



Main Specifications of CA-410 Probes

			High Sensitivity Probe		Normal Probe	High Luminance Probe	Normal Probe	High Luminance Probe	Mini Probe	High Luminance Probe	CIE 170-2: 2015 Supported Probe ⁷		
			CA-VP410	CA-VP427	CA-P410	CA-P410H	CA-P427	CA-P427H	CA-MP410	CA-MP410H	CA-P410C	CA-P427C	
Measurement area			Ø 10 mm	Ø 27 mm	Ø 10 mm	Ø 10 mm	Ø 27 mm	Ø 27 mm	Ø 10 mm	Ø 10 mm	Ø 10 mm	Ø 27 mm	
Acceptance angle			± 8.5°	± 2.5°	± 5°	± 5°	± 2.5°	± 2.5°	± 5°	± 5°	± 5°	± 2.5°	
Accuracy guaranteed measurement distance			30 ± 5 mm	30 ± 10 mm	30 ± 5 mm	30 ± 5 mm	30 ± 10 mm	30 ± 10 mm	10 ± 5 mm	10 ± 5 mm	30 ± 5 mm	30 ± 10 mm	
Display range	Luminance ⁸		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 30,000 cd/m ²	0.0001 to 5,000 cd/m ²	0.0001 to 30,000 cd/m ²	0.0001 to 5,000 cd/m ²	0.0001 to 30,000 cd/m ²	0.0001 to 5,000 cd/m ²	0.0001 to 5,000 cd/m ²	
	Chromaticity		Displayed in 4 digits										
Accuracy guaranteed range ⁸			0.001 to 3,000 cd/m ²	0.001 to 3,000 cd/m ²	0.01 to 5,000 cd/m ²	0.1 to 30,000 cd/m ²	0.001 to 5,000 cd/m ²	0.1 to 30,000 cd/m ²	0.01 to 5,000 cd/m ²	0.1 to 30,000 cd/m ²	0.01 to 5,000 cd/m ²	0.01 to 5,000 cd/m ²	
Luminance	Accuracy (for white) ^{1,3}	> 0.001 cd/m ²	± 9%	± 9%	---	---	---	---	---	---	---	---	
		> 0.01 cd/m ²	± 2.5%	± 2%	± 2.5%	---	± 2%	± 2%	± 2.5%	± 2%	± 2.5%	± 2%	
		> 0.1 cd/m ²	± 2%	± 1.5%	± 2%	± 2.5%	± 1.5%	± 2%	± 2%	± 2%	± 2%	± 1.5%	
		> 1 cd/m ²	± 2%	± 1.5%	± 2%	± 2%	± 1.5%	± 2%	± 1.5%	± 2%	± 2%	± 1.5%	
		> 10 cd/m ²	± 1.5%	± 1.5%	± 1.5%	± 2%	± 1.5%	± 1.5%	± 2%	± 1.5%	± 1.5%	± 1.5%	
	Repeatability (2σ) ¹	AUTO	> 0.001 cd/m ²	7%	10%	---	---	10%	---	---	---	---	10%
			> 0.01 cd/m ²	1%	1%	---	---	1%	---	---	---	---	1%
			> 0.1 cd/m ²	0.25%	0.25%	0.60%	2%	0.40%	1%	0.70%	2.4%	0.60%	0.40%
			> 1 cd/m ²	0.10%	0.10%	0.20%	0.60%	0.10%	0.40%	0.25%	0.70%	0.20%	0.10%
			> 10 cd/m ²	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
Chromaticity	Accuracy (for white) ^{1,3}	Accuracy guaranteed luminance range ⁸	0.01 to 3,000 cd/m ²	0.01 to 3,000 cd/m ²	0.01 to 5,000 cd/m ²	0.1 to 30,000 cd/m ²	0.01 to 5,000 cd/m ²	0.1 to 30,000 cd/m ²	0.01 to 5,000 cd/m ²	0.1 to 30,000 cd/m ²	0.01 to 5,000 cd/m ²	0.01 to 5,000 cd/m ²	
		> 0.01 cd/m ²	± 0.003	± 0.003	± 0.006	---	± 0.003	---	± 0.006	---	± 0.006	± 0.003	
		> 0.1 cd/m ²	± 0.002	± 0.002	± 0.002	± 0.006	± 0.002	± 0.002	± 0.002	± 0.006	± 0.002	± 0.002	
		> 1 cd/m ²	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	
		> 10 cd/m ²	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	± 0.002	
	Repeatability (2σ) ¹	AUTO	At 100 cd/m ² (for monochrome) ²	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003
			> 0.01 cd/m ²	0.0020	0.0030	0.0070	---	0.0035	---	0.0085	---	0.0070	0.0035
			> 0.1 cd/m ²	0.0008	0.0008	0.0020	0.0070	0.0015	0.0025	0.0085	0.0025	0.0020	0.0015
			> 1 cd/m ²	0.0003	0.0003	0.0008	0.0020	0.0004	0.0015	0.0010	0.0025	0.0008	0.0004
			> 10 cd/m ²	0.0002	0.0002	0.0005	0.0008	0.0003	0.0015	0.0006	0.0010	0.0005	0.0003
Flicker (CA-310 Mode) ⁶	Flicker (Contrast)	Measurement luminance range ⁸	---	---	15 to 3,000 cd/m ²	90 to 18,000 cd/m ²	5 to 1,500 cd/m ²	30 to 9,000 cd/m ²	15 to 3,000 cd/m ²	90 to 18,000 cd/m ²	15 to 3,000 cd/m ²	5 to 1,500 cd/m ²	
		Measurement target (Flicker frequency)	---	---	0.25 to 65 Hz	0.25 to 65 Hz	0.25 to 65 Hz	0.25 to 65 Hz	0.25 to 65 Hz	0.25 to 65 Hz	0.25 to 65 Hz	0.25 to 65 Hz	
		Accuracy	30 Hz, AC/DC 10% sine wave	---	± 0.4%	± 0.4%	± 0.4%	± 0.4%	± 0.4%	± 0.4%	± 0.4%	± 0.4%	± 0.4%
	Flicker (JEITA / VESA)	Measurement luminance range ⁸	---	---	15 to 3,000 cd/m ²	90 to 18,000 cd/m ²	5 to 1,500 cd/m ²	30 to 9,000 cd/m ²	15 to 3,000 cd/m ²	90 to 18,000 cd/m ²	15 to 3,000 cd/m ²	5 to 1,500 cd/m ²	
		Measurement target (Flicker frequency)	---	---	0.42 to 65 Hz	0.42 to 65 Hz	0.42 to 65 Hz	0.42 to 65 Hz	0.42 to 65 Hz	0.42 to 65 Hz	0.42 to 65 Hz	0.42 to 65 Hz	
		Accuracy	30 Hz, AC/DC 4% sine wave	---	± 0.35dB	± 0.35dB	± 0.35dB	± 0.35dB	± 0.35dB	± 0.35dB	± 0.35dB	± 0.35dB	± 0.35dB
XYZ (Wide Frequency Mode) ⁵	Flicker (Contrast)	Measurement luminance range ⁸	15 to 3,000 cd/m ²	5 to 3,000 cd/m ²	15 to 5,000 cd/m ²	90 to 30,000 cd/m ²	5 to 5,000 cd/m ²	30 to 30,000 cd/m ²	15 to 5,000 cd/m ²	90 to 30,000 cd/m ²	15 to 5,000 cd/m ²	5 to 5,000 cd/m ²	
		Measurement target (Flicker frequency)	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz	
		Accuracy	30 Hz, AC/DC 10% sine wave	± 0.4%	± 1.1%	± 0.7%	± 1.2%	± 0.7%	± 1.2%	± 0.9%	± 0.9%	± 1.2%	
	Flicker (JEITA / VESA)	Measurement luminance range ⁸	15 to 2,000 cd/m ²	5 to 3,000 cd/m ²	15 to 5,000 cd/m ²	90 to 30,000 cd/m ²	5 to 4,500 cd/m ²	30 to 27,000 cd/m ²	15 to 5,000 cd/m ²	90 to 30,000 cd/m ²	15 to 5,000 cd/m ²	5 to 4,500 cd/m ²	
		Measurement target (Flicker frequency)	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	
		Accuracy	30 Hz, AC/DC 4% sine wave	± 0.35 dB	± 0.35 dB	± 0.35 dB	± 0.35 dB	± 0.35 dB	± 0.35 dB	± 0.35 dB	± 0.35 dB	± 0.35 dB	
Waveform	Measurement luminance range ⁸	1 to 2,500 cd/m ²	1 to 3,000 cd/m ²	1 to 5,000 cd/m ²	6 to 30,000 cd/m ²	1 to 5,000 cd/m ²	6 to 30,000 cd/m ²	1 to 5,000 cd/m ²	6 to 30,000 cd/m ²	1 to 5,000 cd/m ²	1 to 5,000 cd/m ²		
	Sampling frequency	3 kHz	3 kHz	3 kHz	3 kHz	3 kHz	3 kHz	3 kHz	3 kHz	3 kHz	3 kHz		
Accuracy guaranteed measurement speed ⁴	Lvxy	AUTO	1 time/sec (> 0.001 cd/m ²)	1 time/sec (> 0.001 cd/m ²)	1 time/sec (> 0.01 cd/m ²)	1 time/sec (> 0.1 cd/m ²)	1 time/sec (> 0.001 cd/m ²)	1 time/sec (> 0.01 cd/m ²)	1 time/sec (> 0.01 cd/m ²)	1 time/sec (> 0.1 cd/m ²)	1 time/sec (> 0.01 cd/m ²)	1 time/sec (> 0.001 cd/m ²)	
			5 times/sec (> 0.15 cd/m ²)	5 times/sec (> 0.15 cd/m ²)	5 times/sec (> 0.15 cd/m ²)	5 times/sec (> 0.9 cd/m ²)	5 times/sec (> 0.15 cd/m ²)	5 times/sec (> 0.9 cd/m ²)	5 times/sec (> 0.15 cd/m ²)	5 times/sec (> 0.9 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 (> 2 cd/m ²)	20 times/sec (> 12 cd/m ²)	20 times/sec (> 2 cd/m ²)	20 times/sec (> 12 cd/m ²)	20 times/sec (> 2 cd/m ²)	20 times/sec (> 12 cd/m ²)	20 times/sec (> 2 cd/m ²)	20 times/sec (> 2 cd/m ²)	
			0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	0.5 times/sec (at 1 HzPitch), 2.5 times/sec (at 10 HzPitch)	
Measurement synchronization mode			NTSC, PAL, EXT, UNIV, INT, MANU (4 ms to 4 s)										
Measurement speed mode			AUTO, LTD. AUTO, SLOW, FAST										
Measurement target (Vertical synchronization frequency)			0.5 to 240 Hz (luminance and chromaticity)										
User calibration memory channel			99 channels										
Interface	Communication		USB2.0, RS-232C										
	Trigger		In & Out [5V]										
Size (mm)			47 x 47 x 226.5	47 x 47 x 190.5	42 x 42 x 173.5	42 x 42 x 173.5	42 x 42 x 139.7	42 x 42 x 139.7	42 x 42 x 77	42 x 42 x 77	42 x 42 x 173.5	42 x 42 x 139.7	
Weight			570 g (including mount)	510 g (including mount)	280 g (including mount)	280 g (including mount)	270 g (including mount)	270 g (including mount)	200 g (including mount)	200 g (including mount)	280 g (including mount)	270 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										

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: "Flicker (CA-310 Mode)" and "XYZ (Wide Frequency Mode)" are mode names for PC Software CA-S40. "XYZ (Wide Frequency Mode)" can only be used when no CA-DP40 data processor is connected.
⁷: The spectral sensitivities of probes conforming to CIE 170-2:2015 are different from those defined for the CIE 1931 color-matching functions; therefore, displayed values for luminance and chromaticity will be different from those calculated based on the CIE 1931 color-matching functions.
⁸: Measured under Konica Minolta's standard light source (constant light). If the luminance momentarily greatly exceeds the upper limit, such as with a PWM light source with a small duty cycle, luminances below the upper limit may be shown as too high.

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 ● The specifications and appearance shown herein are subject to change without notice.



Main Specifications of CA-410 Probes

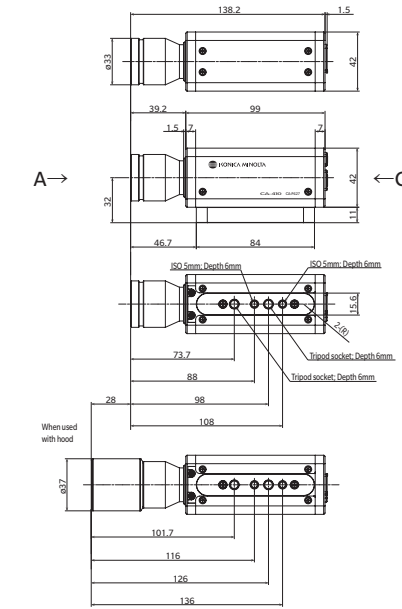
		Small Spot Probe	CA-VP404	LWD Probe		
		CA-VP402	CA-VP404	CA-VP410T		
Measurement area		Ø 2.1 mm	Ø 4 mm	Approx. Ø 10 mm		
Acceptance angle		±10°	±8.5°	±4°		
Accuracy guaranteed measurement distance		28 ± 2 mm	30 ± 2 mm	200 ± 2 mm		
Display range	Luminance ⁸	0.0001 to 6,000 cd/m ²	0.0001 to 12,000 cd/m ²	0.0001 to 12,000 cd/m ²		
	Chromaticity	Displayed in 4 digits	Displayed in 4 digits	Displayed in 4 digits		
Luminance	Accuracy guaranteed range ⁸	0.002 to 6,000 cd/m ²	0.004 to 12,000 cd/m ²	0.004 to 12,000 cd/m ²		
	Accuracy (for white) ^{1, 3}	> 0.001 cd/m ²	± 9% (>0.002 cd/m ²)	± 9% (>0.004 cd/m ²)	± 9% (>0.004 cd/m ²)	
		> 0.01 cd/m ²	± 9%	± 9%	± 9%	
		> 0.1 cd/m ²	± 3%	± 3%	± 3%	
		> 1 cd/m ²	± 3%	± 3%	± 3%	
		> 10 cd/m ²	± 2.5%	± 2.5%	± 2.5%	
	Repeatability (2σ) ¹	> 100 cd/m ²	± 2%	± 2%	± 2%	
		> 0.001 cd/m ²	10% (> 0.002 cd/m ²)	10% (>0.004 cd/m ²)	10% (>0.004 cd/m ²)	
		> 0.01 cd/m ²	5%	5%	5%	
		> 0.1 cd/m ²	1%	0.5%	0.5%	
> 1 cd/m ²		0.25%	0.20%	0.20%		
Chromaticity	Accuracy guaranteed luminance range ⁸	0.02 to 6,000 cd/m ²	0.04 to 12,000 cd/m ²	0.04 to 12,000 cd/m ²		
	Accuracy (for white) ^{1, 3}	> 0.01 cd/m ²	± 0.004 (> 0.02 cd/m ²)	± 0.004 (>0.04 cd/m ²)	± 0.004 (>0.04 cd/m ²)	
		> 0.1 cd/m ²	± 0.004	± 0.004	± 0.004	
		> 1 cd/m ²	± 0.003	± 0.003	± 0.003	
		> 10 cd/m ²	± 0.003	± 0.003	± 0.003	
		> 100 cd/m ²	± 0.002	± 0.002	± 0.002	
	Repeatability (2σ) ¹	At 100 cd/m ² (for monochrome) ²	100 cd/m ²	± 0.003	± 0.003	
		> 0.01 cd/m ²	0.0030 (> 0.02 cd/m ²)	0.0030 (>0.04 cd/m ²)	0.0030 (>0.04 cd/m ²)	
		> 0.1 cd/m ²	0.0030	0.0015	0.0015	
		> 1 cd/m ²	0.0008	0.0005	0.0005	
> 10 cd/m ²		0.0003	0.0003	0.0003		
Flicker (CA-310 Mode) ⁶	Measurement luminance range ⁸	---	---	---		
	Measurement target (Flicker frequency)	---	---	---		
	Accuracy	30 Hz, AC/DC 10% sine wave	---	---	---	
		60 Hz, AC/DC 10% sine wave	---	---	---	
	Repeatability (2σ)	20-65 Hz, AC/DC 10% sine wave	---	---		
	Flicker (JEITA / VESA)	Measurement luminance range ⁸	---	---	---	
		Measurement target (Flicker frequency)	---	---	---	
		Accuracy	30 Hz, AC/DC 4% sine wave	---	---	---
			30 Hz, AC/DC 1.2% sine wave	---	---	---
	Repeatability (2σ)	30 Hz, AC/DC 4% sine wave	---	---		
XYZ (Wide Frequency Mode) ⁶	Measurement luminance range ⁸	35 to 6,000 cd/m ²	20 to 12,000 cd/m ²	20 to 12,000 cd/m ²		
	Measurement target (Flicker frequency)	0.25 to 200 Hz	0.25 to 200 Hz	0.25 to 200 Hz		
	Accuracy	30 Hz, AC/DC 10% sine wave	± 1.1%	± 1.1%	± 1.1%	
		60 Hz, AC/DC 10% sine wave	± 1.7%	± 1.7%	± 1.7%	
	Repeatability (2σ)	20-65 Hz, AC/DC 10% sine wave	1.6%	1.6%	1.6%	
	Flicker (JEITA / VESA)	Measurement luminance range ⁸	35 to 6,000 cd/m ²	20 to 12,000 cd/m ²	20 to 12,000 cd/m ²	
		Measurement target (Flicker frequency)	0.42 to 200 Hz	0.42 to 200 Hz	0.42 to 200 Hz	
		Accuracy	30 Hz, AC/DC 4% sine wave	± 0.35 dB	± 0.35 dB	± 0.35 dB
			30 Hz, AC/DC 1.2% sine wave	± 0.35 dB	± 0.35 dB	± 0.35 dB
	Repeatability (2σ)	30 Hz, AC/DC 4% sine wave	0.4 dB	0.4 dB	0.4 dB	
Waveform	Measurement luminance range ⁸	7 to 6,000 cd/m ²	4 to 12,000 cd/m ²	4 to 12,000 cd/m ²		
	Sampling frequency	3 kHz	3 kHz	3 kHz		
Accuracy guaranteed measurement speed ⁴	Lvxy	AUTO	0.16 times/sec (> 0.002 cd/m ²) 1 time/sec (> 0.05 cd/m ²) 5 times/sec (> 1.5 cd/m ²) 20 times/sec (> 25 cd/m ²)	1 time/sec (> 0.004 cd/m ²) 5 times/sec (> 0.6 cd/m ²) 20 times/sec (> 8 cd/m ²)		
	Flicker (Contrast)		20 times/sec	20 times/sec		
	Flicker (JEITA / VESA)		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 (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			
Measurement target (Vertical synchronization frequency)		0.5 to 240 Hz (luminance and chromaticity)	0.5 to 240 Hz (luminance and chromaticity)			
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)		47 x 47 x 222.9	47 x 47 x 226.5			
Weight		580 g (including mount)	570 g (including mount)			
Power supply		DC 5V (input from USB bus power line or RS communication connector)	DC 5V (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	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	0 to 45°C, relative humidity 85% or less (at 35°C) with no condensation			

*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

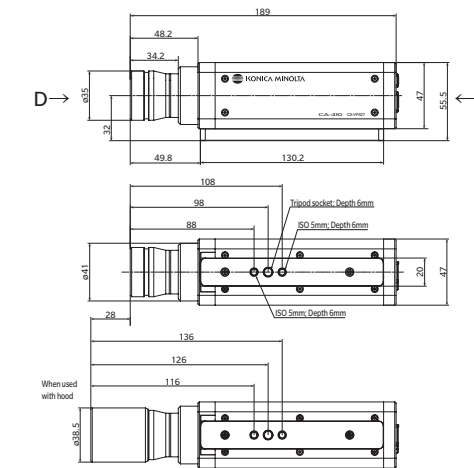
*5: Reading fluctuation (compared to reference reading at 23°C, 40% RH): Luminance: ±2% for white; Chromaticity (at 100 cd/m²): ±0.002 for white, ±0.003 for monochrome
 *6: "Flicker (CA-310 Mode)" and "XYZ (Wide Frequency Mode)" are mode names for PC Software CA-S40. "XYZ (Wide Frequency Mode)" can only be used when no CA-DP40 data processor is connected.
 *8: Measured under Konica Minolta's standard light source (constant light). If the luminance momentarily greatly exceeds the upper limit, such as with a PWM light source with a small duty cycle, luminances below the upper limit may be shown as too high.
 * Unless otherwise specified, specifications are given for conditions established by Konica Minolta.

Probe Dimensions (unit: mm)

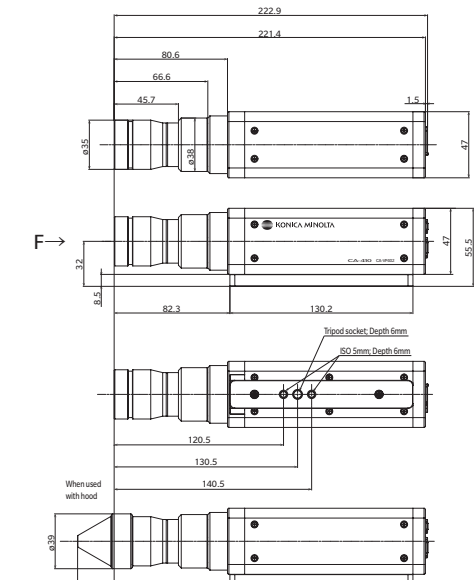
CA-P427 Ø27 Normal Probe
 CA-P427H Ø27 High Luminance Probe
 CA-P427C Ø27 Normal Probe



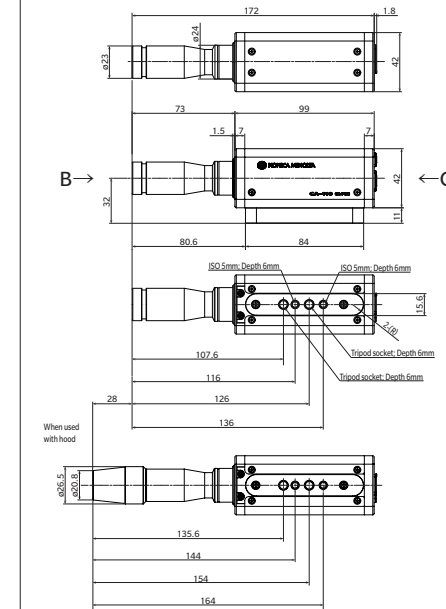
CA-VP427 Ø27 High Sensitivity Probe



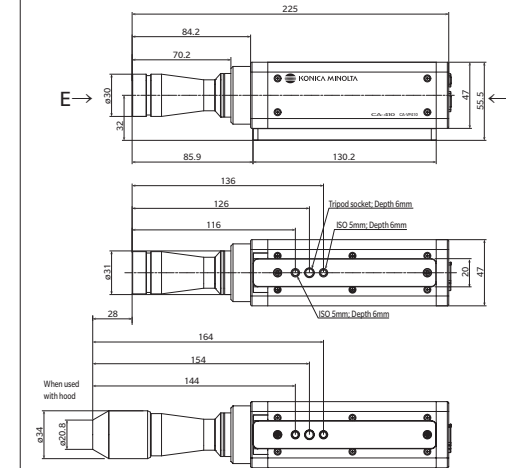
CA-VP402 Ø2 Small Spot Probe



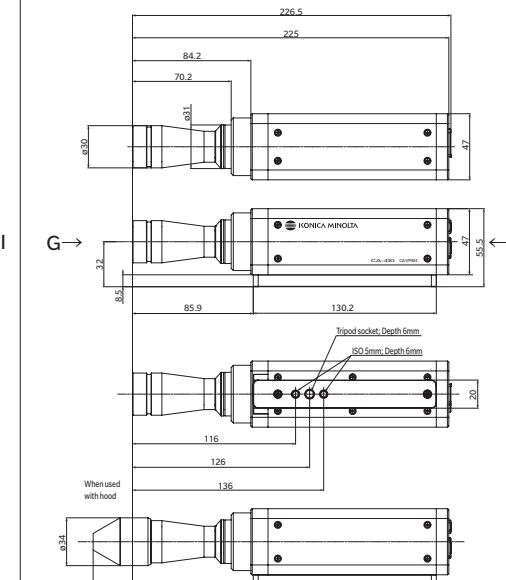
CA-P410 Ø10 Normal Probe
 CA-P410H Ø10 High Luminance Probe
 CA-P410C Ø10 Normal Probe



CA-VP410 Ø10 High Sensitivity Probe



CA-VP404 Ø4 Small Spot Probe



CA-MP410 Ø10 Mini Probe
 CA-MP410H Ø10 Mini High Luminance Probe

