

Main Specifications of CA-410 Probes

* Regarding specifications of CA-P410H and CA-P427H Probes for high luminance, please contact the nearest Konica Minolta sales representative.

			High Sensitivity Probe		Normal Probe		Mini Probe	
			CA-VP410	CA-VP427	CA-P410	CA-P427	CA-MP410	
Measurement area			ø10 mm	ø27 mm	ø10 mm	ø27 mm	ø10 mm	
Acceptance angle			±8.5°	±2.5°	±5°	±2.5°	±5°	
Accuracy guaranteed measurement distance			30±5 mm	30±10 mm	30±5 mm	30±10 mm	10±5 mm	
Display range	Luminance		0.0001 to 3,000 cd/m ²	0.0001 to 3,000 cd/m ²	0.0001 to 5,000 cd/m ²	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	Displayed in 4 digits	Displayed in 4 digits	Displayed in 4 digits	
Luminance	Accuracy guaranteed range		0.001 to 3,000 cd/m ²	0.001 to 3,000 cd/m ²	0.01 to 5,000 cd/m ²	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%	±9%	---	±9%	---	
		> 0.01 cd/m ²	±2.5%	±2%	±2.5%	±2%	±2.5%	
		> 0.1 cd/m ²	±2%	±1.5%	±2%	±1.5%	±2%	
		> 1 cd/m ²	±2%	±1.5%	±2%	±1.5%	±2%	
		> 10 cd/m ²	±1.5%	±1.5%	±1.5%	±1.5%	±1.5%	
		> 100 cd/m ²	±1.5%	±1.5%	±1.5%	±1.5%	±1.5%	
	Repeatability (2σ) ¹	AUTO	> 0.001 cd/m ²	7%	10%	---	10%	---
			> 0.01 cd/m ²	1%	1%	2%	1%	2.40%
			> 0.1 cd/m ²	0.25%	0.25%	0.60%	0.40%	0.70%
> 1 cd/m ²			0.10%	0.10%	0.20%	0.10%	0.25%	
> 10 cd/m ²			0.10%	0.10%	0.10%	0.10%	0.12%	
> 100 cd/m ²	0.10%	0.10%	0.10%	0.10%	0.10%			
Chromaticity	Accuracy guaranteed luminance range		0.01 to 3,000 cd/m ²	0.01 to 3,000 cd/m ²	0.01 to 5,000 cd/m ²	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	±0.003	±0.006	±0.003	±0.006	
		> 0.1 cd/m ²	±0.002	±0.002	±0.002	±0.002	±0.002	
		> 1 cd/m ²	±0.002	±0.002	±0.002	±0.002	±0.002	
		> 10 cd/m ²	±0.002	±0.002	±0.002	±0.002	±0.002	
		> 100 cd/m ²	±0.002	±0.002	±0.002	±0.002	±0.002	
	At 100 cd/m ² (for monochrome) ²		100 cd/m ²	±0.003	±0.003	±0.003	±0.003	±0.003
	Repeatability (2σ) ¹	AUTO	> 0.01 cd/m ²	0.0020	0.0030	0.0070	0.0035	0.0085
			> 0.1 cd/m ²	0.0008	0.0008	0.0020	0.0015	0.0025
			> 1 cd/m ²	0.0003	0.0003	0.0008	0.0004	0.0010
> 10 cd/m ²			0.0002	0.0002	0.0005	0.0003	0.0006	
> 100 cd/m ²			0.0002	0.0002	0.0003	0.0002	0.0004	
Flicker (Contrast)	Measurement luminance range		---	---	15 cd/m ² or higher	5 cd/m ² or higher	15 cd/m ² or higher	
	Accuracy	30 Hz, AC/DC 10% sine wave	---	---	±0.4%	±0.4%	±0.4%	
		60 Hz, AC/DC 10% sine wave	---	---	±0.7%	±0.7%	±0.7%	
	Repeatability (2σ)	20-65 Hz, AC/DC 10% sine wave	---	---	0.3%	0.3%	0.3%	
Flicker (JEITA)	Measurement luminance range		---	---	15 cd/m ² or higher	5 cd/m ² or higher	15 cd/m ² or higher	
	Accuracy	30 Hz, AC/DC 4% sine wave	---	---	±0.35dB	±0.35dB	±0.35dB	
		30 Hz, AC/DC 1.2% sine wave	---	---	±0.35dB	±0.35dB	±0.35dB	
	Repeatability (2σ)	30 Hz, AC/DC 4% sine wave	---	---	0.1dB	0.1dB	0.1dB	
		30 Hz, AC/DC 1.2% sine wave	---	---	0.3dB	0.3dB	0.3dB	
Accuracy guaranteed measurement speed ⁴	L _v x _y	AUTO	> From minimum luminance cd/m ²	1 time/sec	1 time/sec	1 time/sec	1 time/sec	
			> 0.15 cd/m ²	5 times/sec	5 times/sec	5 times/sec	5 times/sec	
			> 2 cd/m ²	20 times/sec	20 times/sec	20 times/sec	20 times/sec	
	Flicker (Contrast)		---	---	20 times/sec	20 times/sec	20 times/sec	
Flicker (JEITA)		---	---	0.5 times/sec (at 1 Hz pitch) 2.5 times/sec (at 10 Hz pitch)	0.5 times/sec (at 1 Hz pitch) 2.5 times/sec (at 10 Hz pitch)	0.5 times/sec (at 1 Hz pitch) 2.5 times/sec (at 10 Hz pitch)		
Measurement synchronization mode			NTSC, PAL, EXT, UNIV, INT, MANU (4 ms to 4 s)	NTSC, PAL, EXT, UNIV, INT, MANU (4 ms to 4 s)	NTSC, PAL, EXT, UNIV, INT, MANU (4 ms to 4 s)	NTSC, PAL, EXT, UNIV, INT, MANU (4 ms to 4 s)	NTSC, PAL, EXT, UNIV, INT, MANU (4 ms to 4 s)	
Measurement speed mode			AUTO, LTD.AUTO, SLOW, FAST	AUTO, LTD.AUTO, SLOW, FAST	AUTO, LTD.AUTO, SLOW, FAST	AUTO, LTD.AUTO, SLOW, FAST	AUTO, LTD.AUTO, SLOW, FAST	
Supported range to be measured (frequency)			0.5 to 240 Hz (luminance and chromaticity)	0.5 to 240 Hz (luminance and chromaticity)	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)	0.5 to 240 Hz (luminance and chromaticity) 0.5 to 130 Hz (flicker)	
User calibration memory channel			99 channels	99 channels	99 channels	99 channels	99 channels	
Interface	Communication		USB 2.0, RS-232C	USB 2.0, RS-232C	USB 2.0, RS-232C	USB 2.0, RS-232C	USB 2.0, RS-232C	
	Trigger		In and Out [5 V]	In and Out [5 V]	In and Out [5 V]	In and Out [5 V]	In and Out [5 V]	
Size (mm)			47 x 47 x 226.5	47 x 47 x 190.5	42 x 42 x 173.5	42 x 42 x 139.7	42 x 42 x 77	
Weight			570 g (including mount)	510 g (including mount)	280 g (including mount)	270 g (including mount)	200 g (including mount)	
Power supply			DC 5 V (input from USB bus power line or RS communication connector)	DC 5 V (input from USB bus power line or RS communication connector)	DC 5 V (input from USB bus power line or RS communication connector)	DC 5 V (input from USB bus power line or RS communication connector)	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, 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					

Measured with Konica Minolta's specified PC and probe connected directly, using the supplied measurement software.

* 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 variation within range (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