



KONICA MINOLTA

Display Color Analyzer CA-410

CIE 170-2:2015 Compliant Probe

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CA-P427C/P410C

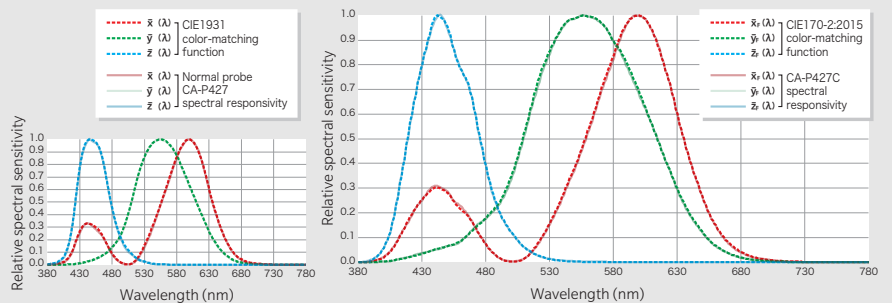


CA-P427C



CA-P410C

CIE 170-2: 2015 is a chromaticity diagram with physiological axes defined by CIE and announced in 2015. This probe has color-matching functions conforming to the CIE 170-2: 2015 definition, and provides luminance and chromaticity data that have high correlation with visual results even when adjusting wide color gamut displays.



Model	CA-P427C		CA-P410C		
Measurement area	Φ 27 mm		Φ 10 mm		
Acceptance angle	± 2.5°		± 5°		
Accuracy guaranteed measurement distance	30 ± 10 mm		30 ± 5 mm		
Display range	Luminance Chromaticity		Displayed in 4 digits Displayed in 4 digits		
Luminance	Accuracy guaranteed range		0.001 to 5,000 cd/m ²		
	Accuracy (for white) ^{*1, *3}	> 0.001 cd/m ²	± 9%	---	
		> 0.01 cd/m ²	± 2%	± 2.5%	
		> 0.1 cd/m ²	± 1.5%	± 2%	
		> 1 cd/m ²	± 1.5%	± 2%	
		> 10 cd/m ²	± 1.5%	± 1.5%	
		> 100 cd/m ²	± 1.5%	± 1.5%	
	Repeatability (2σ) ^{*1}	AUTO	> 0.001 cd/m ²	10%	---
		> 0.01 cd/m ²	1%	2%	
		> 0.1 cd/m ²	0.40%	0.60%	
> 1 cd/m ²		0.10%	0.20%		
> 10 cd/m ²	0.10%	0.10%			
> 100 cd/m ²	0.10%	0.10%			
Chromaticity	Accuracy guaranteed luminance range		0.01 to 5,000 cd/m ²		
	Accuracy (for white) ^{*1, *3}	> 0.01 cd/m ²	± 0.003	± 0.006	
		> 0.1 cd/m ²	± 0.002	± 0.002	
		> 1 cd/m ²	± 0.002	± 0.002	
		> 10 cd/m ²	± 0.002	± 0.002	
		> 100 cd/m ²	± 0.002	± 0.002	
		At 100 cd/m ² (for monochrome) ^{*2}	100 cd/m ²	± 0.003	± 0.003
	Repeatability (2σ) ^{*1}	AUTO	> 0.01 cd/m ²	0.0035	0.0070
		> 0.1 cd/m ²	0.0015	0.0020	
		> 1 cd/m ²	0.0004	0.0008	
> 10 cd/m ²		0.0003	0.0005		
> 100 cd/m ²	0.0002	0.0003			
Flicker (Contrast)	Measurement luminance range		5 to 1,500 cd/m ²		
	Measurement target (Flicker frequency)		0.25 to 65 Hz		
	Accuracy	30 Hz, AC/DC 10% sine wave	± 0.4%	± 0.4%	
		60 Hz, AC/DC 10% sine wave	± 0.7%	± 0.7%	
	Repeatability (2σ)		20-65 Hz, AC/DC 10% sine wave	0.3%	

Flicker (JEITA)	Measurement luminance range		5 to 1,500 cd/m ²	15 to 3,000 cd/m ²
	Measurement target (Flicker frequency)		0.42 to 65 Hz	0.42 to 65 Hz
	Accuracy	30 Hz, AC/DC 4% sine wave	± 0.35dB	± 0.35dB
		30 Hz, AC/DC 1.2% sine wave	± 0.35dB	± 0.35dB
Accuracy guaranteed measurement speed	Lvxy	AUTO	1 time/sec (> 0.001 cd/m ²)	1 time/sec (> 0.01 cd/m ²)
		20 times/sec	5 times/sec (> 0.15 cd/m ²)	5 times/sec (> 0.15 cd/m ²)
	Flicker (JEITA)	2.5 times/sec (at 10HzPitch)	20 times/sec (> 2 cd/m ²)	20 times/sec (> 2 cd/m ²)
Measurement synchronization mode		NTSC, PAL, EXT, UNIV, INT, MANU (4ms to 4s)	NTSC, PAL, EXT, UNIV, INT, MANU (4ms to 4s)	
Measurement speed mode		AUTO, LTD, AUTO, SLOW, FAST	AUTO, LTD, AUTO, SLOW, FAST	
Measurement target (Vertical synchronization frequency)		0.5 to 240 Hz (luminance and chromaticity) 0.5 to 130 Hz (flicker)	0.5 to 240 Hz (luminance and chromaticity) 0.5 to 130 Hz (flicker)	
User calibration memory channel		99 channels	99 channels	
Interface	Communication	USB2.0, RS-232C	USB2.0, RS-232C	
	Trigger	In & Out [5V]	In & Out [5V]	
Size (mm)		42 x 42 x 139.7	42 x 42 x 173.5	
Weight		270 g (including mount)	280 g (including mount)	
Power supply		DC 5 V (input from USB bus power line or RS communication connector)		
Operation temperature/humidity range ^{*5}		10 to 35°C, relative humidity 85% or less with no condensation		
Storage temperature/humidity range		0 to 45°C, relative humidity 85% or less (at 35°C) with no condensation		
Accessories	Standard	PC Software for Color Analyzer Ver. 1.0 CA-S40 ^{*5} , SDK for Color Analyzer CA-SDK2, USB Cable for Probe-PC (2 m) IF-A28, Hood for Probe, Lens Cap for Probe		
	Optional	Conversion Cable IF-A29, BNC Conversion Cable IF-A35		

*1: Measured under Konica Minolta's standard light source (6,500K).

*2: Luminance for monochrome is measured when reading of luminance for white is 100 cd/m².

*3: Temperature 23°C/±2°C, relative humidity 40%±10%

*4: In NTSC synchronization mode using USB with one probe

*5: Reading fluctuation (compared to reference reading at 23°C, 40% RH): Luminance: ±2% for white; Chromaticity (at 100 cd/m²): ±0.002 for white, ±0.003 for monochrome

*6: The probe corresponding to CIE 170-2: 2015 can not be used under Ver. 1.30 or earlier.

Merits of using a CIE 170-2:2015-compliant probe

When adjusting color of conventional displays using our color analyzer probe conforming to CIE 1931

Conventional display

Wide color gamut display

No visual difference was detected between conventional displays.

Differences are visually evident even though measured values are matched to displays of wide color gamut.

! Issue

Because of the advanced color technologies used with OLED, quantum dot, laser and other advanced displays, colors need to be adjusted between displays of differing spectral characteristics. However, even when measured values are matched, colors do not always look the same.

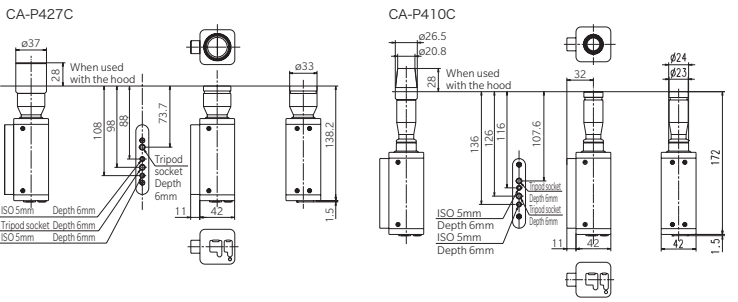
Improvements made using CIE 170-2:2015

When adjusting color of wide color gamut displays using our CIE 170-2:2015-compliant probe

Wide color gamut display

Colors can be adjusted to look the same even with displays of wide color gamut.

Dimensions (Units : mm)



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- Screens shown are for illustration purpose only.
- The specifications and appearance shown herein are subject to change without notice.
- Some lighting control methods may make accurate measurements difficult. For details, please contact your nearest Konica Minolta sales office or dealer.



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 : JQA-E-80027
Registration Date : March 12, 1997

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