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UNDERWATER PHOTOGRAPHY GUIDE

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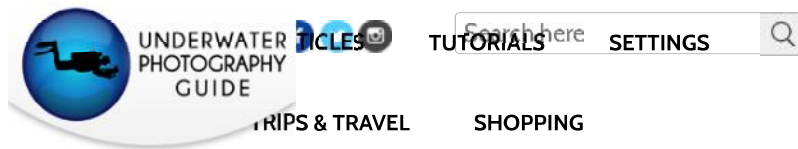TRIPS & TRAVEL   SHOPPING

Welcome to the Underwater Photography Guide. This online book and magazine is a complete underwater photography tutorial full of u/w photography tips and techniques. Our idea is simple – learn, shoot, explore. We hope you enjoy and come back often – Scott Gietler, Owner of UWPG and Bluewater Photo & Travel.

Olympus OM-D E-M10 Underwater Settings

A look at the best settings for macro and wide-angle underwater photography

By Kelli Dickinson

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The Olympus OM-D E-M10 is one of the newest cameras to join the popular OM-D line. This little camera sits somewhere between the E-M5 with similar features and body design and the E-M1 with the same improved processor. In addition to a pop up flash (a first for the OM-D line), it offers all the features you'd expect from an OM-D but at a less hefty price tag.

Below I've compiled several good starting camera settings for different shooting situations. Next is a list of the most important, or required, settings that are crucial to change in your OM-D system when shooting underwater. In addition I take an in depth look at all the menus on the camera so you can fine tune your camera for the best underwater shooting experience.

Olympus OM-D E-M10 Underwater Settings

Actual settings will vary based on your diving location and conditions. Take a look at the following suggestions below as a great starting point for shooting with your Olympus PEN or OM-D cameras.

Settings for Macro with the 45mm or 60mm Macro Lens:

- Manual mode, F22, 1/250th, ISO 200

- Auto white balance, camera flash on "fill in flash", Strobe on TTL

    - Or set the strobe to manual power and adjust power as needed

    - For manual power set the camera flash to manual also to save battery life (see below for instructions)

- TIP: Shoot at lower F stops like F5.6 or F2.8 to try to get some better bokeh and a blurred background

- TIP: You'll need to open up your aperture to around F8 when shooting fish; at F22, your strobes won't "reach" very far and the photo will look black

- ** These settings are also useful with the 12-50mm lens in Macro Mode **

Shallow Focus achieved with an open F-stop - Octopus, OM-D E-M5 w/ 45mm, ISO 200, F2.8, 1/250

Settings for Macro using the kit lens (14-42mm / 12-50mm) with a wet diopter:

- Manual mode, F22, 1/160th, ISO 200

    - For the E-M5 use 1/250th

    - For the E-M1 use 1/320th

- Auto white balance, camera flash on "fill in flash", Strobe on TTL

    - Or set the strobe to manual power and adjust power as needed

    - For manual power set the camera flash to manual also to save battery life (see below for instructions)

- Zoom all the way in

- Shoot at lower F stops like F8-F11 to try to get some better bokeh and a blurred background, you can open up to F2.8, but will have a very small depth of field

Christmas tree worm, photo by Jim Lyle. F14, 1/250th, ISO 200, 45mm macro lens

Settings for Wide Angle with 8mm Fisheye or 9-18mm lens:

- Manual mode, F8, 1/125th, ISO 200

- Auto white balance, camera flash on "fill in flash", Strobe on TTL

    - Or set the strobe to manual power and adjust power as needed

    - For manual power set the camera flash to manual also to save battery life (see below for instructions)

- Important: use the shutter speed to control your ambient light (background exposure). A slower shutter speed (e.g. - 1/60th will let in light when shooting in darker waters, a faster shutter speed will allow less light in when shooting in bright conditions).

- TIP - when the sun is in the photo, set the shutter as fast as possible (1/250th), and you'll need to stop down your aperture to F16 or F22 to avoid blowing out the highlights

- TIP - for ambient light photography, you may need to open your aperture to F5.6 or F4 and increase the ISO to ISO 400, 800 or 1600 to let in more light.

Note: These settings also are great for starting points for shooting with the kit lens on, and for fish portraits with the 60mm macro lens.

Sheephead & Oil Rigs, Olympus OMD E-M5,

8mm Fisheye ISO 200, F5, 1/80

Olympus Camera Set up for Underwater Use

The OM-D E-M10 works well straight out of the box, however there are some important menu and setting changes that you will want to make sure to do for the best shooting experience.

Most Important Settings for Underwater Use:

1) Custom Menu Options - The Custom menu should be turned on by default on the E-M10, if not, follow these instructions to activate it.

Menu -> Set Up Menu (Wrench icon) -> Menu Display and click OK. The Custom Menu is the small cogs icon, hit the right button, and then the down button followed by ok to activate this menu.
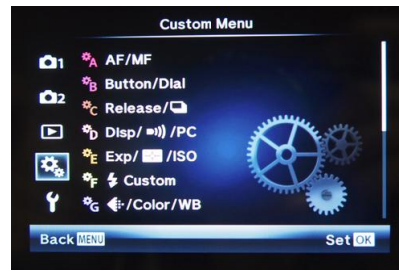
2) Live View Boost - this is very important so that you can see your LCD underwater. This mode disables the live view of exposure settings, since underwater shooting with a strobe, usually results in dark settings in the camera. This function will brighten your LCD so it is always at a good viewing brightness. Note: the LCD does not accurately reflect the exposure settings for the camera.

Custom Menu -> D: Disp/PC -> Live View Boost -> On

3) **EVF Auto Switch -** The OM-D E-M10 has an electronic viewfinder. In order to use the LCD screen underwater you need to turn off the Auto Switch.

Custom Menu -> J: Built-In EVF -> EVF Auto Switch -> OFF.

Note: You lose the ability to display the Super Control Panel in the LCD when using the viewfinder when the "Auto Switch" is turned off. The default is Live Control, which is the same quick menu as previous PEN models. If you prefer the look of the

Super Control Panel you can gain access to it by turning off the Live Control and turning on the SCP through the Custom Menu.

Custom Menu -> D: Disp/PC -> Control Settings -> P/A/S/M -> Live Control OFF -> Live SCP ON
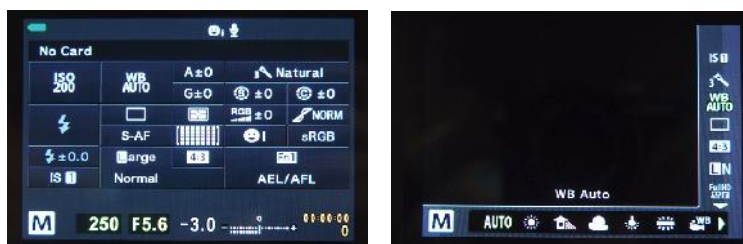
The Super Control Panel on the left, and the Live Control View on the right.

4) **Flash modes -** if you are using a strobe with TTL you will use the single lightning bolt "Fill in Flash" mode on the camera however, if you are planning to use the strobe in manual mode you can save battery life by changing the flash mode to "Manual Value" through the quick menu. This is also beneficial because using the internal camera flash at a lower power means less recycle time and helps eliminate any delay on being able to take a picture.

OK -> scroll to flash icon -> scroll over to select "Manual Value Flash" -> Press Info to change flash power -> scroll to 1/64th power -> OK to confirm

5) **Rear Control Buttons -** **OM-D Only** - the default setting on the OM-D rear buttons controls only the focus point. You can customize three of the buttons instead to gain quick, one-touch access to important features.

Custom Menu -> B: Button/ Dial -> Button Function -> Key Function (option with the four arrow key icon) -> Direct Function -> OK

Now you have access to change the right and down arrow key controls on the back of the camera. (Up gives control of Aperture / Shutter Speed without the dials and Left gives control over the focus point, these are NOT customizable). You have the same options for both customizable buttons, I suggest reviewing each and picking the ones that best suit your needs. For example, I set my camera to have direct access to the flash mode via the right arrow key and direct access to the sequential shot/ timer mode for the down key. (The sequential shot is not something used much underwater but I find i use it alot topside, so it was important to have direct access

for me.)

6) **Rec View -** this sets the length of time an image review is displayed after taking the picture. Default is 0.5 seconds. For underwater use, 2 seconds is usually recommended so you have a chance to quickly gauge that exposure and focus look good before taking another picture. If 2 seconds is too long, set it to what you desire, or simply press the shutter halfway down to cancel the review.

 Set Up Menu -> Rec View

7) **Picture Mode** - the default is natural, but jpeg shooters may prefer Vivid

NOTE: this does not affect RAW files

Accessible through the SCP / Quick Menu or Shooting Menu 1

OM-D, F16, 1/100th, ISO 200

OM-D E-M10 Button & Auto Focus Set Up:

The E-M10 comes set up with defaults that work well on land, but might not give you the best possible results underwater. If you have set the options as outlined above, this section will help you streamline the camera for quick and accurate auto focus underwater.

Similar to the E-M5 the E-M10 does not feature a specific AEL button, but thanks to Olympus' extensive customizable options we can assign the AEL function to another button to allow splitting out the focus control, which is very useful underwater, especially when shooting macro.

OM-D E-M10 Set Up For a Nauticam Housing:

Nauticam's is the only one who created a housing for the E-M10. This housing looks very similar to the E-M5, but is a bit shorter since they did not need to make as much space for the large pop up flash.

The E-M10 camera requires no changes to install in the Nauticam housing, however the metal strap triangles can cause the camera to stick and not go in smoothly. Make sure these are out of the way of the housing when you slide the camera tray into place, or for best results just remove them.

Set up for the E-M10 will be very similar to the E-M5 with the change of several button functions to make it easy to use underwater. Assigning focus to the AEL button (new to the E-M1) allows you to make use of the lever on the Nauticam housing which feels very natural for focusing. To set this up:

AEL/AFL - You can assign this to one of the Fn buttons or even the record button. This can be helpful to separate the focus lock from the Shutter Release. Often underwater it is hard to lock focus. With the camera re-focusing everytime you press the shutter half way it might move that focus just enough to mess up your image, especially when shooting macro. Separating these allows you to focus the camera, then take the picture and take multiple pictures without the camera refocusing. This is very helpful for lenses like the 60mm and 45mm Macro that tend to focus hunt often.

Here is a great way to set up your OM-D E-M10, I find this the best set up for quick changes to focus mode, so that focus can be achieved quickly, easily and accurately with any situation.

Button Functions (Custom Menu -> B: Button/Dial -> Button Function)

Fn1 – One Touch White Balance (not related to focus, but it is only available to this button and it is very useful feature when shooting ambient or video).

Fn2 - MF - this allows you to switch quickly between MF and your default focus mode (S-AF is recommended). This is great for using the AEL/AFL feature. (Note: this comes into play with the AEL/AFL settings so you can switch quickly between two options).

Rec - AEL/AFL

AEL/AFL Settings (Custom Menu -> A: AF/MF -> AEL/AFL)

S-AF - Mode 1 - this will basically keep the

camera as standard, half shutter focuses, full shutter takes the picture

C-AF - Mode 3 - this will separate the shutter release from the auto focus, so you can re-focus the camera from the Rec button and not risk taking a picture

MF - Mode 3 - this separates the shutter release from the auto focus, so you can lock focus and then take as many images as you like without affecting your focus. When you assign AEL/AFL you get an autofocus option while in manual focus mode, so if you have a focus gear on the lens you can use both manual focus or auto focus quickly and easily without changing any modes.

Shutter Release (Custom Menu -> C: Release -> Rls Priority S)

Rls Priority S - OFF - this prevents the camera from taking a photo unless it is in focus in S-AF mode. If you want to be able to take a photo even if the camera has not locked focus then turn this function ON. (Release Priority C is the same only for the C-AF Mode).

Now once you have set all of these, you can shoot a picture as standard (half shutter to focus) when in S-AF mode. Simply press the Fn2 button to switch to Manual Mode and now the Rec button controls auto focus and the shutter release takes the picture. This makes it very easy to have both topside settings and underwater settings created without having to change things in the menus every time you use the camera. Simplifiying the process so you do not forget to reset anything for the next trip.

NOTE: I use all of these settings with the camera in Manual Mode, so I have full control over my exposure settings.

Set Up for an Olympus Housing:

There is no housing from Olympus for th E-M10

Queen Angelfish, OM-D, photo by Jim Lyle, F11, 1/250th, ISO 200

OM-D E-M10 Menu Settings

This info is helpful for fine tuning your camera for the best underwater settings. If a menu item is not listed that is because it does either does not affect shooting pictures or does not affect a setting that would be used underwater. Please note not all options are available with difference cameras, I try to note this as much as possible.

Shooting Menus

These set your cameras defaults, general settings that it will revert to after shutoff.

Shooting Menu #1

Picture Mode - This menu sets the look of your

pictures, it is completely a personal choice to change, I prefer the default, Natural, then fine tuning the image on the computer afterwards. Some users prefer Vivid, especially if they are shooting jpeg, because it enhances reds & oranges.

Picture Quality (pixel icon) – Sets the default quality mode for the camera. Set this to RAW for still images, default for video is FullHD Fine, leave it there unless you know you want a lower quality.

*Note: if you do not have software on your computer that can read and edit RAW files then leave it set to .jpg (LF). I highly recommend shooting RAW for the most flexibility with in computer editing.

Image Aspect – Leave at the default standard image aspect ratio of 4:3 unless otherwise desired.

Digital Teleconverter Leave at default of OFF.

Shooting Menu #2

Burst/ Time Mode - Leave at default of Single Shot Mode, you can change this from the quick menu later for specific shooting instances.

Image stabilizer - Leave at default - this engages full stabilization in all directions (Default is IS1 on E-M5 and Auto on E-M1)

HDR - Leave at Default (OFF).

Exposure Compensation (E-M5 / PEN) - Leave set at default of 0

Time Lapse Settingst - Leave at Default (OFF) - though with a tripod, you can use this to shoot timelapse underwater!

Flash RC Mode - Leave at default of OFF

** NOTE – If you are using the Olympus UFL-2

strobes, you can increase your shutter sync speed with the PEN and OMD cameras to 1/500 using the RC feature of the camera and strobes. Check out the strobe manual for this, but it can be very useful for getting great sunbursts in wide angle shots

Custom Menu Options

The custom menu offers more detailed camera adjustments, however, these can get overwhelming. When in doubt leave it at the default, unless otherwise noted in the Important Settings section above.
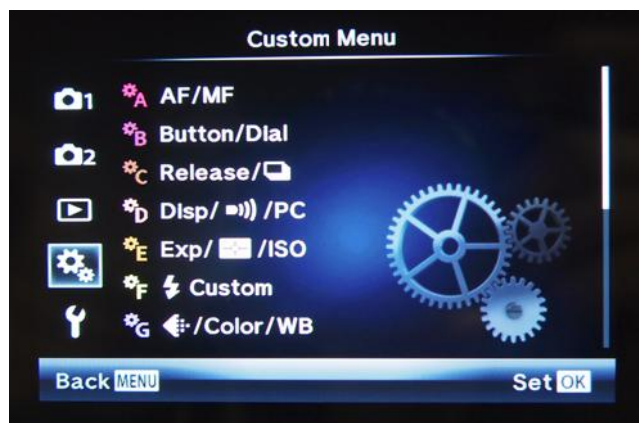
Menu A: AF/MF

AF Mode - I recommend setting this to S-AF (single AF). This is default for still images but not for video. C-AF, continuous auto focus, I find is too slow to accurately catch moving subjects and often hunts more frequently in the low light underwater conditions. You can halfway press the shutter during video to refocus when needed. Note: continuous auto focus has been significantly updated on the E-M1, so it can be a more useful tool with that camera.

Full-time AF - OFF

AEL/AFL - This is a very handy feature, especially for underwater as it allows you to set focus lock separately from the shutter button, so that you can lock focus and then take several images without refocusing. *See the Focus Settings section above for full details.* Here are the settings I would pick, however these are only effective if you have assigned AEL/AFL to one of the customizable buttons through the B Custom

Menu.

S-AF - Mode 1 - this will basically keep the camera as standard, half shutter focuses, full shutter press takes the picture

C-AF - Mode 3 - this will separate the shutter release from the auto focus, so you can re-focus the camera from the Rec button and not risk taking a picture

MF - Mode 3 - this separates the shutter release from the auto focus, so you can lock focus and then take as many images as you like without affecting your focus. In addition this gives you an autofocus option while in manual focus mode, so if you have a focus gear on the lens you can use both that focus and auto focus quickly and easily without changing any modes.

Reset Lens - OFF - leaving this ON resets the lens focus of the lens to infinity after the camera is powered off. For most shooting situations this is not a big deal, though when using specific lenses, like the 60mm macro, it can cause initial focus hunting in the beginning. Turning it off will save the last focus distance used in the camera.

BULB / TIME Focusing - OFF (this doesn't really apply to UW, since you won't use these modes typically)

Focus Ring - Leave a default

MF Assist - ON - very useful with macro - magnifies center of image 10x to aid in focusing

For E-M1 – there are two options, Magnify & Peaking. If you plan to use Manual Focus, turning both on will be extremely useful. The Peaking Option outlines the area of focus to better help you see the focus plane.

[...] Set Home – SINGLE– this sets the "home" position for the AF target for each AF mode. It will return to the position selected after power down. Default is full matrix, change this to Single Auto Focus Point for more control.

AF Illuminator - OFF - this is the small red AF assist light on the camera. It won't shine through the black housing so turn it off to save battery life. If you use the camera both topside and underwater and don't want to hassle with constantly changing it then leave it on, it will not affect picture taking.

Face Priority - OFF - this automatically focuses the camera when it detects a "face" however underwater it can mis-detect and cause issues, will not detect faces in masks so it is not needed.

AF Area Pointer - ON (When turned off the camera will not display the Green target frame for the Auto Focus)

Menu B: Button / Dial

Button Function - There are 2 Fn buttons on the E-M10 and each has a variety of functions you can set. You can also customize the Rec button and assign its own function. Other settings in the Button Function menu allow you to modify the action of that key listed. To gain customization of the up and down arrows you need to change the setting of the four arrows option just below them. I recommend:

Arrow Keys - Direct Function

Right Arrow - Flash Mode

Down Arrow - ISO

For customization of other buttons, check out the Important Settings and Focus Settings Sections above for more detailed information on why I've set these options and how to use them.

Dial Function - This menu allows you to set the functions of the control dials for the camera. Functions are set per shooting mode indivually.

This is for the two control wheels on the top of the camera. For the OM-D in manual mode you can select which button controls Aperature and which controls Shutter Speed, set to your preference for ease of use.

Dial Direction – can be set to change which way you turn the dial to increase shutter or F stop. Set to personal preference or leave at default

Menu C: Release

Rls Priority S / C - this option allows you to set whether the shutter can be released even when the camera is not in focus. I recommend leaving it at the default of OFF for S-AF to help limit out of focus pictures. (can be set individually for S-AF and C-AF modes)

Burst FPS H / L - leave a default - this sets the frame rate for each burst mode option

Burst + IS Off - OFF - allows for image stabilization during sequential shooting when turned OFF

Halfway Rls with IS - ON - this allows for Image

Stabilization to begin when the shutter is pressed halfway.

Lens I.S. Priority- If using a lens that contains it's own Image Stabilization, turn this ON to use the lens IS, otherwise just leave at OFF (default).

Menu D: Disp / Beep / PC

This menu customizes display and sound options. Set these to your preference, they don't affect picture taking, except for a select few.

Camera Control Settings - this gives you options for the display of the quick menus. When the EVF Auto switch is turned off you can only access one of these. Default is the Live Control, Olympus' standard type menu. The other option is the Super Control Panel, the new style for the OM-D that mimics many dSLR cameras. To activate the SCP, turn off the LC and turn on the Live SCP. *(OMD Camera's only)*

Info Settings - Under this menu is LV-Info. These options allow you to streamline your LCD view information. By turning each on or off you choose which viewing modes you would like to be able to see when you press the INFO button on the camera.

Live View Boost - This *must* be turned on to aid in viewing the LCD underwater in dark shooting conditions.

Info Off - The camera automatically hides the basic info from the LCD/ Viewfinder after 10 seconds (half press of the shutter or any button bring it back). This can be changed to be left on all the time by selecting HOLD.

I would also set the **SLEEP** mode and **Auto Power Off** modes as desired to save battery life.

Menu E: Exp / Metering / ISO

EV Step - leave at Default 1/3EV - this gives access to all "in between" stops, for more fine tuning your picture settings. It controls the size of the increments for shutter speed, aperture, etc.

Noise Reduction - only applies to long exposures, leave a default, won't affect your UW photography

Noise Filter - Default - this affects the noise reduction when shooting high ISO

NOISE / NOISE FILTER / ISO – leave at defaults

Metering - Default (Digital ESP Metering) - this

evaluates the entire image for the best overall exposure. For more specific metering you can choose center weighted or spot.

AEL Metering - Default (AUTO) - if you use the AEL function leave this at the default and it will automatically choose the same metering you are currently using.

ISO / ISO Step / ISO Auto-Set / ISO-Auto - leave options at default

Bulb / Time Timer, Live Bulb, Live Time - default (this won't be used underwater)

Anti-Shock - Default OFF - this creates a delay between when the shutter is pressed and actually released to aid in limiting camera vibrations. Not needed underwater.

F: Flash Custom

X-Sync - Default (1/320 for E-M1, 1/250 for E-M5 and EPL5, 1/160 for earlier PEN models) this sets the fastest default Shutter Speed at which the flash can fire.

Slow Limit - Default (1/60) - You can adjust this lower as desired.

NOTE: These flash settings do not matter for Manual Mode, the flash fires based on the shutter speed selected when in Manual Mode. However 1/250 is the highest option available for the OM-D and EPL5, 1/160 for earlier PEN's.

Flash Exposure + Exposure - Default (OFF)

G: Pixels / Color / WB

Pixel Set / Pixel Count / Shading Comp - leave at Default

WB - Auto (default) - this sets the default WB mode, you can adjust for certain instances through the quick menu

All WB Evaluation - default - this changes the overall WB compensation for all modes except custom WB

WB-Auto Keep Warm Color - default - keeps colors warm for Auto WB mode.

Flash + WB - default (auto)

Color Space - default sRGB (unless you specifically know you want a different color space)

H: Record / Erase

Set these to your preference, they do not affect picture taking

I: Movie

Movie Mode - Default - P - this sets the default mode for movie capture (unless you are doing more video and want a specific mode, such as Manual, Aperture or Shutter to be the default)

Movie Mic - Default - ON - turns mic on or off. Turn off if you do not want to record any sound.

Movie Effect - Default - OFF - disables movie effects

Wind Noise Reduction - Default - OFF - reduces wind noise

Recording Volume - Default - Standard

J: Built in EVF

These do not affect picture setting, adjust as you prefer. The only important setting in this menu is:

EVF Auto Switch - OFF - this disables the automatic switch between the LCD and EVF. This is important for underwater use because the housing will always block the sensor and it will be stuck on the EVF only.

K: Camera Utility (OM-D Cameras)

Set as desired, these do not affect picture settings

Setup Menu

Set Date / Time, LCD brightness, upgrade your firmware, etc. The most important item on this menu is:

Rec View - this sets the amount of time an image is displayed for review after taking it. Default is .5 seconds, which is very fast. 2 seconds is a good average to set this to so that you can check exposure and focus on the LCD before taking another picture. If you need to take the next shot quickly this review disappears with a 1/2 shutter press.

If you have any further questions on setting up your Olympus camera or any issues with camera functionality, please post a question in our forums.

Further Reading

- Olympus 60mm macro lens review

- Testing the new Olympus OM-D in Cozumel

- Best mirrorless lenses for underwater photography

RECOMMENDED ARTICLES

3 Tips for GoPro Underwater Video

Acting Snooty!