

Sony's A7C II and A7CR cameras

by Phil Rudin

During December 2024, Sony launched the A7C II and A7CR cameras that combine the advantages of an advanced full frame sensor camera with the size advantages of a mirrorless APS-C or M4/3 camera body.

The Sony A7C II/R are almost identical in size and weight to the Sony A6700 APS-C camera with many of the same features, noticeably smaller and lighter than the OM Systems OM1-II. The big difference is the much larger A7C II sensor size of 35.9mm X 23.9mm v. 23.6mm X 15.6mm for A6700 and 17.4mm X 13mm for OM1 II.

The A7C II has an updated 33 megapixel sensor and the A7CR has the same 35.7 X 23.8mm 61 megapixel sensor found in the Sony A7R V. Sony has also managed to incorporate its sensor based in-body image-stabilization with a CIPA rating of 7.0 stops of stabilization into this very small package.

The latest 33 MP Full Frame Exmor R BSI CMOS sensor has 10-bit 4K/30p full-frame video recording using the BIONZ XR image processor.

The A7C II shoots up to 10 FPS with maximum resolution for up to 44

frames RAW and 1000 frames in JPEG. In native manual mode ISO is 100 to 51200 (50-204800 extended), with 759-point phase-detection covering 94% of the sensor.

The A7CR 61 MP Full Frame Exmor R BSI CMOS sensor has 10-bit 4K/60p video recording using the BIONZ XR image processor. The CR version also has the 240.8 Pixel Shift multi shooting function, 693-point phase-detection points covering 79% of the sensor, seven stop IBIS, up to 8 FPS with native ISO 100 to 32,000 expandable to 50 to 102400.

Both cameras have the rather low 2.36 million EVF and the 3 inch 1.03 million LCD. I feel Sony should have at least bumped up the EVF number on the 61MP CR model to the 576 million dot EVF used in the Sony A7R IV.

Both cameras have a 1/160th sec. flash sync speed which can be expanded with accessory flash triggers like the UW Technics external trigger I am testing with both cameras.

These cameras have been extensively reviewed on line by land reviewers if readers wish to have additional camera information. As an underwater tool both cameras are excellent with outstanding auto focus,



subject recognition and tracking.

The Sony A7C II is selling in the US for \$2398.00 (€1469.00) in black and or silver trim, you can also get the A7C II "kit" with the Sony FE 28-60mm for \$2698.00 (€1669.00) which is a \$200.00 savings over buying them separately.

Be aware that the Sony FE 28-60mm is an excellent lens which can be used with many wet wide lenses and closeup lenses using the same flat macro port for both C/U and wide angle.

The Sony A7CR retails for \$3198.00 (€1969.00) and ships with the Sony GP-X2 Grip Extension for both Sony A7C II and A7CR bodies. Sony A7RC also comes in black or



black with the silver trim and can be bundled with several excellent Sony lenses but not with the FE 28-60mm.

Sony FE 28mm to 60mm F4-5.6 zoom lens

The Sony A7C was introduced in 2020 with a new FE 28-60mm F/4-

5.6 zoom “kit” lens and because of its small diameter the optics in the FE 28-60mm zoom are perfect for use with a verity of closeup lenses in relatively compact flat macro ports like the Marelux flat port 32, Nauticam N100 flat port 45, AOI port system for Sony 28-60 and more. All of these ports except closeup lenses like the Nauticam CMC and SMC 1, 2 & 3, Marelux MV +5, +10 and +15, AOI +6 to +23.6 and many more.

Many of these C/U lenses work best at the 60mm end of the 28-60mm range achieving ratios of 1:1 and a bit beyond. All of the flat ports can be used with or without flip adapters and also allow additional attachments like ring-lights.

The Sony FE 28-60mm is not as useful as a dedicated macro lens in terms of total magnification but very useful covering a much broader range for most U/W shooting situations.

This lens is also extremely usefulness at the 28mm end using a verity of wet wide angle lenses designed for the 28mm and achieving a 130 degree AOV. These wet wide angle lenses also allow zoom through to 60mm giving a 130 to around a 68 degrees AOV depending on the system and wet lens.

You could easily design the A7C II/CR system around only the Sony FE 28-60mm lens for everything from life-size to ultra wide and be able



to interchange from macro to wide on the same dive much like with a compact camera.

A7C II/CR Housings and Ports

Because the Sony A7C II and A7CR are both built with the same body and controls they can both be used in the same housing without any modifications. The advantage of this design is that if you are like me' you don't want to travel half way around the world to dive without a backup camera.

In my case I use the more expensive A7CR as my primary camera for macro and wide angle relaying on the less expensive A7C II as my backup camera. Several manufacturers have released housings for these cameras in both polycarbonate and anodized aluminum.

Poly-carb housings range



from around \$1300.00 to \$1700.00 depending on the brand and accessories. Aluminum housings start at \$2898.00 to \$4000.00 with dual grips and no accessories like vacuum valves or flash triggers.

All of these housings have ports, gears and extensions to support most of the popular lens choices for Sony cameras. Most, but not all of these housings use a hinged clamshell design with a single rotary-cam locking system. These systems have been used for decades with one or two main door O-rings and have been proven to reduce overall housing size and to be quite secure in design.

All manufactures offer as options or include a vacuum system, hand grips, a flash triggering system and more. The ability to use TTL varies between systems and strobe brands. Most require an accessory TTL flash trigger like the UW-Technics TTL flash trigger I use which supports many brands of strobes while other systems



like the Ikelite can be used with the accessory proprietary TTL system for Ikelite strobes.

The AOI AX port system for Sony housings has acrylic ports in 160mm and 220mm with a verity of extensions and flat macro ports. Ikelite uses the DLM port system which has acrylic ports in six and eight inches as well as a verity of extensions, flat port and smaller semi domes.

The Marelux system uses the standard five inch port system with 140, 180 and 230mm optical glass domes along with a verity of extensions and flat macro port sizes.



Cypress Tree, Florida Springs, Sony A7C II, Sigma 15mm F/2.8 Fisheye, Marelux housing with 140mm dome port, Apollo S strobes with yellow diffusers, ISO-320, F/14, 1/160th sec



Cushion Star, Blue Heron Bridge, Florida, Sony A7RC, Sony 28-60mm at 28mm, Marelux housing, flat port 32, Marelux Aquista 120, two Apollo S strobes with white diffusers, ISO-320, F/20, 1/160th sec

Nauticam uses the N100 system for the A7C II/CR housing with N100 and N120 optical glass port options in 140, 180 and 230mm along with a verity of N100 and N120 extensions using an N100 to N120 converter. They also offer a verity of flat macro ports in both N100 and N120.

Field testing the A7C II and A7CR

For this review I used the Marelux MX-A7CII/CR housing with a verity of ports, extensions, gears and lenses. While the housing is smaller than other Sony A7, A9 and A1 housings, it is a bit larger than the other systems because it uses the Marelux large five inch port system.

The up side is that you can easily move the ports between any of

Marelux FF or APS-C housing system's from all of the supported camera brands. The downside is that other manufactures use a smaller port system allowing a bit smaller housing and port system.

For this review I also used the FlashFuel FF2100 manual flash trigger and built-in 2100 mAh power bank combo. This \$348.00 accessory allows you to extend the cameras battery life by more than double and it provides tens of thousands of flash triggers at

speeds up to 20 FPS. Most of the new Marelux housings going forward will have space for this battery option or for the newly designed manual flash trigger arriving soon with the new Sony A1 II housing. For TTL flash triggering I have installed the UW Technics external Sony TTL converter.

Like most of the A7CII housings the Marelux is a clamshell design with the rotary cam locking system. I have used these systems for decades and found them to be quite reliable



Diver Dave, Sony A7C II, Sigma 15mm F/2.8, 140mm dome, Marelux housing, Apollo S strobes with yellow diffusers, ISO-640, F/22, 1/160th sec



Common Octopus, Blue Heron Bridge, Florida, Sony A7RC, Sony 28-60mm at 60mm, Marelux housing, flat port 32, Marelux Aquista 120, two Apollo S strobes with white diffusers, ISO-320, F/14, 1/60th sec

and easy to use. My test housing also included a vacuum system and a third ball head for additional clamp on accessories like focus lighting. For lighting I used two Marelux Apollo S strobes to cover a variety of lens choices with bare (6200) dome, white (5500K) and the yellow (4800K) diffusers.

In the water I found

the system to be very well balanced after adding the required amount of flotation. I used both six inch and eight inch arm sections with two for each strobe in equal lengths.

For this review I used the Laowa 10mm F/2.8 with a 230mm optical glass dome, Sigma 15mm F/2.8 EX DG Fisheye with 140mm glass dome, Sony FE 28-60mm with

the 32 flat port and Marelux Aquista 120 wide angle wet lens (130 AOV) and the Tamron 90mm F/2.8 macro. These are all excellent lens choices for any of Sony's full frame cameras and all use the same ports and extensions throughout the Marelux line of Sony housings. Several of these lenses are also made for other camera brands like



Florida Springs, Sony A7C II, Laowa 10mm F/2.8, Marelux housing with 230mm dome port, Four Marelux Apollo S strobes with two off camera using color gels and two on camera with white diffuser. ISO-500, F/20, 1/160th sec

Canon and Nikon.

My settings for all Sony cameras are the same, I shoot manual mode in both single frame and multi-frames at up to 10 FPS mostly in AF-C with focus tracking. I use mostly manual flash modes but have recently added the new external UW-Technics flash trigger which includes TTL support for the Apollo S and Apollo III strobes.

The UWT flash triggers allow you to shoot in manual mode, high speed sync, TTL and the Marelux MTL mode on the Apollo S and Apollo III strobes allowing you to shoot up to

20 FPS. The 20 FPS is bit fast for me and I try to stay at 10 or lower. I also try to top out HSS at around 1/640 to 1/800th second not finding much upside above over those numbers. All of these flash functions worked flawlessly on both cameras.

My starting ISO for macro is ISO-100 but I have used ISO-50 for shooting wide open with HHS and up to ISO-640 for low light and high F/stop numbers.

For wide angle I decide if I want to balance with ambient light or want a lighten/darken background. Keep in



Loggerhead Turtle, Palm Beach, Florida, Sony A7RC, Sony 28-60mm at 28mm, Marelux housing, flat port 32, Marelux Aquista 120, two Apollo S strobes with white diffusers, ISO-400, F/11, 1/125th sec

mind that best corner sharpness for wide lenses starts at around F/13 or higher. If corners are less noticeable in the frame like blue water shots dropping to F5.6 to F/11 will allow you to use lower ISO-numbers.

Many of the excellent software packages currently available also have some very sophisticated sharpening algorithms that allow you to shoot to around ISO-3200 without heavy penalties. I have been using a 45 degree optical viewfinder for well over a decade on most dives and have assigned a control to switch between

EVF and LCD for convenience. I use the LCD when shooting splits as well as when I am doing blackwater and for follow fast moving subjects.

Set at eight (RC) or ten (C II) FPS my Marelux manual flash trigger was able to keep up without missing a frame using the Apollo S MTL setting for multi-frames. During my testing I found that with the Marelux flash trigger I could shoot at 1/200th sec. with no issues (A7CR). At 1/250th the black bar begins to enter the top of the frame and by 1/500th sec. the sensor is about half covered.

The Sony sensor also includes the fast hybrid auto focus system which uses 693 phase detection points for very fast and precise auto focus (A7CR). The A7CR has the same Real-time Eye AF, animal eye AF and Real Time Tracking AF technologies found in the Sony A7R V (A7C II is closer to A7R IV).

I have Lock-on AF Expanded Flexible Spot (M) set to the AF-ON button activated with my thumb. This combination allows me to lock focus with a half press of the shutter and then drag the focus point around the frame while maintaining the original focus area. This means I can focus on an animal's eye in the center of the frame then drag the eye around the frame for the best composition without losing the tack sharp focus on the eye. I can then trigger the shot by depressing the shutter while locked in.

Auto focus Tracking sensitivity can also be set across five settings from #1 to #5 and I have locked-in four levels of responsiveness. I am trying #4 and will tweak as required for best results. I have the focus area array set

to the shutter trigger in AF-C for more of a point and shoot type of a situation.

Another subtle but very useful update carried over from the A7R IV is that the focus area can be set to white or red for ease of use. For those who have used earlier versions of the A7 cameras and tried to locate the flat gray focus box underwater or in bright light I feel your pain, underwater the RED box stands out much better than the white or gray.

Many readers have asked me about the implementation of animal eye autofocus. With a fair amount testing I have found the animal eye AF is a bit hit and miss underwater but has improved with each new camera release. At this time it does not work in conjunction with lock-on expanded flexible spot because the idea with eye AF is to find the animal/human eye regardless of where it is in the frame and lock onto the eye. You can even chose between the right or left eye and select one persons eye out of a group of people in the frame.

I have used the human



eye AF shooting models both underwater and while doing splits and it is spot on. If you do set the camera for animal eye AF it will also lock focus on human eyes without having to switch back from animal eye AF. For pets like cats, dogs, birds and many other animals the eye AF is spot-on. The eye AF has also been added to video and can be used with or without the touch screen. For me Sony's Real Time Tracking AF technology and more precisely the Lock-on AF expended flexible spot is still my goto AF setting. I have been using the Medium and small focus area box for most precise focus lock-on.

The A7C II/CR uses the same large-capacity NP-FZ100 battery found in all the newer A7, A9 and A1 lines which is rated at approximately 490

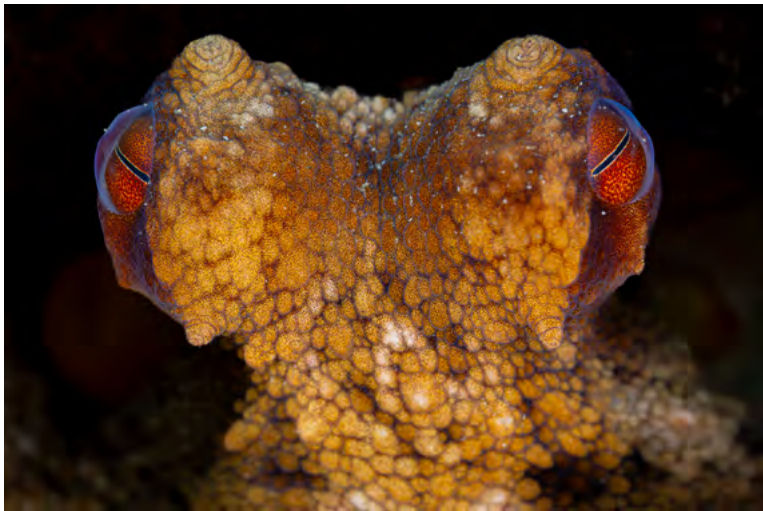


Juvenile Highhat (Pareques acuminatus) Blue Heron Bridge, Florida, Sony A7RC, Tamron 90mm macro, Marelux housing, WeeFine Ring-Light 3000CCW, ISO-1000, F/8, 1/160th sec

shots per charge when using the EVF. I find this number to be a bit high especially when using macro lenses where the number drops due to moving more glass around in the lens. This is why the Marelux FlashFuel 2100 is such an excellent tool for the entire Sony line and also for the Canon and Nikon lines which

have even lower battery life number in many cases.

Another issue which may disturb some is the single SD card slot which supports UHS-II cards. While I fully understand the need for two card slots and the expensive new Sony CF Express type A cards for high end and high speed cameras like the Sony



Common Octopus, Blue Heron Bridge, Florida, Sony A7RC, Tamron 90mm macro, Marelux housing, WeeFine Ring-Light 3000CCW, ISO-200, F/13, 1/160th sec

Alpha 9's shooting at up to 120 FPS the current SD cards are more than fast enough for the A7C II/CR. I have been using the Lexar Pro 128GB 2000 X SDXC 300 MB/s cards which are more than fast enough to keep up with any type of shooting you may do.

The overlooked things that will actually be more important to underwater photographers are details like the card slot being moved to the side of the camera rather than in the battery compartment. This allows those of use with long thin fingers to remove and reinstall the card without removing the camera from the housing. You also have the convenience of in camera battery charging, Bluetooth connectivity for local data acquisition, built-in Wi-Fi enabling image sharing to mobile devices, a Magnesium-alloy chassis with weather sealing, support for the Sony ECM-B1M shotgun Microphone and much more.

This may be a good place to add a disclaimer regarding the use of 35mm full frame cameras both above and below water. If you are thinking about making the jump from compact, M4/3 or APS-C cameras be aware of the following

- Among the advantages of full frame cameras are greater control over depth of field, better low light performance, improved dynamic range and color depth, in many cameras higher numbers of megapixels for added ability to crop, larger files for much larger prints and more.

The disadvantages include greater expense in many cases, no crop factor v. sub full frame cameras especially relevant in macro work.

Full frame cameras especially high MP ones expose flaws in mid to lower quality lenses, focus, shallow depth of field and more.

Many of the files are much larger than those from sub full frame taking up more room on computers, hard drives and flash cards.

Underwater disadvantages are extended to reduced corner sharpness at like F/ numbers especially when using rectilinear wide angle lenses.

Overall system weight and size compared to sub FF adding restrictions in regard to travel and more. Regarding size and weight the A7C systems can actually provide improved size and weight compared to many APS-C and M43 systems..

In conclusion, the A7C'S allow you to shoot top quality full frame images at a verity of price points below other 33MP to 61MP cameras and also saves a bit of size and weight, always welcome for travel or as a backup system.

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