



KONICA MINOLTA

SPECTROPHOTOMETER CM-3700d



The essentials of imaging

A High-Accuracy Benchtop Spectrophotometer With Konica Minolta's Optical Technology for High Performance and Computer Control for Easy Operation

Demands for higher accuracy and more analysis capabilities have been increasing, particularly from R&D professionals. In response, Konica Minolta has utilized its long experience in optics and color measurement to create the Spectrophotometer CM-3700d, a high-accuracy benchtop spectrophotometer suitable for not only research and development, but also for quality control or CCM applications.

High-speed, high-accuracy measurements

Measurements at wavelengths from 360 to 740nm at 10nm pitch are taken in approximately 0.6 seconds. Konica Minolta's optical technology ensures high absolute-value accuracy and repeatability, and extremely strict quality control provides higher inter-instrument agreement and reliability.

① Illumination/viewing geometry meets ISO and DIN standards for d/8 (diffuse illumination/8° viewing angle) geometry and also conforms to CIE and ASTM standards for d/0 (diffuse illumination/0° viewing angle) geometry.

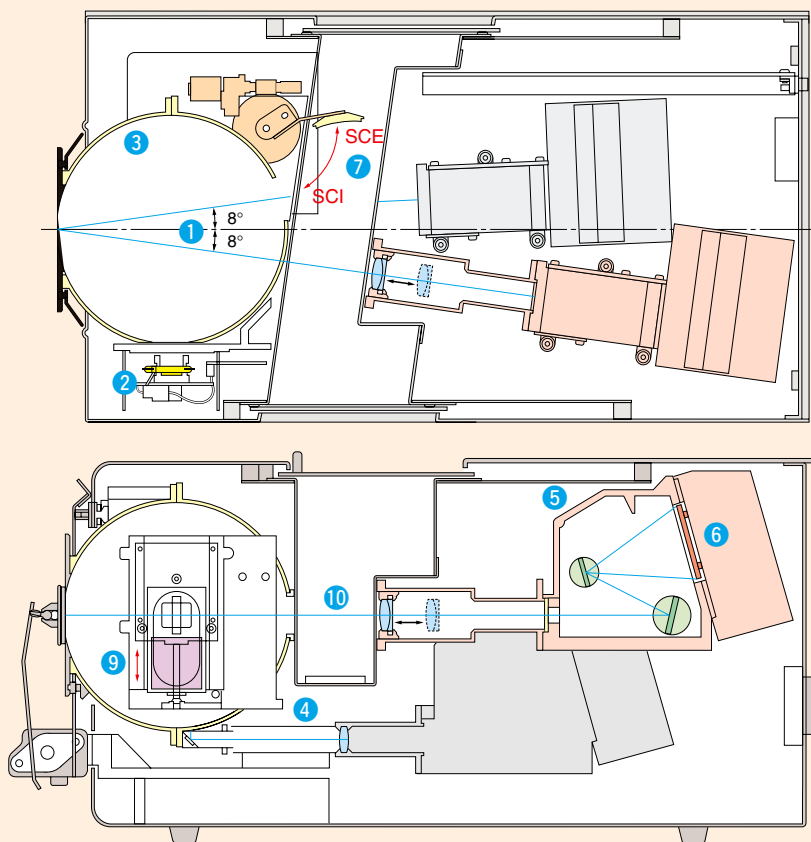
② Pulsed xenon lamp light source provides high stability, long life, and excellent repeatability on dark and high-chroma colors.

③ 6-inch integrating sphere has a powdered barium sulfate (BaSO_4) coating with superior optical characteristics.

④ Double-beam feedback system monitors the light emitted by the xenon lamp and automatically compensates for changes in brightness or spectral characteristics.

⑤ Flat holographic grating efficiently separates the light by wavelength to provide higher repeatability for dark colors.

⑥ Silicon photodiode array sensor quickly converts the light separated by the grating to electrical currents.



Various measuring functions

⑦ Switchable between SCI and SCE measurements

SCI (specular component included) measurements minimize the influence of surface conditions on measured values, making it suitable for CCM applications. SCE (specular component excluded) measurements correspond closely to professional visual evaluation.

⑧ Changeable measurement areas

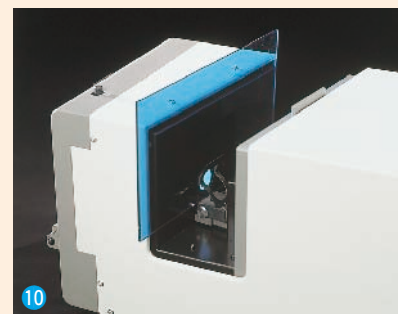
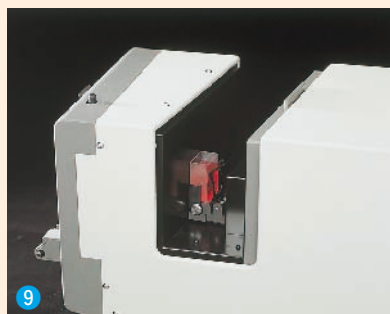
Select measurement areas of 3×5mm, ø8mm, or ø25.4mm according to the application.

⑨ Variable UV

The amount of UV included in the illumination can be controlled in 1000 steps for measurements of fluorescent materials.

⑩ Transmittance measurements

The spectral transmittance of liquids or of specimens in sheet or plate form can be measured using d/0 (diffuse illumination/0° viewing angle) geometry.



CM-3720d (Whiteness Model)/CM-3730d (Paper Industry Model)

UV cutoff filter switching (CM-3720d, CM-3730d)

Cuts off UV components having wavelengths of 420nm or less emitted by the light source. Useful for eliminating the effects of fluorescence when measuring fluorescent materials having excitation wavelengths below 420nm.

Enables easy switching to normal measurement using illumination including ultraviolet radiation.

Low-illumination setting (CM-3720d, CM-3730d)

Reduces illumination level to one-fifth. Reduction of light quantity can eliminate triplet influences, which may occur occasionally when measuring fluorescent materials at the normal illumination level.

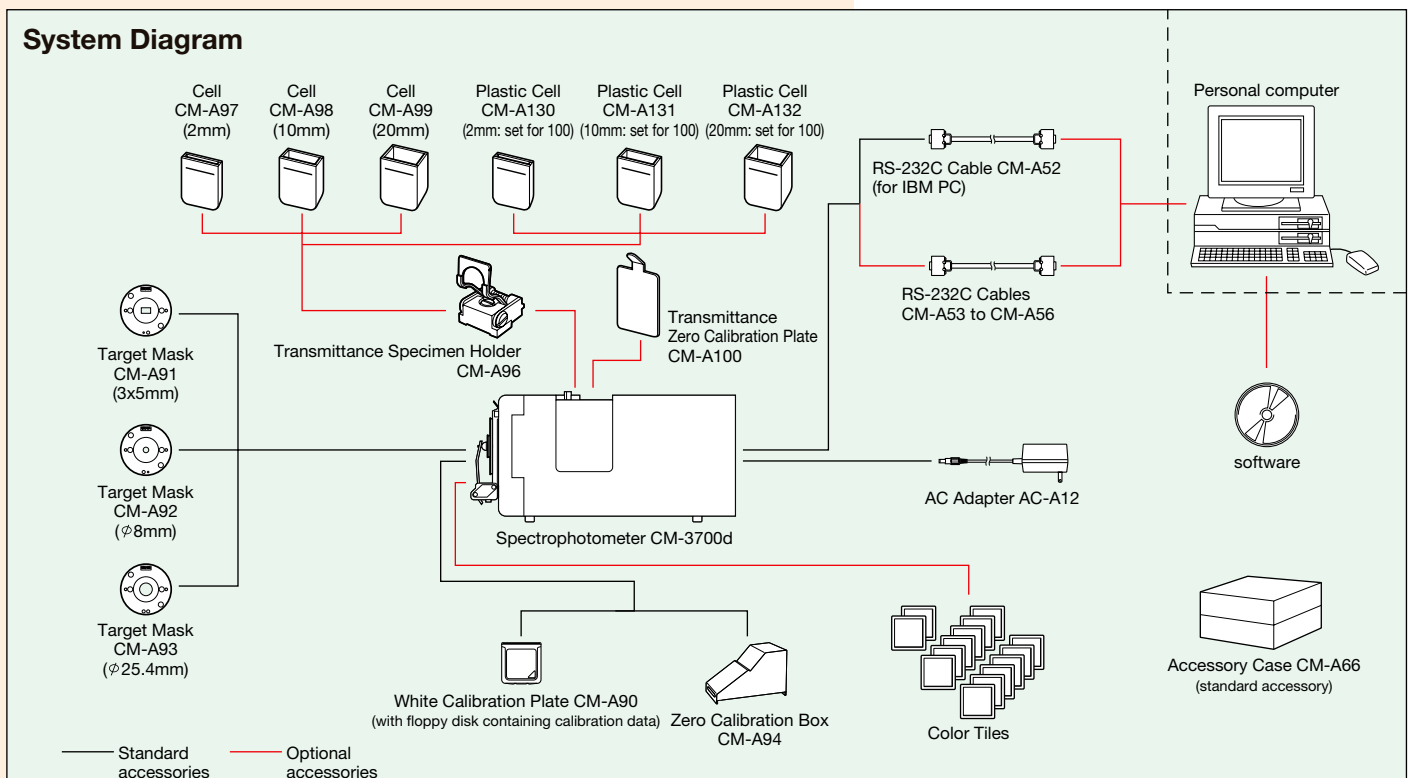
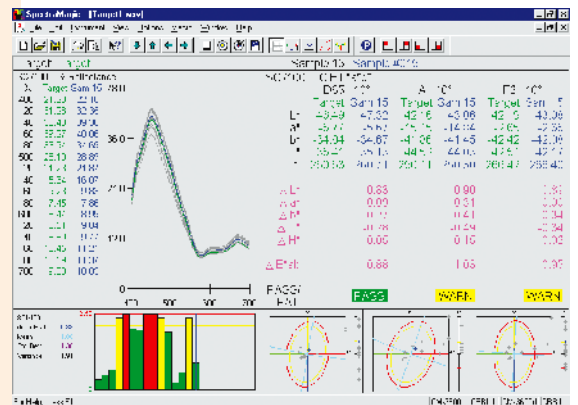
Opacity jig (CM-3730d)

Enables easy switching of the background between white and black and ensures paper position does not shift during opacity measurements.

SpectraMagic

SpectraMagic is a new, versatile color quality control package for KONICA MINOLTA Spectrophotometers, available in English, German, French, and Japanese. It is a 32-bit program compatible with Windows® 2000/98/95 and Windows NT® ver.4.0. SpectraMagic offers a wide range of functions and graphical displays for the evaluation and control of color including instrument control, colorimetric and spectral data, color tolerancing, and statistical calculations like trend charts and histograms.

- 6 customizable report screens to display color data and indices; can be as simple or as complex as required.
- Complete elliptical tolerancing capability including CMC tolerancing and the advanced "best fit" technique to statistically calculate tolerances based on batch history data.
- Macros to automate repetitive tasks and guide technicians through special test procedures; message boxes give instruction on what to do next.
- Send mail allows you to communicate your color data worldwide, directly from the Program.
- Export option stores your choice of color data in Calculated Results and From Database for further processing, reporting, and calculation.
- Over 50 indices including whiteness, yellowness, haze, chromatic strength at maximum absorption
- ★ Windows® is a trademark of Microsoft Corporation in the USA and other countries.



Optional Accessories

Transmittance Specimen Holder CM-A96

Holds specimens in place for transmittance measurements. Maximum specimen thickness: 22.5mm



Glass Cell CM-A97/CM-A98/CM-A99

Hold liquid specimens for transmittance measurements. Optical path lengths: 2mm (CM-A97), 10mm (CM-A98), and 20mm (CM-A99)



Plastic Cells CM-A130(2mm), CM-A131(10mm), CM-A132(20mm) are also available.

Transmittance Zero Calibration Plate CM-A100

For performing zero calibration for transmittance measurements.



Color Tiles

14 color tiles are available: White, Pale grey, Middle grey, Difference grey, Deep grey, Deep pink, Red, Orange, Bright yellow, Green, Difference green, Cyan, Deep blue, Black. Original materials of these tiles are supplied by BCRA.



Specifications (CM-3700d)

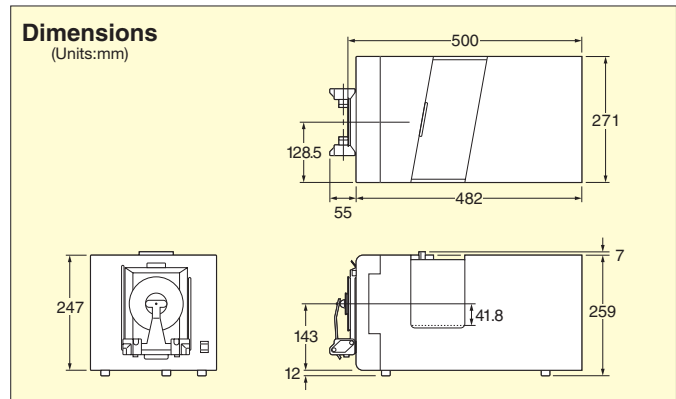
Measuring geometry	Reflectance:d/8 (diffuse illumination/8° viewing angle); SCI (specular component included)/SCE(specular component excluded) switchable; meets ISO and DIN standards for d/8 geometry; also meets CIE and ASTM standards for d/0 geometry. Transmittance: d/0 (diffuse illumination/0° viewing angle)
Detector	Silicon photodiode array with flat holographic grating
Wavelength range	360 to 740nm
Wavelength pitch	10nm
Half bandwidth	Approx. 14nm average
Photometric range	0 to 200%; Resolution: 0.001%
Light source	Pulsed xenon arc lamp
Measurement time	0.6 to 0.8 sec. (to start of data output)
Illumination/ measurement areas	Reflectance: Changeable between LAV, MAV, and SAV LAV: ø28mm illumination/ø25.4mm measurement MAV: ø11mm illumination/ø8mm measurement SAV: 5x7mm illumination/3x5mm measurement Transmittance: Approx. ø20mm
Repeatability	When white calibration plate is measured 30 times at 10-sec. intervals after white calibration has been performed: Spectral reflectance: Standard deviation within 0.05% Chromaticity: Standard deviation within ΔE*ab0.005 When black tile(BCRA Series II; reflectance: 1%)is measured 30 times at 10-second intervals after white calibration has been performed: Spectral reflectance: 380 to 740nm: Standard deviation within 0.02% 360 and 370nm: Standard deviation within 0.04% Chromaticity: Standard deviation within ΔE*ab0.05
Inter-instrument agreement(LAV)	mean ΔE*ab0.08 (typical)based on 12 BCRA Series II color tiles. Max ΔE*ab0.3(corresponds to approx. ΔE*cmc 0.2) for any of 12 BCRA Series II color tiles compared to values measured with master body.
Temperature drift	Spectral reflectance: Within ±0.10%/°C, Color difference: Within ±ΔE*ab0.05/°C
UV adjustment	Computer controlled: continuously variable
Specimen conditions for transmittance measurements	Sheet, plate, or liquid form up to a maximum thickness of approximately 50mm
Interface	RS-232C standard; baud rates: 1200,2400,4800,or 9600
Power	AC 100V/120V/230V 50/60Hz (using included AC adapter)
Operation temperature/humidity range	13 to 33°C, relative humidity 80% or less with no condensation
Storage temperature/humidity range	0 to 40°C, relative humidity 80% or less with no condensation
Dimensions (W×H×D)	271 × 259 × 500mm(10-11/16 × 10-3/16 × 19-11/16 in.)
Weight	18kg(39.7 lb.)
Standard accessories	White Calibration Plate; Target Mask(3×5mm); Target Mask(ø8mm); Target Mask(ø25.4mm); Zero Calibration Box; AC Adapter; RS-232C Cable(2m/6.6 ft., 9-pin, for IBM PC); Accessory Case CM-A66
Optional accessories	Transmittance Specimen Holder; Glass Cells(2mm, 10mm, 20mm); Plastic Cells(2mm, 10mm, 20mm); Transmittance Zero Calibration Plate; Color Tiles; RS-232C Cable(for IBM PC); RS-232C Cable(5m/16.4ft. for NEC PC)

•Specifications are subject to change without notice.

Specifications (SpectraMagic)

Applicable Models	CM-500 series*, CM-2000 series, CM-3500d, CM-3600d, CM-3700 series (*except for CM-512m series)
Observer/ Illuminant Conditions	Observer: CIE2° and 10° Standard Observers Illuminants: CIE Standard Illuminants A, C, D65, D55, and D75; CIE Fluorescent Illuminants F2, F6, F7, F8, F10, F11, and F12; Ultralume U50
Displays	Workset Table, Index Data Table, Color Graph, RfI/Tm View, Trend Graph, Database Table
Color/ color-difference notations	CIE Yxy(XYZ), CIE L*a*b*, CIE L*c*h, CIE L*u*v*, Hunter Lab, FMC-2, CMC, CIE94, Munsell
Indices	Metamerism index: CIE, DIN 6172; Whiteness index/ index difference: CIE, ASTM E313-1973, ASTM E313-1996, Berger, Hunter, Stensby, Taube; Tint/ tint difference: CIE, ASTM E313-1996; Yellowness index/ index difference: ASTM D1925, ASTM E313-1973, ASTM E313-1996, DIN 6167; Strength: Apparent, Chromatic at maximum absorption or user Wavelength, Equal apparent, Pseudo Tristimulus; TAPPI brightness/ brightness difference; Dominant Wavelength/ Excitation Purity; ISO 105.A04(E): Stain Test, 105.A05.2: Gray Scale, 105.A06: Standard Depth; Opacity: Infinite thickness (paper backing), contrast (89% tile backing); Correlated Haze: ASTM D1003; Shade sort: 555. Yardage, Total Yardage; NBS100, NBS200, Rx Ry Rz, Ganz WI, Ganz Tint
Tolerance Settings	Elliptical tolerance, box tolerance, pass/ warn/ fail criteria
Other	Average measurement, remote measurement(using measuring buttons of CM-500 series or CM-2000 series models), automatic naming, macro, online help, password protection, target database
Minimum System Requirements	OS: Microsoft Windows 98, Windows 95, Windows NT ver.4.0 CPU: Pentium 166MHz or higher Memory: 32MB RAM Hard disk: At least 20MB free space Parallel port to connect protecting key CD-ROM drive: 4x speed or higher Display: SVGA (800×600), 256-color or higher

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