

Panasonic

LUMIX S1H



Cinematic Performance, Boundless Creativity.



The full-frame camera unlocking creative possibilities for cinematographers.

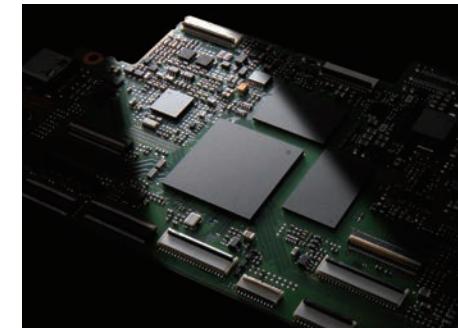
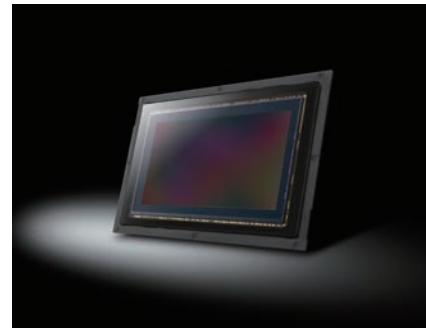
The LUMIX S1H is a full-frame mirrorless camera for film production, scaled to a hand-held design without compromising professional-level standards. It offers extensive recording modes and cinematic image quality to meet the high demands of today's creators. With superior functionality that slots effortlessly into the professional workflow, the S1H is also designed for active filming in the field when attached to a gimbal or drone.

The LUMIX S1H combines cinema industry performance, refined by Panasonic, with the high mobility and functionality of LUMIX mirrorless cameras.

CINEMATOGRAPHY ESSENTIALS

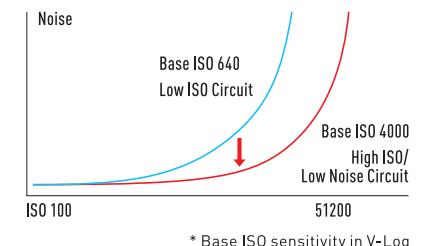
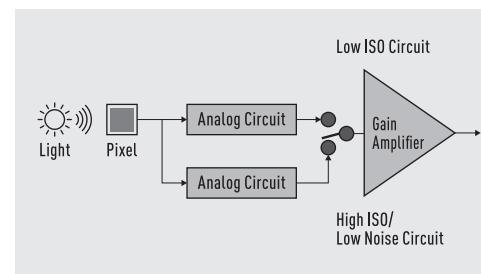
Best Combination of 24.2MP CMOS Sensor and Venus Engine

The LUMIX S1H gives you breathtaking image quality without compromise. By delivering ample light condensation per pixel, the 24.2-megapixel CMOS sensor offers a wide dynamic range and sharp, natural expression even at high sensitivity settings. Together with the low-pass filter, the sensor offers high resolution with minimal moire. Leveraging the power of the Venus Engine, the camera offers an impressive maximum sensitivity of ISO51200.



Newly-developed Dual Native ISO

The S1H is equipped with Dual Native ISO sensitivity, a revolutionary technology that first featured on Panasonic's professional video cameras, notably the flagship VariCam. Through a process that reads the sensor more efficiently, Dual Native ISO offers the advantages of very high sensitivity for low-light shoots while suppressing noise levels. As such, the camera can switch from a standard sensitivity to this higher sensitivity with almost no discernible noise degradation. With 640 and 4000 base ISOs in V-Log, the S1H allows today's cinematographers phenomenal flexibility on set when they wish to capture more extreme lighting scenarios.



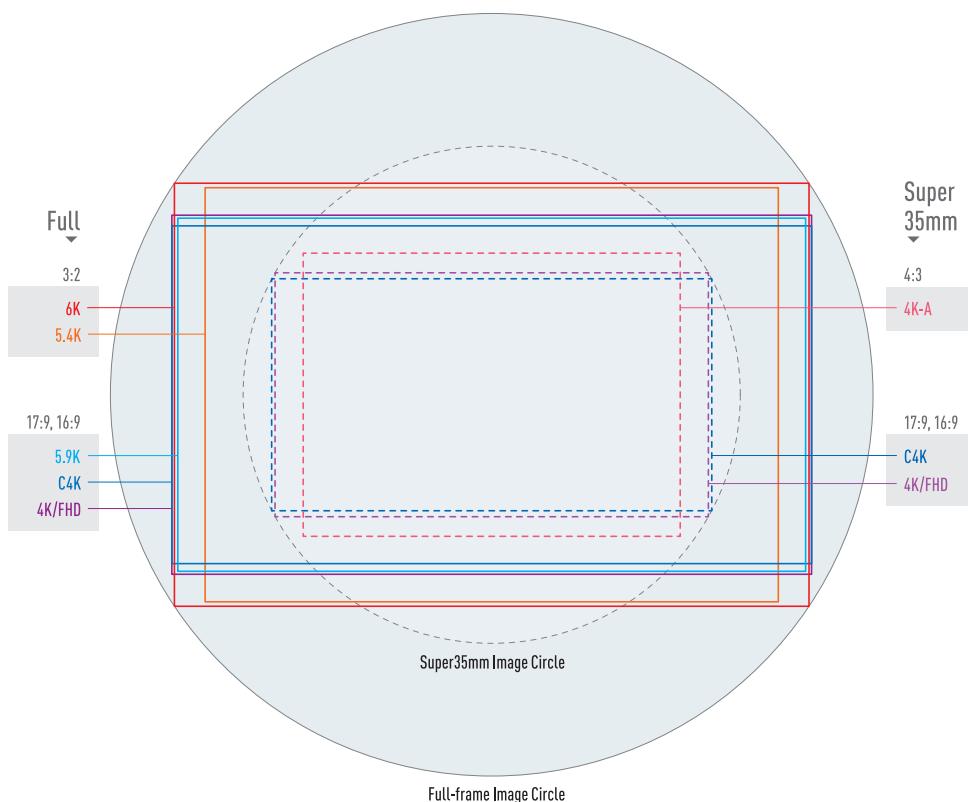
* Base ISO sensitivity in V-Log

Two dedicated circuits are provided for each pixel. → High sensitivity noise is reduced.
Sensitivity is set prior to the gain amplifier.

Multiple Formats and Aspect Ratios with Full Range of Video Recording Modes

Notably, these include full-area 3:2 6K24p, C4K (4,096 x 2,160) and anamorphic modes. The 35 mm full-frame CMOS sensor built into the S1H offers 6,024 x 4,016 effective pixels at stunning 6K resolution across its entire area. This is therefore a full-frame digital camera that, for the first time in the world, achieves video recording at 6K/24p and 5.9K/30p (3:2 or 16:9 aspect ratios respectively).* Even when down-sampling images to C4K (or less) the S1H delivers superior quality resolution. The various formats above can be encoded with superior HEVC compression or the rich tones of 4:2:2 10-bit. High quality data up to 4:2:2 10-bit can also be output via HDMI onto an external video recorder when set to 10-bit recording mode. The HDMI output is enabled simultaneously with the internal recording. The S1H covers every recording mode and option to fully satisfy professional requirements. And as the filtering menu has been streamlined, it is now much easier and faster to find and select the precise mode you want. For quick recall, use the 'My List' feature to register those you use most frequently.

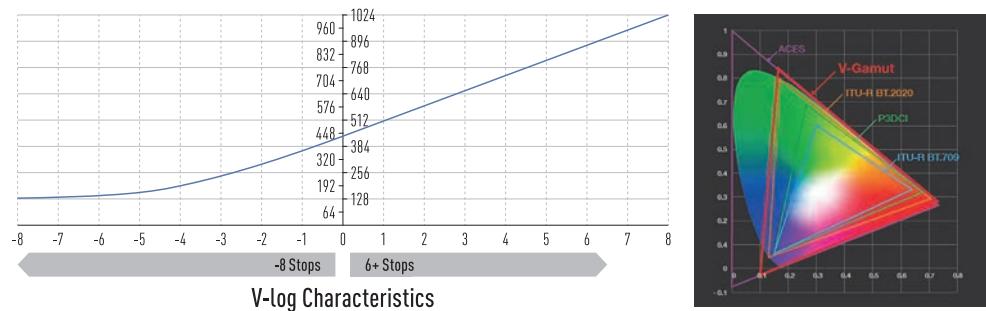
* For a full-frame digital interchangeable lens system camera, as of August 27th, 2019 (U.S.). Panasonic research.



V-Log / V-Gamut

The S1H features V-Log / V-Gamut with a wider 14+ stops of dynamic range, which are compatible with the Cinema VariCam Look, to precisely capture everything from shadows to highlights. The color and even the texture of human skin are faithfully reproduced. Designed for color management consistency, S1H-recorded footage is compatible with V-Log footage recorded on VariCam or S series cameras as well as V-Log L footage shot on the LUMIX GH5/GH5S.

The V-Log View Assist enables you to view a simulation of the final look (hue, saturation and brightness) of your video image in camera using the Look Up Table (LUT) while you are shooting. With Look Up Table (LUT) installed on the camera, the video you record with V-Log can be modified to match the characteristics of your monitor display. The VariCam IDT for ACES can also be applied to footage shot on the S1H.



HDR Video & HLG View Assist

HDR (High Dynamic Range) video recording is available, processing both the brighter and darker parts of an image together, just as the human eye naturally perceives them. The camera also records video with a designated gamma curve compatible with ITU-R BT.2100, as well as offering the option of Hybrid Log Gamma (HLG) in Like2100. The HLG View Assist output mode allows you to visually confirm the gradation and exposure of video shot in HLG mode, depending on the monitor or viewfinder installed in the camera. It can also be used for stills shot in HLG (HLG Photo mode).

Robust Video Expression Features (VFR, HFR)

From basic functionality to advanced technology, the S1H is designed to offer outstanding, multifaceted video performance. VFR (Variable Frame Rate) functionality supports both overcranking and undercranking. Users have access to 2.5x slow (24p/60 fps) in C4K/4K and 7.5x super-slow (24p/180 fps) in FHD.* HFR (High Frame Rate) videography now includes autofocus and audio recording, allowing users to create slow-motion video in post-production thanks to 48p/47.95p recording in Cinema4K/4K and 120p/100p in FHD.

* The degree of effect varies depending on the recording format and frequency, and the angle of view narrows if a frame rate over 150 fps is selected.

SUPERB RELIABILITY

Image Stabilization

The S1H features powerful camera-shake suppression in the body thanks to an algorithm developed by Panasonic that precisely calculates shake information from not only the camera's gyrosensor but also from the image sensor and acceleration sensor. The 5-axis Body I.S. enables an accurate level of correction, even making it possible to use a 6.0-stop slower shutter speed.* Shake suppression is also highly effective even when a cine lens, anamorphic lens, or older lens is attached. Furthermore, 6.5-stop slower shutter speed** can be used thanks to 5-axis Dual I.S.2 stabilization when the Body I.S. is combined with the lens O.I.S. of the LUMIX S series lenses. This compensates for even larger movements that were conventionally uncontrollable.

* Based on the CIPA standard [Yaw/Pitch direction: focusing distance f=50mm, when S-X50 is used.]

**Based on the CIPA standard [Yaw/Pitch direction: focusing distance f=105mm S-R24105 is used or focusing distance f=200mm when S-R70200 is used]. Firmware must be updated to the latest version.

Anamorphic Desqueeze Display

If you are shooting with an anamorphic lens that compresses the image width to an almost unrecognizable extreme, the S1H camera allows you to view a simulation of the final 'desqueezed' CinemaScope format (2.39:1 or 2.35:1), in one of five magnification options, 1.3x, 1.33x, 1.5x, 1.8x or 2.0x, stretched out on the camera monitor. This lets you decide the composition you want, and better visualize the impact of the final project.

Time Lapse Video with 4K 60p/50p

The S1H supports interval capture to create time lapse video in the camera body itself and is also capable of 4K 60p/50p, with smooth exposure transitions across the whole video sequence that eliminate abrupt brightness changes.

Still photos can also be shot with Like709 to avoid later color corrections, and also shot with V-Log for greater workflow flexibility.

Waveform Monitor Display / Vector Scope

You can check the brightness, luminance, hue and saturation (color component and chrominance) while you are shooting. The built-in Waveform Monitor (WFM) quantifies and displays the signals being recorded as visual wave data. This is especially useful for determining correct exposure in situations where relying on the eye alone is not possible, or when needing to comply with a precise broadcast specification. Vector Scope allows you to view and measure waveforms as vectors and check the color phase and saturation on the recording screen. You can instantly judge if you have the right colors or not, and adjust the white balance accordingly. The Vector Scope function is also useful when you want to match the saturation of multiple pieces of footage.

SS/ISO, Angle/ISO, SS/dB Display

The shooting information to be displayed can be changed from shutter speed to shutter angle instead, or from ISO to Gain. Panel contents and layout have been designed by carefully considering how professional videographers and cinematographers instinctively work from years of experience.

Luminance Level Adjustment

Select the luminance range from 3 settings to match video editing and playback and control both super whites and super blacks. When recording in 8-bit, set the range to 16-235 (video levels 0 to 100% on IRE scale) or preserve the super whites with 16-255 (video levels 0 to 109% on IRE scale). The third option, 0-255, covers both, also known as Data Levels. These selections make it easy to match luminance levels in projects that combine both photos and video. For 10-bit recording you can select between 0-1023, 64-940 or 64-1023.

- When the recording format is set to AVCHD, the options are 16-235 and 16-255.
- When the recording format is set to MOV or MP4, options are 0-255, 16-235 and 16-255.
- When Photo Style is set to 'Hybrid Log Gamma', the setting is fixed at 64-940.
- When Photo Style is set to 'V-Log', the setting is fixed at 0-255 in 8-bit or at 0-1023 in 10-bit.

Non-stop Recording

Supported by Heat Dispersing Fan

The S1H has unlimited video recording capability for all recording modes within the recommended operating temperatures, (-10° C to 40° C). To dissipate the heat generated by recording non-stop, a highly-effective and independently operating fan is now included within the body — an industry first.* The film-maker can now concentrate on capturing every minute of the scene without the worry that recording may stop suddenly. The fan is designed for minimal vibration and low noise, operating in four modes to suit the type of shoot and shooting environment and, as with the S1H body overall, is dust- and splash-resistant.**

* For a Full-frame Digital Single Lens Mirrorless Camera, as of August 27th, 2019.

** Dust and splash resistance does not guarantee that damage will not occur if this camera is subjected to direct contact with dust and water.



Dust / Splash / Freeze Resistant*

The magnesium alloy full die-cast frame is highly durable, while sealing helps protect every seam, dial, and button. The overall system is dust- and splash-resistant,* designed furthermore to operate at temperatures as low as -10° C.

* Dust and splash resistance does not guarantee that damage will not occur if this camera is subjected to direct contact with dust and water.



PERFECT OPERABILITY

Double Memory Card Slot

The double memory card slot is compatible with SD Memory Cards (UHS-II / V90). Allocation Record mode allows you to specify the card slot to be used for recording different image formats. The extra card slot is also convenient for recording long videos or as a backup. Relay Recording mode relays recording to the other card slot after the first card runs out of free space during recording. Backup Recording mode* records the same data to the two cards.

* Cannot be used with AVCHD format.



USB Power Supply/Power Charging

This feature allows you to supply power to the camera while charging the battery.* The S1H has been designed with safety considerations and with regard to battery life, charging time and method. The 7.4-V 3,050 mAh high-capacity battery can be quickly charged via USB PD (USB Power Delivery) using the bundled USB 3.1 Type-C** cable. A fully charged battery lasts for about 2 hours, depending on the demands of the shoot. A USB 3.1 Type-C** adaptor is included that is compatible with the USB PD standard. It also realizes high-speed data transfer.

* Battery must be installed in camera and retain some charge for feature to work.

** USB Type-C (TM) and USB-C (TM) are trademarks of USB Implementers Forum.

Durable Shutter & Fast Flash Syncro

The high-precision shutter is designed with increased rigidity and is durable to around 400,000 cycles. It also boasts an external flash sync speed of 1/320 seconds maximum.*

* Guide number decreases at 1/320. Only when set to M mode or S mode.

New Tilting 3.2-inch Free-Angle Rear Monitor

This rear-mounted monitor is a touch-sensitive LCD with a superbly bright 2.33-million-dot high resolution that is still clearly visible in sunny outdoor conditions. The combination of a tilting and swivel mechanism makes unusual compositions and creative angle shots easy to frame. This also avoids the monitor becoming entangled in any connected HDMI or USB cables.



Status LCD

The 1.8-inch high-resolution Status LCD is designed for low power consumption yet high visibility outdoors. The large sub-liquid crystal offers 303 x 230 dots resolution and instant access to information on the most relevant settings, stills or video, with a black/white switchable background. Backlighting allows you to monitor settings in the dark and even view key data when power is off thanks to the LCD's low-power 'Memory in Pixel'.



5.76-million-dot Resolution Real View Finder

Boasting 5.76-million-dot resolution, the highest level among DSLMs, this Real View Finder is the largest level of size in its class. Clarity and sharpness is so vivid that you may feel you are directly viewing the subject with your own eye. This greatly aids concentration. With a lens designed for minimum distortion from center to the corners and high magnification of 0.78x, the Real View Finder supports both perfect framing and high-precision focusing. The high-speed, high-precision OLED (Organic Light-Emitting Diode) for the LVF achieves a smooth display at 60 fps/120 fps (switchable). A high-speed response with minimum time lag of approximately 0.005 sec, as well as 10,000:1 high contrast, allow exceptional visibility. In addition, the 0.78x magnification ratio can be switched to 0.7x or 0.74x according to the shooting situation.



SUPERIOR IMAGE QUALITY

14-bit RAW Recording for Rich Grading

Color depth when recording RAW files corresponds to super-detailed 14-bit. As well as taking beautiful stills with a rich dynamic range of delicate tones and colors, you can prevent gradation jump (tone jump) and overexposures that can occur when correcting an image.

High Resolution Mode

This mode enables ultra-high precision photo shooting. Eight consecutive images are automatically shot while shifting the sensor using the Body I.S. mechanism. These are then synthesized into a 96-megapixel equivalent RAW image. This mode is ideal for taking natural landscapes or works of fine art with delicate details. However, by switching the sub mode, it can also be used in situations where moving subjects are part of the scene.

Fast and Accurate AF at 0.08sec* and Built-in AI Technology

Advanced LUMIX technology provides unified control of the sensor, engine, and lens to deliver high-speed, high-precision focus at every angle. Super-fast sensor-lens communication at a maximum 480 fps and DFD (Depth From Defocus) technology helps achieve high-precision autofocus of approximately 0.08 seconds.*

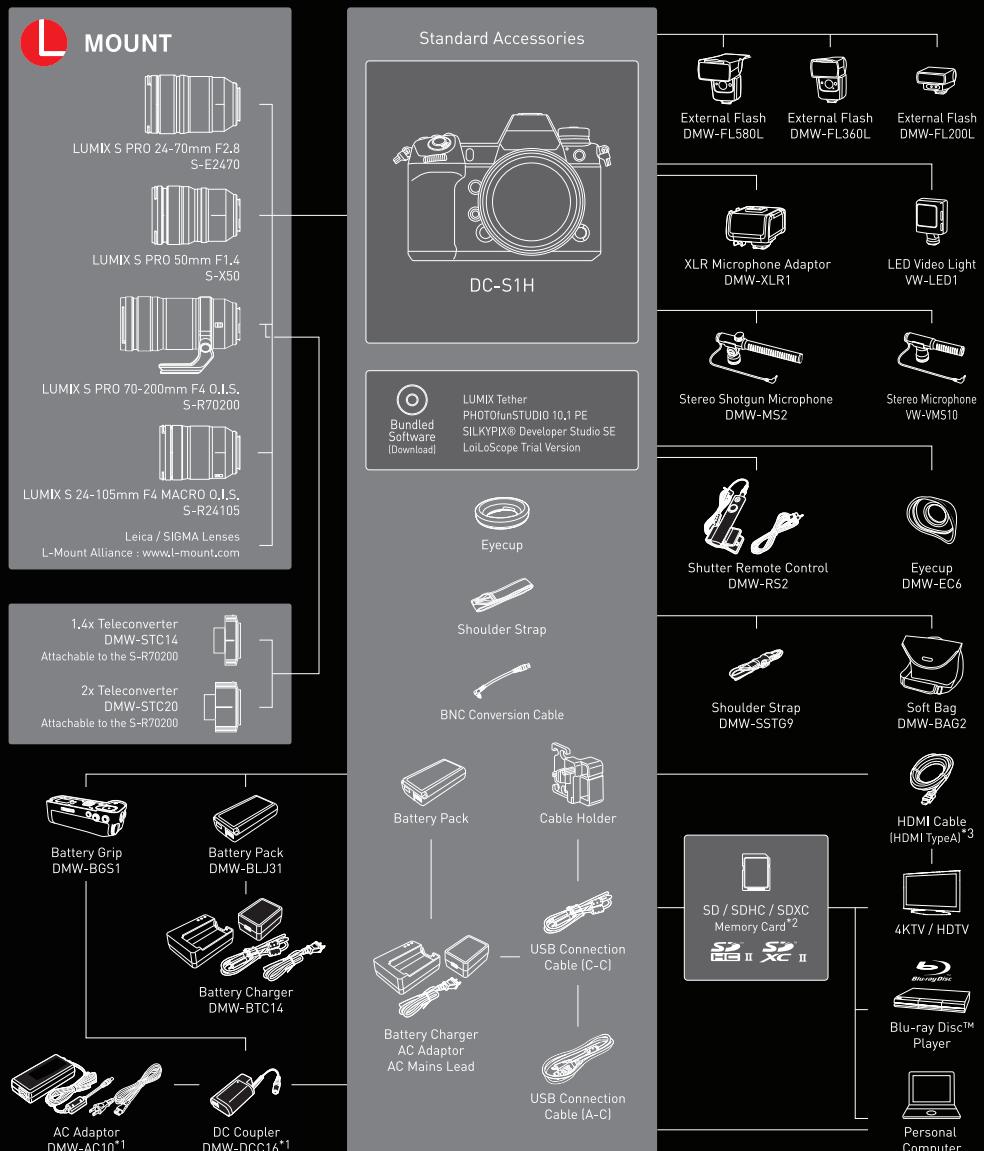
It also incorporates Advanced AI Technology that detects specific subjects – humans and fast-moving animals, including birds, wild dogs and felines. The S1H keeps tracking these subjects even when they turn their back to the camera.

* 11EV, at wide-end with S-R24105 (CIPA) in LVF120 fps setting.

9fps (AFS) / 6fps AFC Burst Shooting

The S1H boasts high speed burst shooting at 9 fps (AFS) / 6 fps (AFC). Together with the camera's high AF tracking performance, you can capture target subjects with almost absolute certainty.

System Chart



*1 The AC Adaptor DMW-AC10 requires the DC coupler DMW-DCC16. The DC coupler DMW-DCC16 requires the AC Adaptor DMW-AC10. *2 SDXC/SDHC Memory Card compatible with UHS Class 3 (U3)*3 must be used when recording 6K video [S1H], 4K video, 6K PHOTO, 4K PHOTO and High Speed Video in camera. Use this SD Memory Card for S1H All-Intra 400Mbps mode requiring Video Speed Class V60 or V90. *3 For 6K video [S1H], 4K video [S1H] and 4K video output, use an HDMI cable that has the HDMI logo on it, and that is described as "4K compatible". • The L-Mount Logo mark is a trademark or registered trademark of Leica Camera AG. • The SDXC/SDHC Memory Card can be used only if their logos are indicated on the equipment or in the operation manual. It cannot be used with equipment that supports only the SD Memory Card. • USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. • Confirm the operation information of compatible lenses at Customer Support <http://panasonic.jp/support/global/cs/dsc> (English). • Batteries made by other companies which have been certified by Panasonic may be used with these units, but we offer no guarantee as to the quality, performance or safety of such batteries. • Exercise care when purchasing batteries. Many fake or imitation batteries have been found among those sold at unusually low prices and those which customers cannot check for themselves before purchasing. • Please confirm the latest information about batteries on the following website. <http://panasonic.jp/support/global/cs/info/battery.html> (English).

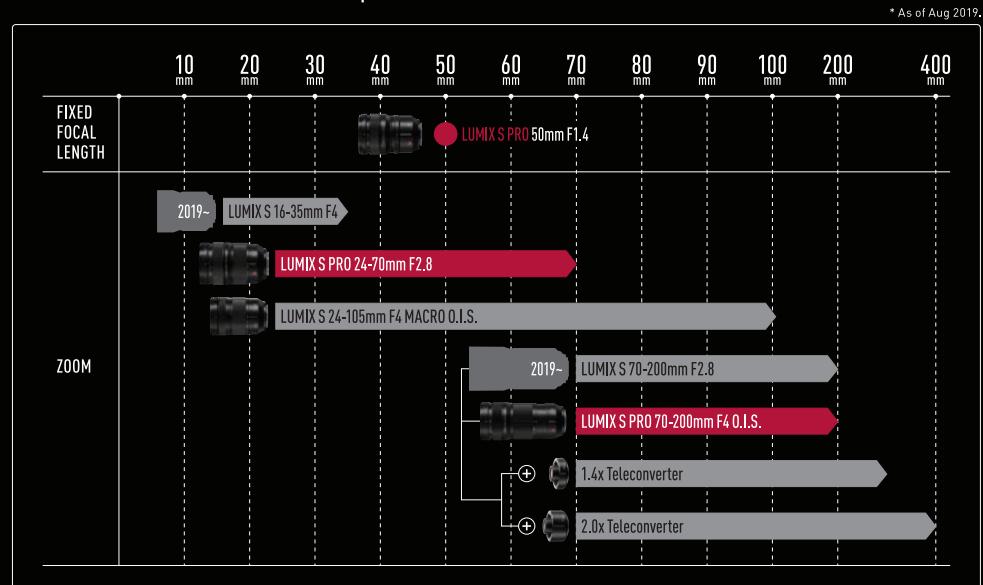


Expansion of L-Mount Lenses

A total of more than 46 lenses and mount adaptors by the end of 2020:

LUMIX 11 or more lenses | **Leica** 18 lenses | **SIGMA** 17 lenses

LUMIX S Series Lens Roadmap



An Alliance by



SIGMA



Discover the possibilities at
www.l-mount.com



* LEICA is a registered trademark of Leica Microsystems IR GmbH. • L Mount is a trademark or registered trademark of Leica Camera AG.

Recording Modes

								HLG	VFR	59.94Hz	50.00Hz	24.00Hz
FULL	6K [3:2]	5952 x 3968	4:2:0 10-bit	LongGOP	HEVC	200Mbps	Yes	-	23,98p	-	-	24.00p
	5.4K [3:2]	5376 x 3584	4:2:0 10-bit	LongGOP	HEVC	200Mbps	Yes	-	29,97p	25,00p	-	-
	5.9K (16:9)	5888 x 3312	4:2:0 10-bit	LongGOP	HEVC	200Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-
C4K	4096 x 2160	4:2:2 10-bit	All-Intra	H.264	400Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:2 10-bit	LongGOP	H.264	150Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	-	29,97p / 23,98p	25,00p	24.00p	-	-
4K	3840 x 2160	4:2:2 10-bit	All-Intra	H.264	400Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:2 10-bit	LongGOP	H.264	150Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	-	29,97p / 23,98p	25,00p	24.00p	-	-
FHD	1920 x 1080	4:2:2 10-bit	All-Intra	H.264	200Mbps	Yes	-	59,94p / 29,97p / 23,98p	50,00p / 25,00p	24.00p	-	-
		4:2:0 10-bit	LongGOP	HEVC	150Mbps	Yes	-	119,88p (HFR)	100,00p (HFR)	-	-	-
		4:2:2 10-bit	All-Intra	H.264	100Mbps	Yes	-	59,94i	50,00i	-	-	-
		4:2:2 10-bit	LongGOP	H.264	100Mbps	Yes	-	59,94p / 29,97p / 23,98p	50,00p / 25,00p	24.00p	-	-
		4:2:0 10-bit	LongGOP	HEVC	100Mbps	Yes	-	47,95p (HFR)	-	48,00p (HFR)	-	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	Yes	59,94p / 29,97p / 23,98p	50,00p / 25,00p	24.00p	-	-
		4:2:2 10-bit	LongGOP	H.264	50Mbps	Yes	-	59,94i	50,00i	-	-	-
Super 35mm	C4K	4096 x 2160	4:2:2 10-bit	All-Intra	H.264	400Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-
		4:2:0 10-bit	LongGOP	HEVC	200Mbps	Yes	-	59,94p / 47,95p (HFR)	50,00p	48,00p (HFR)	-	-
		4:2:2 10-bit	LongGOP	H.264	150Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:0 8-bit	LongGOP	H.264	150Mbps	-	-	59,94p	50,00p	-	-	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	Yes	29,97p / 23,98p	25,00p	24.00p	-	-
4K	3840 x 2160	4:2:2 10-bit	All-Intra	H.264	400Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:0 10-bit	LongGOP	HEVC	200Mbps	Yes	-	59,94p / 47,95p (HFR)	50,00p	48,00p (HFR)	-	-
		4:2:2 10-bit	LongGOP	H.264	150Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:0 8-bit	LongGOP	H.264	150Mbps	-	-	59,94p	50,00p	-	-	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	Yes	29,97p / 23,98p	25,00p	24.00p	-	-
Anamorphic	3328 x 2496	4:2:2 10-bit	All-Intra	H.264	400Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:0 10-bit	LongGOP	HEVC	200Mbps	Yes	-	47,95p (HFR)	50,00p	48,00p (HFR)	-	-
		4:2:2 10-bit	LongGOP	H.264	150Mbps	Yes	-	29,97p / 23,98p	25,00p	24.00p	-	-
		4:2:0 8-bit	LongGOP	H.264	150Mbps	-	-	50,00p	-	-	-	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	Yes	29,97p / 23,98p	25,00p	24.00p	-	-
FHD	1920 x 1080	4:2:2 10-bit	All-Intra	H.264	200Mbps	Yes	-	59,94p / 29,97p / 23,98p	50,00p / 25,00p	24.00p	-	-
		4:2:0 10-bit	LongGOP	HEVC	150Mbps	Yes	-	119,88p (HFR)	100,00p (HFR)	-	-	-
		4:2:2 10-bit	All-Intra	H.264	100Mbps	Yes	-	59,94i	50,00i	-	-	-
		4:2:2 10-bit	LongGOP	H.264	100Mbps	Yes	-	59,94p / 29,97p / 23,98p	50,00p / 25,00p	24.00p	-	-
		4:2:0 10-bit	LongGOP	HEVC	100Mbps	Yes	-	47,95p (HFR)	-	48,00p (HFR)	-	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	Yes**	59,94p / 29,97p / 23,98p	50,00p / 25,00p	24.00p	-	-
		4:2:2 10-bit	LongGOP	H.264	50Mbps	Yes	-	59,94i	50,00i	-	-	-

* Only when Super 35mm is selected. ** Only when Super 35mm is selected at 59,94/50,00p.

								HLG	VFR	59.94Hz	50.00Hz
FULL	4K	3840 x 2160	4:2:0 10-bit	LongGOP	HEVC	72Mbps	Yes	-	29,97p / 23,98p	25,00p	-
			4:2:0 8-bit	LongGOP	H.264	100Mbps	-	-	29,97p / 23,98p	25,00p	-
FHD	1920 x 1080	4:2:0 8-bit	LongGOP	H.264	28Mbps	-	-	59,94p	50,00p	-	-
		4:2:0 8-bit	LongGOP	H.264	20Mbps	-	-	29,97p	25,00p	-	-
		4:2:0 8-bit	LongGOP	H.264	24Mbps	-	-	23,98p	-	-	-
Super 35mm	4K	3840 x 2160	4:2:0 10-bit	LongGOP	HEVC	100Mbps	Yes	-	59,94p	50,00p	-
			4:2:0 10-bit	LongGOP	HEVC	72Mbps	Yes	-	29,97p / 23,98p	25,00p	-
		4:2:0 8-bit	LongGOP	H.264	100Mbps	-	-	29,97p / 23,98p	25,00p	-	-
FHD	1920 x 1080	4:2:0 8-bit	LongGOP	H.264	28Mbps	-	-	59,94p	50,00p	-	-
		4:2:0 8-bit	LongGOP	H.264	20Mbps	-	-	29,97p	25,00p	-	-
		4:2:0 8-bit	LongGOP	H.264	24Mbps	-	-	23,98p	-	-	-
AVCHD / AVCHD Progressive								HLG	VFR	59.94Hz	50.00Hz
FULL /	FHD	1920 x 1080	4:2:0 8-bit	LongGOP	AVCHD /	28Mbps	-	-	59,94p (59,94fps)	50,00p (50,00fps)	-
Super 35mm	PIXEL/PIXEL		4:2:0 8-bit	LongGOP	AVCHD /	17Mbps	-	-	59,94i (59,94fps)	50,00i (50,00fps)	-
			4:2:0 8-bit	LongGOP	Progressive	24Mbps	-	Yes	59,94i (29,97fps) / 23,98p (23,98fps)	50,00i (25,00fps)	-

Specifications

TYPE	Type	Digital Single Lens Mirrorless camera
	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 and UHS-II Video Speed Class 90 standard SDXC Memory Cards.
	Lens mount	L-Mount
IMAGE SENSOR	Type	35mm full-frame [35.6mm x 23.8mm] CMOS sensor
	Camera effective pixels / Total pixels	24.20 megapixels / 25.28 megapixels
	Aspect ratio / Color filter	3:2 / Primary color filter
	Dust reduction system	Supersonic wave filter
LATITUDE		14+ stops [V-Log]
MOTION PICTURE	Recording file format	MOV: H.264/MPEG-4 AVC, H.265/HEVC [Audio format: LPCM [2ch/48kHz/16-bit, 48kHz/24-bit*, 96kHz/24-bit*] *When attaching DMW-LXL1 [sold separately], MP4: H.264/MPEG-4 AVC, H.265/HEVC [Audio format: AAC [2ch]] AVCHD Progressive, AVCHD [Audio format: Dolby Audio [2ch]]
	System frequency	59.94Hz / 50.00Hz / 24.00Hz
	Continuous recordable time [Motion picture]***	Approx. 130 min [MOV [C4K/24p/4:2:2 10-bit/ALL-Intra]] Approx. 120 min [MP4 [4K/60p]] Approx. 160 min [AVCHD [FHD/60p]] *When using S-R24105, When the battery is fully charged, When [FULL] is selected.
	Actual recordable time [Motion picture]***	Approx. 65 min [MOV [C4K/24p/4:2:2 10-bit/ALL-Intra]] Approx. 60 min [MP4 [4K/60p]] Approx. 80 min [AVCHD [FHD/60p]] *When using S-R24105, When the battery is fully charged, When [FULL] is selected.
VIEWFINDER	Type	OLED Live View Finder
	Pixels	Approx. 5.76 million dots
	Field of view / Magnification	Approx. 100% / Approx. 0.78x with 50 mm lens at infinity, -1.0 m ⁻¹ , when the aspect ratio is set to 3:2
	Eye point / Diopter adjustment	Approx. 21 mm at infinity, -1.0 m ⁻¹ / -4.0 ~ +2.0 (dpt)
	Eye sensor	Yes
	Display speed	120fps / 60fps
	Display time lag	Approx. 0.005sec
REAR MONITOR	Type	TFT LCD monitor with static touch control
	Monitor size	Tilt free-angle, 3.2-inch [8.0cm], 3:2 aspect
	Pixels	Approx. 2.33 million dots
STATUS LCD		1.8-inch, 303 x 230 dots (effective pixels 287 x 214 dots), Monochrome LCD monitor
FOCUS	Type	Contrast AF system
	DFD technology	Yes
	Focus mode	AFS (Single) / AFC (Continuous) / MF
	AF mode	Auto Detection [Face, Eye, Body, Animal] / Tracking / 225-Area / Zone [Vertical/Horizontal] / Zone [Square] / Zone [Oval] / 1-Area+ / 1-Area / Pinpoint / Custom 1, 2, 3 [Full area touch is available] [Scalable AF frame size and flexible AF position]
	AF detective range	EV -6 ~ 20 [F1.4, ISO100 equivalent, AFS]
	AF custom setting	AF Sensitivity, AF Area Switching Sensitivity, Moving Object Prediction
	AF assist lamp	Yes
	AF lock	Set the Fn button in custom menu to AF lock
	Post Focus / Focus Stacking	Yes / Yes
	Others	AF-ON, Shutter AF, Half Press Release, Focus/Shutter Priority, Quick AF, Continuous AF [during motion picture recording], Eye Sensor AF, AF-Point Scope Setting, AF-MF, MF Guide, MF Assist, Touch MF Assist, Focus Peaking, Touch AF/AE Function, Touch Pad AF, Touch Shutter, Focus Switching for Vert/Hor, Focus Ring Lock, Show/Hide AF Mode, 1-Area AF Moving Speed, Loop Movement Focus Frame, AFC Start Point [225-Area], Lens Position Resum, Focus Ring Control
EXPOSURE CONTROL	Light metering system	1/28-zone multi-pattern sensing system
	Light metering mode	Multiple / Center Weighted / Spot / Highlight Weighted
	Metering range	EV-0.18 ~ 18 [F2.0 lens, ISO100 equivalent]
	Exposure mode	Program AE / Aperture Priority AE / Shutter Priority AE / Manual Exposure
	ISO sensitivity [Standard output sensitivity]	Auto / 50* / 100* / 200* / 400* / 800* / 1600* / 3200* / 6400* / 12800* / 25600* / 51200* / 102400* / 204800* [Changeable to 1/3 EV step] *Extended ISO
	Dual Native ISO	[Normal] Native ISO: 100, 440 Auto/Auto / 50* / 100-51200 / 102400* / 204800* Low: Auto / 50* / 100-800 High: Auto / 320* / 640-51200 / 102400* / 204800* *Extended ISO [V-Log] Native ISO: 640, 4000 Auto: Auto / 320* / 640-51200 Low: Auto / 320* / 640-5000 High: Auto / 2000* / 4000-51200 *Extended ISO [HLG] Native ISO: 400, 2500 Auto: Auto / 400-51200 / 102400* / 204800* Low: Auto / 400-3200 High: Auto / 2500-51200 / 102400* / 204800* *Extended ISO [Cinelike D2 / Cinelike V2] Native ISO: 200, 1250 Auto: Auto / 100* / 200-51200 / 102400* / 204800* Low: Auto / 100* / 200-1600 High: Auto / 640* / 1250-51200 / 102400* / 204800* *Extended ISO
	Exposure compensation	1/3 EV step ±5EV [±3EV for motion picture]
	AE lock	Set the Fn button in custom menu to AE lock
IMAGE STABILIZATION SYSTEM		Image sensor shift type [5-axis / 6.0-stop*] *Based on the CIPA standard [Yaw/Pitch direction: focusing distance f=50mm when S-X50 is used.] Dual I.S., 6.5-stop* Dual I.S., 2 compatible! *Based on the CIPA standard [Yaw/Pitch direction: focusing distance f=105mm when S-R24105** is used, focusing distance f=200mm when S-R7020** is used.] **Firmware must be updated to the latest version
WHITE BALANCE	White balance	AWB / AWBc / AWBw / 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

MOTION PICTURE FUNCTION	Master pedestal level	31 steps
	Luminance level	8-bit: 0-255 / 16-235 / 16-255 10-bit: 0-1023 / 64-940 / 64-1023
	Wave form monitor / Vectorscope	Selectable
	LUT display	LUT View Assist [Monitor] / LUT View Assist [HDMI]
	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.]
	SS/Gain operation	Shutter Duration/ISO / Angle/ISO / Shutter Duration/DB
	Color bars / 1kHz test tone	Yes [SMPTE / EBU / ARIB] / Yes
	Knee control	Yes [in Like709 mode]
	Yes	Yes
LEVEL GAUGE		SuperSpeed USB 3.1 Gen1 Type-C
INTERFACE	USB	
	HDMI****	Monitor-through 4:2:2 10bit [When [Rec Quality] is set to [4:2:2 10bit] or [4:2:0 10bit],] 4:2:2 8bit [When [Rec Quality] is set to [4:2:0 8bit],] Info Display: ON / OFF [selectable] Down Convert: Auto / 4K/30p/25p / 1080p / 1080i / 720p / 480p 50.00Hz: Auto / C4K/50p / C4K/25p / 4K/50p / 4K/25p / 1080p / 1080i / 720p / 576p 24.00Hz: Auto / C4K/24p / 4K/24p / 1080p
	Playback	HDMI TypeA / VIERA Link, Audio: Stereo 59.94Hz: Auto / C4K/60p / C4K/30p / 4K/60p / 4K/30p / 1080p / 1080i / 720p / 480p 50.00Hz: Auto / C4K/50p / C4K/25p / 4K/50p / 4K/25p / 1080p / 1080i / 720p / 576p
	Remote input	φ2.5mm
	External microphone / external audio device input	φ3.5mm for external microphone / external audio device MIC [Plug-in Power] / MIC / LINE is selectable, Stereo/Lens Auto/Shotgun/Super Shotgun/Manual is selectable when attaching DMW-MS2 [sold separately].
	Headphone output	φ3.5mm
	Microphone	Stereo, Wind Noise Canceller: OFF / Low* / Standard / High *When attaching DMW-MS2 [sold separately].
	High-res audio recording	Yes with DMW-XLR1 [sold separately]
	SD card slot	Slot 1, Slot 2
	TC IN/OUT	Yes with BNC Converter Cable (bundled)
	Fan	Auto1 / Auto2 / Normal / Slow
	Tally Lamp	Yes [front/rear]
WIRELESS	Wi-Fi	2.4GHz [STA/AP] [IEEE802.11b/g/n] 5GHz: [STA] [IEEE 802.11a/n/ac] *5GHz Wi-Fi is not available in some countries.
	Bluetooth	Bluetooth® v4.2 [Bluetooth Low Energy (BLE)]
DUST AND SPLASH RESISTANT*		Yes. *Dust and Splash Resistant does not guarantee that damage will not occur if this camera is subjected to direct contact with dust and water.
POWER	Battery	Li-Ion Battery Pack [7.4V, 3050mAh, 23Wh] [bundled] USB power supply, USB power charging
	Battery life [CIPA standard]	Approx. 400 images [rear monitor], 380 images [LVE], 1,150 images [Power Save LVF mode*] with S-R24105 *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-BGS1 [sold separately]
DIMENSIONS / WEIGHT	Dimensions [W x H x D]	Approx. 15.0 x 114.2 x 10.4 mm / 5.94 x 4.50 x 0.43 inch (excluding protrusions)
	Weight	Approx. 1,164g / 2.57 lb [SD Memory Card x 1, Battery, Body] Approx. 1,052g / 2.32 lb [Body only]
OPERATING ENVIRONMENT	Operating temperature****	-10°C to 40°C [14°F to 104°F]
	Operating humidity	10%RH to 80%RH

*** 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], [MOV], [AVR], [6K PHOTO] or [4K PHOTOL]. [SD speed class is the speed standard regarding continuous writing.] • Video Speed Class 6 or higher is required for ALL-Intra [MP4] recording. • Under the test conditions specified by Panasonic based on CIPA standard, *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.

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• Use an SD Memory Card with Video Speed Class 6 or higher is recommended for C4K/4K ALL-Intra video recording. • 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 continue recording without interruption even if the file size exceeds 4 GB or 3 hours 4 minutes in length, but the motion picture file will be divided and recorded/played back separately. • Use an SDXC memory card: You can continue recording without interruption even if the file size exceeds 4 GB or 30 minutes in length, but the motion picture file will be divided and recorded/played back separately. • 4:2:2 10-bit recording is a recording mode for [MP4] in [FHD]: You can continue recording without interruption even if the file size exceeds 96 GB or 3 hours 4 minutes in length, 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 [6K (5.9K), 5.4K] [C4K/60p] [C4K/30p] [C4K/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.

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