Stills Photography with the Lumix G7

Modern digital cameras are marvellous pieces of technology that are capable of capturing wonderful images. However, most are needlessly complex. We typically face four exposure modes, three metering modes, at least three focus modes and several auto-focus modes. And that is before considering ISO (sensitivity), white balance, exposure compensation, drive mode and a host of other settings!

Lumix G cameras are highly configurable, have a relatively user-friendly interface and most have a number of programmable buttons and other controls. However, this adds yet another level of complexity.

It has taken me years of use to find effective ways of using and configuring Lumix G cameras. Having done so, I find them a delight to use. Features and capabilities hidden in the menus and documentation can be programmed onto buttons and the QUICK MENU (Q.MENU) and made directly accessible and highly usable.

This manual attempts to distil this experience into a relatively short document. It is directed at stills photographers who mainly use RAW format. It does not cover many JPEG-only features, intelligent auto mode or taking video. Don't let this put you off using intelligent auto mode: it does work well. However, the techniques in this manual let you make full use of your camera's capabilities and are no harder, once mastered.

Please refer to the official Panasonic manuals, which can be downloaded from Panasonic's web site, for the basic details of camera operation and for full details of features such as 4K PHOTO.

The manual is organised as follows:

- The first chapter gives an overview of the controls, so you can follow the rest of the manual.
- The second chapter covers taking photos, using recommended custom modes. The setup of the custom modes in described in chapter 4.
- The third chapter summarises the technical capabilities of the camera. It provides details of additional capabilities for you to refer to as needed.
- Chapter four summarises the functions and settings of the cameras and describes how to set up (program) your camera. **This should be the first thing you do.**

I hope you enjoy using your camera.

1. Controls on the G7

This chapter provides a brief overview of the controls: see the photographs on page 2. Note the name or function of each control. Some buttons have the function embossed on or by them. The functions programmed on other buttons, which only have an icon or Fn number on them, are shown on the photographs.

Insert a charged battery and memory card, following the instructions in the camera manual. Turn on your camera using the ON / OFF switch. It's obvious how to turn it off again.

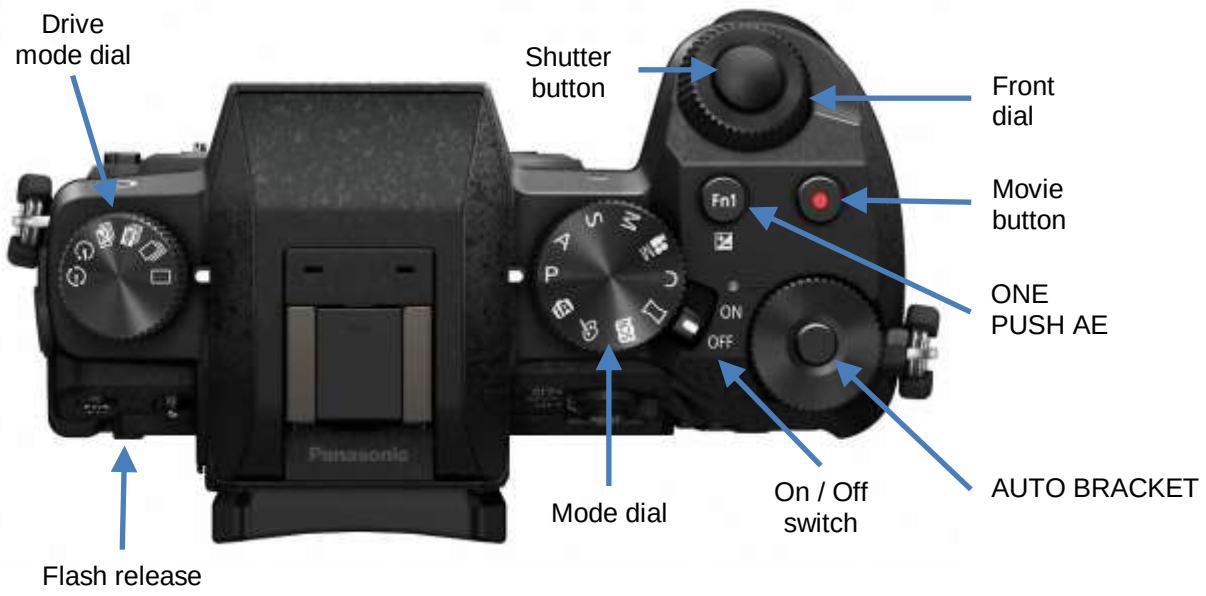
Before proceeding further with this manual, please set up your camera as instructed in chapter 4, which also describes the functions in the menu system. The setup makes the frequently-used features of your camera readily accessible. The functions used most frequently are allocated to the dials, programmable function buttons and screen function icons[1]. For example, the FOCUS AREA SET button lets you enable use of the touch screen and cursor keys to position the AF (auto-focus) area. The use of the other buttons and dials is discussed below.

The next most frequently-used functions are allocated to the Q.MENU, where they can be quickly accessed. You have to access other functions through the full MENU system.

Use the dioptre adjustment, beside the viewfinder, to focus the viewfinder image.

[1] The screen function icons are accessed (and hidden) by touching the small tabs to the right of the screen. They are not available using the viewfinder.

When using the viewfinder, use the buttons and dials to control most functionality, including using the cursor keys to move the AF area after pressing the FOCUS AREA SET button. When viewing the screen, you can use either the buttons and dials or the touch screen.



With the LCD screen open, press the LVF button to toggle through the MONITOR SWITCH settings: LVF on; LCD screen on; and automatic switching between the two[2]. When you turn the camera on it will use the setting you were using when you last switched it off.

Press the DISP button to cycle through alternative displays on the screen or viewfinder (whichever is in use): with info; no info; level and info; level and no info; control screen; and off. The last two only apply to the screen. The control screen shows a number of function settings and allows you to change them.

The Mode dial lets you choose an exposure mode (Panasonic calls them 'shooting' modes, but I find this confusing). The four exposure modes are Program (P) mode, Aperture priority (A) mode, Shutter speed

[2] If you leave MONITOR SWITCH on AUTO, so you could free up the Fn5 button for another use.

priority (S) mode and Manual (M) mode. It also lets you access 4 custom modes (stored sets of camera settings), an 'intelligent auto' mode, a movie mode and a number of scene and filter modes.

Switching between shooting and playback

- Press the playback button (▶) to view photographs and videos you have taken, in playback mode.
- Half-press the shutter button, or press the playback button again, to return to shooting mode.

The Q.MENU

Other important functions for stills photography are programmed on the Q.MENU, I recommend programming the functions shown in Table 1 on the Q.MENU, following the instructions in chapter 4, section 3.

Each row in Table 1 appears on a separate page at the bottom of the Q.MENU. Scroll beyond the end of the row to access the other page.

STABILIZER	AFS/AFF	ZEBRA PATTERN	QUALITY	ELECT. SHUTTER
BURST RATE	4K PHOTO	SELF-TIMER	FLASH MODE	FLASH ADJUST

Table 1: Setup of the Q.MENU

To change one of these function settings:

- Press the Q.MENU button.
- Select the function to change, using the ***front dial***, left/right-cursor keys or touch screen.
- Change the setting for the function using the ***rear dial*** or touch screen. Alternatively, press the up-cursor key to change the function setting with the left/right-cursor keys.
- Half-press the ***shutter button*** (or press SET, Q.MENU or BACK) to save the setting and exit.

Using the front dial, rear dial and shutter button means you don't have to change your grip on the camera.

The MENU system

All functions (except for some with dedicated controls) can be accessed by pressing MENU. The menu system has tabs for REC (still photographs), MOTION PICTURE, CUSTOM, SETUP and PLAYBACK.

- Use the front dial or touch screen to move between tabs.
- Press DISP to move to the next page on a tab.
- Use the rear dial, cursor keys or touch screen to move between functions on a tab.
- Press SET (or the right-cursor key) to edit a function.
- Change the function setting with the rear dial, cursor keys or touch screen.
- Press SET to accept an edit. Press BACK (or the left-cursor key) to leave the setting unchanged.
- Press BACK (or half-press the shutter button at any time) to exit the menu system.

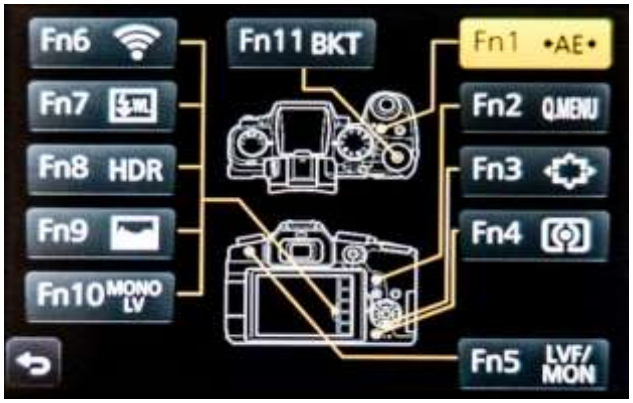
Function icons on the screen

You can allocate functions to function icons on the screen, which are accessed through the tabs to the right of the screen.

I use Fn6 for the Wi-Fi function, which can't be put on the Q.MENU and I don't want to allocate to a physical button.

I use the other four function icons for WIRELESS SETUP, HDR, HISTOGRAM and MONOCHROME LIVE VIEW.

I'd have liked to be able to turn wireless flash on and off from here.



2. Taking stills photographs

Custom Modes

Those of you who have used my earlier manuals for Lumix G cameras will find that I've changed approach in this manual. I used to base a custom mode on each useful combination of AF mode and metering mode, and that worked well.

But for some time, I've allocated FOCUS AREA SET to a button[3] and started using the fact that, whilst in FACE DETECTION AF mode, pressing FOCUS AREA SET switches to 1-AREA AF mode. This avoids the need for a separate custom mode for 1-AREA AF mode. For **stationary** subjects I now use only FACE DETECTION AF mode. This automatically switches to 49-AREA AF mode if no faces are detected and I get immediate access to 1-AREA AF mode simply by pressing the FOCUS AREA SET button. A single custom mode supports all three AF modes.

This helps, as the G7 only supports 3 custom modes (the GX7 and G80 both support 4). I recommend setting up two custom modes for stationary subjects, with C_1 using either P or A exposure mode, according to your preference, and C_2 using M exposure mode, as shown in Table 2. I set up the third custom mode, C_3, for moving subjects.

<table>
<tr><th>Custom mode</th><th>Description</th><th>Exposure mode</th><th>Metering mode</th><th>Quality</th><th>AF mode</th><th>AF/MF switch (2)</th><th>Drive mode dial</th></tr>
<tr><td rowspan="2">C1</td><td rowspan="3">Stationary subjects</td><td>P</td><td rowspan="3">MULTI</td><td rowspan="3">RAW</td><td rowspan="3">FACE (49-AREA or 1-AREA)</td><td>AFS / MF</td><td rowspan="3">SINGLE</td></tr>
<tr><td>A</td><td rowspan="2">AFS / MF (3)</td></tr>
<tr><td>C2</td><td>M</td></tr>
<tr><td>C3</td><td>Moving subjects</td><td>S</td><td>SPOT</td><td>JPEG Fine</td><td>1-AREA</td><td>AFC / MF</td><td>BURST (1)</td></tr>
</table>

Table 2: Key settings for the three custom modes[4]

Note (1): If you need it, select BURST mode on the DRIVE MODE dial when switching to the C_3 custom mode. Remember to switch back to SINGLE on leaving the custom mode.

Note (2): Set FOCUS MODE on the AF/MF switch.

Note (3): If you are using a fully manual lens (without electronic contacts) there is no need to set the AF/MF switch to MF as the camera will operate in MF mode. SHOOT W/O LENS is set to ON for these two custom modes.

I like to have program mode available because it is so good on Lumix cameras. On some other cameras you have to lock the exposure before you can adjust the balance between aperture and shutter speed, so I prefer aperture priority. But on Lumix G cameras you just turn the front dial to adjust the balance between aperture and shutter speed.

I use program or aperture priority exposure mode when depth of field is key (such as for portrait photography). If I use aperture priority, I set SHOOT W/O LENS to ON, so I can use fully manual lenses.

Finally, I use manual exposure mode for specific situations (such as stitching panoramas for astrophotography, often with a fully manual lens) so I set up a second custom mode for that, also with SHOOT W/O LENS set to ON.

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3 So that pressing FOCUS AREA SET enables the cursor keys (and touch screen) to move the AF area.

4 See Table 11 in chapter 4 for the full set of programmed settings for each custom mode.

Stationary subjects using electronically-controlled lenses

The custom modes for stationary subjects work identically to each other when using **electronically-controlled lenses**, except for how you control the exposure. All use FACE DETECTION AF mode, which is very flexible as 49-AREA AF mode is used if no faces are detected and you can switch to 1-AREA AF mode if you want to specify the location of your subject.

Proceed as follows:

1. Select the C_1 (P or A) or C_2 (M) stationary subject custom mode

Also ensure that the MF/AF switch is set to AFS/AFF.

The C_1 custom mode used either program or aperture priority exposure mode (as you have programmed following chapter 4) with MULTI metering mode. Automatic exposure takes into account where focus is taken. I use C_1 (Program or Aperture priority mode) for opportunistic photography and for portraits and when I am concerned about depth of field.

The C_2 custom mode uses Manual exposure mode with exposure being measured in the same locations as for the automatic exposure modes. I use this custom mode when I want to maintain a specific exposure, such as when taking a set of images to be stitched into a panorama in post.

2. Compose the image and consider focus

Even before you half-press the shutter button, any face detected in the scene will be outlined with a frame. The face on which exposure will be taken will be outlined in yellow with a white cross over the (nearest) eye on which focus will be taken. Other faces at the same distance will be outlined in white.

If there are no faces detected the camera will use 49-AREA AF mode.

If you want to specify where the camera should focus, press the FOCUS AREA SET button. The camera will switch to 1-AREA AF mode and a yellow AF frame will appear. Move this over your subject (using the cursor keys or touch screen) and adjust its size with the front and rear dials. Half-press the shutter button or press SET to accept the position. The camera will remain in 1-AREA AF mode (even after you have taken a photograph) until you press the SET button again, when it will revert to FACE DETECTION AF mode.

3. Half-press the shutter button to lock focus and exposure

- If a face is outlined in yellow the frame will turn green if focus has been achieved.
- If no face is detected, then 49-AREA AF mode will be used and green AF frames will indicate if and where focus has been achieved.
- If you have switched to 1-AREA AF mode, the yellow AF frame will turn green if focus has been achieved.

In each case, exposure will be taken in or around the area in focus.

4. Check (and adjust) the focus

If focus has not been achieved where you want it, then you can simply try again and, if you have not done so already, press the FOCUS AREA SET button and tell the camera where to focus, as described above.

If this fails, press and release the AF LOCK button and focus manually: see ‘Focusing, focus lock and manual focusing’ on page 12.

5. Check (and adjust) the exposure

Adjust the exposure as necessary, as described in the section ‘Exposure modes‘ on page 9. Also see the box ‘Exposure: depth of field, image sharpness and noise’ on page 6.

6. Fully-press the shutter button to take the photo

Review the photo - if you don’t want to keep it, press DELETE. Half-press the shutter button to return to shooting mode.

The built-in flash or a hot-shoe mounted flash can be used, for a subject in range: see the section on ‘Flash photography’ on page 14.

Exposure: depth of field, image sharpness and noise

You should be asking the following questions as you take a photo:

- **Do I want to influence the depth of field?** Use a larger aperture (smaller f number) to obtain a shallower depth of field, typically to blur the background in a portrait and make the subject stand out. Use a smaller aperture (larger f number) for a larger depth of field.

  Digital cameras operate with the aperture fully open (to make focusing easier and to optimise the display). As a result, you cannot see the final depth of field of the captured image in the display. Simply take the photo and review it. If necessary, adjust the aperture and take the photograph again. (The G80 provides a depth-of-field preview function, but just review the photo!)

- **What aperture will give the sharpest image?** Most lenses are not at their sharpest when at their widest aperture, especially at the edges of the frame. They are often sharpest when stopped down a stop or two. However, too small an aperture will reduce sharpness, due to diffraction. When sharpness really matters, refer to reviews of your lenses, or obtain MTF (Modulation Transfer Function) charts, to find the aperture which gives the best sharpness for each lens.

  For many tasks ultimate sharpness may not matter, and softer edges may even be an advantage. For example, in portrait photography you often want a shallow depth of field and softer edges can enhance the effect of a blurred background. For other tasks, such as landscape photography, you will want a sharp image and should probably avoid the widest apertures on your lens.

- **Are any bright areas of the scene being over-exposed?** This would result in the brightest areas being recorded as fully white and you would lose detail in the bright areas of the scene. If so, turn the rear dial to apply exposure compensation to darken the image somewhat. The exposure histogram will help you judge this. As a rule, it is easier in post-processing an image to retrieve detail from underexposed areas than from fully saturated areas of an image.

- **Is my subject a dark one, against a bright background?** In this case, you may wish to use exposure compensation to brighten the image and reveal the detail in your subject. The background may be over-exposed, but this may be acceptable or even desirable.

- **Do I need to minimise noise in the image?** If you are working in dim light, at small apertures or at fast shutter speeds (or a combination of the three) the camera will increase the ISO of the sensor (its sensitivity) to compensate; but this may result in noise in the image. To control noise, you may want to set the ISO value by pressing the ISO button and adjusting the setting. You can adjust the ISO LIMIT for AUTO ISO and iISO with the front dial whilst in the ISO menu. Of course, a slower ISO will require a wider aperture and / or a slower shutter speed, possibly to the point where your need a tripod or other support.

- **Is there any movement in the scene** and, if so, is my shutter speed fast enough to avoid motion blur, or slow enough to create blur if it is wanted? See the section on ‘Moving subjects’ on page 8.

Stationary subjects using fully-manual lenses

Only the Aperture priority (if programmed on C_1) and Manual (C_2) custom modes can be used with **fully manual lenses** (with no electronic contacts). The camera cannot control the lens aperture, so program and shutter-speed priority exposure modes cannot work. The two custom modes work identically to each other except that you control the exposure differently. They both use MULTI metering mode around where focus is taken. Obviously, you have to focus manually.

Proceed as follows:

1. Select the C_1 (if programmed for aperture priority) or C_2 custom mode

There is no need to set the AF/MF switch as the camera will operate as though MF has been selected.

The two custom modes use aperture priority and manual exposure mode respectively.

2. Compose the image

3. **Focus**

   Focus using the focus ring on the lens. Edges in focus will be highlighted in blue by focus peaking. If necessary, press the AF MODE button to enlarge the centre of the image to assist focusing. You can move the enlarged AF ASSIST area around with the cursor buttons (or touch screen) and change the magnification using the front and rear dials.

4. **Adjust and lock the exposure**

   Adjust the exposure as necessary, as described in the section ‘Exposure modes‘ on page 9. See the box ‘Exposure: depth of field, image sharpness and noise’ on page 6.

   Half-press the shutter button, which will lock the exposure.

5. **Fully-press the shutter button to take the photo**

   Review the photo - if you don’t want to keep it, press DELETE. Half-press the shutter button to return to shooting mode.

The built-in flash or a hot-shoe mounted flash can be used, for a subject in range. Using flash with manual exposure is beyond the scope of this manual.

Taking panoramas

You can use one of two approaches to taking panoramas and ‘grids’ of images:

Using manual exposure and stitching in post

For the highest quality panoramas, I use MANUAL (C_2) custom mode and set the exposure for the centre of the area to be covered (pressing ONE PUSH AE locks the exposure automatically). I then capture a number of overlapping images that can be stitched together in post (I use Lightroom). I find that this approach gives very good results and produces a high-resolution output.

Using the in-camera Panorama Shot scene mode

Turn the mode dial to the panorama symbol (). Access the settings for the Panorama mode through the PANORAMA SETTINGS sub menu on the REC menu or through the panorama tab that appears on the right of the screen. You can set the direction to scan though both routes. For some reason, the panorama sub menu (but not the tab) lets you apply an effects filter and the panorama tab (but not the sub menu) lets you apply exposure compensation.

To take a panorama, aim the camera at one end of the scene, press and hold the shutter button, and scan the scene slowly and steadily in the intended direction. If you are having problems, try moving to a shorter focal length, slowing down your scan rate, and / or using a lens that focuses more quickly.

Astrophotography

Astrophotography requires you to use manual focus as you need to fix the lens focus at infinity. You will also be using manual exposure, so this is a perfect situation in which to use a fully manual lens. Use a lens with a wide maximum aperture, say f/2 to f/2.8. I find that the Laowa 7.5mm f/2 rectilinear lens fits the bill for an ultra-wide prime lens, as well as being a good landscape and architectural lens.

- Mount the camera on a tripod.
- Select the MANUAL (C_2) custom mode. If using an automatic lens then set the AF/MF switch to MF.
- Press ISO and turn the front dial to increase or remove the ISO LIMIT and switch off image stabilisation. (I suggest that you overwrite the MANUAL custom mode with these settings for your astrophotography session and change them back later for normal manual operation.)
- Set the widest aperture on the lens and focus on infinity.
- Take a series of photos, experimenting with the trade-off between shutter speed, ISO setting, image brightness and noise. Start with an exposure of about 20 seconds.

Moving subjects (custom mode C_3)

A different approach is required to photograph moving subjects. This requires a fast shutter speed to avoid motion blur (enabled by a wide aperture lens and/or higher ISO) and you (and your camera) need the ability to track the motion of your subject. The wider aperture implies a shallower depth of field, which can make focusing harder. You usually don't have time to manually adjust focus or exposure whilst taking the shot or burst of shots. You either have to set up focus in advance or rely on automatic focus, both of which are supported in the following process:

1. Select the C_3 custom mode

This uses:

- Shutter speed exposure mode.
- 1-AREA AF[5] mode and SPOT metering, taking exposure in the AF frame.
- AF/AE LOCK is set to AF-ON and SHUTTER AF is set to OFF so that **AF is only activated whilst the AF/AE LOCK button is pressed** (referred to as 'back button AF').
- Image stabilisation is set to OFF, as you usually want to freeze motion with a fast shutter speed[6].
- ISO LIMIT is set to OFF to allow faster shutter speeds, at the expense of more image noise.
- ISO is set to AUTO. You may want to set it explicitly for the lighting conditions and subject.
- QUALITY is set to JPEG FINE resolution, to enable longer bursts of images to be captured.

2. Select AFC and BURST mode

Set the AF/MF switch to continuous auto-focus (AFC). If you want to use it, turn the drive mode dial to BURST mode. Burst rate is set to M, leaving the display active to allow you to track your subject[7].

3. Set the shutter speed using the front dial

The rule of thumb, with no image stabilisation, is that your shutter speed should be at least the inverse of the (35mm sensor equivalent) focal length. For example, for a 300mm lens on a micro four thirds camera (a 600mm equivalent focal length) you would aim for a shutter speed of 1/600 second or faster. The camera will set the aperture and, if on AUTO, the ISO for correct exposure.

4. Position the AF frame

You might often leave the AF frame in the centre of the scene. To move it, press FOCUS AREA SET and use the cursor keys or touch screen. Change its size with the front and rear dials. Half-press the shutter button or press SET to accept.

5. Take a burst of photos with focus locked or tracking focus

Centre the subject (or something at the distance the subject will be at) in the AF frame and either:

- **Lock focus:** Press and release the AF-ON (AF/AE LOCK) button to lock the focus. Fully depress and hold the shutter button to take a burst of photos with the focus locked at the set distance. You will obtain a higher frame rate, as the camera is not continually checking for focus, and there is no risk of the focus jumping to another object. Of course, your subject must remain at, or pass through, the focused distance.
- **Track focus:** Press and hold the AF-ON (AF/AE LOCK) button to start focus tracking. Fully depress and hold the shutter button to take a sequence of photos, keeping the subject in the AF frame. The camera will (attempt to) continually adjust focus on the subject.

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5 The G7 also has a TRACKING AF mode. I've not had a lot of success with it. Do try it!

6 If you are tracking a fast-moving object, try setting image stabilisation to PANNING and use a somewhat slower shutter speed. This will blur the background, giving a sense of speed.

7 You can use higher burst rates, but (the camera says) you lose live view.

3. Summary of camera controls and capabilities

Exposure (Metering) Controls

Exposure modes

The exposure (PASM or 'shooting') modes on the Mode dial determine **how** the exposure is controlled. Panasonic refers to them as 'shooting' modes, which I find confusing. Turn the Mode dial to select an exposure mode:

- In program (P) exposure mode the camera selects a combination of aperture and shutter speed. Turn the front dial to adjust the balance between them: the aperture and shutter speed values will change in the display and a yellow indicator will appear to the left of the aperture value. Adjusting the exposure in this way is referred to as 'Program Shift'.

  Any Program Shift will be retained and applied to the next photograph. To cancel Program Shift, press the ONE PUSH AE button and the yellow indicator will disappear.
- In aperture priority (A) exposure mode, set the aperture using the front dial. The camera will set the shutter speed for correct exposure.
- In shutter-speed priority (S) exposure mode, set the shutter speed using the front dial. The camera will set the aperture for correct exposure.
- In manual exposure (M) mode, set the aperture and shutter speed (and ISO setting) to obtain correct exposure on the exposure indicator (in the location of the exposure compensation indicator) or the larger exposure meter (which you can enable via the CUSTOM menu). Change the aperture with the front dial and the shutter speed with the rear dial.
- One of the three Custom modes (C_1, C_2, and C_3). See 'Custom Modes' on page 4.
- The Mode dial also has Intelligent Auto (iA), SCENE and CREATIVE exposure modes, which are not covered in this manual.

ISO value

Press the ISO (cursor up) button and select AUTO ISO, intelligent ISO (iISO*)* or an ISO value. Intelligent ISO increases the ISO setting when movement is detected in the scene. Adjust the ISO LIMIT for AUTO ISO and iISO with the front dial whilst in the ISO menu. The ISO setting being used is displayed when the shutter button is half depressed[8].

In manual exposure mode, you can either set an ISO value or select AUTO ISO, in which case the camera will set ISO (up to the ISO LIMIT[9]) to obtain correct exposure for the selected aperture and shutter speed.

The camera will produce images with the least noise if operated at as low an ISO as possible. A higher ISO speed will allow a faster shutter speed (with less motion blur) or operation in lower light.

A lens with a wider maximum aperture will let you use a lower ISO speed, with less noise. Rather than using high ISO settings, use a tripod or other means of supporting the camera if you can.

Metering modes

The metering modes specify **where** the camera measures the exposure. Access these via the METERING MODE button:

Multi-metering: The camera sets the exposure, taking into account the variation in brightness over the whole scene, the focus mode and where focus is obtained.

Centre-weighted metering: Takes an averaged meter reading, around the centre of the image.

Spot metering: Sets exposure at a point – a blue cross is shown at the point where exposure is metered. The location of the exposure point depends on the focus mode in use.

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8 Except in Intelligent ISO, when the ISO setting is selected dynamically.

9 Beware: If ISO LIMIT is set to OFF in manual exposure mode then Auto ISO will only use ISO values up to 3200!

Exposure compensation

If your intended subject appears to be over- or under-exposed look at the exposure histogram to see if values are all to one side or the other. One option is to adjust the exposure compensation so that your subject appears correctly exposed in the display and the histogram is more 'balanced'.

Rotate the rear dial to adjust the exposure compensation, increasing or decreasing the light reaching the sensor. Note that exposure compensation is not available in manual exposure mode.

Exposure lock

When using auto-metering and AFS focusing mode, the exposure is taken and locked when you half-press the shutter button[10]. It is not locked using AFF and AFC focusing modes, except when using the higher-speed burst modes.

Beware, as once the exposure is locked the brightness of the display will vary as you recompose the image. The brightness of the display is continually set for the whole of the image. So don't be confused: the exposure really has been locked!

Exposure bracketing

You can take a series of photos with a range of exposures. Turn the DRIVE MODE dial to AUTO BRACKET. Press the AUTO BRACKET button to select the number of shots to take, and the EV separation to use, the sequence in which the exposures are taken.

White balance and colour

Our eyes adjust to what we see depending on the light source illuminating the scene. Film is terrible at this but digital cameras are now pretty good at determining the light source.

Press the WB (cursor right) button and select the white balance setting you require. Leave it on auto white balance (AWB) unless it fails to cope with specific lighting. If necessary, specify the type of lighting or program one of the four custom white balance options by:

- Selecting one of WHITE SET 1 to WHITE SET 4 and then pressing WHITE SET.
- Fill the frame in the display with something white (such as a test card or sheet of paper) and then press SET.

You can also adjust the colour balance via the PHOTO STYLE menu entry. STANDARD should be fine for most purposes. There is also a Custom photo style.

[10] You could program the AF/AE LOCK button to function as AE LOCK and press it to lock exposure. You would then half-press the shutter button to lock focus before recomposing the image and taking the photo. However, I recommend using AF LOCK to lock the focus and the shutter button to lock the exposure.

Focusing Controls

Focus modes

You specify **when** auto-focus is obtained using the AF/MF switch and the AFS/AFF setting on the Q.MENU. The focus modes are:

AFS: (single) focuses when the shutter button is half-depressed. In AFS focus mode, the camera will switch to manual focusing if you press AF LOCK (or turn the focus ring with the shutter button half depressed), so you may never need to turn on manual focusing.

AFF: (flexible) focuses when the shutter button is half-depressed and refocuses if the subject then moves, with no prediction. Higher power consumption than AFS.

AFC: (continuous) focuses continually whilst the shutter button is half-depressed. Predicts where a moving object will be when the shutter opens. The highest power consumption focus mode.

There are also QUICK AF and EYE SENSOR AF functions, which enable focusing **prior** to the shutter being pressed or when you put your eye to the viewfinder respectively. I leave these disabled.

Auto-Focus modes and specifying where to focus

Press the AF MODE (left-cursor) button to select which auto-focus (AF) mode to use:

FACE DETECTION: Detects faces in the scene. If no faces are present 49-AREA mode is used.

AF TRACKING: Allows you to specify a (potentially moving) object to track and then maintains focus on it. Usually used with continuous auto focus (AFC). Centre the target in the centre of the screen on the object to track and half press the shutter button. The target should turn green when the object is accepted and you can release the shutter button. The target will turn yellow and track the object.

49-AREA: The camera chooses where to focus from among 49 areas across the scene.

CUSTOM: You can define which of the 49 areas will be used for focusing.

1-AREA: The camera focuses on a specific area, which is initially located at the centre of the scene, and which you can move and resize.

PINPOINT: The camera focuses on a specific point, which is initially located at the centre of the scene, and which you can move. When you half depress the shutter, an area around the focus point is enlarged for a short period to allow you to check focus. Not available with AFC.

You can tell the AF system where to look for focus. Press FOCUS AREA SET and set the position (and size when relevant) of the AF frame. For:

- FACE DETECTION AF mode: the camera will switch to 1-AREA AF mode. Move the area and use the rear dial to change its size. See ‘Check (and adjust) the focus’ on page 5.
- AF TRACKING AF mode: select the object to track.
- 49-AREA mode: select a region in the image.
- CUSTOM AF mode: select or define a pattern from the 49 AF areas.
- 1-AREA AF mode: move the area and use the rear dial to change its size.
- PINPOINT AF mode: move the focus point.

Focusing, focus lock and manual focusing

In AFF and AFC focus modes, focus is only locked when you fully depress the shutter button. You **cannot** adjust focus using the focus ring and AF LOCK has no effect.

In AFS focus mode, focus is locked when you half-press the shutter button[11]. You **can** adjust the focus, using the focus ring on the lens, without switching to manual focus, in one of two ways:

1. Press and release the AF LOCK button[12] to take and lock focus. You can then turn the focus ring to adjust focus without having to hold a button down. Exposure will subsequently be locked when you half-press the shutter button, thereby separating where (and when) focus and exposure are locked.
2. Half-press the shutter button to lock focus (and exposure) and keep it half pressed. You can then use the focus ring to adjust focus.

Edges that are in focus will be highlighted: a capability referred to as focus 'peaking'. If necessary, enlarge the focus area by pressing the AF MODE button. The enlarged area can be moved using the cursor keys and its magnification varied using the rear dial. You could press BACK to close the enlarged area.

Turn the focus ring on the lens to bring your subject into sharp focus. An indicator will appear, showing roughly at what distance you are focused (there is no distance scale).

Both of the above options use manual focus, without having to switch to MF focus mode explicitly. Of course, you can always select MF on the MF/AF switch and manual focusing will operate in the same way.

Where does auto-metering evaluate the exposure?

Where exposure is taken depends on the AF mode and the metering mode used, as shown in Table 3. Note that the combinations shaded in green in Table 3 explicitly link where focus and exposure are taken.

AF mode	Metering mode		
	Multi-metering	**Centre-weighted**	**Spot metering**
49-Area	Evaluative.	Average over the scene, weighted to the centre of the frame.	At the centre of the AF region.
Face Detection	On detected face.		At the centre of the image.
Tracking	On tracked object.		At the centre of the image.
1-Area	Evaluative.		At the centre of the AF area.
Pinpoint	Evaluative.		At the AF point.
Manual	Evaluative.		At the centre of the MF Assist region.

Table 3: Where exposure is taken for each combination of AF and metering modes

In practice, I find FACE DETECTION AF mode with MULTI metering mode are an excellent combination for stationary subjects, because it switches to 49-AREA AF mode if no faces are detected and pressing FOCUS AREA SET switches to 1-AREA AF mode with a form of spot metering.

1-AREA AF mode and SPOT metering are a good combination for moving subjects.

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[11] Unless SHUTTER AF is OFF or you have already pressed AF LOCK to lock focus.

[12] Programmed in the setup to function as AF LOCK. AF/AE LOCK HOLD is set to ON, so that you don't have to keep the AF/AE LOCK button depressed.

Other controls and settings

JPEG / RAW formats and image resolution

Access QUALITY on the Q.MENU to specify whether to capture in RAW and / or JPEG formats and the amount of compression to apply to JPEG files. For stationary subjects, I usually use RAW format and post-process images on a computer, and this manual is written from that perspective. However, capturing in JPEG lets you apply many in-camera processing options (or you might say that the processing requires you to capture in JPEG). In addition, you may want to share photographs directly from your camera, in which case JPEG files are smaller. You can choose to capture both RAW and JPEG at the same time.

The PICTURE SIZE setting on the REC menu (JPEG only) sets the resolution used. The ASPECT RATIO setting on the REC menu controls the aspect ratio of your images. I always use the native aspect ratio (4:3) and crop images in post.

Drive mode

Turn the DRIVE MODE dial and select one of:

SINGLE: Takes one photograph when the shutter is fully depressed.

BURST: Takes a series of photographs. Access BURST RATE via the Q.MENU. Choose from super-high (SH), high (H), medium (M) or low (L). The last two continue to display the scene between shots but the first two do not. Super high is only available using JPEG. I set the default burst rate to M in the custom modes.

4K PHOTO:. Access 4K PHOTO via the REC menu and select 4K BURST, 4K BURST S/S or 4K PRE-BURST. See the Panasonic manual for details. All produce 8M pixel JPEG images.

AUTO BRACKET: Access AUTO BRACKET via the Q.MENU. Select the number of shots and the EV separation.

SELF TIMER: Set the timer delay on the SELF TIMER menu entry on the Q.MENU: 10 seconds (one shot); 10 seconds (3 shots); or 2 seconds.

TIME LAPSE / ANIMATION: Turn the DRIVE MODE dial to TIME LAPSE / ANIMATION and immediately press MENU twice or touch the icon on the screen. The TIME LAPSE / ANIMATION menu will be displayed. Choose time lapse or stop motion animation. The menu entries are self-explanatory.

Image Stabilisation

The G7 does not have in-body image stabilisation (IBIS).

If a lens that has optical image stabilisation (OIS) is attached, then OIS can be set to NORMAL or PANNING through the STABILIZER menu entry on the Q.MENU.

If a lens has an OIS switch then image stabilisation is turned on and off using the switch. If a lens does not have an OIS switch then the STABILIZER menu entry on the Q.MENU will have an OFF option.

Electronic shutter

Select ELECTRONIC SHUTTER on the Q.MENU to control the electronic shutter. When you switch it ON the mechanical shutter is disabled, eliminating shutter noise as well as any risk of shutter shock. You can also set it to AUTO and the camera will use the electronic shutter if there is a risk of shutter shock.

The ‘electronic shutter’ exposes rows of the image sequentially. Each row is exposed for the same length of time but not at the same time. As a result, images of moving objects can be distorted. On some cameras the electronic shutter readout is faster than on others (leading to less distortion) but has fewer bits of dynamic range. I **believe** that the G7 has a ‘’fast’ electronic shutter (taking about 1/25 second to scan the image) and only provides 10-bit readout, compared to the 12-bit readout with the mechanical shutter, so I use the mechanical shutter by default.

Touch shutter

You can fire the shutter by touching your subject on the screen. To do so:

- Display the screen icon buttons, if not already visible, by touching the **<** tab.
- Enable TOUCH SHUTTER by touching the  icon. The cross on the icon will disappear and the icon will turn yellow.
- Compose the photograph and touch the position on the screen where you want to take focus and exposure. The camera will take the photograph.
- When you don't need the icon buttons, close the tab by touching **>** on the tab.

Previewing depth of field and motion blur

The simplest way to preview depth of field and motion blur on a digital camera is to take a photograph and then look at the image in the viewfinder or on the screen. You can even zoom in to check. If necessary, you can then change the aperture and/or shutter speed and try again. I use this approach.

Alternatively, you could program a function button or screen icon to act as a PREVIEW button, which lets you see the effects of aperture and shutter speed on depth of field and motion blur before taking a photograph. This used to be useful on a film camera, as otherwise you could only see the depth of field when the prints came back. But at small apertures, with the aperture stopped down, the viewfinder became dark and it was hard to see the depth of field. My advice it not to waste a button on PREVIEW!

Flash photography

The built-in flash can be raised and switched on using the release button. Alternatively, attach an external flash to the hot shoe. The settings for the flash are shown in Table 9 in chapter 4. I recommend setting FIRING MODE to TTL[13] (through the lens) and enabling AUTO EXPOSURE COMPENSATION. The camera will control the flash output to (try to) obtain the correct exposure. The remaining settings for using the flash are:

- FLASH MODE (via the Q. MENU): NORMAL or SYNCHRO. The latter uses a long exposure to expose a dark background and the flash to illuminate a foreground object. You may need OIS or a tripod.
- FLASH SYNCHRO: 1st or 2nd curtain. That is, at the start of the exposure or at the end of the exposure. A classic use of 2nd curtain is to use a long exposure to capture the trails of moving lights and then for the flash to fire to freeze moving objects (such as cars) at the end of the exposure.
- FLASH ADJUST (via the Q. MENU): This allows you to over- or under-expose the flash by up to 3 EV.

Wireless flash

Note that, unfortunately, 'wireless' flash on the G7 uses infra-red communications rather than radio frequency communications. The remote flash therefore needs to be able to 'see' the camera's flash, either directly or by the camera's flash being reflected to the remote flash.

Using a wireless flash or group of flashes is similar to using the internal flash, but more complex to set up. Select FLASH on the REC menu and then, in the sub-menu, set WIRELESS FLASH to ON. This will disable some options the built-in flash and enable some wireless options. See the Panasonic G7 manual and your flash gun manual for more details.

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[13] If you set FIRING MODE to MANUAL you have to vary the flash output using MANUAL FLASH ADJUST and experiment to get the correct exposure.

4. Configuring your camera

1. Configure the Menu Settings

Set the mode dial to P exposure mode. Press MENU and open each of the following menus in turn. Configure each setting, using the suggested default (you can change settings later). Settings on the SETUP menu rarely need changing. Those on the CUSTOM menu are accessed more and those on the REC menu are accessed most frequently. Settings are shaded as follows:

Dedicated buttons, dials, Fn buttons or Fn icons.	Q.MENU (see below).
Needed – access via full MENU.	Rarely changed after setup.

The SETUP Menu

	Options	Comments / instructions
CLOCK SET		Set the time, data and format.
WORLD TIME		Set home and destination time zones.
TRAVEL DATE	TRAVEL SETUP: LOCATION:	Off, or departure and return dates. Off, or location in text.
Wi-Fi		Wi-Fi settings.
LIVE VIEW MODE	30 / 60 fps	Frame rate of display.
BEEP	**OFF** and levels	Volume of the beep and electronic shutter sound.
MONITOR / VIEWFINDER		Adjusts brightness / colour of the display in use.
MONITOR LUMINANCE	**A** / 1 / 2 / 3	Auto adjust / bright / standard / dark.
ECONOMY (1): SLEEP MODE: AUTO LCD OFF:	OFF, 1, **2**, 5, 10min. OFF, 15, **30sec**	Half press shutter button to wake. If not OFF then SLEEP MODE is set to 2 min.
USB MODE	**PC** / Pictbridge / choose	Connect USB to PC or printer.
TV CONNECTION	NTSC / **PAL**, **16:9** / 4:3 aspect ratio, **AUTO** HDMI	
	VIERA Link: OFF/**ON**	Panasonic's HDMI CEC implementation.
	3D/**2D**	Play 3D images in 3D or 2D.
MENU RESUME	OFF / **ON**	Opens each menu at last-used item.
MENU BACKGROUND		Set background colour for menus.
MENU INFORMATION	OFF / **ON**	Short help displayed.
LANGUAGE		Choose language.
VERSION DISP.		Displays firmware version of camera and lens.
EXPOSURE COMP. RESET	OFF / **ON**	Resets EC on mode change and power off.
NO. RESET		Resets file no. to 1 and increments folder no.
RESET		Resets REC/SETUP/CUSTOM menu settings.
RESET Wi-Fi SETTINGS		
PIXEL REFRESH		See the Panasonic manual.
SENSOR CLEANING		See the Panasonic manual.
FORMAT		Formats the memory card, deleting all contents.

Table 4: The SETUP menu – recommended settings in **BOLD**

Note (1): The ECONOMY function allows you to set the camera to switch off the display and/or enter standby after a period. It can greatly extend battery life. Press any button to switch on the display again. To return from standby half press the shutter button.

The CUSTOM Menu

	Options	Comments / instructions
CUST. SET MEM		Stores current setting to one of the custom modes.
SILENT MODE	**OFF** / ON	Disables all sounds and light output.
AF/AE LOCK	AE/**AF**/AF+AE/AF-ON	AF/AE LOCK locks exposure, focus, both or engages AF.
AF/AE LOCK HOLD	OFF / **ON**	Off: Lock only held whilst AF LOCK pressed. On: Pressing AF/AE LOCK engages / disengages lock.
SHUTTER AF	OFF / **ON**	On: Pressing shutter button halfway locks focus.
HALF PRESS RELEASE	**OFF** / ON	Shutter fires when button pressed halfway.
QUICK AF	**OFF** / ON	Focus continually at all times (before shutter pressed).
EYE SENSOR AF	**OFF** / ON	Focus continually when eye sensor activated.
PINPOINT AF TIME	**SHORT** / MID / LONG	Time enlarged when in pinpoint AF mode.
PINPOINT AF DISPLAY	**PIP** / FULL	Window or full AF assist screen in pinpoint AF mode.
AF ASSIST LAMP	**OFF** / ON	On: Lamp assists AF in low light conditions.
DIRECT FOCUS AREA	**OFF** / ON	Cursor buttons move (and rear dial adjusts size of) the AF area.
FOCUS/RELEASE PRIORITY	**FOCUS**/RELEASE	Picture taken once in focus / even if not in focus.
AF+MF	OFF / **ON**	On: Allows manual focus after AF (AFS mode only).
MF ASSIST	OFF / **AF button** / focus ring / either	Enlarges part of image when AF mode button pressed, focus ring turned, or either.
MF ASSIST DISPLAY	FULL / **PIP**	Full screen or window MF assist.
MF GUIDE	OFF / **ON**	Enables a guide bar showing relative zoom.
PEAKING	OFF / **ON**	In focus regions highlighted during MF.
HISTOGRAM	OFF / **ON**	Display of the histogram. Position it after turning on.
GUIDE LINE	OFF / **grid choice**	Sets the pattern of guide lines displayed when shooting.
CENTER MARKER	**OFF** / ON	Displays a cross in the centre of the screen.
HIGHLIGHT	**OFF** / ON	Clipped areas blink during review and playback.
ZEBRA PATTERN		Zebra pattern shows overexposed areas. (On Q.MENU)
MONOCHROME LV	**OFF** / ON	Black and white monitor display.
CONSTANT PREVIEW	**OFF** / ON	Shows effect of aperture / exposure (in manual exposure mode).
EXPO.METER	**OFF** / ON	Displays the large exposure meter – underexposed in red.
LVF DISP.STYLE	Border on/**off**	Select no black border and a row of dots at the top and bottom.
MONITOR DISP.STYLE		
MONITOR INFO. DISP	OFF / **ON**	Adds an info screen to those toggled by the DISP button.
REC AREA	**Still** / Video	Crops display to 4:3 for still and 16:9 for video.
REMAINING DISP.	**Shots** / Time	Which to display as remaining on memory card.
AUTO REVIEW	Off / time / **HOLD**	Time that picture is displayed for review.
Fn BUTTON SET		Assign functions to Fn buttons.
Q.MENU	PRESET / **CUSTOM**	Enables customisation of Q.MENU.
DIAL SET	Sub-menu	See Table 6.
VIDEO BUTTON	**OFF** / ON	Enables video button. Use movie mode & shutter button.
POWER ZOOM LENS		See Panasonic manual on power zoom lenses.
EYE SENSOR	**LOW**/HIGH, Man/**Auto**	
TOUCH SETTINGS	Sub-menu	See Table 7.
TOUCH SCROLL	H / **L**	High or Low speed scroll in playback.
MENU GUIDE	OFF / **ON**	Selection screen on switch to SCN/CUSTOM modes.
SHOOT W/O LENS	**OFF** / ON	Switch on with lenses / lens adaptors that have no contacts.

Table 5: The CUSTOM menu – recommended settings in **BOLD**

	Options	Comments / instructions
ASSIGN DIAL	Front F / Rear SS	Set front dial to F and rear dial to SS. (Manual exposure mode.)
ROTATION	Direction	Change if you don't like the standard direction.
EXPOSURE COMP.	Rear dial.	F or SS on front dial in P, A and S exposure modes.
DIAL OP SWITCH SETUP		Not used, as DIAL OP not allocated to a button.

Table 6: The Dial Set sub-menu – recommended settings in **BOLD**

	Options	Comments / instructions
TOUCH SCREEN	OFF / **ON**	Enables or disables the touch screen.
TOUCH TAB	OFF / **ON**	Enables or disables to tabs to the right of the touch screen.
TOUCH AF	**OFF** / AF+AE / AF	AF point or AF and AE points can be set by touching the screen.
TOUCH PAD AF	**OFF** / OFFSET / EXACT	Enables touch on screen to move AF point whilst using the viewfinder.

Table 7: The Touch Settings sub-menu – recommended settings in **BOLD**

The REC (still photography) menu

	Options	Comments / instructions
PHOTO STYLE (2)	**STANDARD**, VIVID …	Six plus custom to choose from. Use STD and post process.
FILTER SETTINGS		Settings for image effects (filters).
ASPECT RATIO (1)	**4:3**, 3:2,16:9, 1:1	Set to 4:3 and post process.
PICTURE SIZE (1)	**L**, M, S 4:3:	L: 4592x3448, M: 3232x2424, S: 2272x1704 pixels. (JPEG only)
QUALITY	FINE, STD, **RAW**	FINE and STD are JPEG. Can save both JPEG and RAW.
AFS / AFF	**AFS** / AFF	Standard or fast AF mode.
METERING MODE (2)	**Multiple** / Centre-w / Spot:	See Metering modes on page 9.
BURST RATE	SH / H / **M** / L	SH uses JPEG S picture size. M and L refresh the display.
4K PHOTO		See Drive Mode dial description.
AUTO BRACKET	SETTINGS/STEP/SEQ.	Bracket or not / how many shots – EV step / order of exposures.
SELF-TIMER	10s, 10s x3, **2sec**	10s x3 takes 3 shots after a 10 second delay.
TIME LAPSE / ANIM.	Sub menu	Program time-lapse photography and stop motion animation.
HIGHLIGHT SHADOW		Allows adjustment of highlights and shadows
I.DYNAMIC (2)	**OFF**/LOW/STD/HIGH	Adjusts to cope with extreme high / lowlights in the image.
I.RESOLUTION	**OFF**/LOW/STD/HIGH/EXT.	Varies JPEG compression and sharpening depending on the image.
iHANDHELD NIGHT SHOT		Night scenes composed from a burst of photos. JPEG only.
IHDR		Enable and control automated HDR (iA mode?)
HDR	Sub menu	Enable and control HDR. (JPEG only)
MULTI EXP.	Sub menu	Enables multiple exposures onto one image.
PANORAMA SETTINGS	Sub menu	Only active in Panorama mode – can access settings from tab.
ELECTRONIC SHUTTER	**OFF** / ON / AUTO	On: Disables the mechanical shutter.
SHUTTER DELAY	**0**, 1, 2, 4, 8 sec	Delay shutter firing after shutter button pressed.
FLASH	Sub menu	See Table 9.
RED-EYE REMOVAL	**OFF** / ON	Removes red eye in camera. I do this in post.
ISO LIMIT SET	OFF or value (**3200**)	Upper ISO limit in ISO AUTO and iISO. (access via ISO button).
ISO INCREMENTS	1/3 EV / **1 EV**	User can select ISO in 1/3EV or 1EV steps.
EXTENDED ISO	**OFF** / ON	Extends ISO up to 25600.
LONG SHTR NR	OFF / **ON**	Applies more noise reduction at slow shutter speeds.
SHADING COMP.	OFF / **ON**	Corrects lens vignetting (shading in corners).
DIFFRACTION COMP.	**OFF** / AUTO	Attempts to correct for diffraction at small apertures.
EX. TELE CONV.	**OFF** / ZOOM / TELE CONV	Crops pixels from centre of image. (JPEG only)
DIGITAL ZOOM (2)	**OFF** / 2x / 4x	Uses central pixels and interpolates to upscale. Use ETC.
COLOR SPACE	**sRGB** / AdobeRGB	Smaller / larger colour space.
STABILIZER	(OFF /) **ON** / PANNING	PANNING only compensates for vertical movement.
FACE REC. / PROFILE		Neither are covered in this manual.

Table 8: The REC menu – recommended defaults in **BOLD**

Note (1): On the Q.MENU, ASPECT RATIO and PICTURE SIZE are combined in PICTURE SETTING.

Note (2): PHOTO STYLE, FOCUS MODE, METERING MODE, I.DYNAMIC and DIGITAL ZOOM are common to the REC and MOTION PICTURE menus. Changes can be made on either menu.

	Options	Comments / instructions
FIRING MODE	**TTL** / MANUAL	Through the lens metered or manual control (only if wireless off).
FLASH MODE	**NORMAL** / SYNCHRO / OFF	Synchro uses a long exposure for any background. Both with and without red eye reduction. Just close the flash for OFF!
FLASH SYNCHRO	**1ST** / 2ND CURTAIN	Flash fires at start or end of exposure (only if wireless off).
FLASH ADJUST	-3EV to +3EV	Additional adjustment of flash (only in TTL mode and if wireless off).
AUTO EXPOSURE COMP	OFF / **ON**	**On:** flash output linked to exposure compensation.
MANUAL FLASH ADJUST	Fractions of output	Sets flash output to fraction of full output (only in flash manual mode).
WIRELESS	**OFF** / ON	Disables / enables wireless IR flash control.
WIRELESS CHANNEL	1CH, 2HC, 3CH or 4CH	Set camera and flash to same channel (only if wireless on).
WIRELESS FP	OFF / ON	Disables / enables using FP flash on gun (only if wireless on).
COMMUNICATION LIGHT	LOW/**STANDARD**/HIGH	Set output power of IR communication light (only if wireless on).
WIRELESS SETUP (1)	Sub menu	Sets operation of flash and wireless flash groups (only if wireless on).

Table 9: The Flash sub-menu – recommended settings in **BOLD**

Note (1): WIRELESS SETUP allows you to set FIRING MODE and FLASH ADJUST (or MANUAL FLASH ADJUST) for the built-in flash and for each of three wireless groups (A, B and C). See your flash gun manual for more details.

2. Configure the Function Buttons

The G7 has seven fixed function buttons (video, AF/AE LOCK, PLAYBACK, DISP, ISO, AF MODE and WHITE BALANCE), an AF/MF switch, six programmable function buttons, three fixed screen function icons and five programmable screen function icons. To program a function button or function icon:

- Choose FN BUTTON SET from the CUSTOM menu and then ‘Setting in REC mode’. (or press Fn on the ‘control screen’).
- Select the function button or function icon you wish to program via the touch screen, or by using the cursor keys and pressing SET.
- Choose the function you wish to allocate to the button or icon and press SET.

Program the function buttons and icons as follows:

Button, icon or menu	Function	Comment
Fixed on AE/AF LOCK button	AF LOCK	AF ON for moving subjects – mode C_3
Fn1 button.	ONE PUSH AE	
Fn2 button (marked Q.MENU)	Q.MENU	
Fn3 button (cursor down button)	FOCUS AREA SET	Screen and cursor keys move AF area.
Fn4 button (lower left)	METERING MODE	
Fn5 button (marked LVF)	EVF / LCD toggle	
Fn6 screen icon	Wi-Fi	
Fn7 screen icon	WIRELESS SETUP	
Fn8 screen icon	HDR	
Fn9 screen icon	HISTOGRAM	
Fn10 screen icon	MONOCHROME LIVE VIEW	
Fn11 button (centre of rear dial)	AUTO BRACKET	
Fixed screen icon 1	TOUCH SHUTTER	Cannot be changed.
Fixed screen icon 2	TOUCH AE	
Fixed screen icon 3	PEAKING	

Table 10: Setup for function buttons and icons

Set the AF/AE LOCK button to AF LOCK for custom modes C_1 and C_2 and to AF ON for custom mode C_3 (see below and the section on custom modes).

Note that you can quickly change the functions allocated to a button (but not an icon) by pressing and holding the button until the 'Button Set' screen appears and then selecting a function.

3. Configure the Q.MENU

I recommend mapping the functions shown in Table 1 to the Q.MENU:

- Ensure that Q.MENU on the REC menu is set to CUSTOM, so you can program the Q.MENU.
- Press the Q.MENU button to display the quick menu.
- Press the down cursor button or touch the EDIT Q icon at the lower left of the display.
- Accept the instructions, if they are displayed, by pressing SET/MENU or half pressing the shutter.
- Drag functions from those available in the top panel to where you want them in the bottom panel. The top panel has four pages of available functions. The bottom panel has the same three pages as the Q.MENU. If you drop a function over one already present on the bottom panel then the existing one will be moved back to the top panel.
- Drag any function you want to delete from the Q.MENU from the bottom panel and drop it in anywhere on the top panel.
- Press EXIT or half press the shutter button to complete programming the Q.MENU.

4. Configure the CUSTOM modes

Any changes you make to the function settings for the PASM and iA exposure modes are retained as you switch between these modes and when you turn the camera off. This has the advantage that you don't lose any changes you make. However, it can be hard to remember where you left the settings and you may have a lot of changes to make for a new situation.

You can store 3 sets of function settings away as custom modes. Changes you make to the function settings of a custom mode are NOT retained as you switch between modes or switch power off. When you return to a custom mode the settings will be as you last saved them for that mode.

Note that you cannot, for example, start from a custom mode using aperture priority (A) exposure mode and change to shutter priority (S) exposure mode. It is therefore worth programming a custom mode for each of the exposure modes that you use regularly. As the G7 only supports 3 custom modes, I suggest that you allocate **either** program (P) **or** aperture priority (A) exposure mode to custom mode C_1; manual (M) exposure mode to C_2; and shutter-speed priority (S) exposure mode to C_3, as in Table 11.

Custom mode:	**C_1** (P or A mode)		**C_2**	**C_3**
Mode name:	**PROGRAM**	**APERTURE**	**MANUAL**	**MOVING SUBJECT**
EXPOSURE MODE	P	A	M	S
METERING MODE	MULTI			SPOT
ISO	AUTO			AUTO
ISO LIMIT SET	3200			OFF
QUALITY	RAW			JPEG FINE
FOCUS MODE (2)	AFS			AFC
AF MODE	FACE DETECTION (1)			1-AREA
AF/AE LOCK BUTTON	AF LOCK			AF-ON
AF/AE LOCK HOLD	ON			OFF
SHUTTER AF	ON			OFF
DRIVE MODE (3)	SINGLE			BURST
STABILIZER	ON			OFF
SHOOT W/O LENS	OFF	ON	ON	OFF

Table 11: Custom mode settings

Note (1): FACE DETECTION AF mode reverts to 49-AREA mode if a face is not detected. Press FOCUS AREA SELECT to enter 1-AREA AF mode.

Note (2): Set on the AF/MF switch. **Note (3):** Set on the DRIVE MODE dial.

Table 11 shows the settings that I recommend for the custom modes. Program them onto the custom modes, as follows:

- Set the mode dial to P (or A) exposure mode and make sure that you have set each function to the defaults described in 'Configure the menu settings'. Also check that you have configured the function buttons and Q.MENU as described above.
- Work through the columns in Table 11 one at a time. For each custom mode, set the mode dial to P, A, M or S and set each function as shown in the table. Store the setup to the chosen custom mode, using the CUST SET MEM entry on the CUSTOM menu.

Note that the APERTURE and MANUAL custom modes have SHOOT W/O LENS set to ON so that they can be used with a fully manual lens. They will work perfectly well with automatic lenses. If you don't have any fully manual lenses you can leave SHOOT W/O LENS set to OFF.

Appendix 1: TRACKING AF mode

In TRACKING AF mode, the camera attempts to track a selected moving object and maintain focus on it. I've had more success with the approach described above and this section is included for completeness. It is not programmed to a custom mode.

TRACKING AF mode should be used in conjunction with MULTI-METERING. Focus and exposure will then be taken on the subject as it moves.

1. Set the magnification with the zoom ring if using a zoom lens.
2. Either:
   - Position the AF tracking frame over the object to be tracked and half press the shutter button to lock onto it. The AF frame will turn green when the camera has locked on.
   - Or touch the object to track on the screen. A yellow AF frame will appear when the camera has locked on.

   For both cases: if lock fails the AF area will flash red; the AF area will remain yellow while the subject is being tracked; and you can cancel the tracking lock by touching OFF on the screen or pressing the SET button.
3. Half press the shutter button. A green frame will be shown where focusing has been achieved and the frame will track the moving object.
4. Fully press the shutter button to take a burst of photographs with the subject being tracked to maintain focus and exposure.

Appendix 2: Accessing shutter count

1. Insert a fully charged battery and insert a SD memory card.
2. Confirm that the camera is not intelligent auto mode [iA] or intelligent auto plus mode [iA+]. If the unit is in intelligent auto mode [iA] or intelligent auto plus mode [iA+], it does not display the initial settings menu.
3. Select AFS focus mode (not sure this is necessary).
4. Turn the power off.
5. Press the [AF/AE LOCK], [DISP] and [RIGHT CURSOR] buttons simultaneously and turn the power on. You can check you are in service mode by going to Menu - Setup – if so, page 6 will have a "ROM BACKUP" option.
6. Press the [AF/AE LOCK], [MENU/SET] and [LEFT CURSOR] buttons simultaneously once. Error codes will start to scroll down the screen.
7. Press the [AF/AE LOCK], [MENU/SET] and [LEFT CURSOR] buttons simultaneously again. An information page will appear.
8. Then press [DISPLAY] repeatedly to toggle between two information pages. One shows the shutter count and the camera number, etc.
9. Press the ([AF/AE LOCK], [MENU/SET] and [LEFT CURSOR]) buttons simultaneously again to return to the normal display and turn off the camera.

Appendix 3: Change notes

Version	Date	Changes
4.5	16/6/2019	Corrections and alignment with manuals for other cameras.
4.4	6/6/2019	Major revision, with new approach to custom modes. Based on the G80 version of the manual.
3.1	8/1/2019	Correction of errors and cross references.
3.0	5/1/2019	Revised approach, using a simple process and separate details.