



silver

USER MANUAL

SEAFLASH 160DIGITAL

SEAFLASH 160OFFSHORE

CANON TTL / NIKON TTL / SLAVE TTL



Overview

Thank you for your confidence in our products. This manual has been written carefully to help you enjoy your high-quality products. Read these instructions thoroughly before use and keep it at hand when having questions. Take a few moments to familiarize yourself with the functions and handling. If you read the manual carefully, nothing shall keep you from taking excellent underwater pictures.

This manual provides the complete operating instructions for your SEAFLASH 160DIGITAL and SEAFLASH 160OFFSHORE. The document can be downloaded at www.seacam.com/en/downloads or from the QR Code enclosed.



Trademark Information

CANON is a registered trademark of CANON INC.

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Safety Instructions

Before using your product, please read the following safety precautions carefully and thoroughly to ensure correct and safe use and to help prevent damage to your SEACAM product or injury to yourself or others.

- Never try to open the unit by yourself – the internal high voltage is potentially lethal and could lead to personal injury. The unit may only be serviced by an authorized SEACAM Service Center.
- Do not fire the flash unit directly into the eyes of someone that is at close range, as it could seriously damage the retinas of their eyes.
- Use only SEACAM accessories and original TTL- / fiber optical cable which are delivered with the flash.
- Use only the battery pack specified and especially made for this unit. Always follow the warnings and instructions printed on the battery pack.
- Do not short-circuit or disassemble the battery pack, because this could cause the batteries to leak corrosive liquids, generate heat or explode.
- Do not throw or apply strong physical shocks to the batteries as this could cause batteries to leak corrosive liquids, generate heat or explode.
- Handle used battery packs as instructed and follow the environmental information in this manual.
- Use only the original 100V – 240V power supply or 12V power adapter cable to charge the unit.
- Never use two flashes together with a digital camera in a different way than recommended in this manual. Not strictly following the correct connections can result in a damage of the strobes and the camera.



Safety Instructions

- Before using the flash with a camera brand not listed in this manual contact SEACAM.
- Never connect a power supply or battery charger to the synchro connection of the unit or to the USB Adapter.
- Do not remove the battery pack from the battery container if the unit is still switched on.
- Never use this flash together with a different flash brand. Enquire about its compatibility and connections especially when using electrical connections. Not following this recommendation can result a damage of the unit or the camera used.
- Never shoot the flash directly into the lens of a digital camera. This can damage the camera picture sensor.
- Always prevent water or moisture from entering into the battery container, to the batteries, sockets and plugs. Close the battery carefully container before using the flash underwater.
- Never exceed the maximum depth rate. This will cause a structural damage of the unit.
- Make sure that the thread of the ball adapter is no longer than 7 mm. Longer threads can cause massive damage to the housing if force is used.
- Always use the flash as instructed in this user manual. Not paying attention to the recommendations of this user manual can cause damage to the unit or to the used camera and excludes warranty claims.

General Description

The SEAFLASH 160DIGITAL and SEAFLASH 160OFFSHORE are different in the maximum rate of depth only. The standard depth rate is -80 m / -240 ft. The offshore depth rate is -200 m / -600 ft. All electronic features and the accessories are the same. In the further manual both strobes are called SEAFLASH 160DIGITAL.

SEAFLASH 160DIGITAL



SEAFLASH 160OFFSHORE

The SEAFLASH 160DIGITAL is fully controlled by a microprocessor. Some of the significant advantages of using these processors are the possibility of managing digital communication on a serial bus with a digital camera and easily updating the firmware through a USB connection.

Thanks to the sophisticated electronics, the SEAFLASH 160DIGITAL is equipped with many functions and setting options. They can be programmed individually and adapted to your needs. In order to make it easier for you to operate the strobe right from the start, the device is delivered with proven basic settings (default).

An additional advantage is the ability to rotate a graphical digital display (4) which is the perfect interface between the user and the flash. The bright OLED display offers a high contrast ratio for an improved visibility.

This flash unit works in TTL and manual mode with Nikon and Canon cameras. Cameras with fiber optical connection as well as a slave flash, triggered by an integrated optical sensor. Fast synchronization FS up to 1/8000 and rear curtain operation are also a standard feature.



General Description

The SEAFLASH 160DIGITAL features Canon e-TTL, Nikon i-TTL, Multi-TTL, Film-TTL and manual power adjustment, TTL mode exposure adjustment +3 to -3 aperture in 1/3 steps. Manual mode works in 7 f-stops from 1/1 to 1/64 power, which can be subdivided into 14 1/2 and 21 1/3 steps.

A new stroboscopic mode with 2-15 selectable pictures, automatically spaced within the camera synchro speed or manual time mode is also featured in the firmware.

In order to further improve battery life and to make the battery management very fast, easy and safe, a lot of attention was given to the battery pack electronics.

A high-quality NiMH changeable battery pack with an integrated charging unit is used for this unit. Delivered with a 100-240V power supply and 12V cable adapter it offers quick charge, controlled by $-\Delta U$ power off, a charging level display and a total recharge time of 180 min.

This user manual contains important information. By reading it carefully you will learn about the many advantageous features of the SEAFLASH 160DIGITAL that will help you taking great pictures.

CANON or NIKON / FIRMWARE RELEASE / SERIAL NUMBER

When switching **ON** the unit you first see a 3 part battery symbol indicating the battery capacity status and the flash type followed by the NIKON or CANON identification.

Your SEAFLASH 160digital will be **delivered to you with the factory settings as a NIKON MASTER.**

When switching **OFF** the unit you see the serial number on the bottom left and the current Firmware release number (format example = v.01.1) on the bottom right.



Controls and Parts

Control Panel

- 1 Power Switch / Mode selector
- 2 Rotary Switch – multi purpose
- 3 Push Button / Pilot Light / Input control
- 4 OLED Display
- 5 Multicolor Ready Light Indicator LED
- 6 Safety Lock Button
- 7 Battery Compartment / Cap



Front

- 8 Front Slave Sensor
- 9 Flash Bulb / Reflector
- 10 LED Pilot Light



Controls and Parts

Connections

- 11 S6 Synchro Socket
- 12 Fiber Optical Socket
- 13 M8 Connection Thread
- 14 Macro Protection Ring, removable



Battery Pack

- 15 Power Adapter Socket
- 16 Recharger LED Indicator
- 17 Minus (-) Battery Pin
- 18 Plus (+) Battery Pin
- 19 Battery Pull Ring



Compatible Cameras

The SEAFLASH 160DIGITAL is suitable for CANON and NIKON digital and film cameras, in e-TTL, i-TTL, film -TTL and in manual mode. All special functions as, +/- flash compensation, automatic AF- light, pre-exposure lamps, automatic standby, 2nd curtain exposure etc. are supported. Other camera brands can be used in manual mode.

Cameras supporting optical triggering can be used with the SEAFLASH 160DIGITAL in manual and TTL mode by using a fiber optic cable. Optical TTL is available only if the setup of the camera and housing allow it.

With the power switch (1) you have 6 different shooting modes to choose from. All these modes require different kind of connections. The SEAFLASH 160DIGITAL offers 3 different inputs for your demands.

S6 SYNCHRO SOCKET (11)

FRONT SLAVE SENSOR (8)

FIBER OPTICAL SOCKET (12)



Quick Guide

The SEAFLASH 160DIGITAL is easy to set up and use with only a few steps.

Before you start

Please note that your new SEAFLASH 160digital gets delivered to you with the factory settings as a **NIKON MASTER**. However, it can be easily adjusted and activated to suit your needs. (See setup menu on page 33)

Macro protection ring and M8 Ball Adapter

For macro, leave the macro protection ring (14) on the unit to reduce the light angle to approximately 90°. For the required illumination of wide-angle lenses, remove the macro protection ring (14) from the flash by turning it to the left. When installing, make sure that the protection ring snaps into the correct position by turning it over the resistance so that it cannot be lost.

An M8 ball adapter is required to attach a flash arm to the flash unit. Use the original SEACAM M8 ball adapter (not included) – it is mounted onto the M8 connection thread (13).

ATTENTION!

If you are using balls from other manufacturers on the flash unit, make sure that the thread of the ball is no longer than 7 mm. Longer threads can cause massive damage to the housing.

Single flash operation

1. Fit a fully charged battery in the battery compartment and close it with the cap.
2. Connect the flash to the camera by wire or optical cable at the S6 synchro (11) or fiber optic socket (12)
3. Set the power switch (1) to TTL, powering up the strobe.
4. Select desired flash input mode: press push button (3) for 2 seconds to switch between sync inputs:

- CB** Cable
- OC** Optical Cable
- SL** Front Slave Sensor



Quick Guide

5. Select Shooting **Mode** with power switch (1)

- TTL** TTL mode
- MAN** Manual mode
- MOD** Stroboscopic mode

In **TTL** mode, correct the exposure if needed +/- with the rotary switch (2) 1/3 aperture per step.

In **MAN** manual mode, adjust the power setting with the rotary switch (2) – increasing the power rotating clockwise and decreasing the power rotating counterclockwise, selectable in 1/1, 1/2 or 1/3 steps.

Multiple flash operation

If more than one unit has to be connected to the camera **with a cable connection**, **set the main strobe to MASTER MODE and all the other flashes to SLAVE MODE.**

This is **not the same for all camera models** - please refer to the correct settings below.

NIKON – Set the **main flash to MASTER** and **all others to SLAVE DUAL.**

CANON – Set the **main flash to MASTER DUAL** and **all others to SLAVE.**

SPECIAL FEATURE

You can **combine your SEAFLASH160D with all conventional flash units** and operate them **manually** without any problems. To do this, switch the **Trigger only function to ON** in the setup menu. Contact pins on the camera shoe do NOT have to be removed for this.

To select SLAVE mode, enter SET with the power switch (1), select MASTER / SLAVE set up with the rotary switch (2), activate it with push button (3), set it to SLAVE with rotary switch (2) and confirm it with push button (3). The unit will then reboot in SLAVE mode. When in SLAVE mode, an s appears on the display after the CB label: CBs – it identifies the SLAVE units.



Quick Guide

If a **cable connection** is used to synchronize the strobe with NIKON or CANON cameras the system is fully ready to start, no other adjustments are required. CB will be shown automatically in the display when the camera is connected and activated.

If a **fiber optic cable** is used to synchronize the strobe, maybe an additional set up could be required once – due to a great number of possible combinations of different hardware. If this is the case, please refer to the specific chapter in this handbook on page 25 as well as the camera manual.

Feature

All flash settings are stored in the internal memory and have to be set only once.

Battery Management and Maintenance

The removable SEAFLASH 160DIGITAL battery pack is located under the battery compartment cap (7). To remove the cap, press the safety lock button (6) and turn to the left. Close it by turning it to the right. When closing or opening, the battery compartment cap will automatically be pushed in or pulled out from the container. Always prevent water or moisture from entering into the battery container or to the battery pack. Ensure you close the battery compartment (7) completely before using the flash underwater.

IMPORTANT

Maintain / check the O-ring at the battery compartment cap (7) **always** when opening. Clean and grease the sealing surface regularly. Close the battery compartment cap (7) completely until you hear a *CLICK* sound.

Feature

The battery compartment is completely sealed. In case water enters due to an incorrect battery compartment cap positioning or an O-ring failure, the electronic will not be floated. Only the battery pack and battery contacts can be damaged.

Tip

When floating occurred, remove the battery pack immediately, rinse with fresh water and dry the battery compartment completely. By using a spare battery, you can continue shooting. Send the unit to a SEACAM service facility for a complete check as soon as possible.

The battery fits only in one position. You can remove the battery pack by pulling up the battery pull ring (18). When fitting in the battery pack, ensure that the battery pull ring (18) is tilted down. The battery pack is made of special NiMH batteries. It is equipped with a built-in electronic to make battery management easy, fast and safe. By switching on the flash, the user can read the indication of the battery status on the OLED display (4).



ATTENTION!

Never remove the battery pack from the battery compartment when the flash unit is still switched on! To prevent slow deep discharge, never leave the battery in the flash when it is not in use!

1. General Information

During normal operation, a microprocessor checks the battery status and shows it through a three-part battery symbol at the top of the OLED display (4). In order to get a more accurate measurement, it is advised to release the flash 2 or 3 times at full or half power. This operation will give a more accurate status of the battery energy level. When the battery is completely discharged, an alarm is emitted and the display shows a blinking empty battery symbol before automatically shutting off to avoid battery deep discharge.

2. Battery recharge

Prior to first use, the battery must be fully charged before disconnecting it from the power supply. The battery can be recharged also if it has not been fully discharged. For charging, the battery pack has to be removed from the battery compartment (7) and connected to the power supply.

After connecting the power supply or 12V cable power adapter to the power adapter socket (15), the charge process starts and the control LED (16) starts to blink. When the charging cycle ends, the control LED (16) is permanently lit and the battery enters into trickle charge. It can now be disconnected from the power supply.

It takes **approximately 180 min** for the empty battery to fully recharge. If the battery electronic detects an error, the charging process is stopped immediately and the control LED (16) starts to blink at a high frequency. In this case, disconnect the

Battery Management and Maintenance

power adapter and wait for the battery to cool down. If the control LED (16) continues to blink at a high frequency, the battery might be defective and must be serviced or replaced.

3. Battery maintenance and refreshing

As for all NiMH batteries, we advise to fully discharge the battery, when possible, before recharging. To discharge the battery, leave it inside the flash and switch it on, setting the pilot lamp on high power. The flash will automatically shut off when the battery is empty. The battery performance will increase after a few full discharge / recharge cycles.

In order to keep and maintain the maximum energy level of the battery pack when it is left inactive for a period of time, it should be charged and discharged as regularly as described above. A few full charge/discharge cycles (3-4) are necessary to refresh the batteries for perfect conditions if they have been stored for some time.

Tip

We recommend to repeat this procedure every month when the unit is not in use.

IMPORTANT

Never try to recharge a fully charged battery pack in order to avoid a battery overcharge.

ATTENTION!

Never perform a series of full power shoots to discharge batteries. This will decrease the flash bulb life and can also result in a flash damage. Never short-circuit any battery terminals as it will damage the battery pack.

Pilot Light

A high efficiency power LED (10) produces bright coaxial pilot light with a light beam of 10° and allows an easy and perfect setting of the flash. The light intensity can be set in 25 different steps to fit personal requirements and preferences.

The pilot light is switched ON/OFF by the push button (3) and the settings can be adjusted on 2 different light levels. For the first level, press the push button (3) once, press a second time and you get to level 2. Pressing a third time switches the pilot light off again. The two power levels are customizable – go to *pilot light custom set up* below.

Feature

When the flash is connected to a digital camera, the automatic pilot light feature is available. The pilot light turns on automatically when the camera auto focus system needs more light to work.

In all shooting modes, the pilot light is automatically switched off while the camera takes the picture in order to avoid interference with the flash. The pilot light turns on again as the camera shutter stops. Automatic turn-on is limited to 2". For a shutter speed slower than 2", the pilot light has to be turned off manually before taking the picture.

Pilot Light Custom Setup

Selecting the set-up menu SET with the power switch (1), the pilot light can be configured as desired.

To do so, go to the desired menu line, activate the control line with the push button (3), adjust the value with the rotary switch (2) and save the setting with the push button (3).

AF Assist ON / OFF

(default ON)

Automatic Pilot Light for a better autofocus function can be activated or deactivated.



Pilot Light

PL High PL Low value ... 25 (default 20)

PL Low PL High value ... 01 (default 10)

Light intensity for step 1(Low) and step 2(High) can be set in 25 different steps.

PL Stb ON/OFF (default OFF)

The pilot light can be switched off automatically when the connected camera enters into standby mode and will turn on again as camera is reactivated.

IMPORTANT

The function of the automatic pilot light depends on the respective camera and does not work with all cameras.

The connected camera will only activate the Autofocus Light if set properly:

On **CANON** cameras, set the AF selector to **S** and select **single shooting mode**.

On **NIKON** cameras, set the AF selector to **S** and **set the measuring point in the middle**. There is no automatic function in C or M.

Shooting Mode – Cable

Electrical Synchro Connection

It is highly recommended to use a wire synchro connection with Nikon and Canon digital cameras to ensure the precise, full performance and accessibility of all features from the camera-flash setup. For this purpose, use our highest quality S6 synchro cable and connect the S6 synchro socket (4) with your camera system. As soon as you connect the flash unit to the camera and it is active, the display for the cable mode **CB** appears automatically at the top of the display (4). If necessary, this mode can be changed manually with the push button (3).

The different shooting modes are selected with the main switch (1):

TTL	TTL
MAN	Manual Mode
MOD	Stroboscopic Mode

The ready LED (5) shows **RED** when in **TTL** mode and **GREEN** in **MAN** (manual) mode. The power levels are adjustable with the rotary switch (2).

1. i-TTL , e-TTL, film-TTL Mode

Set the power switch (1) to TTL and the ready light LED (5) will be **RED**. The power required from the flash is calculated by the camera to obtain the correct exposure. An additional manual correction from +/-3,0 in 0,3 aperture steps is available if necessary, using the rotary switch (2).

The display indicates the correction: The number **0.0** for no correction. Numbers with minus sign (-) for a negative correction and plus sign (+) for a positive correction. After each shot in TTL mode, the display blinks and indicates the released power for 8 seconds.



Shooting Mode – Cable

When the flash delivers at full power, but less than the camera requires, the user is advised of a **possible underexposure** by an audible alarm signal and the strobe display shows **UEXP (underexposure)**. If the flash is **not ready when the frame rate is high**, a warning sound will be emitted and **NRDY (Not Ready)** will appear on the display.

Feature

Knowing the power tells you if it is still possible to open or close the aperture.

2. MAN - Manual Mode

Set the power switch (1) to MAN and the ready light LED (5) will be **GREEN**. The power of the flash is selected with the rotary switch (2) and the display shows this in 7 f-stops from 1/1 to 1/64. These steps can also be divided into 14 1/2 or 21 1/3 steps. 1/1 at full power, 1/1 -5 for half a step down, or 1/1 -3, -7 for 1/3 power less. For more info see setup menu on page 33.

Feature

In manual mode, the electronics allow triggering even when the flash unit (1/1) is not fully ready. This reduces the recycle time by about 50% and makes it possible to take a picture in hectic situations, even if the exposure is not exactly right. The information NDRY is not displayed in manual mode.

3. HSS - High Speed Synchronization

HSS is available in **TTL** and in **MAN** mode and will operate at up to 1/8000 camera shutter speed. You are able to set this mode only if the camera is active and connected to the strobe. When HSS is activated, the display shows **FP**.



Shooting Mode – Cable

On **NIKON** cameras, the HSS mode is automatically activated by the camera when the shutter speed is set over 1/250. The display shows **FP**.

On **CANON** cameras, HSS can be activated in the camera menu or by pressing the push button (3) **2 times** for more than 2s. The display shows **FP**.

4. 2nd Curtain Flash Operation

2nd curtain flash operation is available in **TTL** and in **MAN** mode. You are able to set this mode only if the camera is active and connected to the strobe. When the 2nd curtain operation is activated, the display shows a >> symbol.

On **NIKON** cameras, 2nd curtain flash operation is automatically activated when selected in the camera menu. The display shows a >> symbol.

On **CANON** cameras, 2nd curtain flash operation has to be activated in the camera menu or by pressing the push button (3) **ONCE** for more than 2s. The display shows a >> symbol.

5. Stroboscopic Mode

The stroboscopic mode is a new feature and for the first time available within an underwater flash. It allows to capture movements in pictures with multi exposure flashes.

vSet the power switch (1) to MOD and the ready light LED (5) will be **GREEN**. This mode only operates in manual mode – there is no TTL, HSS or 2nd curtain available. The manual power level is selected with the rotary switch (2), from a minimum level of 1/8 to full power 1/1.



NOTE

The selected power level refers to the total sum of all emitted stroboscopic flashes (lamps). For example, if $\frac{1}{2}$ energy is selected with a number of 04 stroboscopic lamps, each flash will have the power of $\frac{1}{8}$ for a total emitted energy in the sequence of $\frac{1}{2}$.

Feature

The parameters of the stroboscopic mode can be adjusted to better fit individual needs. In stroboscopic mode, the display shows the manual power level set up, the number of set lamps and the set time.

Select the setup menu with the main switch (1) SET. Here you can individually select the levels of the stroboscopic mode. Activate the corresponding menu item with the push button (3), select the level with the rotary button (2) and save the settings with the push button (3).

Strobo Lamp Nr

02 ... 15

This set the number of lamps the strobe will deliver on one picture. The number can be set up from 2 to 15.

Strobo Time

Auto / 0,1 ... 3,0s

This setting defines the duration of the stroboscopic lamps sequence. If set to AUTO, the flash will read and use the shutter speed time set on camera and will automatically divide this time by the number of stroboscopic lamps to achieve an equal time space between them. If manual time is set, the flash will divide the set time by the number of stroboscopic lamps to achieve an equal time space between them within the desired time. Adjustments are possible from 0,1s to 3,0s in steps of 0,1s.

Shooting Mode – Cable

Strobo Mode

No Mark / Mark First / Mark Last / Mark F-L

In the stroboscopic sequence, it is possible to have all the lamps of the sequence with the same energy or it is possible to increase the energy of the first lamp, the last lamp or both, the first and the last. An increase of one lamp energy will result in a more evident, more marked frozen image corresponding to that lamp. It can be used to mark the beginning of movement, the end of movement or both – all within one picture.

Set Value

The emphasis of the images can be varied in 2 levels: +1 / +2. This function can be set through the Set value. Please note that it is not possible to activate this function with the setting “No mark.”

6. Dual / Multiple Flash Operation

If more strobes are connected to a digital camera using a cable connection, all digital features and all shooting modes are available on the connected strobes.

IMPORTANT

To ensure a proper communication between the flash units and the camera, **one flash unit must be set to MASTER and all others to SLAVE**. This is necessary to avoid damage to the communication interface and must be set specifically, depending on the camera used.

When connecting flash units **from different brands**, always set your flash unit to **“Trigger only”** to avoid damage to the flash unit and camera. **Always** contact SEACAM for additional information on handling strobe combinations.

Different cameras require different settings, so you need to set the master to MASTER, MASTER DUAL, MASTER MIX. Distinguish between SLAVE DUAL and SLAVE COPY for the slave flashes.



Shooting Mode – Cable

To set the SEAFLASH 160DIGITAL to **MASTER, MASTER MIX, MASTER DUAL or SLAVE, SLAVE DUAL, SLAVE COPY**, enter SET with the power switch (1), select MASTER or SLAVE with the rotary switch (2) and activate the mode needed with the push button (3). The unit will reboot in the mode selected.

In Slave mode, an **(s)** appears on the display after the **CB** label: **CBs** – it allows to identify the slave units. **The factory setting of the unit when delivered is always NIKON MASTER.**

Feature

There are no more limitations on digital usage with the Master/Slave setup if more than one strobe is connected. HSS, 2nd curtain, autofocus light, standby and all features are available on all connected units.

When operating more strobes in TTL mode, different +/- adjustment can be set on each different strobe. Also, the master strobe can be set in TTL, while the slaves can be set in in MAN manual mode. Master set to manual and Slave in TTL is **not** possible.

SETTING YOUR STROBE

The following settings are required for **dual / multiple flash photography with 2 or more flash units** or to activate special functions.

NIKON

2 x 160D DUAL

Use 2 x 160D set 1 flash to MASTER and the 2nd flash to SLAVE DUAL. All digital functions work perfectly.

2 x 160D FOLLOW FUNCTION

When using 2 x 160 D units, a follow-up function is also available. That means **you only have to set one flash unit and the 2nd flash follows it** – both in the TTL and in the manual function. The performance is then displayed on the MASTER and COPY



Shooting Mode – Cable

is displayed on the SLAVE. In manual mode, it is also possible to set both flash units separately if required.

1 x 160D - 1 x 150D / 100D / 60D / THIRD PARTY STROBE

If you are using a 1 x 160D and want to combine it with a SEAFLASH150D/100D/60D or a third-party equipment, set the 160D to TRG mode and use it in manual mode.

CANON

2 x 160D DUAL

When using 2 x 160D, set one strobe to MASTER DUAL and the second one to SLAVE. All digital functions will work perfectly.

1 x 160D - 1 x 150D starting from RELEASE 11

If you are using 1 x 160D and want to combine it with a 150D, set the 160D to MASTER MIX and use the features the 150D offers.

1 x 160D - 1 x 150D / 100D / 60D / THIRD PARTY STROBE

If you are using a 1 x 160D and want to combine it with a SEAFLASH150D/100D/60D or a third-party flash, set the 160D to TRG mode and use it in manual mode.



Shooting Mode – Optical Cable & Front Slave Sensor

To trigger the SEAFFLASH 160DIGITAL optically, the Fiber Optic Socket (8) or the Front Slave Sensor (12) can be activated by selecting the synchro input on the strobe. To select the different synchro inputs, press the push button (3) for 2 seconds. The **different inputs** are indicated on the top side of the display and can be selected from:

CB	Electrical Cable
OC	Optical Cable
SL	Front Slave Sensor

Shooting modes are selected by the power switch (1):

TTL	TTL
MAN	Manual
MOD	Stroboscopic

The ready light LED (5) shows **RED** when in **TTL** mode and **GREEN** in **MAN** (manual) mode. The power levels are adjustable with the rotary switch (2).

NOTE

Digital features, HSS, 2nd curtain and automatic pilot light are **not available** with Optical Cable or Front Slave Sensor.

In stroboscopic mode only, manual energy set up is available with a manual time setup.

1. Optical TTL Mode

Set the power switch (1) to **TTL** and select the shooting mode for optical cable by pressing the push button (3) for more than 2 sec until **OC** shows up in the display. The ready light LED (5) will be **RED**. In this setting, the flash will copy the light pulses received from the optical port.



Shooting Mode – Optical Cable & Front Slave Sensor

The power required from the flash is calculated by the camera to obtain the correct exposure. An additional manual correction is available, using the rotary switch (2), which makes an exposure correction from +/-3,0 in 0,3 aperture steps possible.

The display indicates the correction: The number **0.0** for no correction. Numbers with minus sign (-) for a negative correction and plus sign (+) for a positive correction.

After each shot in TTL mode, the display blinks and indicates the delivered power for 8 seconds. The power is displayed in aperture steps and half steps: 1/1 for full power 1/1 -5 for a half step less, 1/2 for half power, 1/2 -5 for a half step less and so on, down to 1/64 -5.

Feature

Knowing the delivered power allows you to identify whether it is still possible to further open or close the aperture.

NOTE

The built-in optical cable TTL circuit is designed to work with camera systems equipped with an optical TTL converter or a pop-up flash.

The duration of the light pulses and accurate TTL depends not only on the camera and flash but also on all the components in between, such as a pop-up flash, TTL converter, optical cable and the optical port on housing. For this reason, the TTL accuracy is different and can require a manual exposure correction +/-.

Shooting Mode – Optical Cable & Front Slave Sensor

A customizable Prelamp copy time in μs (micro seconds) was added in the set-up menu SET in order to work with different available camera systems.

Prelamp Time

15 ... 250 μs

(default 120 μs)

The default value of 120 μs should work on most systems. For small compact cameras, where the prelamp can be a very short pulse, it could be necessary to adjust the value.

IMPORTANT

The amount of light emitted by the different systems can vary on a scale from 1 to 100.000. Incorporating such a wide optical input range was not doable. For this reason, the light transmitted to the strobe's optical port can be too strong and will saturate the input stage. When this happens, the strobe still works fine in manual mode, but the ability to follow input light signals is lost – **the TTL becomes inaccurate.**

Tip

To solve this issue, the light from the popup flash to the optical port needs to be reduced; usually by putting a simple filter in between – for example a piece of semi-transparent paper or tape placed inside the housing's optical port to reduce the light intensity.

2. Optical Manual Mode

Set the power switch (1) to **MAN** and select the shooting mode for optical cable by pressing the push button (3) for more than 2 sec and select **OC** showing up in the display. The ready light LED (5) will be **GREEN**.

The power of the flash is selected with the rotary switch (2) and the display indicates this power in **14** aperture steps and half steps: 1/1 for full power 1/1 -5 for a half step less, 1/2 for half power, 1/2 -5 for a half step less, down to 1/64 -5.

Feature

The rotary switch (2) with accurately defined steps, combined with a clear reading on the display allows for a fast and accurate power setup.

For this mode, two customizable prelamp copy options were added in the SET menu in order for the strobe to work together with different available cameras.

Prelamp Copy
ON / OFF (default ON)

PrelampTime
15 ... 250 μ s (default 120 μ s)

Best Camera Setup

When working in manual mode with an optical cable, the best setup for the camera is to set the pop-up flash to manual and to the minimum available energy to reduce the discharge of the camera battery. On the strobe, switch Prelamp Copy to OFF in the settings.

Shooting Mode – Optical Cable & Front Slave Sensor

If there is no manual mode available for the pop-up flash, set Prelamp Copy to ON and if required, adjust Prelamp Time to a value close to the one on the camera in use. With the correct setting, the strobe will be able to copy the camera prelamp properly and then give the desired output of manual power at the exposure lamp.

3. Optical Stroboscopic Mode

With an optical cable connected the auto stroboscopic time is not available and the desired time has to be set up from the dedicated set up line. *For more info on the Stroboscopic Mode, please refer back to page 23.*

4. Optical Dual / Multiple Flash Operation

More than one unit can be connected to a single camera in fiber optic mode OC. Each unit has to be set up in order to meet the individual requirements. *For more info please refer back to page 27/28.*

5. Front Slave Sensor

When front slave input **SL** is selected, the flash is triggered by the slave sensor (8) placed inside the reflector. This sensor is very sensitive and allows working distances of up to 10 meters between the master and the slave. However, this distance largely depends on the clearness of the water.

Information

Shooting is possible **only in manual mode** – regardless of the TTL position of power switch (1). The desired power level can be selected with the rotary switch (2).



S.O.S. Safety Mode

For security reasons and in order to draw attention, your flash is equipped with a true S.O.S. Morse function. With the power switch (1) in the SOS position an S.O.S. Morse light signal is generated. This feature can also be used to test the flash.

The display will show:

S O S
... --- ...

ATTENTION!

Use the S.O.S. signal only when really needed and never use it to discharge the battery.

Setup Menu

There are various options to customize the SEAFASH 160DIGITAL in the Setup Menu SET. Restore to default factory settings, perform a firmware upgrade, switch from Nikon to Canon system compatibility or from Master to Slave etc.

The following options are available:

1. Pilot Light

AF Assist	ON / OFF	(default ON)
PL High	PL Low value 11- 25	(default 20)
PL Low	PL High value 01-24	(default 10)
PL Stb	ON/OFF	(default OFF)

Here you are able to select the individual pilot light functions.

Please refer to page 19 for more information about the Pilot Light function.

2. Display

Display Up

Down Mode AUTO / DOWN / UP (default Auto)

With this menu you can set the display orientation. This strobe features a built-in accelerometer to detect the flash orientation and automatically rotates the screen upside or down, as required.



3. Prelamp

Prelamp Copy
ON / OFF (default ON)

Prelamp Time
15 ... 250 μ s (default 120 μ s)

Here you can set the prelamp settings for improved use.
Please refer to back to page 29 for more information.

4. Camera Types & Multiple flash use

Camera Brand
NIKON / CANON (default Nikon)

Master Slave
NIKON MASTER / SLAVE DUAL / SLAVE COPY (default Master)
CANON MASTER MIX / MASTER DUAL / SLAVE (default Master)

In this menu, you are able to set the camera brand compatibility and set up the strobe as a Master or Slave.

Please refer to back to page 26 for Master/Slave Setup.

5. Other Settings & Data

Serial Number
0000

Shows the serial number of the unit and cannot be changed.

Firmware upgrade
NO / YES (default NO)



Setup Menu

If set to YES, the Firmware Upgrade procedure is initiated.

Please refer to the following page 36 about the Firmware Upgrade procedure.

Restore
Factory
Default NO / YES

If set to YES, all setup values are restored to default factory settings. Custom set functions will be lost.

Strobo Mode
No Mark / Mark First / Mark Last / Mark F-L (default No Mark)
Set Value
+1/+2 (default +1)
Strobo Lamp Nr
02 ... 15 (default 04)
Strobo Time
Auto / 0,1 ... 3,0s (default Auto)

With this function you can individually set the Stroboscopic function.

Please refer to back to page 23 about Stroboscopic mode.

Energy Steps
1/2 - 1/2 -1/3 (default 1/1)

Here you can divide the manual power setting into 1/1, 1/2 or 1/3 levels.

Trigger
OFF / ON (default OFF)

With this setting you can combine your SEAFASH160D with all conventional flash units and operate them manually without any problems.



Firmware Upgrade

The SEAF160DIGITAL allows for an easy firmware update via the included S6/ Micro-USB adapter and an established connection to a computer.

The current firmware release number (v.01) is shown on the bottom right of the display when you switch off the device.

Find out on our website www.seacam.com whether a new firmware is available, and if you need to upgrade your device.

IMPORTANT

Strictly follow these instructions for a successful firmware upgrade. A wrong installation can cause serious damage and failure on the strobe!

WARNING!

ONLY use the USB adapter directly on the flash unit housing and **NOT** with a flash cable in between. Also, **ONLY** connect a USB cable to the computer if the strobe is **ASKING FOR THE CONNECTION** on the firmware upgrade interface.

To exit the upgrade procedure before the flash starts to overwrite, switch the flash OFF with the power switch (1).

1. How to start the procedure

Download the proper firmware from the SEACAM server www.seacam.com and save the file.

SF160vxx.bin (proper file name) **xx** is the indication of the firmware number.

Do not change the file name or open it with any kind of software or application to avoid damaging the file. If one detail is modified or added, a hash check will fail and the upgrade will not be possible.



Firmware Upgrade

1. In the setup menu **SET**, select the Firmware Upgrade and switch it to **YES**, then activate it by pressing the push button (3).

Firmware upgrade YES

2. The strobe will now ask for a USB connection. Connect the USB cable to your computer with the **S6/USB adapter** provided with the unit.

Firmware
upgrade
Connect USB
cable.

3. With an established connection, the computer now will show the strobe as a USB mass storage. The device is a FAT device (100kB, 512 bytes, no exFAT)

4. If required by the computer's operating system, format the drive as above. If possible, keep the flash drive empty with no file or directory inside to maximize free space for firmware upgrades.

5. The strobe will now ask you to copy the file SF160vxx.bin:

Copy here
SF160vxx.bin
then remove
USB cable.

Copy the file, wait for the operation to be completed, then remove the USB cable. After an internal system check, the memory overwrite will start when the cable is removed.

6. The strobe will check the file to verify the firmware integrity and compatibility. If it passes the check, the firmware upgrade starts and a graphic bar shows the progress of the upgrade.

INFORMATION

In any case of an error, the upgrade stops and an error code is shown on the display. Switch the strobe to OFF, perform the required operation and restart the upgrade from the beginning. If the problem persists, please contact SEACAM Service.

2. Upgrade Error Codes

Low Battery If battery voltage is too low, the firmware upgrade cannot finish. Recharge or change battery.

File error format disk or recopy file In case of a wrong file, wrong file name or missing file, try to copy the file again, format the disk, clean disk from any other file or directory.

File error wrong file name Proper file name was not found. Try to copy the file again or download again.

Firmware Upgrade

**File error
wrong
file hash**

The hash control on the file failed. Download file again and try to recopy it. Do not to modify the file.

**File error
incompatible
release**

The downloaded file is not compatible with the strobe to be upgraded – upgrade with the proper firmware.

**Flash error
memory
fault**

There is an internal flash memory error – try to upgrade again.

General Error Codes

If an error is recognized by the flash's microprocessors an audible alarm is emitted and all the activities of the flash are stopped. If you cannot solve the issue according to the error codes below and / or the error code is permanent, please contact an authorized SEACAM Service Center.

The display can show following error codes:

**FLASH ERROR
CAP VOLTAGE
SWITCH OFF** The main voltage is over the maximum rate.
The capacitors are discharged with a full power lamp
and the strobe is switched off. Switch OFF and ON
again to solve the issue.

**FLASH ERROR
GENERIC
SWITCH OFF** This problem can have multiple or difficult reasons.
Try to switch the unit OFF and ON again.

**FLASH ERROR
TEMPERATURE
SWITCH OFF** The temperature inside the strobe is too high.
Allow the unit to cool down. After cooling down,
try to switch the unit ON again.

ATTENTION!

Never leave the flash unprotected in the sun or a hot place!



Maintenance

Rinse your flash using fresh water after every dive in the sea and dry it carefully. Clean with a mild cleaner and lubricate the threads regularly.

S6 SYNCHRO SOCKET

The S6 connection system is a very safe and sturdy plug-in system. The S6 synchro socket (11) and its golden contact system is very precise and secure and is combined with a 4-part O-ring sealing which is easy to maintain. Plug in – tighten the nut – ready to go!

FIBER OPTICAL SOCKET

Rinse the fiber optic socket (12) carefully and blow out the remaining water from the optical element.

IMPORTANT

Cables, plugs and sockets require particular care and attention. Make sure to check the contacts regularly and ensure that the plugs are clean and O-rings are slightly lubricated.

Check all connections regularly and keep sockets and plugs absolutely dry!

Tip

Leave the cables and sockets open when unplugging them so that remaining moisture can dry. Regularly apply our contact oil, which reduces corrosion and increases the lifetime enormously. Grease all O-rings regularly! If no TTL cable is connected, close the synchro socket (11) and the TTL cable with the protection caps.

Only original SEACAM accessories guarantee that your SEAFLASH 160DIGITAL flash works reliably and safely. In the following chapters you will find the standard accessories, the entire system accessories and our unmatched flash arm system. This way, you can add many more additional functions and possibilities to your strobe, making your time under water a lot easier.

1. Standard Accessories

The SEAFLASH 160DIGITAL is supplied with following standard accessories:

- Exchangeable NiMH battery pack / 4,8V / 3,05 Ah
- Power supply
Input: AC 100-240V~ 50/60Hz, 450 mA
Output: DC 12V, 1500 mA
- Cable adapter 12V
Input **ONLY** DC 12V
- Macro protection ring, removable
- S6 / N5 Synchro Cable or Fiber Optic Cable
- Protection cap for S6 synchro socket
- Spare parts and maintenance set
- Neoprene bag for accupack / accessories
- Micro USB adapter
- Quick Guide manual

2. System Accessories

Following optional accessories are available:

- **SPARE ACCU PACK**

A spare is always good to have.

- **DIFFUSOR**

Mount the diffusor instead of the macro protection ring to get a softer light from your strobe.

- **MACRO FILTER**

Screw-in filter for the diffusor – RED for particularly shy animals and FROST for an even more homogeneous illumination.

- **SNOOT**

To shape the light of your strobe you can mount the 3-part extendable snoot, enabling you to get different spots of light.

- **OFFSHORE SWITCH EXTENSION**

Extends the control switches for easy access – especially in cold water.

- **NEOPRENE COVER**

Protecting your entire flash.

- **NEOPRENE DOME COVER**

Protects your front dome.

- **EXTERNAL SLAVE SENSOR**

For a special placement for the sensor – to put on an electrical cable.

- **TTL / MAN / OPTICAL CABLE**

Different cable connections for different requirements.

Accessories



Diffusor



Macro filter



Snoot



Switch extension



Neoprene cover



Neoprene dome cover





3. Flash Arm System

We have designed your flash arm system for a wide variety of applications. With the enormous retention force of the system, you already have the best product on the market in your hands. The unique, patented brake disc technology guarantees you a perfect hold, even on land. The hollow construction provides additional buoyancy and the different arm lengths significantly improve the range of use for both wide angle and macro. An infinite number of flash positions are possible with the SEAFLASH flash arm system.

Function

The system is based on a brake disc technology. Depending on the setting, a brake surface on two fiberglass holders fixates the aluminum balls to a certain extent. The patented KIPP-levers offer the ability to smoothly adjust the fixity of the flash arms. Depending on the type of the flash arm, different extension arms are connected by joints.

Fixation

Use the M8 stainless steel insert thread at the top of the flash to fix the SEAFLASH 160DIGITAL on the flash arm. The M8 ball adapter is the best way to connect it to our reliable flash arm system (not included in delivery). Clean the thread regularly and grease it slightly.

ATTENTION!

When using other brands, please ensure that the thread of the M8-ball is **no longer than 7 mm**, as a longer thread can cause massive damage to the housing.



Mounting

The flash arm base is used to fix the flash arm system to your housing. Tighten this part carefully with the fixation screw at the housing's T-piece. The best and quickest system to mount your arm is with released joints. Afterwards adjust the flash system to your working position and set it by tightening the fixation levers.

Feature

If your KIPP-fixation levers stop at a particular position, you can easily adjust them by pulling them upwards, changing the position and pushing them back in.

How to use

Always pay attention to a securely fixed flash arm system when going in and out of the water so that your flash system our housing will not be damaged by bumping together. In the water, adjust the system to your desired retention force. In strong currents, we suggest you increase it by tightening the joints to avoid a wrong placement of your flash system.

Telescope Extension

This extension enables you to smoothly lengthen the flash arm to your personal preference. By turning the pipes, you can adjust it to the position you like. This system is meant to be extended outside of the water, as it is hard to fixate the flash in a certain position underwater. In case sand or mud enters the pipes, you can easily clean them by removing the plastic screw and opening the extension.

Maintenance

Rinse your flash arm system carefully with fresh water after every dive and turn the joints. Clean the aluminum balls regularly and the brake surface with acetone, alcohol or cellulose thinner. Grease the screws and fixation levers. You can dismount the levers with a screwdriver and also clean them inside. Store the complete flash arm in the practical neoprene bag.

Tip

To avoid sticking of the brake surface after use do not store wet joints tightened!

ATTENTION!

Grease on the brake surface reduces the retention force enormously!

Accessories



Flash Arm 50/150/300



Telescope Arm



Fiber Optical Cable



Cleaning of Joints



S6 Synchro Cable



External Slave Sensor

Flash Arm Combinations



Standard Combination 1



Standard Combination 2



Makro Combination 1



Makro Combination 2



Close-Up Combination



Wide Angle Combination

Technical Details

- CANON digital E-TTL / film-TTL
- NIKON digital I-TTL/ film-TTL
- Power 160 Ws
- UW guide number 17 – ISO 100 / 1m at full power / 130°
- Light angle coverage 130°
- 260 flashes at full power
- Recycle time 0,1 – 2,5 sec.
- TTL exposure compensation +/- 3 stops in 1/3 steps
- Manual light level selection in 14 half aperture steps
- Color temperature 4500°K
- 10° Power LED, 200lm with individual adjustable power steps and automatic mode.
- Highly intensive Slave Sensor, for all manual settings
- True S.O.S. Morse safety signal
- S6 Synchro socket
- Standard optical port
- Easy to change high performance NiMH battery pack, 4,8V 3,05Ah, integrated automatic charger, controlled by $-\Delta U$, temperature and time controlled, charging time 180 min.
- Dimensions:
 - Flash L x Ø: 190 x 95 (90) mm, 1320 g (with battery), underwater -50g
 - Battery Pack L x B: 95 x 45 mm, 260g
- Depth rate SEAFLASH 160DIGITAL -80m / -240 ft
 SEAFLASH 160OFFSHORE -200m / -600 ft



Disposal of Electrical and Electronic Equipment

User Information for private households

According to our company philosophy, your product was developed and manufactured by using high quality materials and components which can be recycled.



The symbol with the crossed-out bin on our products and/or accompanying documents signifies that at the end of their life cycle, these electrical and electronic products must be disposed of separately from household waste in countries of the EU and EEA (Norway, Iceland and Liechtenstein).

The proper disposal of these products helps our environment and prevents potential adverse effects on human health and our environment.

We therefore ask that you take these products to your municipal collection point for recycling and resource recovery where the devices can be returned at no cost. Alternatively, you can send them to SEACAM for proper disposal. For more detailed information on your nearest collection point, please contact your communal government.

Information for Business Clients

For proper disposal of your electrical and electronic equipment, please contact your local dealer or supplier. They will be able to assist you further.

Battery Disposal



Batteries and rechargeable batteries do not belong in the household waste! As consumers in EU countries, you are obliged to return used batteries and rechargeable batteries. You can return these used batteries to appropriate collection points in your community or anywhere these particular types

of batteries are sold. The batteries and rechargeable batteries can be returned free of charge for the consumer.

Warranty

A 24-month warranty from the date of invoice for function and tightness applies to the flash delivered. This warranty is valid within the EU member countries – for non EU member countries the warranty of the country to where the article is delivered applies. Warranty repairs do not extend the warranty time.

This warranty does not apply in the event of accidental damage, negligence, improper handling, damage to cables, water entering at improperly closed battery container cup or connections, disregarding of operating conditions and operating instructions, as well as unauthorized repairs or changes by a third party.

TTL Synchro cables, batteries, flash bulb and consumables parts are not covered by warranty. If the warranty seal is broken the warranty immediately expires.

SEACAM shall not be liable for direct or indirect damage to persons and devices or (built in) cameras and reserves the right to make technical changes or replacements.

General

If you have any question regarding this unit please contact us at:

SEACAM service

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