

S-Turtle Smart TTL trigger

by Phil Rudin

TRT-Electronics is a Hungarian company that designs what they call a “quartet” of Turtle TTL converters for underwater photographers. The product line includes TTL-flash triggers for Canon, Nikon, Olympus/Panasonic and Sony cameras. These TTL converters can be triggered via sync cords or fiber optic cables. Each trigger is color coded by brand, Red E-turtle Smart for Canon, Blue I-Turtle Smart for Nikon, Green O-Turtle Smart for Olympus/Panasonic and Yellow S-turtle Smart for Sony.

Each of the four different TTL-converters come in two styles. One has the hotshoe directly on the bottom of the trigger for larger housings and the other has a separate hotshoe connected by wiring to the trigger for smaller housings that don't have the room for the trigger above the camera.

For my review I have been testing the yellow S-Turtle Smart TTL trigger for larger housings using the Nauticam NA-A7R III housing and Sony A7R III camera.

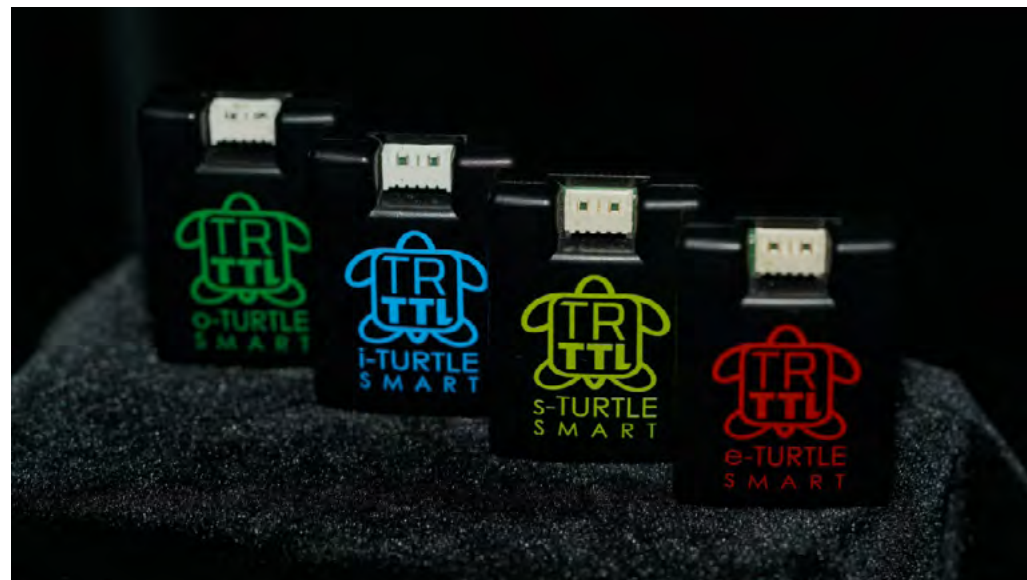
As of February 2019 the strobes that are compatible with the S-Turtle TTL trigger using fiber optic cords include the Inon Z-240 and Z-330, Sea&Sea YS-D1, YS-D2, YS-110a

and Subtronic Pro 160 and Pro 270. The strobes will not fire in the high speed shutter mode when using the Turtle triggers. With a propitiatory sync cord the trigger provides full TTL with all of the Ikelite strobes, Inon Z-220, Z-240 and Z-330, Sea & Sea D1 D2 YS250 and S110a.

Not all of the converter models support the same strobes so be sure to check the trt-electronics.com web site to see which strobes are supported for your camera and housing type. Be aware that these are state-of-the-art user friendly TTL flash triggers that can be upgraded via firmware update using the mini UBS connector on the unit. This means that additional strobes could be added to the growing list supported strobes going forward.

When you purchase the Turtle Smart TTL trigger for Sony cameras you select the LED panel for optical cables or the sync cord connection for your type of bulkhead sync cord. The package includes the Turtle Smart device and the LED cable with two LEDs or sync cord cable.

To setup the trigger you can first charge the internal LIPO 120 mAh rechargeable batteries by connecting a USB 2.0 cable to the port on the right rear of the trigger. A full charge



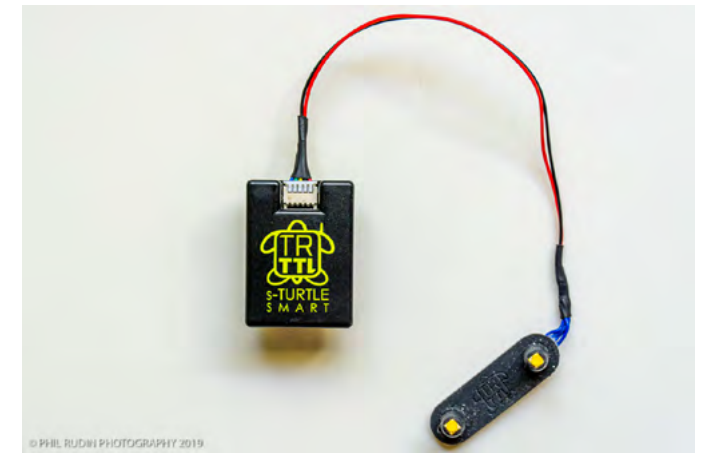
takes about one hour from any USB compatible device. To the left of the USB port is the on/off switch which must be in the OFF (to the right) for charging. On the right side of the trigger is a small red LED which is on during charging. When the red light turned off the trigger is fully charged.

To the far left on the rear of the trigger is another small red LED which will start blinking when the battery level drops under twenty percent. TRT-electronics states that once the device is charged it can produce up to 2000 flashes on a single charge. I was able to exceed that



(Left) Coral Polyp Detail, Blue Heron Bridge, Florida USA, A7R III, Sony 90mm F/2.8 macro, Nauticam Housing, Nauticam SMC-1, two Inon Z-330 strobes. ISO-64, F/18, 1/250th sec, S-Turtle TTL EV+/- 0.0.

(Far left) Model Rossina, Cenote Cristalino, Yucatan, Mexico, A7R III, Sony FE 12-24mm F/4 zoom at 24mm, Nauticam Housing, two Inon Z-330 strobes. ISO-64, F/4.0, 1/125th sec, S-Turtle Manual.



number by at least 1000 flashes without ever getting a low battery signal in manual flash mode.

The entire device is only 35.5 mm long X 26 mm wide X 16 mm deep so the on/off switch is quite small and a bit difficult for old eyes to navigate. Perhaps making the switch a lighter color would help to see if the switch is in the on or off position. Be aware that you will not be able to see the flashing red low power warning when the trigger is sealed inside the housing. I did multiple dives

over several days and the red low power LED never turned on. I also shot models at five and ten frames per second with my Inon Z-330 strobes on quarter power and the trigger kept up without a problem with the strobes set in manual mode.

The S-Turtle can also be programed for 1st curtain shutter release or 2nd curtain mode for rendering motion blur. With the Inon Z-330 strobes in TTL flash mode exposure (+/-flash power compensation) can be adjusted in camera. With

optical flash synchronization over heating problems slow recycle times and camera battery drain have been associated with using an on-board (built-in) flash. With the S-Turtle these issues are completely eliminated even shooting multiple frames per second over an extended period of time.

The S-Turtle Smart electronic components are made from special SMD technologies parts encased in an ABS moulded housing which is very light and extremely robust. The twin LED panel for Nauticam is connected to the trigger by two wires (red & black) which are around 16 cm long. The LED lights are designed to be pushed up into the two fiber optic ports on the inside of the Nauticam

housing. The LEDs can be secured in place with two donut shaped pieces of two sided tape or they will stay in place by just pushing them firmly into place.

The camera can then be mounted in the housing and the TTL trigger can then be mounted to the camera hotshoe. Once in place the wiring is long enough that the camera can be removed from the housing for a flash card or battery replacement without the disconnecting LEDs or removing the TTL trigger. The trigger can be removed from the hotshoe to take the camera out of the housing without removing the LED lights. Be aware that the wire between the trigger and LEDs is long enough to stick out of the housing when the camera is mounted or when it is removed.

Always check to make sure that the wires are fully pushed inside the housing before sealing the rear cover. A connecting cable between the Turtle controller and the Nauticam bulkhead (sold separately) can also be interchanged with the LED light adapter for Nauticam.

What is TTL?

When your camera directly controls the flash output of your strobe by metering the light output through-the-Lens it is referred to as TTL. TTL +/-flash exposure compensation is controlled in the camera menu and works using TTL enabled strobes like the Inon S-TTL Z-240 and Z-330 strobes. TTL works by firing one or more pre-flashes when the shutter is half pressed.

The camera's metering system then measures the pre-flash(s) along with the ambient light level to calculate the power needed from the flash to make a correct exposure. The pre-flash is metered in a few micro-seconds before the shutter is released triggering the main flash. The duration of the main flash exposure is determined by metering based on ISO, aperture, TTL exposure compensation value and the selected metering mode, I.E spot, center weighted and so on.

Shutter speed will have little noticeable effect on the strobes TTL output because the flash occurs within 1/1000's of a second while the shutter moves much more slowly in most cases. Each camera manufacturer has a different propriety TTL protocol hence the need for different Turtle Smart triggers for each camera brand. The Turtle Smart triggers have the same hotshoe design as the proprietary camera brand and they mimic each brands dedicated flash protocol.

For the trigger to support each camera brands TTL protocol you must first download the appropriate loader and driver for your Turtle Smart unit. Then upload the driver to the trigger using the USB 2.0 connection from your computer. Each Turtle has a driver specific to the camera make and some specific camera models. The S-Turtle Smart for all Sony mirrorless cameras uses the S-Turtle Smart loader and driver which is downloaded in a Zip format for PC's.

For other camera brands the Turtle



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Model Fede, Cenote Car Wash, Yucatan, Mexico, A7R III, Sony FE 12-24mm F/4 zoom at 12mm, Nauticam Housing, two Inon Z-330 strobes. ISO-500, F/5.6, 1/80th sec, S-Turtle Manual.



instruction manuals and driver packages can be found in the Web Shop and FAQ sections on the TRT-electronics.com web page. If you are a Mac owner a loader and driver package will be uploaded to the TRT-electronics.com web page in September of this year.

I have used TTL strobes underwater since the film days and have found TTL to be most effective for macro and close focus wide angle photography since it relies on accurate metering by the camera for proper exposure. The larger the primary subject is in the frame the better the TTL will work because the metering will be more accurate.

With wide-angle if the foreground in an image being lighted by the strobe only takes up say the lower third of the frame while the area lighted by ambient light takes up two-thirds of the frame the TTL exposure may be much less accurate. In this situation flash exposure compensation will need to be applied for TTL to work correctly. While +/-flash exposure compensation can resolve some TTL exposure issues, shooting in manual and changing the strobes power level, aperture, ISO or shutter speed can be just as accurate.



Thorny Seahorse (Hippocampus histrix), Puerto Galera, Philippines. Sony A7R III, Sony 90mm F/2.8 macro, Nauticam Housing, two Inon Z-330 strobes. ISO-100, F/16, 1/250th sec, S-Turtle TTL EV+/- 1.0.

Field testing the S-Turtle Smart

My equipment for this review was the Sony A7R III camera, Nauticam NA-A7R III housing, Sony FE 90mm F/2.8 macro lens and the Sony FE 12-24mm F/4 zoom lens with ZEN Underwater 230 mm optical glass dome port. I also used two Inon Z-330 strobes with fiber optic cables for both manual and S-TTL exposures.

The strobes were used in manual power set to

manual EV+/- the last setting on the power switch. I then controlled flash output using the EV control on the left rear of the strobes. For all TTL I used the S-TTL setting which is the first setting on the power switch with the Z-330 EV control centered on +/- 0.0.

To control the S-TTL I used the +/-flash compensation in the super menu accessed through the Fn button on the camera. For both manual and S-TTL I used the cameras color histogram when

reviewing images to judge exposure NOT the LCD image. I shot in manual mode with the 12-24mm zoom for models in the Mexican Cenotes using rapid frame rates and low manual strobe power. The macro images for this review were all shot using S-TTL.

When attempting to control +/-flash compensation with the Z-330 EV controller the output was much less accurate than using the cameras EV settings.

When the images are moved into the Lightroom program the metadata shows that the strobes fired in manual mode, TTL will not appear. This I would assume is because the Inon Z-330 strobes are not proprietary so Lightroom is unable to recognize the difference between TTL and manual when the strobe fires.

When flash exposure compensation is applied in camera it appears in the camera's metadata but when moved to LR the flash compensation EV +/- corrections will not appear. Keep in mind that Flash compensation is changed in the (Sony) super menu while the exposure compensation dial on the camera is for (+/-) ambient light changes. Accessing flash compensation and reassigning it within the camera will vary between brands and models.

If you intend to learn how changing flash EV values is working for you I suggest you save the images on the flash card to compare in camera beside the same images you are seeing when the files are uploaded to Lightroom. Other post processing software may vary depending on its configuration.

The combination of the S-Turtle Smart trigger and the Inon Z-330 S-TTL produced very accurate and pleasing exposures with little need for added +/-flash compensation. Very dark subjects had a



Juvenile Highhat (Equetus acuminatus), Blue Heron Bridge, Florida USA, A7R III, Sony 90mm F/2.8 macro, Nauticam Housing, two Inon Z-330 strobes. ISO-50, F/4, 1/250th sec, S-Turtle TTL EV +/- 0.0.

tendency to overexpose expose a bit while bright white subjects would under expose a bit. This is a result of the camera's 18% gray metering system trying to make very dark subjects lighter and very light subjects darker.

Adding from +/-0.3 to +/-1.0 of flash compensation usually resolves the over/under exposure issue. If you find yourself needing to add more than +/-one stop of light chances are the

strobes are not aimed correctly, the strobes are too far away from the subject or in the case of shooting wide open (F/2.8) may be too close to the subject.

I shot a juvenile Highhat without moving the strobes or changing strobe to subject distance from F/18 to F/3.5 without any flash exposure compensation needing to be added. At F/2.8 I was overexposing and I needed EV-0.7 to EV-1.0 flash compensation for proper exposure at ISO-50 and



Florida Stone Crab (*Menippe mercenaria*) (adult) feeding on a Jack, Blue Heron Bridge, Florida USA, A7R III, Sony 90mm F/2.8 macro, Nauticam Housing, two Inon Z-330 strobes. ISO-64, F/18, 1/250th sec, S-Turtle TTL EV +/- 0.0.

1/250th of a second shutter speed.

If you are looking for accurate TTL across a broad range of subjects the Turtle Smart quartet of flash trigger should be on your short list for consideration.

The S-Turtle Smart TTL flash trigger for Nauticam retails for \$430.00, €329.00 including Vat and €272.00 no Vat. Other brands and configurations range up to \$499.00 and €399.00 inc. Vat.

The Turtle quartet of Smart triggers can be purchased through the TRT-electronics.com web page or at several retailers world wide.

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www.instagram.com/philrudinphotography

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