Спектрорадиометры CS-2000A
Технические характеристики

Spectroradiometer CS-2000A

A high end spectroradiometer for light sources and displays that measures spectral data, luminance and chromacity. Fast measurement times with high repeatability ideal for the low luminance blacks and contrast measurements on modern displays. Accurate as low as 0.0005 cd/m2 providing accurate contrast measurements at 1,000,000:1.

Introduction

Konica Minolta Spectroradiometer CS-2000A World's best for analyzing ultra-low luminance: 1,000,000:1 contrast measurement

Opening the curtain on a new age in which people can experience theatre ambience with their home televisions. The Spectroradiometer CS-2000A enables high-accuracy mega contrast measurements of the extremes from delicate shadows to glittering wave fronts which are the key to image reproduction performance.

The Spectroradiometer CS-2000A is capable of measuring ultra-low luminance levels of 0.0005 cd/m2 of various light-emitting devices and flat-screen televisions such as LCDs, plasma displays, organic EL displays, LEDs, etc. as well as performing high-accuracy measurements corresponding to scotopic relative luminosity.

Principal applications

The CS-2000A can be used for luminance and chromaticity measurement of various optical devices such as displays like LCDs, PDPs, organic ELs and FEDs, as well as light sources such as LEDs and lamps.

Features

1. Accurate ultra-low luminance measurements as low as 0.0005 cd/m2

By utilizing technology to reduce sensor signal noise, the CS-2000A achieves an additional decimal place of performance compared to previous models. The CS-2000A enables stable measurement in ultra-low luminance regions by providing highly accurate measurements as low as 0.0005cd/m^2 at a measurement

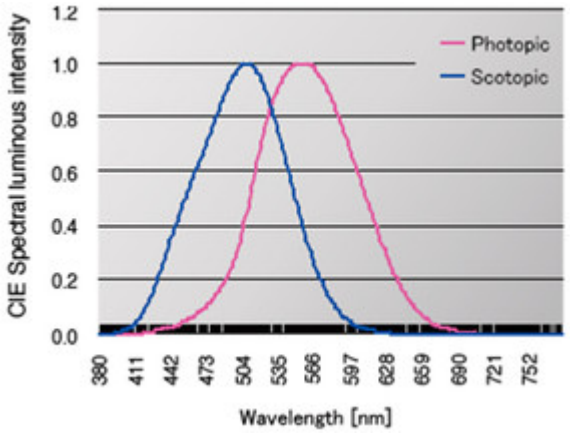
angle of 1°C. In addition, it maintains less than 5nm half bandwidth* (considered necessary for measuring color) throughout the entire measurement wavelength range, enabling precise color measurements.

* Half bandwidth: An indicator of wavelength resolution.

2. Measurement supporting scotopic vision*1

Standard spectral luminous efficiency* of scotopic vision is included in "Data Management Software CS-S10w Professional" (included as a standard accessory), enabling highly accurate measurements corresponding to scotopic vision.

* Standard spectral luminous efficiency: Relative visual sensitivity determined by the International Commission on Illumination (CIE) and used as a standard



3. High-speed measurement of microscopic areas

The measurement angle switching function of the CS-2000A allows the user to select measurement angles of 0.1°, 0.2°, or 1° according to the application. This enables a standard minimum measuring diameter of Ø0.5mm; furthermore, with the close-up lens (optional accessory), areas as small as Ø0.1mm can be measured. Therefore, the CS-2000A can be used not only for measuring general displays, but also for quick and stable luminosity and chromaticity measurements of ultra-small areas such as on automotive or aircraft instrument panels and for indicators of automotive audio systems.

4. Quality control based on the dominant wavelength

"Data Management Software CS-S10w Professional", included as a standard accessory, enables acceptance judgments* based on the dominant wavelength. The CS-2000A is thus optimal for quality control of LEDs, which are hailed as the next generation in lighting, and various other new lighting devices.

* Acceptance judgment based on dominant wavelength: Judges whether the primary wavelength (dominant wavelength) of the respective color is within the standard range in the chromaticity evaluation of LEDs or other illuminating light sources.

5. Accurate measurement of illuminance

Attaching a diffuser adapter for illuminance measurement (optional accessory) enables the CS-2000A to accurately perform spectroscopic measurements of illuminance and chromaticity of irradiated light.

Areas of application

Light sources of all types can be measured under Laboratory conditions with the CS-2000A, for example signal, traffic lights, airport lighting, lamps, LEDs, picture tubes, LCDs, PDPs, etc., simply anything that emits light. With the ever-growing demand for diversified media, stimulated by the growth of information-technology business and full-scale service of digital broadcasting, research and development has accelerated for various display devices centring on plasma displays and LCDs. Innovations in LED technology have led to remarkable breakthroughs in the development of LED products including traffic lights, backlights for reflective LCDs, and large outdoor display screens.

Specifications

Principal Specifications CS-2000A

Model	**Spectroradiometer CS-2000A**	
Measurement angel	0.1°, 0.2°, 1° selectable	
Measurement wavelength range	380 to 780nm	
Wavelength resolution	0.9nm / pixel	
Display wavelength pitch	1.0 nm	
Median wavelength precision	±0.3nm (at 435.8nm, 546.1nm, and 643.8nm)	
Half bandwidth	5nm or less	
Luminance measurement range (for Standard illuminant A)	0.1° measurement angle: 0.5 to 500,000 cd/m^2 0.2° measurement angle: 0.175 to 125,000 cd/m^2 1° measurement angle: 0.005 to 5,000 cd/m^2	
Accurancy	**Luminance**	±2%
	Chromaticity (1° measurement angle)	x,y: ±0.002 (0.001 to 0.05 cd/m^2) x,y: ±0.0015 (from 0.05 cd/m^2)
Repeatability	**Luminance (1°C measurement angle)**	1.5% (0.0005 to 0.001 cd/m^2) 0.7% (0.001 to 0.003 cd/m^2) 0.25% (0.003 to 0.05 cd/m^2) 0.15% (0.05 to 5,000 cd/m^2)
	Chromaticity (1° measurement angle)	x: 0.003 y: 0.0035 (0.001 to 0.003 cd/m^2) x: 0.001 y: 0.0015 (0.003 to 0.1 cd/m^2) x: 0.0006 y: 0.0006 (0.1 to 0.2 cd/m^2) x: 0.0004 y: 0.0004 (0.2 to 5,000 cd/m^2)
Polarization error	0.1°, 0.2° measurement angle: 3% or less 1° measurement angle: 2% or less	

Measurement time	Approx. 2 to 243 sec.
Colour space mode	Lv x y, Lv u' v', Lv TΔuv, XYZ ,spectral waveform, dominant wavelength, excitation purity scotopic luminosity (with CS-S10w Professional)
Interface	USB 1.1
Operating temperature/humidity range	5 to 30°C; Relative humidity 80% or less with no condensation
Power supply	AC adapter (100 to 240V~, 50/60 Hz)
Dimensions (W × H × D)	158 × 200 × 300mm (Main unit) Ø70 × 95mm (Lens)
Weight	6.2kg (including lens)

- Measurement conditions for accuracy/repeatability: Measurement subject: Standard Illuminant A; Ambient temperature: 23°C±2°C;
- Relative humidity: 65% or less
- Specifications and appearance subject to change without notice

Optional Accessories for CS-2000A

Tripod 475B Manfrotto product

Very stable Tripod

Item Order Code: B027801

Pan Head MA-400

Pan Head for Tripod 475B

Item Order Code: 9970-1801

CS-A30 Storage Case

Item Order Code: A0E3-600

CS-A33 ND-Filter 1/10

Item Order Code: A0E3-702

CS-A34 ND-Filter 1/100

Item Order Code: A0E3-703

CS-A35 Close-up lens

Item Order Code: A0E3-704

CS-A36 Adapter for CCD Camera

Item Order Code: A0E3-705

CS-A5 White Calibration Plate

Item Order Code: 1890-705
(no calibration data)

Item Order Code: 1890-706
(with calibration data)

Item Order Code: 1890-707
(with calibration data and certificate)

Custom illuminance adapter incl. calibration data

Item Order Code: A0E3-904

Custom attachment for luminous flux

Item Order Code: A0E3-905

Custom attachment for luminous intensity

Item Order Code: A0E3-906

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