

Mirrorless Macro

by Phil Rudin

For the past two years or so I have been receiving E-mails from many underwater photographers worldwide asking my opinion on what I feel is the best macro lens option for the Micro-Four-Thirds and Sony Alpha NEX mirrorless camera systems.

The magic number that everyone seems to want to get too is 1:1 or life-size, where the image captured on the sensor is the same size as the subject in the frame. The first thing that needs to be understood is that this number, 1:1 is not a single unit of measure. While you can find many different macro lenses from the 30mm to 200mm range that achieve a 1:1, reproduction ratio 1:1 still refers to the size of the image being recorded. At 1:1 on a full frame 35mm sensor the life-size image would be 24 X 36mm, on APS-C it would be 23.5 X 15.6 and on 4/3rds it would be 17.3 X 13mm. For this reason the smaller the sensor, the smaller the subject can fill the entire frame and be 1:1.

Kit lenses for macro

The Olympus 14-42mm F/3.5-5.6mm ED “kit” lens has a maximum

magnification ratio of around 1:2.1 on the 4/3 sensor at the minimum focus distance of 0.25 meters (9.84 inches). The lens is a bit slow to focus and gets better with each new camera incarnation, so expect better auto focus speed with the 14-42 type II / IIR kit lens and with the newer Pen cameras over the older ones.

At the 42mm end of the lens the angle of view is 29 degrees. This lens delivers decent performance and very good image resolution with little vignetting for a low cost Kit lens. With this lens image stabilization is gained in the camera body for all lenses.

The Panasonic 14-42mm F/3.5-5.6 MEGA O.I.S “kit” lens has the image stabilization built into the camera body and not the lens. The Panasonic camera bodies also apply more in-body lens correction to the entire lens line than does the Olympus line of Micro 4/3 bodies. This lens also has a 29 degree angle of view with a minimum focus distance of 0.3 meters (11.8 inches) from 21-42mm this greater focus distance gives a maximum reproduction ratio of 1:3.1 on the M43 sensor. This lens also has



Panasonic 45mm F/2.8 macro

very good image quality for its price point.

The Sony E 18-55mm F/3.5-5.6 OSS “kit” lens for the NEX cameras also has an angle of view of 29 degrees at the 55mm end of the lens on the APS-C size sensor. This lens has a minimum focus distance of 0.25 meters or (9.84 inches) and a maximum reproduction ratio of 1:3.3 on the APS-C size sensor.

This lens is a bit soft on the corners but very sharp in the center. It also has the Sony lensbased image stabilization which seems to work quite well. With the addition of several of the current close-up lenses like the ReefNet SubSee +10 magnifier these three lenses can get close to the 1:1.1 to 1:1.6 range with some image quality lost while using the same flat port designed for the kit lens with an adapter to attach the close-up lens.



Sony E 30 mm F/3.5 Macro



Seaweed Blenny Panasonic 45mm macro, ISO-200, 1/160th, F/22

Macro lenses for NEX & M43

Getting to life-size and beyond with excellent image quality requires a dedicated macro lens. At this time the best choices for M43 and NEX cameras are two very distinctly different lens choices.

The older Panasonic 45mm F/2.8 MEGA OIS Leica DG macro-Elmarit and the recently released Sony E 30 mm F/3.5 Macro. The Panasonic 45mm F/2.8-F/22 macro is one of the high quality Leica branded lenses for Micro 43 camera bodies. With the Panasonic camera bodies the lens takes full advantage of the optical image stabilization built into the lens plus the lens corrections applied by the camera bodies.

When used with the Olympus M43 bodies the lens stabilization is turned off and the lens profiles are not applied by the camera. The Olympus in body stabilization does work with this lens to control lens movement.

On the M43 cameras the lens has a 35mm equivalent of a 90mm macro lens with an angle of view of 27 degrees. At life-size (1:1) the lens has a minimum focus distance of 15.24cm (six inches). These lens should be used with a dedicated macro lens port like the ones from 10Bar, Acquapazza, Aquatica, Athena, Nauticam, ZEN Underwater and others. These ports allow the lens to sit just inside the port glass to take advantage of every millimeter of space between the port glass and the subject.

Many of these ports also have the 67mm threads for close-up lenses built into the end of the port. I have used the Reefnet SubSee +10 and the Inon UCL-165M67 close-up lens both single and stacked with the 45 macro. Close-up lenses added to any lens reduce the distance between the subject



Polka-Dot Batfish Sony 30 macro, ISO-200, 1/160th, F/9

and the lens port. With about 15cm (six inches) of distance between port and subject at 1:1 that distance is cut to about half 7.5cm (three inches) with a +10 close-up on the 45 macro.

The +10 C/U lens will get you to a reproduction ratio of about 2:1 (twice life-size) on the M43 sensor with the 45mm macro lens focal length. At 2:1 you still have an adequate working distance but you may scare off many of the more skittish subjects. This lens has excellent optics, the image stabilization is ineffective at macro distances greater than about 1:3 and like many of the M43 lenses it is light weight and small making it an excellent travel lens.

When announced in 2009 the price was set at \$900US, £590UK, it can now be found for less in the new and used market. The Sony E 30mm F/3.5-F/22 macro lens for the Sony Alpha NEX mount cameras was announced in mid-2011 as an entry level lens with excellent image quality for its price point of \$250US, £189UK. A less robust



Swallowtail Aglaja Panasonic 45mm macro, ISO-200, 1/160th, F/22



Hermit Crab Panasonic 45mm macro, ISO-200, 1/160th, F/13.



Hairy Blenny Sony 30mm macro, ISO-200, 1/160th, F10



Hermit Crab Sony 30mm macro, ISO-200, 1/160th, F/10

feeling lens it never the less has many of the features of a quality macro lens like full 1:1 max reproduction ratio at a minimum focus distance of 9.5 cm (3.75 inches). This lens is smooth and quite for both still and video use. The angle of view on the Sony APS-C sensor is around 50 degrees equivalent to a 45mm lens on a 35mm sensor. I have found the lens to auto focus quite well on the NEX-5 and 5n cameras until you get to very close range.

Since the lens is at around one to two inches from the subject at the 1:1.5 to 1:1 range holding the camera

steady can be a bit of a challenge. It can also be difficult to light a subject so close to the port glass and use of a close-up lens is a waist of time because the subject would need to be pressed up against the glass to get any focus at all.

For me the lens shines more when shot from about 1:2 at 8cm or so (three inches) out to around 45cm (18 inches). In this range you can fit a wide verity of subject sizes into the 50 degree AOV of this lens with stellar image quality for such an inexpensive lens. The custom macro ports that

fit the Panasonic 45 macro can also be used with the Sony 30 macro which are very close in length. Other options for macro are possible with both the NEX and M43 systems.

A verity of lens adapters allow use of almost any lens with these cameras if you are willing to manually focus and set apertures. While this may not be much of a hassle on land the degree of difficulty goes up sharply underwater when ports gears and other hardware need to be redesigned for each new lens. If you are an M43 or NEX shooter I think

you will find both of these lenses will help you fill a void in an otherwise barren mirrorless macro range. I would like to thank NauticamUSA.com and ReefPhoto.com for use of much of the test equipment and for their technical advise while testing these lenses.

Phil Rudin

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Olympus XZ-1

