

## Main specifications

<b>Model</b>	Spectrophotometer CM-5	
<b>Illumination/viewing system</b>	Reflectance:	di:8°, de:8° (diffuse illumination: 8° viewing) SCI (specular component included)/SCE (specular component excluded) switchable Conforms to CIE No. 15, ISO 7724/1, ASTM E 1164, DIN 5033 Teil 7, and JIS Z 8722 (Condition c)
	Transmittance:	di:0°, de:0° (diffuse illumination: 0° viewing)
<b>Integrating sphere size</b>	Ø152 mm	
<b>Detector</b>	Dual 40-element silicon photodiode arrays	
<b>Spectral separation device</b>	Planar diffraction grating	
<b>Wavelength range</b>	360 nm to 740 nm	
<b>Wavelength pitch</b>	10 nm	
<b>Half bandwidth</b>	Approx. 10 nm	
<b>Measurement range</b>	0 to 175 % (Reflectance or transmittance); Output/display resolution: 0.01%	
<b>Light source</b>	Pulsed xenon lamp	
<b>Measurement time</b>	Approx. 1 s (to data display/output); Minimum measurement interval: Approx. 3 s	
<b>Measurement/illumination area</b>	Reflectance:	Changeable by changing mask and settings. LAV: Ø30 mm/Ø36 mm; MAV (optional): Ø8 mm/Ø11 mm; SAV (optional): Ø3 mm/Ø6 mm
	Transmittance:	Ø20 mm
<b>Repeatability</b>	Spectral reflectance: Standard deviation within 0.1% (400 nm to 740 nm) Chromaticity value: Standard deviation within ΔE*ab 0.04 * When a white calibration plate is measured 30 times at 10-second intervals after white calibration	
<b>Inter-instrument agreement</b>	Within ΔE*ab 0.15 (Typical) (LAV/SCI) (Based on 12 BCRA Series II color tiles compared to values measured with a master body under Konica Minolta standard conditions)	
<b>Transmittance chamber</b>	No sides (unlimited sample length); Depth (maximum sample thickness): 60 mm Sample holders (optional) for holding sheet samples or containers of liquid samples can be installed/removed	
<b>Display</b>	5.7-inch TFT color LCD	
<b>Display languages</b>	English, Japanese, German, French, Italian, Spanish, Simplified Chinese	
<b>White/100% calibration</b>	Automatic white (reflectance)/100% (transmittance) calibration using internal white calibration plate (Not applicable to 100% calibration when using cells for transmittance measurements of liquids.)	
<b>Interfaces</b>	USB 1.1 (Connection to PC; USB memory stick); RS-232C standard (Connection to serial printer)	
<b>Observer</b>	2° Standard Observer or 10° Standard Observer	
<b>Illuminant</b>	A, C, D50, D65, F2, F6, F7, F8, F10, F11, F12, ID50, ID65 (simultaneous evaluation with two light sources possible)	
<b>Displayed data</b>	Spectral values, spectral graph, colorimetric values, color-difference values, color-difference graph, pass/fail judgment, pseudo color, color assessment	
<b>Color space</b>	L*a*b*, L*C*h, Hunter Lab, Yxy, XYZ, Munsell, and color differences in these spaces (except for Munsell)	
<b>Index</b>	Reflectance:	Mi; WI (ASTM E 313-73, ASTM E 313-96); Yi (ASTM E 313-73, ASTM E 313-96, ASTM D 1925); ISO Brightness; B (ASTM E 313-73)
	Transmittance:	Gardner; Iodine Color Number; Hazen/APHA; European Pharmacopoeia; US Pharmacopoeia
<b>User index</b>	User-defined index	
<b>Color-difference equation</b>	ΔE*ab (CIE 1976), ΔE*94 (CIE 1994), ΔE00 (CIE 2000), ΔE (Hunter), CMC (l: c)	
<b>Pass/fail judgment</b>	Tolerances can be set to colorimetric values (except Munsell), color-difference values, or reflectance index values	
<b>Storable data</b>	Measurement data: 4,000 measurements; Target color data: 1,000 measurements	
<b>USB memory stick* storage</b>	Storage of measurement data and target color data. Storage/reading of measurement condition settings	
<b>Power</b>	AC 100 to 240 V, 50/60 Hz (using exclusive AC adapter)	
<b>Size</b>	Slide cover closed:	385 (W) × 192 (H) × 261 (D) mm
	Slide cover open:	475 (W) × 192 (H) × 261 (D) mm
<b>Weight</b>	Approx. 5.8 kg	
<b>Operating temperature/humidity range</b>	13 to 33°C, relative humidity 80 % or less (at 35°C) with no condensation	
<b>Storage temperature/humidity range</b>	0 to 40°C, relative humidity 80 % or less (at 35°C) with no condensation	

\* Security-enabled USB memory sticks cannot be used.

**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.
- Be sure to use the specified batteries. Using improper batteries may cause a fire or electric shock.

The specifications and drawings given here are subject to change without prior notice.  
- If you have any questions about specifications, please contact your Konica Minolta representative.



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Konica Minolta Sensing Americas, Inc  
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New Jersey, U.S.A.  
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Addresses and telephone/fax numbers are subject to change without notice. For the latest contact information, please refer to the KONICA MINOLTA SENSING Worldwide Offices web page :

**Phone** : 888-473-2656(in USA), 201-236-4300(outside USA)  
Nieuwegein, Netherlands  
München, Germany  
Roissy CDG, France  
Milton Keynes, United Kingdom  
Milan, Italy  
Zaventem, Belgium  
Dietikon, Switzerland  
Västra Frölunda, Sweden  
Wien, Austria  
Wroclaw, Poland  
Shanghai, China  
Beijing, China  
Guangzhou, China  
Chongqing, China  
Qingdao, China  
Singapore  
Seoul, Korea

**Phone** : +31(0)30 248-1193  
**Phone** : +49(0)89 4357 156 0  
**Phone** : +33(0)1 493-82519  
**Phone** : +44(0)1908 540-622  
**Phone** : +39 02 39011.1  
**Phone** : +32 (0)2 7170 933  
**Phone** : +41(0)43 322-9800  
**Phone** : +46(0)31 7099464  
**Phone** : +43(0)1 87882-430  
**Phone** : +48(0)71 33050-01  
**Phone** : +86-021-5489 0202  
**Phone** : +86-010-8522 1551  
**Phone** : +86-020-3826 4220  
**Phone** : +86-023-6773 4988  
**Phone** : +86-0532-8079 1871  
**Phone** : +65 6563-5533  
**Phone** : +82(0)2-523-9726

**Fax** : 201-785-2482  
**Fax** : +31(0)30 248-1280  
**Fax** : +49(0)89 4357 156 99  
**Fax** : +33(0)1 493-84771  
**Fax** : +44(0)1908 540-629  
**Fax** : +39 02 39011.223  
**Fax** : +32 (0)2 7170 977  
**Fax** : +41(0)43 322-9809  
**Fax** : +46(0)31 474945  
**Fax** : +43(0)1 87882-431  
**Fax** : +48(0)71 734 52 10  
**Fax** : +86-021-5489 0005  
**Fax** : +86-010-8522 1241  
**Fax** : +86-020-3826 4223  
**Fax** : +86-023-6773 4799  
**Fax** : +86-0532-8079 1873  
**Fax** : +65 6560-9721  
**Fax** : +82(0)2-523-9729

<http://konicaminolta.com/instruments/about/network>



# Spectrophotometer CM-5

NEW

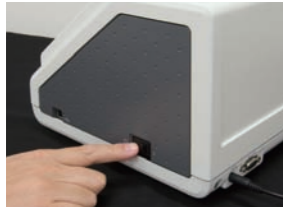
An advanced all-in-one spectrophotometer with innovative operation to let anyone take measurements easily anytime



The CM-5 makes color measurements simple. Just switch it on and start taking measurements. No need to bother with a computer; the CM-5 has a full range of advanced functions including specialized indices for a variety of applications and a large color display that makes results easy to read.

Finally, high accuracy and ease of use in a compact top-port spectrophotometer!

## Measurements as simple as 1-2-3!



### Switch on power.

The CM-5 starts up and **automatically performs white/100% calibration\*** using an internal white calibration plate behind the shutter.

\* Not applicable to liquid transmittance measurements using cells.



### Position sample.

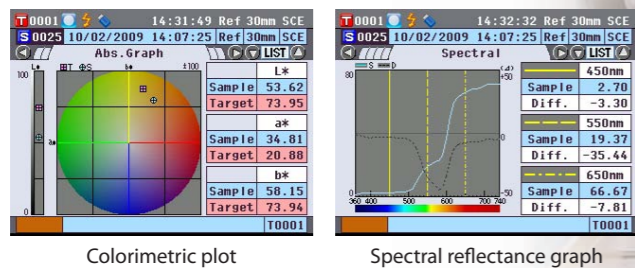
For reflectance, the **top port** makes measuring samples of various shapes and sizes easy. For transmittance, sliding open the CM-5 reveals a **large transmittance chamber**. Liquids can be measured using optional cells.



### Press MEAS.

The measurement is taken and the results appear in the display. The **large color LCD** enables data to be shown not only numerically, but also on the colorimetric plots and spectral graphs that normally require a computer to display.

## Actual CM-5 screens!

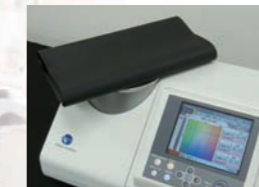


Screens can be shown in any of **7 languages**: English, Japanese, German, French, Italian, Spanish, and Simplified Chinese

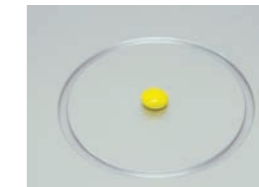
## Compact, versatile color instrument

### Reflectance measurements

The measuring port of the CM-5 is on top, so users can just place a solid object on the port and press the MEAS. button. There's no need to clamp the sample in a sample holder, and there's no worry about the sample shifting position. And, by using a Petri dish (optional accessory), liquids, pastes, and powders can also be measured easily.



Samples are just placed on top, so even large samples can be measured.



By using the Ø3mm target mask (optional accessory), even small samples can be measured.



Chunky materials can be put in a Petri dish (optional accessory) and measured.



Pastes can also be measured using a Petri dish (optional accessory).



Colorant pellets can be measured in raw form using a Petri dish (optional accessory).

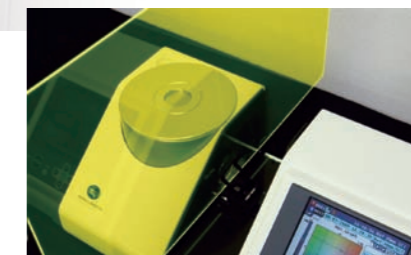


Tiny amounts of costly samples can be measured using the mini dish (custom product).

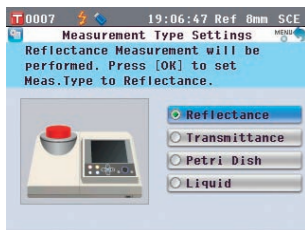
### Transmittance measurements

The CM-5's transmittance chamber is large and sideless, enabling measurements of even large sample sheets with thicknesses up to 60mm.

For liquids, optional cells with 3 optical path lengths are available, and commercial 10mm-wide cells can also be used.



## Just follow the wizard!



### Even beginners can take measurements easily without mistakes.

The CM-5's **wizard mode** guides users through each step, helping users to make settings and take measurements without having to get out the instruction manual each time.

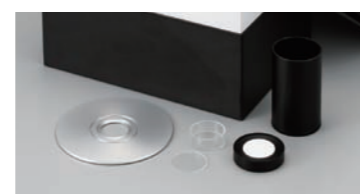
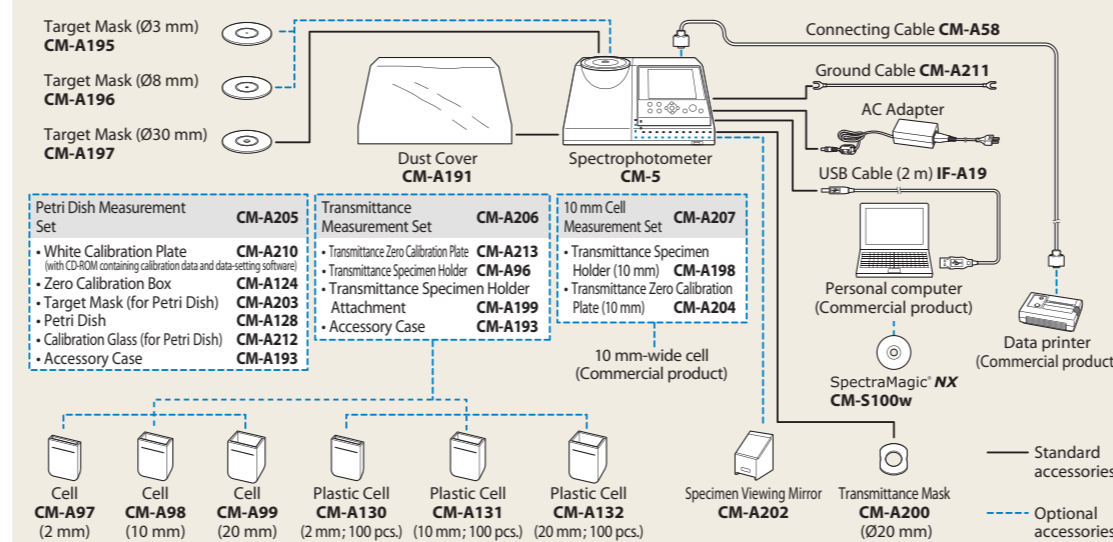
## Avoid multi-user confusion with USB!

Do many people in your lab use the same instrument? The CM-5 helps eliminate that confusion by letting users store their own settings on their own USB memory stick, so they can restore the settings they need by simply reading from the memory stick instead of going through and redoing settings individually. Afterwards when they're finished, they can store measurement and target data on the same USB key and take it with them for further analysis.



Afterwards when they're finished, they can store measurement and target data on the same USB key and take it with them for further analysis.

## System Diagram



Petri Dish Measurement Set CM-A205



Transmittance Measurement Set CM-A206



10mm Cell Measurement Set CM-A207

## Internal calibration curves for measuring standard chemical/pharmaceutical indices

The CM-5 can measure several of the standard color indices commonly used in the chemical and pharmaceutical field: Gardner, Hazen/APHA, Iodine Color Number, European Pharmacopoeia and US Pharmacopoeia. Calibration curves for these indices are stored in the CM-5, so measurements of samples based on these indices can be performed quickly and easily by anyone.

