LUMIX G Camera DMC-GH4

TYPE		Type	Digital Single Lens Mirrorless camera
		Recording media	SD Memory Card, SDHC Memory Card, SDXC Memory Card (Compatible with UHS-I 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	17.20 megapixels
		Camera effective pixels	16.05 megapixels
		Color filter	Primary color filter
		Dust reduction system	Supersonic wave filter
RECORDING SYSTEM	Recording file format	Still image	JPEG (DCF, Exif 2.3), RAW, MPO (When attaching 3D lens in Micro Four Thirds system standard)
		Motion picture	MOV (Audio format LPCM), MP4 (Audio format LPCM / AAC 2ch), AVCHD (Audio format: Dolby Digital 2ch)
	System frequency		59.94Hz, 50.00Hz, 24.00Hz
	Aspect ratio		4:3, 3:2, 16:9, 1:1
	Image quality		RAW, RAW+Fine, RAW+Standard, Fine, Standard/MPO+Fine / MPO+Standard (with 3D lens in Micro Four Thirds system standard)
	Color Space		sRGB, AdobeRGB
	File size(Pixels)	Still Image	[4:3] 4608x3456(L) / 3264x2448(M) / 2336x1752(S) / 1824x1368 (with 3D lens in Micro Four Thirds system standard)/[3:2] 4608x3072(L) / 3264x2176(M) / 2336x1560(S) / 1824x1216 (with 3D lens in Micro Four Thirds system standard)/[16:9] 4608x2592(L) / 3840x2160(M) / 1920x1080(S) / 1824x1024 (with 3D lens in Micro Four Thirds system standard)/[1:1] 3456x3456(L) / 2448x2448(M) / 1744x1744(S) / 1712x1712 (with 3D lens in Micro Four Thirds system standard)
		Motion picture (MOV*:59.94Hz)	[4K] 3840x2160:29.97p, 100Mbps (IPB) (LPCM)/[4K] 3840x2160:23.98p, 100Mbps (IPB) (LPCM)/[Full HD] 1920x1080:59.94p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:29.97p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:23.98p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)
		Motion picture (MOV*:50.00Hz)	[4K] 3840x2160:25.00p, 100Mbps (IPB) (LPCM)/[Full HD] 1920x1080:50.00p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:25.00p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)
		Motion picture (MOV*:24.00Hz)	[C4K] 4096x2160:24.00p, 100Mbps (IPB) (LPCM)/[4K] 3840x2160:24.00p, 100Mbps (IPB) (LPCM)/[Full HD] 1920x1080:24.00p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)
		Motion picture (MP4*:59.94Hz)	[4K] 3840x2160:29.97p, 100Mbps (IPB) (LPCM) / 100Mbps (IPB) (AAC)/[4K] 3840x2160:23.98p, 100Mbps (IPB) (LPCM)/[4K] 23.98p, 100Mbps (IPB) (AAC)****/[Full HD] 1920x1080:59.94p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:29.97p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:23.98p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:59.94p, 28Mbps (IPB) (AAC)/[Full HD] 1920x1080:29.97p, 20Mbps (IPB) (AAC)/[HD] 1280x720:29.97p, 10Mbps (IPB) (AAC)/[VGA] 640x480:29.97p, 4Mbps (IPB) (AAC)
		Motion picture (MP4*:50.00Hz)	[4K] 3840x2160:25.00p, 100Mbps (IPB) (LPCM) / 100Mbps (IPB) (AAC)/[Full HD] 1920x1080:50.00p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:25.00p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)/[Full HD] 1920x1080:50.00p, 28Mbps (IPB) (AAC)/[Full HD] 1920x1080:25.00p, 20Mbps (IPB) (AAC)/[HD] 1280x720:25.00p, 10Mbps (IPB) (AAC)/[VGA] 640x480:25.00p, 4Mbps (IPB) (AAC)
		Motion picture (MP4*:24.00Hz)	[C4K] 4096x2160:24.00p, 100Mbps (IPB) (LPCM)/[4K] 3840x2160:24.00p, 100Mbps (IPB) (LPCM)/[Full HD] 1920x1080:24.00p, 200Mbps (ALL-Intra) (LPCM) / 100Mbps (IPB) (LPCM) / 50Mbps (IPB) (LPCM)
		Motion picture (AVCHD Progressive*:59.94Hz)	[Full HD] 1920x1080:59.94p, 28Mbps (IPB) (Dolby)
		Motion picture (AVCHD Progressive*:50.00Hz)	[Full HD] 1920x1080:50.00p, 28Mbps (IPB) (Dolby)

		Motion picture (AVCHD*:59.94Hz)	[Full HD] 1920x1080:59.94i, 24Mbps (IPB) (Dolby) (Sensor output is 29.97fps)/[Full HD] 1920x1080:59.94i, 17Mbps (IPB) (Dolby) (Sensor output is 59.94fps)/[Full HD] 1920x1080:23.98p, 24Mbps (IPB) (Dolby)
		Motion picture (AVCHD*:50.00Hz)	[Full HD] 1920x1080:50.00i, 24Mbps (IPB) (Dolby) (Sensor output is 25.00fps)/[Full HD] 1920x1080:50.00i, 17Mbps (IPB) (Dolby) (Sensor output is 50.00fps)
	Continuous recordable time (Motion picture)		AVCHD: Approx. 220 min with H-HS12035/AVCHD: Approx. 220 min with H-FS14140
	Actual recordable time (Motion picture)		AVCHD: Approx. 110 min with H-HS12035/AVCHD: Approx. 110 min with H-FS14140
WiFi FUNCTION		WiFi	IEEE 802.11b/g/n, 2412 MHz - 2462 MHz (11 ch), Wi-Fi / WPA / WPA2, Infrastructure mode, WPS, Wi-Fi Direct
		NFC	ISO/IEC 18092, NFC-F (Passive Mode)
		QR Code Connection	Yes
VIEWFINDER		Type	OLED Live View Finder (2,359K dots)
		Field of view	Approx. 100%
		Magnification	Approx. 1.34x / 0.67x (35mm camera equivalent) with 50 mm lens at infinity; -1.0 m-1
		Eye point	Approx. 21 mm from eyepiece lens
		Diopter adjustment	-4.0 - +4.0 (dpt)
		Eye sensor	Yes
		Eye sensor adjustment	High / Low
FOCUS		Type	Contrast AF system
		DFD technology	Yes
		Focus mode	AFS (Single) / AFF (Flexible) / AFC (Continuous) / MF
		AF mode	Face/Eye Detection / Tracking / 49-Area / Custom Multi / 1-Area / Pinpoint/(Full area touch is available)
		AF detective range	EV -4 - 18 (ISO100 equivalent)
		AF assist lamp	Yes
		AF lock	Yes (AF/AE LOCK button)
		Others	One Shot AF, Shutter AF, Half Press Release, Quick AF, Continuous AF (during motion picture recording), Eye Sensor AF, AF+MF, MF Assist, Touch MF Assist, Focus Peaking, Touch AF/AE Function, Touch Pad AF, Touch Shutter
EXPOSURE CONTROL		Light metering system	1,728-zone multi-pattern sensing system
		Light metering mode	Multiple / Center Weighted / Spot
		Metering range	EV0-18（F2.0 lens, ISO100 equivalent)
		Exposure mode	Program AE, Aperture Priority AE, Shutter Priority AE, Manual
		ISO sensitivity (Standard Output Sensitivity)	Auto / Intelligent ISO / 100 (Extended) / 200 / 400 / 800 / 1600 / 3200 / 6400 / 12800 / 25600 (Changeable to 1/3 EV step)/(Up to ISO6400 in motion picture recording) (ISO Auto in M mode)
		Exposure compensation	1/3 EV step ±5EV (±3EV for motion picture)
		AE lock	Yes (AF/AE LOCK button)
		AE bracket	3, 5, 7 frames in 1/3, 2/3 or 1 EV Step, Max. ±3 EV, single/burst
WHITE BALANCE		White balance	Auto / Daylight / Cloudy / Shade / incandescent / Flash / White Set 1, 2, 3, 4 / Color temperature setting
		White balance adjustment	Blue/Amber bias, Magenta/Green bias
		Color temperature setting	2500-10000K in 100K
		White balance bracket	3 exposures in blue/amber axis or in magenta/green axis
4K Photo Mode****		Exif information	Yes
		Selectable aspect ratio	Yes (4:3 / 3:2 / 16:9 / 1:1 are selectable)

	Exposure mode	Program AE/ Aperture-Priority / Sutter-Priority / Manual Exposure
	Marking function	Yes
	Loop Rec function	Yes
SHUTTER	Type	Focal-plane shutter
	Shutter speed	Still image: Bulb (Max. 60 minutes), 1/8,000 - 60/Motion picture: 59.94Hz: 1/16,000 - 1/30, 50.00Hz: 1/16,000 - 1/25, 23.98Hz: 1/16,000 - 1/24 (When using Synchro Scan)
	Shutter life	Approx. 200,000 images
	Self timer	10sec, 3 images / 2sec / 10sec
	Remote control	Remote control with Bulb function by DMW-RSL1 (Optional)
BURST SHOOTING	Burst speed	Mechanical shutter: H: 12 frames/sec (with AFS), 7 frames/sec (with AFC), M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View)/Electronic shutter: SH: 40 frames/sec, H: 12 frames/sec, M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View)
	Number of recordable images	Approx. 40 images (when there are RAW files with the particular speed)/Approx. 100 images (when there are no RAW files)/Approx. 120 images (when using electronic shutter)/(depending on memory card size, battery power, picture size, and compression)
FLASH	Built in flash type	TTL Built-in-Flash, GN12 equivalent (ISO100・m) / GN17 equivalent (ISO200・m), Built-in Pop-up (Reference)/Lighting angle: 24mm (35mm camera equivalent)
	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 ±3EV
	Flash synchronization	1st. Curtain Sync, 2nd Curtain Sync.
	Synchronization for flash dimming and exposure compensation	Yes
	Flash sync socket	Yes
FUNCTION BUTTON	Fn1, Fn2, Fn3, Fn4, Fn5, Fn6, Fn7, Fn8, Fn9, Fn10	Wi-Fi / Q.MENU / Preview / One Push AE / Touch AE / Level Gauge / Focus Area Set / Zoom Control / 1 Shot RAW+JPG / 1 Shot Spot Metering / Cursor Button Lock / Photo Style / Aspect Ratio / Picture Size / Quality / AFS/AFF / Metering Mode / Burst Rate / Auto Bracket / Self Timer / Highlight Shadow / i. Dynamic / i. Resolution / HDR / Electronic Shutter / Flash Mode / Flash Adjust. / Ex. Tele Conv. / Digital Zoom / Stabilizer / Motion Pic. Set / Variable Frame Rate / Picture Mode / Synchro Scan / Time Code Display / Mic. Directivity Adjust / Color Bars / Silent Mode / Peaking / Histogram / Guide Line / Zebra Pattern / Rec Area / Video-Priority Display / Step Zoom / Zoom Speed / AF Mode/MF / Restore to Default
MONITOR	Type	OLED monitor with static touch control
	Monitor size	Free-angle 3.0-inch / 3:2 aspect / Wide viewing angle
	Pixels	Approx. 1036K dots
	Filed of view	Approx. 100%
	Monitor adjustment	Brightness (7 levels), Contrast and Saturation (7 levels), Red-Green (11 levels), Blue-Yellow (11 levels)
CREATIVE CONTROL	Still image	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
	Motion picture	Expressive / Retro / Old Days / High Key / Low Key / Sepia / Monochrome / Dynamic Monochrome / Impressive Art / High Dynamic / Cross Process / Toy Effect / Toy Pop / Bleach Bypass / Miniature Effect / Fantasy / One Point Color
LIVE VIEW	Digital zoom	2x, 4x
	Extra Tele Conversion	Still image: Max. 2x (Aspect ratio sets at 4:3. Not effective with L size recording. Magnification ratio depends on the recording pixels and aspect ratio.)/Motion picture: 2.4x (FHD), 3.6x (HD), 4.8x (VGA)
	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	Direction Detection Function	Yes

PHOTO STYLE		Still image and motion picture	Standard / Vivid / Natural / Monochrome / Scenery / Portrait / Custom / Cinelike D* / Cinelike V* *When Creative Video Mode is selected.
CREATIVE VIDEO MODE	Exposure Mode		Program AE/ Aperture-Priority / Sutter-Priority / Manual Exposure
	Variable frame rate	59.94Hz	MOV/FHD/100Mbps/29.97p, MP4(LPCM)/FHD/100Mbps/29.97p:/2fps, 15fps, 26fps, 28fps, 30fps, 32fps, 34fps, 45fps, 60fps, 75fps, 90fps, 96fps/MOV/FHD/100Mbps/23.98p, MP4(LPCM)/FHD/100Mbps/23.98p:/2fps, 12fps, 20fps, 22fps, 24fps, 26fps, 28fps, 36fps, 48fps, 60fps, 72fps, 84fps, 96fps/AVCHD/FHD/24Mbps/29.97p:2fps, 15fps, 26fps, 28fps, 30fps, 32fps, 34fps, 45fps, 60fps/AVCHD/FHD/24Mbps/23.98p:2fps, 12fps, 20fps, 22fps, 24fps, 26fps, 28fps, 36fps, 48fps, 60fps
		50.00Hz	MOV/FHD/100Mbps/25.00p, MP4(LPCM)/FHD/100Mbps/25.00p:2fps, 12fps, 21fps, 23fps, 25fps, 27fps, 30fps, 37fps, 50fps, 62fps, 75fps, 96fps/AVCHD/FHD/24Mbps/25.00p:2fps, 12fps, 21fps, 23fps, 25fps, 27fps, 30fps, 37fps, 50fps
		24.00Hz	MOV/FHD/100Mbps/24.00p, MP4(LPCM)/FHD/100Mbps/24.00p:/2fps, 12fps, 20fps, 22fps, 24fps, 26fps, 28fps, 36fps, 48fps, 60fps, 72fps, 84fps, 96fps
PLAYBACK		Playback mode	Normal playback, 30-thumbnail display, 12-thumbnail display, Calendar display, Zoomed playback (Max. 16x), Slideshow (All / Picture Only / Video Only / 3D / Category Selection / Favorite, duration & effect is selectable), Playback Mode (Normal / Picture / Video / 3D Play / Category / Favorite), Location Logging, RAW Processing, Clear Retouch, Title Edit, Text Stamp, Video Divide, Time Lapse Video, Stop Motion Video, Resize, Cropping, Rotate, Rotation Display, Favorite, DPOF Print Set, Protect, Face Recognition Edit, Picture Sort, Delete Comfirmation
MOTION PICTURE FUNCTION		SS/Gain operation	Shutter Duration/ISO / Angle/ISO / Shutter Duration/dB
		Color bars / 1kHz test tone	Yes (SMPTE / EBU / ARIB) / Yes
		Cinelike gamma	Cinelike D / Cinelike V
		Master pedestal level	31 steps
		Luminance level	0-255 / 16-235 / 16-255
		Synchro scan	Yes
		Time code	Count Up: Rec Run/Free Run selectable, Time Code Mode: Drop frame/Non-drop frame selectable (When system frequency [59.94Hz] is selected.)
IMAGE PROTECTION / ERASE		Protection	Single / Multi or Cancel
		Erase	Single / Multi / All / Except Favorite
PRINT		Direct Print	PictBridge compatible
INTERFACE	USB		USB 2.0 High Speed Multi
	HDMI (**)	Playback	microHDMI TypeD / VIERA Link, Audio: Stereo/59.94Hz: Auto / 4K / 1080p / 1080i / 720p / 480p/50.00Hz: Auto / 4K / 1080p / 1080i / 720p / 576p
		Monitor-through	4:2:2 8-bit / 4:2:2 10-bit (When 4:2:2 10-bit mode is selected, it is not possible to record motion picture or still picture on the SD memory card in the camera unit.)/Auto / C4K / 4K / 1080p/Information display ON/OFF (selectable)/Automatic down-conversion (4K --> 1080p only)
	Audio video output		Monaural Type
	Remote input		φ2.5mm for remote
	External microphone input		φ3.5mm for external microphone
	Headphone output		φ3.5mm for headphone
	Microphone		Stereo, Wind-cut: OFF / Low / Standard / High / AUTO
	Speaker		Monaural
LANGUAGE		OSD language	Japanese, English, German, French, Italian, Spanish
POWER		Battery	Li-ion Battery Pack (7.2V, 1860mAh) (Included)/Battery Charger
		Battery life (CIPA standard)	Approx. 530 images with H-HS12035/Approx. 530 images with H-FS14140
DIMENSIONS / WEIGHT		Dimensions (W x H x D)	132.9 x 93.4 x 83.9mm / 5.23 x 3.68 x 3.30 in (excluding protrusions)
		Weight	Approx. 560g / 19.75 oz (SD card, Battery, Body)/Approx. 480g / 16.93 oz (Body only)/Approx. 865g / 30.51 oz (SD card, Battery, H-HS12035 lens included)/Approx. 825g / 29.10 oz (SD card, Battery, H-FS14140 lens included)
OPERATING ENVIRONMENT		Operating temperature	0℃ to 40℃ (32°F to 104°F)

		Operating humidity	10% to 80%
STANDARD ACCESSORIES		Software	PHOTOfunSTUDIO 9.5 PE (Windows XP / Vista / 7 / 8)/SILKYPIX® Developer Studio 4.1 SE (Windows XP / Vista / 7 / 8, Mac OS X v10.5 / v10.6 / v10.7 / v10.8)/LoiLoScope (trial version) (Windows XP / Vista / 7 / 8)
		Standard accessories	Battery Charger (AC Cable included), Battery Pack, Body Cap, Hot Shoe Cover, USB Connection Cable, Shoulder Strap, DVD/Lens Cap*, Lens Hood*, Lens Rear Cap* *Included with DMC-GH4A kit and DMC-GH4H kit.
OPTIONAL ACCESSORIES		External flash (optional)	DMW-FL580L (optional), Wireless Channel: 1ch/2ch/3ch/4ch
		Interface unit (optional)	DMW-YAGH (optional)***
		AC adaptor (optional)	DMW-AC10 (optional)
		External microphone (optional)	DMW-MS2 (optional), Stereo/Lens Auto/Shotgun/Super Shotgun/Manual selectable)
		Battery grip (optional)	DMW-BGGH3 (optional)
INTERCHANGEABLE LENS-1	Lens Name		LUMIX G VARIO 14-140mm / F3.5-5.6 ASPH. / POWER O.I.S.
	Lens Construction		14 elements in 12 groups (3 aspherical lenses , 2 ED lens)
	Nano Surface Coating		-
	Mount		Micro Four Thirds mount
	Optical Image Stabilizer		Yes (POWER O.I.S.)
	Focal Length		f=14-140mm (35mm camera equivalent 28-280mm)
	Aperture Type		7 diaphragm blades / Circular aperture diaphragm
	Aperture range		F3.5(Wide) - F5.6(TELE)
	Minimum Aperture		F22
	Closest Focusing Distance		0.30m/0.98ft (at focal length 14-21mm) / 0.50m/1.64ft (at focal length 22-140mm)
	Maximum magnification		Approx. 0.25x / 0.50x (35mm camera equivalent)
	Diagonal Angle of View		75°(Wide) to 8.8°(TELE)
	General	Filter Size	φ58mm / 2.28in
		Max. Diameter	φ67mm / 2.64in
		Overall Length	Approx. 75mm / 2.95in (from the tip of the lens to the base side of the lens mount)
		Weight [g]	Approx. 265g (excluding lens cap, lens rear cap, and lens hood)
		Weight [oz]	Approx. 9.35oz (excluding lens cap, lens rear cap, and lens hood)
NOTE			* About motion picture recording.
NOTE			• Motion picture can be recorded up to 29 min 59 sec depending on the recording format and the camera's sales area.
NOTE			• Use a card with SD Speed Class with "UHS-I Speed Class 3 (U3)" when recording motion pictures in [4K/100Mbps] [C4K/100Mbps] [FHD/100Mbps] or [FHD/200Mbps].
NOTE			• Use a card with SD Speed Class with "UHS-I Speed Class 1 (U1)" or higher when recording motion pictures in [FHD/50Mbps].
NOTE			• Use a card with SD Speed Class with "Class 4" or higher when recording motion pictures in [FHD/28Mbps].
NOTE			(SD speed class is the speed standard regarding continuous writing.)
NOTE			** For [4K] or [C4K] video output, use an HDMI cable that has the HDMI logo on it, and that is described as"4K compatible".
NOTE			*** The DMW-YAGH is not available in some countries or regions.
NOTE			**** Firmware must be updated to the latest version 2.0.