

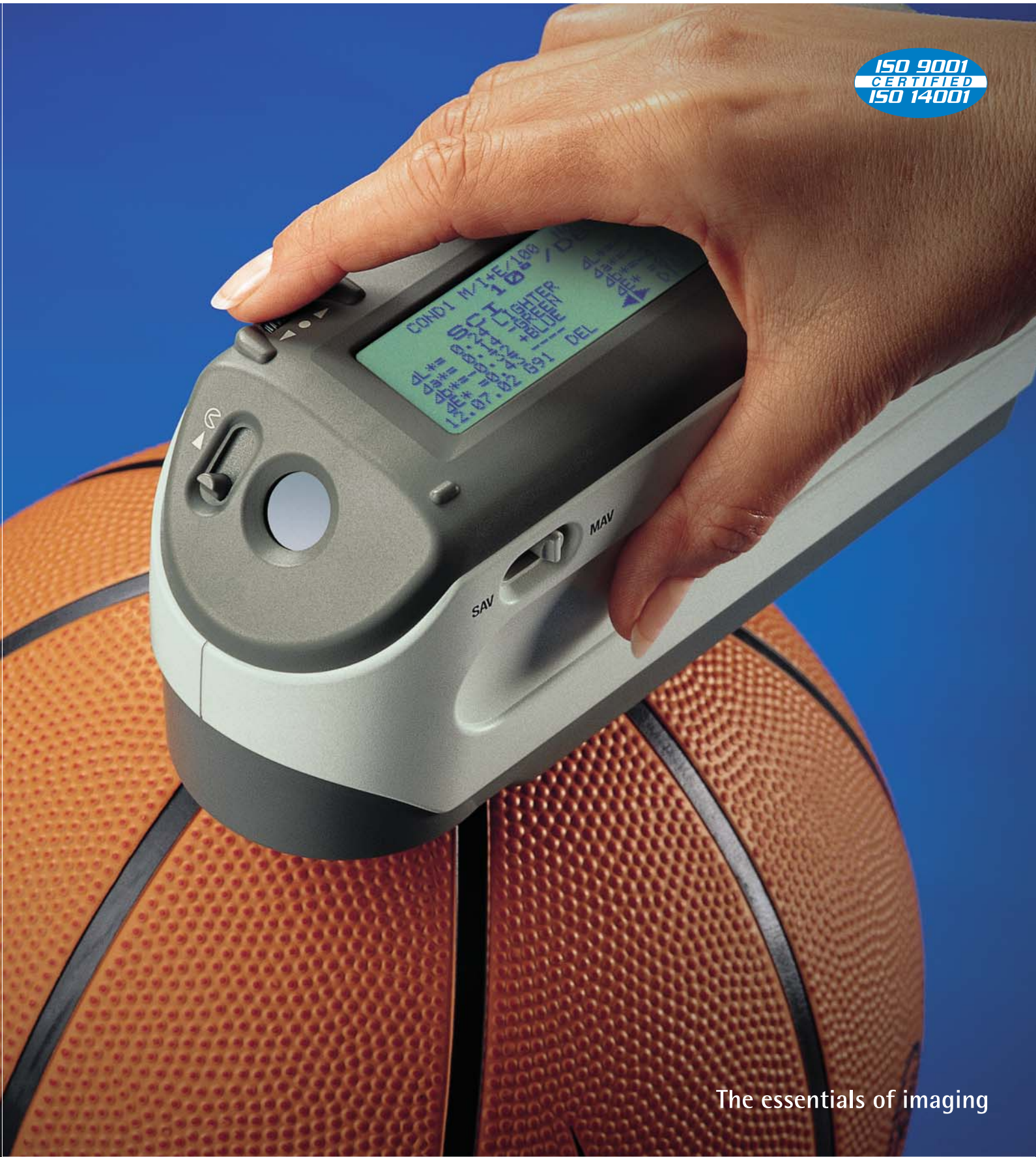


KONICA MINOLTA

SPECTROPHOTOMETER CM-2600d

Simply expands the Boundaries
in Color Control

ISO 9001
CERTIFIED
ISO 14001

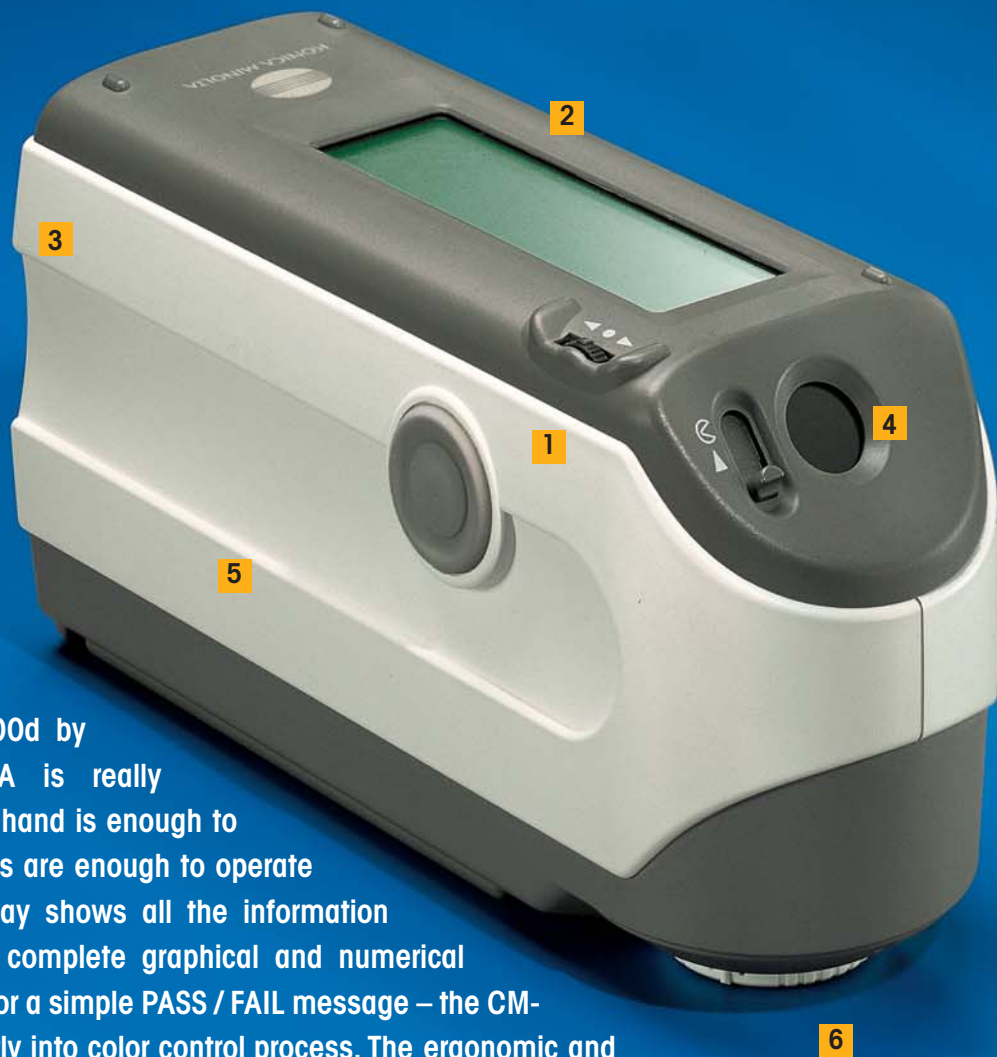


The essentials of imaging

PRONOUNCING "SPECTROPHOTOMETER" IS THE ONLY COMPLICATED THING ABOUT OUR LATEST PRODUCT.

We don't need to explain to you how important reliability is in color control issues. Whatever your product is, your customers can count on the same color on every item, and so can you.

Today's spectrophotometers all claim to be highly accurate, lightweight and reliable. So what makes the difference? Whoever uses a spectrophotometer wants to use it intuitively and easily.



The new CM-2600d by KONICA MINOLTA is really easy to use. One hand is enough to hold it, two fingers are enough to operate it. The large display shows all the information you need, either complete graphical and numerical color information or a simple PASS / FAIL message – the CM-2600d fits perfectly into color control process. The ergonomic and interactive features encompass all applications in color quality control.

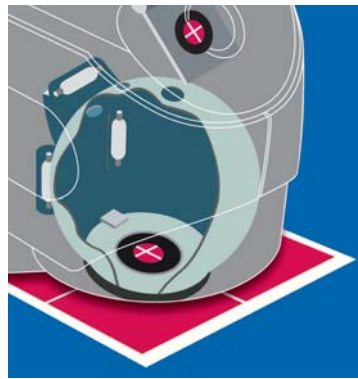
1 Single handed operation and you're in control of the all new CM-2600d:

Forget all you have heard about "easy operation" of any portable spectrophotometer so far! The new CM-2600d sets new standards when you look 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 options with great ease – Forward, Backward and pressing down like using a PC mouse.



4 What you see is what you get:

Sample observation for precise targeting of small specimens has never been as simple as with the CM-2600d. Forget about these fuzzy "stapler" type targeting masks and other unpractical devices. Simply open the sample viewing port and you can exactly see what you're aiming at. Even on very dark colors, the very bright special illumination LED shows you exactly what you'll measure, whether you're using the large or the small aperture mask. Once you have positioned the CM-2600d, just let the lever go and take the measurement.



5 Fits comfortably into your hand :

Weighing only 670 gr. (without batteries) and combined with its ergonomic design, the CM-2600d is perfectly suited for any application in the laboratory in the field. Taking measurements horizontally or vertically is both easy and fatigue free. The compact size and accessible measurement aperture allows you to measure samples of any shape or size.



2 Comprehensive and informative color Data Information Display:

The large Display is your "Information Centre". 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 graph with either box or elliptical tolerances, – you're in control at any time. And also Relativity Gloss Value can be displayed by using Numerical Gloss Control. 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 five 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.



Pass / Fail Display Relativity Gloss Value



Color graph + data Display Relativity Gloss Value



Simultaneous color difference with wording for SCI and SCE Relativity Gloss Value



Spectral graph Relativity Gloss Value

6 Two measuring apertures to cover all sample sizes:

The CM-2600d offers you great flexibility of use with two interchangeable measurement apertures with Ø 8 mm (MAV) and – Ø 3 mm (SAV). Changing the aperture mask is very easy and quick. The two lens position settings guarantee perfect data correlation with both apertures, – as you can expect from a leading-optical precision manufacturer. These two apertures enable you to measure samples of all size and shapes and avoid taking time consuming average measurements on structured surfaces or faulty results on small samples.



3 You'll never be out of power

With the CM-2600d, you have the free choice of three different power sources (batteries, rechargeable batteries or AC power), making your portable instrument ready for action at any time in any place. No need to wait for charging or being out of power at the wrong moment.

NORTH, EAST, SOUTH, WESTWARD HO! EXPANDING THE BOUNDARIES TO A GLOBAL COLOR DATA COMMUNICATION NETWORK.

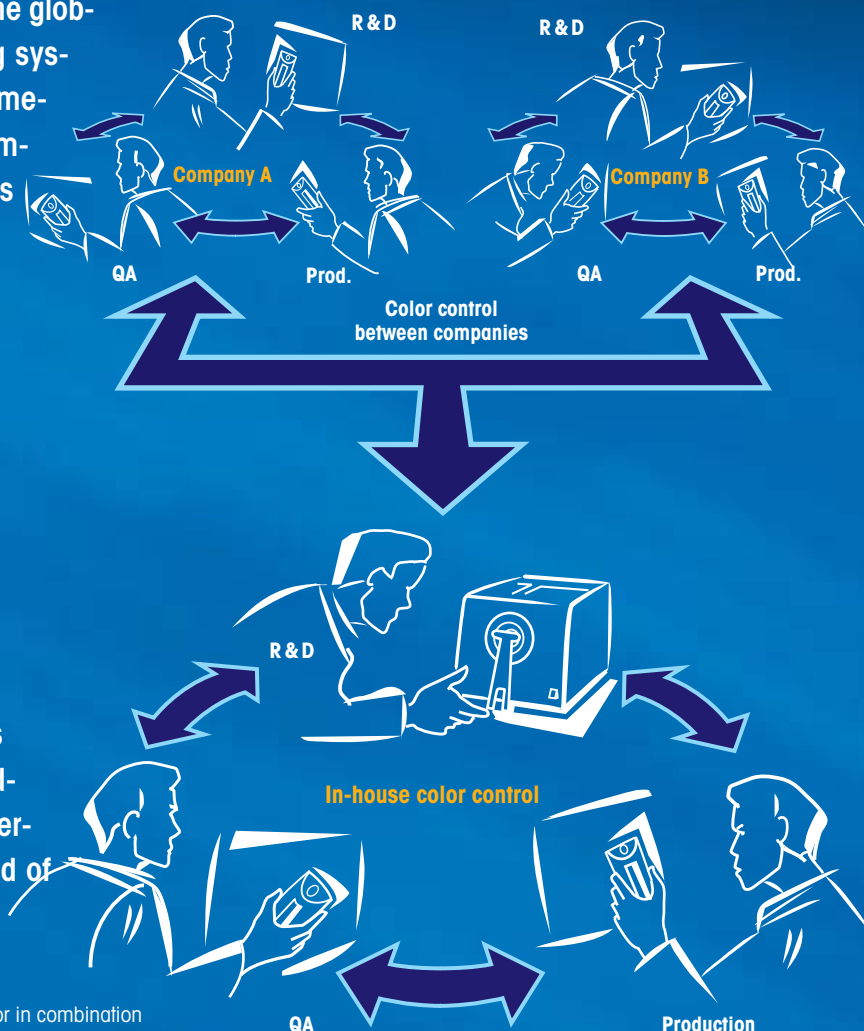
In today's global network, customers, manufacturers and numerous suppliers have to work hand in hand when it comes to Total Quality Assurance. Reliable and correlating color data are a real challenge for flawless color communication in the whole manufacturing process, from R&D to Production and Quality Assurance. KONICA MINOLTA, one of the global leading manufacturers of color measuring systems and pioneer in portable spectrophotometers offers you the most extensive and complete range of instruments to meet this challenge.

The new CM-2600d, a highly interactive portable color measuring instrument, fits perfectly into KONICA MINOLTA's broad range of color measuring systems. The perfect inter-instrument agreement with the line of bench-top instruments as well as the commonly shared line of software, create a total solution system, suited for all stages in the manufacturing process throughout all kinds of applications. It is therefore not just a new fine piece of hardware, but also the expansion into a new generation of instrumentation linked with the world of Information Technology.

The issue: color data communication in a network

When it comes to color data communication within your company or in combination with your customers and suppliers, then the main issue is inter-instrument and inter-model agreement. These two terms describe the level of measurement data agreement between several instruments or the same type and/or several different models. The better this agreement is, the more it is possible to exchange color data within the network for flawless Quality Control. Through accurate design of all optical parts in full accordance with international norms and severe quality control levels, KONICA MINOLTA has earned the highest reputation for best inter-instrument and inter-model agreement levels. So you can choose a bench-top instrument for the laboratory and confidently exchange data with the CM-2600d in the Production and Quality Assurance department.

Network construction for color control either within an organisation or between organisations



The CM-2600d: A real multi-talent for all possible tasks:

The CM-2600d is fully equipped with hardware and software features to cover the widest possible spectrum of applications in any industry. Simultaneous measurement and display of data with specular component included (SCI) and excluded (SCE) can handle any sample surface condition. With the d/8° sphere geometry and two interchangeable apertures, you cover all kind of sample sizes and shapes, from S to XXL. The world's first portable instrument with numerical UV calibration and measurement control opens the way to measure fluorescent materials such as Textiles, Papers and Detergents.



SpectraMagic™ QC Software Ver. 3.xx for Windows® 98/2000, Windows NT®4.0

This optional quality control software further enhances the capabilities of your CM-2600d (or any other Konica Minolta spectrophotometer) with full flexibility to cover your application whatever it is.



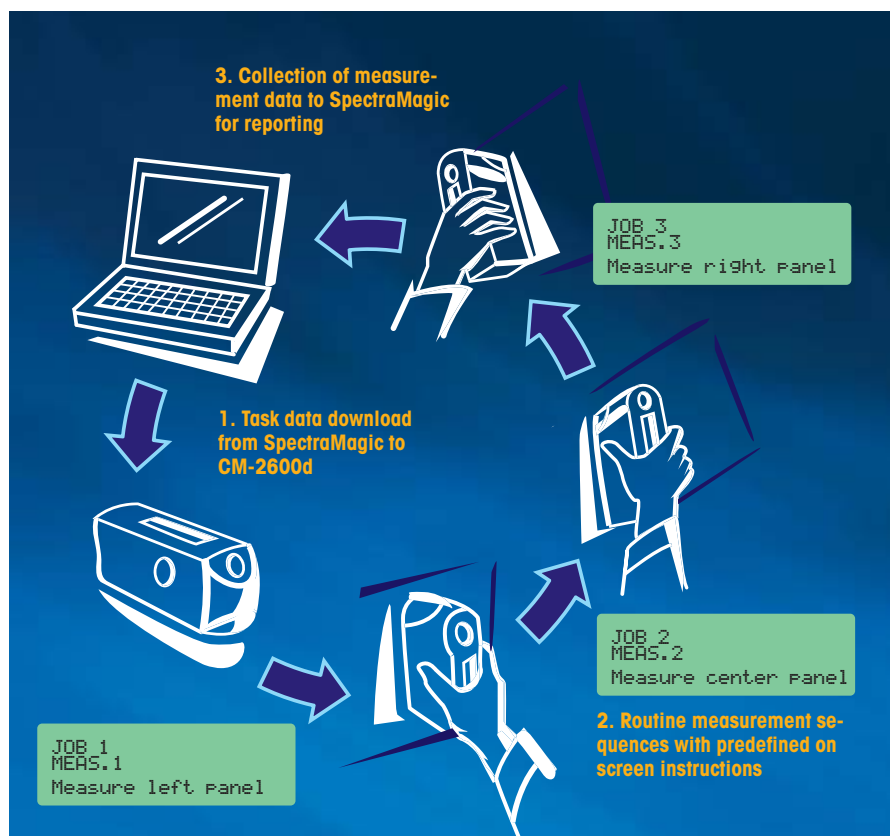
SpectraMagic gives you the freedom to configure your screen with unlimited flexibility. Color graph, Reflectance graph, Trend graph or numerical tables for colorimetric values and indices, with SpectraMagic you have it all. SpectraMagic remains simple and easy to handle thanks to features like the automatic Macro function and pre-selectable working modes with password protection to assure perfect data security according to ISO recommendations. Database handling is extremely flexible, as any measurement data in a Workfile set can be converted to become your Target or Sample. Setting tolerances for box- or elliptical type can be performed automatically or manually. On screen color simulation to visualise color difference or metamerism is another feature of SpectraMagic. Color data files can be exported to spreadsheet or directly to your customer through the Internet by E-mail. (For more detailed information on SpectraMagic please ask for the specific flyer)

* Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the United States and other countries.

The exclusive task function – because we care to make your QA work

Routine instrumental quality checks in production can only work, if the "tool" is easy to handle by everyone. This is why we equipped the CM-2600d with the exclusive "Task-Function". In combination with the optional QC Software SpectraMagic, you have access to an unprecedented simple to operate function, to cover repeated routine measurements on the production line. The Task itself is prepared by the manager or supervisor using SpectraMagic software, and is then downloaded to the instrument.

The CM-2600d can store and handle up to six different Tasks. Once entered, the person in production just executes the Task and follows the instructions appearing on the display, selectable from five different languages. Each Task can contain up to 10 sequences, depending on the job to do. The measurement data is automatically stored with the respective records of Task and sequence number. For further data treatment or to prepare quality reports, data can be up-loaded into SpectraMagic. The Task-Function on the CM-2600d is yet further proof of KONICA MINOLTA's long experience and expertise in on-site color control.



PEOPLE OFTEN TALK ABOUT "INNER VALUES". HERE THEY CAN FIND LOTS OF THEM.

Isn't it the wish of every user to master highly sophisticated instruments with absolute ease? Or is this a fantasy, which will never come true? Our answer to these questions is the new—portable spectrophotometer, the CM-2600d. It combines very simple, comfortable and intuitive use with KONICA MINOLTA's patented Innovative Optical System to meet the highest expectations for color measurement for Quality Assurance of almost any application.

Initially launched with the bench-top spectrophotometer CM-3600d, this innovative technology includes Numerical Gloss- Control (NGC) and, now available for the first time in a portable instrument, numerical UV-Control (NUVC).

Together with the high energy xenon flash illumination and the high resolution monolithic dual beam monochromator, this technology is free from moving parts and therefore guarantees substantial advantages in ruggedness and reliability.

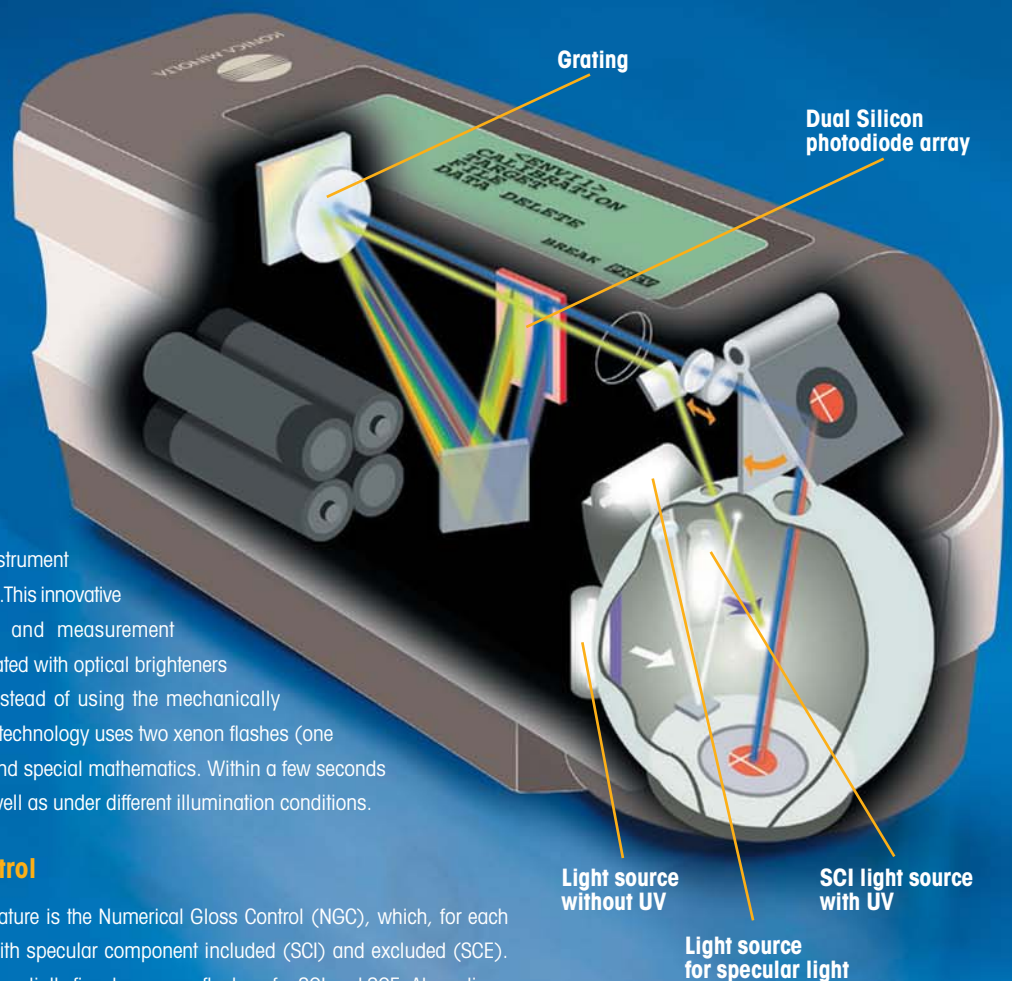
World first: Numerical UV-Control

The CM-2600d is the world's first portable instrument to offer the patented numerical UV-Control (NUVC). This innovative technology drastically reduces calibration and measurement procedure time when measuring products treated with optical brighteners such as Textiles, Papers and Detergents. Instead of using the mechanically driven filters of traditional methods, the NUVc technology uses two xenon flashes (one including UV and one excluding UV energy) and special mathematics. Within a few seconds you get both results, with and without UV as well as under different illumination conditions.

UV-calibration procedure requires optional SpectraMagic software.

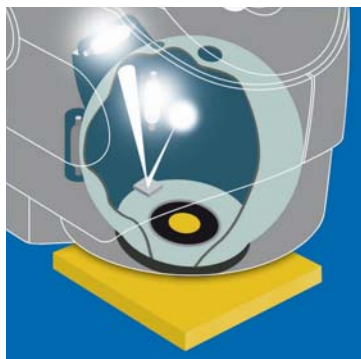
Unequaled: Numerical Gloss Control

Another patented and therefore exclusive – feature is the Numerical Gloss Control (NGC), which, for each measurement, provides simultaneous data with specular component included (SCI) and excluded (SCE). Instead of mechanical moving parts, NGC sequentially fires two xenon flashes, for SCI and SCE. At any time, you can display both measuring results in the display of the CM-2600d. NGC technology has also enable the achievement of Relativity Gloss Value display. The advantages of NGC technology lies in its superior optical results as well as the absence of any moving parts making the CM-2600d rugged enough for portable applications.



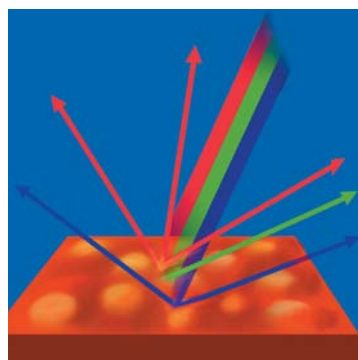
On suitability in accordance with international Standards:

The optical construction has great importance on subjects like absolute accuracy, data compatibility with other (type, brand) instruments. They depend on the way the supplier designs and manufactures all optical parts such as the geometry, light dividing devices, monochromator.



On suitability for all kind of samples:

Samples you have to control come in all sorts of shapes, sizes and forms, which the instrument should be able to measure in an easy and repeatable way. Furthermore, time-consuming sample preparation prior to measurement should be avoided by the instrument's ability to measure it as it is.



On Color data information:

The way color data is output and presented is a vital factor in ensuring quick and easy routine quality control in production. A large easy to read display, fast assessment Pass/Fail indications, including understandable color descriptions in your language, as well as display of color and spectral graphs, makes the instrument understandable to all operators regardless of their color knowledge.

On inter-instrument agreement:

Optimum performance is not a luxury, and you need to ensure you get reliable data throughout the instrument's lifetime. Many of your existing and future customers will undoubtedly have color measurement systems and will need to communicate with you about color data. Perfect inter-instrument agreement ensures data correlation between several instruments of the same type, whereas Inter-model agreement states the level of agreement between different types of instruments (e.g. portable and Bench-top instruments).

On specular evaluation

Depending on the surface condition of the sample and the angle of observation, the eye can perceive different levels of specular gloss (high gloss, semi-gloss or matte). To evaluate the influence of the gloss on the color data, the d/8° geometry offers the ability to measure the sample including (SCI) or excluding (SCE) the specular component. Simultaneous assessment of SCI and SCE in one measurement offers great advantages in the speed and ease of use.

On Design & Ergonomics:

The design, shape, weight and ease of operation dictates if the instrument is "suitable" for your application. Its ergonomics, how it fits into your hand, are vital to the daily working practices and integration into the work process.

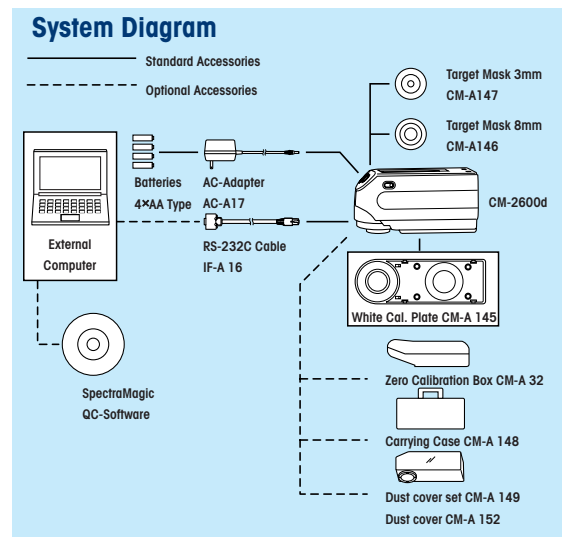
Today's standard requirements for portable color control:

- ✓ Optical system strictly in accordance with international standards (ISO, CIE, DIN, ASTM, AFNOR, JIS)
- ✓ Performances meeting your application for today and the future (repeatability, long term stability, inter-instrument agreement)
- ✓ Full and comprehensive color data information
- ✓ Compact, light, left or right handed operation
- ✓ Suitable for any shape or size of sample; Simultaneous SCI / SCE measurements

10 Additional features only the CM-2600d can offer you:

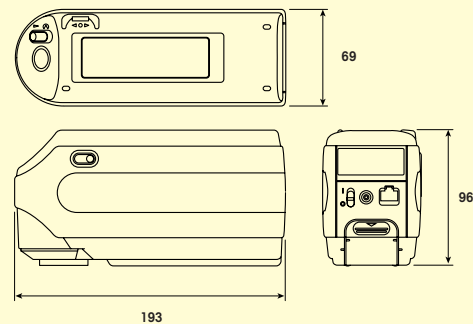
- Perfect sample observation with viewfinder
- Patented numerical Gloss control (NGC)
- Patented numerical UV calibration (standard equipment)
- Unique "Navigation wheel" for menu operation
- Intuitive operation flow
- "Task" function for error free step-by-step operator guidance with clear and concise procedure Performance
- Choice of six pre-selectable measurement modes
- Choice of three power supply modes (Batteries, rechargeable batteries, AC power)
- "Sleep mode" power saving system
- Yearly re-calibration reminder message

Specifications	
Illumination/viewing system:	d/8 (diffused illumination, 8-degree viewing angle), equipped with simultaneous measurement of SCI (specular component included)/SCE (specular component excluded). (Conforms to DIN 5033 Teil 7, JIS Z 8722 Condition C, ISO 7724/1, CIE No.15, ASTM E1164.)
Size of integrating sphere:	∅ 52 mm
Detector:	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%, Display resolution: 0.01%
Light source:	3 pulsed xenon lamps (2 xenon lamps for CM-2500d)
Measurement time:	Approx. 1.5 seconds (approx. 2 seconds for fluorescent measurement)
Minimum measurement interval:	3 seconds for SCI/SCE (4 seconds for fluorescent measurement) (Simultaneous evaluation of SCI/SCE is possible by a single measurement)
Measurement/illumination area:	MAV: ∅ 8mm/∅ 11 mm SAV: ∅ 3 mm/∅ 6 mm (Selectable between MAV and SAV) (Only MAV is available for CM-2500d)
Repeatability:	(Standard deviation): Spectral Reflectance: within 0.1% (360 to 380nm within 0.2%) Chromaticity Value : Δ E*ab within 0.04 (When a white calibration plate is measured 30 times at 10-second intervals after white calibration)
Inter instrument agreement:	Δ E*ab within 0.2 (MAV/SCI) (Based on 12 BCRA Series II color files compared to values measured with master body)
UV adjustment:	Instantaneous adjustment (no mechanical adjustment required) *With UV400nm cut filter (no UV adjustment function for CM-2500d)
Measurement mode:	Single/averaging (auto mode: 3, 5, 8 flashes/manual mode)
Interface:	RS-232C
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)
Outputs:	Spectral value/graph, colorimetric value, color difference value/graph, PASS / FAIL result, relativity gloss value
Color space/colorimetric data:	L*a*b, L*C*h, CMC (1:1), (2:1), CIE94, Hunter Lab, Yxy, Munsell, XYZ, M1, W1 (ASTM E313), W1/Tint (CIE/Ganz&Griesser), Y1 (ASTM E313/ASTM D1925), ISO Brightness (ISO 2470), Density status A/T, L ₉₉ a ₉₉ b ₉₉ , L ₉₉ c ₉₉ h ₉₉
Data memory:	700 (SCI/SCE as a set)
Tolerance Display:	Tolerance for color difference (both box and elliptical tolerances can be set)
Power sources:	AA-size battery (x4), AC adapter
Battery performance:	Approx. 1000 times at 10-second intervals (when alkaline batteries used)
Size (WxHxD):	69 x 96 x 193 mm
Weight:	Approx. 670g (without batteries)
Operating temperature/humidity range:	5 to 40 °C, relative humidity 80% or less with no condensation
Storage temperature/humidity range:	0 to 45 °C, relative humidity 80% or less with no condensation
Standard accessories:	White calibration plate, Target mask ∅ 8 mm, Target mask ∅ 3 mm (not supplied for CM-2500d), RS-232C cable, AC adapter, AA-size battery (x4)
Optional accessories:	Hard case, Dust cover set, Dust cover, SpectraMagic QC software, Zero calibration box CM-A32



CM-2600d Dimensions

(Units:mm)



CM-2500d the lower cost option

Same simplicity, same performance but with the following restrictions:



- No UV control
- Only ∅ 8 mm aperture

Specifications and drawings subject to change without prior notice.

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.



The manufacturing center of Konica Minolta Sensing Inc. (Location: Aichi Pref., Japan) was approved by the British certification organization Lloyd's Register Quality Assurance for certification under the ISO 9001: 1994 international quality management system standards on March 3, 1995. Since its establishment in 1990, the center has carried out the development and production of precision instruments and associated application software for the measurement of color, light, and shape. Certification was awarded to the center's quality management system, including design, manufacturer, management of manufacture, calibration and servicing. Certification was carried over to the ISO 9001: 2000 standards in February, 2003.

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Minolta Europe GmbH
Minolta France S.A.
Minolta UK Limited
Minolta Austria Ges.m.b.H.
Minolta Camera Benelux B.V.
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