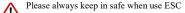**Thanks for purchasing *SwordfishX* brushless speed controllers manufactured by HIFEI Technology Co., Ltd. *SwordfishX* series ESC are specifically developed to supply stable and strong power for R/C model boats beyond your expected.**

Safety

⚠ Please always keep in safe when use ESC

⚠ Strongly recommend to calibrate the throttle range of transmitter when you first use controller or when using a new /different transmitter or receiver

⚠ Before begin the running, turn on the transmitter **BEFORE** powering on the receiver.
When finish the running, power off the receiver **BEFORE** turning off the transmitter.

⚠ Please **DO NOT** run Swordfish ESC without water flow.

⚠ Swordfish ESC is water-resistant, and thus cannot be soaked in water, which may cause ESC failure or be burned.

⚠ Never disconnect the battery pack while the brushless motor is running, as this could cause damage to the speed controller and/or motor. And such damage would not covered under manufacturer's WARRANTY.

⚠ It is suggest to add additional capacitor bank (such as HIFEI capacitor-bank 63V) in the flowing two situations:
A: When run Swordfish X HV ESC with high KV motor with 10s or more lipos.
B: When run Swordfish X HV ESC at max current for a long time.

⚠ Swordfish ESC is preset with default parameters in factory, which can be assembled for running directly. In order to get optimum power performance and well compatible to work with brushless motor, it is suggested to program ESC parameters before first run.

Features

• 32-bit Microprocessor with up to 80Mhz frequency.

• Aluminum PCB process makes the heat dissipation efficient

• High Power Ultra-Low Internal Resistance 263-7 MOSFETS

• Telemetry Real Data By Wireless WIFI.

• ESC is with built-in data logging, Pro is without data logging.

• ESC is water-proof to prevent spill water , and aluminum water-cooler pipe is pre-mounted.

• Full protection soft, include signal lose protection (in 100ms), temperature protection, motor block protection.

• ESC has Auto detect Lipo cells feature. Forward running mode is developed for competitions.

• ESC is fully programmable by Hifei software on computer, or by Hifei Wifi dongle
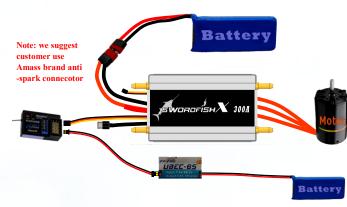
• ESC firmware is upgradeable by Hifei software on computer when a new version firmware becomes available.

Specifications

ESC	Voltage	Current / Max	BEC	Size (mm)	Weight
SwordfishX 300A-15S	4-14Lipos	300/ 380	OPTO	120X70X29	380g

*12S —Working Amp 300A;   14S—Working Amp 280A

Install your ESC

Please solder good quality connectors to ESC's motor wires and power wires before connect ESC to motor and battery. When connect power wires to battery, it is IMPORTANT to correctly connect positive to positive, and negative to negative. Swap any two motor wires' connecting can change the rotation direction.
In order to prevent and reduce any signal disturbance generated by ESC hardware, please install the ESC far away from receiver.

Note: we suggest customer use Amass brand anti-spark connecotor

Step ①: Connect ESC to brushless motor;

Step ②: Connect the receiver lead to the throttle channel of receiver;

Step ③: Connect UBEC or receiver battery to power receiver;

Step ④: Connect ESC to the battery pls make sure ESC's negative(-) is to battery's ; and ESC's positive **(+)** is to battery's.

Step ⑤: After two beeps ♪ ♪ ,it is ready to run.

Calibrate throttle of TX

Note: In the following 3 situations, it is required to calibrate the throttle range of transmitter.
-When it is the first time to use a new speed controller.
-When change a new TX or RX, or a set of new radio system.
-When upgrade the ESC into a new version of firmware.

Board Transmitter

1st: Connect ESC to motor, plug receiver lead of ESC to throttle channel of RX.

2nd: Push joystick of transmitter to max throttle position, power on TX.

3rd: Power on receiver, connect ESC to battery. Motor emits three beeps in drop ⌐⌐⌐ tones.

4th: In the following, motor will emit four long beeps in flat tones. ⌐⌐⌐⌐
After any one beep of the four long beeps, pull joystick to zero immediately.

5th: Then motor emits two beeps in up tones. ⌐⌐

Calibrating is completed, it's ready to go.

Note:SwordfishX ESC can not run in reverse. If throttle range were calibrated from reverse to neutral, the calibrating range will be invalid.

Program the ESC

SwordfishX ESC supports to be more easily programmed the parameters by Hifei programming devices, such as 'Hifei Wifi dongle' and 'Hifei USB Adaptor'(connection to PC).

Connect Wifi Dongle to SwordfishX

Hardware Request
• Keep the length of USB cable no more than 500mm
• Compatible to any kind of smart mobile phone ,PAD or PC with iOS/Android/ Windows Operation System
• Support all kind of browsers such as: Chrome, IE, Safia,Firefox,etc.

Connecting the WiFi Dongle
• Connecting the cable to ESC and WiFi dongle (Figure 1)
• Power on the ESC (the red LED of dongle will light a while and then black out) , waiting more than 20 seconds till the green led on dongle start to blink.
• Option **SwordfishX** in the WLAN list of your smart terminal
• Open your browser and input the default IP address & password as following:
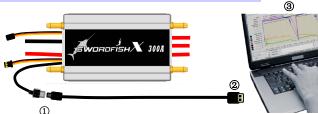 **IP address   192.168.1.16:2015**
  Password   12345678
• Entered into the Home Page

Home page

Parameter Settings
Real Data Display
Throttle Calculate
WLAN Settings
Copyright © HiFei Technology

Please read Wifi Dongle user manuals for more information

Connect ESC to PC

Step①: Correctly connect ESC's Wifi wire/to USB adaptor wire to USB adaptor
Step②:Plug the USB side of USB Linker to one of computer's USB ports, red LED on USB Linker will light.
Step③:Run software "Hifei V6.xx".

Note: 'Please read USB adaptor user manuals for more information.

Install Hifei software

Download the setup software of 'Hifei V6.xx' from website **(Support column)** and finish the installation according to the popped-up window guide.
When installation is finished, 'Hifei V6.xx' software icon is auto saved on computer desktop.
Note: a. If PC OS is Windows 7,8,10, it is suggested to install V6.xx to administrator.
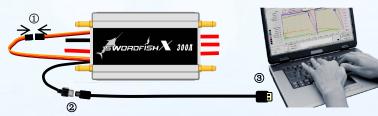*b. If you once changed PC font to big size, then it needs to change it to normal size. Because big size font would possibly cause software interface cannot be showed in full.*

V6.0 tab 5 Upgrade

In **tab 5,** you can upgrade ESC's firmware if there is a new firmware for the ESC be released.
When upgrade the ESC, it needs to connect the cable to receiver with upgrade cable together. (Pls refer to the below diagram)
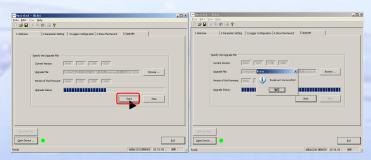*Each ESC has specific firmware and be different. You have to make sure the firmware you chose is correct. Otherwise possibly causing ESC damage.*

Step①: Short upgrade cable with receiver wire.
Step②: Connect ESC's Wifi wire/to USB adaptor wire to USB adaptor
Step③: Plug the USB Adapter to an USB port of PC.

Parameters features

LVC	Auto	4s Lipos*	5s Lipos	6s Lipos	7s Lipos	8s Lipos	9s Lipos	10s Lipos	11-15 Lipos
Cutoff voltage/ cell	2.5V	2.6V	2.7V	2.8V	2.9V	3.0V*	3.1V	3.2V	3.3V
Brake Type	Disabled*		Soft brake		Hard brake				
Current limiting	High		Medium		Low		Disabled *		
Timing	Low		Middle		High		Auto *		0~30
Active Free Wheeling	ON		OFF *						
Cutoff Type	Hard cutoff *		Soft cutoff						
Startup	Soft start		Standard *		Fast start				
PWM Rate	8KHz *		12KHz		16KHz				

*Note: a. The parameters with * behind are the ESC's default settings.*
b. When the 'LVC' of ESC is set at 'Auto' detect, after the two power beeps the ESC will beep the number of Lipo cells which the auto detect feature detects, and the red LED on ESC will blink in accompany with the beeps. '3.0v' is the default cut-off voltage of per Lipo cell when the LVC is set at 'Auto' detect.
Eg: If you connect the ESC to a 4s Lipo battery pack, the motor will firstly emit ♪ ♪ , then detect the Lipo numbers ♪ ♪ ♪ ♪ , and the red LED will blink four times. The low voltage cut-off is calculated as '12.0V'.
c. Please ensure only when the battery packs is fully charged and it can set the LVC at 'Auto', it is recommended to set the LVC at actual Lipo cells once the battery pack is over 4S cells.

Low voltage cut-off

The setting of LVC can protect battery from discharging too low and causing permanent damage to battery, especially for Lithium polymer cells. It is strongly recommended to set the LVC carefully before running.

Cutoff voltage/ cell

The setting is to set the low voltage cut-off of each Lipo cell.

e.g. If set the LVC of per Lipo cell at '2.8v', the LVC is set at '2s cells', then the cut-off voltage of the whole battery pack is "2.8*2"=5.6v.

Brake type

'Brake disabled' setting will close the brake function;
'Soft brake' will provide 20% of full braking power.
'Hard brake' will provide 100% of full braking power.

Timing advance

'Low timing' setting adjusts the timing at the range of 0º~15º, recommended for more lower pole count brushless motors (such as 2 poles, or 4 poles). It gives more power and slightly less efficient;
'Middle timing' adjusts the timing at the range of 5º~20º, recommended for most brushless motors. It gives a good balance of power and efficiency;
'High timing' adjusts the timing at the range of 15º~30º, recommended for higher pole count motors. (such as 8, 10, 12, 14 poles or higher brushless outrunner motor)
'Auto timing' setting is automatically adjust the timing degree according to motor's rotating demand. 0º; 2º; 4º; 6º; 8º; 10º; 12º; 14º; 16º; 18º; 20º; 22º; 24º; 26º; 28º; 30º. (This setting can be only set via software 'Hifei V4.xx . If you want to upgrade your old software .please download Hifei software from **www.hifei.com**.)

Cutoff type

Cutoff type settings decide the way in which the ESC cutoff output to brushless motor when the LVC works, or temperature/ signal-lost protection works.
'Hard cutoff' : when the battery volts discharges to the set LVC value or soft protection works, the motor will shut down immediately. Motor can be restarted by closing the throttle to the lowest position and re-move the throttle as normal.
'Soft cutoff': when the battery volts discharges to the set LVC value or soft protection works, the ESC will slowly reduce motor power to zero, you will notice a decrease in power and it is time to dock.

Startup type

'Soft start': very soft and smoothly start the motor, it will take more time.
'Standard start': start the motor at normal speed, it depends on the motor's quality and dynamic response.
'Fast start': start the motor fast, it is recommended for racing.

PWM rate

8KHz is recommended for most brushless motors.
12KHz is recommended for low inductance motors. (e.g. 8,10,12,14 poles brushless outrunner motors)
16KHz is recommended for very low inductance motors. (e.g. 16,18,20,24 poles brushless outrunner motors)

Note: a. The poles mentioned above is the magnetic poles of brushless motor, but not the stator numbers of motor.
b. High PWM rate is easier to make motor produce more heat. Cooling jacket for motor is very important, and please be more carefully to choose high PWM rate.
c. It is strongly RECOMMENDED to have bench testing and choose appreciate parameters for your configuration before assembling the ESC to hull for running.

Trouble shooting

Trouble	Possible reason	Shoot methods
The ESC started to smoke right after it was powered on.	1. Backward installation of batteries. 2. The input voltage was beyond the ESC operating voltage.	1. Refer to the "+, _" mark (on the ESC/battery) and plug the battery in. 2. Refer to the user manual and plug in a suitable battery.
The ESC was unable to start motor af-	Poor contact between the ESC and battery connectors.	Reconnect all the connectors between ESC and battery or
When connect ESC to battery, there is no power beeps emitted from motor.	1.The battery voltage exceeds the range of ESC's working voltage. May it is too low or too high. 2.Motor is damaged, or the ESC is not well connected with motor.	1. Check battery's voltage and change suitable battery pack. 2.Check the connectors, ensure ESC is tightly connected with motor. Check motor whether it is good.
Motor shut down suddenly even at full throttle or when not decrease the throttle.	1.Battery voltage discharge and drop down to the set LVC, ESC cut-off output to motor to protect the battery. 2. Over-heat protection	1. Please stop the running and change a new battery pack. 2. Stop running for a while until ESC is cool down, check if water-cooling works.
The ESC was unable to start the motor after it was powered on, but the motor beeped " B, B, B, ..."	There was no throttle signal output from the TH channel of receiver.	1. Check if the transmitter and receiver are well bound. 2. Check if the throttle cable has been plugged into the wrong channel or reversely plugged into the TH channel on the receiver. 3. This ESC has no BEC output, a separate battery or UBEC is needed to power the receiver.