Performance Comparable to Many Spectroradiometers
Ease of Use and Simplicity Equal to Tristimulus Meters

The technological innovation of displays such as FPDs and LCDs as well as LED products in recent years requires high-quality production, resulting in the need for accurate measuring instruments. The CS-200 is a new type of colorimeter achieving high accuracy while maintaining the simple operation of tristimulus-type colorimeters.

Three selectable angles of 1°, 0.2°, and 0.1° make it easy to measure large and very small objects in a wide measuring range from low luminance of 0.01 cd/m² to high luminance of 20,000,000 cd/m² (with a measuring angle of 0.1°).

The CS-200 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.

New Auto Mode

Wide measuring range from low to high luminance

The new Auto Mode adjusts the measurement speed according to the luminance of the measurement subject.

- Measurement is available from a low luminance of 0.01 cd/m² to a high luminance of 20,000,000 cd/m² (with a measuring angle of 0.1°).
- Use of the spectral fitting method and precise analog circuitry achieves stable measurement even for low luminance.

Compact and lightweight. Battery power is also possible.

- The compact, lightweight and stylish body allows hand-held operation. The CS-200 can be operated with either four AA batteries (battery indicator function provided) or a special AC adapter.

Additional Functions

- Measurements can be synchronized with the display device by numerical input of the frequency.
- Selectable measurement speed (AUTO, LTD. AUTO, MANU, superFAST, FAST, SLOW and superSLOW)
- Large LCD display with backlight
- USB 1.1 communication
- Data storage: 101 measured values (9-letter ID assignment possible) and 20 reference values
- User calibration: 20 channels

Selectable measuring angle

- While checking the actual subject, you can select the measuring angle easily according to the application (1°, 0.2° and 0.1°).
- The aperture mirror eliminates misalignment between the finder target and the actual measuring spot, ensuring accurate aiming.
"Spectral fitting method" for accurate luminance & chromaticity measurement.

Konica Minolta’s newly-developed spectral fitting method provides tristimulus values (XYZ = red, green, blue) with significantly higher accuracy than that of conventional tristimulus colorimeters. This is achieved by using the output from 40 sensors to calculate the spectral response corresponding to human eye sensitivity (CIE 1931 color-matching functions).

The CS-200 uses 40 sensors for sensitivity covering the entire visible region and multiplies each sensor output by appropriate coefficients. This adjusts the spectral response of the instrument to close to the CIE 1931 color-matching functions.

In addition to the 2° Standard Observer, the 10° Standard Observer (for object-color measurements) can also be selected, which is impossible with conventional tristimulus colorimeters.

KONICA MINOLTA's Chroma Meter for accurate light-source measurement allows building of a color management network both internally and externally.

In R&D and design departments
There is no need for calibration work to determine a value of each light source by using a reference spectroradiometer. For displays like LCDs or organic ELs in particular, user calibration for the reference panel using a spectroradiometer can be eliminated ¹.

1 If higher accuracy is required, user calibration can be used.

In quality management and incoming inspection departments
Since individual errors are minimized compared to conventional tristimulus colorimeters, the inspection of various devices such as panels does not require individual error correction.
Ease of Use and Performance Comparable to Many Spectroradiometers

0.01 cd/m² to high luminance of 20,000,000 cd/m² (with a measuring angle make it easy to measure large type colorimeters. Accurate measuring instruments. The CS-200 is a new type of colorimeter products in recent years requires high-quality production, resulting in the need for FEDs, as well as light sources such as LEDs and lamps. The CS-200 can be used for luminance and chromaticity measurement of).

Use of the spectral fitting method and precise analog circuitry Measurement is available from a low luminance of 0.01 cd/m² to a high luminance Wide measuring range from low to high luminance. User calibration: 20 channels Data storage: 101 measured values (9-letter ID)

Selectable measurement speed (AUTO, LTD. AUTO, FAST, SLOW and superSLOW)

Large LCD display with backlight

MANU, superFAST, FAST, SLOW and superSLOW)

Measurements can be synchronized with the

Diopter adjustment ring

Objective lens and Focus adjustment ring

Measuring angle selector

Power switch

Measurement button

Hand strap

AC adapter input terminal

USB connector

Battery

“Spectral fitting method” for accurate luminance & color-matching functions. This is achieved by using Konica Minolta’s newly-developed spectral fitting method provides tristimulus values (XYZ = red, green, blue) with significantly higher accuracy than that of conventional tristimulus colorimeters.

Standard Observer, the 10

tude colorimeters. This is achieved by using Konica Minolta’s newly-developed spectral fitting method provides tristimulus values (XYZ = red, green, blue) with significantly higher accuracy than that of conventional tristimulus colorimeters. This is achieved by using.

The new Auto Mode adjusts the measurement speed according to the application

While checking the actual subject, you can select the

Selectable measuring angle

Power

Hand strap

(If higher accuracy is required, user calibration can be used.

There is no need for calibration work to determine a

Standard Observer (for object-color measurements) can also be

Various displays with an accuracy

A本公司使用40 sensors for sensitivity covering the entire visible region and multiplies each sensor output

of the CS-200

Spectral response of color-matching functions

<table>
<thead>
<tr>
<th>Color</th>
<th>Regular instrument (CS-200)</th>
<th>In-house color-matching function (CS-200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Green</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Blue</td>
<td>0.3</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Evaluation applications

Evaluation of the luminance and chromaticity of light sources
Evaluation of luminance and chromaticity uniformity
Contrast evaluation -characteristic evaluation
Simple measurement of object colors (The optional white calibration plate is required.)

Measuring distance and measuring area

<table>
<thead>
<tr>
<th>Measuring angle</th>
<th>Minimum measuring area</th>
<th>Maximum measuring area</th>
<th>Minimum measuring distance</th>
<th>Maximum measuring distance</th>
<th>Measuring area at 303 mm</th>
<th>Measuring area at 1000 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Unit: mm)</td>
<td>(Unit: mm)</td>
<td>(Unit: mm)</td>
<td>(Unit: mm)</td>
<td>(Unit: mm)</td>
<td>(Unit: mm)</td>
<td>(Unit: mm)</td>
</tr>
<tr>
<td>Without a Close-Up Lens</td>
<td>0.5</td>
<td>0.7</td>
<td>0.5</td>
<td>0.7</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Close-up lens No. 122</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Close-up lens No. 107</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Measuring distance is the distance from the front edge of the metal lens barrel or close-up lens ring.
Data Management Software CS-S10w Standard (Standard accessory)

CS-S10w Standard Edition allows users to control the CS-200 with a PC to display the list of measured data or to transfer the data to spreadsheet software.

<Functions common to Standard and Professional Editions>
- **Color space**: \( L_x, L_y, L_u', L_v' \), \( L_\lambda, T_{uv} \)
- **Mode selection**: Normal mode, Object color mode
- **Instrument control**: Average measurement, Interval measurement, User calibration
- **Data management**: Reading and saving files, Data management with folders
- **Data evaluation**: Observer/Illuminant settings, Statistics display for each folder, Box tolerance setting

Data Management Software CS-S10w Professional (Optional accessory)

In addition to the functions of Standard Edition, optional CS-S10w Professional Edition enables various data management, analysis and evaluation functions useful for R&D or quality control.

<Functions available only with Professional Edition>
- **Mode selection**: Contrast mode, RGB mode, RGB & contrast mode
- **Data management**: Creating, saving and loading templates (customizable design/layouts for various graphs), Various graph displays
- **Data evaluation**: Multiple-point measurement, uniformity display, contrast display and polygon tolerance setting for display evaluation
- **Other**: Creating customizable reports

System requirements (common to Standard and Professional Editions)

- **OS**: Windows® 7 Professional 32-bit, 64-bit; Windows® 8.1 Pro 32-bit, 64-bit; Windows® 10 Pro 32-bit, 64-bit
- **CPU**: Pentium® III 600 MHz equivalent or higher
- **Memory**: 128 MB min. (256 MB or more recommended)
- **Hard disk**: 60 MB or more space required for installation
- **Display**: 1,024 X 768, 256 colors or more
- **Other**: CD-ROM drive, USB port

* Windows® is a trademark of Microsoft Corporation in the USA and other countries.
* Pentium® is a trademark of Intel Corporation in the USA and other countries.
### CS-200 specifications

**Model**
- CS-200

**Display range**
- 0.01 - 200,000 cd/m² (Measuring angle 1°)
- 0.01 - 5,000,000 cd/m² (Measuring angle 0.2°)
- 0.01 - 20,000,000 cd/m² (Measuring angle 0.1°)

**Accuracy**

<table>
<thead>
<tr>
<th>Measuring angle</th>
<th>CS-A20</th>
<th>CS-A21</th>
<th>CS-A22</th>
</tr>
</thead>
<tbody>
<tr>
<td>1°</td>
<td>±0.5 cd/m²</td>
<td>±1 cd/m²</td>
<td>±2 cd/m²</td>
</tr>
<tr>
<td>0.2°</td>
<td>±0.2 cd/m²</td>
<td>±0.5 cd/m²</td>
<td>±1 cd/m²</td>
</tr>
<tr>
<td>0.1°</td>
<td>±0.1 cd/m²</td>
<td>±0.2 cd/m²</td>
<td>±0.5 cd/m²</td>
</tr>
</tbody>
</table>

**Light source at 5000 cd/m² + color filter (R, G, B) xy ±0.006**

**Repeatability**

<table>
<thead>
<tr>
<th>Measuring angle</th>
<th>Standard Illuminant A</th>
<th>Standard Illuminant C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1°</td>
<td>±0.2 cd/m²</td>
<td>±1 cd/m²</td>
</tr>
<tr>
<td>0.2°</td>
<td>±0.1 cd/m²</td>
<td>±0.5 cd/m²</td>
</tr>
<tr>
<td>0.1°</td>
<td>±0.05 cd/m²</td>
<td>±0.2 cd/m²</td>
</tr>
</tbody>
</table>

**Measurement time**

- AUTO (Automatically set between approx. 1s and 60s)
- LTD.AUTO (Automatically set to approx. 1s or 3s)
- Super-FAST (approx. 0.5 sec/meas.)
- FAST (approx. 1 sec/meas.)
- SLOW (approx. 3 sec/meas.)
- Super-SLOW (approx. 12 sec/meas.)

**Measurement method**
- Spectral method, Grating + linear photo diode array

**Measuring angle**
- 1°, 0.2°, 0.1° (selectable)

**Minimum measuring area**
- 0.5 mm (For 1°)
- 1 mm (For 0.2°)

**Minimum measuring distance**
- 296 mm (Distance from front edge of metal lens barrel)

**Observer**
- 2° or 10° Standard Observer

**Color space**
- L*, u*, v*, u’v’, L*uv, XYZ, dominant wavelength

**Measurement synchronization setting range**
- Vertical synchronization frequency: 40.00 to 200.00 Hz

**Interface**
- USB 1.1

**Power source**
- AC Adapter or 4 AA-Size Batteries

**Battery performance**
- Approx. 3 hours

**Size (WxHxD)**
- 95 mm x 127 mm x 334 mm

**Weight**
- 1.8 kg (without battery)

**Operation temperature**
- 0°C to 40°C, relative humidity 85% or less (at 35°C) with no condensation

**Storage temperature**
- 0°C to 45°C, relative humidity 85% or less (at 35°C) with no condensation

**Repeatability**
- ±0.002 (within 0.01 cd/m² range)
- ±0.001 (within 0.01 to 0.5 cd/m² range)
- ±0.001 (within 0.5 to 2 cd/m² range)
- ±0.002 (within 2 to 4 cd/m² range)
- ±0.005 (within 4 to 8 cd/m² range)
- ±0.01 (within 8 to 20 cd/m² range)

**Measurement method**
- Interval and average
- Average measurement

**Instrument control**
- Data management

**Observer/Illuminant**
- Data evaluation
- RGB mode
- Object color mode
- XYZ, dominant wavelength

**Contrast mode**
- Mode selection
- Various graph displays
- Various layouts for customizable screen

**Battery**
- AC Adapter or 4 AA-Size Batteries

**Power source**
- Approx. 3 hours

**Battery performance**
- Approx. 3 hours

**Display**
- 1,024 X 768, 256 colors or more

**Hard disk**
- 60 MB or more space required for installation
- 128 MB min. (256 MB or more recommended)

**Pentium® CPU**
- 600 MHz equivalent or higher

**OS**
- Windows® 7 Professional 32-bit, 64-bit; Windows® 8.1 Pro 32-bit, 64-bit

**Data management**
- Data evaluation
- Data management

**Data evaluation**
- Box tolerance setting
- Interval and average
- Pass/fail judgment using polygon tolerance
- Various graph displays

**Data management**
- Data evaluation
- Data management

**Creating reports**
- In customizable screen and polygon tolerance layouts

**Interval and average**
- Measurement
- Average measurement

**Measurement**
- Measurement:
- Instrument control:
- Data management:

**Customization Service**
- In order to meet customer needs even more fully, Konica Minolta offers a customization service for modifying products currently being sold.

**Main Customization Service for CS-200**
- Modification for high-speed measurement

**Customized products**
- Will have specifications different from those of our normal products. Please ask your nearest Konica Minolta sales office or dealer.

**Dimensions (Unit: mm)**

- **For tripod screw**
  - M5 screw
  - 61.6 x 70.5 x 150

- **For M5 screw**
  - 61.6 x 70.5 x 150

- **Standard plan for distance measurements**
  - 154

**SAFETY PRECAUTIONS**
- For correct use and for your safety, be sure to read the instruction manual before using the instrument:
  - Always connect the instrument to the specified power supply voltage. Improper connection may cause a fire or electric shock.
  - Be sure to use the specified batteries. Using improper batteries may cause a fire or electric shock.

**ISO Certifications of KONICA MINOLTA, Inc., Sales Site**

**KONICA MINOLTA, INC.**

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New Jersey, U.S.A.

Konica Minolta Sensing Europe B.V.
European Headquarters/BENELUX

Konica Minolta Sensing Singapore Pte. Ltd.
Konica Minolta Sensing Korea Co., Ltd.

**Destinations**

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924-24810-10 BJDPK2