![Konica Minolta logo] **KONICA MINOLTA**

SPECTROPHOTOMETER
CM-2600d

Portable, Compact, Easy to Use
Performs Like a Desktop Spectrophotometer

World's first portable spectrophotometer equipped with automatic UV adjustment function.
Advanced Numerical UV Control dramatically reduces evaluation time.

ISO 9001
CERTIFIED
ISO 14001

The essentials of imaging

The CM-2600d is a portable integrating sphere spectrophotometer designed for versatility in various applications.

Simultaneous measurement of SCI (specular component included) and SCE (specular component excluded). Advanced Numerical Gloss Control.

Simultaneous measurement of SCI and SCE displays data on the LCD in 1.5 seconds. Unlike conventional spectrophotometers, there is no need to 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 also Relativity Gloss Value can be displayed by using Numerical Gloss Control.

Relativity Gloss Value
The LCD specifications are subject to change without prior notice.

- 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. For this reason, it provides measurement results similar to those observed by the human eye.

Light source for evaluation of specular component
Light source for SCI

For plastics, paints, resins and consumer products

High reliability and long life. Maintenance-free design.

The number of moving parts used in the instrument is minimized through the introduction of numerical control technology. The CM-2600d can be used with confidence, since it has been developed, manufactured and calibrated to meet ISO 9001 requirements.

* World's first portable spectrophotometer equipped with instantaneous UV adjustment function. UV evaluation time has been reduced revolutionarily due to the introduction of advanced Numerical UV Control.

Light sources including and excluding UV component flash sequentially to provide sample data taken with UV-included energy as well as UV-excluded energy (UV400nm cutoff filter)

Example of data taken with UV-excluded energy   Example of data taken after UV adjustment

* Since the instrument has a built-in instantaneous

UV adjustment function, data can be easily taken using the desired light source (e.g. D65, D50, C). UV calibration can be performed simply by measuring a standard with known fluorescent values under the desired light source.
Once the UV calibration is completed, sample data can be taken by measuring the sample under the desired light source. Since the conventional UV adjustment that requires the UV cutoff filter to be moved is not necessary, measurement time can be reduced drastically.
(Note on UV-Adjustment : Numerical UV-calibration requires for the adjustment calculation SpectraMagic.)

UV included
UV excluded

For textile, paper, fluorescent and consumer products

Allows measurement in any position. Compact, lightweight with an easy-to-operate navigation wheel and large LCD display.

The battery-powered small, compact body allows the instrument to be placed in any position at the sample surface.
The large LCD reverse video display provides easy reading, irrespective of which hand it is held in.
Using your finger, the navigation wheel allows simple and user-friendly operation.
(◁○▷ Turn) (◁○▷ Push)

For paints, plastics, automobiles, ceramics, architectural interiors, textile, paper, food etc.

Promotes accurate color communication. Conforms to all widely accepted industry standards and allows measurements in all commonly used color spaces.

The optics use an integrating sphere to provide diffuse illumination/8-degree viewing system.
The CM-2600d conforms to all widely accepted industry standards including ISO, JIS, DIN, CIE and ASTM, and generates measurements in color spaces such as L*a*b*, Yxy, Munsell and CMC.

L*a*b*   cMc   Yxy   WI   YI   Brightness
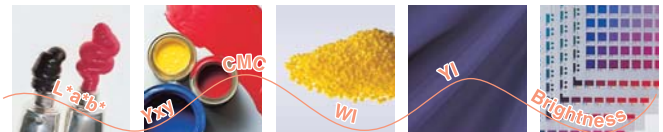
In various applications

Expanded LCD display (64 x 240 dots)
Displays a large quantity of information
(simultaneous display of SCI and SCE data etc.)

High-accuracy sensor
Measures at 10nm intervals for the full wavelength range. Excellent repeatability

Illuminated viewfinder

Numerical Gloss Control

Numerical UV Control

d/8 integrating sphere optics that conform to industry standards

Easy-to-carry, compact and lightweight
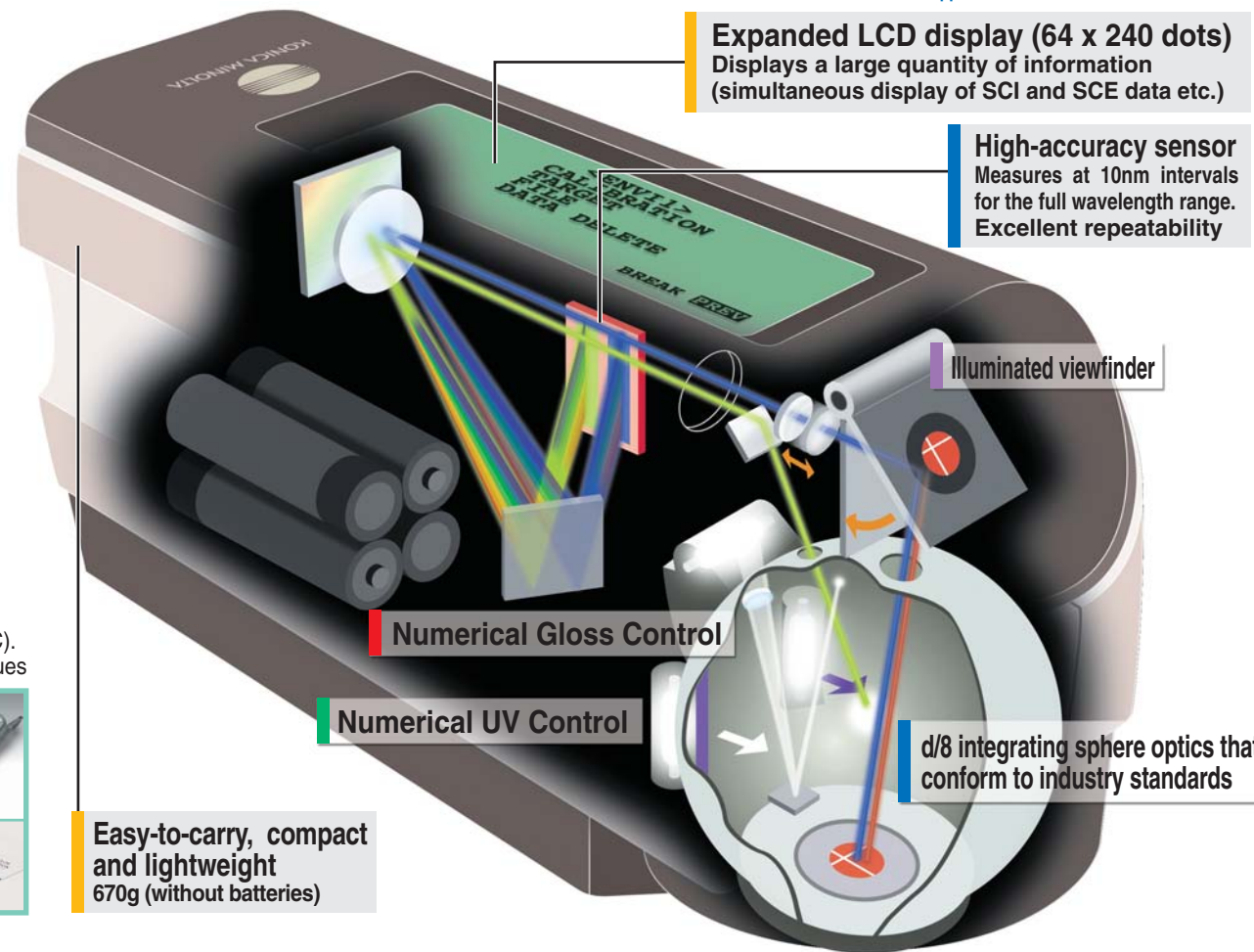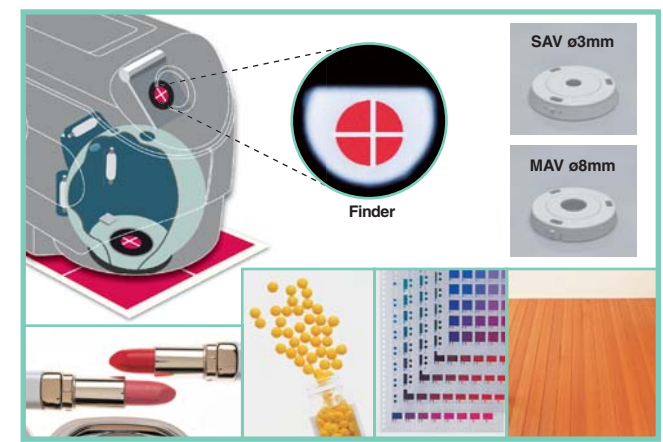670g (without batteries)

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

The instrument is portable and it allows measurements to be taken using two different areas of view (ø8mm and ø3mm). The user can choose the most suitable measurement area for the target. The lightweight, easy-to-carry body with the illuminated viewfinder enables the user to position the instrument on the target quickly and accurately.

SAV ø3mm
MAV ø8mm
Finder

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

Consistent color communication. Since automatic setting of color difference tolerances is possible, accurate Pass/Fail information can be given to customers and manufacturers.
Enables color analysis from various viewpoints. Detailed, easy-to-see spectral graph.
Exports data to spreadsheet applications.
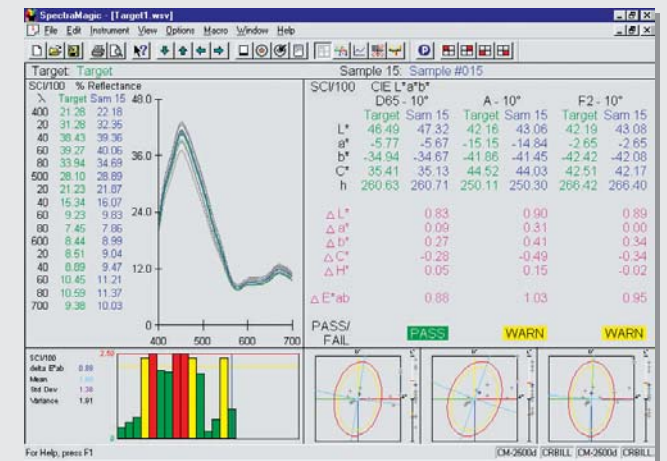
Procedures are displayed in the form of messages, to eliminate in-process mistakes. Task function by CM-2600d and SpectraMagic.

Measurement procedure can be downloaded to the CM-2600d from **SpectraMagic**.
Since standard color difference for each part can be entered, human setting errors can be prevented.

Display example
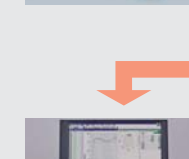JOB1
MEAS.1
Measure the door of the car.

The LCD specifications are subject to change without prior notice.

CM-2600 displays "Measure the car door".
CM-2600 displays "Measure the car seat".
CM-2600 displays "Measure the inside of the car door".

By connecting the CM-2600d to the computer via **SpectraMagic**, data can be downloaded for color quality control analysis.
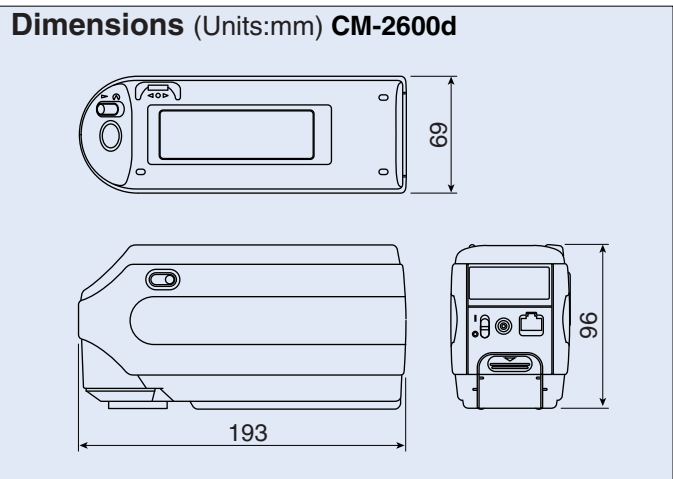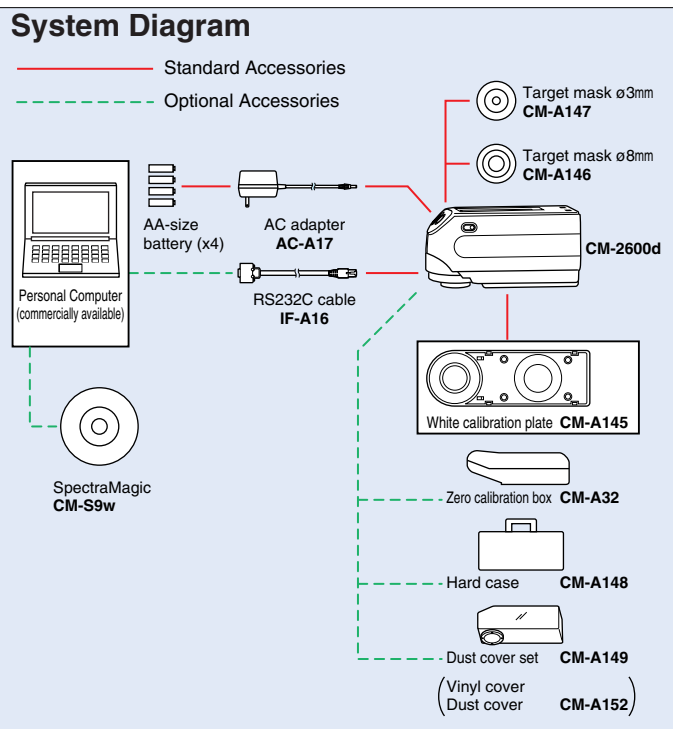
<Main Specifications>

Color space / Color difference scales	L*a*b*, L*c*h, L*u*v*, Hunter Lab, FMC-2, CMC, CIE-94, XYZ, Yxy
Color indices	Metamerism, Whiteness/Whiteness Difference, Yellowness/Yellowness Difference, Tint/Tint Difference, Brightness, opacity, Haze, Dominant Wavelength, Excitation Purity, Ganz WI, Ganz Tint
Observer Conditions	2°, 10°
Illuminant Conditions	A, C, D65, D50, D55, D75, F2, F6, F7, F8, F10, F11, F12, U50
Displays	Spectral plot, Color plot, Tolerance plot, Statistical report, Real color, K/S, Multi-view display
Tolerance Settings	Elliptical, Box, Pass / Warn / Fail

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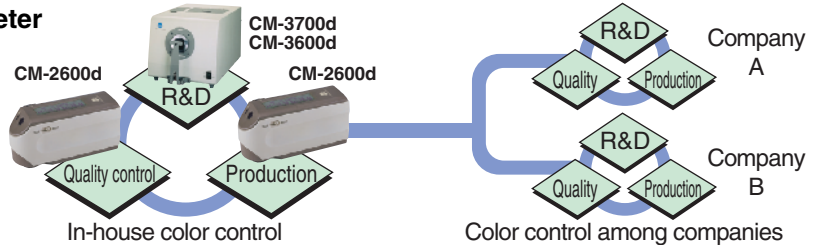
Specifications

Illumination/ observation system	d/8 (diffuse illumination, 8-degree viewing), equipped with simultaneous measurement of SCI (specular component included)/SCE (specular component excluded) Conforms to CIE No.15,ISO 7724/1,ASTM E1164, DIN 5033 Teil7 and JIS Z8722 Condition C standard.
Sphere Size	ø52mm
Light-receiving element	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%, resolution: 0.01%
Light source	3 pulsed xenon lamps
Measurement time	Approx. 1.5 seconds (approx. 2 seconds for fluorescent measurement)
Minimum interval between measurements	3 seconds for SCI/SCE (4 seconds for fluorescent measurement)
Battery perfomance	Alkaline manganese:approx. 1000 measurements
Measurement/ illumination area	MAV: ø8mm/ø11mm SAV: ø3mm/6mm (Selectable between MAV and SAV)
Repeatability	Spectral Reflectance:Standard deviation within 0.1% (360 to 380nm within 0.2%) Colorimetric Value : Standard deviation within ΔE*ab 0.04(Measurement conditions:White calibration plate measured 30 times at 10-second intervals after white calibration was performed)
Inter instrument agreement	within ΔE*ab 0.2 (MAV/SCI) based on 12BCRA Series Ⅱ color tiles compared to values measured with master body.
UV adjustment	Instantaneous numerical adjustment (no mechanical adjustment required) With UV400nm cut filter
Measurement mode	Single measurement/automatic averaging of multiple measurements (auto mode: 3, 5, 8 times/manual mode)
Interface	RS-232C standard
Observer	2/10 degrees (CIE 1931/2°,CIE 1964/10°)
Illuminant	A, C, D50, D65, F2, F6, F7, F8, F10, F11, F12 (simultaneous evaluation is possible using two light sources)
Display data	Spectral value/graph, colorimetric value, color difference value/graph, PASS/FAIL result
Color space/ colorimetric data	L*a*b*, L*C*h, CMC (1:1), CMC (2:1), CIE94, Hunter Lab, Yxy, Munsell, XYZ, MI, WI (ASTM E313), YI (ASTM E313/ASTM D1925), ISO Brightness (ISO 2470), Density status A/T, L99C99h99, L99a99b99, WI/Tint (CIE/Ganz&Grisser)
Data memory	700 (SCI/SCE as a set)
Tolerance judgment	Tolerance for color difference (both box and eliptical tolerances can be set)
Power source	4 AA-size battery or AC adapter
Size (WxHxD)	69 x 96 x 193mm
Weight	Approx. 670g (without batteries)
Operating temperature/ humidity range	5 to 40˚C, relative humidity 80% or less (at 35˚C) with no condensation
Storage temperature/ humidity range	0 to 45˚C, relative humidity 80% or less (at 35˚C) with no condensation
Standard accessories	White calibration plate, Target mask ø8mm, Target mask ø3mm , RS-232C cable, AC adapter, AA-size battery (x4)
Optional Accessories	Hard case, Dust cover set, Dust cover, SpectraMagic(software), Zero calibration box

System Diagram

Standard Accessories
Optional Accessories

Target mask ø3mm **CM-A147**
Target mask ø8mm **CM-A146**
AA-size battery (x4)
AC adapter **AC-A17**
CM-2600d
Personal Computer (commercially available)
RS232C cable **IF-A16**
White calibration plate **CM-A145**
Zero calibration box **CM-A32**
Hard case **CM-A148**
Dust cover set **CM-A149**
Vinyl cover / Dust cover **CM-A152**
SpectraMagic **CM-S9w**

Dimensions (Units:mm) CM-2600d

69
96
193

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

Color control network by spectrophotometer

High inter-instrument agreement between the portable CM-2600d spectrophotometer and the desk top CM-3000 series make it easy to build a total color control network.

CM-2600d
CM-3700d CM-3600d
CM-2600d
R&D
Quality control
Production
In-house color control

R&D
Quality Production
Company A
R&D
Quality Production
Company B
Color control among companies

ISO 9001 CERTIFIED