CRT COLOR ANALYZER MODEL:7100

The Chroma 7100 color analyzer is a versatile instrument for measuring color components and white-balance of color TV sets and computer display CRT monitors. Designed with advanced microprocessor and A/D converter, it is capable of making high speed color measurement accurately to tight specification.

The user can select to display measured data in x,y,Y(x,y as chromaticity coordinates, Y as luminance), T,Δuv,Y(T as correlated color temperature, Δuv as color difference from blackbody locus, and Y as luminance value), u'v'Y(CIE 1976 Uniform Chromaticity Scale) or RGB mode. Wide luminance measurement range from 0.10 to 999 cd/m^2 or 0.03 to 292 fL allows measuring of virtually any CRT. The luminance unit of cd/m^2 or fL could be selected via front panel key.

Powerful Auto-synchronization feature allows the instrument to lock on the vertical scanning frequencies of different CRT systems, insuring accurate measurement results.The measurement values are displayed in digital form according to the display mode selected. Also, the percent differences between the measured data and the standard color data are displayed in analog scale to facilitate easy color adjustment during operation.

The Chroma 7100 has built-in nonvolatile memory to store 12 sets of standard color data, CRT RGB phosphor characteristics, and calibration factor, each with different ID name for user reference. With an optional PCMCIA memory card it can be expanded to store maximum 100 sets of reference data. The Chroma 7100 offers high speed data-communication capability via RS-232C interface. It can be integrated to an computer controlled automated test and alignment system for monitor/TV production testing and QC applications.

MODEL 7100

KEY FEATURES:

- Selectable display modes in xyY, TΔuvY, u'v'Y, and RGB.
- Wide luminance measurement range from 0.10 to 999cd/m^2, or 0.03 to 292fL for testing virtually all CRTs.
- High accuracy measurement: ±2% ±1 digit for luminance (Y), ±0.002 for chromaticity coordinate (xy).
- Auto-synchronization to lock on the vertical scanning frequency of the CRT under test.
- Display measured color values in digital form and analog scale.
- Advanced graphic control software facilitates friendly user interface and speedy color adjustment.
- Memory for storing 12 sets of standard color data and calibration data, expandable to 100 sets with optional memory card.
- RS-232C interface for high speed data communication (max. baud rate 19200bps.)

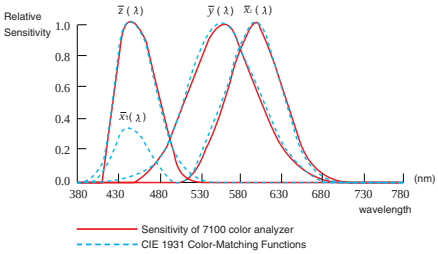
Chroma

7100

The Better Light Measurement Solution

Accurate, Stable Colorimetric Measurement

The C7100 uses precision optical components and electronic circuit to offer accurate, stable, and high speed colorimetric measurement performance. It uses sensors filtered to colsely match the CIE 1931 $\bar{x}(\lambda)$, $\bar{y}(\lambda)$, and $\bar{z}(\lambda)$ color-matching functions to measure the energy of the light emitted by the CRT phosphors. The diagram below shows the spectral sensitivity of the sensors.



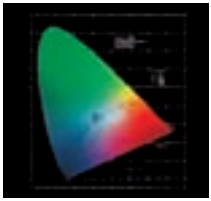
Advanced Graphic Control Software Facilitates Friendly User Interface and Speedy Color Adjustment (Optional)

The advanced graphic control software allows for fast, simple colorimetric measurements and white-balance adjustments of CRT. The software is a DOS-based control program with graphical user interface. The standard graphics screen shows the relative intensity of the RGB guns, color coordinates, luminance, and tolerance of a CRT.

Versatile Measurement Display to Satisfy All Applications

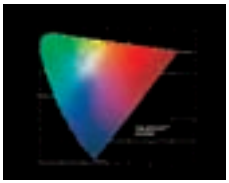
- Either cd/m^2 (nit) or fL(foot-Lambert) can be selected as the luminance measuring unit.
- CIE Colorimetry (1931 x,y; 1976 u'v')

CIE 1931 x,y Chromaticity Diagram



The x,y chromaticity diagrams was defined by the Commision Internationale de l' Eclairage(CIE) in 1931, and was based on the color-matching functions of CIE 2° standard observer. The x,y chromaticity diagram has been widely used in the field of color measuring. The C7100 displays the CIE 1931 (x,y) chromaticity coordinates and luminance of the measured source in xyY display mode.

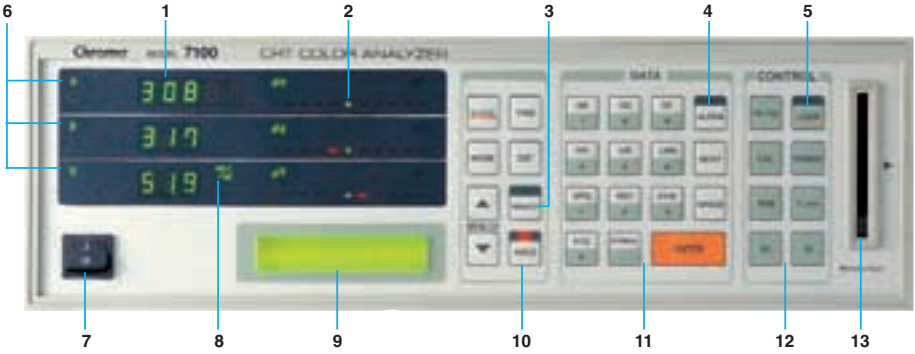
CIE 1976 u' v' UCS Diagram



The u' v' UCS(Uniform Chromaticity Scale) diagram was recommended by the CIE in 1976. The u' v' diagram has an advantage that equal distances in the diagram approximately represent equal color distances for stimuli having the same luminance. The C7100 displays the 1976 (u' v') coordinates and luminance of the measured source in u' v' Y display mode. The value of u' and v' are obtained from x, y:

$$u' = \frac{4x}{-2x + 12y + 3} \qquad v' = \frac{9y}{-2x + 12y + 3}$$

- Correlated Color Temperature (CCT) and color difference (CIE 1960 u, v)
- User selectable measurement mode in xyY(xy as chromaticity coordinates, Y as luminance), TΔuvY(T as correlated color temperature,Δuv as color difference from blackbody locus, and Y as luminance value), u'v'Y(CIE 1976 Uniform Chromaticity Scale), or RGB mode. The RGB mode operation offers fast, simple, white-balance adjustment.



Front Panel Operation

1.Digital Display
Displays measured value in numeric form.

2.Analog Display
Displays percent difference between measured value and standard color depending on present display mode. The percent difference is indicated by LED bars.

3.REMOTE key
Sets/Cancels remote control mode

4.ALPHA key
Selects key set for alphabetic/numeric data input.

5.LOCK key
Locks/Unlocks the control keys to prevent unintentional data entry from altering the existing parameters of C7100.

6.Display Mode Indications
Indicates present display mode: xyY, TΔuvY, RGB, or u'v'Y.

7.Power Switch

8.Luminance Unit Indication
Displays the unit of luminance, either cd/m^2 or fL.

9.Liquid Crystal Display
Display a variety of information including memory channel, ID, chromaticity coordinates of standard color, error message, etc.

10.HOLD key
Stops/Resumes measurement.

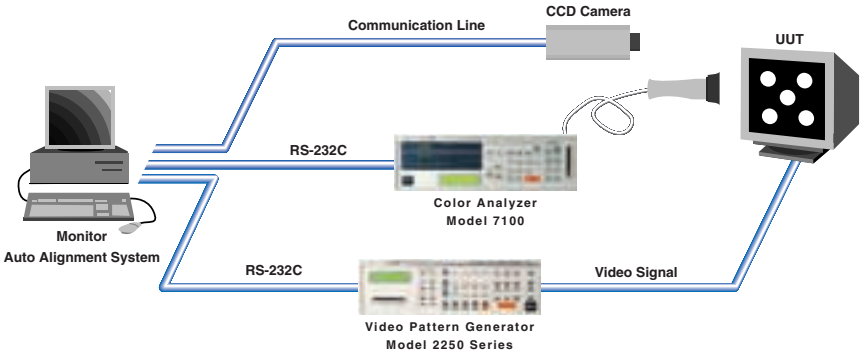
11.Data keys

12.Control keys: Sets the parameters of the operation of C7100

RS-232	Sets the communication parameters of the RS-232C port of C7100.
CAL	Calibration to user-selected standard source.
RGB	Saves the emission characteristics of RGB phosphors of CRT.
SC	Sets colorimetric parameters of standard color.
RANGE	Sets the analog display range.
Yunit	Sets the unit of luminance. (cd/m^2 or fL)
ID	Sets the ID label of present memory channel.

13.Memory Card Slot
Optional PCMCIA memory card(PC card) can be inserted to expand the functions of C7100.

Production Testing and Alignment Automation Applications



Model 7100 CRT Color Analyzer

Specifications:

Luminance Measuring Range	0.10 - 999cd/m^2 or 0.03 - 292fL
Luminance Unit	cd/m^2 or fL, selectable via front panel key
Display Modes	xyY; TΔuvY; u'v'Y; RGB
Synchronization	Automatic
Display Values	Digital:xyY;TΔuvY; u'v'Y; RGB Analog :Δx Δy ΔY; ΔR ΔG ΔB
Memory	12 channels(standard); 100 channels with optional PCMCIA type II memory card
Accuracy	Y : ±2%±1 digit xy: ±0.002 (Measurement conditions: standard monitor, luminance 10.0 cd/m^2 or above,D65)
Repeatability	Y : ±0.3% ±1 digit xy: ±1% ±1 digit(0.10cd/m^2 ≤Y≤ 3.00cd/m^2) ±0.3% ±1 digit(3.00cd/m^2 ≤Y≤ 999cd/m^2)
Measurement Rate	10 times/second (Measurement condition: Display mode:xyY)
Other Functions	Calibration to user-selected reference, storage of channel ID name, variable analog display range, measurement hold, remote control
Data Communication	RS-232C interface (baud rate: 300 to 19200bps)
Operating Temperature Range	0 to 40˚C (32 to 104˚F) 85% humidity (at 35˚C/95˚F with no condensation)
Power	AC 90 to 132V, 50/60Hz, 40 VA or AC 180 to 264V, 50/60Hz, 40VA(switchable)
Dimension	Main unit:424(W) x 133(H) X 261(D) mm
Measuring Probe	ø43 x 144mm Cord Length: 2m (6.6ft)
Weight	Main unit: 6.1Kg(13.5 lb.)