



KONICA MINOLTA

# SPECTROPHOTOMETER CM-3600A/CM-3610A

## Built for Precision. Compact yet powerful.



Plastics

Textiles

Paper

Liquids

Fine particles



### Outstanding Performance through Innovative Technology

#### CM-3600A Horizontal Spectrophotometer

- Highly accurate, reliable and rugged
- Versatile instrument for most colorimetric applications
- Simple operation

#### CM-3610A Vertical Spectrophotometer for best application support

- Speeds up textile and paper measurements
- Ideal for non-contact measurements such as powders, pigments
- Quick sample handling and measurement

# Spectrophotometers CM-3600A and CM-3610A: High-Accuracy Color Measurement in the Laboratory and for Production

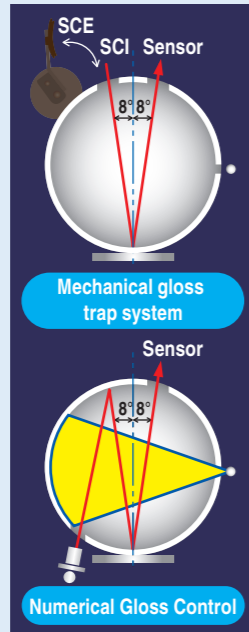
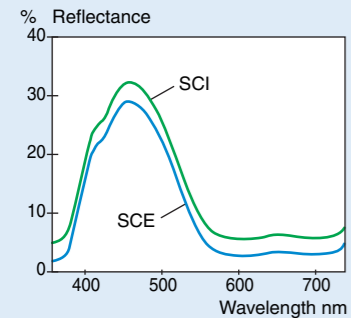
Spectrophotometers CM-3600A and CM-3610A inherit the innovative Konica Minolta Innovative Optical System technology used in the highly popular CM-3600d/CM-3610d, maintaining their high accuracy and excellent performance while offering USB communication and other improvements.

\* CM-3600A and CM-3610A are computer-controlled. Software such as optional SpectraMagic™ **NX** required.

## Simultaneous SCI/SCE measurement

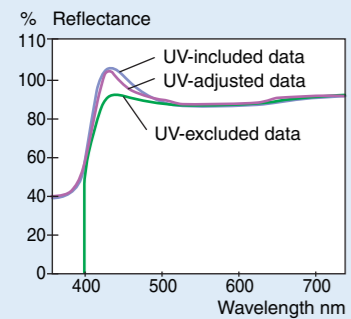
By firing two xenon lamps in quick succession, the patented Numerical Gloss Control (SCI/SCE) system of the CM-3600A and CM-3610A eliminates the need for a mechanical gloss trap while providing virtually simultaneous SCI and SCE measurements and enabling the calculation of 8° gloss.

SCI: Specular component included  
SCE: Specular component excluded



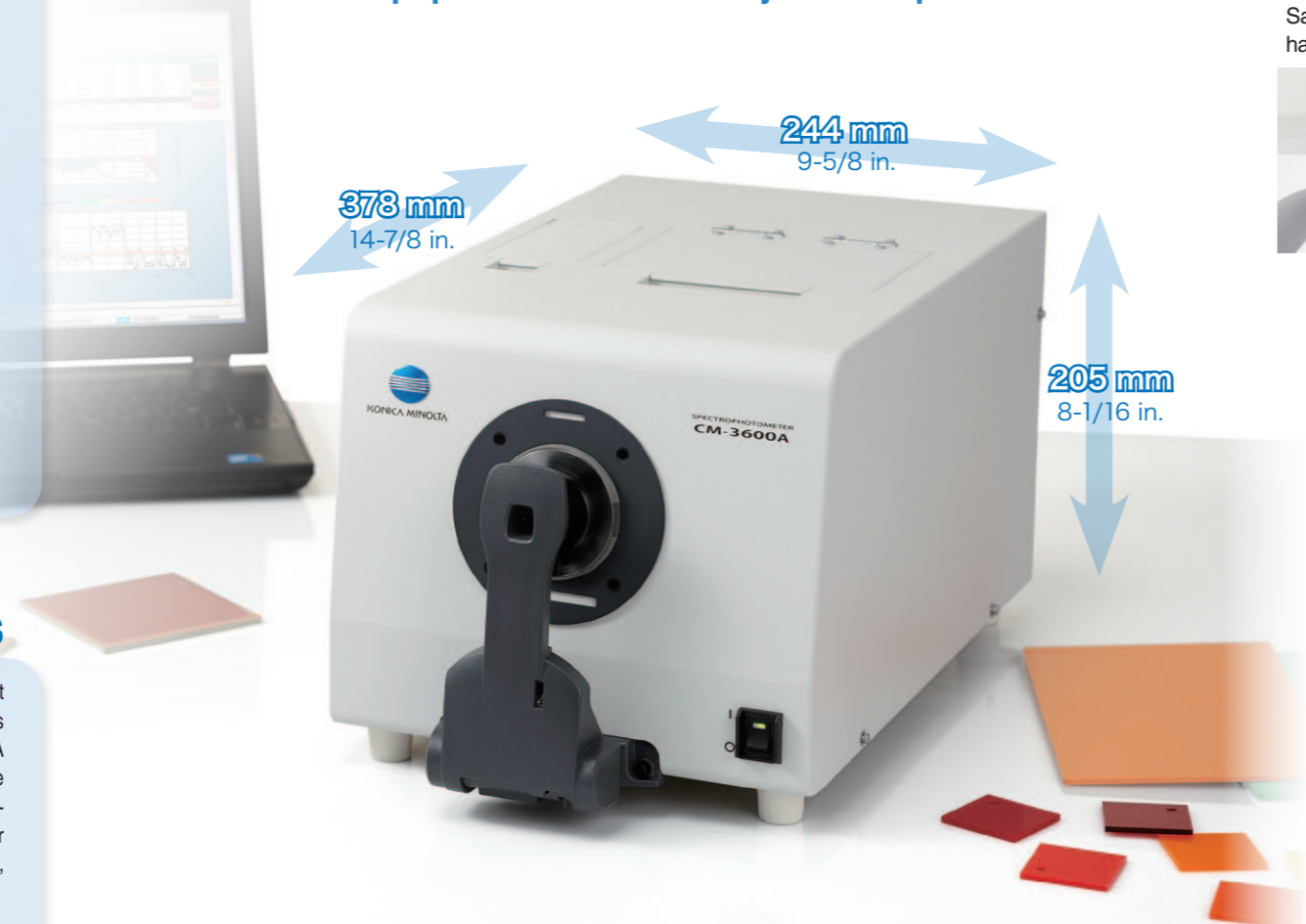
## UV adjustment for accurate measurements of fluorescent materials

Accurate measurement of materials such as paper or cloth treated with fluorescent whitening agents (FWA) requires precise control of the UV component and its effects. The Numerical UV Control method used by the CM-3600A and CM-3610A provides such control by combining results from flashes of two xenon lamps (one with full UV energy, the other with UV energy removed by a 400 nm or 420 nm UV-cutoff filter) using proprietary calculations. This method eliminates the need for mechanical filter positioning, and enables UV adjustment by Whiteness Index, Tint, Brightness, or UV profile.



## CM-3600A: Compact footprint fits easily on your desk

The CM-3600A has about the same footprint as laptop computer or a sheet of B4 paper so it can fit easily where space is limited.



## CM-3610A unique features

The vertical-type CM-3610A retains most of the features of the CM-3600A plus some unique features.

Sample holder - Easier handling of sheet materials  
Direct measurement of powder materials



## Reflectance and transmittance in one instrument

The CM-3600A/CM-3610A can measure both the reflectance of opaque objects and the transmittance of transparent or translucent solid materials such as plastics. With accessories, the CM-3600A can even measure the transmittance of liquids.

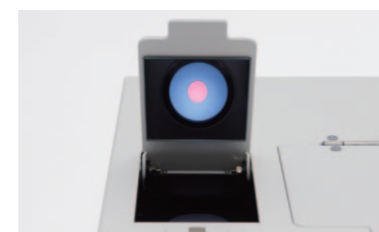
\* Liquid measurements not possible with CM-3610A.



Reflectance Measurement: The CM-3600A/CM-3610A employs di:8°, de:8° geometry (diffuse illumination, 8° viewing) which conforms to ISO, CIE, ASTM, DIN, and JIS standards.

Transmittance Measurement: The CM-3600A/CM-3610A employs the d:0° geometry (diffuse illumination, 0° viewing), which conforms to CIE, ASTM, DIN and JIS standards.

### Brighter, clear sample viewing system



Opening the sample viewer provides a clear, illuminated view of the sample at the measurement port. On the CM-3600A, this view is reflected in a mirror so that you can view it easily even while seated.

### Improved CM-3600A sample holder



Sample holder opens 90° for easy positioning of thick samples and is equipped with a "soft-close" mechanism that prevents it from slamming shut and possibly damaging samples.

### 3 measurement areas for diverse needs



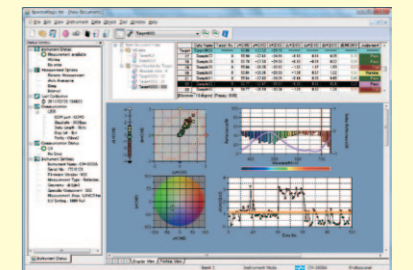
Masks for the CM-3600A's three measurement areas (SAV: Ø4 mm, MAV: Ø8 mm, and LAV: Ø25.4 mm) are included as standard accessories, so you can select the one that fits your measurement requirements.

## SpectraMagic™ **NX** (Optional)

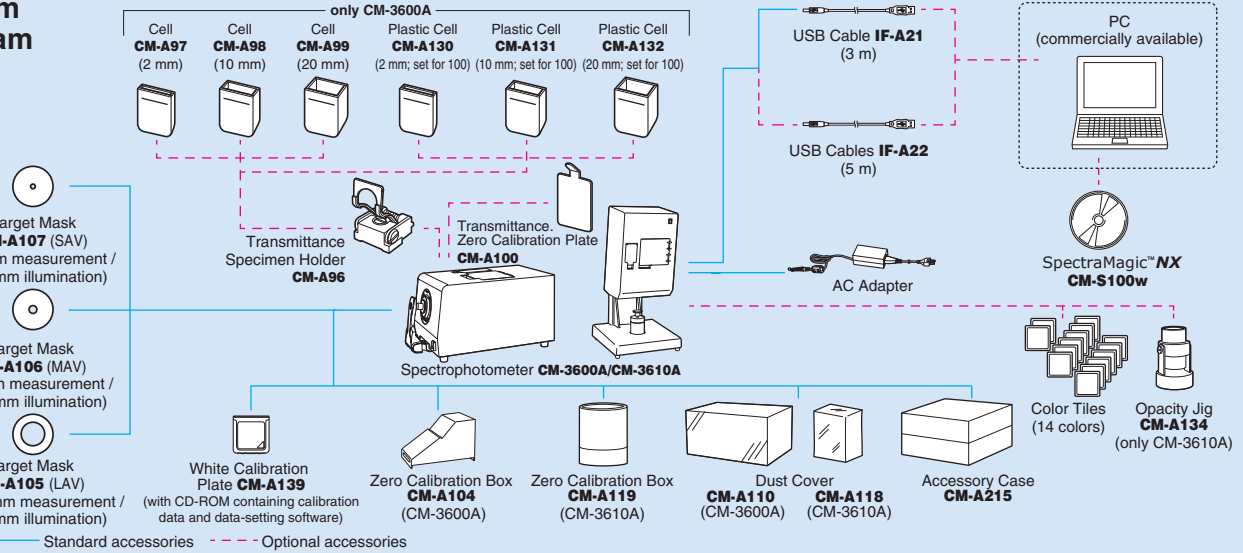
Supports Windows® Vista/7/8/8.1

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 16 illuminants, and up to 40 indices to determine specific color and appearance properties, such as strength, brightness, haze, yellowness, opacity and whiteness. You can even configure up to 8 customized color equations. Reports range from simple Pass/Fail to trend charts, histograms, color plots, and spectral graphs. SpectraMagic™ **NX** comes with predefined templates, 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", as well as step by step navigation help. Available in 8 languages: English, French, German, Italian, Spanish, Japanese, Chinese (Simplified/ Traditional), and Portuguese.

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



# System Diagram



## Specifications

Illumination/viewing system	Reflectance	di:8°, de:8° (diffused illumination, 8-degree viewing) Simultaneous measurement of SCI (specular component included) / SCE (specular component excluded)	Repeatability When white calibration plate is measured 30 times at 10-sec. intervals after white calibration has been performed; Spectral reflectance: Standard deviation within 0.1% Colorimetric values: Standard deviation within ΔE*ab 0.02
		Conforms to CIE No.15, ISO 7724/1, ASTM E 1164, DIN 5033 Teil 7 and JIS Z 8722 condition c standard.	
Detector	Transmittance	di:0°, de:0° (diffused illumination, 0-degree viewing) Conforms to CIE No.15, ASTM E 1164 and DIN 5033 Teil 7 and JIS Z 8722 condition g standard.	Inter-instrument agreement Mean ΔE*ab 0.15 (LAV/SCI) Average for 12 BCRA Series II color tiles compared to values measured with master body.
		Silicon photodiode array (dual 40 elements)	UV adjustment Instantaneous numerical adjustment
Spectral separation device	Diffraction grating		UV cut filter 400 nm cutoff and 420 nm cutoff
Wavelength range	360 to 740 nm		Transmittance chamber Width: 133 mm; depth: approx. 50 mm Transmission sample holder (Optional accessory): Sample holder for both plate-shaped and liquid samples (removable)
Wavelength pitch	10 nm		Interface USB 1.1
Half bandwidth	Approx. 10 nm		Power AC100 to 240 V 50/60 Hz (Using included AC adapter)
Reflectance range	0 to 200%; resolution: 0.01%		Operation temperature/humidity range (*1) 13 to 33°C, relative humidity 80% or less (at 33°C) with no condensation
Integrating sphere size	ø152 mm		Storage temperature/humidity range 0 to 40°C, relative humidity 80% or less (at 35°C) with no condensation
Light source	4 pulsed xenon lamps		Size (WxHxD) CM-3600A 244 x 205 x 378 mm, CM-3610A 300 x 597 x 315 mm
Minimum measurement interval	Normal SCI/ SCE measurement: 4 sec. Transmittance measurement: 3 sec. UV-cut/ UV-adjusted measurement: 5 sec.		Weight CM-3600A 11.5 kg, CM-3610A 16.5 kg
Measurement/illumination area	Reflectance	Reflectance: Changeable between SAV, MAV, and LAV SAV : ø4 mm measurement / ø7 mm illumination MAV : ø8 mm measurement / ø11 mm illumination LAV : ø25.4 mm measurement / ø30 mm illumination	*1 Operation temperature/humidity range of products for North America : 13 to 33°C, relative humidity 80% or less (at 31°C) with no condensation
		Transmittance Approx. ø17 mm / ø24 mm	

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### 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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