KONICA MINOLTA

NEW

Support for LED backlights

Display Color Analyzer CA-310

The next-generation model that surpasses the CA-210

For high-speed, high-accuracy measurements of LED-backlit LCD TVs

Main specifications (Specifications other than Measurement area are for the Ø27 mm measurement area probe.)

Measurement area		Ø27 mm (Ø10 mm probe also available)	Measurement speed (USB)	xyL_V	0.0050 to 0.0999 cd/m²	4 times/sec.
Acceptance angle		±2.5°			0.1 to 1.999 cd/m²	5 times/sec.
					2.000 to 1000 cd/m²	20 times/sec.
Measurement distance		30±10 mm		Flicker (Contrast)	16 times/sec.	
Display range	Luminance	0.0001 to 1000 cd/m²	Display	Digital	xyL_V, $T\Delta uvL_V$, RGB analyze, XYZ, $u'v'L_V$	
	Chromaticity	Displayed as 4-digit or 3-digit value (selectable)				
Luminance	Measurement range	0.0050 to 1000 cd/m²		Analog	Δx, Δy, ΔL_V; R/G, B/G, ΔG; ΔR, B/R, G/R	
	Accuracy (white)	10.00 to 1000 cd/m² ±2% (0.0050 cd/m² ±0.0015 cd/m²)		LCD	16 characters/2 lines (with backlight)	
	Repeatability (2σ)	10.00 to 1000 cd/m² 0.1% (0.0050 cd/m² 0.0010 cd/m²)	Interface		USB; RS-232C (38,400 bps or below)	
Chromaticity	Measurement range	0.0500 to 1000 cd/m²	Operating temperature/ humidity range		10 to 28°C, relative humidity 70% or less with no condensation Temperature-dependent value change from reading at 23°C 40% relative humidity: Luminance: Within ±2% ±1 digit of reading (for white) Chromaticity: Within ±0.002 (for white); Within ±0.006 (for monochrome) (When measuring Konica Minolta's standard LCD at 120 cd/m²; 6500K, 9300K)	
	Accuracy (white)	120 cd/m² ±0.002 (±0.004 for monochrome)				
	Repeatability (2σ)	0.0500 to 0.0999 cd/m² 0.010 2.000 to 1000 cd/m² 0.001				
Flicker (Contrast method)	Measurement range	5 cd/m² or higher				
	Display range	0.0 to 999.9%				
	Accuracy	±1% (Flicker frequency: 30Hz AC/DC 10% sine wave) ±2% (Flicker frequency: 60Hz AC/DC 10% sine wave)	Input voltage range		100-240 V, 50-60 Hz, 50 VA	
			Size; Weight	Main body	340 (W) × 127 (H) × 216 (D) mm; Approx. 3.6 kg	
	Repeatability (2σ)	1% (Flicker frequency: 30Hz AC/DC 10% sine wave)		Probe	Ø49 × 204 mm; Approx. 530 g	

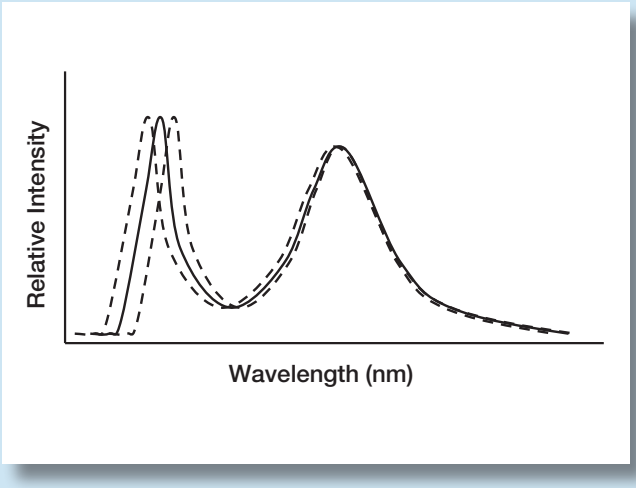
- The specifications and drawings given here are subject to change without prior notice.
- Screens shown are for illustration purpose only.

The essentials of imaging

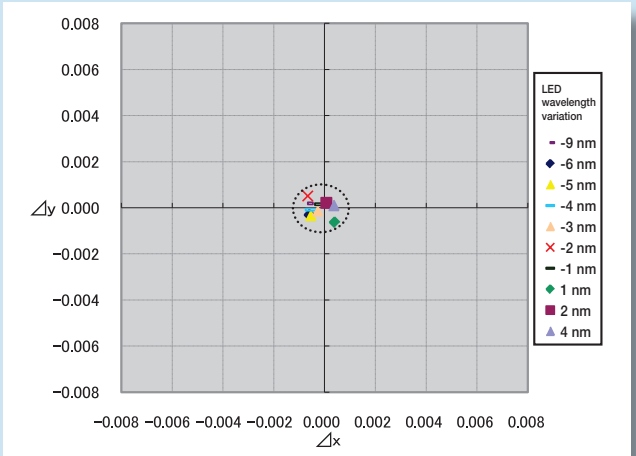
Reduces errors due to LED emission distribution variations to less than 1/3.

Variations in the emission distribution of LED backlights result in individual differences of about 10 nm in peak intensity wavelength. If LED-backlit LCD TVs with such individual differences are adjusted using conventional color analyzers, color differences of close to 0.010 on the xy chromaticity diagram may occur. But with the CA-310, the color difference in the same case is reduced to around 0.003, enabling errors to be suppressed to less than 1/3.

Variations in the emission distribution of LED backlights

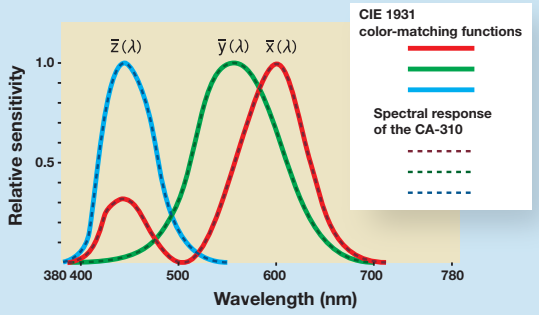


Measurement errors for LED backlights



With sensors that virtually match the CIE 1931 color matching functions

Using how a human eye senses as our model, we developed sensors that are exceedingly close to the CIE 1931 color matching functions. The solid lines in the graph below show the color matching functions expressing the sensitivity of the human eye, and the dotted lines show the sensitivities of the new sensors. In this way, it is possible to minimize measurement error for light sources regardless of emission distribution.



Enables high-speed measurement of even extremely low luminances down to 0.005 cd/m²

Sensor noise reduction technology has been used to enable measurements even in the extremely low luminance region around 0.005 cd/m² at speeds as fast as 4 times per second. This allows high-speed measurement of 100,000 : 1 contrast* (essential for manufacturing of high-grade displays aiming for ever-more-realistic gradation), and rapidly provides high-accuracy measurements. In addition, at luminances higher than 2.0 cd/m², 20 measurements per second are possible.

* Maximum luminance of 500 cd/m²

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

KONICA MINOLTA SENSING, INC.	Osaka, Japan			
Konica Minolta Sensing Americas,Inc	New Jersey, U.S.A.	**Phone :** 888-473-2656(in USA), 201-236-4300(outside USA)		**Fax :** 201-785-2482
Konica Minolta Sensing Europe B.V.	European Headquarter /BENELUX	Nieuwegein, Netherlands	**Phone :** +31(0)30 248-1193	**Fax :** +31(0)30 248-1280
	German Office	München, Germany	**Phone :** +49(0)89 4357 156 0	**Fax :** +49(0)89 4357 156 99
	French Office	Roissy CDG, France	**Phone :** +33(0)1 493-82519	**Fax :** +33(0)1 493-84771
	UK Office	Milton Keynes, United Kingdom	**Phone :** +44(0)1908 540-622	**Fax :** +44(0)1908 540-629
	Italian Office	Milan, Italy	**Phone :** +39 02 39011.1	**Fax :** +39 02 39011.223
	Swiss Office	Dietikon, Switzerland	**Phone :** +41(0)43 322-9800	**Fax :** +41(0)43 322-9809
	Nordic Office	Västra Frölunda, Sweden	**Phone :** +46(0)31 7099464	**Fax :** +46(0)31 474945
	Polish Office	Wroclaw, Poland	**Phone :** +48(0)71 33050-01	**Fax :** +48(0)71 734 52 10
Konica Minolta (CHINA) Investment Ltd.	SE Sales Division	Shanghai, China	**Phone :** +86-(0)21-5489 0202	**Fax :** +86-(0)21-5489 0005
	Beijing Branch	Beijing, China	**Phone :** +86-(0)10-8522 1551	**Fax :** +86-(0)10-8522 1241
	Guangzhou Branch	Guangdong, China	**Phone :** +86-(0)20-3826 4220	**Fax :** +86-(0)20-3826 4223
	Chongqing Office	Chongqing, China	**Phone :** +86-(0)23-6773 4988	**Fax :** +86-(0)23-6773 4799
	Qingdao Office	Shandong, China	**Phone :** +86-(0)532-8079 1871	**Fax :** +86-(0)532-8079 1873
	Wuhan Office	Hubei, China	**Phone :** +86-(0)27-8544 9942	**Fax :** +86-(0)27-8544 9991
Konica Minolta Sensing Singapore Pte Ltd.		Singapore	**Phone :** +65 6563-5533	**Fax :** +65 6560-9721
KONICA MINOLTA SENSING, INC.	Seoul Office	Seoul, Korea	**Phone :** +82(0)2-523-9726	**Fax :** +82(0)2-523-9729

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 :

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