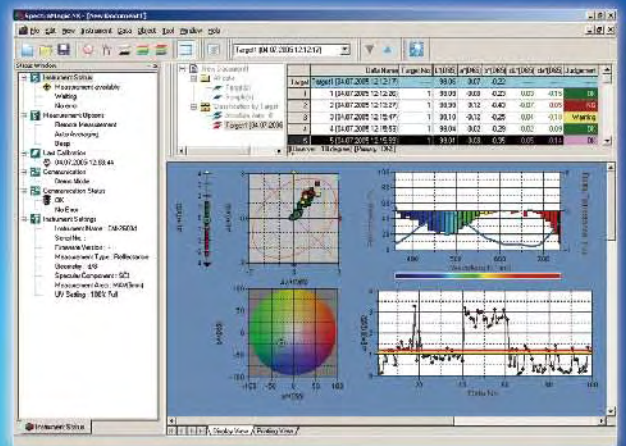




KONICA MINOLTA

# SPECTROPHOTOMETER CM-3500d



SpectraMagic™ NX (Optional)



The essentials of imaging

# A Multi-Function Top-Port Benchtop Spectrophotometer with Computer Control for Easy Operation

The Konica Minolta CM-3500d Spectrophotometer is a highly accurate, top-port instrument designed for a broad range of color measurement applications. Control is performed via computer software to provide simple, efficient color control from the research laboratory to the factory floor.

## Variety of measurement functions

### Reflectance measurements

The di:8°, de:8° illumination/ viewing geometry meets CIE, ISO, ASTM, and DIN standards. The top port design allows specimens to be simply placed on top of the unit, making it easy to measure the reflectance of not only solids but also powders or pastes.

#### ■ SCI/SCE switchable

SCI (specular component included) measurements minimize the influence of surface conditions on measured values, making it suitable for color-matching applications. SCE (specular component excluded) measurements correspond closely to professional visual evaluation and are useful when differences in gloss are encountered.

#### ■ Changeable measurement areas

Select measurement areas of ø8mm, ø30mm, or ø3mm (optional accessory) according to the measurement application.

#### ■ Measurements of powders and pastes

Measurements of powders and pastes are easy using the Petri Dish Set CM-A126 (optional accessory).

### Transmittance measurements

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



### Illumination/viewing system

#### ■ Pre-flash function

The pre-flash function fires the xenon tube at a low level (2% of full flash output) at the start of the measurement cycle to check the specimen reflectance and determine the proper amount of light to use for the measurement. This improves repeatability for low-reflectance specimens, and also extends the life of the xenon tube.

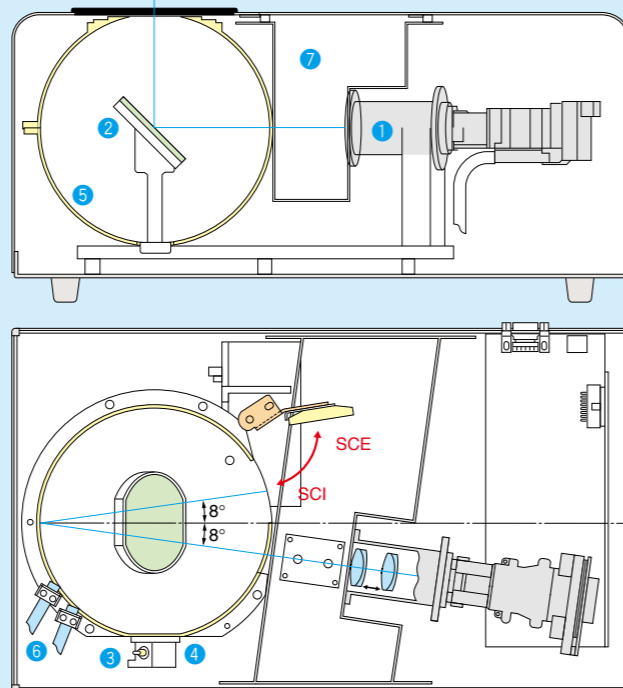
#### ■ Double-beam feedback system

The light emitted by the xenon lamp is monitored directly to eliminate the effects of slight changes in illumination or spectral characteristics, and to ensure high-accuracy measurements.

#### ■ Shutter-equipped integrating sphere port

The measurement port of the integrating sphere is equipped with a shutter which is normally closed to prevent dust or dirt from entering the integrating sphere. The shutter automatically opens and closes when a measurement is taken.

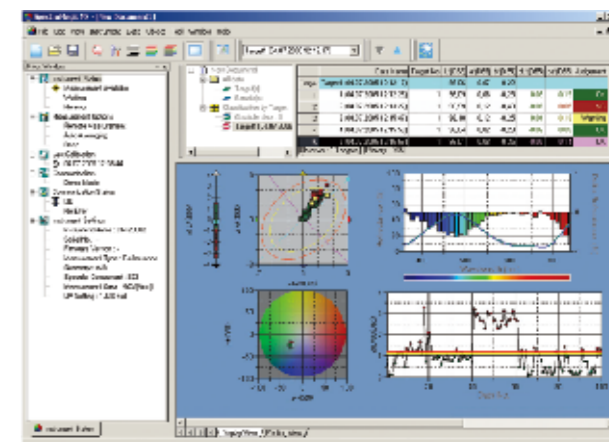
- 1 Optical system for measuring specimen
- 2 Mirror for measuring specimen
- 3 Pulsed xenon lamp
- 4 UV cutoff filter
- 5 Integrating sphere
- 6 Optical fiber for monitoring illumination
- 7 Transmittance specimen chamber



# SpectraMagic™ NX (optional)

Supports Windows®2000/XP/Vista

SpectraMagic™ NX enables you to perform comprehensive color inspection and analysis of incoming raw materials, in process production, and outbound color critical goods and materials in virtually any industry. With SpectraMagic™ NX you can insert digital images with measured data. Measure samples in any of 8 universally accepted color spaces. Select from 15 illuminants, and up to 40 indices to determine specific color and appearance properties, such as strength, brightness, haze, yellowness, opacity and strength. You can even configure up to 3 customized color equations. Reports range from simple Pass/Fail to trend charts, histograms, color plots, and spectral graphs. SpectraMagic™ NX comes with predefined templates using skin technology, or you can create your own templates. For illustrations and explanations to understanding color and color measurement technology, there is a link to Konica Minolta's well known and respected "Precise Color Communication". Step by step navigation help.



★ Windows® is a trademark of Microsoft Corporation in the USA and other countries.

## Optional Accessories

### For transmittance measurements

#### 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)



#### Transmittance Zero Calibration Plate CM-A100

For performing zero calibration for transmittance measurements.



### For measurements of powders or pastes

#### Petri Dish Set CM-A126

Includes Target Mask (for Petri Dish) CM-A127, Petri Dish CM-A128, and Calibration Glass (for Petri Dish) CM-A129.



### Other accessories

#### 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.



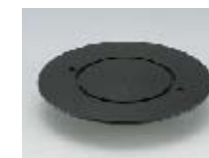
#### Sample Viewing Mirror CM-A125

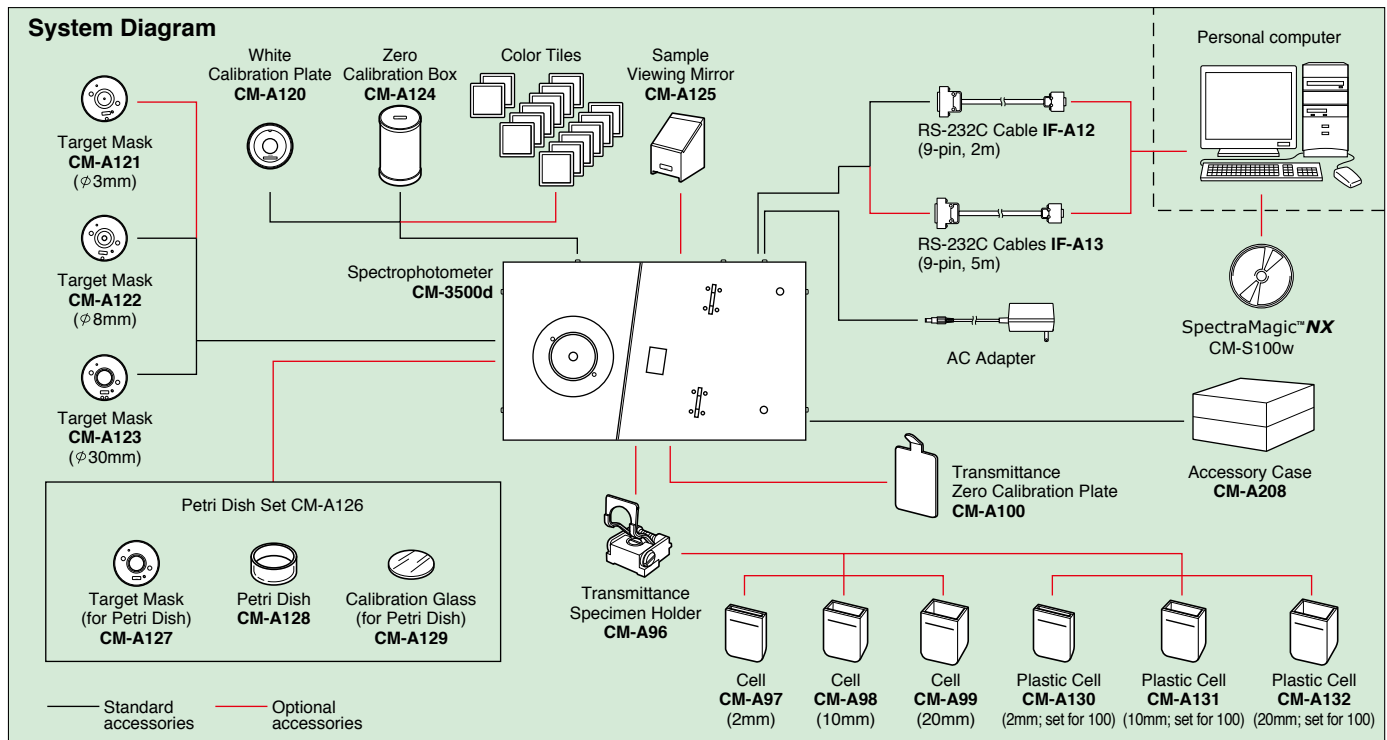
Allows the measurement aperture to be seen from the inside for exact positioning of the specimen for reflectance measurements.



#### Target Mask CM-A121

For measurements of ø3mm areas.

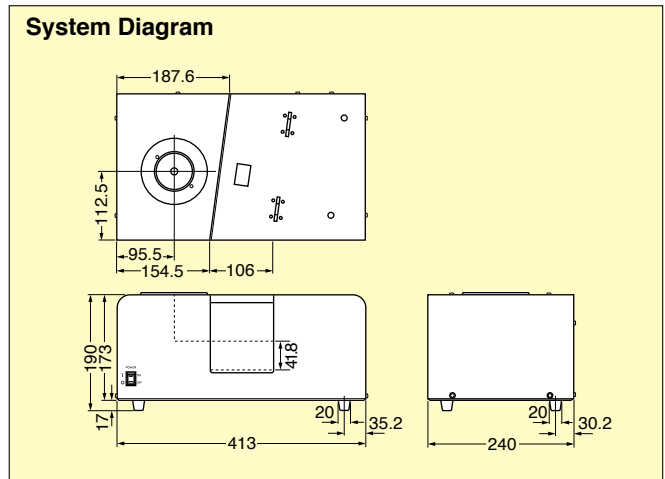




### Specifications (CM-3500d)

<b>Measuring geometry</b>	Reflectance: di:8°, de:8° (diffuse illumination/8°viewing angle); SCI (specular component included)/SCE (specular component excluded) switchable; meets CIE, ISO, ASTM, and DIN standards. Transmittance: di:0°, de:0° (diffuse illumination/0°viewing angle)
<b>Detector</b>	Dual 18-element silicon photodiode array with wedge-shape continuous interference filter
<b>Wavelength range</b>	400 to 700nm
<b>Wavelength pitch</b>	20nm
<b>Half bandwidth</b>	Approx. 20nm average
<b>Photometric range</b>	0 to 175%; Resolution: 0.01%
<b>Light source</b>	Pulsed xenon arc lamp
<b>Measurement time</b>	Approximately 2.5 sec. (to start of data output)
<b>Minimum interval between measurements</b>	3 sec.
<b>Illumination/measurement areas</b>	Reflectance: Changeable; ø36mm illumination/ø30mm measurement or ø11mm illumination/ø8mm measurement Transmittance: Approx. ø22mm
<b>Specimen conditions for transmittance measurements</b>	Sheet, plate, or liquid (in container) form up to a maximum thickness of approximately 50mm
<b>Repeatability</b>	When white calibration plate is measured 30 times at 10-sec. intervals after white calibration has been performed: Spectral reflectance: Standard deviation within 0.20% Chromaticity: Standard deviation within $\Delta E^*ab$ 0.05
<b>Inter-instrument agreement (LAV)</b>	mean $\Delta E^*ab$ 0.15 (typical) Average for 12 BCRA Series II color tiles compared to values measured with master body.
<b>Temperature drift</b>	Spectral reflectance: Within $\pm 0.30\%/^{\circ}C$ Color difference: Within $\Delta E^*ab$ 0.05/ $^{\circ}C$
<b>Interface</b>	RS-232C standard
<b>Power</b>	AC 100V/120V/230V 50/60Hz (using included AC adapter)
<b>Operating temperature/humidity range (*1)</b>	0 to 40°C, relative humidity 85% or less (at 35°C) with no condensation
<b>Storage temperature/humidity range</b>	-20 to 45°C, relative humidity 85% or less (at 35°C) with no condensation
<b>Dimensions (W×H×D)</b>	413 × 190 × 240mm (16-15/16 × 7-1/2 × 9-7/16 in.)
<b>Weight</b>	10kg (22 lb.)

\*1 Operating temperature/humidity range of products for North America : 5 to 40°C, relative humidity 80% or less (at 31°C) with no condensation



\* Specifications are subject to change without notice.



Certificate No : YKA 0937154  
Registration Date : March 3, 1995

Certificate No : JQA-E-80027  
Registration Date : March 12, 1997



### 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.

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