ENSOTECH LIMITED

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MANUAL SWAVE-E/E2/W/W2

INTRODUCTION

Thank you for choosing Swave ESC, its novel technology provides smoothest and ultra-efficient performance.

Please, read this manual, terms and conditions carefully before installing your new Swave electronic speed controller.

If you are looking for certified motor list, warranty terms and conditions, how to dialogistic esc, all of these answer can be found in Ensotech Shop under the download sector https://shop.ensotech.ltd

If you are looking for supporting motor kv, chassis and characteristic, these can be found in each product descriptions in https://shop.ensotech.ltd

Here to introduce how to hook up the swave esc, perform calibration and use the SWAVE apps

-Plug-in and solder connections may loose due to vibrations or collisions. Please, ensure secure connections, otherwise you may experience a short-circuit which will damage the device.

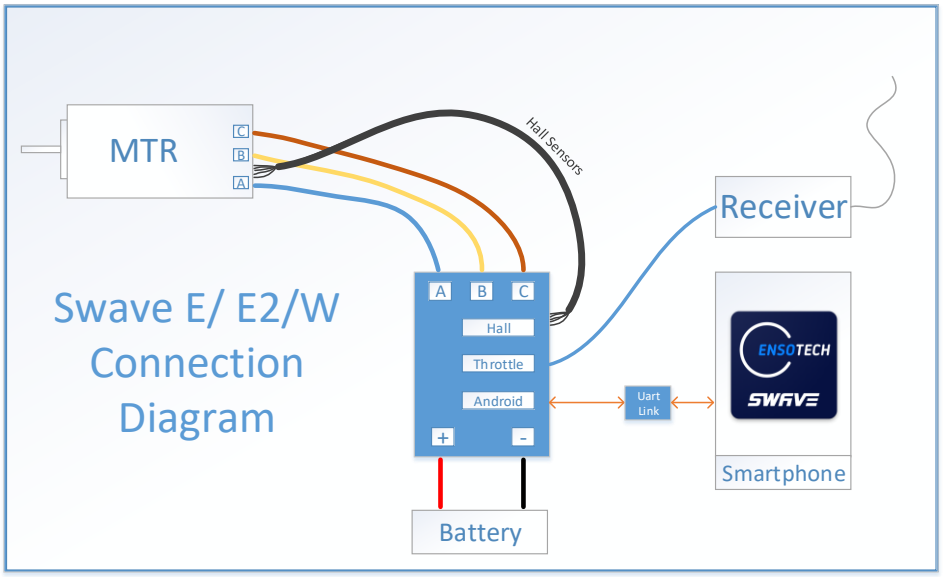
HOOKUP INSTRUCTION

Connect “sensor cable” – a cable between ESC and Ensotech certified sensored motors.

Connect “receiver cable” – a cable between ESC and receiver. We have included two different types of cable plug

(JR & JST) for different type of receivers.

The motor should be well and properly soldered to the ESC for getting full performance from the system and reduce heating.



Always caution the direction of the plug, plugging in wrong direction will damage the pin inside the esc connector.

THROTTLE CALIBRATION

**** Swave ESC was design to calibrate with the most popular and current radio system available on the market. Obsolete radio system may not able to launch the calibration process because of dilatory delay of signal transmission in between the radio, receiver and esc**

STEP 1

Turn on your transmitter and connect a fully charged battery to the ESC.

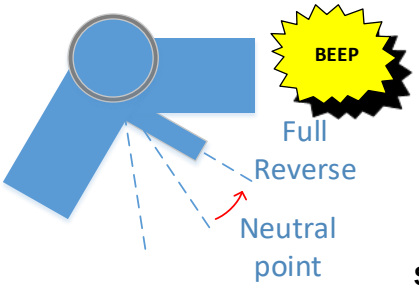
STEP 2

Pull the trigger for full BRAKE/REVERSE and HOLD it in this position.

STEP 3

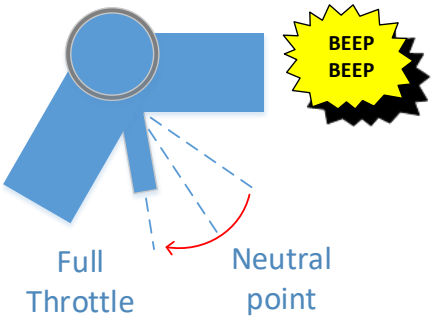
Turn on the ESC and wait for **one** short beep – switch-on beep (motor must be connected to the ESC, or there will be no sounds). After that wait for **another** beep – calibration beep. (it will be in a second). Do not release the trigger before calibration beep.

** Beep sound came from the motor movement, there will be no sound without motor.



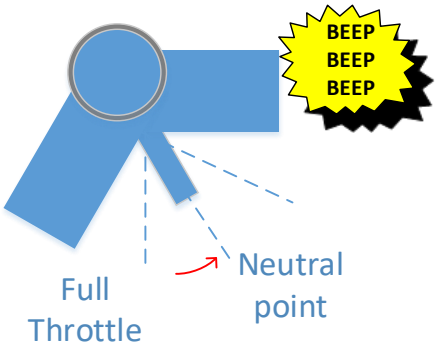
STEP 4

Pull the trigger to full throttle and wait for **TWO** short beeps



STEP 5

Release the trigger to neutral position and wait for **THREE** short beeps



Calibration finish!

Some advanced transmitters have radio channel encoding features. In most cases they use SSL/SSR open channel encrypting protocol (for details read transmitter's manual) that requires some time to establish connection between itself and receiver. Swave ESC will be wait for calibration during **2 seconds.** If your radio system requires a comparable time for establishing connection in encrypted mode you should switch this mode off! In other case some difficulties with calibration may occurs.

For some earlier KO radio system, it may need to reverse the radio throttle direction to active the calibration.

Without properly done calibration the ESC can be damaged.

Ensotech is not responsible and warranty is not covered if because of the compatibility of radio system, and using non-factory "after market" radio equipment.

ESC does not have a speaker to create the beep sound, it came from the motor powered by the ESC. Sometimes the beep sound may become weak to hear doesn't mean the ESC has a problem, there is a quite different reason of different motor kV and design, power supply, circuits, and gear ratio.

THE ESC PARAMETERS ADJUSTMENT AND SWAVE programming App

Cables & Bluetooth for changing the ESC settings and updating firmware

UARTLINK for Swave E (Optional)

UARTLINK-II for Swave E2 and Swave W & W2 (Optional)

Both UARTLINK & UARTLINK-II support Android device only.

ENSO BLUETH (Optional) for Android – wireless device with BLE

ENSO BLUETH-2 (Optional) for IOS – wireless device with BLE

Both ENSO BLUETH & ENSO BLUETH-2 support Swave E2, W, W2 only

Refer to product description in Ensotech online store for supporting mobile model and the version of model system

If you are uncertain about your phone, please check with your phone manufacturer, Ensotech cannot guarantee to support every kind of phones.

** ENSO BLUETH & ENSO BLUETH-2 do not support Swave-E

Always switch off the ESC before connect and disconnect programming devices.

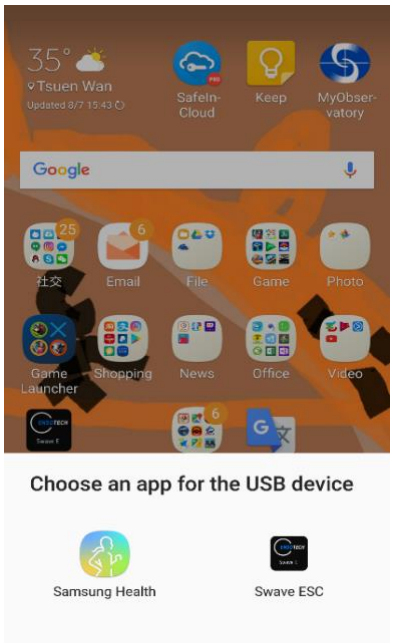
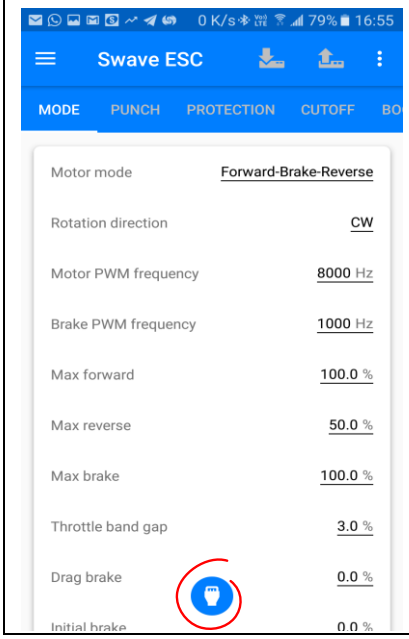
Important notice to IOS and Android Users

1) For Android user, you can download Swave ESC application from Google Play™ / App Store or download the installation apk file for Android from Ensotech online shop software page to install manually. If you decide to install the Android apk file manually, please make sure to un-install / remove the previous version before process to install the new version.
2) For IOS user, you can only install Swave ESC application via App Store.

Cable (UARTLINK & UARTLINK-II) connection

Connect the Android device to the ESC by the programming cable. If the green LED on the UARTLINK is off, please, check the Android device USB connection. One should note that some new Android devices utilize Type-C micro USB. Always use high quality Type-C connectors with OTG data transfer features. Beware that some cheap adaptors in the market have bad or even do not feature with OTG connection.

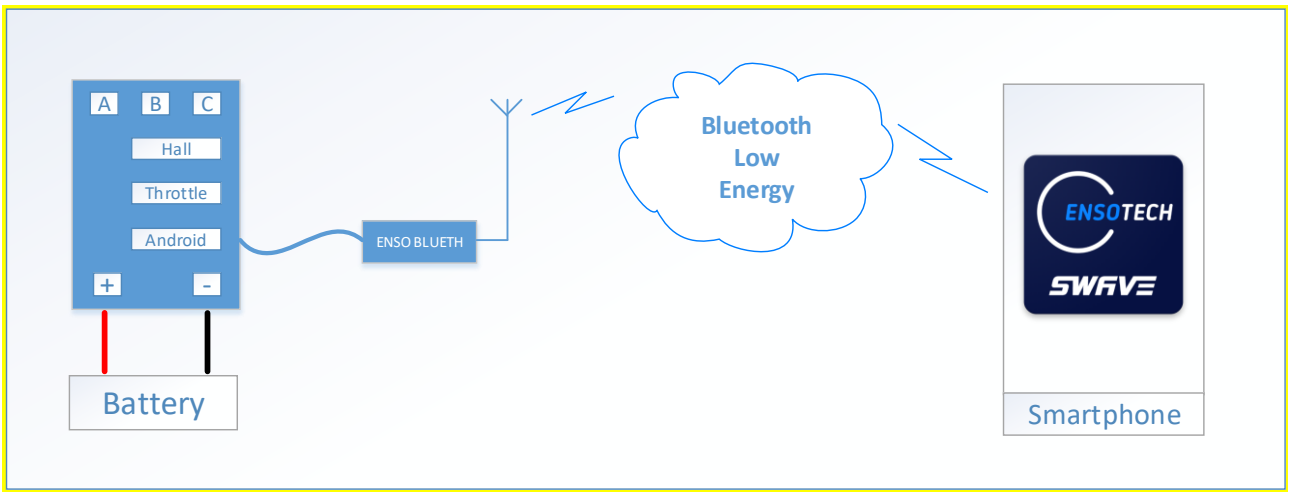
**** UARTLINK & UARTLINK-II doesn't support IOS ****

	Connect the battery and switch on the ESC, your Android device will automatically detect the USB device and ask you to choose an app for it. Otherwise, you can launch the app manually and connect it by context menu at the right corner of the APP.
	If the device is connected successfully, the color of the application icon will change to BLUE, if it remains GREY, please, try to unplug and plug again the USB into your Android device and wait 2 second for your android device response. If the icon still remains grey, please, recheck all your connections. Connection require the phones / tabs support the latest OTG. Ensotech try to have the most compatibility but we are not guarantee and not responsible to support every devices. If your device uses TYPE-C USB, please make sure to use an adaptor has OTG feature. If you are uncertain please do not open the package. Consults with your sellers and other users their advice for supported model.

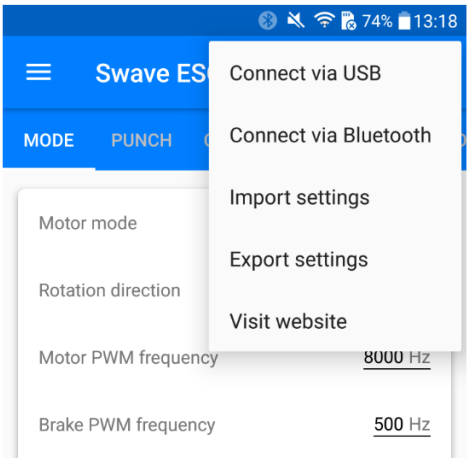
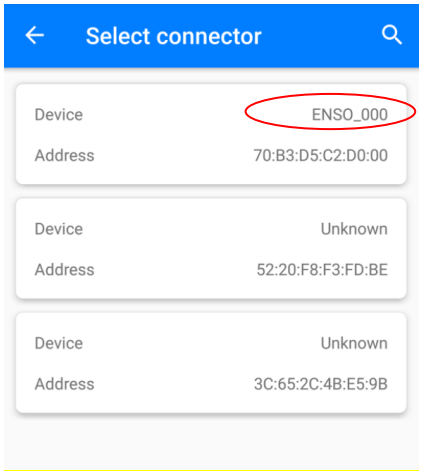
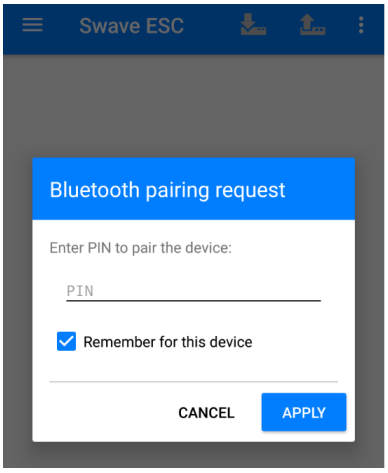
Wireless (ENSO BLUETH) connection

ENSO BLUETH is a wireless adapter for settings management, firmware updating, and real-time observing of the ESC parameters. It uses Low Energy Bluetooth standard (4.0 version) for communication with Swave APP. Every device has a personal name and pin-code. Radio channel between the device and the application is protected by strong encryption, to exclude connection to your device without six-digit pin code. This code can be stored in your app after first linking and can be applied automatically when you would like to connect to your ENSO BLUETH device.

** The response time of telemetry real-time observing depends on your phone processing power, cache memory space, and the wireless transmission speed and signal performance. Ensotech do not guarantee and not responsible to support every devices.

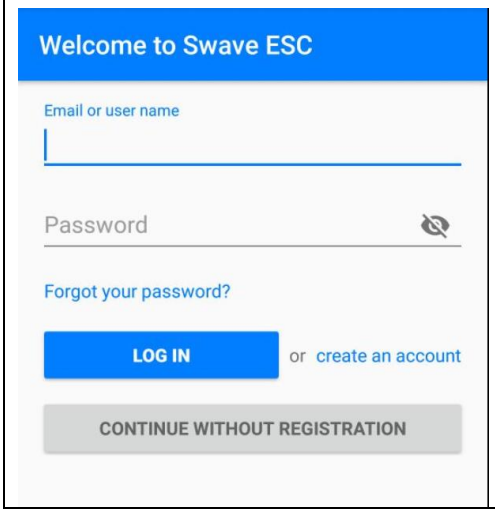
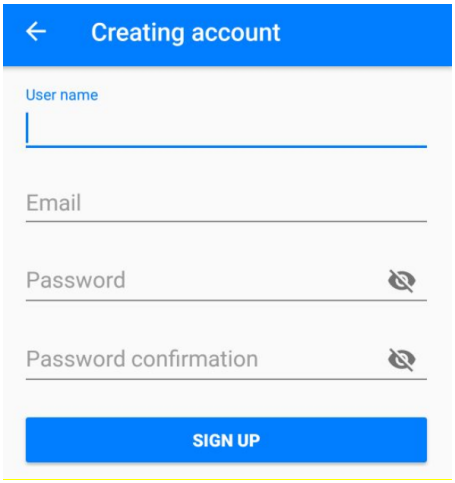
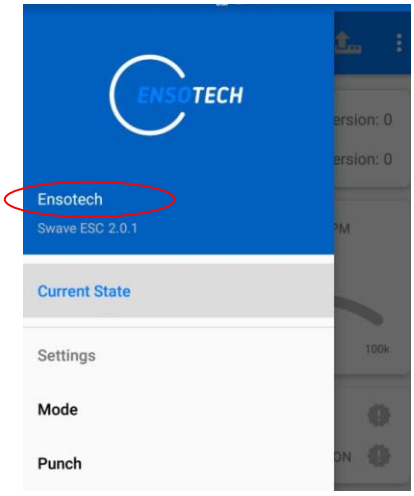


YOU SHOULD CONFIRM ALL REQUIRED PERMISSIONS TO USE WIRELESS MODE

		
Select Bluetooth connection from context menu at the right corner *If you are doing it the first time, the APP will require location detection permission, this is necessary for using the Bluetooth module of your phone. This is an android feature.*	Select your device name from list *Device name listed on the label inside the package.*	Enter six-digit pairing pin-code *Pin Code listed on the label inside the package.* *If you lost the pin code, please contact Ensotech with provided your device name*

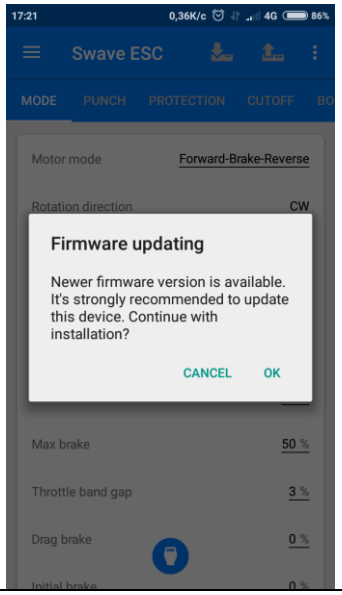
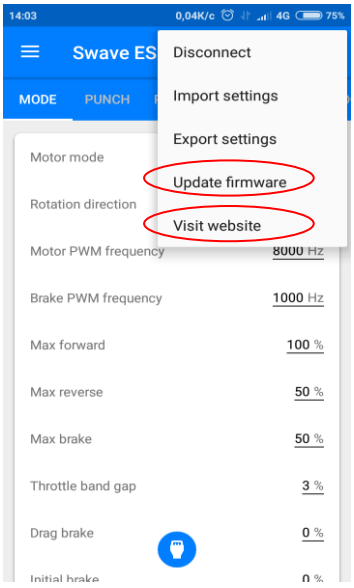
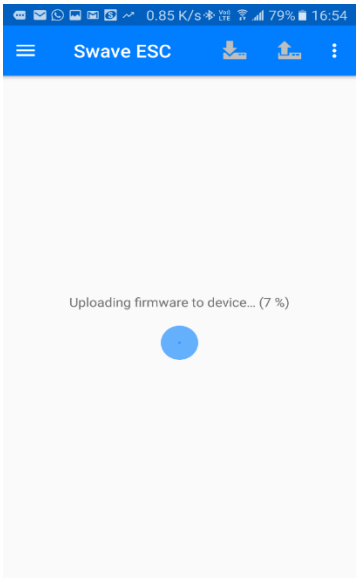
Registration

For updating device firmware, you should be a registered user of the Ensotech software management system.

If you are already a user of Ensotech software management system, you can login with your Email/Username and password. Also, you can restore the password by Email..	To create an account, enter an unique user name, contacting email, and create a password. If everything is done right you will receive the confirmation code to your entered email use to activate your account. Please check your spam email box if not receive the email.	If you are registered user and successfully logged in the apps, you can see your name at the app screen.
		

Device firmware updating

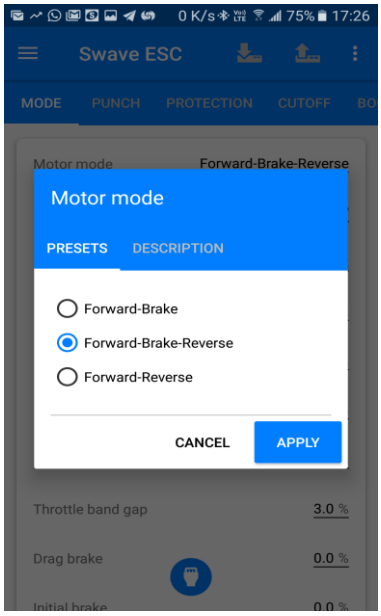
Before starting Firmware update, you should be sure that your phone cache memory is quite clear and there are not a lot of many un-necessary apps in the background. Moreover, you can use any phone optimization app.

In case of new firmware release, the app will show notification; you can accept or discard update.	Chose the context menu in the right corner and push the button to check for updates. Also you can find this manual at our website	When update is completed successfully, ESC performs one beep and turns on a blue LED.
		

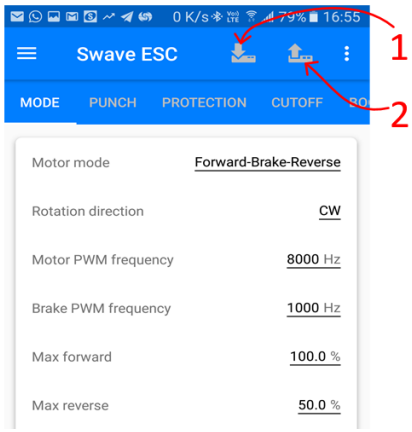
***During update the phone power must be always present, keep the screen always on without entering sleep mode, without entering the power saving mode, otherwise ESC can be damaged!**

***If you are using Bluetooth connection DO NOT WALK WITH THE PHONE! Leave it near the ESC.**

Settings management



Now you can start to manage the settings, press “APPLY” to accept changes

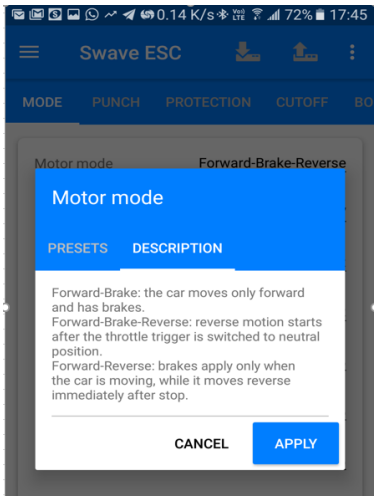


After you complete managing the settings, you need to upload all new settings to the ESC, so click the icon on the top left comer. After uploading process, the ESC will perform one beep and turn on a blue LED.

1. This is a resume key if you need to download the ESC current settings to the app
2. Upload new settings to the ESC

***During upload or download the setting from the ESC, the phone power must be always present, keep the screen always on without entering sleep mode either power saving mode, otherwise ESC can be damaged!**

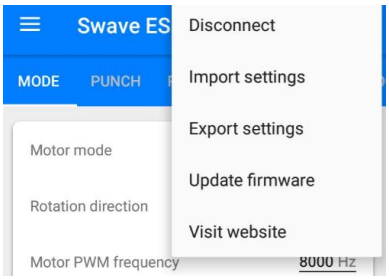
***If you are using Bluetooth connection DO NOT WALK WITH THE PHONE! Leave it near the ESC.**

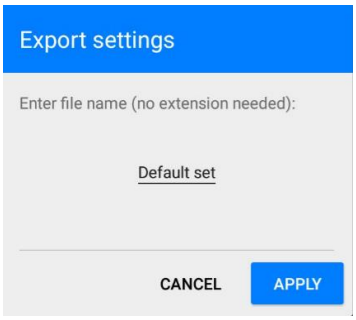


Each parameter has a detailed description

EXPORT / IMPORT SETTINGS CONFIGURATION

Swave App allows you export to a local file and import different settings configuration. When you will save you first configuration in the root directory of the device internal memory will be created the folder “Swave ESC Settings”, all other configurations will be here. For importing settings chose configuration file in this folder and apply it.





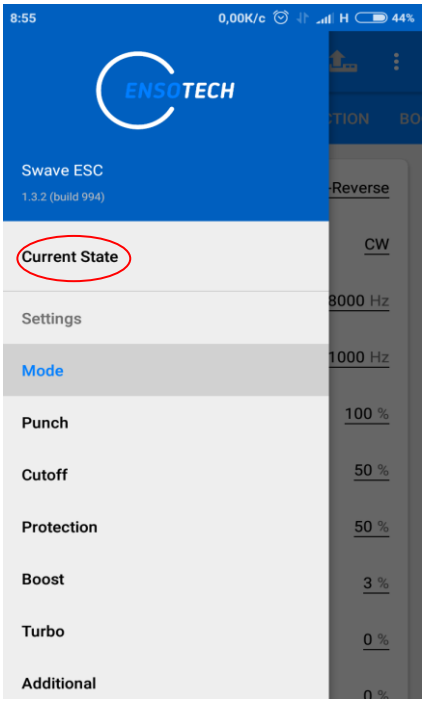
ESC PARAMETERS MONITORING

Swave Android Apps allows you control ESC state in real time. To open the state monitor you should chose “Current state” tab in App menu.

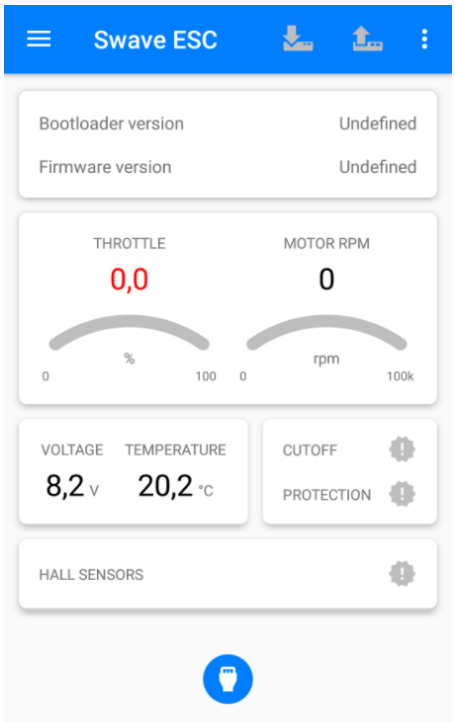
Apps display your phone region's language included English, Chinese, French and Japanese, other than that would be English.

With connected ENSO BLUETH device, you can observe the ESC parameters in real time at the racetrack!

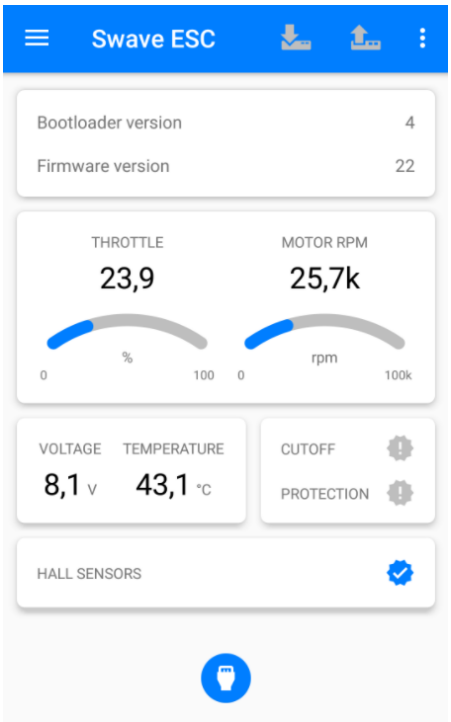
Open a state tab to enter in parameters monitor window



If radio system do not connected or switched off throttle will lights red color, if error occurs voltage and temperature lights red color too



If all parameters is ok you can control ESC state and watch main parameters



SENSORS RECOGNITION SYSTEM

Swave E ESC has sensors recognition system. So, if you connect sensor cable to ESC the hall sensors icon will still grey. Then if you push throttle with connected sensor cable and all is correct sensors icon becomes blue. If something is wrong ESC detects the error and show warning icon, also, red led will ON

Initial sensor connection or sensorless mode	Working on sensor mode	Error with sensor
		

ESC LED INDICATION

Red led is failure indicator, there are several events that may cause red LED turn on.

Throttle receiver is disconnected or was not calibrated – RED LED is constant ON

Cut Off issue occurs – RED LED blinks

Protection issue occurs – RED LED is constant ON

Sensor issue occurs – RED LED blinks

Blue led indicates the status of the device, if it is constant ON or blinks your device works normal otherwise try to update it. If Update does not help, connect our support team: support@ensotech.ltd or contact your dealers.

Turbo timing advance and Boost timing advance are BOTH zero – BLUE led blinks otherwise it is constant ON

REGISTERED TRADEMARK

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All other brands mentioned in this guide are protected by copyright being the property of their respective owners.

SAFETY PRECAUTIONS / MAINTENANCE / TIPS

-Not for children under 14 years old. This is not a toy.

-Swave needs NO external capacitors or any other rework.

-“servo tester” damage the esc! It is an un-appropriate method to test and operate now-a-day esc.

-Use Ensotech certified sensor motor with Ensotech Brushless ESC for best performance and protection. Using a not approved sensored motor due to non-sequential frequencies and timing control the result in excessive current draw due to advance motor timing and may cause severe ESC damage that will not be covered by product's warranty!

- Swave ESC is a high end racing product that offers many customized parameters. If you are not certain about any of the settings, contact your dealer for assistant or contact us.

-Do not overload motor due to incorrect/high gear ratios. Make sure the gear mesh is set properly. If the mesh is too loose it can cause motor and ESC overheat which will damage the ESC and motor

- Do not allow motor, ESC and battery in contact with water or other fluids, this could cause internal shortcut and damage.

- Disconnect and remove the battery when ESC is not used.

-To prevent the runaway of your R/C car model, do not connect battery to the ESC or switch on the ESC without switching-on the transmitter.

- To achieve the smoothest and stable firmware update process, please turn off all background apps under a stable and strong internet connection.
FW version:65535 in terms of "firmware update failure either firmware broken", and need to recover the firmware by updating the firmware again.

- To update firmware, the transmitter/radio must present OFF or un-plug the receive cable from ESC. Once the firmware updated successfully require to calibrate the throttle position.

- Soldering cables - things **NOT** to do
Higher then 60W soldering iron
Lower then 30W soldering iron
Silver type soldering materials
Alcohol or chemical to clean the PCB before and after the soldering
Shorten the processing time, not to overheat the PCB

ENJOY YOUR RACE !

Ensotech Limited

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