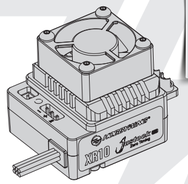


XERUN USER MANUAL

Brushless Electronic Speed Controller
XERUN XR10 Justock G3S

20231225

HW-SMA536DUL00

01 Disclaimer

Thank you for purchasing this HOBBYWING product! Any improper use may cause personal injury and damage to the devices. Please read through this manual before use and strictly abide by the specified operating procedures. We shall not be liable for any liability arising from the use of this product, including but not limited to reimbursement for incidental or indirect losses. We do not assume any responsibility caused by unauthorized modification of the product. We have the right to change the product design, appearance, performance and use requirements without notice.

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, in order to prevent poor connections that may cause your vehicle to lose control or other unpredictable issues like damage to the device.
- Please carefully check power devices and manual of car frame to ensure the power pairing is reasonable. Avoid incorrect pairing to overload the motor and damage the ESC.
- Please use a soldering iron with the power of at least 50W to solder all input/output wires and connectors.
- Stop using the ESC when its outer temperature exceeds 90℃/194℉; otherwise your ESC will be damaged and may also damage your motor.
- Always disconnect and remove batteries after use, as the ESC will continue to consume current if it's still connected to batteries (even if the ESC is turned off). Long-time contact will cause batteries to completely discharge and result in damage to batteries,ESC, or both. This will not be covered under warranty.)

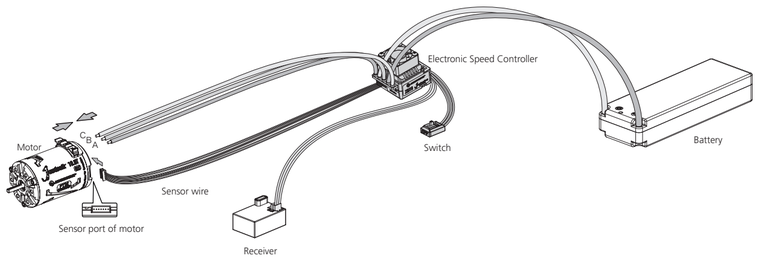
03 Features

- The timing has been permanently set to 0 degree. With the identical competition motor, this ensures that every driver will have the same power system and have a equal race.
- The built-in capacitor avoids the trouble of finding installation position for the external capacitor module, saves space and is convenient for layout;
- The built-in reverse connection protection circuit prevents damaging ESC due to reverse connection of battery.
- The innovative capacitor overheat protection function can avoid the capacitor explosion caused by overload and damage the ESC.
- Multiple protections: battery low-voltage cutoff protection, over temperature protection, fail safe (throttle signal loss protection) and motor lock-up protection.
- Supports multi-function LCD program box pro and OTA programmer to set parameters of ESC, which is convenient for outside use.
- Supports firmware upgrade of ESC (Multi-function LCD program box pro or OTA Programmer need to be purchased), Enjoy the latest features.
- Supports various RPM limit values to meet the needs of different races. It can be set directly by the program box pro or OTA programmer.

04 Specifications

Model	XERUN XR10 Justock G3S
Cont./Peak Current	60A / 380A
Motor Type	Sensorless/Sensored Brushless Motor
Applications	1/10、1/12 On-road and Off-road club competition and normal training
Motor Limit	＞10.5T　3650 Motor
LiPo Cells	2S Lipo(Only 2S)
BEC Output	6V/7.4V @ 4A(Switch-mode)
Cooling fan	Powered by built-in BEC
Size/Weight (including wire)	40.9(L)x33.9(W)x32.1(H)/ 75.4g(Including weight of wire)
Programming port	Independent programming 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 your pinion gear before performing calibration and programming functions with this system, and keeping wheels in the air when you turn on the ESC.

Please wire correctly according to wiring instructions and wiring diagram.

1. Motor Connection

The sensored motor wiring is a little different from the sensorless motor wiring; please make sure that you will strictly follow the introductions below.

A. Sensored Brushless Motor Connection

Sensored motors have a specific wiring order, **the three A/B/C ESC wires must connect to the three A/B/C motor wires correspondingly, otherwise, it may damage the ESC,** and then connect the ESC sensor port and the motor sensor port with the stock 6-pin sensor cable.

Note: If the motor direction is reversed, change the parameter on item 8"Motor Rotation"to achieve the correct setting.

B. Sensorless Brushless Motor Connection

There are no wire sequencing requirements needed when using a sensorless brushless motor,you can swap two wires if the motor runs in opposite direction.

2. Receiver Connection

Plug the throttle control cable (also called Rx cable) on the ESC into the throttle (TH) channel on receiver. Please do not supply power to the receiver,your ESC will be damaged.

If additional power is required, disconnect the red wire on the throttle plug from the ESC.

3. Battery Connection

Connect the battery when the ESC is powered off. Make sure positive (+) of ESC connects to positive (+) of battery, and negative (-) of ESC connects to negative (-) of battery when you plug in your battery! Then turn on the ESC to run it.

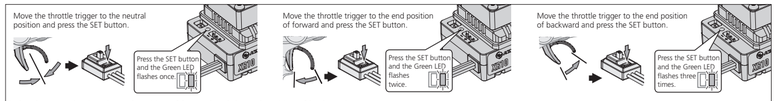
06 ESC Setup

1 Set the Throttle Range - ESC Calibration Process

You must calibrate throttle range when you begin to use a new ESC, the transmitter has been replaced,or the Throttle TRIM have been adjusted, otherwise the ESC cannot work correctly.

We strongly recommend to activate the "Fail Safe" function of the transmitter and set no signal protection for throttle channel of transmitter (F/S) to "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. The throttle calibration steps is as follows:

1. Turn on the transmitter, set parameters on the throttle channel like "D/R", "EPA" and "ATL" to 100% (for transmitter without LCD, please turn the knob to the maximum) and the throttle "TRIM" to 0 (for transmitter without LCD, please turn the corresponding knob to the neutral position). **You don't need to do this step if the transmitter's settings are default, and you can start from the second step directly!**
2. Turn off the ESC. Hold the SET button and turn on the ESC, the RED LED on the ESC starts to flash (the motor beeps at the same time), and then release the SET button.
   Note : Beeps from the motor may be low sometimes, and you can check the LED status instead.



3. Set the neutral point, the end position of forward and the end position of backward.
   1) Leave the throttle trigger at the neutral position, press the SET button, the GREEN LED dies out and the GREEN LED flashes once and the motor beeps 1 time to store the neutral position.
   2) Pull the throttle trigger to the end position of forward, press the SET button, the GREEN LED flashes twice and the motor beeps 2 times to store the end position of forward.
   3) Push the throttle trigger to the end position of backward, press the SET button, the GREEN LED flashes 3 times and the motor beeps 3 times to store the end position of backward.
   Note:
   - **The end position of forward: Pull the trigger to the maxim um throttle position if it is pistol-style transmitter . Push the throttle to the top if it is board-style transmitter .**
   - **The end position of backward: Push the trigger to the maximum brake position if it is pistol-style transmitter. Pull the throttle to the bottom if it is board-style transmit ter.**
4. The motor can work normally after the throttle range calibration is complete.

2 Programmable Items

Those "black background and white text" options are the factory default settings.

Programmable Items	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
1. Running Mode	*Forward with Brake*	Forward/ Reverse with Brake	Forward and Reverse						
2. Max. Reverse Force	*25%*	50%	75%	100%					
3. Cutoff Voltage	Disabled	2.6V/Cell	2.8V/Cell	3.0V/Cell	*3.2V/Cell*	3.4V/Cell			
4. ESC Thermal Protection	Disabled	*Enabled*							
5. Motor Thermal Protection	Disabled	*Enabled*							
6. BEC voltage	*6.0V*	7.4V							
7. Smart Fan	Disabled	*Enabled*							
8. Motor Rotation	*CCW*	CW							
9. Freewheeling	Disabled	*Enabled*							
10. Start Mode (Punch)	1-15 (Adjust Step:1)								
11. Neutral Range	6%	*8%*	10%						
12. Initial Throttle Force	1%	2%	*3%*	4%	5%	6%	8%	10%	12%
13. RPM Limit	*Unlimited*	10000RPM - 88000RPM (Adjust Step: 1000RPM)							
14. Drag Brake Force	0-100% (Adjust Step: 5%)								
15. Max.Brake Force	0%	12.5%	25%	37.5%	50%	62.5%	75%	87.5%	*100%*

1. Running Mode

Option 1: Forward with Brake

The vehicle can go forward and brake but cannot reverse in this mode. This mode is usually for racing.

Option 2: Forward/Reverse with Brake

This option is known to be the "training" mode with "Forward/Reverse with Brake" function. The vehicle only brakes on the first time you push the throttle trigger to the reverse/brake position. If the motor stops when the throttle trigger return to the neutral position and then re-push the trigger to reverse position, the vehicle will reverse, if the motor does not completely stop, then your vehicle won't reverse but still brake, you need to return the throttle trigger to the neutral position and push it to reverse again. This method is for preventing vehicle from being accidentally reversed.

Option 3: Forward/Reverse

The motor will reverse immediately when the throttle trigger is pushed to reverse position. This mode is generally used in special vehicles.

2. Max. Reverse Force

Different reverse amount will bring different reversing speed. For the safety of your vehicle, we recommend using a low amount.

3. Cutoff Voltage (or Low Voltage Cutoff Threshold)

The ESC will monitor the battery voltage all the time, once the voltage is lower than the threshold value, the ESC will reduce the power to 50% and cutoff the power output in 40 seconds. When enters into voltage pr otection, the RED LED will single flash that repeats (☆, ☆, ☆, ☆.....). Please set the "Cutoff Voltage" to "Disabled" if you are using NiMH batteries.

4. ESC Thermal Protection

The output from the ESC will be cut off with the value you have preset. The GREEN LED flashes (☆, ☆, ☆....) when the ESC temperature reaches to the preset value. The output will not resume until the ESC temperature gets down.

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.

5. Motor Thermal Protection

After enable this function, the output will be automatically closed when the motor temperature reaches the preset value. The green light flashes until the temperature drops to restore the output. When the motor is overheated, the green light will flash twice in cycle (☆☆, ☆☆, ☆☆....).

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.

6. BEC Voltage

The BEC voltage can be adjusted at 6.0V and 7.4V. The normal steering servo is generally set at 6.0V, and the high-voltage steering servo can be set at 7.4v. Select the appropriate voltage according to the steering servo used.

Note: Do not set the BEC voltage above the maximum operating voltage of the servo and receiver, as this may damage the servo/receiver or even the ESC.

7. Smart Fan

This esc has a fan control function. If this item is set to "Disabled", the fan will continue to run after the ESC is powered on; If this item is set to "Enabled", The fan will start running after the internal temperature of the esc exceeds 50℃/122℉.

8. Motor Rotation

It is used to adjust the rotation direction of the motor (in CW or CCW), that is, when the forward throttle is given, and the rotation direction of the motor is reverse, it can be set to the opposite direction.

9. Freewheeling

When this function is enabled, it will have better low-speed linearity and relatively less heat.

10. Start Mode / Punch

This item is used to control the throttle response. It can be adjustable from 1 to 15 (step: 1), the lower this value, the slower the response; the higher this value, the faster the response. A suitable rate can help driver to control his vehicle properly during the starting-up process.

11. Throttle Neutral Range

As not all transmitters have the same stability at "neutral position", please adjust this parameter as per your radios neutral range.

12. 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.

13. RPM Limit

It is used to set the max. RPM value of the motor. Set corresponding values according to competition rules.

Note: The RPM limit value here corresponds to a 2-pole motor. If a 4-pole motor (such as a Justock Handout motor) is used, it needs to be divided by 2 to obtain the corresponding mechanical rpm value.For example, using a Justock Handout 13.5T (3200KV) motor, if you want to limit the rpm to 22000rpm (mechanical rpm), you need to set the RPM limit value to: 22000*2=44000.

14. Drag Brake Force

Refers to the brake force generated by the motor when the throttle trigger returns to neutral position. (Attention! Drag brake will consume much power, so please apply it cautiously.)

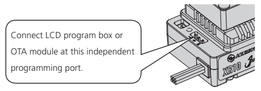
15. Max. Brake Force

This ESC provides the proportional braking function; the braking effect is determined by the position of the throttle trigger. The max. brake force is produced when the throttle trigger is at the brake bottom position. Please select the max. brake force parameter as per your car condition and your preference.

3 ESC Programming

1. Program your ESC with a LCD program box pro

Connect the interface marked with "- + s" 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 battery to the esc and turn it on. Click[Parameter Settings]to set the esc.



2. Program your ESC with a OTA Programmer

Plug the programming cable of OTA Programmer to the programming port of ESC. Then use the mobile phone to install HOBBYWING HW LINK App to set parameters.

3. Data Logging

1) The ESC is able to record the Maximum Temperature of ESC and Motor, Minimum Battery Voltage, Maximum Motor RPM and Maximum Current in running. It automatically saves the recorded data when you turn off the ESC after a run. You can check those data via a multifunction LCD program box pro. Users need to switch on the ESC after the esc is connected with the program box.Click on [Data Record] to view the above five extreme value data.
2) The ESC running data is read through the OTA Bluetooth module. After connecting the OTA Bluetooth module to the esc and establishing communication, you can view not only the five extreme value data recorded above, but also the real-time running data and historical record data (graph) in the [Data Log] menu in HW link app.

4 Factory Reset

1) Restore the default values with the SET button

Press and hold the SET button for over 3 seconds anytime when the throttle trigger is at the neutral position (except during the ESC calibration and programming) can factory reset your ESC. RED & GREEN LEDs flash simultaneously indicating you have successfully restored all the default values within your ESC. Once you power the ESC off, and then back on, your settings will be back in the default mode.

2) Restore the default values with a multifunction LCD program box pro

After connecting the program box to the ESC, Click on [Parameter Settings], and then click on "Reset parameter" at the bottom of the parameter items.

3) Restore the default values with a OTA Programmer(Use HW LINK mobile phone App)

Connect OTA Programmer to the ESC, enter into 【Parameter】, click "reset" to factory reset your ESC.

07 Explanations for Different Status LED

1. The throttle is in neutral zone
   1) In normal Blinky mode (non-rpm limit mode), the red LED flashes rapidly.
   2) In the RPM limit mode, setting different RPM limit values results in different LED flashing phenomena, the specific rules are: the number of times the green light flashes represents ten thousand digits of the RPM limit value you set, and the number of times the red light flashes represents one thousand digits of the RPM limit value you set.
   For example, if the RPM limit is set to 25000, the green light will flash twice and then the red light will flash five times. This cycle; If the RPM limit is set to 40000, the green light will flash four times and cycle. And so on.
2. The throttle is in non-neutral zone
   1) The RED LED turns on solid when moving forward. Green LED is also on when throttle trigger is at the end position of forward（100% throttle，on non-speed limit mode).
   2) The RED LED turns on solid when you brake. The GREEN LED will also come on when pushing the throttle trigger to the full brake endpoint and setting the "Max. Brake Force" to 100%.
   3) The RED LED turns on solid when you reverse your vehicle.
3. LED status when some Protection is Activated:
   1) The RED LED flashes a short, single flash that repeats (☆—, ☆—, ☆—) indicating the low voltage cutoff protection is activated.
   2) The GREEN LED flashes a short, single flash that repeats (☆—, ☆—, ☆—) indicating the ESC thermal / overheat protection is activated.
   3) The GREEN LED flashes a short, double flash that repeats (☆—☆—, ☆—☆—, ☆—☆—) indicating the motor thermal /overheat protection is activated.
   4) The GREEN LED flashes a short, five times flash that repeats (☆—☆—☆—☆—, ☆—☆—☆—☆—) indicating the capacitor thermal /overheat protection is activated.

08 Trouble Shooting

Trouble(s)	Possible Causes	Solution(s)
The motor was unable to start and the LED is not on after power on.	1. No power was supplied to the ESC. 2. The ESC switch was damaged.	1. Check if all ESC & battery connectors have been well soldered or firmly connected. 2. Replace the broken switch.
The ESC was unable to start the motor after it was powered on, but the motor emitted a short, double beep (BB, BB, BB...) that repeats with GREEN LED on the ESC blinked. (The interval between two beeps was 1 second.)	The battery voltage was beyond the normal operating voltage range of the ESC.	Check the battery voltage.
ESC was unable to start the motor after it was powered on, but the red LED flashes quickly.	The throttle signal is not detected.	Check if the transmitter is turned on and bound, check if the throttle wire is reversely plugged in or whether the receiver is good (Insert the throttle wire to the channel of servo to debug)
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 the cause of interference on the receiver, and check the battery power of the transmitter. 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 wire connections between the motor and ESC were not A-A, B-B and C-C. 2. Some soldering between the motor and the ESC was not good. 3. The ESC was damaged (some MOSFETs were burnt).	1. Check the connections; 2. Check all soldering points, please re-solder if necessary. 3. Contact the distributor for repair.
The vehicle could run forward (and brake), but could not reverse.	1. The throttle neutral position on your transmitter was actually in the braking zone. 2. Set the "Running Mode" improperly. 3. The ESC was damaged.	1. Re-calibrate the throttle neutral position. The LED on the ESC is not on when the throttle trigger is at the neutral position. 2. Set the "Running Mode" to "Forward/Reverse with Brake". 3. Contact the distributor for repair.
The car ran forward/backward slowly when the throttle trigger was at the neutral position.	1. The neutral position on the transmitter was not stable, so signals were not stable either. 2. The throttle range is not calibrated properly.	1. Replace a transmitter with stable signal. 2. Re-calibrate the throttle range or fine tune the neutral position on the transmitter.
The setting of throttle range cannot be completed.	The ESC did not receive correct throttle signal.	Check if the transmitter is turned on and bound, check if the throttle wire is reversely plugged in or plugged in wrong channel, whether the receiver is damaged (Insert the throttle wire to the channel of servo to debug)