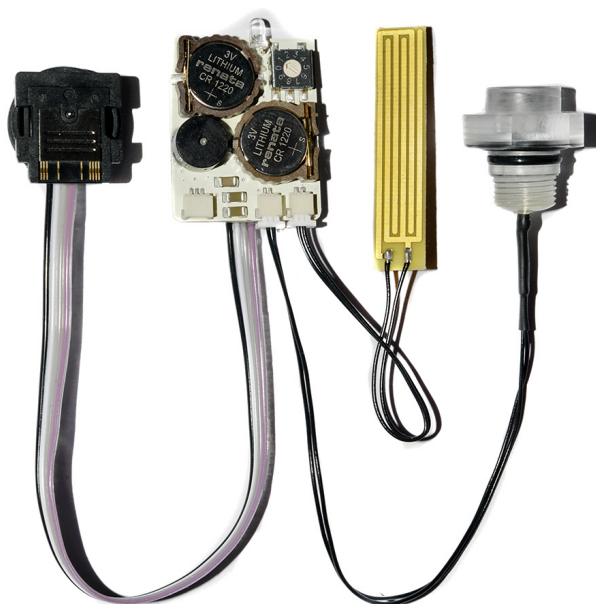


## #16034-HSS Optoelectronic TTL-Converter for SEAFROGS underwater photo housings for SONY A7 II, A7 III, A7 IV

(February-2021)

### USER'S MANUAL



### Specifications

- Compatible photo cameras: Sony A7-A9 family
- Compatible underwater housings : Seafrogs
- Compatible strobes: Inon Z-330, Z-240, S-2000,  
Sea&Sea YS-250, YS-D1,  
Sea&Sea YS-D2 (made-in-China)  
Ikelite DS-161, DS-160,  
Subtronic Pro-270, Pro-160,  
Retra Pro (including HSS functionality)
- TTL outputs onboard: 1 optical and 1 electric
- (+/-) "Flash Exposure compensation" adjustment underwater: yes
- Continuous (serial) shooting mode support: yes
- High Speed Synchronization (HSS) up to 1/8000 for Retra Pro strobe in Manual mode
- 1-st / 2-nd curtain modes support: yes
- Switching TTL /M underwater by camera controls: yes
- Setting strobe power manually by camera controls in M mode: 1/64.....1/1
- Switching power "ON/OFF": automatic by camera command
- Battery type: CR1220 (2pcs.)
- Current consumption in standby mode: 0.01 mA
- Optical Bulkhead included in standard kit
- Compatible Fiber-optic cable type: 613-fiber type (Nauticam 26216 / 26217, HowShot 613L etc.)
- Available Electric Bulkhead type (optional accessory): Nikonos-5, Ikelite
- Dual Electric cables ("Sea&Sea") support: yes

### Safety Warning for Batteries usage

- Use batteries only CR1220 type.
- Batteries must be new and undamaged. Carefully check batteries before usage.
- To avoid leakage or explosion, always check appropriate battery terminals position ("plus" / "minus") before installing to the TTL-Converter.
- Never expose batteries to overheating, short-circuiting, disassembling, high pressure, mechanical deformation. Save batteries from high humidity and water. All these circumstances may cause a chemical leakage, electric shock, explosion or fire, which can be dangerous for health.
- Remove batteries from TTL-Converter before longtime storage.
- Utilize used batteries according appropriate rules.
- Keep out batteries of children. Save batteries in inaccessible for children place

## Installation



- Deinstall original Seafrogs Leak Detector and sensor strip from the housing.
- Install new sensor strip to the bottom, instead of original sensor. The sensor strip has adhesive tape on the back side.
- Unscrew the nut and deinstall the original Seafrogs electric bulkhead from the housing. Keep the original nut for further installation of Optical bulkhead.
- Before Optical bulkhead installation, please check both o-rings condition and grease them by silicone lubricant. Install Optical bulkhead to its place and screw the nut (use original Seafrogs nut from electric bulkhead). Connect Optical bulkhead cable to the TTL-Converter 2-pin socket.
- **(Optional):** In case of using Electric Wire Synchronization, install UWTechnics electric bulkhead (Nikonos or Ikelite style bulkhead) the same way and connect the cable to 3-pin socket on the TTL-Converter board.
- Connect Leak Detector sensor cable to TTL-Converter board 2-pin socket (the last right socket on the board).
- Insert batteries into TTL-Converter. Before installation check that "plus" terminal of each battery is in Up position.
- Make few shots, testing TTL flash control work with the camera and underwater strobe.
- Test Leak Detector alarm by touching the sensor with wet finger.

- Glue TTL-Converter board on the housing wall by double-side adhesive tape, or by a drop of glue.

## Optional Bulkheads

- UWTechnics Optical Bulkhead (Seafrogs style mount) with cable and 2-pin connector, - included with standard kit.
- UW Technics Nikonos style Bulkhead (Seafrogs style mount) with cable and 3-pin connector.
- UW Technics Ikelite style Bulkhead (Seafrogs style mount) with cable and 3-pin connector.
- Electric Bulkheads (Nikonos, Ikelite style) are optional products and must be purchased separately.

## External cable connection to underwater strobes


- TTL-Converter maintains synchronization for underwater strobes by Fiber Optical cable connection and by electric cable connection as well.
- A single fiber optical cable can be used for the best optical signal transmission (via optical bulkhead). It is also possible to connect 2 underwater strobes using a dual fiber optical cable (only HowShot 613L Dual cable is recommended).
- A single electric sync cord can be used via electric (Nikonos / Ikelite) bulkhead. Dual electric cord ("Sea&Sea") can be used as well. Using a dual sync cord, it is possible to connect 2 underwater strobes simultaneously.

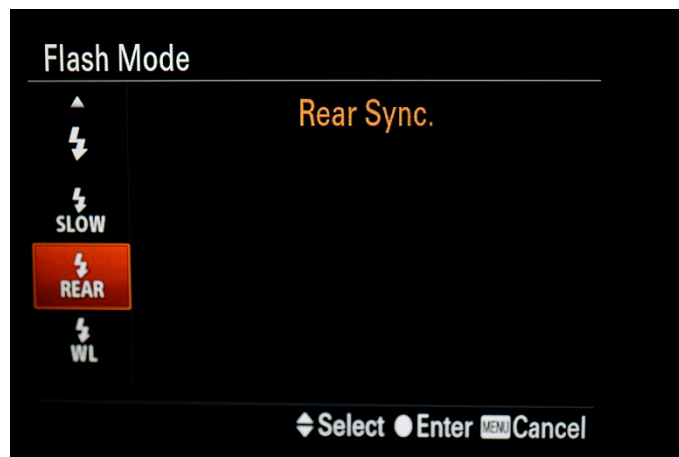
## Initial Settings

- Set and check camera settings before underwater shooting:
  - Set "Mechanical Shutter" type in camera menu. You also can use "e-Front Curtain Shutter". But don't set fully Electronic Shutter by menu, it does not supported by this TTL system.
  - Set Camera mode ("M", "P", "A", "S" etc.), as is your preference. For underwater shooting it is recommended to use "M" mode, so the underwater photographer can control Aperture and Shutter Speed manually.
  - Set Aperture and Shutter Speed according to the actual underwater conditions and shooting task. Do not exceed 1/250 shutter speed (1/250 is maximum "sync speed") when using mono-flash underwater strobes.
  - Set appropriate Exposure Metering ("Multi", "Spot", "Center") according to the shooting conditions. The right type of Exposure Metering is the key setting for accurate TTL work. In the case of wrong setting, the shot may be over exposed, or under exposed.
  - Set camera's "Flash Exposure Compensation" (and "Exposure Compensation") to "0 ev", as initial setting.
  - Set appropriate ISO. Recommended to use ISO 100....400 for the best resolution and TTL accuracy underwater.
  - Use recommended apertures F8-F16 for Wide-angle underwater photo, and F16-F22 for Macro photo.
  - Use other settings recommended by your camera User's Manual.

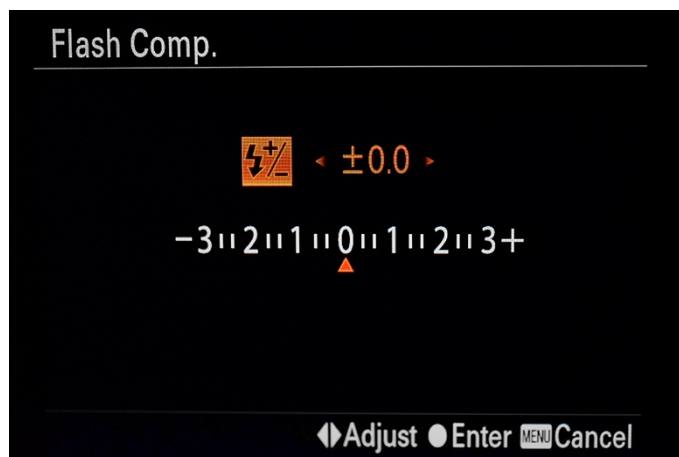
## Shooting in TTL mode

- Set TTL-Converter onboard rotary switch according your strobe type:
  - **0 - Hardwire Manual Mode**
  - **1 - Inon Z-240**
  - **2 - Sea&Sea YS-D1**
  - **3 - Sea&Sea YS-D2**
  - **4 - Sea&Sea YS-250, Subtronic Pro-270**
  - **5 - Ikelite DS-161, Ikelite DS-160**
  - **6 - Inon Z-330**
  - **7 - Retra Pro**
  - **8 - Subtronic Pro-160**
  - **9 - Inon S-2000**
- Set main dial switch on the underwater strobe body to TTL mode. Please refer to strobe's User Manual to choose appropriate mode (Z330, Z240 set to "S-TTL", YS-D1/D2 set to "DS-TTL", YS-250/DS-161/DS160 set to "TTL").
- Set the dial (+/-Ev correction) on the underwater strobe body to "0 ev" position, as initial setting.

- Using Z240 / Z330 strobe, pay attention:
  - 1) Pre-flash control magnet must be in "Push" (down) position and locked by rotation.
  - 2) Using optical synchronization, set right dial switch on the strobe body to "0ev" (position "12 o'clock"), but using electrical wire synchronization set right dial switch to "TTL" mark as fixed position ("9 o'clock").
  - 3) In case of optical synchronization, TTL correction (+/-) is available by the Inon strobe right dial switch "+/-Ev" and also by the camera control "Flash Compensation" (+/-). Recommended to use the camera correction, because it is significantly more effective than Inon strobe corrector. The final correction value is the sum of these two corrections. Pay attention: In case of electric wire synchronization, the adjustment (+/-) by the strobe corrector is unavailable on most of underwater strobes, but always available by camera control "Flash Compensation".
- Connect TTL-Converter Hot Shoe plug to the camera Hot Shoe socket. Switch ON the camera. TTL-Converter activates automatically (switch ON) when user pushes camera Shutter Release Button for shooting or focusing. Device goes to standby mode (switch OFF) automatically a few seconds later (based on input from the camera), or after disconnection from camera Hot Shoe socket.
- Camera recognizes TTL-Converter as Sony compatible TTL device on the Hot Shoe and confirms the compatibility by the two "Flash" symbols  on the service screen.
- In Flash Mode menu set "Fill-flash", "Slow" sync, or "Rear curtain" sync, depending on the shooting tasks. Most popular is "Fill flash" mode.



- Based on the camera model sensor, strobes condition and quantity (1 strobe / 2 strobes in a pair, or more), battery condition etc., photographer should set any initial (+/-) "Flash Compensation" by camera menu, - for balanced flash lighting. For example, A7 camera model usually requires +1Ev Flash Compensation, A7RIII and A9 requires zero (0)Ev Flash Compensation etc. Please make some land test of TTL work before submerging.
- During the diving, photographer can use (+/-) Flash Compensation in wide range (-3ev ....+3ev), based on shooting conditions, subjects and tasks, if images are too bright or too dark.



As written above, in normal operation TTL +/- Flash Compensation adjustment is available for underwater photographer using 2 methods:

- Using "+/-Ev" dial switch on the underwater strobe body (adjustment works for fiber-optical type connection only).
- Using camera "Flash Compensation" function. Such adjustment type is recommended as more accurate and effective, and it works for both types of connection (optical and electric). Available "Flash Compensation" range for Sony cameras: -3ev...0...+3ev. User can adjust it in steps 0.3ev or 0.5ev (set the step by camera menu), viewing the value on the camera menu scale.
- Set only Mechanical Shutter type in camera menu. This is important for normal TTL work with underwater strobes. Don't use fully electronic shutter (option available in some cameras menu). Only 1-st curtain (e-front curtain) can be used on some camera models, if necessary.
- Shooting macro, for normal TTL accuracy the nearest distance from underwater strobe to a target must be more than 0.35m underwater (or more than 0.7m for the land tests), **to keep the system inside of working TTL range**. But the camera can be positioned as close to the target as user requires so long as the strobe minimum distance is adjusted
- TTL-Converter is tuned for normal TTL accuracy under water. Land tests may give different results.

- In some shooting conditions or camera settings, TTL system may be not effective or **out of working range**. This case photographer should use **Manual mode**.

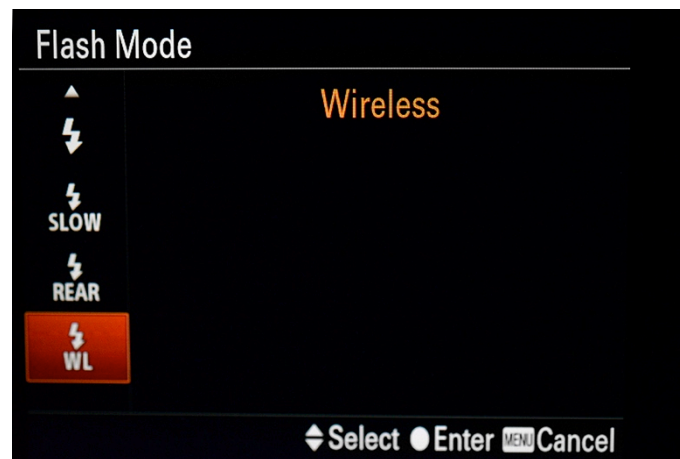
## Shooting in Manual mode

- Underwater photographer can use 3 different methods for shooting in Manual mode:
  - *Camera menu Manual mode*
  - *Underwater strobe Manual mode*
  - *TTL-Converter hardwire Manual mode*
- **Camera menu controlled Manual Mode** (set by camera menu assigned command – “WL”)

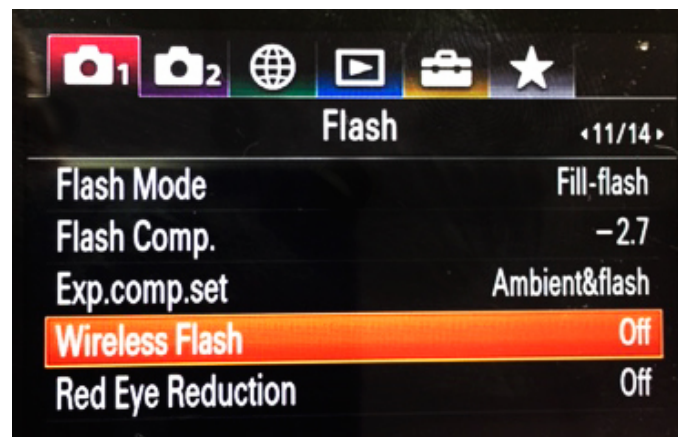
Switch TTL-converter to Manual mode by camera menu setting “WL” –(Wireless flash).

Set underwater strobe to “S-TTL” mode on the dial switch on the strobe body, - to control light intensity manually via camera scale.

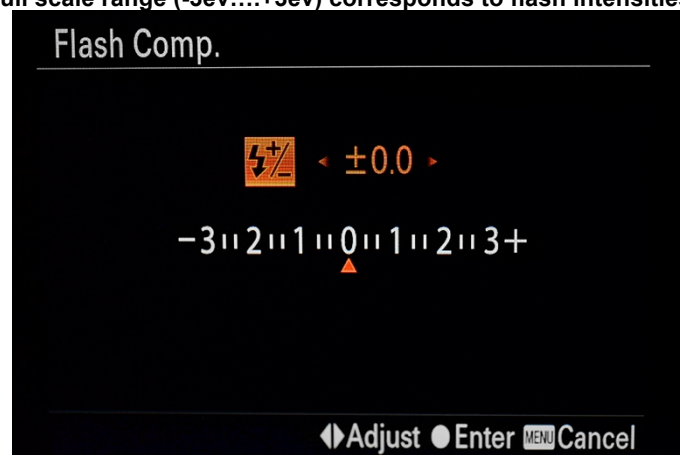
Sony camera menu does not have any original command for switching to M mode. That is why the “WL” command (On/Off) is assigned for this aim via TTL-Converter firmware. “WL” command ON switches TTL-Converter to M mode without Pre-flashes. This is preferable Manual mode for universal usage, easy switchable and controllable during the diving.



Based on your camera firmware, if “WL” sign doesn’t show on the Flash Mode Menu, it can also be found on page 11 of Camera Menu 1. When ON, it will override the flash mode setting menu and the TTL system will operate in Manual Mode only.



In this Manual Mode the **flash intensity manual adjustment by camera menu** also becomes available. Pay attention, underwater strobe must be in STTL mode for this function. Then, user can comfortably adjust flash intensity by camera wheel, looking at the camera scale. **Full scale range (-3ev....+3ev) corresponds to flash intensities 1/64 ...1/1.**



- **Underwater Strobe Manual Mode** (set by underwater strobe dial switch):

**Set underwater strobe dial switch to M or FULL mode without pre-flashes. Adjust strobe light intensity by the dial switch on the strobe body.**

Shooting in this mode, it is strongly recommended to set TTL-Converter also to M mode (by camera menu "WL" command), to exclude Pre-flashes in system (for strobe energy saving).

- **TTL-Converter Hardwire Manual Mode** (set by onboard switch to "0" position):

**Set TTL-Converter onboard rotary switch to "0" position.**

**Set underwater strobe to M (or FULL) mode without pre-flashes by dial switch on the strobe body. Adjust strobe light intensity by the dial switch on the strobe body.**

Setting TTL-Converter rotary switch to "0" position can be done only before closing the case, while the housing is open. This is a hardwired Manual mode.

In this mode TTL-Converter emits single pulse of fixed maximum duration, without Pre-flashes.

This mode is recommended for any creative shooting, for example using long length fiber optical cables (up to 40m length is supported), or for usage with TTL incompatible underwater strobes, low sensitivity strobes, or for any other difficult situations.

### High Speed Synchronization (HSS) with Retra Pro strobe

- New Generation Retra Pro strobe supports High Speed Sync (HSS).
- HSS shutter speeds are available for flash usage in range 1/320 ....1/8000 with Sony A7-A9 cameras.
- Pay attention, that Retra HSS in Manual type HSS, but not TTL. In HSS strobe mode Retra flash intensity can be adjusted by the strobe knob, only manually.
- For shooting with Retra HSS, use the following settings:
  - Only once: Assign "HSS" function to U1 or U2 switch position on the strobe body, using "Retra-UWT" application via I-Phone or I-Pad bluetooth connection.
  - Set Retra Pro strobe switch to U1 or U2 position (according the assigned position for HSS mode)
  - Set Manual flash mode for the system by camera menu (using "WL" command).
  - Use camera at any shutter high speeds (1/320 ...1/8000). Test shooting with HSS flash. Adjust necessary flash intensity by the strobe knob.

### Shutter High Speeds availability for shooting with ambient light

- Classic underwater strobes produce a mono-flash, they cannot work in HSS range speeds (excluding Retra Pro), camera automatically limits sync speed 1/250 for them, usually until HotShoe plug is connected. But new TTL-Converter firmware allows shutter high speeds usage for shooting underwater with ambient sunlight, without flash. User does not need to reopen the housing to disconnect the HotShoe plug.
- Shutter high speeds for shooting are available in Manual mode of the system (use "WL" command) in range 1/320 ....1/8000 for Sony A7-A9 cameras. All models uw strobes (excluding Retra Pro) in this case don't produce a flash, automatically.

### Continuous (Serial) Shooting using underwater strobes

- TTL-Converter supports Continuous shooting in all modes, including TTL and M modes. But the main role in this case plays underwater strobes specific (read below).
- Compact size underwater strobes like Z-240, Z-330, S-2000, YS-D1, YS-D2 etc. have a weak charger inside, which cannot charge the strobe quick enough between series of TTL doubled flashes (pre-flash + main flash each time). Sometimes for the next shot the energy is not enough to keep an accurate Pre-flash / Main flash duration. That is why, compact size underwater strobes are not recommended for Continuous (Serial) Shooting in TTL mode. The only 1<sup>st</sup> shot will have normal lighting in TTL, next shots can have some different lighting or none at all. The effect depends on specific strobe's capabilities, camera Aperture/ISO and other settings.
- Large size underwater strobes, like YS-250, DS-161, DS-160 etc. have more powerful charger inside and large main capacitor. Those strobes work some better in Continuous (Serial) Shooting TTL mode. The user can make more shots with acceptable lighting. However the best lighting accuracy will be on only the first 1-3 shots in series, the others may have different lighting. The effect depends on specific strobe's capabilities, camera Aperture/ISO and other settings.
- In normal usage, all underwater strobes support accurate TTL lighting only in "Single Shot" camera mode. Underwater strobe must be fully charged before each TTL flash, to maintain accurate TTL lighting. Usually, charge time of modern underwater strobes is about 2 seconds for 50% of energy (but 6-8 seconds for 100% energy).
- For Continuous (Serial) Shooting with underwater strobes, it is strongly recommended to use **Manual mode** and set minimum strobe intensities. This way it is possible to get serial shots with acceptable lighting accuracy due to reduced recycle times.



## Battery energy saving

- Set acceptable “Power Save Start Time” in camera menu, this is important for TTL-Converter battery saving. Recommended value – 10 seconds or 1 minute.



## Storage

- After shooting switch Off the camera.
- Disconnect TTL-Converter Hot Shoe plug from camera after the diving. This way you protect the TTL-Converter from any accidents. Also you save TTL-Converter battery, because current consumption is minimum in this case.
- For a extended storage periods remove batteries from TTL-Converter.

## Warranty

- Product warranted against any manufacturing defects for 2 year from the date of purchase for consumer use.
- Manufacturer accepts no liability for any damage to and defects in the housing caused by improper use and/or poor maintenance.
- Manufacturer does not hold responsibility for damage of any nature, to any equipment used with the product.
- Manufacturer accepts no liability for any loss of captured images or the inability to capture images even if it is due to the malfunctioning of the product.
- This warranty only applies to products purchased from authorized dealers and does not extend beyond the original retail purchaser.
- Unauthorized modifications and/or repairs of the product will automatically invalidate this warranty.
- To return products for service, please contact authorized dealer in your region.