Introducing the successor to the Konica Minolta CR-300/310, our best-selling colorimeter globally accepted as the standard in a wide range of industries.

**CR-400**
Measurement area Ø8mm

**CR-410**
Measurement area Ø50mm

The measuring head can perform measurement alone.
The measuring head is detachable from the data processor. Now, you can take measurements directly with the head alone. What's more, you can connect the measuring head directly to a PC. Simply install our optional software, and your PC can function as the data processor.

User-defined evaluation formulas freely set up.
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: ΔE*ab within 0.6
CR-410: ΔE*ab within 0.8
Repeatability : within ΔE*ab 0.07

User calibration function ensures higher accuracy. (Settings can be configured with the data processor or via a PC with optional software installed.)

Color difference tolerance can be set to perform PASS/WARN/FAIL
(Settings can be configured with the data processor or via a PC with optional software installed.)

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. (When connected to data processor)

A simple, cellular-phone-type text entry system is provided for entering the names of color-difference target colors and calibration channels. (When connected to data processor)

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. (When connected to data processor)

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**

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

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

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3</td>
<td>a°/b° &gt; 0.3a°/L°</td>
</tr>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td></td>
</tr>
</tbody>
</table>

Note: The evaluation formula and grade indicated above are hypothetical examples used only to demonstrate the user index function.

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

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

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

The compact data processor features a built-in printer for superior mobility.
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 6 universally accepted color spaces. Select from 16 illuminants, and up to 40 indices to determine specific color and appearance properties, such as brightness, haze, whiteness, 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>Name</th>
<th>CR-A33a</th>
<th>CR-A33f</th>
<th>CR-A33c</th>
<th>CR-A33d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Glass Light-Projection Tube</td>
<td>Glass Light-Projection Tube</td>
<td>Glass Light-Projection Tube</td>
<td>Glass Light-Projection Tube</td>
</tr>
<tr>
<td>(with comes glass)</td>
<td>(with convex glass)</td>
<td>(no disc)</td>
<td>(with 20mm disc)</td>
<td>(includes CR-A33c)</td>
</tr>
<tr>
<td>Name</td>
<td>Pivoting Base CR-A12</td>
<td>Pivoting Base CR-A12</td>
<td>Pivoting Base CR-A12</td>
<td>Pivoting Base CR-A12</td>
</tr>
</tbody>
</table>

CR-400 Utility Software CR-S4w
Attaching the Pivoting Base CR-A12 to the Measuring head of the CR-400 ensures greater stability and accuracy in measurements Light-Projection Tube CR-A33c is also included.

System requirements

OS: Windows® XP Professional 32 bit, 64 bit
Windows® 7 Professional 32 bit, 64 bit
Windows® 8 Pro 32 bit, 64 bit
Windows® 8.1 Pro 32 bit, 64 bit
- The hardware of the computer system to be used must meet or exceed the greater of the recommended system requirements for the compatible OS 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: 450 MB or more of free space for installation
Display/Resolution: 1024 x 768 dots or more/16-bit colors or more

Other:
- DVD-ROM drive (required for installation); one free USB port for protection key; one free port (serial port or additional USB port) for connection to instrument when connecting via cable (or 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.

Display resolution: VGA (640x 480) or higher

System Diagram

Optional Accessories

- Shoulder Strap SS-01
- Roll Paper DP-A22 (five rolls)
- Protective Cap CR-A72
- Protective Cap CR-A104
- Granular-Materials Attachment CR-A50
- Glass Light-Projection Tube CR-A33a (with comes glass)
- Glass Light-Projection Tube CR-A33f (with convex glass)
- Light Project Tube CR-A33c (no disc)
- Light Project Tube CR-A33d (with 20mm disc)
- Pivoting Base CR-A12 (includes CR-A33c)
- White Calibration Plate CR-A43
- Color Tiles
- Glass Light-Projection Tube CR-A33e
- Hard Case CR-A103
- Standard accessories
- Optional accessories

Pivoting Base CR-A12 (For CR-400)

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.

SpectraMagic™ NX

Supports Windows® Vista/7/8/8.1

CR-A101
CR-400
CR-41

Supports Windows® Vista/7/8/8.1
Precise Color Communication.

CR-A50 illuminants, and up to 40 indices to determine specific color and appearance properties, such as brightness, haze, yellowness, opacity and strength. You can even configure up to 8 memories:

Windows® Vista Business 32 bit, 64 bit

Roll Paper (with convex glass) Glass Light-Projection Tube exceed the greater of the recommended system requirements CR-A33a

DP-A22

SS-01 (includes one Roll Paper)

Data Processor

Projection Tube CR-A33c (no disc) Pivoting Base NX

CR-A72 Battery (x4) AAA Size

Projection Tube

AC Adapter (Head-DP)

Materials such as textiles are flat during measurements. Glass Light-Projection Tube

Specifications

display Graph Observer

Color Color space

Δ C, D65

WI (CIE 1982, ASTM E313-73, Hunter, Berger, differences (excluding Munsell) Standard Observer

Δ E (Hunter), CMC E00

The specifications and appearance shown herein are subject to

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CR-A12 Pivoting Base

To take measurements or change the reference color data can be uploaded Bluetooth® adapter when using a USB Bluetooth®

USB port for protection key; one free port (serial port 5.01 or later. TM

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

spec

Measurement time 1 seconds.

Minimum measurement interval 3 seconds.

Pigmentary performance Approx. 80 measurements (when using batteries under company testing Konica Minolta’s conditions)

Repeatability

Within ±Δab ±0.07 standard deviation (when the white calibration plate is measured 30 times at intervals of 10 seconds).

Inter-instrument agreement

3E ab. within ±0.1, 3E ab. within ±0.8

Observer

2 Degrees CIE CIE1931 Standard Observers. (K, T, J, k)

Illuminant \( C, D_{65} \)

Display

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

Tolerance judgment

\( \Delta a^*, \Delta b^* \) Color difference tolerance (under diffuse reflection and elliptical tolerance) Only for display function

Colorimetric data

XYZ, \( Y \times \lambda \), Hunter Lab, L-C-H, Munsell (only illuminant C), CMF (a, b), CIE1994, Lab99, CN99, CIE2000, CIE WW-Tw (only illuminant Lw), WI ASTM E313 (only illuminant C), YI ASTM D1925 (only illuminant C), YI ASTM E131 (only illuminant C), User index (up to six can be registered from computer)

Languages

Operating keys: English LCD: English (default)

-LCD: German, French, Italian, Spanish, Japanese

Data memory

1,700 (measuring head and data processor save different data)

Data different target colors

100

Colorimetric data/

Calibration channels *1

19 channels (Ch00: white calibration, Ch01 to Ch19: user calibration)

Display

Dot-matrix LCD with back light (15 chars x 9 lines +1 line for icon display)

Interface

RS-232C compliant for data processor/PC

Power

4 AAA size alkaline or Ni-MH batteries, AC Adapter AC120V ~ 50-60Hz (for N.America and Japan), AC230V ~ 50-60Hz (for worldwide except N.America)

Size (W x H x D)

102 x 271 x 36 mm

Weight

Approx. 550g

(including 4 AAA size batteries and not including PC-232C cable)

Operation temperature/humidity range

0 to 40 °C, relative humidity 88% or less (at 35 °C with no condensation)

Other

LCD backlight OFF function (when ON, the backlight stays ON for 30 seconds after last key or measurement operation)

*1 indicates when connected to the Data Processor or when not set using the Data Processor or the optional accessories, that some of the functions are not available when the measuring head is not connected.

** indicates that part of all functions are not available when the measuring head is not connected.

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Konica Minolta Sensing Europe B.V.

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Beijing Office

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