Optional Accessories
CR-A50, the color of powders, pastes, "Precise Color Communication".
SpectraMagic as brightness, haze, yellowness, opacity and strength. You can even configure up to 8 incoming raw materials, in process production, and outbound color critical goods and

Hard disk:
Windows ® 11 Pro

(with convex glass) Glass Light-Projection
Glass Light
(five rolls)
Glass Light-Projection Tube
(no disc) Pivoting Base
Battery (x4)
SpectraMagic
Glass Light-Projection Tube CR-A33f and CR-A33e
Glass Light-Projection Tube

1,024 x 768 dots or more/ 16-bit colors or more
White Calibration
Specifications comes with predefined templates, or you display
USB port for protection key; one free port (serial port
DVD-ROM drive (required for installation); one free
histogram of each color space and color
C, D65
CR-A104
CR-410
(For CR-410)
Plate
Granular-Materials
CR-A44

Projection Tube CR-A33c is also included.

Pivoting Base
CR-400 Utility Software

Bluetooth® is a registered trademark of Bluetooth SIG, Inc. and

Display resolution: VGA (640¥ 480) or higher
CPU: Pentium ® 166MHz or higher
Memory: 32MB or higher

CR-A33e
CR-S4w
CR-S4w

or modified.
Calibration data and color-difference
directly to a Microsoft Excel
measuring head and data processor are
including 4 AAA size batteries: not including RS-232C cable or USB cable)

Minimum measurement interval 3 seconds.
(Specular component included/Conforms (Specular component included)
Model
Observer 2 degrees Closely matches CIE 1931 Standard Observers: ( x2 agreement Average of 12 BCRA series II colors
Inter-instrument
(when using batteries under company testing Konica Minolta's conditions)
Agreement

Acknowledgment

Chroma values, color difference values, PASS/WARN/FAIL display
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.

∗ Color difference tolerance (box tolerance and elliptical tolerance)
∗ 1 Color difference tolerance (box tolerance and elliptical tolerance) Only for the display function
∗ 2 Date and time display: year, month, day, hour, minute

Data Processor

E*ab0.07 standard deviation (when the white calibration plate

Dimensions
63” 46” 105.4”

67.6” 32”

78.4”

33.4”

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Design, development, manufacture, service and sales

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Trade names and registered trademarks are the property of their respective owners.

Webpage: www.konicaminolta.com

The Standard in Measuring Color & Light

Giving Shape to Ideas
When measuring powders or pastes, color control is performed with a customized evaluation formula, instead of the versatile color system. When a compact colorimeter is needed in the field, measurements need to be printed on-site for labeling of samples. With the varied accessories, you can measure targets with diverse profiles. User-defined evaluation formulas can be entered as desired. Now, you can control color with customized evaluation formulas. The measuring head can be used independently of the data processor. This is advantageous when portability is required or limited space is available. The compact data processor features a built-in printer for superior mobility.

The CR-400 Series features a User Index function that allows you to configure the evaluation formula and color-calculation formula as desired. This feature is intended to meet the needs of color-control applications in which industry-specific or customized evaluation formulas are used instead of the versatile color system and standard evaluation formula such as L*a*b*.

Abundant accessories applicable to various materials. A varied selection of accessories is available to accommodate various types of targets including powder, paste and opaque liquids.

Compact data processor incorporates a high-speed printer. The compact, lightweight data processor is battery-operated and features a built-in high-speed printer. Its size and weight are approximately one-half those of the conventional DP-300 Series. In addition, the CR-400 Series is designed with a detachable shoulder strap for easier portability. *An AC adapter is included as a standard accessory.

Full data compatibility with the CR-300/310 series. To ensure data compatibility, the CR-400 Series utilizes the same illumination-viewing optical system as the conventional CR-300/310 Series. As a result, those upgrading from the preceding model can make full use of their existing data.

Easy-to-understand the name on the buttons, ensure smooth measurement and setting operations.

Achieves exceptional accuracy
Inter-instrument agreement: CR-400: \( \Delta E^{*ab} \) within 0.6
CR-410: \( \Delta E^{*ab} \) within 0.8
Repeatability: within \( \Delta E^{*ab} \) 0.07

User calibration function ensures higher accuracy.

Color difference tolerance can be set to perform PASS/WARN/FAIL

Offers a wider range of color systems than the CR-300/310 Series.

The measuring head alone can store up to 1,000 measurements. When the data processor is connected, up to 2,000 measurements can be stored.(The measuring head can store up to 100 color-difference target colors with or without the data processor connected.)

Capable of displaying color-difference graphs that provide a visual representation of the color difference.

A simple, cellular-phone-type text entry system is provided for entering the names of color-difference target colors and calibration channels.

Features a large, easy-to-see LCD with a built-in backlight.

The LCD offers six user-selectable languages for the display mode, including English and Japanese.

Can be powered with rechargeable batteries for reduced operating costs.

Denotes a new feature not available with the previous CR-300/310 Series.
The CR-400/410 Series really shows its abilities in these applications.

- **When measuring powders or pastes**

- **When color control is performed with a customized evaluation formula, instead of the versatile color system**

- **When a compact colorimeter is needed in the field**

- **When measurements need to be printed on-site for labeling of samples**

With the varied accessories, you can measure targets with diverse profiles.

User-defined evaluation formulas can be entered as desired. Now, you can control color with customized evaluation formulas.

The measuring head can be used independently of the data processor. This is advantageous when portability is required or limited space is available.

The compact data processor features a built-in printer for superior mobility.
ISO Certifications of KONICA MINOLTA, Inc., Sakai Site

Grains, and other granular substances can "Precise Color Communication." You can even configure up to 8 illuminants, and up to 40 indices to determine specific color and appearance properties, such as brightness, haze, yellowness, opacity and strength. You can measure in any of 8 universally accepted color spaces. Select from 16 materials in virtually any industry. With incoming raw materials, in process production, and outbound color critical goods and services, this system is designed to ensure the best color results.

System Diagram

Optional Accessories

Granular-Materials Attachment CR-A50
With the Granular-Materials Attachment CR-A50, the color of powders, pastes, grains, and other granular substances can be easily and accurately measured.

SpectraMagic™NX
SpectraMagic™NX enables you to perform comprehensive color inspection and analysis of incoming raw materials, in process production, and outbound color critical goods and materials in virtually any industry. With SpectraMagic™NX you can insert digital images with measured data. Measure samples in any of 8 universally accepted color spaces. Select from 16 illuminants, and up to 40 indices to determine specific color and appearance properties, such as brightness, hazy, yellowness, opacity and strength. You can even configure up to 8 customized color equations. Reports range from simple Pass/Fail to trend charts, histograms, color plots, and spectral graphs. SpectraMagic™NX comes with predefined templates, or you can create your own templates. For illustrations and explanations to understanding color and color measurement technology, there is a link to Konica Minolta's well known and respected "Precise Color Communication".

Specifications

<table>
<thead>
<tr>
<th>Color space</th>
<th>L’K’D’, L’C’H’, Lab, LCh, LCh+, XYZ, Hunter Lab, Yxy, L’uv’, L’uv’, Munsell, and their color differences (excluding Munsell)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>WI (CIE 1931, ASTM E313-73, Hunter, Berger, Taube, Stensby, Gandi, Tinschard, Yti (ASTM D1925-70, ASTM E313-73, ASTM E313-95, DIN6171, WB ASTM E313-73), Standard Depth (ISO 105-A06), Rr, Rr, Gray scale (ISO 105-A05)</td>
</tr>
<tr>
<td>Color difference equation</td>
<td>∆E<em>ab (CIE 1976), ∆E</em>ae (CIE 1994), ∆E<em>ce (CIE 2000), ∆L</em> (Hunter), CMC (Lc), FMC-2, NBS 100, NBS 200</td>
</tr>
<tr>
<td>Observer</td>
<td>2° Standard Observer</td>
</tr>
<tr>
<td>Illuminant</td>
<td>C, D, D65, D75, D50, D67, F, F2, and others</td>
</tr>
<tr>
<td>Graph display</td>
<td>L’K’D’, absolute value, L’K’D’ (color difference distortion), Hunter Lab absolute value, Hunter L2ab (color difference distortion), Trend chart and histogram of each color space and color difference equation, Pseudo Color display</td>
</tr>
</tbody>
</table>

System requirements

- OS: Windows® 10 Pro 32-bit, 64-bit Windows® 11 Pro
- The hardware of the computer system to be used must meet or exceed the greater of the recommended system requirements for the compatible GIS being used or the following specifications:
- CPU: Pentium® III 600 MHz equivalent or faster
- Memory: 128 MB or more (256 MB or more recommended)
- Hard disk: 400 MB or more of free space for installation
- Display resolution: 1,024 x 768 dots or more (16-bit colors or more)
- Other: DVD-ROM drive (required for installation), one free USB port for port key; one free port (serial port or additional USB port) for connection to instrument when connecting via cable (USB port for USB Bluetooth® adapter when using a USB Bluetooth adapter for performing communication with CM-700D or CM-600D via Bluetooth®), Internet Explorer Version 5.01 or later.

CR-400 Utility Software CR-S4w

- To take measurements or change the measurement parameters of the CR-400/410 Series, you can control the unit with a PC.
- Measurement data can be transferred directly to a Microsoft Excel® file by means of the OLE function.
- Calibration data and color-difference reference color data can be uploaded or modified.
### Optional Accessories

- Measured data: Approx. 800 measurements (when using batteries under company testing Konica Minolta’s conditions)
- Display: Chroma values, color difference values, color difference graphs, PASS/WARN/FAIL display
- Color difference tolerance (box tolerance and elliptical tolerance) for the display function

### System Diagram

- **CPU:**
  - System requirements
- **Memory:**
  - Memory: 32MB or higher
- **Hard disk:**
  - Hard disk: 100MB or more free space
- **Power:**
  - CR-A12 to the Pivoting Base
  - CR-A33c/d (commercially available)

### Specifications

#### Measuring Head (Units: mm)

<table>
<thead>
<tr>
<th>Name</th>
<th>CR-400 Head</th>
<th>CR-410 Head</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>CR-400 Head</td>
<td>CR-410 Head</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Chroma Meter Measuring Head</td>
<td>CR-410 Measuring Head</td>
</tr>
<tr>
<td><strong>Humidity/temperature system</strong></td>
<td>provisions</td>
<td>provisions</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>Liquid crystal display (160 x 128 dots)</td>
<td>Liquid crystal display (160 x 128 dots)</td>
</tr>
<tr>
<td><strong>Light source</strong></td>
<td>Pulsed xenon lamp</td>
<td>Pulsed xenon lamp</td>
</tr>
<tr>
<td><strong>Measurement time</strong></td>
<td>1 seconds</td>
<td>1 seconds</td>
</tr>
<tr>
<td><strong>Operational humidity range</strong></td>
<td>0 to 45%, relative humidity 85% or less (at 35°C) with no condensation</td>
<td>0 to 45%, relative humidity 85% or less (at 35°C) with no condensation</td>
</tr>
<tr>
<td><strong>Operation temperature range</strong></td>
<td>-10°C to 50°C</td>
<td>-10°C to 50°C</td>
</tr>
<tr>
<td><strong>Light source range</strong></td>
<td>10,000lux</td>
<td>10,000lux</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>AC Adapter</td>
<td>AC Adapter</td>
</tr>
<tr>
<td><strong>Size (W x H x D)</strong></td>
<td>100 x 73 x 255 mm</td>
<td>100 x 73 x 255 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 2 kg</td>
<td>Approx. 2 kg</td>
</tr>
<tr>
<td><strong>Humidity range</strong></td>
<td>30% to 90% (non-condensing)</td>
<td>30% to 90% (non-condensing)</td>
</tr>
<tr>
<td><strong>Temperature range</strong></td>
<td>-10°C to 50°C</td>
<td>-10°C to 50°C</td>
</tr>
<tr>
<td><strong>Date and time</strong></td>
<td>Battery powered, can be set</td>
<td>Battery powered, can be set</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>Day/night display, month/day/hour/min</td>
<td>Day/night display, month/day/hour/min</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>8MB</td>
<td>8MB</td>
</tr>
<tr>
<td><strong>Baud rate (bps)</strong></td>
<td>19,200</td>
<td>19,200</td>
</tr>
<tr>
<td><strong>Data protected</strong></td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Data protection ON/OFF function, Back light ON/OFF function, Buzzer ON/OFF function, Display contrast adjustment</td>
<td>Data protection ON/OFF function, Back light ON/OFF function, Buzzer ON/OFF function, Display contrast adjustment</td>
</tr>
<tr>
<td><strong>Safety Precautions</strong></td>
<td>For use in industrial environments, use the specified power supply voltage. Improper connection may cause a fire or electric shock. Be sure to use the specified batteries. Incorrect use of batteries may cause a fire or electric shock.</td>
<td></td>
</tr>
</tbody>
</table>

### SAFETY PRECAUTIONS

- For use in industrial environments, use the specified power supply voltage. Improper connection may cause a fire or electric shock. Be sure to use the specified batteries. Incorrect use of batteries may cause a fire or electric shock.

### Dimensions

<table>
<thead>
<tr>
<th>Name</th>
<th>CR-400 Head</th>
<th>CR-410 Head</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>CR-400 Head</td>
<td>CR-410 Head</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Measuring Head</td>
<td>Measuring Head</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>Measuring Head</td>
<td>Measuring Head</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td>255 mm</td>
<td>259 mm</td>
</tr>
<tr>
<td><strong>Width</strong></td>
<td>100 mm</td>
<td>100 mm</td>
</tr>
<tr>
<td><strong>Depth</strong></td>
<td>105.4 mm</td>
<td>105.4 mm</td>
</tr>
</tbody>
</table>

### ISO Certifications of KONICA MINOLTA, Inc., Sakai Site

- KONICA MINOLTA, Inc., Sakai Site (New Jersey, U.S.A.)
  - ISO 9001:2015
  - ISO 13485:2003
  - ISO 14001:2015
  - OHSAS 18001:2007

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