RUDDOG RP-0500 Racing Brushless Speed Controller User Manual

RP-0500 Racing Brushless Speed Controller
User Manual

Contents

RP-0500 Racing Brushless Speed Controller

MANUAL
Thank you for your purchasing the RUDDOG Racing RXS Brushless Speed Controller. Please read and understand the following pages carefully before your first run. This will help you to set and run your speed controller properly and to gain maximum performance. Please keep this instruction manual in a safe place for future reference.

SPECIFICATION

- 32 Bit Processor System
- Super Low Resistance FET Technology
- Continuous Current: 160A
- Peak Current: 760A
- Voltage: 2S – LiPo | 6.0 – 8.7V
- Motor Limit: Over 4.5T
- BEC: Adjustable 6.0V | 7.4V
- Weight: 38g (without wires)

INSTALLATION

When installing your RUDDOG Racing RXS esc in your car, look for a place where it is protected from any rotating parts or crashes. When you have found this position,
install it securely with double-sided tape.

1. To solder the motor wires please observe the following connection order: A (blue) B (yellow) C (orange)
2. Connect the sensor unit of your motor to the RXS esc.
3. Plug the receiver lead into channel 2 position of your receiver. Ensure the connection order on the wiring

    coming from the ESC matches the connection order on your receiver socket.
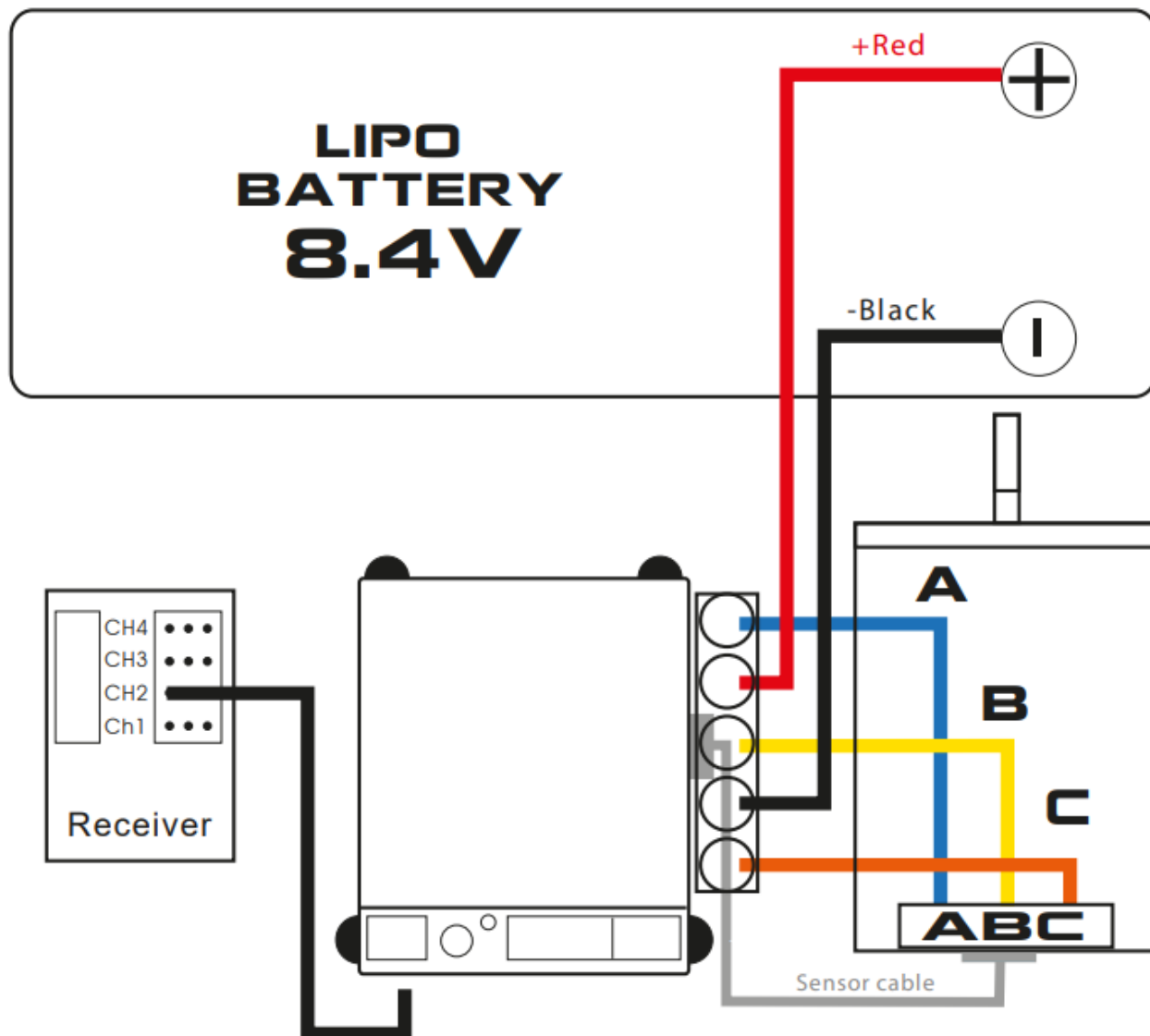
⚠️ **WARNING!:**
Ensure that all wires are safely secured away from any rotating parts!

THROTTLE RANGE CALIBRATION

You have to do this once before using your esc for the first time, as well as when changing your transmitter or after a firmware update. Before calibrating your RXS esc to your transmitter, please set all your transmitter settings as follows:
– Brake/Throttle end point / ETV / EPA = 100%
– Brake/Throttle Exponential / EXP / EXPO = neutral (linear)
– Neutral point = centre
– Set the direction of the throttle channel to REV (reverse)

1. Connect the ESC with the battery pack

2. Press and hold the button on the RXS until the red LED turns off and the RXS beeps once.

3. Keep the throttle trigger in neutral position and push the button once. The LED will flash blue one time and you will hear a beep sound.

4. Pull the trigger to full throttle and push the button again in this trigger position. The blue LED will blink twice and you will hear two beeps sound to confirm this setting.

5. Push the throttle trigger to full brake, and push again the button in this trigger position.The blue LED will flash three times combined with three beeps sound.

6. You are now ready to use the RUDDOG Racing RXS.

ADJUST YOUR RXS

Please use the separately available RUDDOG Racing Program Card (RP-0501) to change the settings on your RUDDOG Racing RXS esc.This program card will also enable you to install future firmware updates on your RXS speed controller.
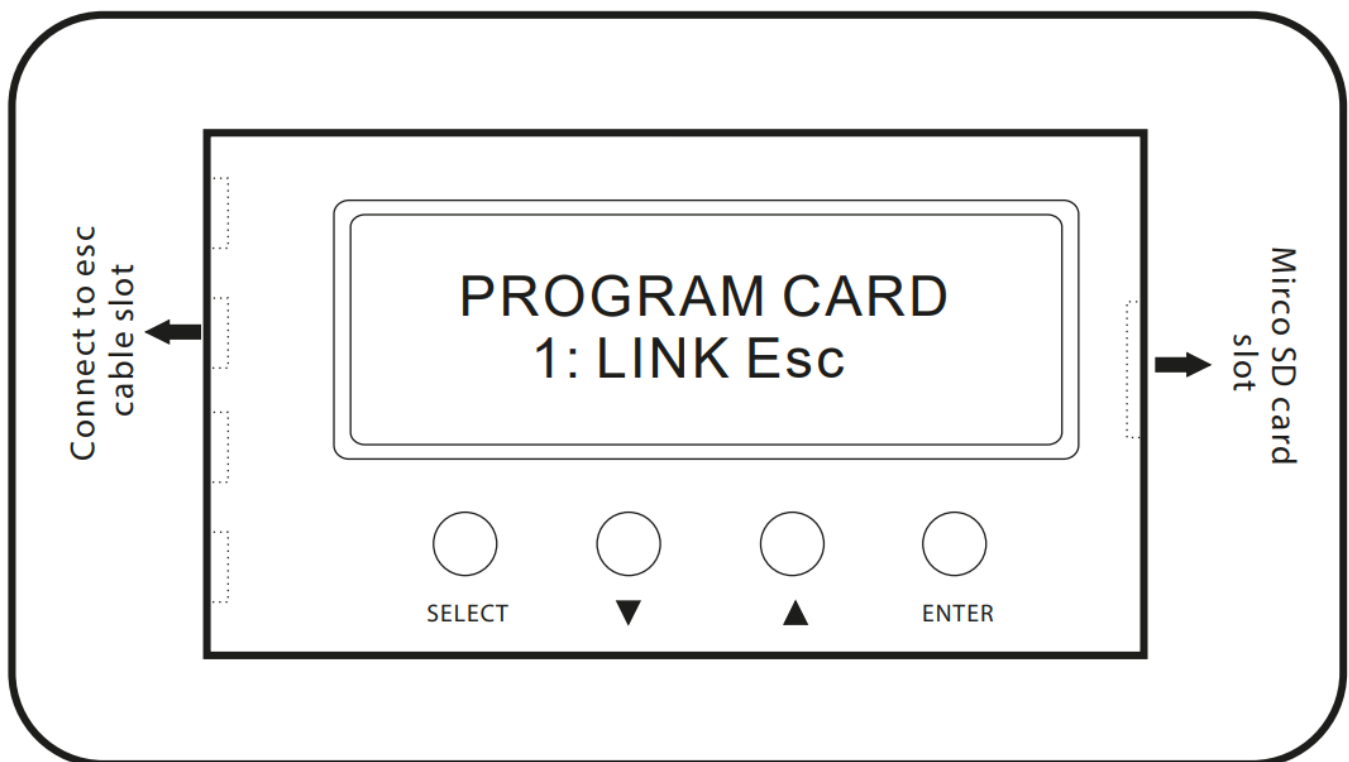
Connect your program card with the included wire to your RXS speed controller, while it is turned off.

When you turn on your ESC with the connected program card, you will first see an entry screen, where you select"Link ESC"and press Enter twice.

Now you can select between:

A. Power Settings
B. Brake Settings
C. Timing Settings
D. General Settings
E. Load Setting
F. Save Setting
G. Limit Value
H. ESC Firmware Update

Use the up and down buttons to select a setting and press enter. Within each of the settings, use the select button to jump to the next value. You can change the value with the arrow buttons and confirm each value with enter. If you press and hold the select button, you will exit the menu.

A. Power Settings

1. **PWM Frequency**

   The PWM Frequency is one of the key factors to adjust the feeling of your ESC. The lower the value is, the more aggressive the feeling will be. The higher the value is, the smoother it gets, and your top end speed will increase slightly. However, a higher value will also increase temperature of your ESC. At some point, a too high setting will also feel disconnected because of a certain delay between a change of trigger position and a change in speed. We recommend a setting of 7.000-9.000 Hz for stock classes and 10.000-12.000 for modified.

2. **Punch**

   This adjust the throttle punch of the ESC. More punch means more aggressive on trigger position change. We usually recommend a value of 15-25.

3. **Compress**

   Compress adjust the throttle curve of your ESC. OFF is the linear setting and is what we recommend to start with. The higher the value is, the more responsive the bottom end will get.

4. **Throttle Feel**

   As the name says, this value has a major impact on the feel of your ESC. We recommend a value of 1 to 3 for onroad and 3 to 5 for offroad. The higher the value is the more reactive the ESC will feel.

5. **Reverse Force**

   This adjust the speed when using reverse function.

B – Brake Settings

1. **Drag Brake**

   The function provides the driver a set percentage of brake when you have the transmitter resting in neutral. Drag brake is used in racing to slow a vehicle as you let off approaching a corner versus the driver having to push the brake at every corner. Try working with this to get a sense of how you might use this for your track. If you are running on a high traction track with tight corners, a stronger setting should work best. If you are running in an open area, you will find a smaller percentage will result in better control. If you are running on dusty or slippery surfaces, you will more than likely want to use the lowest option. The standard range is usually between 4-8%

2. **Brake Punch**

   This adjusts the punch of your brakes. A higher value means more punch. We recommend a setting of 15-25.

3. **Initial Brake**

   The function refers to the brake strength applied in the initial position of the brake. The default is'=drag brake; so the brake effect can be smooth.

4. **Brake Frequency**

   A lower brake frequency has a more aggressive brake feel at higher RPM, so at the beginning of braking, and will be smooth at lower RPM. A higher brake frequency is smoother initially, but increases brake strength towards the end.This setting heavily depends on your own preference and driving style. We recommend starting with a value of 1.200 to 2.000 Hz, and adjusting it in steps of 200 to your liking.

5. **Max Brake Force**

   A higher brake force will give you more brake; however, it can also lead that your tires lock up. In addition, a higher brake force will result in a higher ESC temperature. Usually less is more. If you feel that you are missing brake force, but you are already on the highest setting, your tires might be already locking up. In addition, it

might be that you brake too late. As your turn entry speed is the most critical factor in getting a turn apex or not

C, liming Settings

The timing settings have a major influence on the speed and RPM of your car/motor. Therefor you have two different timing option available. Boost timing for bottom to mid-range, and Turbo Timing for top end or full throttle timing. A higher timing setting will always increase the temperature of your ESC.

1. **Boost Activation**

   Here you can select how the boost timing is activated. RPM will allow you to set a specific value, while AUTO will automatically adjust the Boost activation.

2. **Boost**

   This adjust the value for boost timing. More timing means more bottom to mid-range speed.

3. **Boost Start RPM**

   This defines the start RPM of boost timing. As boost is dynamically defined through the RPM, when RPM is lower than start RPM, the start boost is '0'. When the RPM is between start RPM and end RPM, the boost changes dynamically according to the RPM.

4. **Boost end RPM**

   This defines the end of boost timing based on RPM.

5. **Turbo Timing**

   This adjust the value for turbo timing. A higher value has more top end timing and so more top speed.

6. **Turbo Start**

   This defines the start of turbo timing based on throttle trigger position.

7. **Turbo Delay**

   Adds a delay time before the turbo start.

8. **Turbo Up Rake**

   Here you can adjust how aggressive or smooth the turbo timing kicks in.The turbo timing will start at (rat its activation trigger position and increase over time to the set value. For example if you set turbo timing to 20° at a turbo timing up rake of 30°/0.5s, it will take 0.33s to reach 20° turbo timing.

9. **Turbo Down Rake**

   Same applies to the turbo down rake. Once you lift from full throttle and get out of your turbo timing range, then the down rake will define how fast the turbo timing declines.

General Setting

1. **Running Mode**

   Forward /Brake: This is a race setting – Reverse is disabled.

   Forward /Brake/Reverse: Reverse enabled.

   Forward / Reverse: If the option is active, the RC car could go forward and backward, but could not brake.

2. **Batt Low Voltage Protection**

   Here you can turn ON or OFF the low voltage protection for your battery. In ON all settings are adjusted automatically based on the battery you use. 3) ESC Overheat Protection This turns ON or OFF the overheat protection of your ESC. We recommend leaving this turned ON as a burned ESC is not covered by warranty.

3. **Motor Overheat Protection**

   This turns ON or OFF the overheat protection of your motor.

4. **BEC voltage**

The BEC voltage can be adjusted to your servo type. If you servo is capable of 7.4V / HV the BEC voltage can be increased and will lead to a faster and stronger servo. However, it will damage your servo if it is no HV servo. Also a slower servo can sometime be beneficial to calm down the car.

5. **Motor Action**

   Changes the motor rotation from counter clock wise to clockwise.

6. **Motor Link**

   For a clean wiring we implemented to swap A and C pole on the ESC. Activate this so you do not have to cross your motor wires on certain motors or motor positions.

7. **Remote ON/OFF**

   Here you can active the possibility to turn off your ESC by holding brake for over 5 seconds.

E. LOAD SETTING
This allows you to load a previously saved setting from your program card. This is an easy option to load the full settings from a different US ESC to yours.
F. SAVE SETTING
This allows you to save the settings onto the SD card to exchange with friends or multiple other cars also using the RXS ESC.
G. Limet Value
This is a simple data logger option of the RXS speed controller. It will give you information like minimum voltage, ESC maximum temperature, motor maximum temperature and maximum RPM of your last run.

FIRMWARE UPDATE

The separately available program card can update the firmware of your RXS speed controller. Therefor you need a empty MicroSD card, with a folder named "RUDDOG': In this folder you safe both the ESC and program card firmware files. No other folders must be on this SD card. Insert the SD card into the MicroSD card slot of the program card.

1. Update the program card first by selecting PROGRAM CARD Firmware Update on the opening screen of your program card. Press Enter to start the update.
2. Once the Program Card is updated, link it to your ESC and select RUDDOG RXS Firmware Update by pressing Enter.
3. Once the update is finished, do not forget to calibrate the ESC again to your transmitter and set all values again to your liking.

RUDDOG RACING TEAM TIPS

1. Keep your wiring nice and clean. A clean wiring job will prevent damages to the wires and your ESC. We have a A and C swap option in the General Settings of the RXS. Therefore, you do not have to cross the motor wires.
2. The RUDDOG Racing RXS has been developed with the RP542 brushless motor. This combo will always ofier you absolute best performance.
3. Mount a cooling fan next to your motor. A cooler motor always brings better performance over the whole runtime. Especially motor temperatures of over 85°C can not only damage your motor, but also your ESC.
4. We will regularly upload setups on social media as well as our website. Follow us to always have the latest RUDDOG Racing team setups and information.

Documents / Resources
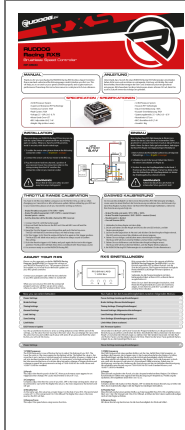
[RUDDOG RP-0500 Racing Brushless Speed Controller](#) [pdf] User Manual
RP-0500 Racing Brushless Speed Controller, RP-0500, Racing Brushless Speed Controller, Brushless Speed Controller, Speed Controller

Manuals+,