



Full Option Electronic Board for R/C Trucks

Operating & Installation Manual



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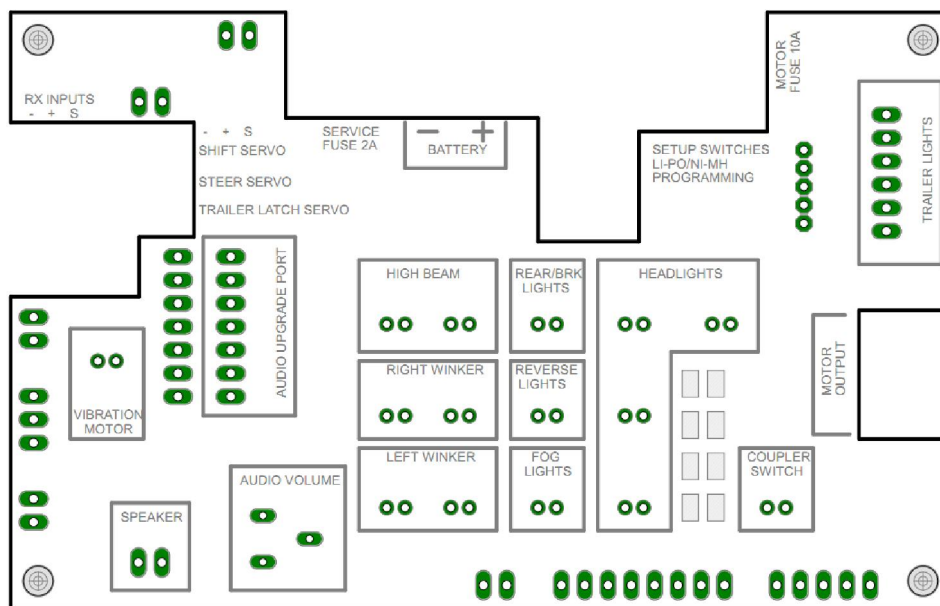
1 INTRODUCTION

The IBU2 Truck is a Multi-Function Controller for Radio Controlled Trucks, featuring realistic sound effects and lighting all from a hobby grade 4 channel radio set (AM, FM, 2.4Ghz) sold separately.

2 FEATURES

- Sound effects are fully user definable via supplied microSD card, so any type of truck can be selected or something totally unique.
- Fully synchronized sounds with truck actions, including engine start-up and shutdown, rev up, brake, reverse beep, horn, indicators, change of speed, gear selection, air discharge, trailer hook up, and many more.
- User settings changeable via the supplied microSD card, no special software required.
- User can define top speed 0-100%
- User can define restricted reverse speed for added realism. 0-100% based on set forward speed
- Compactable with Tamiya lighting tractor unit and trailer units.
- Lighting effects controlled via the remote using 4 channel radio set. Including hazards, head lights and tail lights, high beam, fog lights.
- Automatic synchronized features like reverse beep and reverse light during reversing, brake sounds and brake light when braking, indicators during slow speed turns.
- Cab vibration unit ^(Sold separately) control for realism. User changeable settings via supplied microSD card.
- Modern ESC allowing ultra realistic speed control even at slow speeds. And higher efficiency allowing longer battery run time.
- User changeable protection. IBU2 Truck protected by 2A fuse and 10A fuse for ESC. No more sending back to manufacturer for repair after accidental electrical short.
- Built in battery monitoring to protect your batteries.
- Supports 2S LiPo, 6 cell Ni-Cd, 6 cell Ni-MH batteries.
- Optional audio upgrade unit, allowing twin speakers and twin volume control. 1 dedicated to engine, 1 dedicated to sound effects each rated at 6w.
- Small dimensions at 103 x 65 x 25mm, leaving more space in cab for interior detail.

3. THE IBU2 TRUCK



Layout of the IBU2 Truck.

Connector	Utilization
Vibration Motor	Output for cabin vibration motor
Speaker	2W audio output @ 8 ohms (4W @ 4 Ohms)
High Beam	High beam lights output
Right Winker	Right turn indicator output
Left Winker	Left turn indicator output
Fog Lights	Front fog lights output
Reverse Lights	Reverse light output
Rear /Brake Lights	Rear/brake lights output
Headlights	Headlight/Side lights output
Coupler Switch	Trailer micro switch input
Battery	Power input
Motor Output	Motor output
Audio Volume	Audio volume regulation
Service Fuse	Protection fuse for services (2A)
Motor Fuse	Protection fuse for traction motor (10A)
Gear Shift Servo	Gear shift servo output
Steer Servo	Steering servo output
Trailer Latch	Trailer latch servo output



BOARD SETTINGS

After installing the board on the truck set the type of battery used through the dip switch on the board below.

Battery Type

Li-Po battery (*)
Ni-Mh or Ni-Cd (*)

Switch 1

ON
OFF

Radio Programming

Programming mode
Normal mode

Switch 2

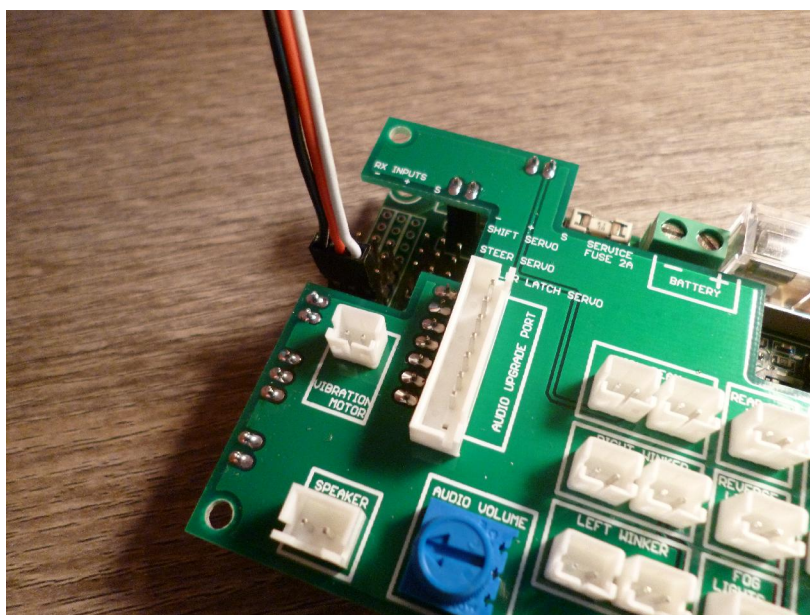
ON
OFF

(*) Monitors the voltage of the battery pack. When this becomes low the alarm sound is played. Further use on a low battery will lead to the truck turning off.

CONNECTING RADIO AND CONFIGURATION

- Connect the receiver with cables (included) referring to the figure and the table below.
- Make sure to have no reverse or dual /rate active on radio channels.
- Turn on the truck and the radio transmitter.
- Wait until the receiver is aligned to the transmitter. (when aligned the low beam lights will stop blinking and stay lit)
- Move the dip switch 2 to ON.
- Move both stick to the radio in all directions until it stops.
- Move the dip switch 2 to OFF.
- The board is now configured for use with the radio / receiver connected to it.

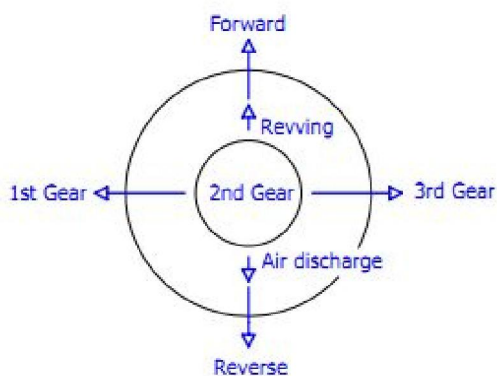
Receiver connected (cable inserted corresponds to channel 1)



Inputs IBU2	Connect to the channel relative to the stick / command you want to use
CH1	Acceleration / reverse
CH2	Steer
CH3	Lights, horn
CH4	Gear shift

5 CONTROLS

Left Stick Functions



Right Stick Functions



- Switch on the truck, the head light will flash.
- Turn on the radio, the head lights remain on and you hear the horn sound.
- At this point you can activate certain functions such as:
High beam lights, fog lights, indicators, emergency lights, horn 1 & 2, coupling / uncoupling trailers.
- Start the engine of the truck (right stick diagonally lower left for 5 seconds) and wait for the engine to finish starting up and starts idling.
- Engage a gear and bring the left stick forward or backward to move, make sure the truck is moving in the right direction.
- Try to steer right and left and check that the wheels are moving in the right direction, check also the activation of turning indicator lights.

NOTE

If some of the movements are reversed compared to the command you need to reverse its own channel on the radio, or change the parameter for the channel in the file "IBU2_TR.ini" in the root of the microSD board inserted in IBU2 (see chapter 7 below).



Additional controls available from the radio controller

- **Head light control (default = ON)**
Right stick in the top left corner for 1-2 seconds to turn on / off the lights
- **High beam lights control** stick right up to 1-2 seconds to turn on / off high beam lights
- **Fog lights control** right stick down for 1-2 seconds to turn on / off lights
- **Emergency lights control** right stick in the upper right corner for 1-2 seconds to turn on / off the emergency lights
- **Latch/unlatch trailer** right stick in the bottom right corner for 1-2 seconds to hook/unhook the trailer
- **Horn 1** right stick up (about 25% of the movement) to play the sound effect of the horn 1
- **Horn 2** right stick down (about 25% of the movement) to play the sound effect of the horn 2
- **Revvng the engine with out moving truck**, right stick up (about a 25% of the movement useful) to play the sound effect of the engine revving.
- **Air exhaust from the air brake reservoir** right stick down (about 25% of the movement useful) to play the sound effect of the exhaust air



6 CHANGING THE SOUNDS

On the supplied microSD are provided customized sound effects for a several number of trucks.

Note: To fully enjoy the sound quality it is recommended to use the original Tamiya™ speaker's or a speaker of good quality available from your local dealer.

To select the set of sounds appropriate for the truck on which is installed the IBU2, do the following:

1. With 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 !!!**), pull it out and insert into a memory card reader (not supplied) on your PC, MAC.
2. Access the media and browse its contents.
3. In the root of the media are the files used by the sound module of IBU2.
Each wave file is associated with a different sound effect according to the correspondence set in the file "IBU2_TR.INI":

<i>Variable in the file IBU2_TR.ini</i>	<i>Es. Audio file</i>	<i>Corresponding effect</i>
<i>Engine Cold ON</i>	<i>estartc.wav</i>	<i>Starting a cold engine</i>
<i>Engine Warm ON</i>	<i>estartw.wav</i>	<i>Starting the engine hot</i>
<i>Engine Stop</i>	<i>estop.wav</i>	<i>Engine stop</i>
<i>Engine Idle</i>	<i>eidle.wav</i>	<i>Engine idling</i>
<i>Engine Step 1</i>	<i>es01.wav</i>	<i>Motor Ramp 1</i>
<i>Engine Step 2</i>	<i>es02.wav</i>	<i>Motor Ramp 2</i>
<i>...</i>		
<i>Engine Step XX</i>	<i>esXX.wav</i>	<i>Motor Ramp XX</i>
<i>Revup</i>	<i>revup.wav</i>	<i>acceleration</i>
<i>Revdw</i>	<i>revdw.wav</i>	<i>deceleration</i>
<i>Airblast1</i>	<i>airbst1.wav</i>	<i>1 air vent</i>
<i>Airblast2</i>	<i>airbst2.wav</i>	<i>Air vent 2</i>
<i>Airblast3</i>	<i>airbst3.wav</i>	<i>Air vent 3</i>
<i>Airblast4</i>	<i>airbst4.wav</i>	<i>Air vent 4</i>
<i>AlarmRev</i>	<i>alarmrev.wav</i>	<i>Reverse Alarm</i>
<i>AlarmBatt</i>	<i>alarmb.wav</i>	<i>Battery Alarm</i>
<i>Brake</i>	<i>brake.wav</i>	<i>braking</i>
<i>Dryer</i>	<i>dryer.wav</i>	<i>air vent dryer</i>
<i>Horn1</i>	<i>horn1.wav</i>	<i>Clacson1</i>
<i>Horn2</i>	<i>horn2.wav</i>	<i>Clacson2</i>
<i>Latch</i>	<i>latch.wav</i>	<i>trailer coupling</i>
<i>Unlatch</i>	<i>unlatch.wav</i>	<i>release trailer</i>
<i>Shift1</i>	<i>horn1.wav</i>	<i>Clacson1</i>
<i>Shift2</i>	<i>horn2.wav</i>	<i>Clacson2</i>
<i>Turn1</i>	<i>turn1.wav</i>	<i>indicator 1</i>
<i>Turn2</i>	<i>turn2.wav</i>	<i>indicator 2</i>



4. To choose a different truck set for your truck simply enter into its subfolder (e.g. "Mack") and copy all the files in the root of the microSD, overwriting the existing ones. Check the name matching the audio samples with the associated tags in the file IBU2_TR.INI.
5. Remove the microSD from the PC/MAC adapter and put it back into the IBU2 socket until it clicks, turn on your truck and try new sounds included.
6. New sound sets when produced will be available to download from http://www.ibu-electronics.com/downloads_9.html

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

The names of the * .wav files are not important, as long as the file is reported IBU2.ini proper correspondence between each file and its sound effect, and provided they are not longer than 8 characters (plus the extension ".wav") 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 is not able to successfully convert the audio in this format, or add data that can not be read by IBU2: if you have problems in the reproduction of its samples, please contact the manufacturer.

Also avoid reformat the microSD provided because some operating systems do not properly format the media.



7 CONFIGURATION SETTINGS "IBU2_TR.INI"

In addition to the associations of the sound effects with the corresponding wave file, into the text file IBU2_TR.INI there are other variables that allow you to customize certain features of your IBU2 Truck.

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 channels depending on the truck that are using

RadioCH1InverseCmd = FALSE; TRUE / FALSE

RadioCH2InverseCmd = FALSE; TRUE / FALSE

RadioCH3InverseCmd = FALSE; TRUE / FALSE

RadioCH4InverseCmd = FALSE; TRUE / FALSE

In this example, all channels have value FALSE this means that no channel is applied on the inversion, or the commands that arrive from the 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, and this function is used as different manufactured servos turn in opposite direct. This will be truck specific.

The line:

SteerInverseCmd = FALSE; TRUE / FALSE allows you to reverse the steering control

The line:

TrailInverseCmd = FALSE; TRUE / FALSE allows to invert the command of latch/unlatch the trailer

The line:

ShiftInverseCmd = FALSE; TRUE / FALSE allows you to reverse the command of the gear shift

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

Configuring the front and rear lights

The parameter is used to configure the state of the headlights at truck power on

HeadlightInitialStatus = 1; [0 OFF - 1 ON]

In this case, the lights will be turned on at power on, by entering the value 0 (zero) the truck will start with the lights off.

(The lights can be turned on or off even from the transmitter, see chapter 5 Controls)



Configuration of the rear lights and brake lights

The rear lights and the stop, (typically two LEDs) are powered by the same output, the output is modulated to obtain a low intensity for the tail lights, the parameter:

TailLightIntensity = 50; [1..50]%

Allows you to adjust the brightness of the rear lights, a lower value will decrease and vice versa a highest increase.

Since braking output is modulated at 50% if you use a value very close to this for the sidelights the braking effect will be barely visible.

The following parameter allows you to adjust the length of time of the brake lights stay lit when you make a brake:

BrakeDuration = 500; [100..5000] mSec

The range of values allowed is from 100 to 5000 milliseconds.

Configuring the maximum current supplied to the motor

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

Adjusts the threshold of over current monitoring protection.

The default value is 10 Amperes, it is possible in case of use of particular reducers or very heavy truck to increase up to a maximum of 15 Ampere the current supplied to the motor.

Configuration of the power supplied to the motor

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

Allows to adjust the overall power delivered to the engine during running, this function calibrates accurately the movement speed to approach to the dynamics of the real truck, a lower value will decrease and vice versa a higher increase.

Configuration of the vibration of the cab of the truck

The parameters: **MinPwmMot = 25; [0..100]** and **MaxPwmMot = 30; [0 ... 100]**

Allow to set the minimum and the maximum speed of the vibration unit, from 1% to 100%

To turn off simply enter the value 0 in both parameters.

Configuring the maximum reverse speed

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

Used to limit the speed during reverse.

To have same speed backwards as forwards set parameter to 100



8 TROUBLE SHOOTING

Nr.	ANOMALY	POSSIBLE SOLUTION
1	I turn on the truck but nothing happens.	<ul style="list-style-type: none"> - The battery is exhausted: recharge - The power connections are broken or incorrect: check the connections from the battery
2	The engine does not start when I hold stick down left.	<ul style="list-style-type: none"> - Check that the turning indicators flash, high beam and fog lights operate in the right direction with respect to the control stick, if not servo channels and/or reverse settings need changing. If correct check battery voltage, engine won't start on a low battery.
3	I turn on the truck but the headlights continues to flash	<ul style="list-style-type: none"> -No valid RX signals received : check the connections between the IBU2 truck and receiver
4	The turning indicators are in opposite direction	<ul style="list-style-type: none"> - Reverse the channel (Ch4) in the transmitter or in the settings file IBU2.ini
5	I have no sound	<ul style="list-style-type: none"> - Ensure that the volume is turned up - Ensure that the speaker is connected - Ensure the microSD card is plugging in correctly - Ensure that the samples are all present in the microSD card, the correct size and properly associated to its function in the file IBU2.ini
6	The truck moves or steers the opposite direction compared to controls	<ul style="list-style-type: none"> - Reverse the acceleration channel (Ch1) and / or steering (Ch2) on the transmitter or in the settings file IBU2_TR.ini
7	The servo(s) does not move	<ul style="list-style-type: none"> - Check that the servo connector is inserted with the correct orientation - Check that the servo can move freely in the direction
8	The card overheats or a burning smell	<ul style="list-style-type: none"> - Disconnect the battery immediately / off the truck : there must be some short circuit in your links!

9 Authorised Dealers

Europe / U.K. U.S.: RC Tank Electronics <http://rc-truck.weebly.com/>
<http://rctankelectronics.weebly.com/>
Europe / Italy Modeltecnica <http://www.modeltecnica.it/catalog/index.php>

10 Follow Us



<https://www.youtube.com/channel/UC1SWKKffZzUtXBU9B4QBRAg>



<https://www.facebook.com/pages/IBU2-Truck/1535099413442564>

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