 cd/m ² and above: 15 times/sec.	0.1 to 3.99 cd/m ² : 5 times/sec. ; 4.00 cd/m ² and above: 15 times/sec.
	FMA	---	---	6 times/sec. (UNIV) ; 20 times/sec.(NTSC); 16 times/sec. (PAL)
	FLVL	---	---	0.5 time/sec.
Dimension		Ø 46 x 234.9(D) mm / Ø 1.81 x 9.25(D) inch	Ø 46 x 221.9(D) mm / Ø 1.81 x 8.74 (D) inch	Ø 46 x 234.9(D) mm / Ø 1.81 x 9.25(D) inch
Weight		0.5 kg / 1.1 lbs	0.5 kg / 1.1 lbs	0.5 kg / 1.1 lbs
Cord Length		2.5m / 98.43 inch		
Optical System		LED positioning function		
Main unit				
Memory Channel		100 Channels		
Sync Mode		NTSC, PAL, EXT, UNIV, INT		
Object Under Measurement		10~240 Hz		
Interface		USB(2.0), USB flash disk port, RS-232C (Baud rate max. 115200)		
Input Voltage Range		1Ø 110~240V ± 10% V _{LN} , 47~63Hz, 50VA		
Operating Temperature/ Humidity Range		10°C to 30°C (50°F to 86°F); less than 75% relative humidity (with no condensation)		
Storage Temperature / Humidity Range		0°C to 40°C (32°F to 104°F); less than 75% relative humidity (with no condensation)		
Dimension (H x W x D)		115x320x260 mm / 4.5x12.6x10.2 inch		
Weight		2.7 Kg / 5.95lbs		
Other Functions		Customized light source calibration, memory channel ID storage, variable analog display range, display pause, remote control, comparison, video pattern generator and UUT control, programmable test item, test result judgment, calibration period setting and reminding function, USB flash disk supported. *2		
Certification		CE		

Note #1: Standard illuminant A is used for test according to Chroma's test condition.

Note #2: Only the USB flash disks certified by Chroma are supported.

***Reference standards:** IEC 61747-6, EIAJ ED-2522, ASTM E455-03, VESA Standard

ORDERING INFORMATION

7123 : Display Color Analyzer Main Unit

A712200 : Flicker measuring probe (with 2.5m signal cable)

A712102 : Tripod (including a level gauge)

A712200 : Flicker measuring probe (with 2.5m signal cable)

A712301 : Ultra-Low luminance measuring probe (with 2.5m signal cable)

A712302 : Small size high luminance measuring probe (with 2.5m signal cable)