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.

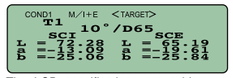
The essentials of imaging

www.minolta.com

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.



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.

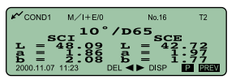
For plastics, paints, resins and consumer products

High reliability and long life. Maintenance-free design.

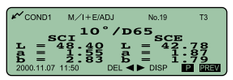
The number of moving parts used in the instrument is minimized through the introduction of numerical control technology. The CM-2600d can be used with confidence, since it has been developed, manufactured and calibrated to meet ISO 9001 requirements.

* 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.)

For textile, paper, fluorescent and consumerproducts

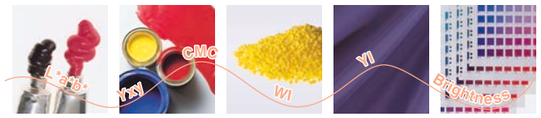
Allows measurement in any position. Compact, lightweight with an easy-to-operate navigation wheel and large LCD display.

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)

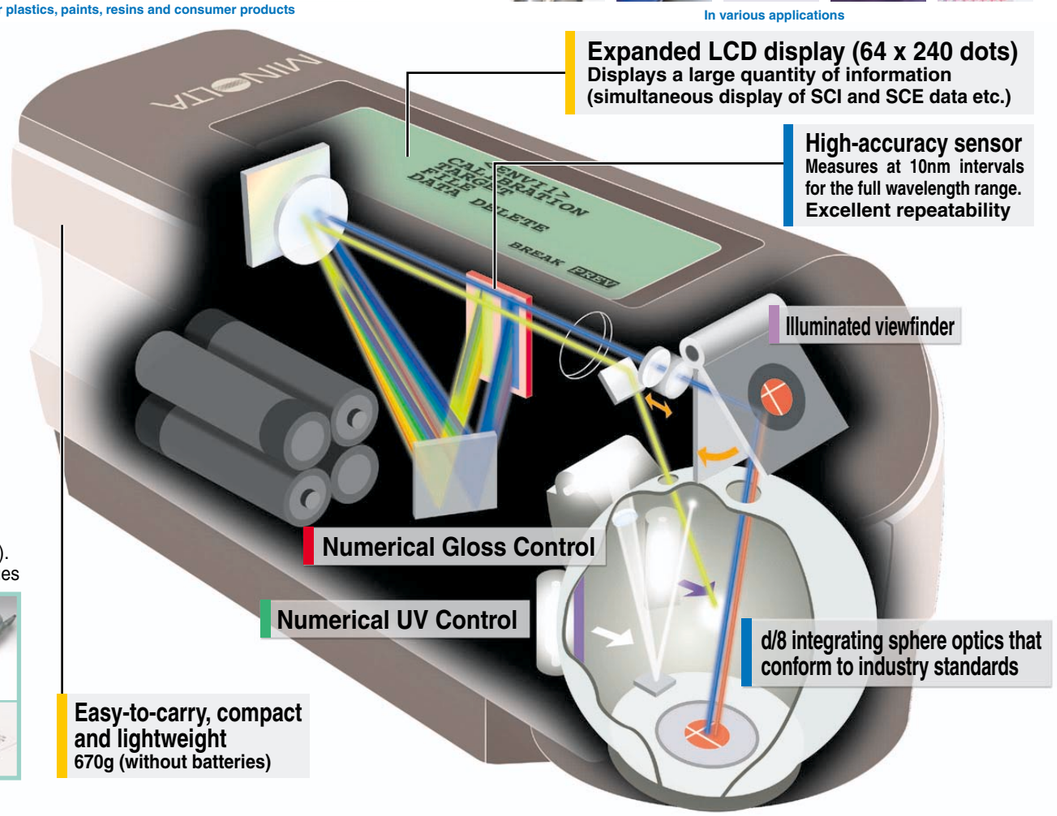
For paints, plastics, automobiles, ceramics, architectural interiors, textile, paper, food etc.

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.

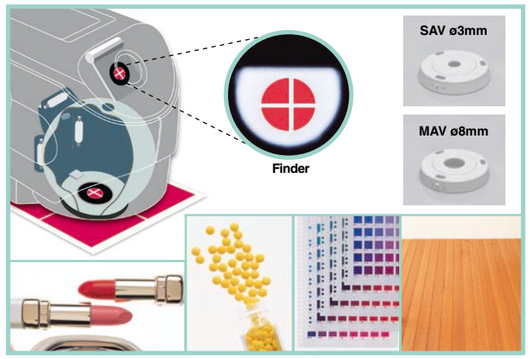


In various applications



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.



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

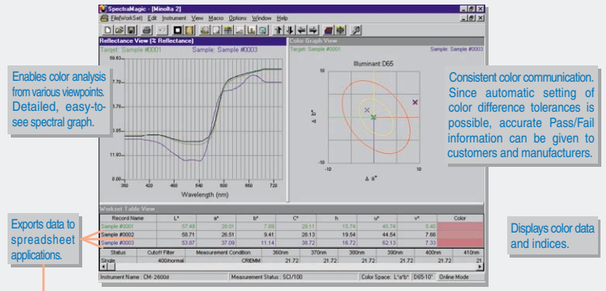
Powerful partnership between CM-2600d and SpectraMagic

Color Quality Control Software

SpectraMagic Ver.3.2* (Optional)

Supports Windows® 95, 98 and NT4.0

SpectraMagic Ver.3.2 supports CM-2600d.

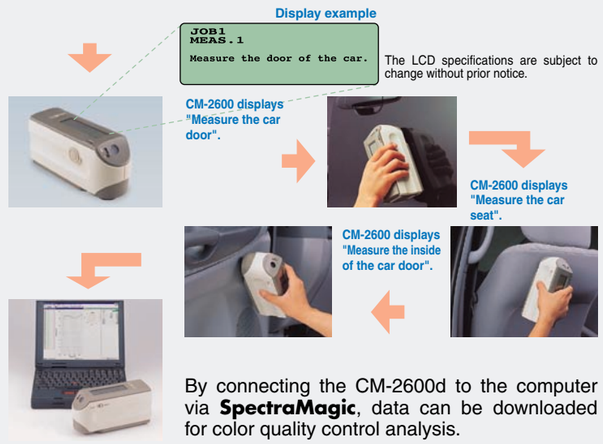


Microsoft® Excel® are registered trademarks of Microsoft Corporation in the USA.

Color data can be sent through the Internet to customers and manufacturers from a computer.
(A computer with Internet and E-mailing capability is required.)

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.



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

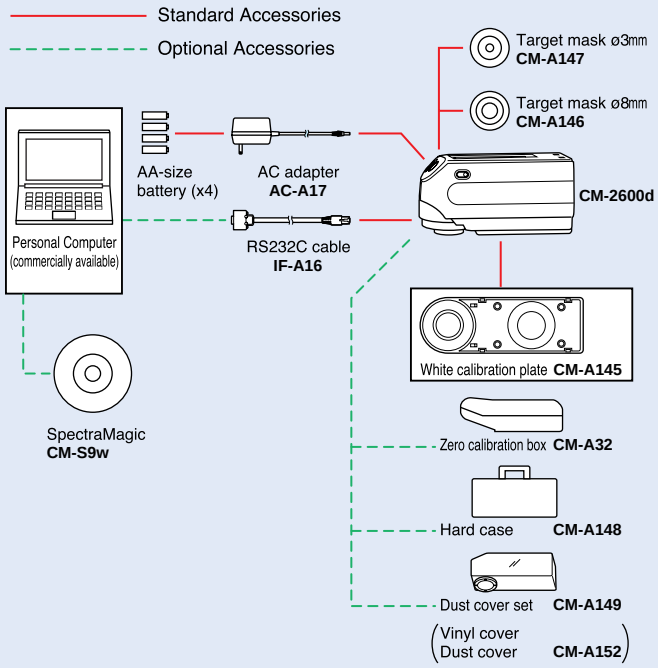
<Main Specifications>

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

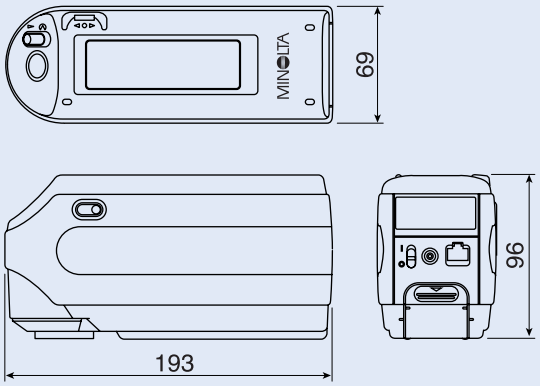
Specifications

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:Up to 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
Inter instrument agreement	at 10-second intervals after white calibration was performed) within ΔE*ab 0.2 (MAV/SCI) based on 12BCRA SeriesⅡ color tiles
UV adjustment	compared to values measured with master body. Instantaneous numerical adjustment (no mechanical adjustment required)
Measurement mode	With UV400nm cut filter Single measurement/automatic averaging of multiple measurements
Interface	(auto mode: 3, 5, 8 times/manual mode)
Observer	RS-232C standard
Illuminant	2/10 degrees (CIE 1931/2°,CIE 1964/10°) A, C, D50, D65, F2, F6, F7, F8, F10, F11, F12 (simultaneous evaluation
Display data	is possible using two light sources) Spectral value/graph, colorimetric value, color difference
Color space/ colorimetric data	value/graph, OK/NG result L*a*b*, L*C*h, CMC (1:1), CMC (2:1), CIE94, Hunter Lab, Yxy, Munsell, XYZ, MI, WI (ASTM E313/CIE), YI (ASTM E313/ASTM
Data memory	D1925), ISO Brightness (ISO 2470), Density status A/T
Tolerance judgment	700 (SCI/SCE as a set)
Power source	Tolerance for color difference (both box and eliptical tolerances can be set)
Size (WxHxD)	4 AA-size battery or AC adapter
Weight	69 x 96 x 193mm
Operating environment	Approx. 670g (without batteries) 5 to 40°C; less than 80% RH (no condensation); Installation
Storage environment	category: 2; Pollution degree: 2
Standard accessories	0 to 45°C; less than 80% RH (no condensation) White calibration plate, Target mask ø8mm, Target mask ø3mm ,
Optional Accessories	RS-232C cable, AC adapter, AA-size battery (x4) Hard case, Dust cover set, Dust cover,

System Diagram



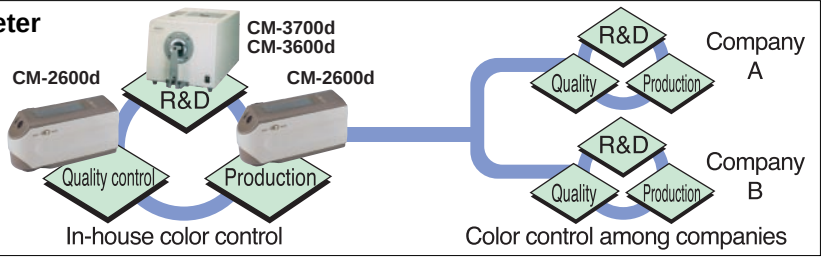
Dimensions (Units:mm) CM-2600d



* 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.



ISO 9001 CERTIFIED

Toyokawa Administrative Center (Aichi Pref., Japan) of Minolta Co., Ltd. was approved by the British certification organization Lloyd's Register Quality Assurance for certification under the ISO 9001:1994 international quality assurance standards on March 3, 1995. Since the Center's establishment in 1990, Radiometric Instruments Operations in Toyokawa Administrative Center has carried out the development and production of precision instruments for the measurement of color, light, and temperature. The ISO 9001:1994 certification was awarded to the Radiometric Instruments Operations quality control system, including the design, development, production, calibration, and servicing of the measuring instruments described above.

Minolta Co.,Ltd.
Radiometric Instruments Operations **3-13, 2-Chome, Azuchi-Machi, Chuo-Ku. Osaka 541-8556, Japan**
Minolta Corporation / ISD 101 Williams Drive, Ramsey, New Jersey 07446, U.S.A. Phone: 201-529-6060, 1-888-ISD-COLOR FAX: 201-529-6070
Minolta Canada Inc. 369 Britannia Road East Mississauga, Ontario L4Z 2H5, Canada Phone: 905-890-6600 FAX: 905-890-7199
Minolta Europe GmbH Minoltaring 11, 30855 Langenhagen, Germany Phone: 0511-74040 FAX: 0511-741050
Minolta France S.A. 365-367, Route de Saint-Germain, 78424 Carrieres-Sur-Seine, France Phone: 01-30866161 FAX: 01-30866280
Minolta UK Limited Precedent Drive, Rooksley Park, Milton Keynes, MK13 8HF, England Phone: 01-908200400 FAX: 01-908618662
Minolta Austria Ges.m.b.H. Amalienstrasse 59-61,1131 Wien. Austria Phone: 01-87882-222 FAX: 01-87882-180
Minolta Camera Benelux B.V. Postbus 6000 3600 HA Maarssen, The Netherlands Phone: 00(31)-30-2470860 FAX: 00(31)-30-2470861
Minolta Schweiz AG Riedstrasse 6, 8953 Dietikon, Switzerland Phone: 01-7403727 FAX: 01-7422350
Minolta Italia s. r. l Via Stephenson 37, 20157, Milano, Italy Phone: 02-39011-1 FAX: 02-39011-219
Minolta Svenska AB Albygatan 114 P.O.Box 9058 S-17109 Solna, Sweden Phone: 08-627-7650 FAX: 08-627-7685
Minolta Hong Kong Limited Room 208, 2/F, Eastern Centre 1065 King's Road, Quarry Bay, Hong Kong, China Phone: 2565-8181 FAX: 2565-5601
Minolta Singapore (Pte) Ltd. 10, Teban Gardens Crescent Singapore 608923 Phone: 563-5533 FAX: 561-9879
Minolta Co.,Ltd. Seoul Office 801, Chung-Jin Bldg., 475-22, BangBae-Dong, Seocho-ku, Seoul, Korea Phone: 02-523-9726 FAX: 02-523-9729

MINOLTA

9242-4879-11 ABBATK① Printed in Japan