KONICA MINOLTA

SPECTROPHOTOMETER CM-3600d / CM-3610d

**Built for Precision,
Priced for Economy**

Outstanding Performance through Innovative Technology

CM-3600d Horizontal Spectrophotometer

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

CM-3610d 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 observation

The essentials of imaging

CM-3600d and CM-3610d Spectrophotometer: Highest Quality in Color Measurement in the Laboratory and for Production

Enhanced Performance Technology Konica Minolta Innovative Optical System

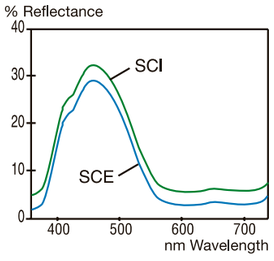
The CM-3600d and CM-3610d are equipped with Konica Minolta Innovative Optical System technology. For users, this means high accuracy and repeatability, improved performance, additional features, simple operation, and - low, affordable pricing.

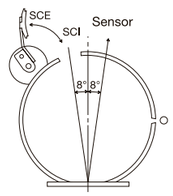
This technology also provides:

1.Numerical Gloss Control

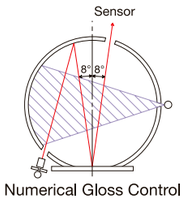
Instead of using a mechanically driven gloss trap, the CM-3600d and CM-3610d feature a patented numerical Gloss (SCI/SCE) control system.
By sequentially firing two flashes, within a few seconds the system provides both SCI and SCE values for each sample.

SCI specular component included
SCE specular component excluded





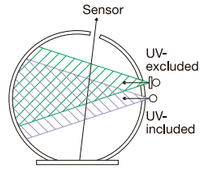
Mechanical driven gloss trap



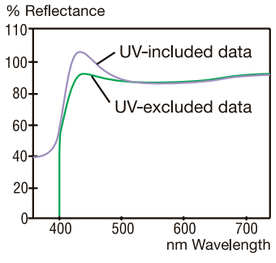
Numerical Gloss Control

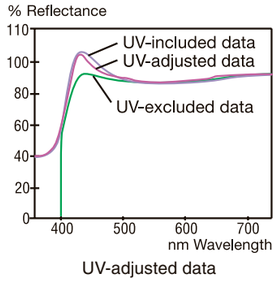
2.Numerical UV Control

To replace the time-consuming traditional UV measurement system that utilizes moving filters, the CM-3600d introduces yet another patented numerical calculation system, which is also part of the CM-3610d: The measured values of two sequentially fired flashes, one with full UV energy and one with UV cut-off filter at either 400 or 420 nm are combined to obtain the spectral characteristics, and the respective whiteness and tint value of any UV-activated fluorescence sample. To avoid triplet effect on FWA treated samples, the CM-3600d and CM-3610d can be set to Soft-Flash mode. Numerical UV Control technology makes faster, more effective and reliable measurements of FWA treated materials such as textiles, papers and detergents.



Numerical UV Control

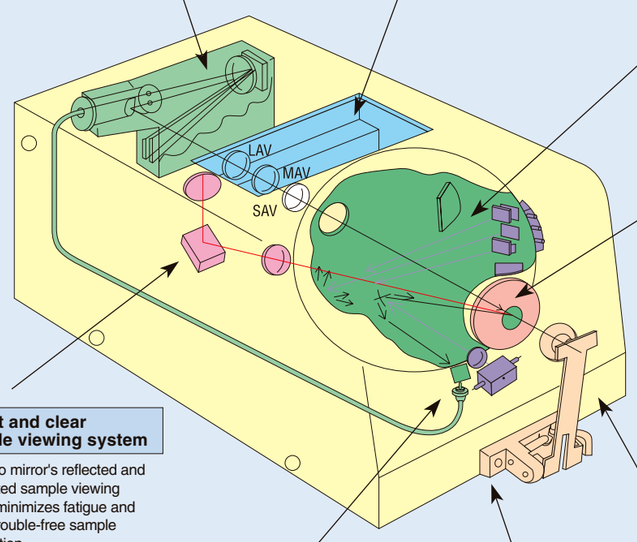




UV-adjusted data

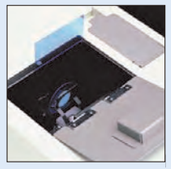
For high-accuracy color control
The newly designed Monolith Polychromator Unit

consists of a diffraction grating with a full wavelength range, 360-740 nm, at 10nm pitch, and 10nm half-band width, both for sample and reference light, and dual-channel sensor array.

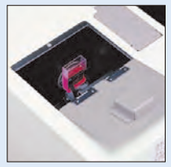


Full range of application coverage

Whatever your sample looks like, with the CM-3600d you can measure it! Reflectance of opaque samples, Transmittance of transparent liquids or solids and Diffuse Transmittance of translucent materials such as plastics - the CM-3600d is truly versatile.



Transmittance Measurement-The CM-3600d employs the d/0° geometry (diffused lighting, 0° viewing), which conforms to ISO, DIN, CIE, and ASTM standards.



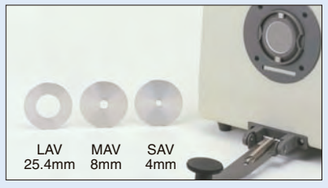
Reflectance Measurement-The CM-3600d employs d/8° geometry (diffused lighting, 8° from normal viewing) which conforms to JIS7 ISO, DIN, CIE and ASTM standards.

Konica Minolta Innovative Optical System Technology

Konica Minolta's Innovative Optical System, including Numerical Gloss Control and Numerical UV Control, opens the way to unlimited application versatility at a price level never seen before.

Multiple measurement area selection

To cover all kinds of samples, the CM-3600d gives you the choice among three aperture sizes: LAV 25.4mm, MAV 8mm and SAV 4mm with precise measurement spot adjustment by a motorized observing lens.

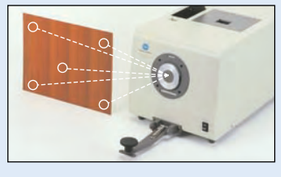


Bright and clear sample viewing system

The retro mirror's reflected and illuminated sample viewing screen minimizes fatigue and allows trouble-free sample observation.

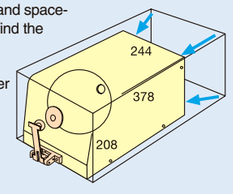
Designed to meet your highest ergonomic expectations

The compact and space-saving body as well as all functions of the CM-3600d have been designed to ensure easy and fatigue-free operation in daily use. The bright mirror sample viewing system, the sample holder for up to A4 size samples with full 90° lock down, and the versatile Transmittance chamber for liquid or translucent samples are all just where you expect them to be for easy operation.



Compact but yet Powerful

Behind the compact and space-saving design, you'll find the skills of a top-class instrument with 6" large sphere and other functions so far only found in much larger and more expensive instruments.



Maintenance free technology and ruggedness concept

The CM-3600d is equipped with maintenance-free technology and solid state components to withstand rugged conditions. The monolith polychromator unit assures highest durability and stability. With one exception (Observing Lens), the CM-3600d does not use any moving parts. Furthermore, each CM-3600d passes a hard endurance test program to comply with KONICA MINOLTA's highest quality standards in accordance with ISO-9001.

Performance

- Fast, simultaneous measurement of Specular Included and Specular Excluded components (SCI/SCE)
- Fast, Instantaneous numerical UV adjustment enables UV-included, UV-excluded, and UV-adjusted data to be obtained simultaneously
- Precise inter-instrument agreement.
  All CM-3600d spectrophotometers meet published inter-instrument agreement.

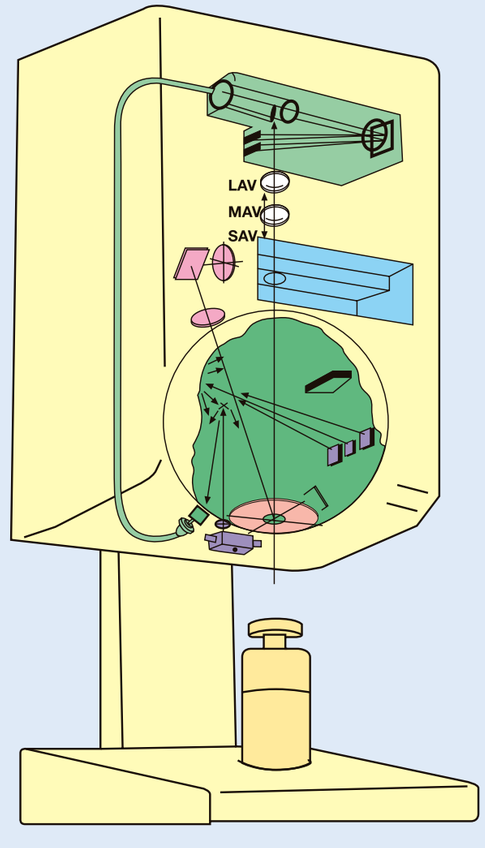
Versatility

- Full wavelength range 360-740nm with 10nm pitch
- Large (6") sphere; d/8° geometry
- Reflectance and transmittance sample measurements
- Changeable measurement areas (ø4mm,ø8mm,or ø25.4mm)
- View finder design for easy sample viewing
- Compact and lightweight

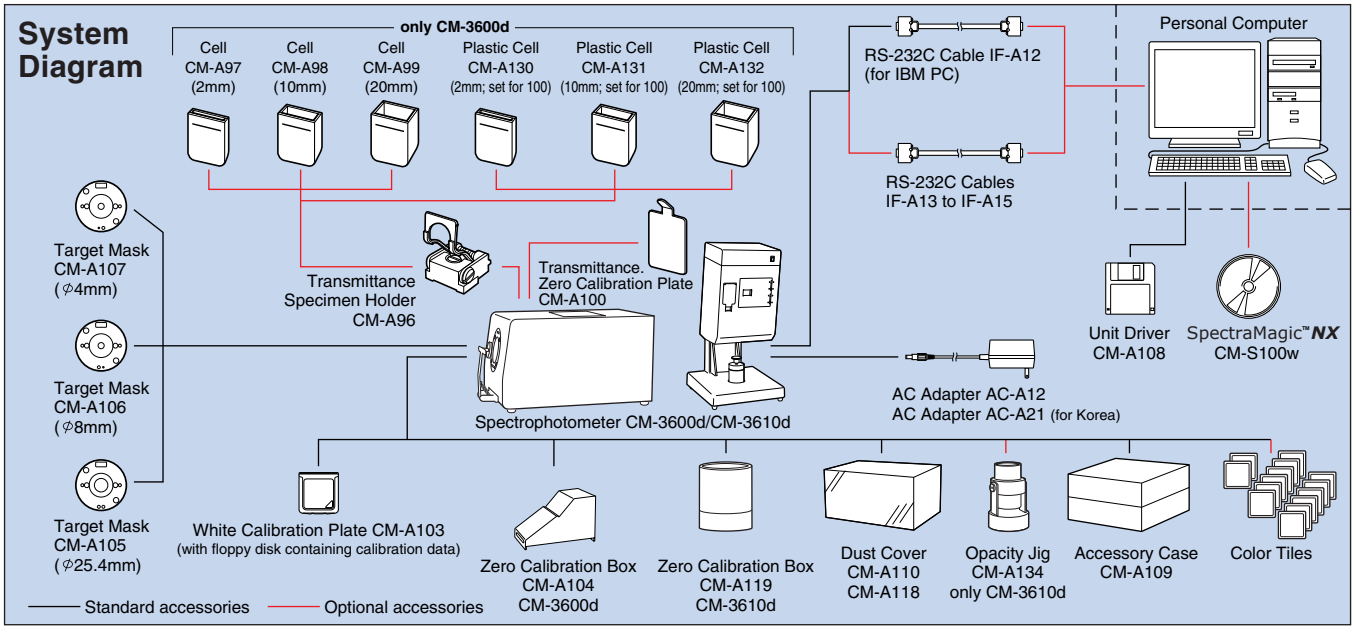
Reliability

- High reliability design with fewest moving parts of any benchtop spectrophotometer

CM-3610d Vertical Model



System Diagram



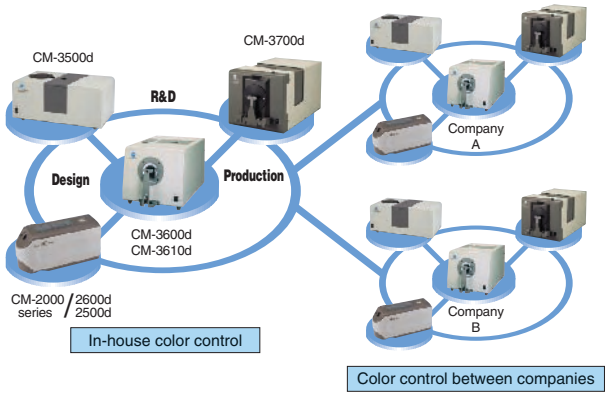
Specifications

Illumination/ Observation system	Reflectance;d/8 (diffused illumination, 8-degree viewing), equipped with simultaneous measurement of SCI (specular component included) / SCE (specular component excluded) Conforms to CIE No.15,ISO7724/1,ASTME1164, DIN5033 Teil7 and JIS Z8722 condition C standard. Transmittance : d/0 (diffused illumination, 0-degree viewing) Conforms to CIE No.15, ASTME1164 and DIN5033 Teil7 standard.
Light-receiving element	Silicon photodiode array (dual 40 elements)
Spectral separation device	Diffraction grating
Wavelength range	360 to 740nm
Wavelength pitch	10nm
Half bandwidth	Approx.10nm
Reflectance range	0 to 200%; resolution: 0.01%
Sphere size	ø152mm
Light source	4 pulsed xenon lamps
Measurement time	Approx. 1.5 seconds
Minimum interval Between measurements	Approx. 5 seconds
Measurement/ illumination area	LAV : ø25.4mm/ø30mm MAV : ø8mm/ø11mm (Selectable) SAV : ø4mm/ø7mm
Repeatability	Spectral reflectance: Standard deviation within 0.1% Colorimetric values: Standard deviation within ΔE*ab0.02
Inter instrument agreement	Mean ΔE*ab0.15 (SCI) Average for 12 BCRA Series II color tiles compared to values measured with master body.
Temperature dependence	Spectral reflectance: Within ±0.10%/°C Color difference: Within ΔE*ab 0.05/°C
UV adjustment	Instantaneous numerical adjustment
UV cut filter	400nm cutoff and 420nm cutoff
Transmittance chamber	Width: 133mm; depth: approx. 50mm; measurement dia.: approx. 17mm Transmission sample holder (Optional accessory): Sample holder for both plate-shaped and liquid samples (removable)
Interface	RS-232C, D-SUB 9-pin (female) terminal
Power	AC120V/230V 50/60Hz (Using included AC adapter)
Operating temperature/ humidity range (*1)	13 to 33°C, relative humidity 80% or less (at 33°C) with no condensation
Storage temperature/ humidity range	0 to 40°C, relative humidity 80% or less (at 33°C) with no condensation
Size (W x H x D)	CM-3600d 244 x 208 x 378 mm, CM-3610d 300 x 597 x 315 mm
Weight	CM-3600d 12 kg, CM-3610d 16.5 kg

*1 Operating temperature/humidity range of products for North America : 13 to 33°C, relative humidity 80% or less (at 31°C) with no condensation

Network construction for color control either within an organization or between organizations

High inter-instrument agreement between the same Konica Minolta model and also among all CM models (benchtops and portables): CM-2000 series, CM-3000 series,
This inter-instrument agreement is ideal when multiple units will be used for color control either within an organization or between organizations.



KONICA MINOLTA SPECTROPHOTOMETER LINEUP

CM-3700d series	"State of the Art" Reference models
CM-3600d	Laboratory and Production Model(horizontal)
CM-3610d	Laboratory and Production Model(vertical)
CM-3500d	Unique Top Port bench-top model
CM-2600d/2500d/2500c	Top class accuracy portables

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.

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

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

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http://konicaminolta.com/about/se/contact.html

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