

#11076 Optoelectronic TTL-Converter (for PANASONIC)
for NAUTICAM underwater photo housings

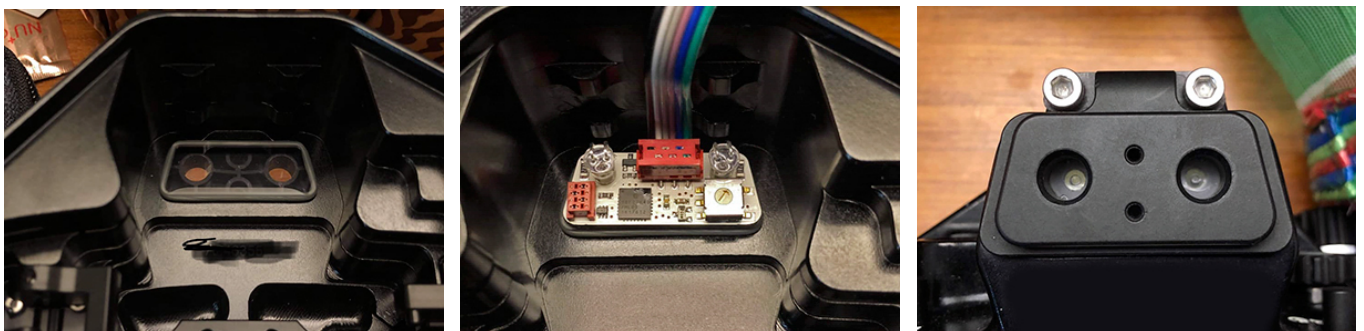
USER'S MANUAL



Specifications

- | | |
|---|------------------------------------|
| ▪ Compatible photo cameras: | Panasonic GH-5 / GH-5s |
| ▪ Compatible underwater housings : | NA-GH5 |
| ▪ Compatible strobes: Inon Z-330, Z-240, D-2000;
Sea&Sea YS-250, YS-D1, YS-D2;
Ikelite DS-161, DS-160;
Subtronic Pro-270 | |
| ▪ TTL outputs onboard: | 2 optical + 1 electric |
| ▪ (+/- Ev) "Flash Exposure compensation" adjustment underwater: | yes |
| ▪ "TTL / M" mode switching underwater: | yes |
| ▪ Manual Adjustment of flash intensity (by camera controls): | 1/64.....1/1 |
| ▪ 1-st / 2-nd curtain mode: | yes |
| ▪ "Flash Off" mode: | yes |
| ▪ Continuous (serial) shooting mode: | yes |
| ▪ Switching power "On/Off": | automatic by camera command |
| ▪ Battery: | no battery required |
| ▪ Compatible Fiber-optic cable type: | Nauticam #26616 |
| ▪ Compatible Electric cable: | Sea&Sea, Ikelite, Subtronic, Subal |
| ▪ Compatible Dual Electric cable: | Sea&Sea, Ikelite |
| ▪ Electric Bulkhead type (optional accessory): | Nikonos-5, Ikelite, S-6 |

Installation



- Delete plastic cover from adhesive base of TTL-Converter board. Press hard the board to housing transparent window, glue it like a sticker.
- (Optional). In case of using Electric Bulkhead, connect bulkhead cable to 4-pin socket on the board.

Optional Accessories

- UW Technics #91340 Nikonos style Bulkhead (M14 screw) with flat cable and 4-pin MicroMatch connector.
- UW Technics #91341 Ikelite style Bulkhead (M14 screw) with flat cable and 4-pin MicroMatch connector.
- UW Technics #91342 S-6 style Bulkhead (M14 screw) with flat cable and 4-pin MicroMatch connector.
- Bulkheads are optional products and must be purchased separately.



External cable connections for underwater strobes control


Fiber Optical cable connection:

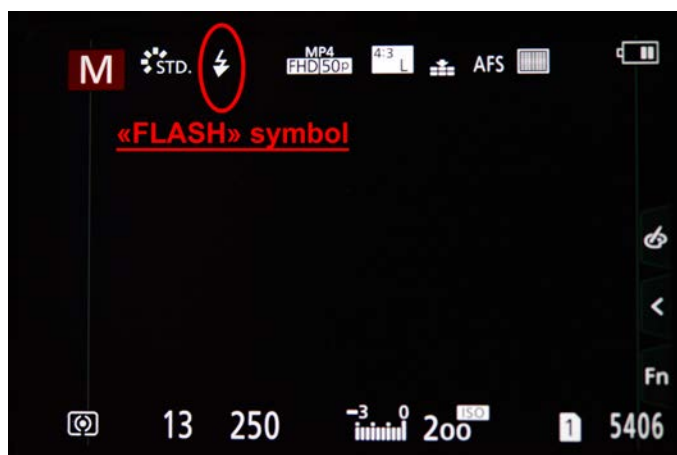
- Available to connect 2 underwater strobes using a pair of single type fiber-optical cables #26616.
- **IMPORTANT!** Don't use any Dual fiber optical cables, another case the reliable TTL operation is not supported. Strongly recommended to use only original fiber optical cables Nauticam #26616.

Electric cable connection:

- Electric cable can be connected via housing electric bulkhead.
- Dual electric cables ("Sea&Sea", "Ikelite") are supported by TTL system as well. Using dual electric cable, it is possible to control 2 underwater strobes.

Initial Settings

- Set TTL-Converter onboard rotary switch according your strobe type:
 - **0 - Manual mode (TTL protocol is disabled)**
 - **1 - Inon Z-240 / Z-330**
 - **2 - Sea&Sea YS-D1**
 - **3 - Sea&Sea YS-D2**
 - **4 - Sea&Sea YS-250**
 - **5 - Ikelite DS-161 / DS-160**
 - **6 - Inon D-2000**
 - **7 - Subtronic Pro-270**
- Set and check camera settings before 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 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 overlighted, or underlighted.
 - Set "+/- Flash Exposure Compensation" (and "Exposure Compensation") to "0 ev", as initial setting for most of Panasonic cameras.
 - Set appropriate ISO. Recommended to use ISO 200...400 for best resolution and TTL accuracy underwater.
 - Set Aperture and Shutter Speed according real underwater conditions and shooting task. Pay attention that max fast sync speed, restricted by camera, is usually about 1/250 (or 1/200).
 - Recommended apertures F7.1-F16 for wide angle photo, and F16-F22 for Macro photo, as initial settings.
 - Use other settings recommended by your camera User's Manual.
- 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 Panasonic camera and TTL-Converter.



- Use **Flash** menu to set initial preferences:



Shooting in TTL mode

- Set main dial switch on the underwater strobe body to TTL mode. Please refer to concrete strobe User's Manual to choose appropriate mode name for digital TTL control (Z-330/ Z-240 set to "S-TTL", YS-D1/D2 set to "DS-TTL", YS-250/DS-161/DS160 set to "TTL", Pro-270 set to "Auto").
- Set another dial (+/-Ev correction) on the underwater strobe body to "0 ev" position, as initial setting. Using Z-330 / Z-240 strobes, pay attention: magnet must be in "Push" (down) position, for 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.
- Set **TTL** firing mode in camera menu:



- Set **1-st curtain** or **2-nd Curtain** flash synchronization:



- Set initial +/- Flash Adjustment:



Dependently of experience, shooting situation and strobes position photographer can set +/- Flash adjustment (+/- TTL correction) initial value.

Later, photographer can use this correction in wide range, if images are too bright or too dark.

- Try to use special camera feature **Auto Exposure Compensation**. Sometimes it gives useful results.



Understanding of working TTL 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 modes.

Shooting in Manual modes

Underwater photographer can use 3 different ways to shoot in Manual mode:

- Camera menu Manual mode
- Underwater strobe Manual mode
- TTL-Converter Manual mode

1) Camera menu Manual Mode (set by camera menu):

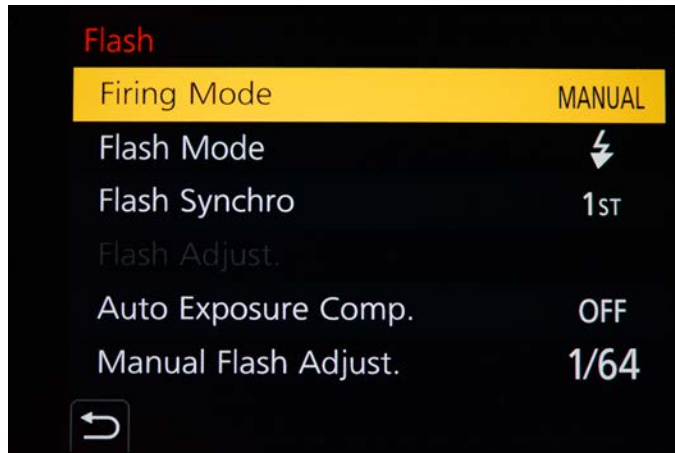
Switch system to Manual mode by camera menu.

Set underwater strobe to S-TTL (TTL) mode (for availability of flash intensity adjustment by camera control).

Adjust flash intensity using camera menu scale.

This is preferable Manual mode for universal usage, easy switchable and controllable during the diving.

This case TTL-Converter switches to M mode without Pre-flashes automatically by camera menu command. TTL-Converter has special firmware module for transformation camera scale to underwater strobe intensity real scale. Underwater strobe flash intensity can be easily adjusted directly by camera controls (scale: 1/64.....1/1):



2) Underwater Strobe Manual Mode (set by strobe body dial switches):

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

Adjust strobe light intensity by another dial switch on the strobe body.

Recommended settings in camera menu for this case: M mode, flash intensity "1/1".

For information: If camera is set to M mode by menu, - all Pre-flashes in system are disabled.

3) TTL-Converter Manual Mode (set by onboard switch):

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

Set underwater strobe to M mode without pre-flashes.

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 submerging, when the housing is open. This is forced Manual mode. This case camera does not recognize any device on it's HotShoe socket, TTL protocol in system is totally disabled.

In this mode TTL-Converter emits single pulse of fixed (maximum) duration at each shutter release.

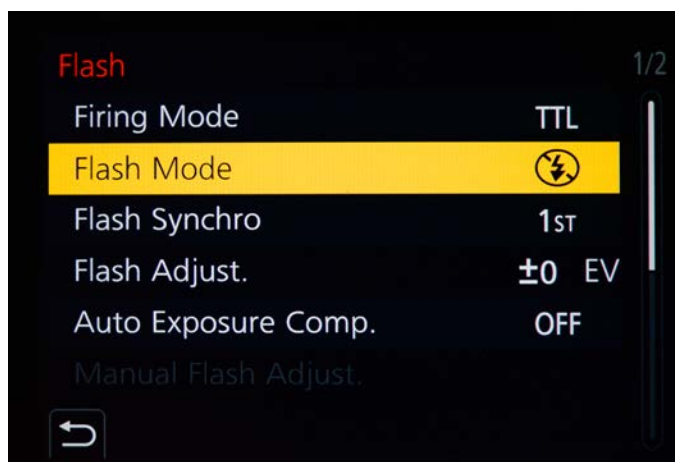
For information: In this Manual mode all Pre-flashes are disabled.

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, D-2000, YS-D1, YS-D2 etc. have rather weak charger (high voltage) inside, which cannot charge the strobe capacitor quick enough between series of TTL doubled flashes (pre-flash + main flash). Each next shot the energy is not enough to keep accurate pre-flash duration. That is why, compact size underwater strobes are not recommended for Continuous (Serial) Shooting in TTL mode. Normal lighting will have only 1-st shots in series, next shots will have different lighting or impossible. The effect depends on concrete strobe type certainly.
- Large size underwater strobes, like YS-250, DS-161, DS-160 etc. have more powerful charger inside and large size main capacitor. Those strobes work better in Continuous (Serial) Shooting TTL mode. User can make some more shots with acceptable TTL lighting. But anyway, the best lighting accuracy will have only first 1-2-3 shots in series, the others may have different lighting. The effect depends on concrete strobe type certainly.
- In common case, all underwater strobes support accurate TTL lighting only in "Single Shot" camera mode. Underwater strobe must be fully charged before each flash, to get accurate TTL control. Usually, charge time of modern underwater strobes - 2...6 seconds.
- 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.

Shooting with Flash Off

Shooting with sunlight, if necessary to temporary disable flashing, simply set Flash Mode to **Flash OFF** by camera menu:



Storage

- After shooting 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

- 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.