



KONICA MINOLTA

CHROMA METER CR-400/410

25



CR-400

CR-410



The Standard in Measuring Color & Light

Giving Shape to Ideas

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 \varnothing 8mm

CR-410

Measurement area \varnothing 50mm



● 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 $L^*a^*b^*$.

(Settings can be configured via a PC with optional software installed.)

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.

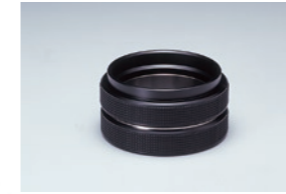
● Denotes a new feature not available with the previous CR-300/310 Series.

The CR-400/410 Series really shows its abilities in these applications.

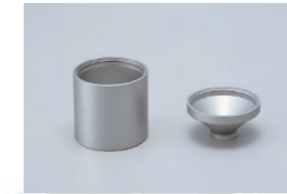
When measuring powders or pastes



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



Granular-Materials Attachment **CR-A50**



Glass Light-Projection Tube **CR-A33f** (For CR-400) **CR-A33e** (For CR-410)



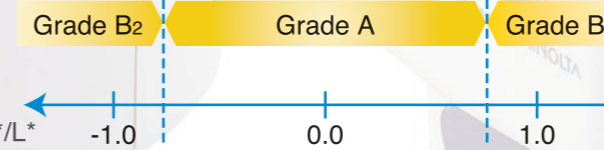
When color control is performed with a customized evaluation formula, instead of the versatile color system



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

User index function
-Example-

Evaluation of tomato ripeness= $a^*/b^*+0.3a^*/L^*$



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.



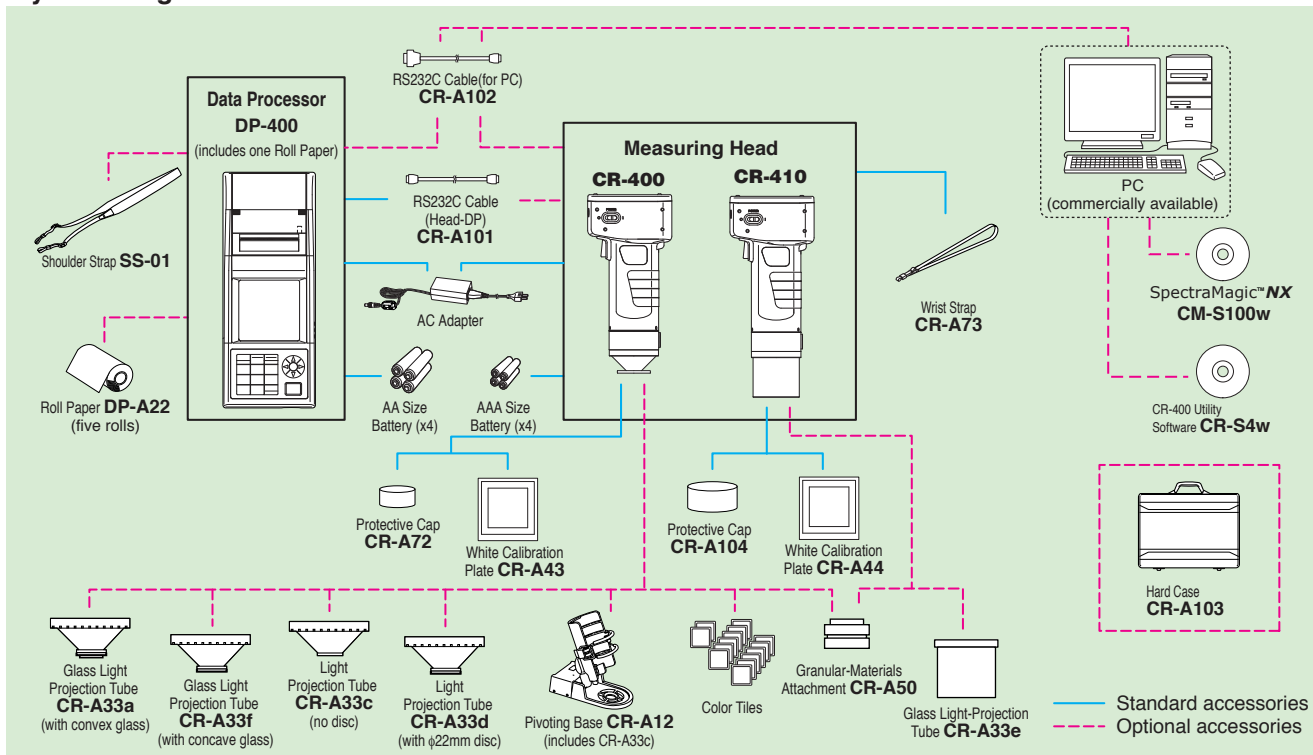
When measurements need to be printed on-site for labeling of samples



The compact data processor features a built-in printer for superior mobility.



System Diagram



Optional Accessories



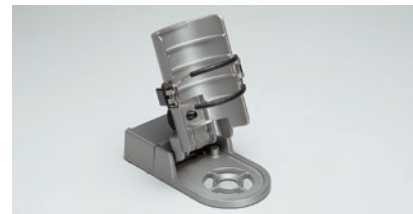
Granular-Materials Attachment **CR-A50**

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



Glass Light-Projection Tube **CR-A33f** (For CR-400) and **CR-A33e** (For CR-410)

Glass Light-Projection Tube CR-A33f and CR-A33e have a glass plate at the tip and can be used for measuring wet surfaces or for ensuring that materials such as textiles are flat during measurements.



Pivoting Base **CR-A12** (For CR-400)

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.

SpectraMagic™ NX

Supports Windows® Vista/7/8.1/10

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, haze, 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".

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.

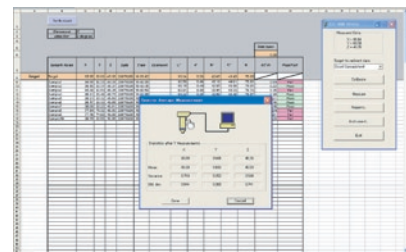
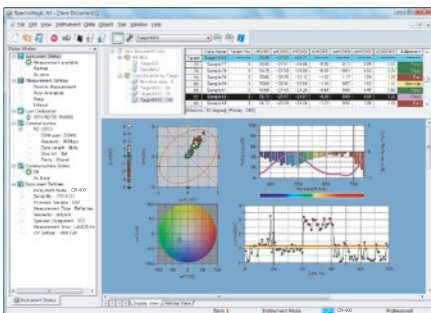
■ Measurement data can be transferred directly to a Microsoft Excel® file by means of the OLE function.

(Excel® 97/2000/2002/2007 is required to use the Excel® transfer function.)

■ Calibration data and color-difference reference color data can be uploaded or modified.

Specifications

Color space	L*a*b*, L*C*h, Lab99, LCh99, XYZ, Hunter Lab, Yxy, L*uv*, L*u'v', Munsell, and their color differences (excluding Munsell)
Index	WI (CIE 1982, ASTM E313-73, Hunter, Berger, Taube, Stensby, Ganz), Tint(Ganz), YI (ASTM D1925-70, ASTM E313-73, ASTM E313-96, DIN6167), WB (B ASTM E313-73), Standard Depth (ISO 105.A06), R _x R _y R _z , Gray scale(ISO 105.A05)
Color difference equation	ΔE* _{ab} (CIE 1976), ΔE* ₉₄ (CIE 1994), ΔE ₀₀ (CIE 2000), ΔE ₉₉ (DIN99), ΔE (Hunter), CMC (l:c), FMC-2, NBS 100, NBS 200
Observer	2 Standard Observer
Illuminant	C, Des
Graph display	L*a*b* absolute value, ΔL*a*b* (color difference distribution), Hunter Lab absolute value, Hunter ΔLab (color difference distribution), Trend chart and histogram of each color space and color difference equation, Pseudo Color display



System requirements

OS: Windows® Vista Business 32-bit, 64-bit
Windows® 7 Professional 32-bit, 64-bit
Windows® 8.1 Pro 32-bit, 64-bit
Windows® 10 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: 1,024 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.

System requirements

OS: Windows® 7 Professional 32-bit, 64-bit
Windows® 8.1 Pro 32-bit, 64-bit
Windows® 10 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® 166MHz or higher
Memory: 32MB or higher
Hard disk: 100MB or more free space
Display resolution: VGA (640×480) or higher

· Windows® is a trademark or registered trademark of Microsoft Corporation in the USA and other countries.
· Pentium® is a trademark of Intel Corporation in the USA and other countries.
· Bluetooth® is a registered trademark of Bluetooth SIG, Inc. and is used under license agreement.

