

# 01 Introduction

## XERUN USER MANUAL

Brushless Electronic Speed Controller  
XERUN XR10 STOCK SPEC G2 ETS



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# 02 Warnings

- To avoid short circuits, ensure that all wires and connections are well insulated before connecting the ESC to related devices.
- Ensure all devices in the system are connected correctly to prevent any damage to the system.
- Read the manuals of all the items being used in the build. Ensure gearing, setup, and overall install is correct and reasonable.
- Stop usage once the casing of the ESC exceeds 90°C / 194°F as this may cause damage to both the ESC and motor. Hobbywing suggest activating the overheat protection.
- The battery must be disconnected after use. There is a small draw even when the system is off, and will eventually fully drain the battery. This may cause damage to the ESC, and will NOT BE COVERED UNDER WARRANTY.

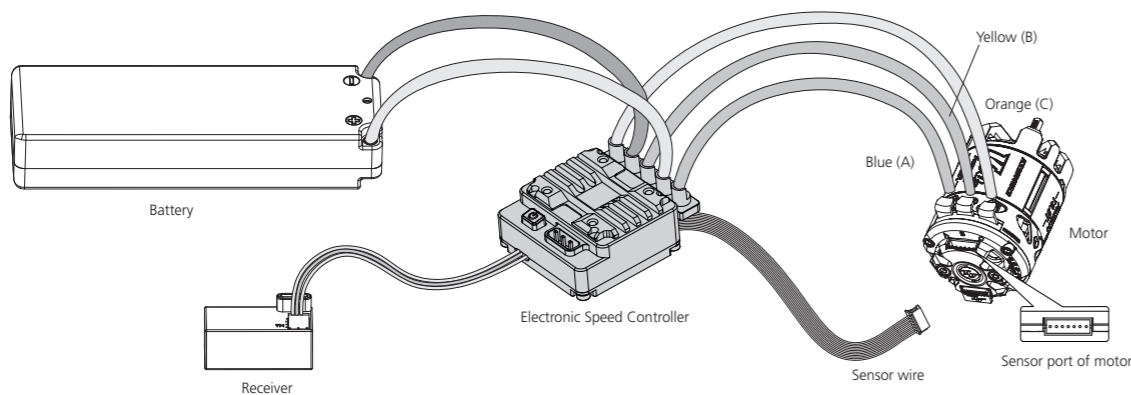
# 03 Features

- Separate PRG/FAN port is able to power an external fan for maximize cooling performance or connect a LCD program box or OTA Programmer to the ESC.
- Multiple protections: low-voltage cutoff protection, ESC and motor thermal protection, and fail safe (throttle signal loss protection), reverse polarity protection (the external standard capping will still be damaged if battery reversal occurs).
- Data logging for recording the maximum ESC/motor temperature, the lowest voltage of the battery, and others in real time.
- Parameter settings and firmware upgrade via Hobbywing multifunction LCD G2/Pro program box or OTA Programmer (item sold separately).

# 04 Specifications

Model	XERUN XR10 STOCK SPEC G2 ETS
Cont./Peak Current	100A/500A
Motor Type	Sensored / Sensorless Brushless Motors
Applications	Stock Class of 1/10 Touring Car and Buggy Racing, 1/10 Drift
Motor Limit	With 2S LiPo: >= 10.5T
LiPo/NiMH Cells	2S LiPo (Only)
BEC Output	6V, Continuous Current of 5A (Switch-mode)
Size/Weight	34.8x30x13.8mm / 63g(w/ wires)
Programming Port	PRG/FAN Port

# 05 Connections



This is an extremely powerful brushless motor system. For your safety and the safety of those around you, we strongly recommend removing the pinion gear attached to the motor before performing calibration and programming functions with this system. It is also advisable to keep the wheels in the air when you turn on the ESC.

## 1. Motor Connection

Sensored motor connection MUST connect A from the ESC to A on the motor, B to B, and C to C, with the sensor wire connected any variation of the motor to ESC connections may cause damage.

## 2. Receiver Connection

The throttle control cable on the ESC has to be plugged into the throttle (TH) channel on the receiver. The throttle control cable has an output voltage of 6V to the receiver and steering servo, please do not supply additional power to the receiver, otherwise the esc may be damaged. If additional power is required, disconnect the red wire on the throttle plug from the ESC.

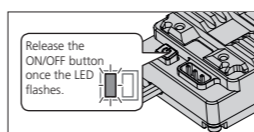
## 3. Battery Connection

Proper polarity is essential. Please ensure positive (+) connects to positive (+), and negative (-) connects to negative (-) when plugging in the battery! When reverse polarity is applied to the ESC from the battery, the external standard capping will be damaged.

# 06 ESC Setup

## 1 Set the Throttle Range - ESC Calibration Process

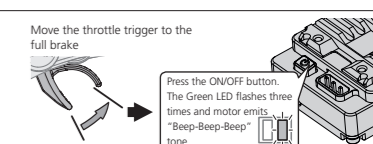
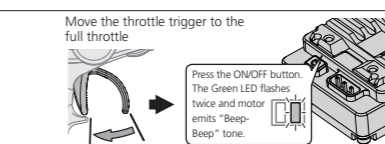
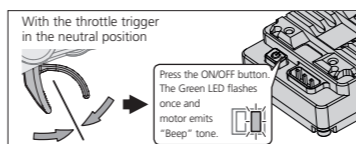
Begin using your ESC by calibrating with your transmitter. We strongly recommend Hobbywing users to use the "Fail Safe" function on the radio system and set (F/S) to "Output Off" or "Neutral Position". Example of calibrating Neutral range and Endpoint.



1. Turn on the transmitter, ensure all parameters (D/R, Curve, ATL) on the throttle channel are at default (100%). For transmitter without LCD, please turn the knob to the maximum, and the throttle "TRIM" to 0. Please also turn the corresponding knob to the neutral position. **This step can be skipped if the radio's settings are default.**

2. Start by turning on the transmitter with the ESC turned off but connected to a battery. Holding the "ON/OFF" button, the RED LED on the ESC starts to flash (the motor beeps at the same time), and then release the ON/OFF button.

**Note: Beeps from the motor may be low sometimes, and you can check the LED status instead.**



3. Set the neutral point, the full throttle endpoint and the full brake endpoint.

- Leave transmitter at the neutral position, press the "ON/OFF" button, the GREEN LED flashes 1 time and the motor beeps 1 time to accept the neutral position.
- Pull the throttle trigger to the full throttle position, press the "ON/OFF" button, the GREEN LED blinks 2 times and the motor beeps 2 times to accept the full throttle endpoint.
- Push the throttle trigger to the full brake position, press the "ON/OFF" button, the GREEN LED blinks 3 times and the motor beeps 3 times to accept the full brake endpoint.

4. The motor can be started after the ESC/Radio calibration is complete.

## 2 Power On/Off

Short press the power button to turn on the ESC in the off state, and long press the power button to turn off the ESC.

**Attention!** 1. After the esc operates at a high load, the temperature of the aluminum casing is very high, for safety, we suggest letting the esc cool naturally for one or two minutes before pressing the button to shut down.

2. To prevent accidental shutdown in racing, pressing the power button cannot shut down the esc while the motor is running, if there is an emergency, battery plugs can be pulled out to turn off the ESC.

## 3 Programmable Items

Programmable Items	Parameter Values			
1. Cutoff Voltage	Disabled	Auto (3.5V/Cell)	3.0~7.4V Adjustable (Step: 0.1V)	
2. ESC Thermal Protection	Disabled	105°C/221°F	125°C/257°F	
3. Motor Thermal Protection	Disabled	105°C/221°F	125°C/257°F	
4. Throttle Rate Control	1~30 Adjustable (Step: 1), Default: 30			
5. Initial Throttle Force	1~15 Adjustable (Step: 1), Default: 5			
6. RPM Limit	Unlimited	18000RPM	21000RPM	
7. Drag Brake Force	0%~100% Adjustable (Step: 1%), Default: 0%			
8. Drag Brake Rate	Auto	1~20 Adjustable (Step: 1)		
9. Brake Rate Control	1~20 Adjustable (Step: 1), Default: 20			
10. Brake Frequency	0.5K	1K	2K	4K 8K 12K 16K

### 1. Cutoff Voltage

Sets the voltage at which the ESC lowers or removes power to the motor in order to either keep the battery at a safe minimum voltage (for LiPo batteries). The ESC monitors the battery voltage all the time, it will immediately reduce the power to 50% (in 2 seconds) and cut off the output 40 seconds later when the voltage goes below the cutoff threshold. The RED LED will flash a short, single flash that repeats (☆, ☆, ☆) to indicate the low-voltage cutoff protection is activated.

#### Option 1: Disabled

The ESC does not cut the power off due to low voltage. We do not recommend using this option when you use any LiPo battery as you will irreversibly damage the product. You need to select this option when you are using a NiMH pack.

#### Option 2: Auto

The ESC calculates the corresponding cutoff voltage for the battery shall be 7.0V.

#### Option 3: Customized

The customized cutoff threshold is a voltage for the whole battery pack (adjustable from 3.0V to 7.4V).

### 2. ESC Thermal Protection

When the temperature of the ESC reaches the set value, it will reduce the power and then cut off the output about 40 seconds later. The GREEN LED will flash a short, single flash that repeats (☆, ☆, ☆, ...) to indicate the over-heat protection is activated.

**Warning!** Please do not disable this function unless you're in a competition. Otherwise the high temperature may damage your ESC and even your motor.

### 3. Motor Thermal Protection

When the temperature of the motor reaches the set value, it will reduce the power and then cut off the output about 40 seconds later. The GREEN LED will flash a short, double flash that repeats (☆☆, ☆☆, ☆☆☆, ☆☆☆,...) to indicate the over-heat protection is activated.

**Warning! Please do not disable this function unless you're in a competition. Otherwise the high temperature may damage your motor and even your ESC. For non-Hobbywing motor, the ESC may get this protection activated too early/late because of the different temperature sensor inside the motor. In this case, please disable this function and monitor the motor temperature manually.**

### 4. Throttle Rate Control

This item is used to control the throttle response. The higher the throttle rate, the more aggressive the throttle will be applied. A suitable rate can help driver to control the vehicle properly during the starting-up process.

### 5. Initial Throttle Force

It also called as minimum throttle force. You can set it according to wheel tire and traction. If the ground is slippery, please set a small throttle force. Some motors have strong cogging effect with lower FDR , if there is any cogging with very light throttle input, you can try to increase the initial throttle force.

### 6. RPM Limit

It is used to set the max. RPM value of the motor. You can set it according to the competition rules. 18000RPM is recommended for the 21.5T class, and 21000RPM is recommended for the 17.5T class. Different RPM limit values correspond to different blinky modes, as follows:

Unlimited: RED – RED - RED.....

18000RPM: RED – GREEN - RED – GREEN - RED – GREEN.....

21000RPM: RED – RED – GREEN – GREEN – RED – RED – GREEN – GREEN.....

### 7. Drag Brake

It is the braking power produced when releasing from full speed to neutral position. This is to simulate the slight braking effect of a neutral brushed motor while coasting. It's not recommended for buggy and monster truck.

**(Attention! Drag brake will consume more power and heat will be increased, use it cautiously.)**

### 8. Drag Brake Rate

This parameter is used to control the response of the drag brake. The higher the setting value,the faster the drag brake. Setting a suitable value can improve the drag braking effect of the vehicle, thus, improving drivability to suit each users. "Auto" will intelligently adjust the drag brake acceleration according to the current speed, the higher the current speed/rpm, the lower the drag brake rate.

### 9. Brake Rate Control

This parameter is used to control the response of the brake.The higher the setting value,the faster the brake. A suitable rate can aid the driver to brake his vehicle correctly.

### 10. Brake Frequency

The brake force will be larger if the frequency is low; you will get a smoother brake force when the value is higher. Please choose the frequencies as per the actual test results of your vehicles.

## 08 Trouble Shooting

Trouble	Possible Causes	Solutions
The ESC was unable to start the status LED, the motor, after it was powered on.	1. No power was supplied to the ESC; 2. The ESC switch was damaged.	Check if all ESC & battery connectors have been well soldered or firmly connected.
After power on, the RED LED flashes and the motor does not work.	The throttle cable of the esc is connected incorrectly or the throttle is not at the neutral position.	1. Plug the throttle cable into the throttle channel (CH2) by referring to relevant mark shown on your receiver. 2. Calibrate the esc and radio.
The motor suddenly stopped or significantly reduced the output in operation.	1. The receiver was influenced by some foreign interference; 2. The ESC entered the LVC protection; 3. The ESC entered the thermal shutdown protection.	1. Check all devices and try to find out all possible causes, and check the transmitter's battery voltage; 2. The RED LED keeps flashing indicating the LVC protection is activated, please replace your pack; 3. The GREEN LED keeps flashing indicating the thermal protection is activated, please let your ESC cool down before using it again.
The motor stuttered but couldn't start.	1. The (ESC-to-motor) wiring order was incorrect. 2. Some soldering between the motor and the ESC was not good; 3. The ESC was damaged (some MOSFETS were burnt).	1. Check if the wiring order is A-A, B-B, and C-C 2. Check all soldering points, please re-solder if necessary; 3. Contact the distributor for repair or other customer service.
The motor got stuck or stopped when increasing the throttle during the starting-up process.	1. Poor discharging capability of the pack; 2. The RPM of the motor was too high, or the FDR was too low; 3. The Throttle Rate Control is set too high.	1. Change another pack with great discharging capability; 2. Change a low-speed motor, or increase the FDR; 3. Set the Throttle Rate Control to a low level.
The RED & GREEN LEDS on the ESC flashed rapidly at the same time when the throttle trigger was at the neutral position.	(When pairing with a sensored motor) the ESC automatically switched to sensorless mode when it detected incorrect signal from Hall sensor.	1. Check if the sensor cable is loose or poor contact issue exists; 2. Hall sensor inside the motor is damaged.

## 4 ESC Programming

### 1. Program your ESC with a multifunction LCD program box pro

Connect the interface marked with "- +#" on the esc to the interface marked with "ESC" on the program box using a separate programming cable(a cable with JR plugs at both ends included in the program box packaging), then connect the esc to the battery and turn it on. Click on **【Parameter Settings】** to set the esc.

### 2. Using the OTA Programmer for parameter settings

Insert the programming cable of the OTA Programmer into the programming interface of the esc, and use your phone to install the HW Link APP to set the esc.

### 3. Read the running data of esc

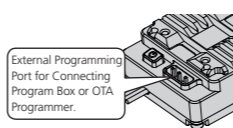
1) Click on the **【Data record】** on the homepage of the LCD box pro to read the extreme values of the highest temperature of the esc, the highest temperature of the motor, the maximum current, the lowest voltage of the battery.

2) By using the OTA Bluetooth module, you can also view the, real-time data, and historical data (curve chart) under the **【Data Log】** menu in the HW LINK App on your phone.

### 4. Upgrade of firmware for esc

1) Using the LCD box pro or OTA programmer, download and install the HW LINK App on your phone, click on the **【Firmware Update】** button on the APP homepage to upgrade the firmware of the esc.

2) Connect to the computer through the LCD box pro, download and install Hobbywing USB LINK software on the computer, and use this software to upgrade the firmware for esc.



## 5 Factory Reset

### • Restore the default values with a multifunction LCD program box pro

After connecting the program box to the ESC, Click on **【Parameter Settings】** and select the **【Reset Parameters】** to restore the factory settings.

### • Restore the default values with a OTA Programmer (& HW Link App)

After connecting the OTA Programmer to the ESC, open the HOBBYWING HW Link App on your smart phone, select "Parameters" followed by "Factory Reset" to reset the ESC.

## 07 Explanation for LED Status

### 1. The throttle is in neutral zone

- In Non-rpm limit(Unlimited) mode, the red LED flashes.
- In the 18000 RPM limit mode: RED – GREEN - RED – GREEN - RED – GREEN.....
- In the 21000 RPM limit mode: RED – RED – GREEN – GREEN – RED – RED – GREEN – GREEN.....

### 2. The throttle is in non-neutral zone

- The GREEN LED blinks when your vehicle runs forward. The GREEN LED turns solid when pulling the throttle trigger to the full (100%) throttle.
- The GREEN LED blinks when you brake your vehicle. The GREEN LED turns solid when pushing the trigger to the full brake and setting the "maximum brake force" to 100%.
- The GREEN LED blinks when you reverse your vehicle.

### 3. When Some Protection is Activated

- The RED LED flashes a short, single flash and repeats "☆☆, ☆, ☆" indicating the low voltage cutoff protection is activated.
- The GREEN LED flashes a short, single flash and repeats "☆☆, ☆, ☆" indicating the ESC thermal protection is activated.
- The GREEN LED flashes a short, double flash and repeats "☆☆☆, ☆☆☆, ☆☆☆" indicating the motor thermal protection is activated.
- The RED & GREEN LEDS flash a short, single flash and repeats at the same time indicating the drive mode has been automatically switched to sensorless mode from sensored mode because of abnormal sensor signal when pairing the ESC with a sensored motor.