

### 01 Disclaimer



Thank you for purchasing the HOBBYWING's XERUN AXE Brushless System! Brushless power systems can be very dangerous. Any improper use may cause personal injury and damage to the product and related devices. We strongly recommend reading through this user manual before use. Because we have no control over the use, installation, or maintenance of this product, no liability may be assumed for any damage or losses resulting from the use of the product. We do not assume responsibility for any losses caused by unauthorized modifications to our product. We, HOBBYWING, are only responsible for our product cost and nothing else as result of using our product.

## XERUN USER MANUAL

XERUN AXE R2 Brushless System

20231016

### 02 Warnings

- Ensure all wires and connections are well insulated before connecting the ESC to related devices, as short circuit will damage your ESC.
Ensure all devices are well connected to prevent poor connection that may cause your vehicle to lose control or other unpredictable issues such as damage to the device.
Read through the manuals of all power devices and chassis and ensure the power configuration is correct before using this unit.
Please use a soldering iron with the power of at least 60W to solder all input/output wires and connectors.
Do not hold the vehicle in the air and free it to full throttle, as rubber tires can "expand" to extreme size or even crack to cause serious injury, or damage to your system can occur.
Never allow the ESC & motor temperatures (external temp.) go above 90/194, as high temperature may cause damage to both the ESC and motor.
Always disconnect the batteries when your vehicle is not in use. The ESC will continue to drain current if it is connected to batteries (even if the ESC is turned off). Extended battery connection (Even when off) will cause batteries to completely discharge and result in damage to batteries or ESC. This will NOT be covered under warranty.
The ESC must be Calibrated or setup to your radio system before normal operation.

### 03 Features

- Apply FOC(Field Oriented Control) driving mode to the power system of rock crawler. The low speed torque is very strong, it is better than ordinary sensored brushless power system or even better than the brushed power system.
The chip-type magnetic encoder inside the motor guarantees consistency between three phases' signals and always outputs the pure and precise signals indicating the rotor position.
The waterproof and dust-proof design (\*IP67 standards) allows the AXE brushless power system to be used in all weather & track conditions without any issue of damage caused to the system from water or dust. Damage to the vehicle caused by water, mud, or conditions should be monitored closely when running in muddy, wet, or adverse conditions.
Intelligent torque output & speed closed-loop control for easy control, and consistent motor RPM under all loads.
The adjustable drag brake & drag brake rate control with the maximum drag brake of up to 200% (that's nearly twice the drag brake of standard brushless power systems) can provide unprecedented parking capacity on slopes, with no jerky stops.
The innovative built-in Bluetooth connectivity allows users to read ESC data or update ESC firmware via a smart phone (installed with the HW LINK app).
Multiple protections: low-voltage cutoff, thermal, fail safe (throttle signal loss), motor lock-up, over current, and battery reversal.
It supports dual operation mode, not only classic "Forward and Reverse (rock crawler)" mode, but also "Forward/Reversewith brake (normal)" mode.

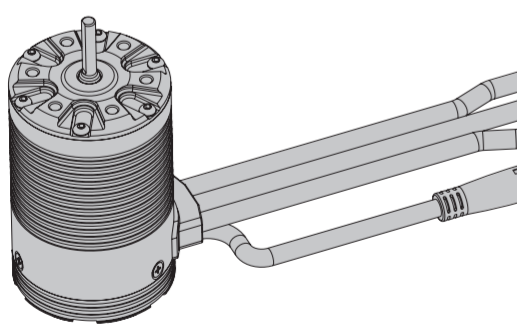
### 04 Specifications

Table with columns for Model, PN, Cont/Peak Current, Motor Type, Applications, LiPo/NiMH Cells, BEC Output, Connectors, Size/Weight, ESC Programming and COMBO options for 2300KV, 1400KV, 2100KV, 2800KV, and 3300KV.

Table with columns for PN, Motor Model, KV (No-load), LiPos, Resistance, No-load Current, Motor Diameter Length, Shaft Diameter Length, Poles, Weight.

### 05 Connections

XERUN AXE R2 Brushless Motor



XERUN AXE R2 Brushless ESC

Please make sure that the two arrows align when connecting, otherwise you may damage the inner part of the connectors and cause the power system to function abnormally. Remember, never connect/disconnect them forcibly. This is an extremely powerful brushless motor system. For your safety and the safety of those around you, we strongly recommend removing your pinion gear before performing calibration and programming functions with this system, and keeping wheels in the air when you turn on the ESC.

- Cooling Fan Installation (Optional)
Motor Wiring
Receiver Wiring
Battery Wiring

Please ensure that the ESC sensor wire has been plugged into the motor sensor wire and screwed up, otherwise the water may get inside and damage the ESC or motor.

- Receiver Wiring
Battery Wiring

### 06 ESC Setup

#### 1 Set the Throttle Range - ESC Calibration - Radio Setup

In order to make the ESC match the throttle range, you must calibrate it when you begin to use a new ESC. If you install a new radio system, or make changes to your throttle/brake values in your transmitter, you must redo the ESC Calibration Process. Failure to calibrate the ESC to your radio system will result in the ESC not working correctly. We strongly recommend activating the "Fail Safe" function of the radio system and set it (F/S) to "Output OFF" or set its value to the "Neutral Position" to ensure the motor can be stopped when there is no signal received from the transmitter. About setting the throttle range, please follow the following steps:

Diagrammatic steps for ESC calibration: Press and hold the SET button, Press the ON/OFF button, Release the SET button once the LED flashes. Text: ESC starts to flash (Note 1: the motor beeps at the same time), and then release the SET button immediately. (The ESC will enter the programming mode if the SET button is not released in 3 seconds, then you need to restart from step 1.) Note 1: Beeps from the motor may be low sometimes, and you can check the LED status instead.

Diagrammatic steps for setting neutral point and full throttle: Move the throttle trigger to the neutral position and press the SET button. The Green LED flashes once and motor emits "Beep" tone. Move the throttle trigger to the end position of forward and press the SET button. The Green LED flashes twice and motor emits "Beep-Beep" tone. Move the throttle trigger to the end position of backward and press the SET button. The Green LED flashes three times and motor emits "Beep-Beep-Beep" tone.

#### 2 Power On/Off & Warning Tones

- Power ON/OFF: (Start with the ESC turned off), press the ON/OFF button to turn on the ESC; (start with the ESC turned on) press and hold the ON/OFF button to turn off the ESC.
Warning Tones: Turn on the ESC in the normal way (that is to turn it on without holding the SET button); the motor will beep the number of LiPo cells you have plugged in. For example, 3 beeps indicate a 3S LiPo.

#### 3 Programmable Items

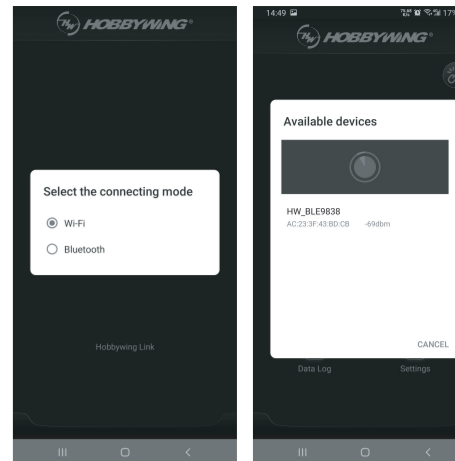
Table with columns: Item #, Programmable Item, Option 1, Option 2, Option 3, Option 4, Option 5, Option 6, Option 7, Option 8, Option 9, Option 10.

Note: those black-and-white options are default values.

- Running Mode
Option 1: Forward and Reverse
Option 2: Forward/Reverse with Brake
Option 3: Forward/Reverse with Brake
Option 4: Forward/Reverse with Brake
Option 5: Forward/Reverse with Brake
Option 6: Forward/Reverse with Brake
Option 7: Forward/Reverse with Brake
Option 8: Forward/Reverse with Brake
Option 9: Forward/Reverse with Brake
Option 10: Forward/Reverse with Brake
Cutoff Voltage
RPM/Throttle Matching
Max. Forward Force
Max. Reverse Force
Turbo Timing
Turbo Delay
Drag Brake Force
Drag Brake Rate

### 4 ESC Programming & Firmware Upgrade - The Axe ESC is Only Adjustable using the HW Link App and a Bluetooth enabled Smart Phone

- Program your ESC with a smart phone (installed with the HW LINK app)
Download and install the Hobbywing's official app "HW LINK" on your smart phone. For smart phones with the iOS operating system, please search "Hobbywing" in the App Store; for smart phones with the Android operating system, search "Hobbywing" in the Google Play or download it from our website or scan the following QR code to download it.
Connect a battery to the ESC and turn it on, then open the Hobbywing official app "HW LINK" on your smart phone.
It will ask if you want to connect "Bluetooth" or "WiFi" the first time when you open the app; at this point, please select "Bluetooth". You need to change the connection to "Bluetooth" after using the "WiFi" connection, you can click "Settings" (on the home page) and then "Select the connecting mode" to change the connection. A list of Bluetooth devices will pop out when you click the ESC icon on the upper right corner, then select the ESC you want to program to establish the Bluetooth connection between the ESC and smart phone. (Note: the default name & password of the Bluetooth device are HW\_BLE\*\*\*\* & 8888888 respectively.)
Click "Parameters" (on the home page) to adjust the ESC parameters, click the ESC icon on the upper right corner to disconnect the Bluetooth connection between the ESC and smart phone after completing and saving the adjustments.



- Firmware Upgrade with a smart phone (installed with the HW LINK app)
Download and install the Hobbywing's official app "HW LINK" on your smart phone.
As you enter the app, click Settings->About->Check for updates to ensure that the database and software version of your ESC are the latest.
Connect a battery to the ESC and then turn it on, open the "HW LINK" app on your smart phone, a list of Bluetooth devices will pop out when you click the ESC icon on the upper right corner, then select the ESC (Bluetooth device) you want to program to establish the Bluetooth connection between the ESC and smart phone.
(Note: the default name & password of the Bluetooth device are HW\_BLE\*\*\*\* & 8888888 respectively.)
Click "Firmware upgrade" and then "Select the target version" to select the firmware version you need, and then click "Update" to upgrade your ESC. After the upgrade, you can adjust the parameters via "Parameters" and click the ESC icon on the upper right corner to disconnect the Bluetooth connection between the ESC and smart phone after saving the adjustments.



- During the upgrade process, please ensure that the network connection is stable and do not upgrade your ESC at any place with strong interference.
In addition, please ensure that the smart phone is fully charged and the battery connected to the ESC still has sufficient power and it's firmly connected to the ESC.
Do not disconnect the battery during the upgrade process, as that may cause the ESC to get damaged or be unable to function.
When connecting the Bluetooth device (your ESC), please ensure the connection between the ESC sensor wire and the motor sensor wire is normal, otherwise the Bluetooth device cannot be connected and programmed.

### 5 Factory Reset

- Restore the default values (ESC parameters & Info about the Bluetooth module) with the SET button
Turn on the ESC, press and hold the Set button for over 3 seconds.
Pressing and holding the SET button for over 3 seconds at any time when the throttle stick is at the neutral position (except during the ESC calibration or programming), can factory reset your ESC. The Red & Green LEDs flash at the same time indicating the factory reset is successful. The default values only take effect after you turn the ESC off and then on again.
Attention! This method will also factory reset the Bluetooth device.
Restore the default values (only the ESC parameters) with a smart phone (installed with the HW LINK app)
After entering the app and establishing the Bluetooth connection between the ESC and smart phone, click "Factory Reset" in "Parameters" to factory reset your ESC. After that, please re-calibrate the throttle range.

### 6 Automatic Motor Pairing (Optional)

- You must do the "automatic motor pairing" (as explained below) when any of the following situations occurs:
1) Updated the ESC firmware,
2) Issues like loose rear endplate, severe impact, or abnormal heat (during the operation) abnormal power output occurs to the motor,
Steps of "Automatic Motor Pairing"
Step1: Unplug the throttle wire from the receiver, and then remove the pinion gear (or you can hold the vehicle in the air and remove the wheels, but the effect won't be that good);
Step2: Connect a battery (to the ESC), turn it on, press and hold the SET button for 3 seconds after it completes the self test to enter the "automatic motor pairing", the motor will spin a while during the process.
Step3: The ESC will automatically re-start and beep out the number of the LiPo cells you've plugged in after the pairing completes, after that, please re-plug the throttle wire into the receiver, and then the power system will be ready.

### 07 Explanations for Different Status LEDs

- During the Start-up Process
The Red LED keeps flashing rapidly indicating the ESC doesn't detect any throttle signal or the neutral throttle value stored on your ESC may be different from the current value stored on the transmitter. - Redo the ESC calibration Process if your ESC is flashing and not working.
The Green LED flashes "N" (number of) times indicating the number of LiPo cells you have plugged in.
In Operation - What lights you should see.
The Red & Green LEDs go out when the throttle trigger is in throttle neutral zone.
The Red LED turns on solid when your vehicle runs forward. The Green LED will also come on solid when pulling the throttle trigger to the full (100%) throttle endpoint and setting the "Max. Forward Force" to 100%.
The Red LED turns on solid when you brake the vehicle, the Green LED will also come on solid when pushing the throttle trigger to the full brake endpoint and setting the "Max. Reverse Force" to 100%.
Error or Warning LED CodesN
The Red LED flashes a short, single flash that repeats (☆, ☆, ☆) indicating the low voltage cutoff protection is activated.
The Green LED flashes a short, single flash that repeats (☆☆, ☆☆, ☆☆) indicating the ESC thermal protection is activated.
The Green LED flashes a short, double flash that repeats (☆☆☆, ☆☆☆) indicating the motor thermal protection is activated.
The Green and Red LEDs flash a short, double flash that repeats (☆☆☆, ☆☆☆) indicating the power system stops functioning due to "sensor issue". In that case, please check if the ESC sensor wire has been firmly connected to the motor sensor wire before resuming the operation.

### 08 Trouble Shooting

Table with columns: Trouble(s), Possible Causes, Solution(s).