



11072-22-HSS Optoelectronic TTL Converter for NAUTICAM underwater photo housings for OLYMPUS cameras

(Firmware: June-2024)

USER'S MANUAL



Specifications

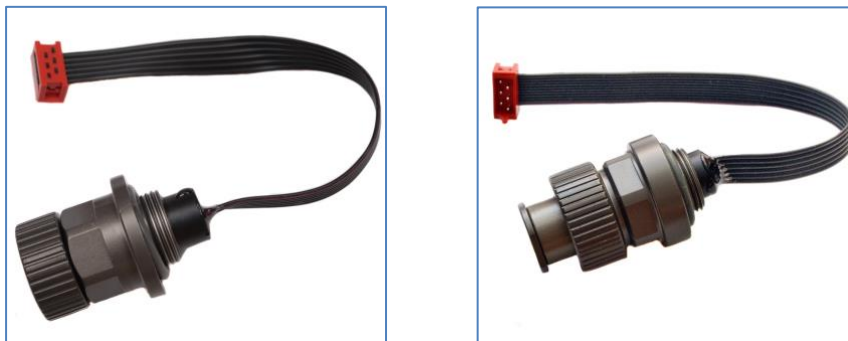
- Compatible photo cameras: OLYMPUS mirrorless cameras
- Compatible Hot Shoe type: new style M4/3 Hot Shoe (4 pins + frame)
- Compatible housings: Nauticam NA-EM10IV, NA-EM1III, NA-EM1X, NA-EM5II, NA-EM5III, NA-OM1 and newer (22mm distance between optical socket centers).
- Compatible strobes:
 - Inon** Z330, Z240, S220, S2000, D200
 - Sea&Sea** YS-D3 DUO, YS-D3 Mark II, YS-D1, YS-250
 - Ikelite** DS-232, DS-230, DS-162, DS-161, DS-160, DS-125
 - Subtronic** Pro-160 (by electric sync cord),
 - Retra Pro MAX** (including HSS functionality),
 - Marelux APOLLO-III V2.0, APOLLO-S** (including HSS functionality).
- TTL outputs onboard: 2 optical + 1 electrical
- (+/- Ev) "Flash Exposure compensation" adjustment underwater: yes
- "TTL / M" mode switching underwater: yes
- Manual Adjustment of strobe intensity (by camera controls in "M" mode): 1/64.....Full
- 1-st / 2-nd curtain mode: yes
- "Flash Off" mode: yes
- Continuous (serial) shooting mode: yes
- Switching power "ON/OFF": automatic
- Battery: no battery required
- Compatible Fiber-optic cable type: 613-fiber core: Nauticam #26216 / #26217, HowShot 613L, Sea&Sea #50128 etc.
- Compatible Electric cable: Sea&Sea, Ikelite
- Compatible Dual Electric cable: Sea&Sea, Ikelite
- Electric Bulkhead type (UWTechnics optional bulkhead): Nikonos, Ikelite

External cable connections for underwater strobes

- TTL-Converter maintains synchronization for underwater strobes by Fiber Optical cable connection and by electric cable connection as well.
- Fiber optical cables can be connected via 2 optical sockets on the housing. It is possible to connect underwater strobes using a single or dual fiber optical cables listed in Specification above.
- The **613-core** fiber optical cable type is strongly recommended for usage with TTL Converter, to achieve an accurate automatic TTL flash control. TTL Converter is tuned for 613 fiber cable usage only. Other fiber cables have a lower "transmission index" and give a worse exposure in TTL flash control, and even can be totally incompatible.
- Electric sync cord can be used via electric (Nikonos or Ikelite style) UWTechnics M14 bulkhead.
- Dual electric sync cord ("Sea&Sea", "Ikelite") can be used via electric bulkhead as well.

Optional Accessories compatible with Nauticam housing

- **UW Technics #91340 Nikonos style M14 Bulkhead** with flat cable and 4-pin MicroMatch connector.
- **UW Technics #91341 Ikelite style M14 Bulkhead** with flat cable and 4-pin MicroMatch connector.
- Bulkheads and adapters are optional products and must be purchased separately.



Installation



- Delete the plastic cover film from adhesive tape on the TTL-Converter back side. Press hard the board to housing inner surface, like a sticker. Pay attention to the LEDs position opposite the optical sockets.
- (*Optional*). In case of using Electric Bulkhead, connect the bulkhead cable to 4-pin MicroMatch socket on the board.

Setting the strobe type

- Set TTL-Converter onboard rotary switch according to your strobe model:
 - **0 - Hardwire Manual Mode**
 - **1 - Inon Z240, D200, Sea&Sea YS-D1**
 - **2 - Marelux APOLLO-III V2.0, APOLLO-S** (including HSS functionality)
 - **3 - Sea&Sea YS-D3 Mark II**
 - **4 - Ikelite DS-232, DS-230, Sea&Sea YS-250, Subtronic Pro 270** (by electric sync cord)
 - **5 - Sea&Sea YS-D3-DUO** (programming is below), **Ikelite DS-162, DS-161, DS-160, DS-125**
 - **6 - Inon Z330**
 - **7 - Retra Pro MAX** (including HSS functionality)
 - **8 - Subtronic Pro 160** (by electric sync cord)
 - **9 - Inon S220, S2000**

Sea&Sea YS-D3-DUO strobe programming:

- YS-D3-DUO strobe must be programmed before usage, according to its User Manual, to the following settings:
- *Pre-flash cancel* setting must be programmed: "5.6" (mode C),
 - *Optical input* setting must be programmed: "1" (mode 10, factory default).

Shooting in TTL flash mode


- Check camera settings before the underwater shooting:
 - Set Camera mode ("M", "P", "A", "S" etc.) by camera wheel, dependently of preferences. In common case, for underwater shooting it is recommended to use "M" mode, when user can set Aperture and Shutter Speed manually.
 - Set Aperture and Shutter Speed according real underwater conditions and shooting task. Pay attention that maximum X-sync speed, restricted by camera, is usually about 1/250 (or 1/200).
 - Set appropriate Exposure Metering type ("Matrix", "Partial", "Spot", "Center-weighted" etc.) according your shooting conditions and available options of your camera model. Right type of Exposure Metering is the key setting for accurate TTL work. In case of wrong setting, the shot may be significantly over-lighted, or under-lighted.
 - Set "+/- Flash Exposure Compensation" (and "Exposure Compensation") to "0 ev", as initial setting for most of Olympus cameras.
 - Set appropriate ISO. Recommended to use ISO 200....400 for best resolution and TTL accuracy underwater.
 - Recommended apertures F8-F16 for wide angle photo, and F16-F22 for Macro photo, as initial settings.
- Using camera menu photographer can totally control TTL-Converter underwater via camera controls.
- Enter **Flash** menu to set initial preferences for your flash system, including X-Sync speed:



- Set main dial switch on the underwater strobe body to TTL mode. Please refer to concrete strobe User's Manual to choose appropriate mode for digital TTL control (Inon Z330/ Z240 set to "S-TTL", Sea&Sea YS-D1/D3 MarkII set to "DS-TTL", Sea&Sea YS-250, Ikelite DS-162 / DS-161 / DS160 set to "TTL", Subtronic Pro-160 set to "Auto" etc.).
- Set another dial (+/-Ev correction) on the underwater strobe body to "0 ev" position, as initial setting. Using Z330 / Z240 strobes, pay attention: magnet must be locked in "Push" (down) position. For the fiber optical connection, set second dial switch to "0 Ev" (position "12 o'clock"), for electric wire connection set it to "ttl" mark as fixed position ("9 o'clock").

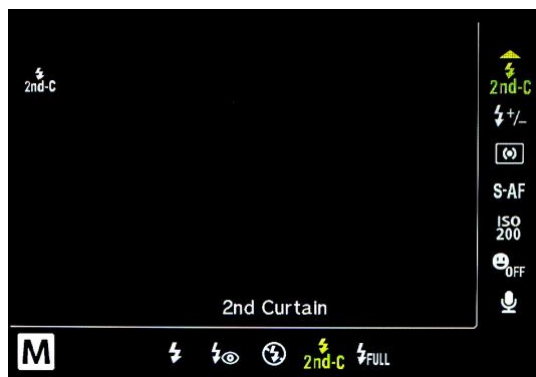
In case of optical TTL control, adjustment (+/-) is available by the strobe dial "+/-Ev" and also by the camera wheel "flash exposure compensation", the final value is the sum of these two corrections.

In case of electric wire TTL control, adjustment (+/-) is unavailable by the strobe dial, but available by the camera controls using "+/- Flash Exposure Compensation" scale.

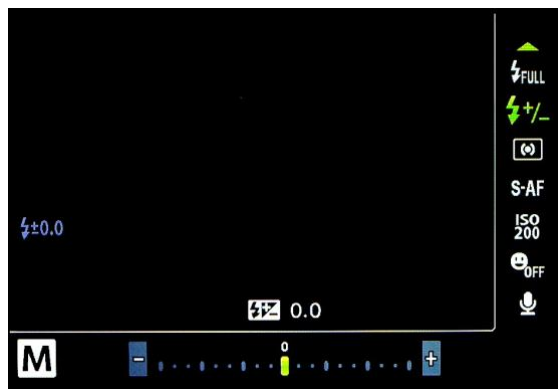
- Camera recognizes TTL device on the Hot Shoe socket and confirms compatibility by the "Flash" symbol  on the camera screen. Flash menu becomes available only in case of full compatibility camera and TTL-Converter.
- Set TTL ("Fill-in") flash mode, 1-st curtain synchronization:



- For creative shooting, also possible to set **2-nd Curtain synchronization**:



- Set **Flash Exposure Compensation (+/-)**:



Depending on camera model, situation, ambient lighting and strobes position, photographer can set any acceptable value of "Flash Exposure Compensation" (+/- TTL correction).

Later, photographer can use it in wide range underwater as well, according shooting conditions, if images are too bright or too dark.

Understanding of TTL working range:

- For normal TTL accuracy the **distance from the strobe to a target must be more than 0.35m underwater** (or more than 0.7m for land tests), to keep the system inside of working TTL range.
- Camera can be positioned as close to the target as user needs.
- 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 flash mode

TTL-Converter supports 2 different variants of manual flash mode (described below):

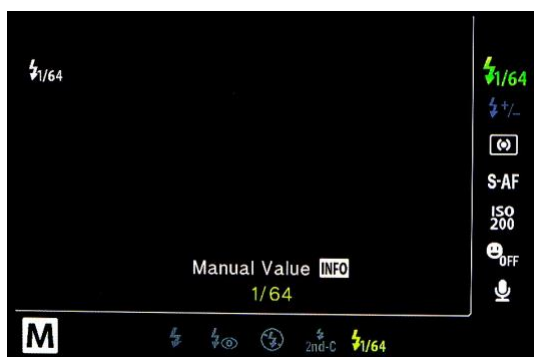
- **Manual Flash Mode set via camera menu** (flash intensity also can be adjusted via camera menu),
- **Manual Flash Mode at rotary switch "0" position** (communication protocol is disabled).

Manual Flash Mode set via camera menu:

Switching the flash system to this M mode during the dive (underwater) is a most useful feature.

At the such setting of camera menu, TTL-Converter switches to M mode without Pre-flashes, the system produces a single main flash of adjustable intensity.

- Switch system to Manual Flash Mode by camera menu.
- Set underwater strobe to S-TTL (TTL) mode (for availability of flash intensity adjustment by camera controls).
- Adjust flash intensity using camera menu scale 1/64...1/1 (Full) and camera wheel.



Manual Flash Mode at rotary switch “0” position:

- Switch system to Manual mode by setting TTL-Converter onboard rotary switch to “0” position.
- This operation can be done only before submerging, when underwater housing is open.
- TTL protocol communication is totally disabled.
- In this mode all Pre-Flashes are disabled. TTL-Converter produces a single pulse of maximum intensity at each shutter release.
- For the **flash intensity adjustment** in this mode, - the strobe must be set in “**M**” mode without Pre-Flashes” by the dial switch on the strobe body. Adjust flash intensity by the dial switch on the strobe body.

HSS (High Speed Synchronization) with “Retra” and “APOLLO” strobes

- HSS (FP) speeds on the most of Olympus cameras are available up to 1/4000s. But some newest camera models allow to set it up to 1/8000s.
- Pay attention, that Retra and Marelux HSS means only Manual type flash, but not TTL. Flash intensity can be adjusted by the strobe knob only.
- For shooting with a flash at HSS shutter speeds use the following settings:
 - Set strobe knob to “HSS” position
 - Set flash mode by camera menu to “**R/C mode**” and option “**FP**” inside the R/C menu.
 - Use camera at any shutter high speeds (1/320 ... 1/8000). Test shooting with HSS flash.
 - Adjust necessary flash intensity by the strobe knob.
 - Pay attention that 1/200 and 1/250 camera speeds usually don't require HSS type flash. Independently of camera menu HSS option, most of cameras use just a normal sync flash for them in reality.

Ultra-fast Shutter Speeds for shooting with ambient light (without flash)

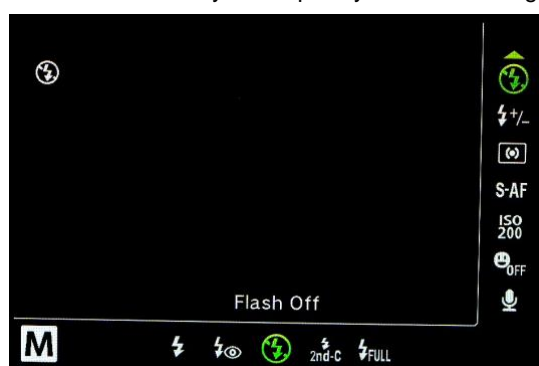
- Camera automatically limits sync speed 1/250 (or 1/200) for classic flash system, if Hot Shoe plug is connected. But our new TTL-Converter **firmware allows to use ultra-fast shutter speeds** for shooting underwater (or half-water, or above the water surface) with ambient sunlight as well (but without flashing) **even if Hot Shoe plug is connected**. User does not need to reopen the housing to disconnect the Hot Shoe plug for such aim.
- These ultra-fast shutter speeds for shooting with natural sunlight are available in Manual mode of the system (use “Auto FP” command to set M mode) up to 1/8000 (and faster, dependently on camera model). All models of classic underwater strobes in this case don't produce a flash, the flash is automatically switched OFF via TTL-converter control.

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 performs the underwater strobe itself (read below).
- Compact size underwater strobes (like Z-240, Z-330, YS-D1, YS-D3 Mark II etc.) have small size capacitor inside, and usually are not able to fully recharge it quick enough between series of TTL doubled flashes (pre-flash + main flash). Each next shot the energy is less, not enough to keep accurate pre-flash and main flash. That is why, compact size underwater strobes are not recommended for Continuous (Serial) Shooting in TTL mode. The 1st shot will have normal exposure, but the next shots will have different lighting or none at all. The effect strength depends on specific strobe's capabilities.
- Large size underwater strobes (like YS-250, DS-162 etc.) have bigger size main capacitor inside, which contents much more energy. Those strobes work some better in Continuous (Serial) Shooting TTL mode. The user usually can make few shots with acceptable lighting. However, the best lighting accuracy anyway will be for the first 1-2 shots in series, the next shots will have less flash exposure. The effect strength depends on specific strobe's capabilities.
- In common case, all underwater strobes support accurate TTL lighting only in Single Shot mode (not Continuous Shooting Mode), because underwater strobe must be fully charged before each flash. Usually full charging time for modern underwater strobes is 3-8 seconds. For Continuous (Serial) Shooting with underwater strobes, it is recommended to use **Manual mode** and set **small flash intensities**. This way it is possible to get serial shots with acceptable lighting accuracy, due to a small energy of each flash.

Shooting with Flash Off

Shooting with sunlight, sometimes when necessary to temporary disable flashing, **Switch Off the Flash by camera menu:**



Storage

- After the shooting, please switch Off the camera.
- Disconnect TTL-Converter Hot Shoe plug from camera after the diving. This way you defend the TTL-Converter from any accidents.

Warranty

- This warranty only applies to products purchased from Underwater Technics authorized distributor / dealer and does not extend beyond the initial retail purchaser.
- Product warranted against any manufacturing defects for two years from the date of purchase for consumer use.
- Manufacturer accepts no responsibility for any damage and defects in product caused by improper use and/or poor maintenance.
- The product is intended for underwater use. Damages or defects caused by use on land will be rated as improper use and are not covered by the warranty.
- Manufacturer does not hold responsibility for damage of any equipment used with the product.
- Manufacturer accepts no responsibility for any loss of captured images or the inability to capture images even if it is due to the malfunctioning of the product.
- In case of warranty claim the corresponding proof-of-purchase (sales receipt / invoice) or warranty certificate issued by an official regional Underwater Technics distributor / dealer must be presented.
- Underwater Technics company and its distributors / dealers don't cover the warranty if the corresponding proof-of-purchase (sales receipt / invoice) or warranty certificate issued by an official regional Underwater Technics distributor / dealer is not produced when presenting a warranty claim.
- 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.