# Panasonic Lumix GH7 with Nauticam NA-GH6

by Massimo Franzese


The GH7 is the first model of the GH line to feature Phase Detection Autofocus. The GH7 is physically identical to its now phased out predecessor GH6 therefore the Nauticam NA-GH^ housing fits both the GH6 and GH7. Many GH5 users did not upgrade to the GH6 now they are wondering if it is time to move forward with the GH7. In this review I will talk about the GH7 as a photo camera.

Image Quality

A few key improvement over the GH5 include:

Increased resolution 25 Megapixels vs 20.2

New RAW files with 16 bits depth

Dual Gain Output Circuit

Back illuminated sensor

The increase in resolution compared to the GH5 and GH5M2 is only 11.4% (5776/5184). This is not exactly life changing but more pixels are always better than less pixels bearing in mind that pixel size and image overall noise are NOT related.

With regards to the dual gain output circuit the increase in peak dynamic range compared to the GH5M2 is minimal and appears entirely due to the fact that base sensitivity is now ISO 100 instead of 200.

Perhaps the most interesting feature of the GH7 are the new 16 bits RAW files.

A typical wide angle image has a size of 38 MB which is rather large considering the 25 Megapixels, for reference Sony A7 IV files are around 42 MB. There are several discussions about the efficiency of Panasonic compression but we are not going to deep dive on this. What matters to use is how much beating the raw files can take.

The camera can easily take +3 adjustment as well as shadows up to 100% which is an excellent result.

The other aspect of image quality is of course the lens and we can here use the excellent canon 8-15mm in the entire zoom range in addition to a huge assortment of lenses and ports for Micro Four Thirds supporting all Nauticam water contact optics including EMWL, WACP, WWL and others.

Compared with my A1 with the same Canon 8-15 in a similar shot I can say that at the edges the GH7 is superior and in the centre the difference in actual resolution is small to non-existent despite half the pixels.

In general terms I feel the RAW files of the GH7 are similar in handling to my A1 and A7C II.

## Housing Ergonomics

I want to get out of the way few annoying things of the NA-GH6 housing which is otherwise a great product.

The joystick is not available through the housing, not many Nauticam housings have a joystick control but Sony full size bodies, Canon and Nikon top of the range

do. I feel this is a drawback of the NA-GH6 which continues from the GH5.

To resolve this and make operations quicker you need to customise your camera for underwater use. Change the joystick to Fn and assign focus area movement to the joystick central button. This will allow you to skip one step compared to focus area select where you need to navigate to access focus area movement.

There are other two issues with the housing, the handles are angled forward, something typical of the Nauticam GH series. I have been told it improves shooting video but I just cannot see how that would differ from shooting photos. I wish Nauticam would give straight angles to the GH series housing too.

Another consideration: not all function buttons are accessible, in particular the two on the left side of the camera are not. The lever under the front ring controls the function buttons 2 and 3 that correspond to the front two buttons of the camera.

The housing is not small at 331x176x136 with a weight of 2.8 kg is indeed similar or equal to a full frame camera housing.

The final consideration is that the price of the GH6 housing, that is compatible with the GH7, is very high, more than a Sony A7 IV, less than Sony A1 and way more than other smaller micro four thirds body as well as other full frame (the S5II housing costs less).

## Key Autofocus Settings for the GH7

Please note that the camera focuses differently in video than it does for photos and therefore you should not draw any conclusion for video autofocus from this post except that due to phase detection the infamous DFD pulsing no longer occurs.




*Above: I recommend using one for constant preview, hitting will circle through aperture simulation, shutter simulation or nothing and the other can be used to recall the focus limiter which is very important for macro shooting. The function button on the back can be your fn 9 to recall the focus area movement useful if you want to move it to position the focus are in a specific part of the frame.*
*Above right: In total you have access to 3 function buttons as well as white balance, ISO, exposure compensation, focus mode, operation lock, EVF/LCD, quick button, menu and the four arrows, delete, mode, shutter mode, playback, movie, af.*
*Right: One very important feature is that the handles distance from the housing can be adjusted, I move out the left handle so that the lens is central to the handles to avoid uneven exposure for close focus shots.*
*The housing also has an M10 accessory port as well as the ability to host M5 accessories, and two ports for monitor and vacuum valve in addition to a cold shoe mount.*
*While Nauticam recommends the M5 accessory this is too close to the handles and personally I find the cold shoe and especially the M10 port more suitable for focus light and external monitors.*

If you look in the menu nothing has changed from the previous Panasonic cameras in terms of set up options except a few significant improvements that came with the GH6.

Macro lenses tend to focus hunt and take a long time to move from infinity to your focus point, this is a problem in any format unless you use a focus limiter. The challenge when using a limiter on the lens is that in most cases once the camera is inside the housing and you have made a choice you cannot change it during the dive and therefore miss photo opportunities when the subject is outside your range.

The GH7 however has a software focus limiter feature that is extremely useful. You can set the focus between a near and far point and the camera will increase the focus speed significantly afterwards. This is also very useful to make sure that you do get close to fish.

For the purpose of my tests I did not use this feature as I wanted to stress the setup and thought of using it only if I had problems but I did not. I find this feature invaluable to ensure you get really close. I have discovered when using wet diopters that all the wet lens was doing was forcing me to get closer but indeed I could have used the naked lens to get the same shot. In consideration of the limited depth of field I rarely use wet diopters with dedicated macro lenses on micro four thirds as the imaging frame is as small at 17.3x13 mm in size.

## Wide Angle with the Canon fisheye 8-15mm

I am not a fan of shooting fisheye lenses with Continuous Autofocus as the depth of field is high and the focus range is so limited that rarely it matters.

*Fish was not always recognised, especially in those cases where only one eye was visible and the fish was on busy background, however the MFT camera combined with the 8-15 means there is always depth of field to fix any issues of focus at wide angle. A better option is to use animal detection without eye focus especially for schooling fish.*

With the GH7 I use the Canon fisheye 8-15mm using a metabones adapter and this in the past only supported single autofocus. I noticed some vignetting on the bottom side of the frame that I did not experience with the GH5 series that I need to double check, but otherwise the setup is identical to what you see here on my website.

Metabones released firmware V4.10 on 12 July 2024 declaring continuous autofocus compatibility with the Panasonic G9M2 which has indeed the same AF system of the GH7. The update also

*Diver with Grouper ISO 100 8mm f/7.1 1/80*

improves general performance. I updated my adapter and I can confirm continuous autofocus works correctly with the Canon 8-15mm. Like it does with the Sony camera the focus is a bit wobbly however it works fine. I used zone focus with subject detection, the GH7 does recognise fish and fish eyes so it did not have problem locking onto this grouper. The GH7 shows the focal length on screen as you zoom which is extremely useful.

*Sea Stars ISO 100 8mm f/8 1/160*

## Close up work with the Panasonic 45mm Macro

For close up work I used the Panasonic 45mm lens because it has the best rendering on the MFT landscape. Here I used continuous autofocus using a single area or zone focus with subject detection on animal eyes.

I have been advised by Panasonic not to use tracking functionality however topside tests indicate it may work well underwater. Many people get

*The GH7 focus right on the eye of this large grouper. ISO 100 45mm f/10 1/250*

confused between tracking and subject detection so it may be worth some explanation. Tracking works with or without subject detection and allows you to choose an area on the frame that may or not correspond to a detected subject and then the focus points follow this area. It is especially useful when the camera does NOT detect a subject. Subject detection works differently: it uses the camera live feed to scan for shapes using a deep learning algorithm when a shape is identified the location of the focus points is passed to the autofocus engine to take the shot.

Strictly speaking the camera is not tracking an area of choice but detecting one or multiple targets across the frame. This has a risk when there are multiple targets as the camera may jump from one to another however in close up work this is not generally an issue. If the camera detection works there is no need to use tracking as the subject detection mechanism is quicker and more effective.

I activated subject detection with Single Area + and the camera identified all fish with eyes, in my case groupers, gobies and blennies. For nudibranchs I got a shape around the body most times. The subject detection for fish is way more successful than my A1 but I do not know how it compares with the latest implementations of current cameras with more detection modes like insects that may be a good proxy for certain critters.

I took 255 shots in a dive with the 45mm of which 5 did not have a subject in focus and of those 2 had no subject as the fish had run off the frame.

The Panasonic PDAF system focuses like a DSLR with the lens wide open this helps in situations of low light.

I had a very high success rate as mentioned and only in a few circumstances the focus was off the eye but more because the fish had moved too quickly and I was at close range.

This focus system is excellent for shots wide open and you can easily obtain nice bokeh with eyes in sharp focus. I had a focus light but I never had to turn it on because the GH7 focuses wide open, my strobes have a modelling light but this is only useful if you aim at the subject which in most cases I actually do, again there was no need to use it. I did not have a single shot with focus on the background which for me is quite impressive.

Subjects like nudibranchs can move fast or be on little algae that is swaying in the current, the MFT system with the huge depth of field available means you can achieve the effect you want easily. Different shots at various f stop

The GH7 like the GH5 and GH6 can sync with the strobes at 1/400 using the Nauticam trigger which also supports rear sync and burst mode. Only the A1 can match this sync speed and is very useful for close up work as it easily gives you dark

*Too Close ISO 100 45mm f/10 1/250*

*Shallow ISO 100 45mm f/2.8 1/250*

backgrounds in the right conditions.

The 45mm maintains good sharpness even at f/10 and further but I did not stress the setup in my tests. Take into account that the depth of field even at f/11 on MFT (equivalent to f/22 on full frame) is 1 cm at very close range therefore some really small critters may even need f/16 or more.

## Conclusion

The Panasonic GH7 performs very well both for wide angle with a dome port and at close range with a macro lens. Continuous autofocus is reliable and appears to work fine without a focus light even when the shooting conditions are not easy. Subject detection recognises fish and fish eyes and makes shooting easy. It is unlikely that the GH7 will appeal to pure photographers due to the high price of the housing. Perhaps the real strength of the GH7 though is hybrid use, if you want a camera equally capable of top range photos and videos you are looking at Sony A1 or Nikon Z8 or similar or the GH7 and here it becomes interesting for the latest Panasonic. In the near future I will provide some details of how the GH7 performs as a video capture device so that you can get the end to end view.

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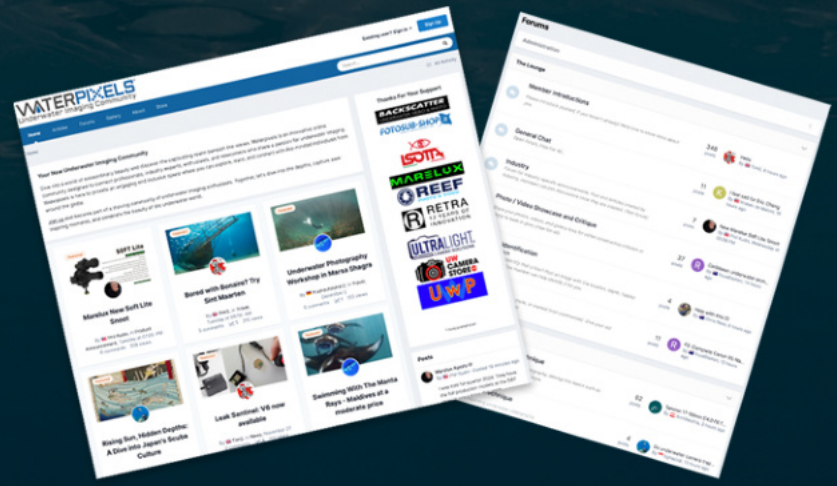

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