KONICA MINOLTA

Chroma Meter CS-150/CS-160

New models with higher accuracy and comfort of use !

Chroma Meter CS-150 measures color and luminance with 1° measuring angle across a 0.01 to 999,900 cd/m² range.

Chroma Meter CS-160 measures color and luminance with 1/3° measuring angle across a 0.1 to 9,999,000 cd/m² range.

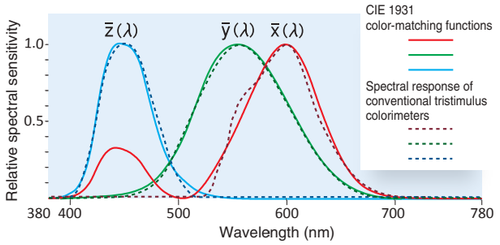
The Standard in Measuring Color & Light

Giving Shape to Ideas

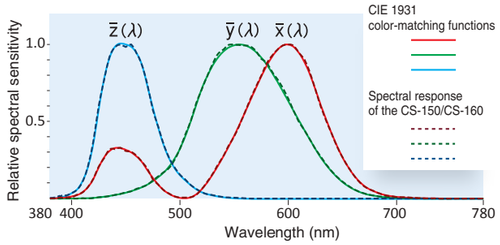
1 High accuracy

The CS-150 and CS-160 are highly accurate tristimulus colorimeters equipped with newly designed sensors with spectral responses that more closely match the CIE 1931 color-matching functions representing the sensitivity of the human eye to provide measurement results that better correlate with visual evaluation.

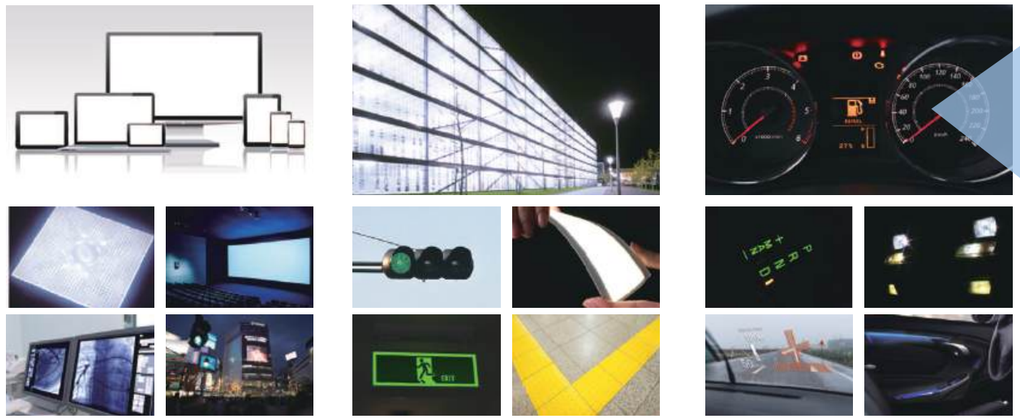
* The $\bar{x}(\lambda)$ CIE 1931 color-matching function has two peaks, a small one in the short-wavelength region (often labeled $\bar{x}_1(\lambda)$) and a larger one in the long-wavelength region (often labeled $\bar{x}_2(\lambda)$). In conventional tristimulus colorimeters, the $\bar{x}(\lambda)$ sensor has a spectral response only for the long-wavelength region $\bar{x}_2(\lambda)$, and the data for the short-wavelength region $\bar{x}_1(\lambda)$is calculated from the $\bar{z}(\lambda)$ sensor. But the CS-150 and CS-160 have spectral responses that more closely follows the CIE 1931 color-matching functions, and directly measures using the $\bar{x}(\lambda)$ response in both the short-wavelength region $\bar{x}_1(\lambda)$ and long-wavelength region $\bar{x}_2(\lambda)$, so the resulting instrument spectral response more closely matches the CIE 1931 color-matching functions for the human eye.



CIE 1931 color-matching functions and spectral response of a conventional tristimulus colorimeter



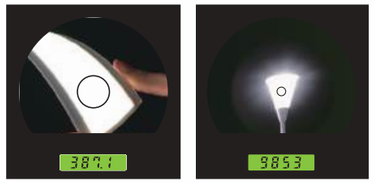
CIE 1931 color-matching functions and spectral response of the CS-150/CS-160



2 Incredibly easy to use

Bright viewfinder makes it easy to target desired areas of measurement subjects.

CS-150 / CS-160



Automatic mode automatically sets the measurement time according to the brightness of the target.

Easy-to-hold grip.
Smooth focusing during measurement.

Backlit display is easy to read even in dark places, and is automatically switched off during measurements.

3 Numerous optional accessories

Close-up lenses
Lineup of 4 lenses (Nos. 153, 135, 122, and 110) enable measurements of tiny areas.

Measuring distance and measuring area (Units: mm)

(Measuring angle)	Minimum measuring area 1/3°	Minimum measuring area 1°	Maximum measuring area 1/3°	Maximum measuring area 1°	Minimum measuring distance	Maximum measuring distance
None	4.5	14.4	∞	∞	1,012	∞
No.153	2.5	8	5.9	18.8	627	1,219
No.135	1.6	5.2	2.7	8.6	455	625
No.122	1.0	3.2	1.3	4.3	331	378
No.110	0.4	1.3	0.5	1.5	213	215

***Measuring distance is the distance from the measuring distance reference plane.**

C-mount CCD camera adapter enables the viewfinder to be monitored from a distance.

This adapter allows an industrial C-mount CCD camera to be attached to the viewfinder so that measurements including the view through the viewfinder can be monitored from a distance or recorded.
* CCD camera not included.

Illuminance adapter enables illuminance to also be measured.

Measurable illuminance range:
- CS-150:
  Corresponds to 0.15 - 999,900 lx
- CS-160:
  Corresponds to 1.5 - 9,999,000 lx

* This illuminance measuring method does not conform to DIN or JIS standards.

4 Easy-to-understand utility software

The included software allows the meters to be controlled from a PC. Repeated interval measurements can be conducted for a specified number of times at specified intervals, measurement data can be displayed on graphs or lists, and data can be sent to spreadsheet applications.

Supported OS: Windows® 7 Professional 32 bit, 64 bit
Windows® 8.1 Pro 32 bit, 64 bit
Windows® 10 Pro 32 bit, 64 bit

Features

Meter control	1-shot measurement Continuous measurement Interval measurement: 2 to 5,000 times at 3 to 3,600 sec. intervals (in 1-sec. increments) Instrument trigger measurement Setting of meter settings Export of data stored in meter to PC User calibration
Target data	Setting of target data Download of target data from PC to meter
Data list	List displays and delete/copy/paste of measurement and target data
External I/O	Text input; Saving in CSV format; copying of list to/from clipboard

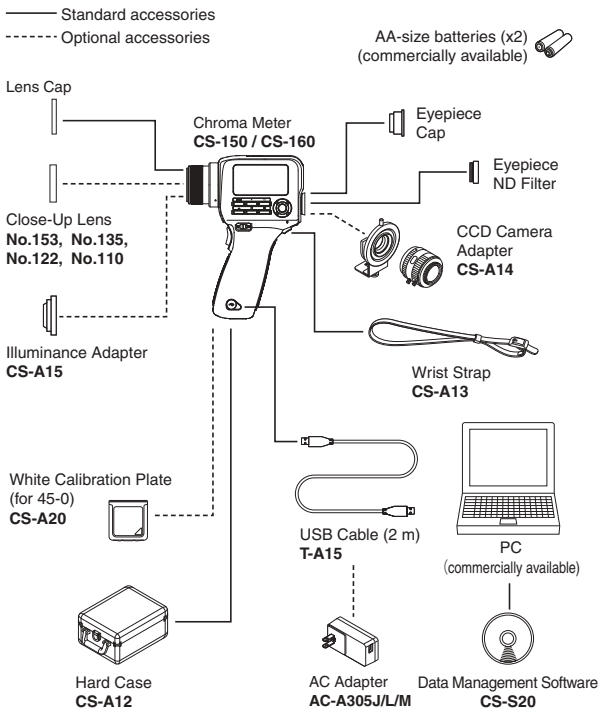
Measurement subjects

Main Specifications

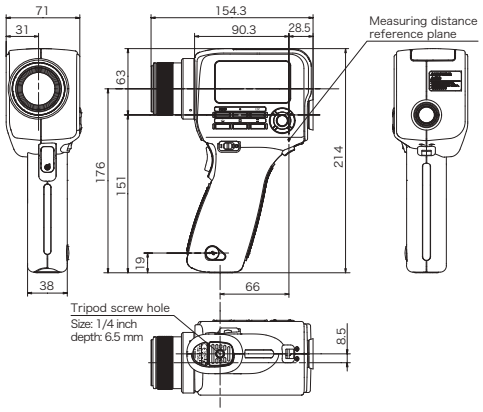
Model	CS-150	CS-160
Measuring angle	1°	1/3°
Optical system	SLR viewing system, f = 85 mm F2.8	
Angle of view	9° (with diopter adjustment)	
Relative spectral responsivity	Closely matches CIE 1931 color matching function ($\bar{x}$ (λ), $\bar{y}$ (λ), $\bar{z}$ (λ))	
Minimum measuring area(diameter)	14.4 mm (1.3 mm when close-up lens is used)	4.5 mm (0.4 mm when close-up lens is used)
Minimum measuring distance (From the measuring distance reference plane)	1,012 mm (213 mm when close-up lens is used)	
Color notations	(Absolute value) L_v, x, y (Y, x, y), L_v, u', v', L_v, T_{cp}, duv, XYZ, L_v, λ_d, P_e	
Measurement mode	(Luminance) Instantaneous value, maximum/minimum value, luminance difference (Δ)/luminance ratio (%) (Chromaticity) Instantaneous value, chromaticity difference (Δ)	
Measurement time	Auto: 0.7 to 4.3 seconds Manual: 0.7 to 7.1 seconds	
Luminance unit	cd/m² or fL	
Luminance range	0.01 to 999,900 cd/m²	0.1 to 9,999,000 cd/m²
Accuracy*1	(Luminance) ±2% ± 1 digit (Chromaticity) ±0.004 (5 cd/m² or more)	(Luminance) ±2% ± 1 digit (Chromaticity) ±0.004 (50 cd/m² or more)
Repeatability*1	(Luminance) 0.2% + 1 digit (Chromaticity) 0.001 (10 cd/m² or more) (Chromaticity) 0.002 (5 cd/m² or more)	(Luminance) 0.2% + 1 digit (Chromaticity) 0.001 (100 cd/m² or more) (Chromaticity) 0.002 (50 cd/m² or more)
Calibration standard	Konica Minolta standard/user-specified standard switchable	
User calibration channels	10 channels	
Data memory	1,000 data	
External display (Number of significant digits)	(Luminance) 4 digits (Max.) (Chromaticity) 4 digits	
Internal display (Number of significant digits)	(Luminance) 4 digits (Max.)	
Interface	USB2.0	
Power	AA-size batteries (x2), USB bus power, or optional AC adapter	
Current consumption	When viewfinder display is lit: 70 mA average	
Operation temperature/ humidity range	0 to 40°C, relative humidity of 85% or less (at 35°C)	
Storage temperature/ humidity range	0 to 45°C, relative humidity of 85% or less (at 35°C)	
Size	71×214×154 mm	
Weight	850 g (without batteries)	
Standard accessories	Lens Cap Eyepiece ND Filter Eyepiece Cap AA-size batteries (x2) Hard Case CS-A12 Wrist Strap CS-A13 USB Cable T-A15 Data Management Software CS-S20	
Optional accessories	Close-Up Lens No. 153/135/122/110 CCD Camera Adapter CS-A14 Illuminance Adapter CS-A15 White Calibration Plate (for 45-0) CS-A20 AC Adapter AC-A305J/L/M	

*1 Standard Illuminant A; Standard measurement distance; Measurement time setting: Auto

System Diagram



Dimensions (Units:mm)



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SAFETY PRECAUTIONS

For correct use and for your safety, be sure to read the instruction manual before using the instrument.

- Be sure to use the specified power supply voltage. Improper connection may cause a fire or electric shock.

ISO Certifications of KONICA MINOLTA, Inc., Sakai Site

ISO 9001 JQA-QMA15888 Design, development, manufacture/ manufacturing management, calibration, and service of measuring instruments

ISO 14001 JQA-E-80027 Design, development, manufacture, service and sales of measuring instruments

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