



CHROMA METER CR-400/410

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The essentials of imaging

www.minolta.com



CR-410

CR-400



Introducing the successor to the 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



Data Processor **DP-400**

● 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)

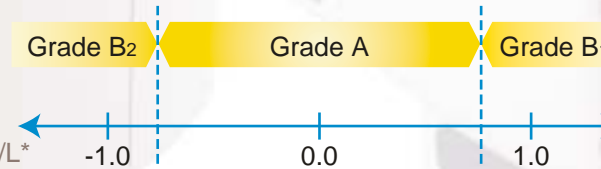


When color control is performed with a customized evaluation formula, instead of the versatile color system



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.



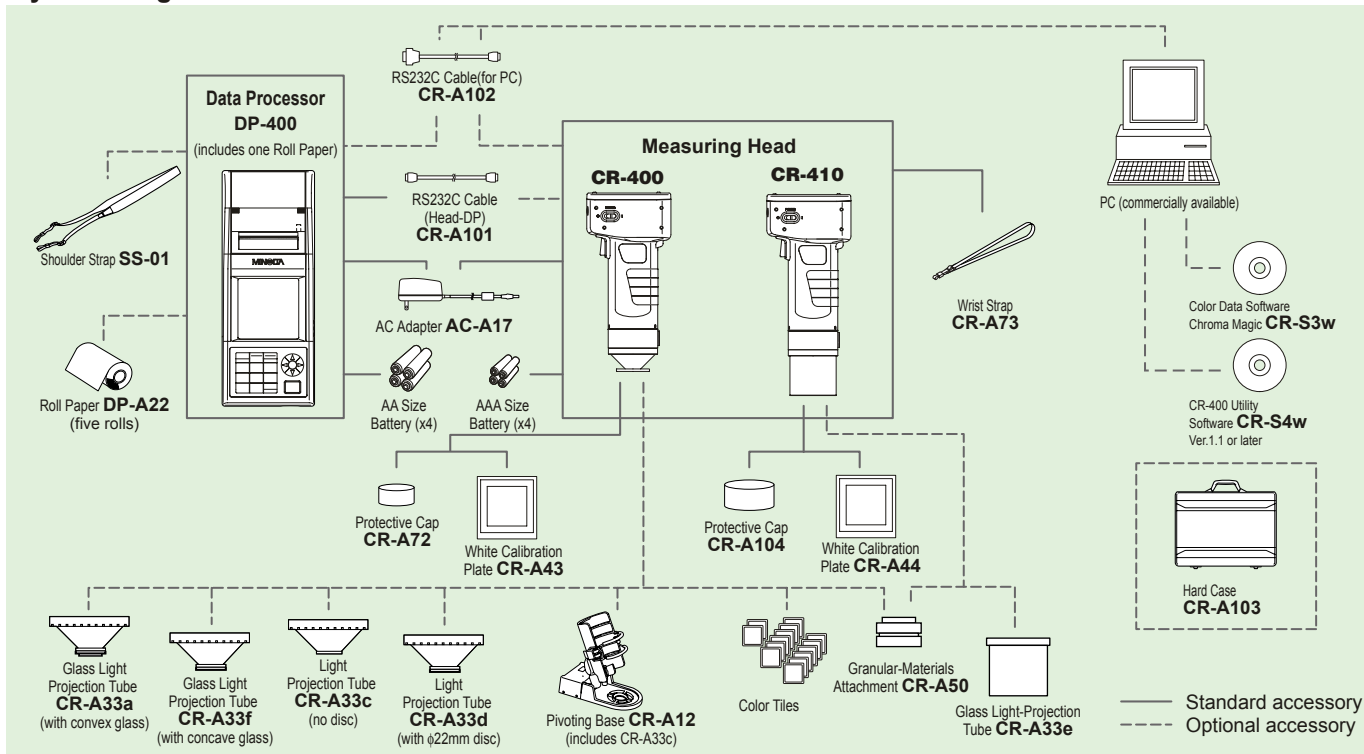
When measurements need to be printed on-site for labeling of samples



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)

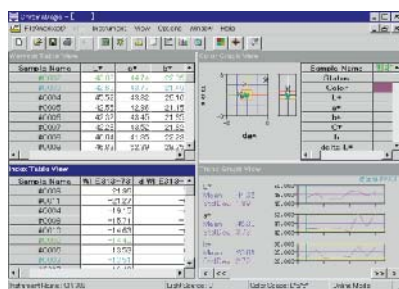
Attaching the Pivoting Base CR-A12 to the Measuring head of the CR-400 ensures greater stability and accuracy in measurements. Light-Projection Tube CR-A33c is also included.

Color Data Software **CR-S3w ChromaMagic** Ver. 1.1 or later

(Not Available in USA and Latin America)

- Enables comprehensive color analysis from incoming raw materials through all phases of the manufacturing and production processes.
- Supports the eight universally accepted color spaces, and provides easy-to-understand displays of color control data.
- Improves color control efficiency and reduces costs.

- Enables accurate and quick display of pass/fail results and alarm levels.
- Displays trend graph and statistical compilation of measured data.
- Easily exports data to spreadsheet applications.
- Various graphs and data display windows can be viewed at one time.
- Built-in color space and color indices offer complete solutions for a wide range of applications and industries.



System requirements

OS	Windows® 95/98/2000/XP, WindowsNT®4.0
CPU	Pentium 166MHz or higher
Memory	32MB or more
Hard disk	100MB or more free space
Display resolution	SVGA (800×600) or higher
Parallel port or USB port	to connect protecting key

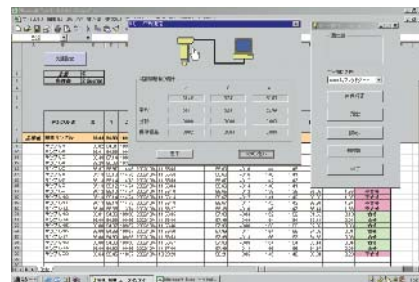
Notes for users of Windows®95 and Windows NT® 4.0

- (1) The protect key for the USB port connection cannot be used.
- (2) When using Windows®95, you must use Internet Explorer Version4.0 or higher.
- (3) When using Windows NT® 4.0, you must use SP4 or higher, or Internet Explorer Version 4.0 or higher.

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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 is required to use the Excel® transfer function.)
- Calibration data and color-difference reference color data can be uploaded or modified.



System requirements

OS	Windows® 98/2000/XP
CPU	Pentium 166MHz or higher
Memory	32MB or higher
Hard disk	100MB or more free space
Display resolution	SVGA (640×480) or higher

CIE L*a*b*
CIE L*C*h
CMC
CIE L*u*v*
HUNTER Lab
CIE94
XYZ/Yxy
FMC2
Dominant WL
Excitation Purity
NBS 100
NBS 200
Rx
Rx Delta
Ry
Ry Delta
Rz
Rz Delta
Strength:Tristimulus(%)
Strength:Tristimulus X(%)
Strength:Tristimulus Y(%)
Strength:Tristimulus Z(%)
Tint(ΔASTM E313-1996)
Tint(ΔASTM E313-1996) Delta

Tint(CIE)
Tint(CIE) Delta
WI(ΔASTM E313-1973)
WI(ΔASTM E313-1973) Delta
WI(ΔASTM E313-1996)
WI(ΔASTM E313-1996) Delta
WI(Berger)
WI(Berger) Delta
WI(CIE)
WI(CIE) Delta
WI(Hunter)
WI(Hunter) Delta
WI(Stensby)
WI(Stensby) Delta
WI(Taube)
WI(Taube) Delta
YI(ΔASTM D1925)
YI(ΔASTM D1925) Delta
YI(ΔASTM E313-1973)
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YI(DIN 6167)
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