



KONICA MINOLTA

# NEW SPECTROPHOTOMETER CM-2300d

**The CM-2300d is a portable integrating sphere spectrophotometer designed for versatility in various applications.**

Ideal for color control of plastics and resins of electronic products, car paints and textiles, leather products, etc.

- Easy-to-carry, compact, lightweight and stylish body 670g (without batteries)
- Memory for a maximum of 1,700 data



- High-accuracy sensor  
Measures at 10nm intervals for Excellent repeatability.

- Data compatible with CM-2600d (ø8) and CM-2500d

## Simultaneous measurement of SCI (specular component included) and SCE (specular component excluded).

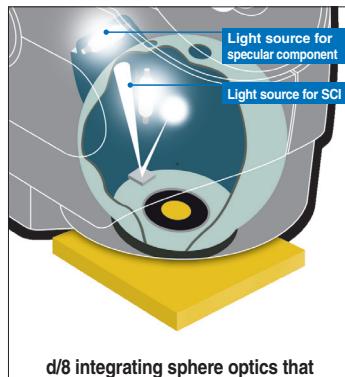
Simultaneous measurement of SCI and SCE displays the data on the LCD in only 1.5 seconds. Unlike conventional spectrophotometers, there is no need to mechanically switch between SCI and SCE mode. This improves working efficiency and provides stable measured data since the measurement area does not shift when the mode is switched. And Numerical Gloss Control allows Relative Gloss Value to be displayed.



For plastics, paints, resins and consumer products

• SCI is a method in which measurements are taken with the specular reflection included. For this reason, it minimizes influences of the surface condition of a sample, and is especially suitable for color quality control and Computer Color Matching.

• SCE is a method in which measurements are taken excluding the specular reflection. This type of measurement provides results similar to those observed visually.



d/8 integrating sphere optics that conform to industry standards

## Easy-to-operation and large LCD display

Sample data screen



Color difference values and absolute values



Spectral reflectance

## Allows measurement in any position.

Use of Xenon lamp allows the instrument to be placed in any position at the sample surface.

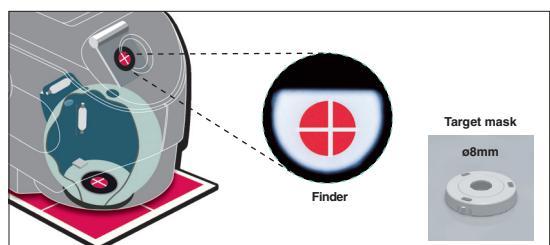


## Measures the target with high accuracy. Easy-to-carry stylish body with an illuminated viewfinder.

The easy-to-carry body with the illuminated viewfinder enables the user to position the instrument on the target quickly and accurately.



For pharmaceuticals, cosmetics, printing, building materials, textiles, food etc.

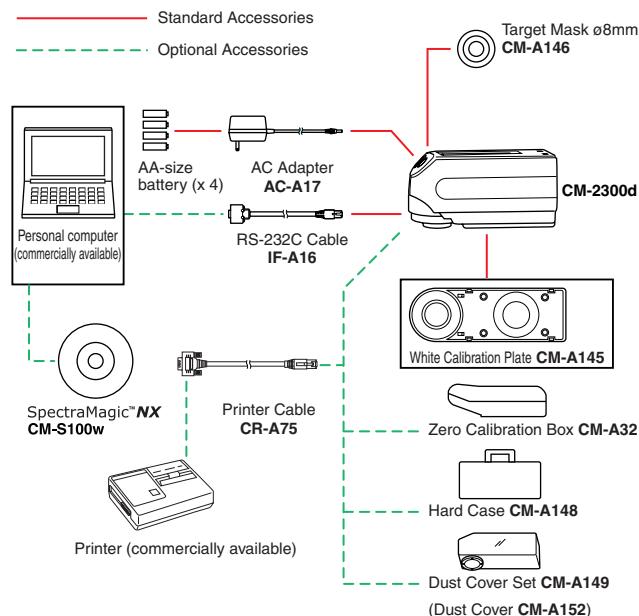


The essentials of imaging

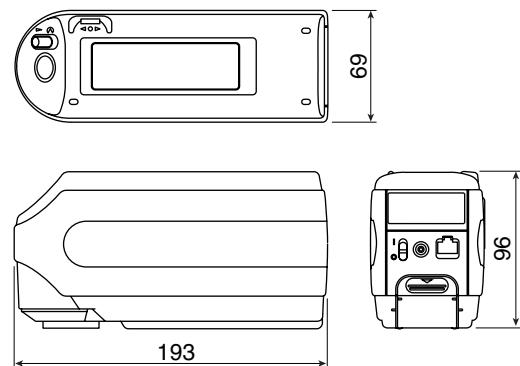
## Specifications

Model	CM-2300d
Illuminating/viewing system	d/8 (diffuse illumination, 8-degree viewing angle), equipped with simultaneous measurement (not switched mechanically) of SCI (specular component included)/SCE (specular component excluded). (Conforms to CIE No.15, ISO 7724/1, ASTM E1164, DIN 5033 Teil7, JIS Z8722 Condition c, standard.)
Size of integrating sphere	ø52mm
Detector	Silicon photodiode array (dual 40 elements)
Spectral separation device	Diffraction grating
Wavelength range	360nm to 740nm
Wavelength pitch	10nm
Half bandwidth	Approx. 10nm
Reflectance range	0 to 175%, Display resolution: 0.01%
Light sources	2 pulsed xenon lamps
Measurement time	Approx. 1.5 seconds
Minimum measurement interval	3 seconds (at 23°C)
Battery performance	Approx. 1000 times at 10-second intervals (when alkaline batteries used) (at 23°C)
Measurement/illumination area	ø8mm/ø11mm
Repeatability	Spectral Reflectance: Standard deviation within 0.2% (360 to 380nm: Standard deviation within 0.4%) Chromaticity Value: Standard deviation $\Delta E^*ab$ within 0.08 (When a White Calibration Plate is measured 30 times at 10-second intervals after white calibration)
Inter instrument agreement	$\Delta E^*ab$ within 0.4 (SCI) (Based on the average of 12 BCRA Series II color tiles, compared to values measured with master body at 23°C)
Language modes	English/Chinese
Measurement mode	Single/averaging (auto mode: 1 to 8 times/manual mode)
Interface	Conforms to RS-232C
Observer	2/10 degrees
Observation illuminant	A, C, D <sub>50</sub> , D <sub>65</sub> , F <sub>2</sub> , F <sub>6</sub> , F <sub>7</sub> , F <sub>8</sub> , F <sub>10</sub> , F <sub>11</sub> , F <sub>12</sub> (simultaneous evaluation is possible using two illuminant)
Display	Spectral value/graph, colorimetric value, color difference value, PASS/FAIL result, relative gloss value
Color space/colorimetric data	L <sup>*</sup> a <sup>*</sup> b <sup>*</sup> , L <sup>*</sup> C <sup>*</sup> h, Yxy, XYZ, MI, $\Delta E^*ab$ , CMC (1:1), CMC (2:1), CIE94, CIE DE2000, WI (ASTM E313), YI (ASTM D1925)
Storable data sets	1,700 (each SCI/SCE pair constitutes a single data set)
Tolerance judgment	Tolerance for color difference (1 set of tolerances can be set.)
Power	AA-size battery (x 4), AC adapter
Size	69 (W) x 96 (H) x 193 (D) mm
Weight	approx. 670g (including "Measuring Base"/excluding batteries)
Operating temperature/humidity range	5°C to 40°C, relative humidity 80% or less (at 35°C) with no condensation
Storage temperature/humidity range	0°C to 45°C, relative humidity 80% or less (at 35°C) with no condensation
Standard accessories	White Calibration Plate: CM-A145 Target Mask ø8mm: CM-A146 RS-232C cable (D-sub 9-pin, for IBM, PC/AT): IF-A16 AC adapter: AC-A17 AA (R6) alkaline battery x 4
Optional accessories	Zero Calibration Box: CM-A32 Hard Case: CM-A148 Dust Cover Set: CM-A149 Dust Cover: CM-A152 Color Data Software "SpectraMagic NX": CM-S100w Printer cable (D-sub 9-pin, for serial connection): CR-A75

## System Configuration



## Dimensions (Units:mm) CM-2300d



\* The specifications and drawings given here are subject to change without prior notice.

## SAFETY PRECAUTIONS

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

- Always connect the instrument to the specified power supply voltage. Improper connection may cause a fire or electric shock.
- Be sure to use the specified batteries. Using improper batteries may cause a fire or electric shock.



Certificate No: YKA 0907154  
Registration Date: March 3, 1995



Certificate No: JQA-E-90027  
Registration Date: March 12, 1997

KONICA MINOLTA SENSING, INC.