

A7R IV is that the focus area box can be reduced or enlarged in size to fit the user's needs. The box can also be set to white or red which makes it much easier to see compared to the original gray box in older Sony A7/A7R versions.

Many readers have asked me about the new implementation of animal eye autofocus in the A7R IV and A7R III firmware update. With limited testing I have found the animal eye AF is at best hit and miss underwater while human eye-AF has worked well with models.

The most endlessly discussed feature of the new A7R IV in forums and chat rooms is its 61MP full frame sensor. Who is it for, why does anyone need so much resolution, will I need a new computer to handle the file sizes and on and on. The 61MP A7R IV provides exceptional image quality with plenty of dynamic range and an ability to do large crops. In the APS-C mode the image and focus points cover the entire frame and produce an excellent 26.2MP image which is larger than most current APS-C cameras. This matters to me because I get a faster work flow and additional options when shooting, especially in macro.

The Sony FE 90mm F/2.8 macro lens is a must-have for underwater macro shooters and a one push toggle to APS-C gives an AOV equivalent

of a 135mm macro lens extending my lens range. I have already found this to be quite useful with the Sony FE 90mm and FE 50mm macro lenses. I am aware that I can just crop the FF image to achieve APS-C or other format sizes. However what I see in the viewfinder in APS-C mode is exactly what I get giving me two cameras in one with all of the additional features of the A7R IV system.

Aquatica A7rIV Pro Housing and Ports

Aquatica is a Montreal based Canadian company founded in 1982 as Aqua Vision Systems and later renamed Aquatica. Aquatica is the leading manufacturer of quality aluminum underwater housings in North America.

Every Aquatica housing is machined in-house from a single aluminum block on a highly specialized five-axis machine. The housing is then anodized to military specifications and powder-coated with a special environmental-resistant paint. The finished product is durable and the craftsmanship is first rate.

The housing has excellent ergonomics, which are user friendly and the control layout is simple even for those wearing heavy gloves. I owned two Aquatica housings



for Nikon F-3 film camera back in the mid 1990s before moving to a Nikonos RS. I sold one of the F-3 housings to a Professor now living in California who contacted me about two years ago looking for recommendations on moving to digital.

After a brief conversation I asked about the Aquatica F-3 housing and the Professor advised he was still shooting with the F-3 housing on a regular basis. The quality and durability of the Aquatica line has

been well documented for decades.

The Aquatica Pro A7rIV housing is the third generation of Aquatica housings for the Sony A7R line of full frame mirrorless cameras. This is my first Aquatica digital housing review for UWPMAG.com and when the test housing arrived one of the first things I noticed was the excellent finish on the housing.

The housing ships with the Surveyor Vacuum system, valve, sensor and pump included as standard equipment. The housing

sells with three different bulkhead configurations, twin Nikonos sync cord connectors, one Ikelite connector or dual optical connectors. My test housing used the dual optical connectors which support a verity of strobes from Backscatter, Inon, OneUW, Retra, Sea & Sea and more.

For this review I used two Inon Z-330 strobes or two Backscatter Mini Flash OS-1's both with fiber optic cords. The housing also supports the HDMI large 23.75mm bulkhead opening for the optional monitor cables and the Aquatica 5HD monitor.

The A7rIV Pro housing uses aerospace grade 6061 T6 aluminum with T304 stainless steel push buttons. All of the camera's function buttons and dials are accessible including support for back button auto focus with the AF-On control using the right thumb and triggering with the right forefinger.

I have programmed the left C3 button on the A7R IV to toggle between EVF and LCD, I also programmed the right AEL button to toggle between full frame and APS-C. Both of these controls have larger than normal push buttons that fall directly under my thumbs so finding these buttons without looking away from the viewfinder is a breeze.

All of the other buttons and dials on the rear of the housing can easily be controlled with your thumbs even



while wearing gloves. The rear of the housing has two sets of up/down right/left OK button arrays. The set on the top right of the housing can be used to scroll over the more than 500 auto focus points on the sensor. The lower right set controls control the display, ISO, drive mode and more. The control buttons and dials can also be reprogrammed to satisfy just about any need.

Levers on the right side of the housing control back button AF and Video on/off with a second lever controlling focus area while the left hand thumb lever controls image review. Again these camera functions can be reprogrammed for just about any need. I reprogrammed the video



Little Devil Springs, Florida-Aquatica A7rIV Pro housing, Sony A7R IV, Sony 12-24mm F/4 zoom at 20mm, Two Inon Z330 strobes, ISO400, F/16, 1/125th sec

on/off and moved it onto the mode dial to avoid accidental recording while shooting stills.

To record video I select the video mode on the mode dial and use the shutter lever to start and stop recording.

The back half of the housing has a pickup viewfinder which works well with the spectacular 5.76M dot electronic viewfinder. My recommendation for the A7rIV Pro housing would be to add one of Aquatica's excellent 45 or 180 degree Aqua View accessory viewfinders to

take full advantage of the outstanding EVF.

The back half of the housing also contains the vacuum system electronics which have a user replaceable 3V CR 2032 battery. Two stainless pins at the bottom of the back align with the front of the housing to assist in a proper seal. Two locking buckles secure the front and rear of the housing.

The housing comes with an excellent camera tray that attaches to the bottom of the camera using the tripod thread mount. The tray includes

the lens release control and a positive locking device. Once mounted on the tray the camera will not shift at all keeping it perfectly aligned. To install the camera pull up the mode control wheel and slide the tray onto the two stainless rods in the front half of the housing. Once the tray locks into place the camera will not move or fall out of the housing even if held upside-down and the controls align perfectly.

To change camera batteries the camera needs to be removed from the housing but the tray can remain in place. Both flash cards can be removed and reinstalled while the camera is locked into the front half of the housing. Once the camera is installed in the housing it is easy to mount the Aquatica flash trigger for Sony on the camera hot shoe. The flash trigger is for manual flash control (not TTL) using two fiber optic cords. The flash trigger is powered by two 3V CR 2450 batteries that slide into the sides of the trigger. A small switch on the left rear of the flash trigger turns on the trigger test, firing the two small LED lights. A green LED on the rear of the trigger also lights to show the trigger is activated and then turns off to conserve battery power. While field testing the housing system the flash trigger worked flawlessly. The housing also has plenty of room for an after market Sony TTL flash trigger if that is one's preference.

For this review Aquatica sent me ports, gears and port extensions to support several FE lenses. The ports and extensions are the same as those used for Aquatica DSLR housings making it a bit more cost effective for DSLR owners making the move to Sony full frame.

Field Testing the Aquatica Pro A7rIV Housing System

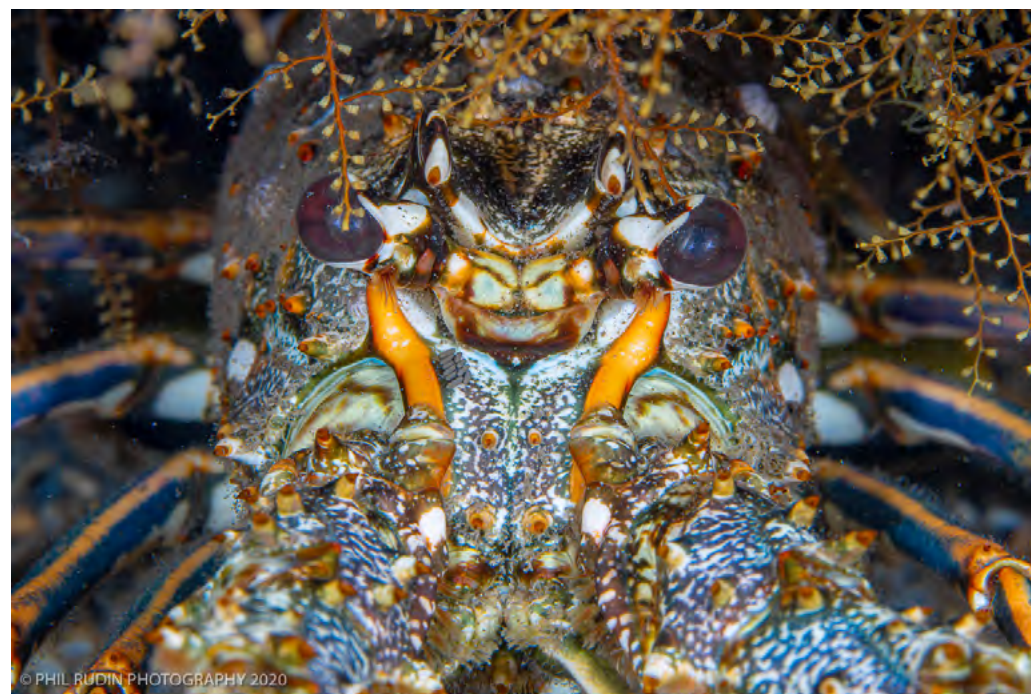
Let me start by saying that Sony has definitely arrived and that the A7RIV system is no longer a work in progress. While the A7RIV is a huge improvement over the A7R III I reviewed in 2017 Sony is still filling in its lens lineup which is incomplete compared to Canon and Nikon DSLR's but much improved since the 2017 review. Sony has been concentrating on the full frame premium lenses line and each new release has been very well received.

For this review I selected the Sony FE 90mm F/2.8 macro G OSS lens which easily handles the larger A7RIV 61MP sensor and is without question the best macro lens I have

Caribbean Spiny Lobster, Blue Heron Bridge, Florida, Aquatica A7rIV Pro housing, Sony A7R IV, Sony FE 90mm F/2.8 macro, Two Backscatter MF-1 strobes ISO100, F/16, 1/125th sec



Phil Rudin field testing the Aquatica Pro A7rIV housing. Photo by Christian Baki.



ever used with any camera. The 90macro was paired with the Aquatica 1840 macro port and 28.5mm port extension 48453. Aquatica also provided the ACU10 +10 close-up lens (19353) and the ACU 19355 single flip adapter. The flip adapter and closeup lenses is perfect for shooting in full frame or APS-C formats.

For wide angle I used the super wide (12-84 AOV) rectilinear Sony FE 12-24mm F/4 G zoom. This lens was paired with the 200mm (8 inch) acrylic dome port with removable shade blades (18405), 63.5mm port extension 48458 and zoom gear 49107. This combination works well at high (F/13 and above) F-numbers but I would recommend the Aquatica 230mm (9.25 inch #18407) glass dome for best corner sharpness.

I also used the 200mm port with 28.5mm port extension 48453 for the 114 degree AOV Rokinon AF 14mm F/2.8 FE for Sony which is not listed on Aquatica's port chart. Again I would recommend the 230mm (9.25 inch #18407) glass dome for best corner sharpness.

Sony has not yet released any FE fisheye lenses so I have been using the Canon 8-15mm F/4L Fisheye with a Metabones IV lens adapter. The Canon Fisheye was also used with the 200mm dome port with shade blades removed for circular Fisheye and 39.5mm port extension 48462. All four of the Aquatica's dome ports including the small 152mm (6 inch) acrylic can be used with the Canon fisheye zoom.

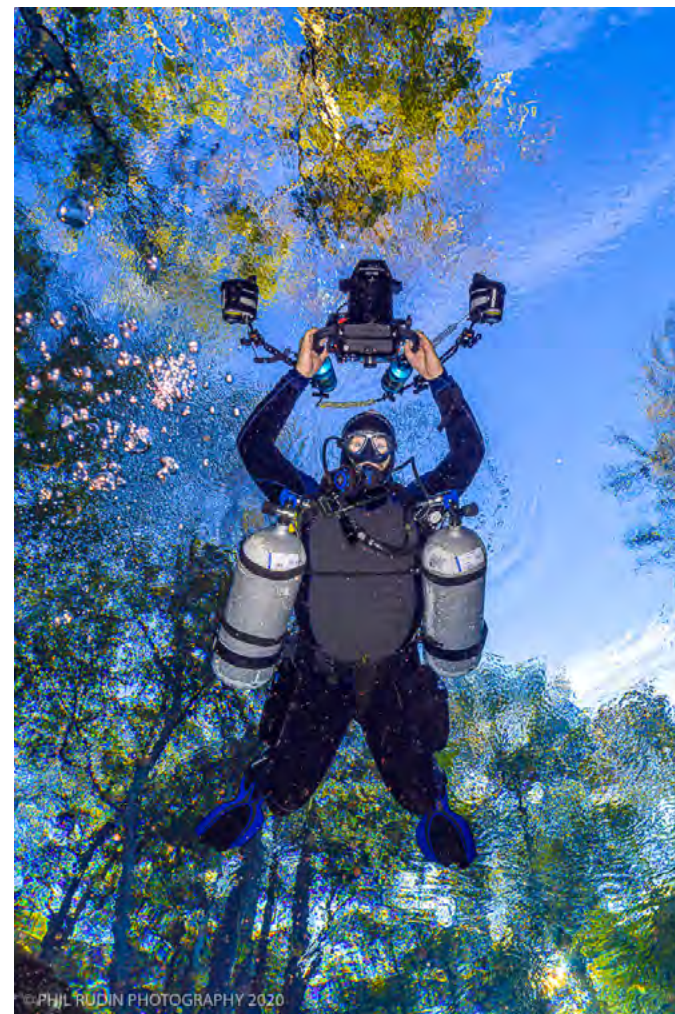
Be aware that like all 200mm acrylic ports buoyancy is an issue compared to Aquatica's 230mm and 200mm glass ports. The acrylic ports have a tendency to turn port up putting a strain on your right wrist while holding the housing for long periods. The Aquatica dome shade is drilled for



Diver Silhouette, Devil's Ear Springs, Florida, Aquatica A7rIV Pro housing, Sony A7R IV, Sony 12-24mm F/4 zoom at 12mm, Two Inon Z330 strobes, ISO640, F/8, 1/125th sec

attaching counter weights to help resolve this issue.

I configure the 90mm macro lens with the focus limiter set from 1:1 to infinity in auto focus. On past Sony A7 cameras I always set the focus limiter from 1:1 to 0.5 meters which renders



Christian Baki at Devil's Eye Springs, Florida- Aquatica A7rIV Pro housing, Sony A7R IV, Sony 12-24mm F/4 zoom at 24mm, Two Inon Z330 strobes, ISO400, F/13, 1/125th sec

everything from life size, 1:1 to about 1:10 in focus. I find that most of the macro/closeup subjects I want to photograph fall well within that shooting range.

As I have said in past reviews it takes a few dives to get the hang of shooting within this rather



Ginnie Springs Ballroom Entrance, Aquatica A7rIV Pro housing, Sony A7R IV, Sony 12-24mm F/4 zoom at 12mm, Two Inon Z330 strobes, ISO640, F/16, 1/30th sec

short focusing range. By using the focus limiter I find that the lens is less likely to hunt and that the lens acquires focus more quickly than when it is set from 1:1 to infinity.

With the A7R IV set to AF-C with tracking flexible spot the camera does not hunt like it did with prior versions set to infinity. Aquatica also offers a manual focus gear for the 90mm macro allowing you to switch from AF to manual in the super menu. This allows me to rack the lens out to 1:1 and leave it there while using the ACU+10 for greatest magnification.

Once I have a subject in focus at 1:1 I can flip the ACU+10 into place and just move the port closer to the subject to regain focus in the viewfinder. I used the ACU+10 close-up lens in AF for this review but some subjects are easier to acquire using manual focus. I use the same F/13 starting point and shoot at ISO-64 to ISO-200 for most macro work. I set shutter speed at 1/250th sec. and tweak for best background results. With the recommended Aquatica macro port configuration the housing was very well balanced without the



Sharptail Eel, Blue Heron Bridge, Florida, Aquatica A7rIV Pro housing, Sony A7R IV, Sony FE 90mm F/2.8 macro, Two Backscatter MF-1 strobes ISO100, F/16, 1/125th sec

need for any added buoyancy.

The Aquatica zoom gear for the Sony FE 12mm to 24mm F/4 is 3D printed and just slides over the lens being held in place by thin rubber tubing on the inside of the gear. I found that this simple system worked very well and that the gear remained in place once mounted in the housing. The camera and FE 12-24mm zoom can be mounted from the rear of the housing or the front before the port and extension are mounted over the lens.

Once installed the lens zooms

smoothly and auto focus is excellent all the way to the dome port. Best results for depth of field and corner sharpness are at F/13 or higher. Most photographers will be more than happy in the F/8 to F/16 range but for best corner sharpness F/13 or greater renders the best results. The F/13 and above aperture setting is my standard starting point across all full frame DSLR or mirrorless cameras with like AOV lenses not just the Sony cameras.

The very last thing I do before heading out for a dive is turn on

the flash trigger, test fire the strobes then seal the housing and draw the vacuum. To draw the vacuum you must turn on the system before closing the housing using the on/off switch on the electronics. Once the housing buckles are secure the plug is removed from the vacuum valve and the pump is attached. Use the pump to draw the vacuum until the green LED on the left rear of the housing remains a steady green, DO NOT OVER PUMP. The green light will then remain on throughout the dive until the vacuum is released by opening the port of the pump. Don't forget to replace the plug (which is secured to the valve by a chain) in the vacuum valve. The pump supplied with my test housing was a bit flimsy and not up to Aquatica's high standards.

For my review I shot stills using four Delta 3 Technical Lighting Control eight inch strobe arms with TLC clamps. Technical Lighting Control is an Aquatica owned lighting support company that offers arms, clamps, ball heads and other support equipment. These arms integrate easily with the one inch ball heads on the two Inon Z-330 strobes and two Backscatter Mini Flash OS-1's I used for this review. I really like the TLC arms and clamps; they are smooth and very easy to move yet never droop or collapse while in the water.

For those of you thinking about



moving from a sub-full frame system to a full frame system remember the reduced depth of field at any given F/stop over sub-full frame can present a few issues. The shallower DOF associated with full frame cameras requires more critical focus so taking a machine-gun approach to shooting may result in high numbers of poorly focused images. Also high megapixel cameras like the Sony A7R III and especially the A7R IV tend to highlight the flaws associated with many lenses of inferior quality, I recommend choosing wisely when making lens purchases.

In the water the Aquatica A7rIV Pro housing is well balanced and easy to use. All of the controls fall at your finger tips and after a few dives I did

not find myself having to look away from the viewfinder to change any of my camera settings. The bayonet mounted ports and extensions were easy to change in the field and I often did lens changes from the front of the housing without needing to remove the camera. The extension rings for the type 4 port system have a unique lock on the outside of the extension which is very easy to use.

This housing is compact and very easy to carry. The housing grips are removable making the housing simple to pack for carry-on or shipping. The ACU flip adapter held the ACU +10 close-up lens out of the way of the

port and strobes at all times when not in use.

The Aquatica A7rIV housing retails in the US with any of the bulkhead configurations for \$2949.00. The eight inch acrylic port is around \$580.00, the 9.25 inch optical glass port is \$1760.00 and the Macro port is \$419.00. Extensions with lock begin at around \$250.00.

If you are seeking the very best in image quality and a full frame camera with quality lenses is within your budget the Sony Alpha A7R IV and Aquatica Pro A7rIV housing should be on your short list for consideration.

Thanks to Aquatica.ca for providing the equipment for my review and to Pura Vida Divers (puravidadivers.com) for assistance during some diving operations.

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