NSAVR-HDVL Manual

Novasub Autonomous Video Recorder, HD video and lights

Camera: Hero4+
Lights: 2x LUX6M (6000 lumen@6500K)
Index

1 Help & Support ......................................................................................................................... 3
2 Safety precautions .................................................................................................................... 4
3 General use ............................................................................................................................... 4
4 Maintenance ............................................................................................................................. 5
5 Warranty .................................................................................................................................. 6
   5.1 Warranty Period .................................................................................................................. 6
   5.2 Exclusions and Limitations ............................................................................................... 6
   5.3 This Limited Warranty is not enforceable if item................................................................ 6
   5.4 Limitation of Liability ......................................................................................................... 6
6 Specifications ............................................................................................................................ 7
   6.1 Items supplied ....................................................................................................................... 7
7 Glossary ................................................................................................................................... 8
8 Pre dive preparations ................................................................................................................ 9
   8.1 Batteries charging ................................................................................................................ 9
   8.2 Battery installation .............................................................................................................. 9
   8.3 NSHERO1 SD-card installation .......................................................................................... 11
   8.4 Connector & cables ............................................................................................................ 13
   8.5 Pre-Dive check .................................................................................................................... 13
9 NSAVR-HDVL installation ....................................................................................................... 15
   Quick start guide ..................................................................................................................... 17
10 Drawing .................................................................................................................................. 18
WARNING

YOU MUST READ the NSAVR-HDVL manual before using the NSAVR-HDVL. Failure to do so may lead to improper use, serious injury or death. Care should be taken to follow the instructions correctly and also conduct a separate risk assessment prior to commencing work.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
<td>WARNING Is used in connection with a procedure or situation that may result in serious injury or death.</td>
</tr>
<tr>
<td>!</td>
<td>CAUTION Is used in connection with a procedure or situation that will result in damage to the product.</td>
</tr>
<tr>
<td>![ ]</td>
<td>NOTE! Is used to emphasize important information.</td>
</tr>
</tbody>
</table>

Disposal of the device

Please dispose of the device in an appropriate way, treating it as electronic waste. Do not throw it in the garbage. If you wish, you may return the device to your nearest Novasub dealer.
1 Help & Support

First please read this manual thoroughly. Further details about a Warranty Statement can be found at the chapter 5 - Warranty.

For technical support contact your local a Novasub Authorized Service Center or Seascape BV.

Seascape BV
De Hoogjens 22
NL-4254 XW Sleeuwijk
The Netherlands
T. +31-183-307900
F. +31-183-307910
E. info@seascape.nl
www.seascape.nl

Copyright © Seascape BV
All Rights reserved.

If you have cause to use our technical support service, please make ensure that you have the following details at hand prior to calling:

- system serial number
- firmware version and build number
- fault description
- any remedial action implemented
2 Safety measurements

The content of this manual may be changed without prior notices. Seascape cannot under any circumstances be held liable for any special, indirect or incidental damages in connection with, or as a result of the purchase or use of this product and items that come.

Safety precautions

Do not attempt to use the NSAVR-HDVL without reading this instruction manual in its entirety, including all the warnings. Make sure that you fully understand the use, displays and limitations of the instrument. If you have any questions about the manual or the NSAVR-HDVL, contact your Novasub Authorized Service Center before diving with the NSAVR-HDVL.

Always remember that YOU ARE RESPONSIBLE FOR YOUR OWN SAFETY!

2.1

3 General use

The NSAVR-HDVL is for subsea use only. The following limitations are in order:

- The NSAVR-HDVL is for only in water operations can be switched on at the surface of max. 10 min.
- The max. operating depth is 500 m.
- Do not expose for more than 10 min. in direct sunlight.
- Do not clean the camera viewport with any dissolvent and paper towel/tissue
- Make sure that always the SD-CARD plug/cap is fitted with and O-ring and well hand tightened against the housing.
- Make sure all connectors and dummy plugs are well fitted before water deployment
- Make sure that both battery compartment caps are well fitted with O-rings and tightened against battery housing

WARNING

- Do not use the NSAVR-HDVL deeper than 500 m water depth.

WARNING

- Do not expose for more than 10 min. in direct sunlight.

WARNING

- Never deploy the NSAVR-HDVL in water without:
  - SD-Card plug well fitted, check that O-ring is fitted
  - Battery compartment caps are well fitted
  - All cables and dummy plugs, plugged in.
4 Maintenance

The NSAVR-HDVL is a sophisticated precision instrument. Although it is designed to withstand rough diving circumstances, you must treat it with the same proper care and caution as any other precision instrument.

4.1.1 Maintenance by authorized dealer or distributor

Have your NSAVR-HDVL serviced every two years or after 200 dives (whichever comes first) by a Novasub Authorized Service Center. This service will include a general operational check, replacement of O-rings, and water resistance check. The service requires special tools and training.

Maintenance scheme

<table>
<thead>
<tr>
<th>By Customer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Cleaning NSAVR-HDVL</td>
<td>Weekly, use freshwater and mild soap</td>
</tr>
<tr>
<td>Front viewport cleaning</td>
<td>When needed, use cotton cloth with water and mild soap</td>
</tr>
<tr>
<td>Cleaning/greasing O-ring faces</td>
<td>Before every dive, only opened compartments</td>
</tr>
<tr>
<td>Charging battery</td>
<td>After each dive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>By Novasub Authorized Service Center</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Servicing NSAVR-HDVL</td>
<td>2 years</td>
</tr>
</tbody>
</table>

![WARNING]

- It is not allowed to disassemble the NSAVR-HDVL or to repair the product by unqualified personal or disassemble part, in that case all warranties are void.
- DO NOT use the NSAVR-HDVL if you detect any moisture or water inside.

![CAUTION]

- Protect the unit from shock, extreme heat, direct sunlight, and chemical attack.
- The NSAVR-HDVL cannot withstand the impact of heavy objects like air cylinders, nor chemicals like gasoline, cleaning solvents, aerosol sprays, adhesive agents, paint, acetone, alcohol, etc. Chemical reactions with such agents will damage the seals, case and finish.
- You can use compressed air to blow water off the unit, But do not use too much pressure directly on critical parts.
- The Synthetic Polymer housing can be cleaned with water and soap. The Lexan front glass can be cleaned with water and soap and only using a cotton cloth or any other non-scratching material. Small scratches on the front glass will not affect the view underwater.

![WARNING]

- DO NOT: clean the front glass with paper or other scratching materials

![NOTE!]
5 Warranty

Novasub warrants that during the Warranty Period Novasub or a Novasub Authorized Service Center (hereinafter Service Center) will, at its sole discretion, remedy defects in materials or workmanship free of charge either by a) repairing, or b) replacing, or c) refunding, subject to the terms and conditions of this Limited Warranty. This Limited Warranty is only valid and enforceable in the country of purchase, unless local law stipulates otherwise.

Warranty Period

The Limited Warranty Period starts at the date of original retail purchase. The Warranty Period is two (2) years for the NSAVR-HDVL. Warranty applies only on manufacturing defaults. The Warranty Period is one (1) year for accessories, including mounting hardware and connector cables.

5.1 Exclusions and Limitations

This Limited Warranty does not cover:

1. a) normal wear and tear;
   b) defects caused by rough handling or;
   c) defects or damage caused by misuse contrary to intended or recommended use;
2. user manuals or any third-party items;
3. defects or alleged defects caused by the use with any product, accessory, software and/or service not manufactured or supplied by Novasub;
4. battery.

5.2 This Limited Warranty is not enforceable if item:

1. has been opened beyond intended use;
2. has been repaired using unauthorized spare parts; modified or repaired by unauthorized Service Center;
3. serial number has been removed, altered or made illegible in any way, as determined at the sole discretion of Novasub;
4. has been exposed to chemicals. Novasub does not warrant that the operation of the product will be uninterrupted or error free, or that the product will work with any hardware or software provided by a third party.

5.3 Limitation of Liability

To the maximum extent permitted by applicable mandatory laws, this Limited Warranty is your sole and exclusive remedy and is in lieu of all other warranties, expressed or implied. Novasub shall not be liable for special, incidental, punitive or consequential damages, including but not limited to loss of anticipated benefits, loss of data, loss of use, cost of capital, cost of any substitute equipment or facilities, claims of third parties, damage to property resulting from the purchase or use of the item or arising from breach of the warranty, breach of contract, negligence, strict tort, or any legal or equitable theory, even if Novasub knew of the likelihood of such damages. Novasub shall not be liable for delay in rendering warranty service.
6 Specifications

Materials: Plastic (Acetal and Lexan) and Stainless steel
Operating depth: 500 m
Operating time: 6 hrs. with lights at full power
Charging time: 3 hrs.
Batteries: LifePO4 batteries, 26 Vdc@ 15 Ah (4.8 kg)
Size: 580x585x210 mm (WxLxH)
Weight Dry: Without batteries fitted: 29 kg ; With batteries fitted: 38.5 kg
Weight Wet: Complete with batteries: 15.8 kg in water
Type of camera: GoPro Hero4+
Recording time: Depends on resolution & framerate settings, ex. 128 Gb SD-Card and settings 1080P@50 fps can store 8.44 hrs of recording
Lights: Novasub LUX6M, set for 0-5 volts control (6000 lumen@6500K)
Light Control: Lights intensity preset control in battery compartment, 0-100%
Control: Switch plug, switching system on and start recording, stop recording and switching system off
Extra connector: 1x TCBH4F connector for extra NSHero1 camera connection (2x 5 Vdc power supply)

Items supplied

The following items are supplied with the complete system in two flight cases.

6.1 Case1 (size 836x641x304 mm , 52 kg)
   - NSAVR-HDVL frame with NSHero1 and lights
   - 25 m Network cable with TCIL4M connector
   - Laminated Quick start Guide

Case2 (size 670x510x372 mm, 32 kg)
   - 4x NSBM-15A battery modules, 26v@15Ah
   - 2x EMC-180 battery charger, 24v@5Ah, LifePO4, 200-260 Vac
   - 2x 220 Vac cables for battery chargers
   - Stainless steel flatbar (for opening / closing batt. comp. cap)
   - Bag with Spare parts
     - 4x 20mm 10A fuses (for Battery chargers)
     - USB2.0 Card Reader
     - TCDC4M wired Dummy plug (for switching on the system)
     - 2x O-ring φ35x2 mm for SD-Card Cap NSHero1
     - 2x O-ring φ150x3 mm for Batt. compartment Cap
     - 2x O-ring φ145x4 mm for Batt. compartment Cap
     - USB stick with Manual and software
     - SD-Card 128 Gb Sandisk Extreme SDXC 3 Class 10 (90Mb/s)
7 Glossary

The NSAVR-HDVL is an autonomous video recording system with powerful lights. The camera is based on a GoPro Hero4+ Silver camera module which is built in a pressure proof housing. The lights are two powerful LED lights of 6000 lumen at 6500K color temperature, which is near daylight. The system has an battery compartment which can hold two battery packs. Each battery pack can be quickly changed by the extra supplied spare batteries. The battery are each loaded at the sides of the battery compartment. The system is switched on with a switch plug. The Switch plug activates the lights and camera to switch on, and the camera to start recording. Unplugging the switch plug, stops the lights and recording and will switch of the camera after 1 min.

The camera housing has a SD-Card Cap to quickly access the SD memory card which holds the recorded files. The SD card can be removed and quickly replaced by an empty card. The camera housing also has a network connection, which can be used to access the GoPro Hero4 using the activated Wi-Fi. The supplied software makes is possible to access the camera and change the recording settings. The Hero4 can also be accessed using the GoPro app on a smartphone or tablet. The Hero4 Wi-Fi is activated using special scripts that needed to be installed on the SD-card.

Optional
The NSAVR-HDVL can be optional fitted with the following items and control

- Extra NSHero1 camera
  There is an extra connector on the Batt. compartment for connecting a second NSHero1 camera housing. This housing could be installed somewhere on the same structure as the NSAVR-HDVL is installed and also will start recording when the system is powered.

- Time lapse control for NSHero1
  WiFi enabled GoPro time lapse and scheduler accessory that unlocks the full potential of the GoPro camera. The Time lapse controller allows users to control when and how the camera will trigger based on a daily, weekly schedule. Configuration is handled through an easy-to-use web interface via a smartphone, tablet or laptop.
8 Pre dive preparations

Before you can use the NSAVR-HDVL you need to make the system ready for its deployment. Please follow the below steps to get the system ready.

Batteries charging

The batteries needed to be fully charged. The supplied battery charger automatic charge the batteries.

- Plug the battery charger into a 220-240 vac power supply
- Connect the battery cable to the charger cable, take care of connector position and polarity.
- The battery will be charged with the indication of the LED being solid RED.
- When the battery is fully charged the LED will turn solid green. The charger will go in trickle charge mode and will start periodically a charge pulse (LED solid RED), leave the battery connected for at least 30 min. extra after the fully charge cycle has ended.

NOTE!

- Use only the supplied LifePO4 battery charger.

Battery installation

After fully charging the batteries, two batteries need to be installed in the battery compartment.

- Opening the Batt. Compartment:
  On each side of the compartment there is a screw on cap. The caps when fully screwed on are quite tight. The unscrew the cap use the stainless steel supplied bar. Place the bar in the groove of the cap. To open the battery compartment unscrew the cap anti-clockwise.
- Placing the battery
  Place the battery beside the opening and connect the battery cable. Watch the connector position.
  Slide in the battery, rotate the battery pack a few times to coil the cable. The cable needs to fit well at the end and not end up between the battery pack and the end edge.
Make sure that the battery is fully fitted. Check the inserted depth using the flat bar with the orange marked lines. The battery is fully seated when the orange line is flush with the end of the battery compartment edge.

If the orange line is not flush, then the battery is not fully fitted. Move and rotate the battery pack to guide the battery cable in its position.

**WARNING**
Do not place the cap unless the battery pack is well seated inside the compartment.

- **Closing battery compartment:**
  Check that the cap has both O-rings fitted, lightly creased and clean. If needed remove the O-rings, clean and slightly grease with Silicon grease 111.
  Make also sure that the O-ring faces inside the battery compartment are clean and slightly greased.
  Screw on the cap, using the flat bar. Screw fully on so that cap end face is touching the battery compartment edge. Hand tight only using the flat bar.

**WARNING**
When the cap is not well seated or installed without the O-ring or damaged O-ring, the battery housing will flood and be fully damaged. Please make sure that O-ring is OK, and well seated in the groove of the cap.
NSHERO1 SD-card installation

The NSHero1 has a separate compartment for the SD-card. The system is supplied with 2x 128GB SD-cards. Please use only these cards or same brand and model SD-cards.

The SD-cards need to be fitted with the correct script which activates commands on the Gopro on power-up.

We supplied two scripts: (on the USB-stick supplied with the system)
- The recording script;
- The wifi enable script;

The recording scripts start the recording of the Gopro
The script can be found in the folder: Start recording

The wifi enable script is used to switch on the GoPro wifi which is needed to access the Gopro with the network cable or directly with the Gopro App on a tablet or smartphone.
The script can be found in the folder: 10 min wifi on time

8.3 Copy script to SD-card

- Insert the SD-card in the PC directly or using the supplied USB SD-card reader.
- Go to the corresponding drive letter with your PC explorer.

<table>
<thead>
<tr>
<th>Naam</th>
<th>Gewijzigd op</th>
<th>Type</th>
<th>Grootte</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCIM</td>
<td>13/02/17 10:44</td>
<td>Bestandsmap</td>
<td></td>
</tr>
<tr>
<td>MISC</td>
<td>13/02/17 10:44</td>
<td>Bestandsmap</td>
<td></td>
</tr>
<tr>
<td>autoexec.csi</td>
<td>13/02/17 10:57</td>
<td>CSI-bestand</td>
<td>1 kB</td>
</tr>
<tr>
<td>csiController</td>
<td>13/12/16 08:34</td>
<td>Bestand</td>
<td>46 kB</td>
</tr>
<tr>
<td>csiLog.txt</td>
<td>13/02/17 10:58</td>
<td>Tekstdocument</td>
<td>1 kB</td>
</tr>
<tr>
<td>Get started with GoPro</td>
<td>13/02/17 10:44</td>
<td>Internetsnelpenke...</td>
<td>1 kB</td>
</tr>
</tbody>
</table>

The content of the SD-card will look like above.
The DCIM folder contains the recordings.
The MISC folder contains information regarding the GoPro Hero camera
The autoexec.csi is the script containing the commands to control the Hero camera
The csiController is the script controller, and needs to be present, else the script command will not work.
The csiLog.txt is the logfile of the script command carried out so far.

- Copy the correct script file to the SD-card;
  - For recording copy the autoexec.csi from the folder: Start recording
  - For wifi enable copy the autoexec.csi from the folder: 10 min wifi on time

When you copy to the SD-card with and existing autoexec.csi file, just click on: replace existing file in destination folder

NOTE!
- When the autoexec.csi & csiController files are not installed on the SD-card, then the Hero4 camera will not take any action. This means it will not start recording or enable the wifi.

Other scripts are available on request, like timed recording, or change to photo mode.

8.3.2 Emptying the DCIM folder

To be able to use the full 128 Gb of recording capacity, make sure to remove all files and folders from the SD-card. Delete them if you do not want them or cut and copy to another folder on your PC.
8.3.3 SD-card insert into camera NSHero1

The NSHero1 has a special watertight compartment to hold the SD-card. The compartment is closed with the SD-card cap. The cap is screwed on to the compartment and seals the compartment with an O-ring fitted inside the cap.

- Open the SD-card compartment; unscrew with your hand anti-clock wise. Make sure that any water or moisture is wiped off around the SD-card Cap.
- Hold the SD-card as indicated on picture with the label to the outerside of the camera housing
- Insert the SD-card in the slot, press it until it clicks
- Screw on the SD-card cap, make sure that the O-ring is cleaned, slightly greased and well fitted in the groove, also make sure that the O-ring contact fase on the housing is dry and clean.
- Hand tighten the cap, make sure the cap end touches the housing face.

**WARNING**

*When the cap is not well seated or installed without the O-ring or damaged O-ring, the camera housing will flood and be fully damaged. Please make sure that O-ring is OK, and well seated in the groove of the cap*
Connector & cables
Make sure that the following cables and dummy plugs are well fitted.

1. NSHero1 cable: Check that the cable from the NSHero1 to the battery compartment is well fitted and secured with the plastic lockrings.
2. 2x Light cables: Check that the cable from the lights to the battery compartment is well fitted and secured with the plastic lockrings.
3. Spare camera dummy: Check that the top connector of four on the battery compartment is fitted with a 4 pin dummy plug and lockring
4. NSHero1 network connector: Check that the bottom 4 pin female connector is fitted with a 4 pin male dummy plug and lockring

In general; Check that no wires are sticking out of the frame, and if needed ty down with Ty-raps.

NOTE!
- Loose cables and start moving in the water currents during deployment, causing the wear & tear the connectors and cables. Make sure that the cables are well Ty-rapped which each other or on the frame.

Pre-Dive check
Before deploying the NSAVR-HDVL we need to check if the systems start-up and starts recording. Also we need to check if the lights are set to the correct power intensity.

8.5.1 Check Hero4 power status
- Plug in on the back side of the battery compartment the dummy plug which is attached the stainless steel bar.
  - The NSHero1 will be powered. When internal Hero4 battery is charged the Hero4 will start, switch on the lights and start recording. Recording is indicated with a flashing Red LED and the timer on the display will start counting the elapsed recording time.
  - When the lights do not switch on, then the Hero4 internal battery is drained and needs to be charged for 10 min. see 8.5.2

8.5.2 Charging Hero4 battery
- Keep the dummy plug, plugged in. The charging will be indicated with a solid RED led lighted up on the Hero4 window. The lights and the Hero4 camera do not start up.
- After 10 min. unplug the dummy connector, wait 10 seconds and re plug it in.
- When the Hero4 internal battery has enough power the lights will lid up, the camera will start and the Hero4 will start recording.

8.5.3 Switching OFF
When you have established a correct switching on and recording you can switch off the system.
- Unplug the rear dummy connector.
  - The lights will switch Off immediately and the camera will stop recording after 1 min. and shut down completely. When the system does not power down after 1 min. re-plug the dummy switch connector for 10 sec. and unplug again. The system should now should down after 1 min.
### 8.5.4 Switching ON

After above power checking the system works and can therefore be switched on and start recording.

- Plug in on the back side of the battery compartment the dummy plug which is attached the stainless steel bar. The NSHero1 will be powered. The Hero4 will start, switch on the lights and start recording. Recording is indicated with a flashing Red LED and the timer on the display will start counting the elapsed recording time. The display will also show the remaining recording time and the Hero4 internal battery status. (bottom line)

### 8.5.5 Light settings

The two LED lights can be controlled for a 0-100% intensity setting. Setting the light intensity lower will use less power and therefore extend the operation time of the NSAVR-HDVL. When using the NSAVR-HDVL to film an action close by (less than 4 m.) you can lower the light intensity and still have enough light to film the target.

- **Access right batt. compartment**
  The right batt. compartment is the starboard side of the NSAVR-HDVL
  Remove the right battery comp. cap and slide out the battery. Keep the battery cable connected.
  If you look inside the battery compartment you will see a small round knob. By rotating the knob you change the light intensity.

- **Switch on the system:**
  Switch the system on, see 8.5.4
  The Hero4 will start and switch on the lights.

- **Adjusting the light Intensity**
  Rotating clockwise: increase intensity
  Rotating anti-clockwise: decreasing intensity
  Rotated fully clockwise is 100 % LED power
  Rotated fully anti-clockwise is LED lights OFF
9 NSAVR-HDVL installation

The NSAVR-HDVL needs to be installed and fixed on the object which is deployed. The camera&light bar can be adjusted to point at the filming target. The camera can also be rotated within the camera&light bar to level the image.

9.1.1 Fixing the frame

The frame has several point to use as fixations points to attach the NSAVR-HDVL to your equipment/object. You can either use rope or strong Ty-raps to fix the frame. Make sure that the frame is well attached and that during deployment the frame cannot come loose from your object. Use the ty down / fixing points as indicated.
9.1.2 Adjusting camera&light bar
You can tilt the camera&light bar for correct aiming at your target. Also you can rotate the camera housing within the camera&light bar.

- **Adjusting the tilt angle**
  Loosen the M8 Hex bolts on either side of the bar
  If needed loosen also the M12 Hex bolts on either side

- **Adjusting the camera roll angle**
  Loosen the M10 nuts, loosen the middle 4 ones

**NOTE!**
Make sure that after adjustments of the Bar you tighten all bolts again.
Quick start guide

1. **Make sure you have carried out the Predive checks** (Chapter 8.5) and installations (Chapter 9) procedures
2. **Install an empty SD-card in NSHero1 SD-card compartment** (Chapter 8.3.3)
   - Screw on the SD-card cap, make sure that the O-ring is cleaned, slightly greased and well fitted in the groove, also make sure that the O-ring contact face on the housing is dry and clean.
   - Hand tighten the cap, make sure the cap end touches the housing face.

![Image of cap well seated against housing face](image1)

**WARNING**

*When the cap is not well seated or installed without the O-ring or damaged O-ring, the camera housing will flood and be fully damaged. Please make sure that O-ring is OK, and well seated in the groove of the cap.*

3. **Check that both battery compartments are well closed** (Chapter 8.2)

![Image of cap flush with edge](image2)

**WARNING**

*When the cap is not well seated or installed without the O-ring or damaged O-ring, the battery housing will flood and be fully damaged. Please make sure that O-ring is OK, and well seated in the groove of the cap.*

4. **Power On the system** (Chapter 8.5.4)
   - Plug in on the back side of the battery compartment the dummy plug which is attached the stainless steel bar.
   - The NSHero1 will be powered. The Hero4 will start, switch on the lights and start recording. Recording is indicated with a flashing Red LED and the timer on the display will start counting the elapsed recording time.
   - The display will also show the remaining recording time and the Hero4 internal battery status. (bottom line)
10 Connectors & connections

The NSAVR-HDVL has several connector and connections on the frame Battery Compartment and NSHero1.

**Battery Compartment connectors**

The Battery compartment external connectors. On the front side 4 connectors and on the back side one connector. Internal, each batt. compartment has the battery pack cable with connector.

### 10.1 External connector

The following connectors are installed on the batt. compartment:

- **2x TCBH4FSS** – 4 pin female connector for NSHero1
  
  **Function** To power the Hero activation, internal battery charger and trigger signal to activate the LED lights

- **2x TCBH3FSS** – 3 pin female connector for the LUX6M LED lights
  
  **To power and control the intensity of the LED lights, 26 vdc and 0-5 vdc**

- **1x TCBH4FSS** – 4 pin female connector for switching ON/OFF

### 10.1.2 Internal connectors

Each compartment has a cable with batt. connector to connect to the Battery pack Modules.

The connector has a locking clip.
NSHero1 connectors
The NSHero1 has 2x connectors and a SD-Card compartment.

- TCBH4MSS – 4 pin male connector Power connector to connect to Batt. compartment
  Function To power the Hero activation, internal battery charger and trigger signal to activate the LED lights
- TCBH4FSS – 4 pin female connector to connect to a PC
  To connect the NSHero1 to a PC for changing settings and downloading files.
- SD-Card slot
  Quick access slot to change the SD-card for Hero4 file storage.

Connections
There are several patching cables, dummy plugs and network cable.

10.3.1 Patch cables
There are 3 patch cables connecting the LED lights and NSHero1 with the Battery compartment
- 2x LED light patch cables; MCIL3F-TCIL3MX50cm PUR cable with Lockrings
- 1x NShero1 patch cable; TCIL4F-TCIL4MX50cm PUR cable with lockrings

10.3.2 Dummy connectors
- 1x TCDC4M; dummy plug with pin1-2 cross wired and pin3-4 cross wired. Switching dummy plug
- 1x TCDC4M; dummy blanking plug for blanking network connections
11 NSHero1 network setup

The NSHero1 can be used to connect through wifi or wired LAN connection to a smartphone/ tablet or Windows PC. The network/wifi connection can only be established if the wifi ON script is installed on the SD-card to activate the wifi on startup of the NSHero1.

You can use the wifi and wired connection to change the recording settings of the Hero4 camera.

Enable NSHero1 wifi

The wifi of the Hero4 camera is by default off and needs to be switched on. That is only possible using a special command script which needs to be installed on the SD-card replacing the recording script.

11.1 Copy script to SD-card

- Insert the SD-card in the PC directly or using the supplied USB SD-card reader.
- Go to the corresponding drive letter with your PC explorer.

<table>
<thead>
<tr>
<th>Naam</th>
<th>Gewijzigd op</th>
<th>Type</th>
<th>Grootte</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCIM</td>
<td>13/02/17 10:44</td>
<td>Bestandsmap</td>
<td></td>
</tr>
<tr>
<td>MISC</td>
<td>13/02/17 10:44</td>
<td>Bestandsmap</td>
<td></td>
</tr>
<tr>
<td>autoexec.csi</td>
<td>13/02/17 10:57</td>
<td>CSI-bestand</td>
<td>1 kB</td>
</tr>
<tr>
<td>csiController</td>
<td>13/12/16 08:34</td>
<td>Bestand</td>
<td>46 kB</td>
</tr>
<tr>
<td>csiLog.txt</td>
<td>13/02/17 10:58</td>
<td>Tekstdocument</td>
<td>1 kB</td>
</tr>
<tr>
<td>Get_started_with_GoPro</td>
<td>13/02/17 10:44</td>
<td>Internetsnelkop...</td>
<td>1 kB</td>
</tr>
</tbody>
</table>

The content of the SD-card will look like above. The DCIM folder contains the recordings. The MISC folder contains information regarding the GoPro Hero camera. The autoexec.csi is the script containing the commands to control the Hero camera. The csiController is the script controller, and needs to be present, else the script command will not work. The csiLog.txt is the logfile of the script command carried out so far.

- Copy the script file to the SD-card;
  - For wifi enable copy the autoexec.csi from the folder: 10 min wifi on time
- When you copy to the SD-card with an existing autoexec.csi file, just click on: replace existing file in destination folder

- Insert the SD-card in the NSHero1 SD-card slot

11.2 Switching On the NSHero1

- Switch the NSAVR-HDVL on with the switching dummy plug.
  - The Hero4 will start and activate the internal wifi, a Blue LED will flash on the Hero4 display. The lights will also switch on, of this is disturbing then you can dim the lights using the rotating knob inside the right batt. compartment, or unplug the lights from the patch cables.
  - Unplug the lights before you power up the NSHero1

11.3 Connecting App with Hero4

If you have a smartphone you can connect through wifi with the Hero4.

- Install the GOPRO Capture app see: https://shop.gopro.com/EMEA/softwareandapp/
- Connect with the Hero4
  ID: NSHERO1
  Password: seascape1

Connecting PC with Hero4

The system is supplied with a 25 m Network cable which can be plugged into a windows PC and the NSHero1 Network connector.
• Plug the TCIL4M cable end of the 25 m network cable in the 4 pins female TCBH4F connector of the NSHero1
• Plug the RJ45 LAN connector of the other end in a PC

11.3.1 Install Camera Suite Pro
On the supplied USB-stick you will find a folder called software. Install the camerasuitewin.exe on your PC
• Run the software in fill in the username and serial (see document in software folder on USB-stick)

11.3.2 LAN settings PC
When the LAN connector is connected to the PC and the NSHero1 is switched on, you will see in your PC Network control the LAN connection. You need to set the network connection on a fixed IP.

• Make sure that the NSHero1 is powered on (Chapter 11.1.2)
• Open the Network and sharing Centre
• Click on Ethernet at Connections: This will open the Ethernet Status window
• Click on Properties, this will open the Ethernet Properties window
• Double click on Internet Protocol Version 4 (TCP/IPv4)
• Set IP to 10.5.5.20 and subnet mask to 255.255.255.0
• Click OK and Close on all windows to close
Using CameraSuite
Open Camera Suite software.

11.4.1 Connecting Camera

1. Make sure that you have followed the procedure of Chapter 11.3.2
2. Start the Camera Suite app and select the "GoPro Hero 4" entry in the connection dialog.
3. Press the "Connect to camera" button. A connection dialog appears which will immediately disappear when your GoPro is correctly connected. The first time fill in the ID: NSHero1 and Password: seascape1

11.4.2 No connection established
When the camera does not connect, then the internal wifi bridge needs to be set to the correct wifi channel. See Chapter 11.5
11.4.3 General app usage
The main app screen consisting of the camera settings and the download manager is shown after connecting to a camera.

11.4.4 Functions
- The top bar ("Connect", "Camera browser", ...) opens main functions of the app.
- **Poll camera status**: If checked then the camera status is regularly checked. For long lasting operations (e.g. time-lapse) it is recommended to uncheck this option to save energy.
- **Settings**: Opens a dialog with general app settings.
11.4.5 General Settings

- **Download thumbnails in file browser**: If checked then thumbnails are downloaded for each media file. If not checked, then only media information (filename, etc.) are retrieved.
- **Show audio levels in live preview**: If checked then the audio levels (meter) of the left and right channel are shown. Generally it is recommended to disable this option because it slows down preview.

11.4.6 Media browsing and management

The media browser supports viewing, streaming, download, and deleting of media files from the camera.

11.4.7 Functions:

- **Refresh**: Reloads the list of media files from the camera.
- **Clear cache**: Clears the local cache of thumbnails.
- **Select all/video/images and deselect**: Selects and deselects items.
- **Delete from camera**: Deletes the selected files from the camera. **Note**: Some media types (such as time-lapse, burst, some video formats) cannot be deleted over Wifi on GoPro Hero cameras. This is a restriction of the current camera firmware.
- **Get download links**: Shows a list of download links for the selected files. These links can for instance be copied into another download manager app.
- **Download selected**: Adds the selected files to the internal download manager. As an alternative, files can be directly dragged into the download manager window using drag&drop.
- **Toggle view**: Switches between grid and list view.
- **Options**: Show camera specific options.

**Hints**: Double click on a thumbnail to open the full resolution version. Right click on a thumbnail to open a popup menu with more options.

### 11.4.8 GoPro Hero camera browsing options

- **Use legacy media downloader**: The legacy media downloader supports downloading of all media files (it has not the limitations of the "normal" downloader which uses the official camera functions). The download is slower than the "normal" downloader.
Setting wifi channel

Inside the NSHero1 is a small wifi Bridge, which needs to be set correctly to be able to connect to the GoPro Hero4 camera.

- Follow all steps of Chapter 11.3.2
- Open your webbrowser and type in the title bar 10.5.5.80
This will open the web interface of the VM300 Bridge

- Login with: admin and password: admin
- Go to Scan Hospots

- Click on nshero1 and click Next, the window will show below, make sure that Pass Phrase is: seascape1
- Click on Apply and then Back.
- Go to system settings and click on Restart

Wait one Minute and refresh the webinterface (F5), login again and go to Operative status and check if you are connected
Look at the line Connection status; It should show Connect.
Now you have connected the internal wifi of the Hero4 camera with the wifi bridge.
Continue with the Camera suite software (Chapter 11.4)
12 Drawing