

CR-410

PRODUCT SPECS:

What are the specs for the product?

Name	Chroma Meters Measuring Head	
Model	CR-400 Head	CR-410 Head
Illuminating/viewing system	d/0 (diffuse illumination/0° viewing angle; specular component included) (compliant with JIS Z 8722; including regular reflectance)	Wide-area illumination/0° viewing angle; specular component included)
Detector	Silicon photocells (6)	
Display range	Y: 0.01% to 160.00% (reflectance)	
Light source	Pulsed xenon lamp	
Measurement time	1 sec.	
Minimum measurement interval	3 sec.	
Battery performance	Approx. 800 measurements (when using batteries under Konica Minolta's testing conditions)	
Measurement/illumination area	Φ8mm/ Φ11mm	Φ50mm/ Φ53mm
Repeatability	Within ΔE^*_{ab} 0.07 standard deviation (when the white calibration plate is measured 30 times at intervals of 10 seconds)	
Inter-instrument agreement	ΔE^*_{ab} : Within 0.6 Average of 12 BCRA Series II colors	ΔE^*_{ab} : Within 0.8 Average of 12 BCRA Series II colors
Observer	2 degree; Closely matches CIE 1931 Standard Observer ($\bar{x}_2\lambda, \bar{y}_\lambda, \bar{z}_\lambda$)	

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Illuminant	*C, D65	
Display	*Chroma values; color difference values; PASS/WARN/FAIL display	
Tolerance judgment	* Color difference tolerance (box tolerance and elliptical tolerance)	
Color space/colorimetric data	* XYZ, Yxy, L*a*b*, Hunter Lab, L*C*h, Munsell (Illuminant C only), CMC (l:c), CIE1994, Lab99, LCh99, CIE2000, CIE WI/Tw (Illuminant D65 only), WI ASTM E313 (Illuminant C only), YI ASTM D1925 (Illuminant C only), YI ASTM E313 (Illuminant C only), User index (Up to 6 can be registered from computer)	
Languages	Operating keys: English * LCD: English (default), German, French, Italian, Spanish, Japanese	
Storable data sets	1,000 (Measuring head and data processor save different data)	
Color-difference target colors	100	
Calibration channels	* 20 channels (ch00: White calibration; ch01 to ch19: User calibration)	
Display	Dot-matrix LCD with backlight (15 chars × 9 lines + 1 line for icon display)	
Interface	RS-232 compliant (for data processor/PC) * Baud rate: 4,800, 9,600, 19,200 (bps); Set at 9600 when shipped from factory	
Power source	Four AAA size alkaline or Ni-MH batteries AC Adapter AC-A17 AC120V 50-60Hz 0.4A (for N. America and Japan) AC230V 50-60Hz 0.4A (for worldwide except N. America)	
Dimensions (W × H × D) mm	102 × 244 × 63mm	
Weight	Approximately 550 g (including 4 AAA size batteries and not including RS-232C cable)	Approximately 570g (including 4 AAA size batteries and not including RS-232C cable)
Operating temperature/humidity	0 to 40°C, relative humidity 85% or less with no condensation	

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range		
Storage temperature/humidity range	-20 to 40°C, relative humidity 85% or less with no condensation	
Other	LCD backlight ON/OFF function (When on, backlight stays ON for 30 seconds after last key or measurement operation)	
Standard accessories	White Calibration Plate CR-A43; Protective Cap CR-A72; Wrist Strap CR-A73; AC Adapter AC-A17; 4 AAA size batteries	White Calibration Plate CR-A44; Protective Cap CR-A72; Wrist Strap CR-A73; AC Adapter AC-A17; 4 AAA size batteries
Optional accessories	Hard Case CR-A103; RS-232C Cable CR-A102 (for PC); Granular Materials Attachment CR-A50; CR-400 Utility Software CR-S4w; Color Data Software SpectraMagic NX CM-S100w ; Glass Light-Projection Tube CR-A33a/f; Light-Projection Tube CR-A33c/d; Pivoting Base CR-A12; Color Tiles	Hard Case CR-A103; RS-232C Cable CR-A102 (for PC); Granular Materials Attachment CR-A50; CR-400 Utility Software CR-S4w; Color Data Software SpectraMagic NX CM-S100w ; Glass Light-Projection Tube CR-A33e

The "*" mark indicates functions available only when the Data Processor is connected or when the required settings have been made.

Name	Data Processor
Model	DP-400
Display range	Y: 0.01% to 160.00% (reflectance)
Measurement time	* 1 sec.
Minimum measurement interval	* 3 sec.
Battery performance	Approx. 800 measurements (when using batteries under Konica Minolta's testing conditions)

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Illuminant	C, D65
Display	Chroma values; color difference values; color difference graphs; PASS/WARN/FAIL display
Tolerance judgment	* Color-difference tolerance (box tolerance and elliptical tolerance) Only for display function
Color space/colorimetric data	* XYZ, Yxy, L*a*b*, Hunter Lab, L*C*h, Munsell (Illuminant C only), CMC (l:c), CIE1994, Lab99, LCh99, CIE2000, CIE WI/Tw (Illuminant D65 only), WI ASTM E313 (Illuminant C only), YI ASTM D1925 (Illuminant C only), YI ASTM E313 (Illuminant C only), User index (Up to 6 registered in the measuring head can be used)
Languages	Operating keys: English * LCD: English (default), German, French, Italian, Spanish, Japanese
Storable data sets	Max. 2,000 pieces of data (divided into 100 pages) Deletion and Undoing of selected stored data (one or all data) are possible
Color-difference target colors	* Only for the operating function (100 pieces of data when the measuring head is connected; input of measurement values or numeric) (Independent from page function)
Calibration channels	* Only for the operating function (20 channels when the measuring head is connected) (Channel 00: White calibration; Channels 01 through 19: User calibration)
Page function	100 pages
Display	Dot-matrix LCD with backlight (16 characters x 9 lines + 1 line for icon display) Contrast adjustment
Printer	384-dot line thermal printer (can also print graphs); Automatic printing for each measurement (can be set not to print)
Statistical function	Maximum, minimum, average, and standard deviation
Automatic measurement	* Date and time display: Year, month, day, hour, minute Timer: 3 seconds to 99 minutes (Some measurement modes require more than 3 seconds)
Interface	RS-232C compliant Baud rate (bps): 19,200 fixed (when connected to PC); when measuring head is connected, baud rate is automatically set to that of the measuring head.
Power source	Four AA-size alkaline or Ni-MH batteries AC Adapter AC-A17 AC120V 50-60Hz 0.4A (for N. America and Japan) AC230V 50-60Hz 0.4A (for worldwide except N. America)
Dimensions (W × H × D) mm	102 × 244 × 63mm
Weight	Approx. 600g (not including batteries and paper)
Operating temperature/humidity	0 to 40°C, relative humidity 85% or less with no condensation

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range	
Storage temperature/humidity range	-20 to 40°C, relative humidity 85% or less with no condensation
Other specifications	* User calibration function (multi-calibration/manual calibration); Measurements for automatic averaging function; Print on/off function; CR-400 measurement data import function; All color space print on/off function; Data protection on/off function; Backlight on/off function; Buzzer on/off function; Display color limit function; Remote mode (stored data output); Character input function (alphanumeric)
Standard accessories	Roll paper (1); RS-232C Cable CR-A101 (Head-DP); 4 AA-size batteries
Optional accessories	Shoulder Strap SS-01; Hard Case CR-A103; Roll Paper DP-A22 (5 rolls); RS-232C Cable CR-A102 (for PC); CR-400 Utility Software CR-S4w; Color Data Software SpectraMagic NX CM-S100w

The "*" mark indicates functions that can be used only when the measuring head is connected.