

---

---

## Dear Customer

---

---

### ◆ About the Upgrade of the DC-GH5 Firmware

The following functions were added or changed from Ver. 2.0 of the firmware.

Please read this in conjunction with the owner's manual for the camera.

- The firmware version can be checked from the [Version Disp.] of the [Setup] menu.

## Contents

---

Settings that support ALL-Intra motion picture have been added to [MP4 (LPCM)] and [MOV]	P2
Settings that support High resolution Anamorphic mode and ALL-Intra motion picture have been added to [Anamorphic(4:3)]	P3
HDR motion pictures in HLG format can now be recorded	P4
Approximate available recording times for the motion picture settings added by this firmware update	P6
The camera can now be controlled from a PC connected via USB	P7
Loop recording can now be used for 6K photos	P8
A position where AF Tracking locks on the subject can now be specified	P8
Changes to the Wi-Fi/Bluetooth function	P8
Other functions that have been added	P9

---

## Settings that support ALL-Intra motion picture have been added to [MP4 (LPCM)] and [MOV]

When [Rec Format] is set to [MP4 (LPCM)] or [MOV], you can now select the items below in [Rec Quality] in the [Motion Picture] menu.

Item	System frequency	Size	Frame rate	Bit rate	YUV/bit	Image compression
[C4K/ALL-I/400M/24p]	59.94Hz (NTSC)	4096×2160	23.98p	400 Mbps	4:2:2/10 bit	ALL-Intra
[4K/ALL-I/400M/30p]		3840×2160	29.97p	400 Mbps	4:2:2/10 bit	ALL-Intra
[4K/ALL-I/400M/24p]		3840×2160	23.98p	400 Mbps	4:2:2/10 bit	ALL-Intra
[FHD/ALL-I/200M/60p]		1920×1080	59.94p	200 Mbps	4:2:2/10 bit	ALL-Intra
[FHD/ALL-I/200M/30p]		1920×1080	29.97p	200 Mbps	4:2:2/10 bit	ALL-Intra
[FHD/ALL-I/200M/24p]		1920×1080	23.98p	200 Mbps	4:2:2/10 bit	ALL-Intra
[4K/ALL-I/400M/25p]	50.00Hz (PAL)	3840×2160	25.00p	400 Mbps	4:2:2/10 bit	ALL-Intra
[FHD/ALL-I/200M/50p]		1920×1080	50.00p	200 Mbps	4:2:2/10 bit	ALL-Intra
[FHD/ALL-I/200M/25p]		1920×1080	25.00p	200 Mbps	4:2:2/10 bit	ALL-Intra
[C4K/ALL-I/400M/24p]	24.00Hz (CINEMA)	4096×2160	24.00p	400 Mbps	4:2:2/10 bit	ALL-Intra
[4K/ALL-I/400M/24p]		3840×2160	24.00p	400 Mbps	4:2:2/10 bit	ALL-Intra
[FHD/ALL-I/200M/24p]		1920×1080	24.00p	200 Mbps	4:2:2/10 bit	ALL-Intra

- Use a card rated at Video Speed Class 60 or higher to record C4K/4K ALL-Intra motion pictures (400 Mbps). Operation has been confirmed with a Panasonic card rated at Video Speed Class 90.

Label example

**V60 V90**

- Depending on the recording conditions and the card being used, the camera may display [  ] and stop the recording to protect itself. Wait until the camera cools down.
- You cannot record C4K/4K ALL-Intra motion pictures when using [Backup Rec] in [Double Slot Function] if a card rated at Video Speed Class 60 or higher is not inserted in either of the card slots.
- “ALL-Intra” refers to a data compression method in which each frame is compressed. The file size of motion pictures recorded in this method becomes larger, but this method can prevent the loss of image quality because editing does not require re-encoding.
- When [Miniature Effect] is selected for Creative Control Mode, you cannot select the items used for ALL-Intra motion pictures.
- If you select a setting that supports ALL-Intra motion picture, [Loop Recording (video)] will not be available.
- ALL-Intra motion pictures are intended for editing on a computer used for video production. As such, they are not supported by TVs, recorders, and players manufactured by Panasonic.
- To perform playback or editing with the software “PHOTOfunSTUDIO”, update it to the latest version. Playback and editing require a 64 bit edition of the Windows 7/Windows 8.1/Windows 10 operating system and a high-performance PC environment. Refer to the operating instructions of “PHOTOfunSTUDIO” (PDF file) for further operating environment.

## Settings that support High resolution Anamorphic mode\*1 and ALL-Intra motion picture have been added to [Anamorphic(4:3)]

You can now select the items below in [Anamorphic(4:3)] in the [Creative Video] menu.

\*1 "High Resolution Anamorphic Mode" records motion picture with an aspect ratio suited for an anamorphic lens, 4:3. The effective picture size for this mode is equivalent to the number of pixels produced by 6K (approx. 6,000 (horizontal)×3,000 (vertical)) images (approx. 18 megapixels).

Item	System frequency	Size	Frame rate	Bit rate	YUV/bit	Image compression
[6K/A/200M/30p]*2	59.94Hz (NTSC)	4992×3744	29.97p	200 Mbps	4:2:0/10 bit	Long GOP
[6K/A/200M/24p]*2		4992×3744	23.98p	200 Mbps	4:2:0/10 bit	Long GOP
[4K/A/400M/30p]		3328×2496	29.97p	400 Mbps	4:2:2/10 bit	ALL-Intra
[4K/A/400M/24p]		3328×2496	23.98p	400 Mbps	4:2:2/10 bit	ALL-Intra
[6K/A/200M/25p]*2	50.00Hz (PAL)	4992×3744	25.00p	200 Mbps	4:2:0/10 bit	Long GOP
[4K/A/400M/25p]		3328×2496	25.00p	400 Mbps	4:2:2/10 bit	ALL-Intra
[6K/A/200M/24p]*2	24.00Hz (CINEMA)	4992×3744	24.00p	200 Mbps	4:2:0/10 bit	Long GOP
[4K/A/400M/24p]		3328×2496	24.00p	400 Mbps	4:2:2/10 bit	ALL-Intra

\*2 High resolution Anamorphic mode

- Use a card rated at Video Speed Class 60 or higher to record ALL-Intra motion pictures (400 Mbps). Operation has been confirmed with a Panasonic card rated at Video Speed Class 90.
- Label example

**V60 V90**
- Depending on the recording conditions and the card being used, the camera may display [&] and stop the recording to protect itself. Wait until the camera cools down.
  - You cannot record ALL-Intra motion pictures when using [Backup Rec] in [Double Slot Function] if a card rated at Video Speed Class 60 or higher is not inserted in either of the card slots.
  - [Anamorphic(4:3)] is available only when the camera is set to Creative Video Mode.
  - High Resolution Anamorphic Mode records motion picture that meets a video compression standard designed to achieve a higher video compression ratio (HEVC/H.265). To play back motion pictures recorded in this mode on a device other than this camera, you will need a playback device that supports HEVC/H.265.
  - In High Resolution Anamorphic Mode:
    - You can perform recording only with [MP4 (LPCM)] in [Rec Format].
    - [Ex. Tele Conv.], [Digital Zoom], and [E-Stabilization (Video)] are not available.
    - It is not possible to use the HDMI output during recording. In other cases, it will be output at the [4K] resolution.
  - If you select a setting that supports ALL-Intra motion picture, [Loop Recording (video)] will not be available.



## [MP4 HEVC] has been added to [Rec Format] in the [Motion Picture] menu

You can play back motion pictures recorded with [MP4 HEVC] on a 4K/HDR (HLG format)-compatible Panasonic TV.

With [MP4 HEVC], the camera records motion pictures that meet a video compression standard designed to achieve a higher video compression ratio (HEVC/H.265).

- To play back motion pictures recorded in this mode on a device other than this camera, you will need a playback device that supports HEVC/H.265.
- [Photo Style] is fixed to [Hybrid Log Gamma]
- The following [Rec Quality] settings are available.

Item	System frequency	Size	Frame rate	Bit rate	YUV/bit	Image compression
[4K/72M/30p]	59.94Hz (NTSC)	3840×2160	29.97p	72 Mbps	4:2:0/10 bit	Long GOP
[4K/72M/24p]		3840×2160	23.98p	72 Mbps	4:2:0/10 bit	Long GOP
[4K/72M/25p]	50.00Hz (PAL)	3840×2160	25.00p	72 Mbps	4:2:0/10 bit	Long GOP

- To record motion pictures to a card, use a card that supports one of the Speed Class ratings below.

Speed class	Label example	Speed class	Label example
Class 10		UHS Speed Class 1 or higher	

- [MP4 HEVC] is not available when [System Frequency] is set to [24.00Hz (CINEMA)].
- [Filter Settings] is not available when [MP4 HEVC] is set.
- To perform playback or editing with the software "PHOTOfunSTUDIO", update it to the latest version. Playback and editing require a 64 bit edition of the Windows 7/Windows 8.1/Windows 10 operating system and a high-performance PC environment. Refer to the operating instructions of "PHOTOfunSTUDIO" (PDF file) for further operating environment.

## A menu item that converts the dynamic range of HDR images has been added

Use this menu item to display HDR images with a natural brightness on the camera's screen or output HDR images to a non-HDR (HLG format)-compatible device via HDMI.

### ■ [HLG View Assist]

This item converts the dynamic range of HDR images to display them on the monitor/viewfinder of the unit.

**MENU** →  **[Creative Video]** → **[HLG View Assist]**

**MENU** →  **[Playback]** → **[HLG View Assist]**

[MODE2]	Converts images while giving priority to the brightness of main subjects.
[MODE1]	Converts images while giving priority to the brightness of areas such as the sky.
[OFF]	Displays HDR images without converting them.

- These settings are available in the [Creative Video] menu only when [Photo Style] is set to [Hybrid Log Gamma].

## Notes about the HLG View Assist function

- When the camera is in Playback Mode, this function is applied only to motion pictures recorded with [Hybrid Log Gamma].
- The effects are not applied to motion pictures saved to the card.
- During the dynamic range conversion of HDR images, [MODE1] or [MODE2] is displayed on the screen. If the function is set not to convert images, [HLG] is displayed.

### ■ [HLG View Assist (HDMI)]

This item converts the dynamic range of HDR images to output them via HDMI.

**MENU** →  **[Motion Picture]** → **[HDMI Rec Output]** → **[HLG View Assist (HDMI)]**

**MENU** →  **[Setup]** → **[TV Connection]** → **[HLG View Assist (HDMI)]**

<b>[AUTO]</b>	Converts images before outputting them via HDMI while applying the effect of [MODE2]. This conversion setting works only when the camera is connected to a non-HDR (HLG format)-compatible device.
<b>[MODE2]</b>	Converts images before outputting them via HDMI while giving priority to the brightness of main subjects.
<b>[MODE1]</b>	Converts images before outputting them via HDMI while giving priority to the brightness of areas such as the sky.
<b>[OFF]</b>	Outputs HDR images via HDMI without converting them.

- These settings are available in the [Motion Picture] menu only when [Photo Style] is set to [Hybrid Log Gamma].
- Refer to “Notes about the HLG View Assist function” for other relevant information.

## Approximate available recording times for the motion picture settings added by this firmware update

- The recordable time is the total time of all the motion pictures which have been recorded.
- “h” is an abbreviation for hour, “m” for minute and “s” for second.
- [MP4 HEVC]**

[Rec Quality]	System frequency	Card capacity			
		16 GB	32 GB	64 GB	128 GB
<b>[4K/72M/30p]/[4K/72M/24p]</b>	59.94Hz (NTSC)	26m00s	55m00s	1h55m	3h50m
<b>[4K/72M/25p]</b>	50.00Hz (PAL)	26m00s	55m00s	1h55m	3h50m

- [MP4 (LPCM)], [MOV]**

[Rec Quality]	System frequency	Card capacity		
		32 GB	64 GB	128 GB
<b>[C4K/ALL-I/400M/24p]/[4K/ALL-I/400M/30p]</b> <b>[4K/ALL-I/400M/24p]</b> <b>[4K/A/400M/30p]/[4K/A/400M/24p]</b>	59.94Hz (NTSC)	9m00s	20m00s	42m00s
<b>[FHD/ALL-I/200M/60p]/[FHD/ALL-I/200M/30p]</b> <b>[FHD/ALL-I/200M/24p]</b> <b>[6K/A/200M/30p]/[6K/A/200M/24p]</b>		20m00s	41m00s	1h20m
<b>[4K/ALL-I/400M/25p]/[4K/A/400M/25p]</b> <b>[FHD/ALL-I/200M/50p]/[FHD/ALL-I/200M/25p]</b> <b>[6K/A/200M/25p]</b>	50.00Hz (PAL)	9m00s	20m00s	42m00s
<b>[C4K/ALL-I/400M/24p]/[4K/ALL-I/400M/24p]</b> <b>[4K/A/400M/24p]</b>		20m00s	41m00s	1h20m
<b>[C4K/ALL-I/400M/24p]/[4K/ALL-I/400M/24p]</b> <b>[FHD/ALL-I/200M/24p]/[6K/A/200M/24p]</b>	24.00Hz (CINEMA)	9m00s	20m00s	42m00s
		20m00s	41m00s	1h20m

- Motion picture file will be recorded and played back in separate files in the following cases. (You can continue recording without interruption.)
  - When using an SDHC memory card: If the file size exceeds 4 GB
  - When using an SDXC memory card: If the continuous recording time exceeds 3 hours and 4 minutes or if the file size exceeds 96 GB

## The camera can now be controlled from a PC connected via USB

### Camera Control Software “LUMIX Tether”

This software is used to control a Panasonic digital camera from a PC. It allows you to change various settings of the camera, perform remote recording, and save remotely recorded images to the PC.

Check the site below to download and install the software.

[http://panasonic.jp/support/global/cs/soft/download/d\\_lumixtether.html](http://panasonic.jp/support/global/cs/soft/download/d_lumixtether.html)

- Operating environment

OS	Windows	Windows 7, Windows 8.1, Windows 10
	Mac	OS X v10.10 to v10.11, macOS 10.12
Interface	USB port (Super Speed USB (USB 3.0))	

- For details on how to use the “LUMIX Tether”, refer to the operation guide of “LUMIX Tether” (PDF file).
- To download the software, you need to connect the PC to the Internet.
- It may take some time to download the software depending on the communication environment.

### [PC(Tether)] has been added to [USB Mode] in the [Setup] menu

[PC] has been renamed to [PC(Storage)].

By selecting [PC(Tether)] and connecting the camera to a PC, you can control the camera from supported software.

### ■ Operating the camera from a PC

Preparations:

Install “LUMIX Tether” to the PC. Turn on the camera and the PC.

- 1 Connect the computer and camera with the USB connection cable (supplied).**
  - Do not use any other USB connection cables except the supplied one.
- 2 Press ▲/▼ to select [PC(Tether)], and then press [MENU/SET].**
  - If [USB Mode] is set to [PC(Tether)] in the [Setup] menu in advance, the camera will be automatically connected to the PC without displaying the [USB Mode] selection screen.
- 3 Use “LUMIX Tether” to operate the camera from the PC.**
  - When the camera is connected to the PC via [PC(Tether)]:
    - The camera will be set to Recording Mode.
      - Wi-Fi/Bluetooth function cannot be used.
      - [  ] is displayed on the screen.
      - The HDMI cable can be connected to the camera at the same time.
    - Instead of the number of recordable pictures, [PC] will appear on the screen if you perform recording without inserting a card into the camera.

## Loop recording can now be used for 6K photos

[Loop Recording(4K PHOTO)] has been renamed to [Loop Recording(6K/4K PHOTO)].

You can now perform loop recording with [6K Burst(S/S)] when [Picture size / Burst speed] is set to [6K 18M].

- Use a card rated at Video Speed Class 90 to perform loop recording with the 6K Photo function.
- Once you start loop recording with the 6K Photo function, a 6K burst file will be recorded and divided approximately every 1 minute. Approximately the last 11 minute segment (up to approximately 12 minute portion) of the motion picture will be saved.

Label example

V90

## A position where AF Tracking locks on the subject can now be specified

We have changed the way in which the Auto Focus Mode [AF] ([Tracking]) locks on the subject to be tracked.

- 1 Press [AF].
- 2 Select [AF] and press  $\blacktriangledown$ .
- 3 Change the lock-on position.

Button operation	Touch operation	Description of operation
$\blacktriangle/\blacktriangledown/\blacktriangleleft/\blacktriangleright$	Touching	Moves the position
[DISP.]	[Reset]	The position is reset to the center



- 4 Press [MENU/SET] to set.
- 5 Press the shutter button halfway to lock the subject.

- If you press [MENU/SET] or touch [AF OFF], lock will be canceled.

- You can also specify the lock-on position with the joystick.
- While the recording screen is displayed, press the joystick to switch between the default lock-on position and the specified position.
- If you touch a subject on the recording screen, the subject will be locked. (When [Touch AF] is set)
- When [Focus Switching for Vert / Hor] in the [Custom] ([Focus / Release Shutter]) menu is enabled, you can set the lock-on position for each orientation of the camera.



## Changes to the Wi-Fi/Bluetooth function

The shutter button can now be operated with a smartphone via a Bluetooth connection alone

- 1 Make a Bluetooth connection to the smartphone.
- 2 Operate the smartphone.



The items below have been added.

- MENU** →  **[Rec]** → **[Stabilizer]**  
**MENU** →  **[Motion Picture]** → **[Stabilizer]**

<b>[I.S. Lock (Video)]</b>	<p>Allows you to enhance the image stabilization effect during motion picture recording. This effect can keep the motion blur in the composition minimal when you want to perform recording from a fixed perspective.</p> <p><b>[ON]/[OFF]</b></p> <ul style="list-style-type: none"> <li>This effect works only during recording. [] is displayed on the recording screen.</li> <li><b>To change the composition during recording, set the effect to [OFF] first, and then move the camera.</b> Use the appropriate function button to change the setting during recording.</li> <li>In situations where the focal length becomes greater, such as when a telephoto lens is attached, the stabilization effect will be weaker.</li> <li>The stabilization effect may be weak depending on the lens used.</li> </ul>
<b>[Anamorphic (Video)]</b>	<p>Allows you to switch to the stabilizer control setting that suits the anamorphic lens. You can select a setting that suits the magnification of your lens.</p> <p>[] (2×) / [] (1.33×) / <b>[OFF]</b></p> <ul style="list-style-type: none"> <li>When [Anamorphic (Video)] works, [], [], [] or [] is displayed on the recording screen.</li> <li>[] can only be used when an item in [Anamorphic(4:3)] in the [Creative Video] menu is set. If you select an item in [Anamorphic(4:3)], the [Anamorphic (Video)] setting will change to []. On the other hand, if you set [Anamorphic(4:3)] to [OFF], the [Anamorphic (Video)] setting will change to [OFF].</li> <li>When [I.S. Lock (Video)] is set, control priority is given to [I.S. Lock (Video)].</li> </ul>

- [I.S. Lock (Video)] and [Anamorphic (Video)] are not available when you are using a lens that supports non-Panasonic cameras with stabilizer functions.

### [Loop Movement Focus Frame]

New menu item

When setting the AF area position or the MF Assist display position, you can now loop the position from one edge to the other edge of the screen.

- MENU** →  **[Custom]** →  **[Focus / Release Shutter]** → **[Loop Movement Focus Frame]**

Settings: **[ON]/[OFF]**

### [AF Area Display]

New menu item

This changes the AF area display setting to be applied when the Auto Focus Mode is set to [] ([225-Area]) or [] ([Custom Multi]).

- MENU** →  **[Custom]** →  **[Focus / Release Shutter]** → **[AF Area Display]**

<b>[ON]</b>	<p>Displays AF areas on the recording screen.</p> <ul style="list-style-type: none"> <li>AF areas are not displayed when [] (225-Area) or [], [] or [] in [Custom Multi] is set to the default AF area setting.</li> </ul>
<b>[OFF]</b>	<p>Displays AF areas on the recording screen for just a few seconds after you start using them.</p>

- In the following cases, AF areas are not displayed regardless of the setting of this item:
  - When recording motion pictures – Creative Video Mode
  - When recording 6K/4K photos

## [Fn Button Set]

Changes to a menu item

Items that can be assigned to the function buttons have been added.

**MENU** → [Custom] → [Operation] → [Fn Button Set] → [Setting in REC mode]/[Setting in PLAY mode]

### [Setting in REC mode]

<ul style="list-style-type: none"> <li>– [Video Record]</li> <li>– [Destination Slot]</li> <li>– [Min. Shtr Speed]*</li> <li>– [I.S. Lock (Video)]</li> <li>– [Mic Level Adj.]</li> <li>– [HLG View Assist (HDMI)]*</li> </ul>	<ul style="list-style-type: none"> <li>– [Anamorphic Desqueeze display]*</li> <li>– [HLG View Assist]*</li> <li>– [Video Guide Line]*</li> <li>– [Constant Preview]*</li> <li>– [Hybrid Log Gamma]</li> </ul>
--	---

\* It can also be assigned in the Quick Menu ([CUSTOM]).

- With [Video Record], you can start/stop recording a motion picture in the same way as with the motion picture button.
- [Destination Slot] is available only when [Double Slot Function] is set to [Relay Rec].

### [Setting in PLAY mode]

<ul style="list-style-type: none"> <li>– [RAW Processing]</li> <li>– [6K/4K PHOTO Bulk Saving]</li> <li>– [Anamorphic Desqueeze display]</li> </ul>	<ul style="list-style-type: none"> <li>– [HLG View Assist]</li> <li>– [HLG View Assist (HDMI)]</li> </ul>
---	---

- You can perform [RAW Processing] and [6K/4K PHOTO Bulk Saving] when playing back images one at a time.

## [Dial Set.]

Changes to a menu item

The menu item below has been added. It sets the item to be assigned to the control dial while the recording screen is displayed.

**MENU** → [Custom] → [Operation] → [Dial Set.]

[Control Dial Assignment]	<ul style="list-style-type: none"> <li>[] ([Headphone Volume])/[]/[] ([Exposure / Aperture])*<sup>1</sup>/</li> <li>[] ([Exposure Comp.])/[] ([Sensitivity])/</li> <li>[] ([Focus Frame Size])*<sup>2</sup></li> </ul>
---------------------------	--

\*<sup>1</sup> A function that sets the aperture value is assigned when the camera is set to Manual Exposure Mode. If it is set to a mode other than Manual Exposure Mode, a function that compensates the exposure is assigned.

\*<sup>2</sup> When the Auto Focus Mode is set to [], [], [] or [], a function that adjusts the AF area size is assigned. When the Auto Focus Mode is set to [] or Manual Focus is used, a function that changes the magnification factor of the assist screen is assigned.

**[Operation Lock Setting]**

Changes to a menu item

The items below have been added.

**MENU** →  **[Custom]** →  **[Operation]** → **[Operation Lock Setting]**

<b>[DISP. Button]</b>	Disables the functions of the [DISP.] button.
-----------------------	---

**[Video Guide Line]**

New menu item

The recording screen displays guide lines aligned with the angle of view to be used when you crop motion pictures with editing software on your PC.

**MENU** →  **[Custom]** →  **[Monitor / Display]** → **[Video Guide Line]**

**Settings:** [2.39:1]/[2.35:1]/[16:9]/[1:1]/[OFF]

**[Power Save LVF Shooting]**

Changes to a menu item

If you display the monitor using the viewfinder/monitor automatic switching function, the camera will turn off automatically after being left idle.

**MENU** →  **[Setup]** → **[Economy]** → **[Power Save LVF Shooting]**

<b>[Time]</b>	<p>Sets the amount of time before the camera turns off automatically.  <b>[10SEC]/[5SEC]/[3SEC]/[2SEC]/[1SEC]/[OFF]</b></p> <p>• When not using [Power Save LVF Shooting], select [OFF].</p>
<b>[Display]</b>	<p>Sets whether or not to turn off the camera automatically when a particular screen is displayed on the monitor.</p> <p><b>[Only Monitor Info.]:</b>          Sets the camera to turn off automatically only when [Monitor Info. Disp.] is displayed.</p> <p><b>[All Live View]:</b>          Sets the camera to turn off automatically when any screen is displayed.</p>

• SDXC Logo is a trademark of SD-3C, LLC.

