



KONICA MINOLTA

Display Color Analyzer CA-410

CIE 170-2:2015 Compliant Probe

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CA-P427C/P410C

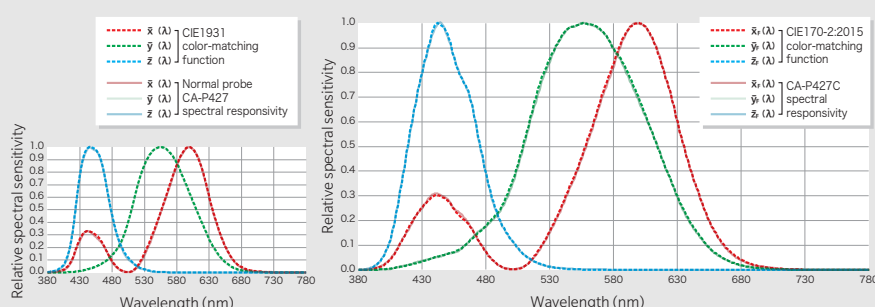


CA-P427C



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	Luminance		0.0001 to 5,000 cd/m ²	0.0001 to 5,000 cd/m ²
	Chromaticity		Displayed in 4 digits	Displayed in 4 digits
	Accuracy guaranteed range		0.001 to 5,000 cd/m ²	0.01 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}	> 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	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
	Repeatability (2σ) ^{*1}	At 100 cd/m ² (for monochrome)	100 cd/m ²	± 0.003
		> 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	15 to 3,000 cd/m ²
	Measurement target (Flicker frequency)		0.25 to 65 Hz	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 %	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
	Repeatability (2σ)	30 Hz, AC/DC 4% sine wave	0.1dB	0.1dB
30 Hz, AC/DC 1.2% sine wave		0.3dB	0.3dB	
Accuracy guaranteed measurement speed ^{*4}	Lvxy	AUTO	1 time/sec (>0.001 cd/m ²)	1 time/sec (>0.01 cd/m ²)
			5 times/sec (>0.15 cd/m ²)	5 times/sec (>0.15 cd/m ²)
	Flicker (Contrast)		20 times/sec (> 2 cd/m ²)	20 times/sec (> 2 cd/m ²)
			20 times/sec	20 times/sec
			0.5 times/sec (at 1HzPitch), 2.5 times/sec (at 10HzPitch)	0.5 times/sec (at 1HzPitch), 2.5 times/sec (at 10HzPitch)
Measurement synchronization mode			NTSC, PAL, EXT, UNIV, INT, MANU (4ms to 4s) INT, MANU (4ms to 4s)	NTSC, PAL, EXT, UNIV, INT, MANU (4ms to 4s) 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 ^{*6} , 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%

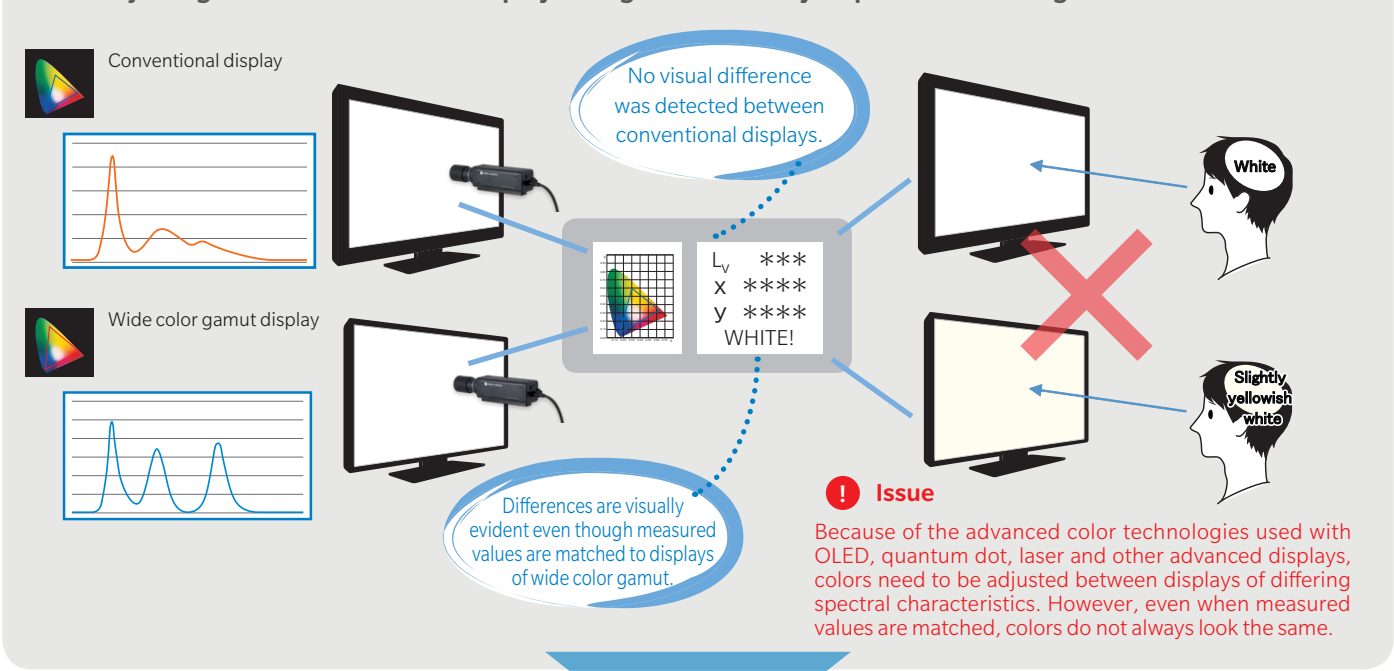
*4: In NTSC synchronization mode using USB with one probe

*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.

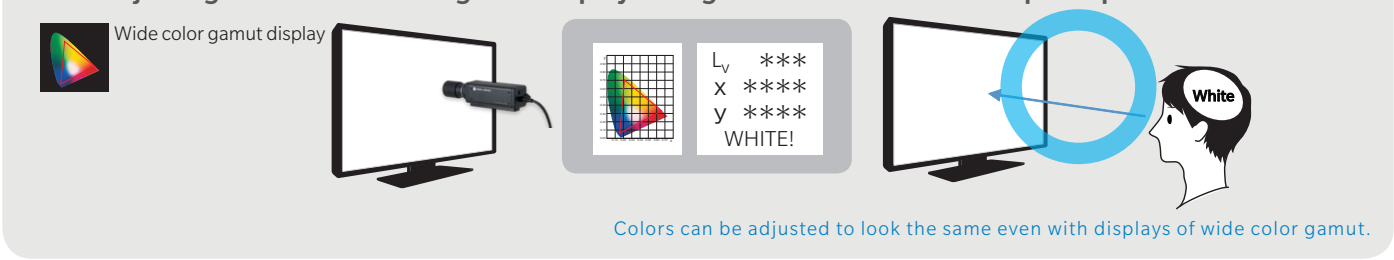
Merits of using a CIE 170-2:2015-compliant probe

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



Improvements made using CIE 170-2:2015

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



Dimensions (Units : mm)

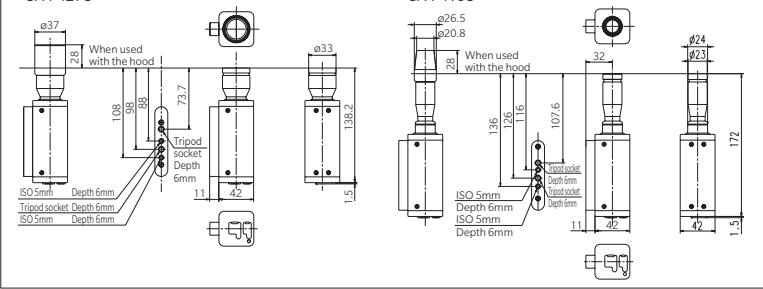
CA-P427C

Technical drawing of the CA-P427C probe. The drawing includes a front view, a side view, and a detail view of the tip. Dimensions are as follows: Front view shows a total length of 108 mm, a tip diameter of $\phi 37$ mm, and a tip length of 7.8 mm. The side view shows a total length of 136 mm, a base diameter of $\phi 33$ mm, and a base length of 1.5 mm. The detail view shows a tip length of 73.7 mm and a base length of 11 mm. The probe is labeled "When used with the hood".

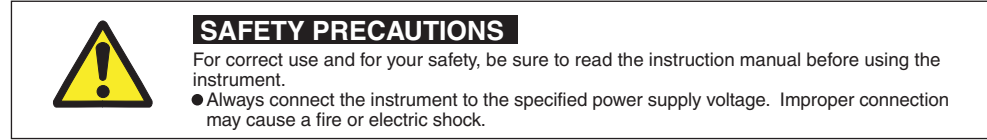
CA-P410C

Technical drawing of the CA-P410C probe. The drawing includes a front view, a side view, and a detail view of the tip. Dimensions are as follows: Front view shows a total length of 136 mm, a tip diameter of $\phi 26.5$ mm, and a tip length of 7.8 mm. The side view shows a total length of 116 mm, a base diameter of $\phi 20.8$ mm, and a base length of 1.5 mm. The detail view shows a tip length of 107.6 mm and a base length of 11 mm. The probe is labeled "When used with the hood".

CA-P427C	CA-P410C
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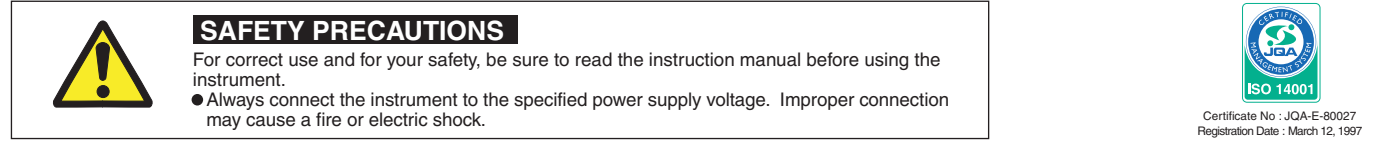
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SAFETY PRECAUTIONS

 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.



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