



# Clifton Cameras Product Specification

## Panasonic Lumix DC-G9 with 12-60 Lumix F3.5-F5.6 Lens Full Specifications

	Type	Digital Single Lens Mirrorless camera
TYPE	Recording media	SD Memory Card, SDHC Memory Card, SDXC Memory Card (Compatible with UHS-I / UHS-II UHS Speed Class 3 standard SDHC / SDXC Memory Cards)
	Image sensor size	17.3 x 13.0 mm (in 4:3 aspect ratio)
	Lens mount	Micro Four Thirds mount
IMAGE SENSOR	Type	Live MOS Sensor
	Total pixels	21.77 Megapixels
	Camera effective pixels	20.33 Megapixels
	Color filter	Primary color filter
	Dust reduction system	Supersonic wave filter
IMAGE STABILIZATION SYSTEM		Image sensor shift type (5-axis / 6.5-stop*), Dual I.S. (Dual I.S. 2 compatible) *Based on the CIPA standard [Yaw/Pitch direction: focusing distance f=60mm (35mm camera equivalent f=120mm), when H-ES12060 is used.
	Still image	JPEG (DCF, Exif 2.31), RAW
	6K PHOTO**	
	Recording file format	MP4 (H.265/HEVC, Audio format: AAC (2ch)) / 4K PHOTO: MP4 (H.264/MPEG-4 AVC, Audio format: AAC (2ch)) PHOTO**
	Motion picture	MP4: H.264/MPEG-4 AVC (Audio format: LPCM (2ch 48kHz/16-bit), AAC (2ch)) AVCHD Progressive, AVCHD (Audio format: Dolby Audio 2ch)
RECORDING SYSTEM	Aspect ratio	4:3, 3:2, 16:9, 1:1
	Image quality	RAW, RAW+Fine, RAW+Standard, Fine, Standard
	Color space	sRGB, AdobeRGB
	File size	[4:3] 5184x3888(L) / 3712x2784(M) / 2624x1968(S) / 10368x7776(XL)* / 7296x5472(LL)* / 4992x3744(6K PHOTO) / 3328x2496(4K PHOTO) *High Resolution Mode.
	Still image (Pixels)	[3:2] 5184x3456(L) / 3712x2480(M) / 2624x1752(S) / 10368x6912(XL)* / 7296x4864(LL)* / 5184x3456(6K PHOTO) / 3504x2336(4K PHOTO) *High Resolution Mode. [16:9] 5184x2920(L) / 3840x2160(M) / 1920x1080(S) / 10368x5832(XL)* / 7296x4104(LL)* / 3840x2160(4K PHOTO) *High Resolution Mode. [1:1] 3888x3888(L) / 2784x2784(M) / 1968x1968(S) / 7776x7776(XL)* / 5472x5472(LL)* / 2880x2880(4K PHOTO) *High Resolution Mode.



			59.94p, 150Mbps (4:2:0 8-bit LongGOP) (LPCM)
			50.00p, 150Mbps (4:2:0 8-bit LongGOP) (LPCM)
		[4K] 3840x2160	29.97p, 100Mbps (4:2:0 8-bit LongGOP) (AAC)
			25.00p, 100Mbps (4:2:0 8-bit LongGOP) (AAC)
		MP4**	23.98p, 100Mbps (4:2:0 8-bit LongGOP) (AAC)
		Motion picture**	59.94p, 28Mbps (4:2:0 8-bit LongGOP) (AAC)
			50.00p, 28Mbps (4:2:0 8-bit LongGOP) (AAC)
		[Full HD] 1920x1080	29.97p, 20Mbps (4:2:0 8-bit LongGOP) (AAC)
			25.00p, 20Mbps (4:2:0 8-bit LongGOP) (AAC)
		AVCHD** [Full HD] 1920x1080	50.00p, 28Mbps (LongGOP) (Dolby)
			50.00i, 24Mbps (LongGOP) (Dolby) (Sensor output is 25.00fps)
			50.00i, 17Mbps (LongGOP) (Dolby) (Sensor output is 50.00fps)
		High speed video	30p, 100Mbps (Sensor output is 60fps / 50fps / 48fps)
		[4K] 3840x2160	
		*When Creative Video Mode is selected.	
		MP4**	30p, 20Mbps (Sensor output is 180fps / 150fps)
		[Full HD] 1920x1080	
		Continuous recordable time (Motion picture)	AVCHD [FHD/50p]: Approx. 130 min (rear monitor), 120 min (LVF) with H-FS12060, Approx. 120 min (rear monitor), 110 min (LVF) with H-ES12060
			AVCHD [FHD/50i]: Approx. 130 min (rear monitor), 120 min (LVF) with H-FS12060, Approx. 120 min (rear monitor), 120 min (LVF) with H-ES12060
			MP4 [4K/60p, 4K/50p]: Approx. 120 min (rear monitor), 110 min (LVF) with H-FS12060, Approx. 110 min (rear monitor), 110 min (LVF) with H-ES12060
			MP4 [4K/30p, 4K/25p]: Approx. 130 min (rear monitor), 120 min (LVF) with H-FS12060, Approx. 130 min (rear monitor), 120 min (LVF) with H-ES12060
		Actual recordable time (Motion picture)	AVCHD [FHD/50p]: Approx. 65 min (rear monitor), 60 min (LVF) with H-FS12060, Approx. 60 min (rear monitor), 55 min (LVF) with H-ES12060
			AVCHD [FHD/50i]: Approx. 65 min (rear monitor), 60 min (LVF) with H-FS12060, Approx. 60 min (rear monitor), 60 min (LVF) with H-ES12060
			MP4 [4K/60p, 4K/50p]: Approx. 60 min (rear monitor), 55 min (LVF) with H-FS12060, Approx. 55 min (rear monitor), 55 min (LVF) with H-ES12060
			MP4 [4K/30p, 4K/25p]: Approx. 65 min (rear monitor), 60 min (LVF) with H-FS12060, Approx. 65 min (rear monitor), 60 min (LVF) with H-



		ES12060
		Wi-Fi2.4GHz (STA/AP) (IEEE802.11b/g/n)
	Wi-Fi	Wi-Fi5GHz (STA) (IEEE 802.11 a/n/ac) *5GHz Wi-Fi is not available in some countries.
WIRELESS		Please refer to "Wi-Fi" Sheet
	Bluetooth	Bluetooth® v4.2 (Bluetooth Low Energy (BLE))
	QR code connection / Password-less connection	Yes / Yes (ON / OFF selectable)
	Type	OLED Live View Finder (3,680k dots)
	Field of view	Approx. 100%
	Magnification	Approx. 1.66x / 0.83x (35mm camera equivalent) with 50 mm lens at infinity; -1.0 m <sup>-1</sup>
VIEWFINDER	Eye point	Approx. 21 mm from eyepiece lens
	Diopter adjustment	-4.0 - +3.0 (dpt)
	Eye sensor	Yes
	Display speed	120fps / 60fps
	Type	Contrast AF system
	DFD technology	Yes
	Post Focus	Yes
	Focus Stacking	Yes
	Focus mode	AFS (Single) / AFF (Flexible) / AFC (Continuous) / MF
	AF mode	Face/Eye Detection / Tracking / 225-Area / Custom Multi / 1-Area / Pinpoint (Full area touch is available) (Scalable AF frame size and flexible AF position)
FOCUS	AF detective range	EV -4 - 18 (ISO100 equivalent)
	AF assist lamp	Yes
	AF lock	Yes (AF/AE LOCK button)
	AF custom setting	AF Sensitivity, AF Area Switching Sensitivity, Moving Object Prediction
	Others	One Shot AF, Shutter AF, Half Press Release, Quick AF, Continuous AF (during motion picture recording), Eye Sensor AF, AF-Point Scope Setting, AF+MF, MF Assist, Touch MF Assist, Focus Peaking, Touch AF/AE Function, Touch Pad AF, Touch Shutter
	Light metering system	1,728-zone multi-pattern sensing system
	Light metering mode	Multiple / Center Weighted / Spot
	Metering range	EV 0 - 18 (F2.0 lens, ISO100 equivalent)
	Exposure mode	Program AE, Aperture Priority AE, Shutter Priority AE, Manual
EXPOSURE CONTROL	ISO sensitivity (Standard output sensitivity)	Still image: Auto / Intelligent ISO / 100 (Extended) / 200 / 400 / 800 / 1600 / 3200 / 6400 / 12800 / 25600 (Changeable to 1/3 EV step) Creative Video Mode: Auto / 100 (Extended) / 200 / 400 / 800 / 1600 / 3200 / 6400 / 12800 (Changeable to 1/3 EV step)
	Exposure compensation	1/3 EV step ±5EV (±3EV for motion picture)
	AE lock	Yes (AF/AE LOCK button)
WHITE BALANCE	White balance	AWB / AWBc / Daylight / Cloudy / Shade / Incandescent / Flash / White Set 1, 2, 3, 4 / Color temperature setting 1, 2, 3, 4
	White balance adjustment	Blue/Amber bias, Magenta/Green bias



	Color temperature setting	2500-10000K in 100K
	Type	Focal-plane shutter
SHUTTER	Shutter speed	Still image: Bulb (Max. 30 minutes), 1/8,000 - 60 Electronic first curtain shutter: Bulb (Max. 30 minutes), 1/2,000 - 60 Electronic shutter: 1/32,000 - 1 Motion picture: 1/16,000 - 1/25
	Shutter life	Approx. 200,000 images
	Self timer	10sec, 3 images / 2sec / 10sec
	Remote control	Remote control with Bulb function by DMW-RSL1 (sold separately)
	AE bracket	3, 5, 7 images in 1/3, 2/3 or 1 EV step, max. $\pm 3$ EV, single/burst
	Aperture bracket	3, 5 or all positions in 1 EV step
BRACKET	Focus bracket	1 to 999 images, focus steps can be set in 10 levels
	White balance bracket	3 exposures in blue/amber axis or in magenta/green axis, color temperature setting
		[Mechanical shutter / Electronic first curtain shutter] AFS/MF: H: 12 frames/sec, M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View) *When H-ES12060 is used. AFF/AFC: H: 9 frames/sec (with Live View), M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View) *When H-ES12060 is used.
	Burst speed	[Electronic shutter] AFS/MF: SH: 60 frames/sec, H: 12 frames/sec, M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View) AFF/AFC: SH: 20 frames/sec, H: 9 frames/sec (with Live View), M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View)
BURST SHOOTING		[H/M/L] More than approx. 60 images (when there are RAW files with the particular speed.) More than approx. 600 images (when there are no RAW files and using a card with SD Speed Class with "UHS-II UHS Speed Class 3 (U3)".)
	Number of recordable images	(depending on memory card size, battery power, picture size, and compression) [SH] More than approx. 50 images (depending on memory card size, battery power, picture size, and compression)
	Burst speed	[6K PHOTO] 30 frames/sec [4K PHOTO] 60 frames/sec, 30 frames/sec
6K PHOTO** / 4K PHOTO**	Exif information	Yes (Each JPEG image cropped out of the 6K/4K burst file complies with EXIF.)
	Marking function	Yes (in 6K/4K Burst (S/S) mode)
TIME LAPSE SHOT		Yes
STOP MOTION ANIMATION		Yes
	Flash type	TTL External Flash (sold separately)
FLASH	Flash mode	Auto*, Auto/Red-eye Reduction*, Forced On, Forced On/Red-eye Reduction, Slow Sync., Slow Sync./Red-eye Reduction, Forced Off *For iA, iA+ only.
	Synchronization speed	Less than 1/250 second
	Flash output adjustment	1/3EV step $\pm 3$ EV



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	Flash synchronization	1st Curtain Sync., 2nd Curtain Sync.
	Synchronization for flash dimming and exposure compensation	Yes
	Wireless control	Yes (When using DMW-FL200L / FL360L / FL580L (sold separately)), Wireless Channel: 1ch/2ch/3ch/4ch
	Flash sync socket	Yes
SILENT MODE		Yes
	Type	TFT LCD monitor with static touch control
	Monitor size	Free-angle 7.5cm (3.0-inch) / 3:2 aspect
REAR MONITOR	Pixels	Approx. 1,040k dots
	Field of view	Approx. 100%
	Monitor adjustment	Brightness, Contrast, Saturation, Red-Green, Blue-Yellow
STATUS LCD		Yes
	Digital zoom	2x, 4x
	Extra Tele Conversion	Still image: Max. 2x 4K PHOTO: 1.6x (4:3), 1.5x (3:2), 1.4x (16:9, 1:1) Motion picture: 2.7x (FHD), 1.4x (4K)
LIVE VIEW	Other functions	Level Gauge, Real-time Histogram, Guide Lines (3 patterns), Center Marker, Highlight display (Still image / motion picture), Zebra pattern (Still image / motion picture)
DIRECTION DETECTION FUNCTION		Yes
		Wi-Fi / Q.MENU / Video Record / LVF/Monitor Switch / LVF/Monitor Disp. Style / AF-Point Scope / AF/AE LOCK / AF-ON / Preview / One Push AE / Touch AE / Level Gauge / Focus Area Set / Zoom Control / 1 Shot RAW+JPG / 1 Shot Spot Metering / 1 Shot 6K/4K PHOTO / Operation Lock / Dial Operation Switch / Destination Slot / Photo Style / Filter Select / Aspect Ratio / Picture Size / Quality / AFS/AFF / Metering Mode / Burst Shot Setting / 6K/4K PHOTO / Self Timer / High Resolution Mode / Bracket / Highlight Shadow / i. Dynamic / i. Resolution / Min. Shtr Speed / Post Focus / HDR / Shutter Type / Flash Mode / Flash Adjust. / Wireless Flash Setup / Ex. Tele Conv. / Digital Zoom / Stabilizer / I.S. Lock (Video) / 4K Live Cropping / Motion Pic. Set / Picture Mode in Rec. / Mic Level Adj. / Mic. Directivity Adjust / Silent Mode / Peaking / Histogram / Guide Line / Zebra Pattern / Monochrome Live View / Constant Preview / Rec Area / Step Zoom / Zoom Speed / Night Mode / ON/OFF of each item in White Balance / ON/OFF of each item in Photo Style / AF Mode/MF / Rec/Playback Switch / Off / Restore to Default
FUNCTION BUTTON	REC	Wi-Fi / LVF/Monitor Switch / Rec/Playback Switch / Slot Change / 6K/4K Photo Play / Delete Single / Protect / Rating 1, 2, 3, 4, 5 / RAW Processing / 6K/4K PHOTO Bulk Saving / Copy / Night Mode / Off / Restore to Default
	PLAY	AF Mode / Quality / Photo Style / Long Shtr NR / Stabilizer / 6K/4K PHOTO (Pre-Burst) / Self Timer / Silent Mode / Shutter Type / Bracket / Touch Screen / Touch Pad AF / Auto Review (Photo) / Peaking / Night Mode / Front/Rear/Control Dial Lock / Off / Restore to Default
Fn LEVER		
PHOTO STYLE		Standard / Vivid / Natural / Monochrome / L. Monochrome / Scenery / Portrait / Custom 1, 2, 3, 4 / Cinelike D / Cinelike V



		Expressive / Retro / Old Days / High Key / Low Key / Sepia / Monochrome / Dynamic Monochrome / Rough Monochrome* / Silky Monochrome* / Impressive Art / High Dynamic / Cross Process / Toy Effect / Toy Pop / Bleach Bypass / Miniature Effect / Soft Focus* / Fantasy / Star Filter* / One Point Color / Sunshine* *For photos only.
CREATIVE CONTROL		30-thumbnail display, 12-thumbnail display, Calendar display, Zoomed playback (Max. 16x), Slideshow (All / Picture Only / Video Only, duration & effect is selectable), Playback Mode (Normal / Picture Only / Video Only), Protect, Rating, Title Edit, Face Recognition Edit, RAW Processing, 6K/4K PHOTO Bulk Saving, 6K/4K PHOTO Noise Reduction, Light Composition, Clear Retouch, Text Stamp, Copy, Resize, Cropping, Rotate, Video Divide, Time Lapse Video, Stop Motion Video, Rotation Display, Picture Sort, Delete Confirmation, Creating Still Pictures from a Motion Picture
PLAYBACK	Playback mode	
IMAGE PROTECTION / ERASE	Protection	Single / Multi or Cancel
	Erase	Single / Multi / All / Except Rating
PRINT	Direct print	PictBridge compatible
	USB	USB 3.0 Micro-B, SuperSpeed USB 3.0 Gen 1
	HDMI***	HDMI TypeA / VIERA Link Video: Auto / 4K/50p / 4K/25p / 1080p / 1080i / 720p / 576p Audio: Stereo Monitor-through: 4:2:2 8bit (Except for [4K/60p]/[4K/50p]) / 4:2:0 8bit
	Audio video output	No
	Remote input	φ2.5mm for remote
INTERFACE	External microphone input	φ3.5mm for external microphone Stereo/Lens Auto/Shotgun/Super Shotgun/Manual is selectable when attaching DMW-MS2 (sold separately).
	Headphone output	φ3.5mm for headphone
	Microphone	Stereo, Wind Noise Canceller: OFF / Low* / Standard / High *When attaching DMW-MS2 (sold separately).
	Speaker	Monaural
	SD card slot	Slot 1, Slot 2
LANGUAGE	OSD language	Please refer to "OSD" Sheet
	Battery	Li-ion Battery Pack (7.2V, 1860mAh, 14Wh) (included) USB power supply, USB power charging
POWER	Battery life (CIPA standard)	Approx. 400 images (rear monitor), 380 images (LVF), 920 images (Power Save LVF mode*) with H-FS12060 Approx. 380 images (rear monitor), 360 images (LVF), 890 images (Power Save LVF mode*) with H-ES12060 *Under the test conditions specified by Panasonic based on CIPA standard. When the time to get in the sleep mode is set to 1 sec.
	Battery grip	DMW-BGG9 (sold separately)
	Dimensions (W x H x D)	136.9 x 97.3 x 91.6 mm / 5.39 x 3.83 x 3.61 inch (excluding protrusions)
DIMENSIONS / WEIGHT	Weight	Approx. 658g / 1.45 lb (SD card x 1, Battery, Body) Approx. 586g / 1.30 lb (Body only) Approx. 868g / 1.91 lb (SD card x 1, Battery, H-FS12060 lens included)



		Approx. 978g / 2.16 lb (SD card x 1, Battery, H-ES12060 lens included)
OPERATING ENVIRONMENT	Operating temperature****	-10°C to 40°C (14°F to 104°F)
	Operating humidity	10%RH to 80%RH
	Software	<p>□ The software to edit and playback images on computer is not bundled with this camera. To do this, PHOTOfunSTUDIO 10.0PE is available for download at Panasonic website using computer connected to the Internet. <a href="http://panasonic.jp/support/global/cs/soft/download/d_pfs99pe.html">http://panasonic.jp/support/global/cs/soft/download/d_pfs99pe.html</a> (For Windows)</p> <p>□ The software to process RAW file on computer is not bundled with this camera. To do this, SILKYPIX Developer Studio is available for download at Ichikawa Soft Laboratory's website using computer connected to the Internet. <a href="http://www.isl.co.jp/SILKYPIX/english/p/">http://www.isl.co.jp/SILKYPIX/english/p/</a> (For Windows / Mac)</p>
STANDARD ACCESSORIES		DC-G9 Kit Battery Charger (AC Adaptor, USB connection Cable included), Battery Pack, Body Cap, Hot Shoe Cover, Eye Cup, Flash Syncro Socket Cap, Cover for the Battery Grip Connector, USB Connection Cable, Shoulder Strap
	Standard accessories	DC-G9L / DC-G9M Kit Battery Charger (AC Adaptor, USB connection Cable included), Battery Pack, Body Cap, Hot Shoe Cover, Eye Cup, Flash Syncro Socket Cap, Cover for the Battery Grip Connector, USB Connection Cable, Shoulder Strap, Lens Cap, Lens Hood, Lens Rear Cap
		□ The DC-G9 Operating Instructions for advanced features is available for download at Panasonic LUMIX Customer Support Site using PC, smartphone or tablet connected to the Internet.

\*\* About motion picture recording / 6K PHOTO/4K PHOTO recording

- 6K PHOTO is a high speed burst shooting function that cuts a still image out of a 4:3 or 3:2 video footage with approx. 18-megapixel (approx. 6000 x 3000 effective pixel count) that the 6K image manages.
- Use a card with SD Speed Class with "Class 4" or higher when recording motion pictures in [AVCHD] or [MP4(under 28Mbps)].
- Use a card with SD Speed Class with "UHS-I / UHS-II UHS Speed Class 3 (U3)" when recording motion pictures with [MP4] in [4K] or [6K PHOTO/4K PHOTO].  
(SD speed class is the speed standard regarding continuous writing.)
- Recording stops when the continuous recording time exceeds 10 minutes with [MP4] in [4K/60p] [4K/50p] [4K/High Speed Video].
- Recording stops when the continuous recording time exceeds 29 minutes and 59 seconds with [AVCHD] in [FHD] and [MP4] in [4K/30p] [4K/25p] [4K/24p] [FHD].
- MP4 motion pictures with [MP4] in [4K]:
  - When using an SDHC memory card: You can continue recording without interruption even if the file size exceeds 4 GB, but the motion picture file will be divided and recorded/played back separately.
  - When using an SDXC memory card: You can record a motion picture in a single file.
- MP4 motion pictures with [MP4] in [FHD]:
  - You can continue recording without interruption even if the file size exceeds 4 GB, but the motion picture file will be divided and recorded/played back separately.
- When the ambient temperature is high or continuous recording is performed, the camera may stop the recording to protect itself. Wait until the camera cools down.

\*\*\* For [4K/60p] [4K/50p] video output, use an HDMI2.0 cable that has the HDMI logo on it, and that is described as "4K compatible".



\*\*\*\* The camera may stop recording when used in lower or higher than recommended operating temperature: -10 to 40 degrees.