



KONICA MINOLTA

NEW

SPECTROPHOTOMETER

CM-2500c

A breakthrough in 45/0 optics with
unprecedented accuracy & stability



- Innovative 45/0 geometry optics
- Most lightweight, compact and rugged in its class
- 360-740 nm wavelength range, 10 nm resolution
- Single-handed operation with "Navigation wheel"
- Free choice of power source : AC adapter or AA batteries

The essentials of imaging

Compact, Lightweight, 45/0 Portable Spectrophotometer Offering High Measurement Stability

The CM-2500c is a 45/0 model that utilizes the same high accuracy, precision and portability as Konica Minolta's sphere-based CM-2600d and CM-2500d.

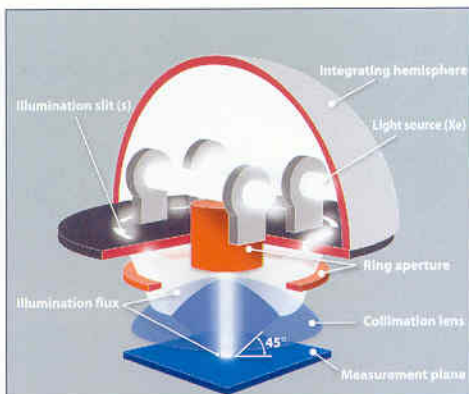
The CM-2500c is best suited for color measurement of samples such as automotive interior parts, coil coatings, plastics, paint, packaging, and raw materials. The 45/0 viewing optics correlate closely with visual perception of objects.

The innovative optical system ensures perfect annular illumination for best repeatability and stability.



The Innovative Optical System...

The optical design of the CM-2500c assures maximum reproducibility and stability of measurement during actual use. It also minimizes data fluctuation during repeated color measurements and improves the accuracy of the output.



The mixing box (integrating hemisphere) and the illumination slit create a ring-shaped light source, achieving more uniform illumination, and thus more ideal 45/0 geometry than conventional systems.

The additional collimation lens provides highly parallel illuminating and receiving light beams and thus uniformity within the area.

The large sample contact area offers close and stable contact, ensuring easy measurement of samples with curved surfaces such as automotive parts or soft samples.

Traditional 45/0 spectrophotometers are subject to fluctuation in measured values for samples with uneven and eroded surfaces.

The CM-2500c achieves highest stability by adopting an innovative optical system.

Fits your hand like a glove



...the Benefits are Yours

- Higher uniformity of illumination distribution (less uneven intensity in the illumination area)
- Perfect circle illumination area (not an ellipse)
- Ring-shaped illumination (no direction dependency)
- Improved reproducibility of measurements
- Less influence by changes in measuring position, instrument rotation sample position or sample angle

Weighing only 670 g (without batteries) and ergonomically designed, the CM-2500c is perfectly suited for any application in the laboratory, in the plant or in the field. Taking measurements horizontally or vertically is both easy and fatigue-free. The compact size and easy-to-align aperture allows you to measure samples of any shape or size.



The CM-2500c: A real multi-talent for special tasks

The CM-2500c is fully equipped with hardware and software features to cover a wide range of applications where 45/0 geometry is either recommended or specified by applications such as automotive interior plastic and textile parts, solid paints (VDA ¹), Coil Coating (ECCA ²), high-visibility clothing (EN-471 ³), printing & packaging (TAPPI 1524 ⁴), Clay and Calcium Carbonate (TAPPI 646 ⁴) or road markings (ASTM D4956-4960 ⁵). The CM-2500c 45/0 geometry conforms to the following norms: CIE No.15, ISO 7724/1, ASTM E179, DIN 5033 Part 7 and JIS Z 8722.

¹ Verband der Automobilindustrie, ² European Coil Coating Association, ³ European Standard, ⁴ Technical Association of Pulp and Paper Industry, ⁵ American Society for Testing and Materials



Single-handed operation

Forget all you have heard about "easy operation" of any portable spectrophotometer so far! The new CM-2500c sets the standard for a simple and fast handling instrument. The exclusive "Navigation wheel" and the measuring button are placed right where your hand fits. The Navigation wheel "guides" you through all the menu operations with great ease -- Use the wheel like a PC mouse, moving it forward or backward to select and pressing it down to click on the selection.



Pass/Fail Display



Color graph + data Display



Absolute + Color difference display



Spectral graph

Comprehensive color Information Display

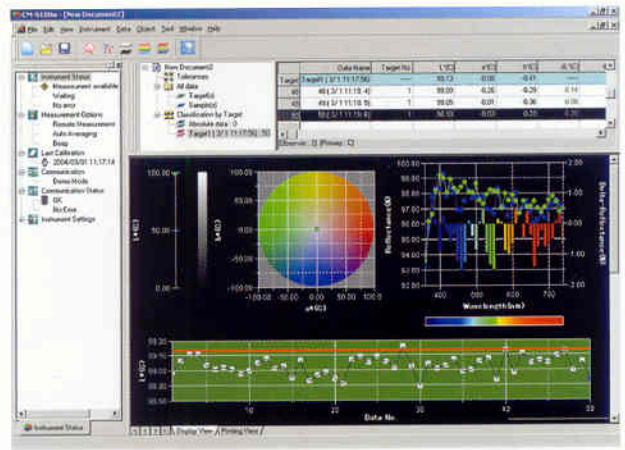
The large display is your "Information Center". Displaying data graphically or numerically, it shows you the facts about your colors at a glance. Whether you select simple Pass/Fail indications, colorimetric data with descriptive color difference or L*a*b* color plot with either box or elliptical tolerances or spectral graph -- you're in control at any time. The internal software contains all necessary colorimetric equations and standard light sources to cover your tasks as well as numerous industry and application-specific indices.

The internal software communicates in six languages (English, German, French, Italian, Spanish and Japanese) and thus is prepared for your international color communication network. It even reminds you when it is time for a factory re-calibration to ensure traceability to ISO 9000 recommendations.

Color Data Software

SpectraMagic™**NX** (optional)

In combination with the optional Color Data Software SpectraMagic™**NX**, the CM-2500c become a complete Quality Control and color Management System. The software allows you to configure the graphic and numerical layout according to your needs, from ultra-simple Pass/Fail assessments to more sophisticated analysis with spectral, color and trend graphs. The unique Navigation function of SpectraMagic™**NX** is another useful feature to assure fast and easy use. To improve color communication with your customers and suppliers, SpectraMagic™**NX** allows you to insert digital pictures in printed reports—another unique feature.

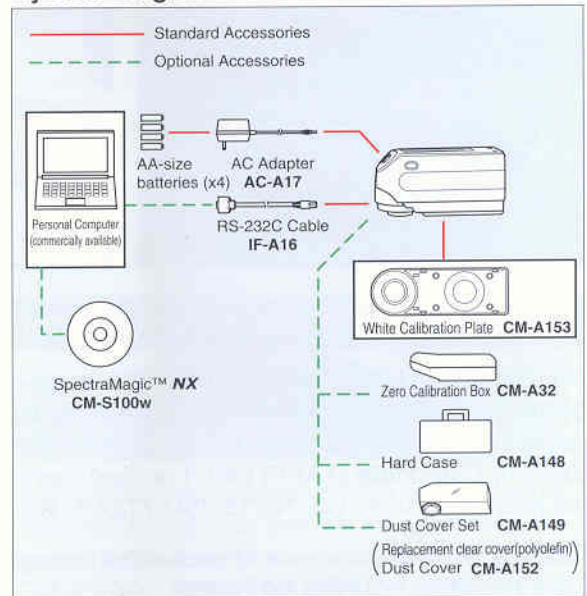


Specifications

Model	Spectrophotometer CM-2500c
Illumination/observation system	45/0 method (45° ring-shaped illumination, vertical viewing)
Light-receiving element	Silicon photodiode array (dual 40 elements)
Spectral separation device	Diffraction grating
Wavelength range	360 nm to 740 nm
Wavelength pitch	10 nm
Half bandwidth	Approx. 10 nm
Reflectance range	0 to 175%, resolution: 0.01%
Light source	2 pulsed xenon lamps
Measurement time	Approx. 1.5 seconds
Minimum interval between measurements	4 seconds
Battery performance	Alkaline manganese: Approx. 1000 measurements, (at 23°C)
Measurement/illumination area	φ7 mm/φ11 mm
Repeatability	Colorimetric Value: Standard deviation within ΔE*ab 0.05 (Measurement conditions: White calibration plate measured 30 times at 10-second intervals after white calibration was performed)
Inter instrument agreement	Within ΔE*ab 0.25 (Average for 12 BCRA Series II color tiles compared to values measured with master body; at 23°C)
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, ASSESSMENTS (Except for Japanese mode)
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), WI (CIE), YI (ASTM E313/ASTM D1925), ISO Brightness (ISO 2470), Density status A/T, WI/Tint (CIE), DIN 99 Lab, DIN 99 LCh
Data memory	700
Pass/Fail judgment	Tolerance for color difference (Both box and elliptical tolerances can be set)
Power source	4 AA-size batteries or AC adapter
Size (W x H x D)	69 x 96 x 193 mm
Weight	Approx. 670 g (without 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

* Specifications are subject to change without notice.

System Diagram



* This mark indicates ISO 9001:2000-certified quality management system.

SAFETY PRECAUTIONS

To ensure correct use of the instrument, please adhere to the following.



- Before using the instrument, be sure to read the instruction manual.
- Always use the specified power. Use of inappropriate power may result in fire or electric shock.

KONICA MINOLTA SENSING, INC.

Konica Minolta Photo Imaging U.S.A., Inc.
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 Konica Minolta Photo Imaging Svenska AB
 Konica Minolta Photo Imaging (HK)Ltd.
 Shanghai Office
 Konica Minolta Photo Imaging Asia HQ Pte Ltd.
 KONICA MINOLTA SENSING, INC. Seoul Office

3-91, Daisennishimachi, Sakai.Osaka 590-8551, Japan

725 Darlington Avenue, Mahwah, NJ 07430, U.S.A. Phone: 888-473-2656 (in USA), 201-574-4000 (outside USA) FAX: 201-574-4201
 1329 Meyerside Drive, Mississauga, Ontario L5T 1C9, Canada Phone: 905-670-7722 FAX: 905-795-8234
 Europaallee 17, 30855 Langenhagen, Germany Phone: 0511-7404-895 FAX: 0511-7404-809
 Paris Nord II, 385, rue de la Belle-Etoile, B.P. 50077, F-95948 Roissy C.D.G. Cedex, France Phone: +33-1-49 38 25 19 FAX: +33-1-49 38 47 71
 7-9 Tanners Drive, Blakelands North, Milton Keynes, MK14 5BU, United Kingdom Phone: +44 (0) 1908 283 939 FAX: +44 (0) 1908 618 662
 Amalienstrasse 59-61, 1131 Vienna, Austria Phone: 01-87882-430 FAX: 01-87882-431
 Postbus 6000, 3600 HA Maarssen, The Netherlands Phone: 030-2470860 FAX: 030-2470861
 Riedstrasse 6, 8953 Dietikon, Switzerland Phone: +41 43 322 97 40 FAX: +41 43 322 97 49
 Via Stephenson 37, 20157, Milano, Italy Phone: 02-39011-1 FAX: 02-39011-219
 Solna strandväg 3, P.O.Box 9058 S-17109, Solna, Sweden Phone: 08-627-7650 FAX: 08-627-7685
 Room 1818, Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong Phone: 852-34137508 FAX: 852-34137509
 Rm 1211, Ruijin Building No.205 Maoming Road (S) Shanghai 20020, China Phone: 021-64720496 FAX: 021-64720214
 10, Teban Gardens Crescent, Singapore 608923 Phone: +65 6563-5533 FAX: +65 6560-9721
 801, Chung-Jin Bldg., 475-22, BangBae-Dong, Seocho-ku, Seoul, Korea Phone: 02-523-9726 FAX: 02-523-9729