CR-300

Spectroradiometer/Spectrophotometer

Made in USA

The CR-300 is a high resolution spectroradiometer/spectrophotometer in a very compact footprint with a 2 nm bandwidth and 0.8 nm/pixel resolution that excels in low-light, highly accurate wavelength and color measurements. It's ideal for measuring current and future display technologies as well as projectors including 6P projector technology.

COLORIMETRY
RESEARCH, INC

DESIGNED FOR PERFORMANCE

The ruggedly constructed housing of the CR-300 is made of machined aluminium and stainless steel, and can withstand high acceleration rates for the most demanding motion positioning systems and environments. All optical components are fixed to ensure that no optical misalignments occur due to vibration, shock or high acceleration/ deceleration rates.

It weighs only 2.5 pound (1.134 kg), and it is the perfect tool for display inspection and calibration and for mounting on fast moving XYZ tables. Its small size and shape allows for several CR-300s to be mounted in the same motion control system and the simultaneous measurement of several spots in the same display.

VERSATILE INTERFACE OPTIONS

The CR-300 is a USB 2.0 compatible device, remotely controlled by the host software from any personal computer, laptop or net book. As an option, the CR-300 can also be controlled by an Ethernet 10BASET/100BASE-TX IEEE-802.3 compliant connection or a RS-232 port.

OPTIONAL EXTERNAL TRIGGER PORT

The CR-300 can be equipped with an optional External Trigger Port which enables remote measurement activation from either a push button, a peripheral device, or by hardware trigger signals to measure strobes/pulsed lights, and start/stop signals. This option is ideal for fast temporal events that need to be precisely synchronized for measurement or data capture.

RUBBER HOOD

Screw-on rubber hood adapter is included for contact measurements. Measurement spot diameter on contact measurements is 8 mm for a unit that has a 2 degree aperture and 14 mm for a unit that has a 1 degree aperture.

VIEWING SYSTEM OPTIONS

The CR-300 Detachable Viewing System (Patent pending)
The CR-300 has been designed with a direct viewing system that is easily detachable from the instrument's main body (e.g., snaps in and out manually), and can be replaced with different types of viewing systems depending on user needs.

The CR-300 Rotatable Viewing Systems (Patent pending)
Direct viewing systems have been utilized for several decades in optical measuring instruments. Typically, the eyepiece is in a fixed location on the instrument and is otherwise non-movable. As such the viewer must align themselves with the angle of the viewing optics to use the eyepiece. This can be disadvantageous in situations where the eyepiece is in an inaccessible and/or uncomfortable spot for the viewer. The CR-300 overcomes the limitations of the typical direct viewing system by offering the horizontally rotatable viewing system VO-203

The CR-300 Perpendicular Viewing System:
For those cases where the CR-300 is mounted vertically on a test fixture or a robotically controlled XYZ table; the Perpendicular Viewing System VO-202 is an alternative to the rotatable viewing system.

The CR-300 Camera Viewing System
The VO-204 is a very compact viewing system that couples to a small C-Mount camera for positioning and monitoring the measurement spot from a robotically controlled system.

ACCESSORIES

■ USB Cable
■ Universal mounting bar
■ ND Filters (optional)

■ Viewing system
■ Cosine Receptor (optional)

APPLICATION SOFTWARE

The CRIApp application is a streamlined, cross-platform, user-centric application designed to perform all colorimetric - based analysis. It provides a familiar and consistent workspace no matter which platform you are in. The CR-300 comes standard with a built-in, easy-to-learn command interpreter, for users to quickly create their own dedicated software to perform specific measurement tasks or for inclusion in an Automated Test Environment.

In addition, a fully documented communication language with numerous real-world, sample templates are included as starting points for customers to build their own software tools using any of the current development environments.

FEATURE HIGHLIGHTS
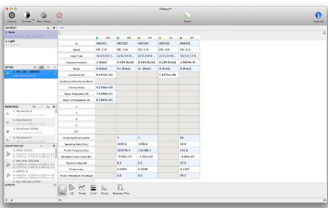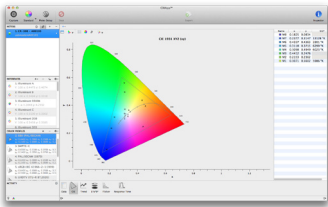
■ **Cross Platform:** Your working environment is the same in every platform while taking advantage of features specific to the host operating system.
■ **Intuitive:** The user interface is designed with a user-friendly approach with controls at your fingertips, not hidden away in menus or complex preferences.
■ **Connectivity:** The software is engineered to support simultaneous data capture from multiple connected instruments based on the contextual task at hand. Select an instrument to take a reading or simultaneously use all open instruments.
■ **Data Visualization:** Measurements are presented in a customizable tabular grid or charts. The software supports multiple types of measurements, and co-exists gracefully within the same streamlined interface.
■ **Spectral Auto Interpolation:** The spectral data view supports automatic interpolation of spectral data so that it provides seamless comparison between unlike spectra.
■ **CRI & Gamma:** Color Rendering Index visualization and gamma measurement mode is available.

The Colorimeter Utility is an accompanying tool that aids in updating, preserving and recovering the state of the instrument.

MEASUREMENT SPOT SIZE

Working Distance (mm)	Spot Size (mm)					
	3° Aperture	2° Aperture	1° Aperture	0.5° Aperture	0.25° Aperture	0.125° Aperture
2000	103.50	68.99	34.49	17.25	8.62	4.31
1500	77.30	51.53	25.76	12.88	6.44	3.22
1000	51.10	34.06	17.03	8.52	4.26	2.13
750	38.02	25.34	12.67	6.34	3.17	1.58
500	24.94	16.62	8.31	4.16	2.078	1.039
400	19.69	13.12	6.56	3.28	1.64	0.82
300	14.46	9.64	4.82	2.41	1.205	0.603
254	12.05	8.03	4.01	2.01	1	0.5
250	11.84	7.89	3.94	1.97	0.985	0.493
240	11.31	7.54	3.77	1.89	0.943	0.471
200	9.22	6.14	3.07	1.54	0.768	0.384

CR-300 SPECIFICATIONS

Detector	CMOS image sensor, 512 pixels
Spectral Range	380 - 780 nm
Spectral Bandwidth	2.0 nm
Spectral Accuracy	± 0.3 nm
Spectral Resolution	0.8 nm / pixel
Luminance Range	0.02 Nits to 154,000 Nits *(0.006 fL to 46,000 fL)*[§]
Luminance Accuracy	± 2 % [Ω]
Luminance Repeatability	≤ 1 % [Ω]
Chromaticity Accuracy	± 0.0015 x, y [Ω]
Chromaticity Repeatability	0.0005 x, y [Ω]
Polarization Error	≤ 0.5 %
Digital Resolution	16 bits
Optics	Direct viewing and direct measuring system
Objective Lens	40 mm
Focusing Range	200 mm to infinity
Aperture	Fix (available at order time: 3°, 2°, 1°, 0.5°, 0.25°, 0.125°)
Field of View	10°
Viewing optics	Patent pending removable and rotatable viewing system.
Custom Synchronization	10 - 10000 Hz
Exposure Time Range	0.04 to 30 seconds
Power Requirements	5V, 120 mA (600 mW) via USB 2.0
Interface	USB 2.0, Ethernet, RS-232
Weight / Mass	2.5 pound (1.134 kg) 2.7 pounds (1.224 kg) with viewing system VO-201

NOTE:

Luminance Range, Accuracy and Repeatability and Chromaticity Accuracy and Repeatability are measured with a NIST-traceable 2856 K light source, using a 1° aperture.

When Custom Synchronization is selected, the user is required to enter the refresh rate or the on/off frequency of the device he is measuring.

[§] Sensitivities measured for 10:1 signal to noise (RMS)

[Ω] Measured with luminance level of 1.7 Nits *(0.5 fL)*

www.colorimetryresearch.com

Get in touch

Sales: sales@colorimetryresearch.com
Engineering: engineering@colorimetryresearch.com
Support: support@colorimetryresearch.com

As part of our policy of continuous product improvement, we reserve the right to change specifications at any time

September 26, 2023