



***Full Option card for boats R / C***

***User Manual & Installation***



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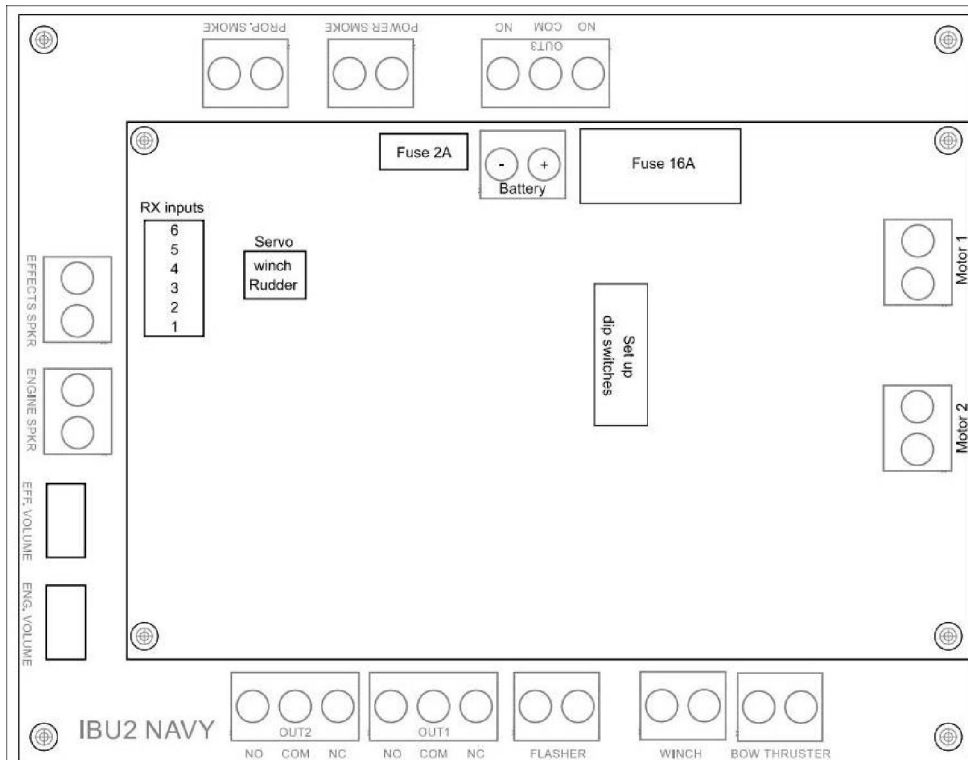
## 1. INTRODUCTION

The IBU2 Navy is a multifunction controller for radio-controlled boats, equipped with realistic sound effects and lights all controlled by a 5 or 6 channel proportional radio, AM, FM, or 2.4 Ghz (sold separately).

## 2 FEATURES

- The sound effects are completely user definable via microSD card included, allowing customization of the type of boat.
- Sounds completely synchronized with the functions of the boat, including the starting and stopping of the motor, motor running, Bow Thruster, Winch, Sirens and custom sounds.
- User settings editable via the microSD card supplied, no special software required.
- The user can select the use of one or two motors, in case of vessel twin engine latter are controlled in a proportional way during turns.
- The user can define the maximum speed of each motor from 0 to 100%
- The user can define the speed limitation of Reverse run from 0 to 100% (based on setting forward speed).
- Output proportional to the smoke generator (max. 2.5 Ampere)
- Output power ON / OFF to smoke generator relay (max. 10 Ampere)
- Output proportional control bidirectional Bow Thruster (max. 2 amperes)
- Output proportional control bidirectional winch (max. 2 amperes)
- ESC latest generation, which allows speed control realistic, with its greater efficiency increases battery life.
- Three relay outputs (max. 10 Ampere each) operated by radio control.
- Flasher output signals for system status.
- Protections recoverable by the user, the IBU2 Navy is protected by a 2A fuse for services and a 16A fuse for the section ESC.
- Monitoring battery voltage to prevent overdischarge and protect the battery, provides visual indication (via the flasher) and sound of the notice of low battery and off motors battery.
- Supports LiPo 2 and 3 cells, Ni-Cd / Mi-MH, 6 and 8-cell, lead-acid battery 12V.
- Dual audio amplifier that allows the use of two speakers with separate control for each channel. One channel dedicated to the engine, one channel dedicated to sound effects.
- Compact size, 115 x 90 x 40mm.
- Screw terminations which allow up to 18 AWG cable to be connected.

### 3. THE IBU2 Navy



Board layout.

Connector	Utilization
<b>Battery</b>	Power Input
<b>Motor 1</b>	Motor output 1
<b>Motor 2</b>	Motor output 2
<b>Bow Thruster</b>	Output Bow Thruster
<b>Winch</b>	Output winch
<b>Flasher</b>	Output Flasher
<b>Out 1</b>	Output 1 (relay 10A)
<b>Out 2</b>	Output 2 (relay 10A)
<b>Eng. Volume</b>	Engine volume
<b>Eff. Volume</b>	Effects volume
<b>Engine Spkr</b>	Engine speaker
<b>Effects Spkr</b>	Effects speaker
<b>Prop. Smoke</b>	Smoke generator proportional output (2.5A)
<b>Power Smoke</b>	Smoke generator power output (relay 10A)
<b>Out 3</b>	Output 3 (relay 10A)
<b>Servo Winch</b>	Output for Winch servo
<b>Servo Rudder</b>	Output for Rudder servo



## SETUP SHEET

After installing the card on the model set the dip switches as shown below

<b>Motor 1</b>	<b>Switch 1</b>
Enabled (1)	ON
Disabled	OFF

<b>Selection engine 2</b>	<b>Switch 2</b>
Enabled (1)	ON
Disabled	OFF

<b>Battery Type (2)</b>	<b>Switch 3</b>
Li-Po battery (2/3 cells)	ON
Ni-Mh or Ni-Cd (6 to 10 cells)	OFF

<b>Programming radio</b>	<b>Switch 4</b>
Programming mode	ON
Normal Mode	OFF

<b>Cells count (2)</b>	<b>Switch5</b>
3 cells LiPo, 12V PB, 8-10 cells Ni-Mh/Ni-Cd	ON
2 cells LiPo, 6 cells Ni-Mh/Ni-Cd	OFF

(1) If both engines are enabled, during turns will be piloted in proportion to the same tack.

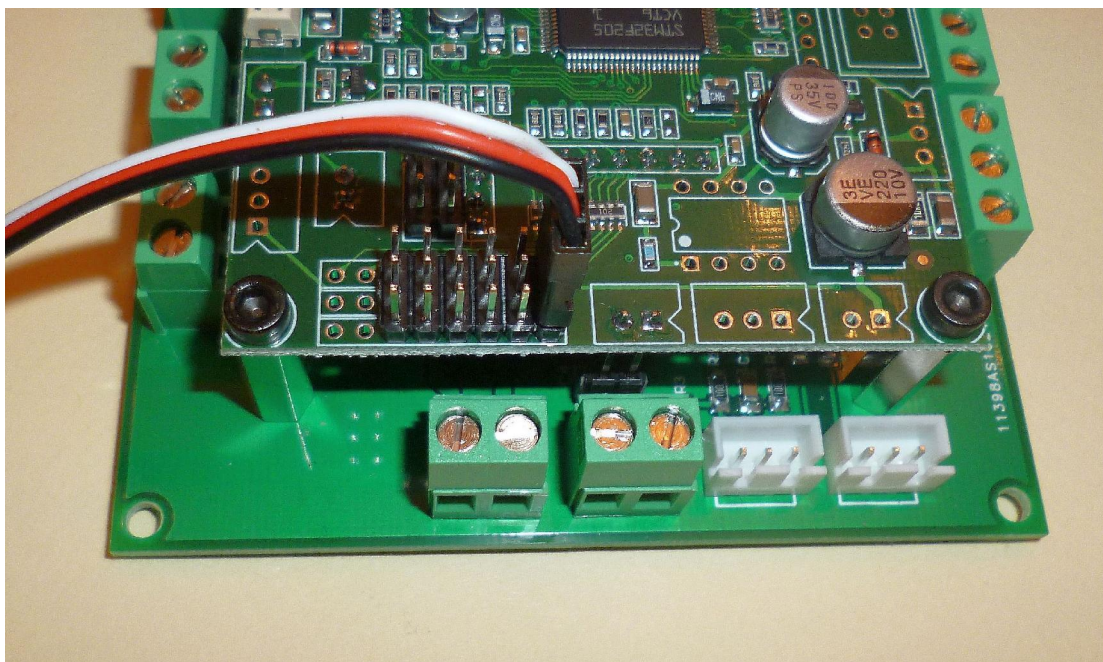
(2) Check the battery voltage. When this becomes low alarm sound is played. In addition to low battery warning the boat will turn off automatically.

## RADIO LINK AND CONFIGURATION

- Connect the receiver cables (supplied) referring to the figure and table below.
- Make sure you do not have reverse or dual / rate active on radio channels.
- Turn on the boat and the transmitter.
- Wait until the receiver is aligned to the transmitter. (When aligned output OUT1 stops flashing)
- Move the dip switch 4 ON.
- Move both the transmitter sticks in all directions until it stops.
- Move channel 5 & 6 switch/knobs from off/on, min/max.
- Move the dip switch 4 OFF.
- The card is configured for use with the radio / receiver connected.

**CHECK CONTROLS ARE CONTROLLING THE BOAT AS INTENDED BEFORE ATTEMPTING TO USE IN WATER.**

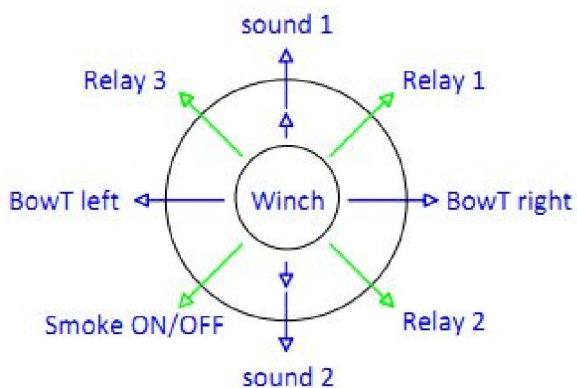
Receiver connected (cable inserted corresponds to channel 1)



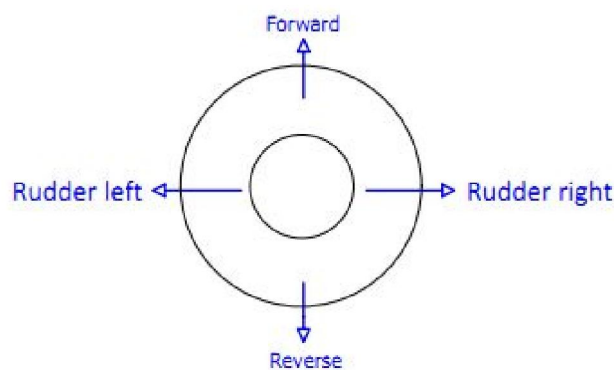
<b>Inputs IBU2</b>	<b>Connect to the channel relative to the stick / command you want to use</b>
<b>CH1</b>	Forward / backward
<b>CH2</b>	Rudder
<b>CH3</b>	Winch
<b>CH4</b>	Bow Thruster
<b>CH5</b>	On / Off engine
<b>CH6</b>	Additional Sound Effects

## 5 CONTROLS

### Left Stick Functions



### Right Stick Functions



- Turn on the boat, the output OUT1 flashes (If connected).
- Turn on the radio, the output OUT1 is steady (If connected).
- At this point you can activate some features, such as: OUT2, OUT3, output Winch, sounds 1 and 2, additional sounds.
- Start the engine of the boat (using channel 5) and wait for the motor to start up and motor idles.
- Move the right stick forward or backward to move, make sure that the boat is moving in the right direction.
- Move the rudder left and right and make sure it moves in the right direction.

#### NOTE

If some of the movements are reversed compared to the command you need to reverse their own channel on the radio (See radio instructions), or change the parameter for the channel in the file "IBU2\_TR.ini" in the root of the microSD card inserted into IBU2 (see Chapter 7).



## **Additional controls available from the controller of the radio**

- **Sound 1** left stick up (100% of the movement) to play the sound effect 1
- **Sound 2** left stick down (100% of the movement) to play the sound effect 2
- **Additional sounds (slider1, 2, 3)** move the potentiometer (CH6) to 30% to enable sound slider1, take it to 60% to activate the sound slider2, take it to 100% to activate the sound slider3.
- **Winch** left stick in the bottom or top (about 30% of the useful motion) for moving the winch in the desired direction.





## 6 CHANGE THE SOUNDS

On the supplied microSD custom sound effects are provided for one type of boat.

**Note:** To fully enjoy the sound quality you should use a good quality speakers. 4ohm speaker impedance is recommended, although 8 ohm impedance will also work. The amplifier output varies dependent on the battery voltage, 6w @ 7.2v and 10w @ 12v therefore a minimum rating of 6w or 10w speaker is required.

To change the set of sounds appropriate to do the following:

1. With the power OFF, press lightly on the microSD inserted under the IBU2 to release the microSD memory card (**NOTE: DO NOT PULL THE MICROSD TO UNLOCK !!!**), Take it out and put in a memory card reader (not supplied) on your PC, MAC.
2. Access to the memory and browse the content.
3. In the root of the media are the files used by the sound module of IBU2. Note everything in a subfolder is ignored by the IBU2.

Each wave sound file is associated with a different sound effect according to the correspondence set in the file "IBU2\_NV":

<i>Variable in the file IBU2.ini Es. Audio file</i>	<i>Corresponding effect</i>	
<i>EngineCold ON</i>	<i>estartc.wav</i>	<i>Starting a cold engine</i>
<i>Engin Warm ON</i>	<i>estartw.wav</i>	<i>Starting the engine hot</i>
<i>EngineStop</i>	<i>estop.wav</i>	<i>Engine stop</i>
<i>Engine Idle</i>	<i>eidle.wav</i>	<i>Engine idling</i>
<i>EngineStep 1</i>	<i>es01.wav</i>	<i>Motor Ramp 1</i>
<i>EngineStep 2</i>	<i>es02.wav</i>	<i>Motor Ramp 2</i>
<i>...</i>		
<i>EngineStep XX</i>	<i>esXX.wav</i>	<i>Motor Ramp XX</i>
<i>Alarm1</i>	<i>hooga.wav</i>	<i>Battery Alarm</i>
<i>Bowthruster Bow.wav Bow Thruster</i>		
<i>Winch</i>	<i>Winch.wav</i>	<i>Winch</i>
<i>Sound1</i>	<i>horn1.wav</i>	<i>Sirena1</i>
<i>Sound2</i>	<i>horn2.wav</i>	<i>Siren2</i>
<i>Slider1</i>	<i>foghorn.wav</i>	<i>Siren fog</i>
<i>Slider2</i>	<i>seagull.wav</i>	<i>Gulls</i>
<i>Slider3 Bbell.wav</i>	<i>Buoy</i>	<i>Buoy</i>



4. To choose different sound effects simply copy the desired files into the main root of the microSD. Check the name corresponding to the audio samples associated with tags in the file IBU2\_NV.INI.
5. Remove the microSD adapter from MAC / PC and put it back in IBU2 until it clicks, turn on the boat and check the new sounds.
6. New sound sets when issued will be available for download at <http://www.ibu-electronics.com>

You can also create your own sounds, replacing the sounds provided by converting a sound effect or music from any format (WAV, MP3) into WAV format, mono, 22050 Hz, 8 bits. Each sample should not be larger than 1 Mb or its reproduction will be truncated.

The names of the \* .wav files are not important, but you need to keep the correspondence with those reported in the file IBU2\_NV.ini as between each file and its sound effect, provided that no more than 8 characters (plus the ".wav" extension ) and do not contain spaces or periods.

#### Example

"Abcd_defg.wav"	Not good (9 characters);
"Abcdefghi.wav"	Okay (8 characters);
"Ab cd.wav"	Not good (5 characters, but there is a space);
"Ab.cd.wav"	Not good (there is a point in the middle of the name).

**Note:** some audio editing software are not able to successfully convert the audio in this format, or add data that cannot be read by IBU2: If you have problems in the reproduction of its samples, please contact the manufacturer.

**Also avoid reformatting the microSD provided because some may end up not operating properly when used with the IBU2.**



## 7 CONFIGURATION SETTINGS "IBU2\_NV.INI"

In addition to the associations of the sound effects with the wave file in the corresponding text file IBU2\_NV.INI there are other variables that allow you to customize certain features of IBU2.

### Configuring the reverse channel radio

Each line refers to a specific channel receiver, this function is used, if you are using an older radio (without memory), to avoid having to set (if necessary) the reverse channel according to the trucks that use

RadioCH1InverseCmd = FALSE; TRUE FALSE

RadioCH2InverseCmd = FALSE; TRUE FALSE

RadioCH3InverseCmd = FALSE; TRUE FALSE

RadioCH4InverseCmd = FALSE; TRUE FALSE

RadioCH5InverseCmd = FALSE; TRUE FALSE

RadioCH6InverseCmd = FALSE; TRUE FALSE

In this example, all channels have value FALSE this means that no channel is applied on the inversion, or the commands coming from transmitter are reported to the decoding circuit so as sent.

### Configuring the reverse servo

If needed, you can reverse the direction of rotation of the servos, each line is related to a specific channel, this function is used, if you are using an older radio (without memory), to avoid having to set the reverse channels depending on the boat that you are using.

SrvRudInverseCmd = FALSE; TRUE FALSE allows to reverse the rudder control

SrvWinchInverseCmd = FALSE; TRUE FALSE allows you to reverse the winch control

In this example, all channels have value FALSE this means that no channel is applied on the inversion.

Moreover the string SrvWinchType = 0 allows you to select the mode of operation of the dedicated servo winch between 0 (normal) or 1 (360°).

Accepted values 0, 1

### Configure the output OUT 1

The parameter is used to configure the output status OUT1 power

Rele1InitialStatus = 1; [OFF 0 - 1 ON]

In this case, the output will be active on power, entering the value 0 (zero) will be disabled. (The output can be turned on or off from the transmitter, see Chapter 5)



### Configuring the maximum current supplied to the engines

Parameter: **CurrentMotorTreshold = 10; [1..15]**

Adjusts the threshold of current protection.

The default value is 10 Amperes, is possible in case of use of engines can be increased up to a maximum of 15 Ampere the current supplied to each motor.

### Configuration of the power supplied to the motor

The parameters: **PowerMotorScaleSx = 100; [1..100]%** and **PowerMotorScaleDx = 100; [1..100]%**

Allows to adjust the total output power to the motors during running, this function calibrates accurately the movement speed to approach the real dynamic, a lower value will decrease and vice versa a higher the increase.

### Configuring the maximum reverse speed

The parameter: **ReverseSpeed = 50; [1 ... 100]%**

Used to limit the speed when reversing, a lower value will decrease and vice versa one the highest increase. Note this is proportional to the forward speed selected above.

### Configuring the smoke generator

In case you want to use the smoke generator are two configuration parameters:

**SmokeInitialStatus = 0; [OFF 0 - 1 ON]**

This parameter allows you to set the generator, when the boat is turned on, automatically. (The generator can be turned on or off even from the transmitter)

In this example the value 0 (zero) means that the smoke generator is OFF when the model is turned ON.

The smoke generators have different characteristics from one model to another, so the

parameter: **MinPwmSmoke = 50; [1..100]%**

Allows you to determine how much power is delivered to the generator with the engine idling.

The command is proportional to the position of the throttle stick.

Also on board is a secondary output relay power (max. 10 Ampere) that works in ON / OFF mode.

## 8 Authorized Dealers

Europe / U.K. U.S.: RC Tank Electronics <http://rctankelectronics.weebly.com/>  
<http://rc-boat.weebly.com/>

Europe / Italy Modeltecnica <http://www.modeltecnica.it/catalog/index.php>

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<https://www.youtube.com/channel/UCEp-GZ2yJouc3cszClnuIDg>



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Design, manufacture and support of the product:

I.B.U. by Bretti Ivano

<http://www.ibu-electronics.com>

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