

# SCU-2DRV Manual



## Operations Manual

SCU-2DRVL – 2 Diver radio with camera & light control.

**NOVASUB Surface control unit two diver radio with integrated camera and light control.**

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Version:  
Date:


1.26 **Preliminary**  
15-Apr-15






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 **WARNING** **YOU MUST READ** the SCU-2DRVL manual before using the SCU-2DRVL. 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

	<b>WARNING</b>	Is used in connection with a procedure or situation that may result in serious injury or death.
	<b>CAUTION</b>	Is used in connection with a procedure or situation that will result in damage to the product.
	<b>NOTE!</b>	Is used to emphasize important information.

## 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 Seascope BV.

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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. Seascope 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.

### 2.1 Safety precautions

Do not attempt to use the SCU-2DRVL 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 SCU-2DRVL, contact your Novasub Authorized Service Center before using the SCU-2DRVL.

Always remember that **YOU ARE RESPONSIBLE FOR YOUR OWN SAFETY!**

## 3 Installation

The Novasub SCU units are standard 19" rack mountable. The SCU-2DRVL can be fitted to the 19" rails with adequate screws. We advise to use plastic washer between the screw head and the panel. This avoids damaging the panel and losing the screw do to vibration.



### WARNING

- Make sure there is enough forced or natural ventilation available around the SCU unit
- Do not cover the top and bottom of the SCU, the top and bottom are open for ventilation
- Avoid any moisture onto the SCU

## 4 Maintenance

The SCU-2DRVL is a 19" rack case. You must treat it with the same proper care and caution as any other electronic instrument.

### 4.1.1 Maintenance by authorized dealer or distributor

Have your SCU-2DRVL serviced by a Novasub Authorized Service Center. This service will include a general operational check, replacement of the battery, and overall upgrade of firmware. The service requires special tools and training.

### 4.2 Maintenance scheme

By Customer	
Charging battery	Regularly
By Novasub Authorized Service Center	
Servicing SCU-2DRVL	2 years
Internal backup battery replacement	2 Yearly



### WARNING

- It is not allowed to disassemble the SCU-2DRVL or to repair the product by unqualified personal or disassemble part, in that case all warranties are void.
- Avoid large amount of water on the control and monitor panels.
- DO NOT use the SCU-2DRVL if you detect any moisture or water inside.



### CAUTION

- Protect the unit from shock, extreme heat, direct sunlight, and chemical attack.
- The SCU-2DRVL 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.
- Do not use compressed air to blow water off the unit.



### NOTE!

- The SCU-2DRVL is not waterproof, it can withstand some water drops on the monitor panel and control panel. Be sure to whip off any water drops or moisture from the panels.

## 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.

### 5.1 Warranty Period

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

### 5.2 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 (only first 6 month after purchase is under warranty).

### 5.3 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 or excessive water spraying. 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.

### 5.4 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 Glossary

The Novasub diver communication radio is based on the latest electronic technology and is specially designed for an outstanding diver and surface sound quality. The unit is standard fitted for a 2 diver connection and has a built in LED light and video transmission over twisted pair or coax controller for camera and light.

The video controller is auto tunable for any cable up to 600 m. The unit has a mains and battery backup. Is powered with a built in smart battery charger and has a battery state condition monitoring. Standard the radio is fitted with a volume controllable external speaker amplifier. Both diver's and tender voice are heard on the external speaker.

The SCU-2DRVL series have the latest audio electronics for superior audio both at the diver and tender end. The built in Microphone makes it able to have a crystal clear audio at the diver end. The system works both with 2 and 4 wire. In 4 wire comms you can also select full duplex comms, no PTT pressing is needed. In 4 wire mode the divers can speak to each other while the Tender can listen in. The Tender can speak to the divers's by pressing the PTT. In 4FD mode the tender does not have to press any PTT and can speak and listen to the both divers. Just like a normal telephone conversation.

*\*works only with 4 wire comms*

The unit also has a NovaBUS (rs485) connection to interface with other Novasub systems, like the SCU-DVR2 or DDG. The Novabus makes it possible to share data and control camera and light from the SCU-DVR2 recorders or NSDVRsoft, video recording&control software

## Features

- 2 and 4 wire communication
- Automatic battery charger and conditioner
- Camera & light control
- High Power Audio
- Multi-pin & Banana socket connections
- External speaker amplifier

## 7 General Specifications

### Specifications

<b>Ext. Power supply</b>	: 100-240 VAC, 50/60 Hz 100 watt	<b>Battery life</b>	: 10 hours -> 2 diver comms only 0.5 hours -> 2 Divers Camera&light 1 hours ->1 Diver Camera&light
<b>Light control (Only L and VL versions)</b>	: 0-100 % dimmable light control for the Novasub Lux3R or 6R and up to 25 watt halogen 12v lights	<b>Int. Power supply</b>	: 24 vdc rechargeable battery with battery status indication, UPS function
<b>Video out</b>	: 2x per diver, 1Vpp/75 Ohm	<b>Audio Out</b>	: 2x per diver, signal of 1Vpp
<b>Diver volume control</b>	: Potentiometer control	<b>Tender volume control</b>	: Potentiometer control
<b>Video control (Only VL version)</b>	: Video transmission over twisted pair or coax, auto-tune to 600 m, 32 vdc (12,15,24 vdc optional)	<b>External Speaker</b>	: Amplifier 10W/4-8 Ohm with volume control
<b>Communication</b>	: 2 wire - simplex, 4 wire - full duplex	<b>Dimensions</b>	: 19" 3U high – 350 mm deep (excluding connectors)
<b>Diver to diver</b>	: Cross-talk switch, full duplex (4 wire)		:

### Connections

<b>Audio out</b>	: 2x RCA (Cinch)	<b>Video out</b>	: 2x BNC
<b>Audio out All</b>	: 1x RCA (Cinch)	<b>Audio in</b>	: 1x RCA (Cinch)
<b>Headset/Mic</b>	: Bulgin 8pin, audio out, Mic in, PTT	<b>Ext. speaker</b>	: 2x Banana screw sockets
<b>Umbilical connector</b>	: 2x Multi pin circular connector, comms, camera and light	<b>Diver comms</b>	: 2x2 Banana sockets (Parallel with Multi-pin) (Mic, Head diver)
<b>Bobox (optional)</b>	: Bulgin, 8 pin	<b>DATA</b>	: Bulgin, 8 pin
<b>Power in</b>	: IEC C14 mates with C13	<b>novaNET</b>	: Screw terminal

## 8 Optional

- Diver depth to overlay ; direct connection of UDS-3 depth sensor data to video overlay.
- DDG diver data to overlay ; DDG depth and dive/time data to video overlay.
- BoBox ; Breakout Box for remote comms control with both divers, 50 m cable.
- Thickness Gauge to overlay ; Tritex or Cygnus Thickness data to video overlay.
- Analog value to overlay ; any 0-10v or 4-20 ma signal data to video overlay.
- Digital data to overlay; rs 232 and rs422/485 data input to video overlay.
- Remote control software ; Novasub DVR software to remote control and view the SCU-2DRVL G3.
- 4 channel viewing and recording
- Lynn Video enhancement integrated



NSBCB camera



LUXR 3&6 Led lights



BoBox

### 8.1 BOBOX

The Bobox can be ordered at new order or post ordered for integration on previously built systems.

The Bobox is an optional Break Out Box to use as an remote extension for 2 diver communication. The Bobox is standard supplied with 30 m cable. The Bobox has a built in amplifier and speaker. Also PTT for each diver and volume control of the speaker and divers.

Also an external Headset/Mic can be connected.

All Tender-Diver and Diver communication are heard on the Bobox as well as the SCC.

Also the SCC controls are fully functional.

Application:

- Remote setup out of the diver container at the diver launching platform
- Remote setup in a control room for any machinery
- Remote setup in a client area

The Bobox is connected to an optional connector installed on the SCC.



## 8.2 Sensor data input on Video overlay

The SCU-2DRVL can be supplied with a DSI data to video text&data overlay. The DSI enables the input of different analog and digital sensors which can be displayed on the monitor video overlay. The Data can be 0-10v, 4-20 ma, rs232 and rs422/485. And the standard Novasub UDS-3 depth sensor can be interfaced also to the DSI.

### 8.2.1 UDS-1 Underwater Depth sensor

The USD-1 depth sensor is an analog pressure sensor in a underwater housing with a 3 pin connector. The sensor outputs a 4-20 ma signal through the diver umbilical/cable to the SCC's overlay. The sensors are standard 0-60 MSW and are so calibrated together with the SCC's overlay OSD-2 unit. Other pressure depth ranges are possible.



### 8.2.2 UDS-3 Underwater Depth sensor

The UDS-3 depth sensor is an analog pressure sensor based on the HART digital protocol data signal over 4-20 ma. The sensors transmit the depth data digital and the sensor is internal calibrated. The calibration is standard 0-7 Bar absolute. The OSD-2 overlay unit displays the water depth in MSW with an accuracy of < 0,2% of the FS (60 MSW)



## 8.3 Thickness Gauge (T)

The data of a Ultrasound thickness gauge can be displayed on the video overlay. Standard the OSD-2 is configured for the Tritex Multigauge 3000.



## 8.4 CP probe (CP)

The OSD-2 has a built in 0-2000 mV input which can be used with a underwater Proximity Probe to measure the cathodic potentials.

## 8.5 Third party camera connection

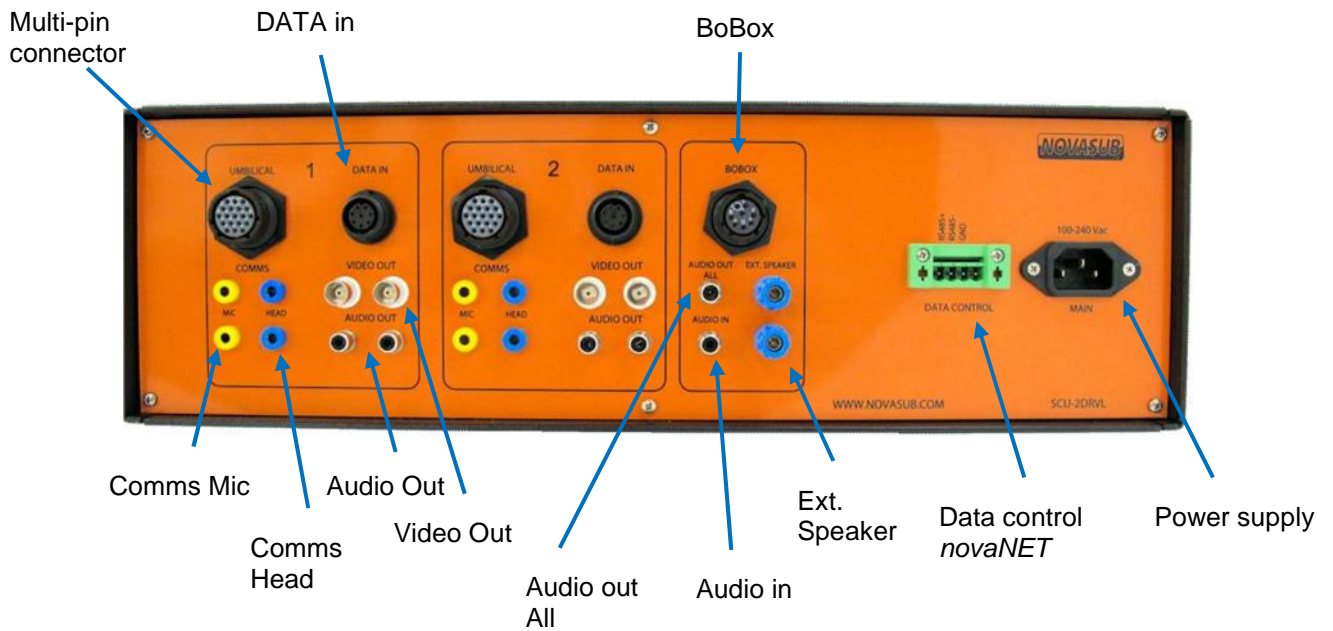
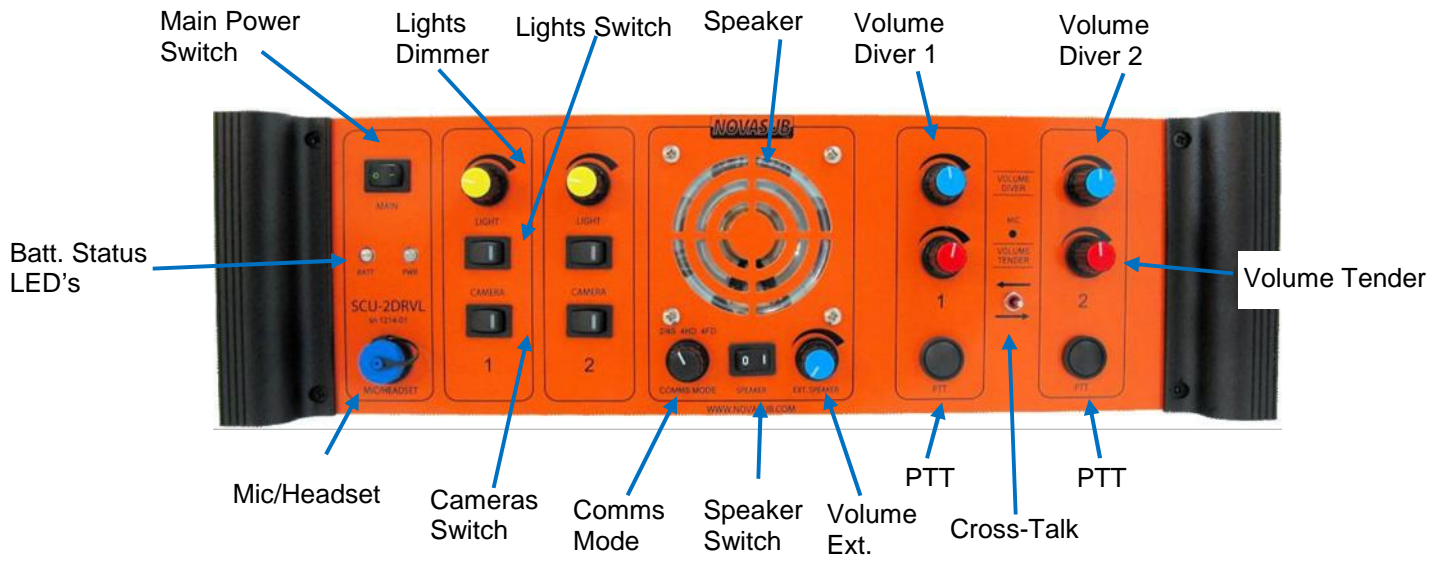
The SCU-2DRVL is fully built to accept the standard Novasub video cameras. However any brand of analog video camera can be connected to the SCU-2DRVL. The standard voltage output to the camera connection is 32 vdc. This can be configured to a lower voltage by Seascope at its factory. On new orders please specify required voltage range. Standard range are 12 vdc, 15 vdc and 24 vdc.

## 8.6 Low voltage power supply

The SCC can also be fitted with an extra external power supply connection of 12-36 vdc. The SCC can then be powered with 110 /230 vac or 12-36 vdc.

## 9 General Functions & Connections

The SCU-2DRVL has the following control function and connections.



## 9.1 Main Power

The Main power switches on and off the complete unit.

When the external IEC plug is inserted on the top left of the case the internal battery will be automatically charged. The system can be powered with 100 – 240 vac 50/60 Hz and requires 100 watts.

The Charge level LED's will indicate that the system is being charged and the status of charge. Charging time for a fully discharged system will take approx. 10 -12 hrs.

When system is fully charged the batteries are automatically trickle charged to maintain full capacity.

The Main power does not need to be switched on to the charge the system.

Charge level	BATT	PWR	Status
	○	●●●	System on and external powered. Battery charging; ● = Full ● = Half Full and charging ● = Empty and charging
	●●●	○	System on and running on battery. Battery discharging; ● = Empty ● = Half Full ● = Full
	●		LED on and Blinking
	●		LED on and solid
	○		LED off

## 9.2 Diver Communications

The diver audio is standard set for a 2 wire communications (simplex).

The divers can only speak to each other when the surface operator pushes the cross-talk switch to the desired direction.

The SCU-2DRVL can also be set for 4 wire communication (duplex)

The divers have an open 2 way communications with each other without any selection from the surface. The surface will hear both divers and can talk to the desired diver by pressing the corresponding PTT. Also can the comms be set for Full duplex. The there is a full open communication (conference) between the divers and surface.

### 9.2.1 2 wire comms configuration

The SCU-2DRVL is standard fitted with a 10 pin multipin connector.

The audio comms for 2 wire comms is connected to the diver umbilical via the multipin connector (pins H,J) or via the yellow Banana sockets



### 9.2.2 4 wire comms configuration

The SCU-2DRVL is standard fitted with a 10 pin multipin connector.

The audio comms for 4 is connected to the diver umbilical via the multipin connector (pins H,J,G,K) or via the yellow and blue Banana sockets

### 9.2.3 Comms Mode

The Comms Mode is a selection comms mode switch. This allows the use of a 4 wire comms system and still be able also to use the system as a 2 wire system.

The 4 wire configurations has 3 user modes:

2S - 2 or 4 wire simplex

4HD- 4 wire Half duplex surface to diver, full duplex diver to diver

4FD- 4 wire Full duplex, surface and divers full duplex without any PTT



### 9.2.4 2/4S - 2 wire simplex

This mode is the same as the standard comms when using 2 wire. This works with either 2 or 4 wires comms cable configuration. The diver will always be heard at the surface and the Tender needs to push the PTT switch to talk to the diver. The divers can only speak to each other when the Tender uses the Cross to Talk switch from diver 1 to diver 2 and vice versa.

### 9.2.5 4HD – 4 wire Half Duplex

This mode uses a 4 wire comms cable configuration. In this mode the divers can speak with each other without any control from the Tender. The Tender will hear both.

The Tender needs to push the PTT button to speak to the divers.

### 9.2.6 4FD- 4 wire Full Duplex

This mode allows to have a full open communication between divers and Tender to divers without using the PTT buttons. Like a conference call.

### 9.2.7 Comms Volume control

Each diver has a Tender and Diver volume control.  
 The Volume Diver is the volume control of what the diver hears  
 The Volume Tender is the volume control of what the tender hears

### 9.2.8 Internal MIC

On the panel between the Volume Tender control, the internal MIC is positioned. It is not needed to place your mouth close the the Mic. Normal arm length distance is sufficient to pick-up the Tender speaking volume.

### 9.2.9 Push To Talk (PTT)

The button per diver to press when the Tender want's to speak to the diver.

### 9.2.10 Cross-Talk

The cross talk switch can be used to have Diver 1 speak to Diver 2 in a 2 wire comms configuration. When the toggle switch is pushed direction Diver 2, then Diver 1 can speak to Diver 2. If the toggle switch is pushed towards Diver 1, then Diver 2 can speak to Diver 1.



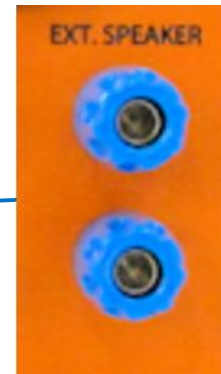
### 9.3 Internal Speaker

The Internal Speaker can be switched off with the rocker switch Speaker. This can be used when operating with the Mic/Headset or only with the external speakers

### 9.4 External Speaker

The SCC has a built in 10 watt amplifier to which an external 4-8 ohm (10-30w) speaker can be connected. The external speaker has its own volume control.  
 All conversation, divers and tender are heard on the ext. speaker.

Banana connection or bare wire



## 9.5 Headset / Mic

The external headset/Mic connector can be used to connected the supplied headset with mic and used with the SCC built in PTT to speak to the divers.  
 Another option is to us the headset/mic connector for an optional MIC with PTT to talk to the divers. The internal speaker can be switched of if required.

When the Headset with Mic or the MIC only are connected, the internal MIC is automatically switched off.



Headset/Mic standard supplied with SCC, MIC-PTT is optional

## 9.6 Camera & light

The SCU-1DRVL version has a LED light controller with video camera control per diver channel.

When Camera or light are switched on the power is enable to the camera and light.  
 The light can be dimmed with the Yellow turning knob.

## 9.7 Sensor DATA In (Optional)

The onboard camera&light controller can interface an optional PCB with input of any type of sensor.

The type of sensor and data input can be rs232/422 or 485, 4-20 ma and 0-10v.  
 This data can be used to be displayed on the video text overlay of a SCU-DVR2 or the novasub-DVR software.





## 9.8 Data control (novaNET)

### 9.8.1 Data Control

The Data control is a rs485 2 wire BUS interface connection. All G3 Novasub SCC and SCU units are fitted with this BUS connection which we call **novaNET**.

With novaNET connection between the various SCC and SCU units you can control the camera & light on/off and dimming, and data is being sent to and from the units.

#### 9.8.1.1 novaNET systems

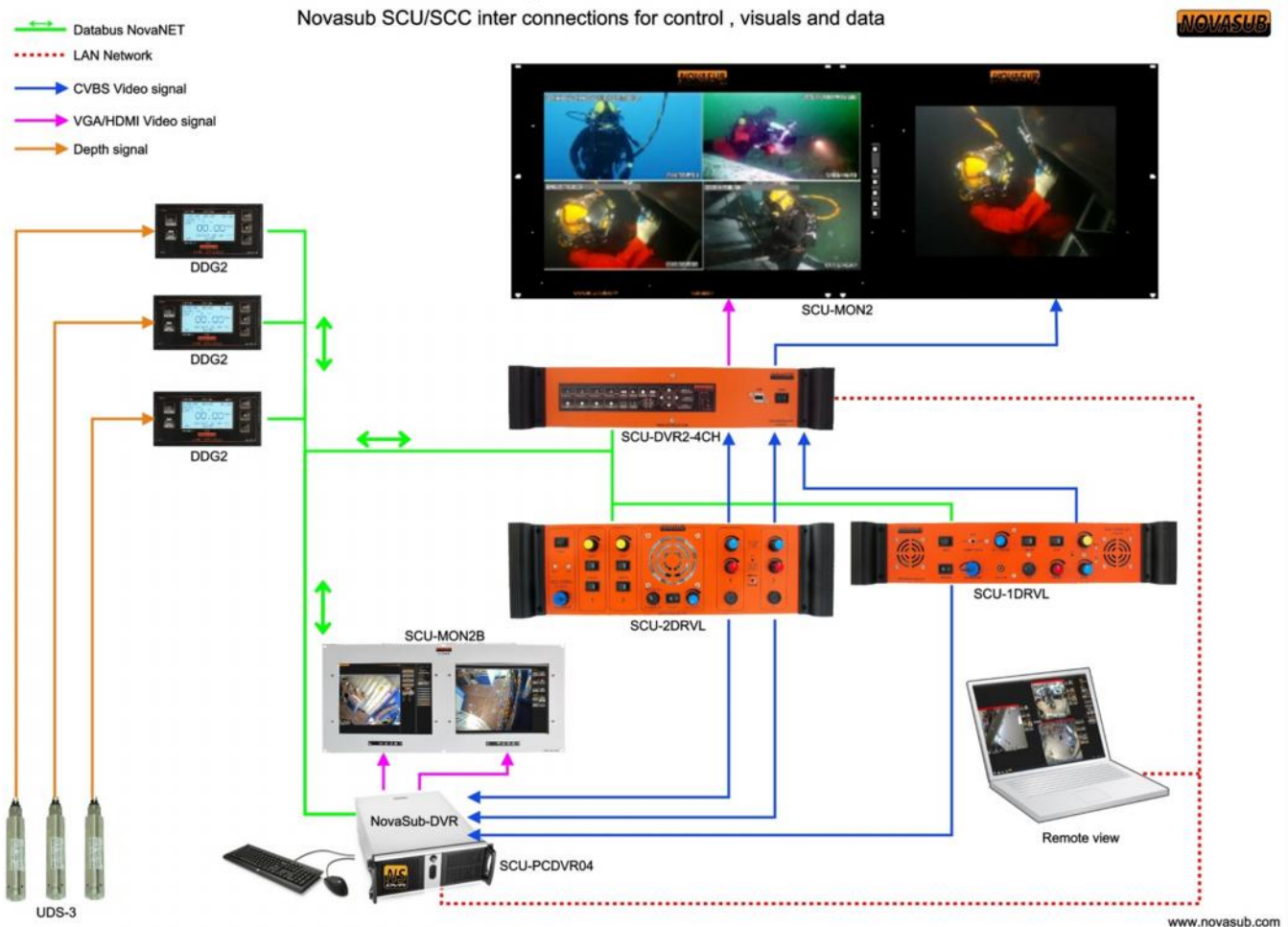
Novasub has released the following units with the novaNET interface:

- SCU-1DRVL
- SCU-2DRVL
- SCU-DVR2 (1CH,2CH &3CH)
- SCU-PCDVR04
- SCC-PCDVR04
- DDG1
- DDG2
- SCU-xVL

#### 9.8.1.2 How it works

With novaNET controls you can control cameras & lights from any SCU or SCC unit within the network. Each camera & light is addressed with CH1 up to CH16. This is set during manufacturing. There will be always be one unique address 1. But address 1 (CH1) with the belonging camera and light can be controlled from more than one SCC/SCU unit. All works in parallel, with overrule from the last SCC/SCU control command send. This means you can switch on the camera with the switch on the SCU-1DRVL and switch it off with a SCU-DVR2. The switch on the SCU-1DRVL is still in the on position but the LED on the switch will be off. You can switch on again with the SCU-DVR2 by pressing on CAM or with the SCU-1DRVL by toggling the switch off and on again. The same is for the lights.

If you switch on from a SCU-DVR2 or from the NovasubDVR software, the LED in the swith will lid up, even if the switch on the SCU-1DRVL is in off position.









## 10 Main Operating

This chapter describes the main basic operations to be able to start the system and switch on camera and light (only L, VL versions)

### 10.1 System startup



Connect the main cable with the camera and light, connect the power supply. Make sure that the actual camera and light are connected at the other end of the cable.

Follow next steps to quick start the system.

<b>Plug in Main power cables</b>	Plug in external power supply 100-240 vac to 24 vdc. The system will automatically start charging the internal battery. Even with the main power switch off.																				
<b>Connect cable</b>	Connect cable with comms, camera and light																				
<b>Switch Main power on</b>	<table border="1"> <tr> <th>BATT</th> <th>PWR</th> <th>Status</th> </tr> <tr> <td style="text-align: center;">○</td> <td style="text-align: center;">●●●</td> <td>System on and external powered. Battery charging; ● = Full ● = Half Full and charging ● = Empty and charging</td> </tr> <tr> <td style="text-align: center;">●●●</td> <td style="text-align: center;">○</td> <td>System on and running on battery. Battery discharging; ● = Empty ● = Half Full ● = Full</td> </tr> <tr> <td style="text-align: center;">●●●</td> <td></td> <td>LED on and Blinking</td> </tr> <tr> <td style="text-align: center;">●●●</td> <td></td> <td>LED on and solid</td> </tr> <tr> <td style="text-align: center;">○</td> <td></td> <td>LED off</td> </tr> </table>	BATT	PWR	Status	○	●●●	System on and external powered. Battery charging; ● = Full ● = Half Full and charging ● = Empty and charging	●●●	○	System on and running on battery. Battery discharging; ● = Empty ● = Half Full ● = Full	●●●		LED on and Blinking	●●●		LED on and solid	○		LED off		 <p style="text-align: center;">Battery / Power status</p>
BATT	PWR	Status																			
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●●●		LED on and Blinking																			
●●●		LED on and solid																			
○		LED off																			
<b>Comms Mode</b>	For Simplex 2 or 4 wire comms set, the switch to 2/4S For Duplex between divers set to 4HD																				
<b>Speaker</b>	Press the Speaker switch to the right with the 1 down. You can now hear the diver audio on the internal speaker																				
<b>Switch on the Camera and light (Only L &amp; VL)</b>	Press the camera switch to the right, the CAM green LED switches on. Press the light switch to the right, the green LED indicates that the light is powered. Increase and decrease light intensity with the Yellow knob.			 <p style="text-align: center;">Light camera</p>																	

## 10.2 Camera and light control

The camera and light are switched on with rocker switches. Both have a LED indicating that power is supplied to the camera and light. The light intensity can be controlled with rotation Knob.

<p><b>Switch on the Camera</b></p>	<p>Press the camera switch to the right, the CAM green LED switches on.</p>	
<p><b>Switch on the Light</b></p>	<p>Press the light switch to the right, the green LED indicates that the light is powered. Increase and decrease light intensity with the Yellow knob.</p>	
<p><b>Remote Control</b></p>	<p>When a SCU-DVR2 or SCU-PCDVR04 is connected via the novaNet Bus, then the camera and light switching and light control can also be realized from the Keypad of the SCU-DVR2 or Novasub-DVR software. See Manuals of SCU-DVR2 and Novasub-DVR software</p>	<p>See chapter 9.8.1.2 How it works</p>

### 10.2.1 Camera signal

The SCC has a built in auto tunable video line driver for each camera. This video line driver allows the use of video signal over twisted pair or coax cable up to a maximum length of 600 m. Also the line driver can be set for coax cable use.

The Novasub cameras are available with video line driver for video signal over twisted pair and coax.

The Novasub cameras set for Twisted Pair can also be used on Coaxial umbilical's or cables.

The power supply to the camera is standard 32 Vdc, if required the voltage can be set to 12, 15 or 24 Vdc. This is a factory setting.\*

\*Only on order of SCU-2DRVL.

#### 10.2.1.1 Why use video transmission over Twisted pair

Novasub has developed video transmission converters that makes it possible to transfer a video composite signal over a standard twisted pair cable. The latest converters are Auto tuneable for cable length up to 600 m. All standard Novasub camera and topside control units have these video transmission converters built in. The cameras have a composite video to twisted pair signal transmitter, and the topside units have a twisted pair signal to composite video receiver.

All Novasub cables and umbilical's, are standard fitted with screened twisted pairs (STP). These STP are used for all possible data/audio and video transmission.

Novasub does not use Coax for video signal transmission. The reason is the mainly weak and interference sensitive Coax cable.

NOVASUB umbilical and cable uses video signal transmission over shielded twisted-pairs (STP).

The advantages of twisted-pair are;

- more reliable video transmission through less interference( electromechanical- or radio frequency interference)
- higher movability through higher flexibility
- STP is a stronger cable then coax
- higher flexibility in applications, twisted-pair cabling is the standard in data transfer worldwide
- easier to install/repair/handle

### 10.2.2 Light controller

The SCU-2DRVL is standard fitted with a LED light controller that matches the Novasub LUX3 and LUX6 lights.

The LED controller regulates the Ampere from 0-1,6 A at 32 vdc.

An Halogen light bulb up to max. 25/30 watts can also be controlled directly from the LED-controller.

Also other brands of LED light can be controlled, however they need to be internal protected against a max.of 1,6 Amp. Current and a 32 Vdc voltage.

If required the max. output Ampere can be set to a lower and higher value. This is a factory setting.

## 11 Panel Connections

The SCU-2DRVL has connectors on the front panel and at the backside.  
The following connectors are on the front panel.

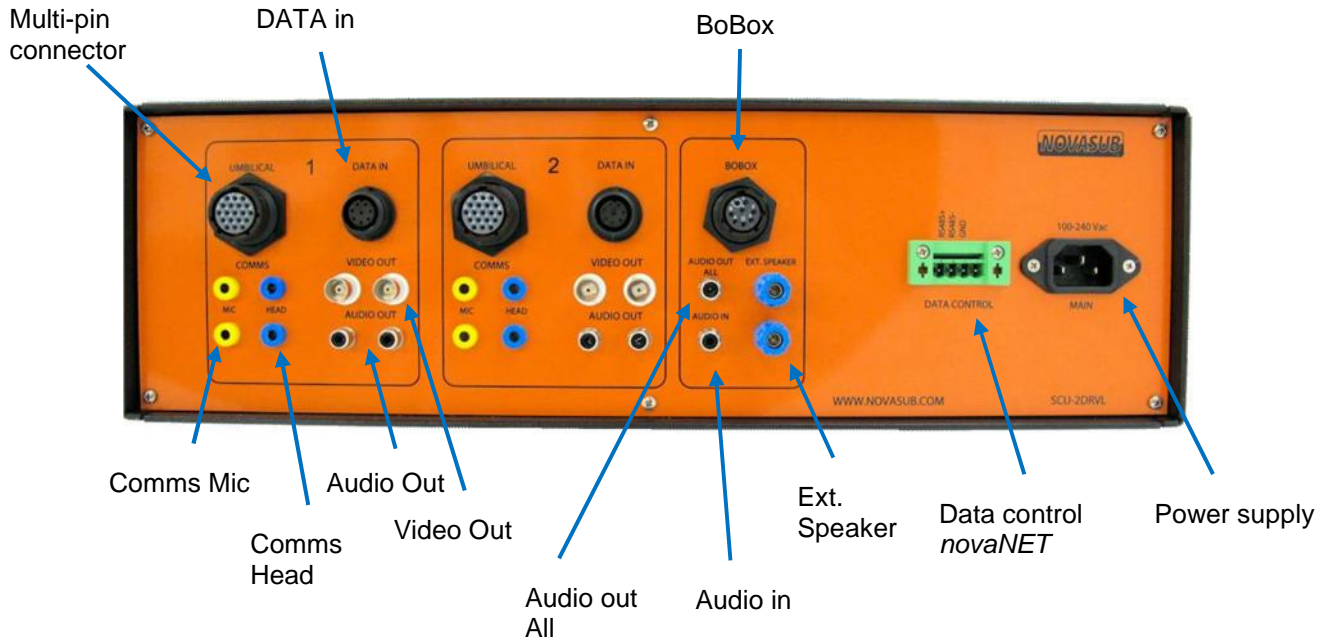
### 11.1 Mic/Headset

The Mic/Headset connector can be used to connect the Mic/headset or only a handheld MIC.

Mic/Headset	SCC 01-019	
Type	Bulgin,PX0412/08S	
Mating type	PX0410/08P	
Function	Pin layout	
12 vdc	1	
PTT	2	
Speaker/mic -	3	
Int. Mic off	4	
Mic +	5	
Speaker +	6	
nc	7	
nc	8	

## 12 Back connections

The SCU-1DR(VL) is fitted standard with the following connectors which are at the backside of the case.



### 12.1 Power supply

The Power supply connector is a standard IEC C14 connector socket.

<b>Power</b>	<b>IEC</b>	
Type	C14	
Mating type	C13	

## 12.2 Main cable connection

The camera and light connector is a multipin connector. Different types and makes can be used, depending on the clients requirements.

### 12.2.1 Standard connector, SCU-02-15a and SCU-02-15b

The SCU-2DRVL is standard fitted with a 10 pins multipin connector.

Diver	SCU 02-15a/b	
Type	Souriau, UTS 71210S	 
Mating type	UTS6JC1210P	
Function	Pin layout	
GND Light	A	
Vcc Light	B	
GND Cam	C	
Vcc Cam	D	
Video +	E	
Video -	F	
Comms Mic	H	
Comms Mic	J	
Comms Head	G	
Comms Head	K	

### 12.2.2 Connector with sensor data, SCU-02-16a and SCU-02-16b

This connector also can interface a depth sensor or other sensor to the DSI databoard.

Diver	SCU-02-16a/b	
Type	Souriau, UTS 714E19S	 
Mating type	UTS6JC14E19P	
Function	Pin layout	
GND Light	A	
Vcc Light	B	
GND Cam	C	
Vcc Cam	D	
Video +	E	
Video -	F	
Depth V+	R	
Comms Mic	H	
Comms Mic	J	
CP+	N	
Data +	L	
Data -	M	
Depth Out+	P	
Comms head	G	
Comms head	K	

### 12.2.1 Comms Banana sockets

Parallel to the Comms MIC and Head are the banana sockets connected. These can be used in a 2 or 4 wire configuration to connect the divers comms cable without the use of the Multipin connector.

Diver	2 & 4 pin comms	
Type	Banana sockets	
Mating type	Banana plugs	
Function	Pin layout	
Comms MIC	Parallel to comms MIC multipin connector H,J	
Comms MIC		
Comms Head	Parallel to comms Head multipin connector G,K	
Comms Head		

### 12.2.2 Ext. Speakers

The external speaker banana screw sockets.

Ext. Speaker	speaker output	
Type	Banana screw socket	
Mating type	Banana plug	
Function	Pin layout	
Speaker +		
Speaker -		

### 12.2.3 Audio Out

The 2x audio out per channel is the audio from the diver and tender. The audio out is a RCA (Cinch) connector



### 12.2.4 Video Out

The 2x video out per channel is a composite video signal direct from the camera video signal. The connector is a 75 ohm BNC connector.

### 12.2.5 Audio Out All

Audio out all is an audio output of Diver1, Diver 2 and Tender, mixed together

### 12.2.6 Audio In

Audio in is an audio input which is mixed to the Tender speaker. Can be used in combination with the SCU-DVR2 audio out. When a recorded file is played back the audio is amplified by the SCU-2DRVL and heard over the Tender speaker.



## 12.2.7 Data Control (novaNET)

The Data control is a rs485 2 wire BUS interface connection. All G3 Novasub SCC and SCU units are fitted with this BUS connection which we call **novaNET**.

With novaNET connection between the various SCC and SCU units you can control the camera & light on/off and dimming, and data is being sent to and from the units.

<b>Data Control</b>		
Type	Male socket	
Mating type	Plug with screw terminal	
Function	Pin layout	
<b>RS485+</b>	Rx and Tx	
<b>RS485-</b>	Rx and Tx	

### 12.2.7.1 How it works

With novaNET controls you can control cameras & lights from any SCU or SCC unit within the network. Each camera & light is addressed with CH1 up to CH16. This is set during manufacturing. There will be always be one unique address 1. But address 1 (CH1) with the belonging camera and light can be controlled from more than one SCC/SCU unit. All works in parallel, with overrule from the last SCC/SCU control command send. This means you can switch on the camera with the switch on the SCU-1DRVL and switch it off with a SCU-DVR2. The switch on the SCU-1DRVL is still in the on position but the LED on the switch will be off. You can switch on again with the SCU-DVR2 by pressing on CAM or with the SCU-1DRVL by toggling the switch off and on again. The same is for the lights.

If you switch on from a SCU-DVR2 or from the NovasubDVR software, the LED in the swith will lid up, even if the switch on the SCU-1DRVL is in off position.

## 12.3 Optional extra connectors

The following extra connectors can be fitted on top of the SCU-2DRVL.

### 12.3.1 Data In connection RS232, SCU-02-49

Data connector for data input of sensor to overlay. The SCU-2DRVL needs to be fitted with a OSD or DSI sensor interface board.

SCC-01-49, RS232		
Type	Bulgin,PX0412/08S	
Mating type	PX0410/08P	
Function	Pin layout	
<b>nc</b>	1	
<b>nc</b>	2	
<b>GND</b>	3	
<b>nc</b>	4	
<b>nc</b>	5	
<b>nc</b>	6	
<b>Rx ←</b>	7	
<b>Tx →</b>	8	



### 12.3.2 Data In/Out connection to DDG, SCU-02-50

The Novasub DDG, Digital diver depth gauge can be connected to the SCU-2DRVL using above connector, or in combination with the SCC-01-50 connector.

SCC-01-50	
OSD/DSI RS232 out/in, Depth (HART) out	
Type	Bulgin,PX0412/08S
Mating type	PX0410/08P
Function	Pin layout
nc	1
V+ (OSD/DSI)	2
GND	3
V+ (Depth)	4
Vout+ (Depth)	5
Vout+ (OSD/DSI)	6
Rx ←	7
Tx →	8



This connections make it possible to use the Novasub DDG digital depth gauge with depth sensor measurement. There are 2 ways of connecting the diver depth sensor UDS-3.

#### 12.3.2.1 UDS-3 connected to SCC

The 2 wire UDS-3 depth sensor is wired into the multipin connector of the SCC. By using cable SCC-01-51, the UDS-3 is rewired internal to the DDG. The OSD-2 or DSI overlay boards is connected via de rs232 connection with the same cable SCC 01-51 to the DGG. The OSD-2 or DSI uses this depth input. Use cable **SCC-01-51**

#### 12.3.2.2 UDS-3 connected to DDG

The 2 wire UDS-3 depth sensor is wired to the DDG digital depth gauge. The DDG rs232 is wired to the SCC rs232 port. The SCC-OSD-2 uses the rs232 depth input to display on the overlay. Use cable **SCC-01-53**

### 12.3.3 DATA Out/In to DDG, SCU-03-11

The depth sensor UDS-3 is looped from the UTS 19 pins connector the SCU-03-11 connector. From the SCU-03-11 the UDS-3 depth data is send to the DDG. The DDG sends the diver depth back to the OSD1/2 or DSI interface.

SCU-03-11	
Depth (HART) out, OSD/DSI RS232 in	
Type	Bulgin,PX0412/08S
Mating type	PX0410/08P
Function	Pin layout
nc	1
nc	2
GND	3
V+ (Depth)	4
Vout+ (Depth)	5
nc	6
Rx ←	7
Tx →	8



Use the **DDG-01-56** cable to connect from the SCU-01-11 to the DDG

### 12.3.4 BoBox

The Bobox connector is needed to connect the BoBox, the comms break-out box.

SCC break-out Box		
<b>BoBox</b>	<b>SCU-02-28</b>	
Type	Souriau,UTS712E8S	
Mating type	UTS6JC12E8P	
Function	Pin layout	
<b>PTT DIVER1</b>	1	
<b>PTT DIVER2</b>	2	
<b>VCC</b>	3	
<b>GND</b>	4	
<b>SPEAKER</b>	5	
<b>MIC+VOL</b>	6	
<b>MIC</b>	7	
<b>nc</b>	8	