ENSOTECH LIMITED

www.ensotech.ltd

MANUAL   SWAVE-E / E2/ W

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.
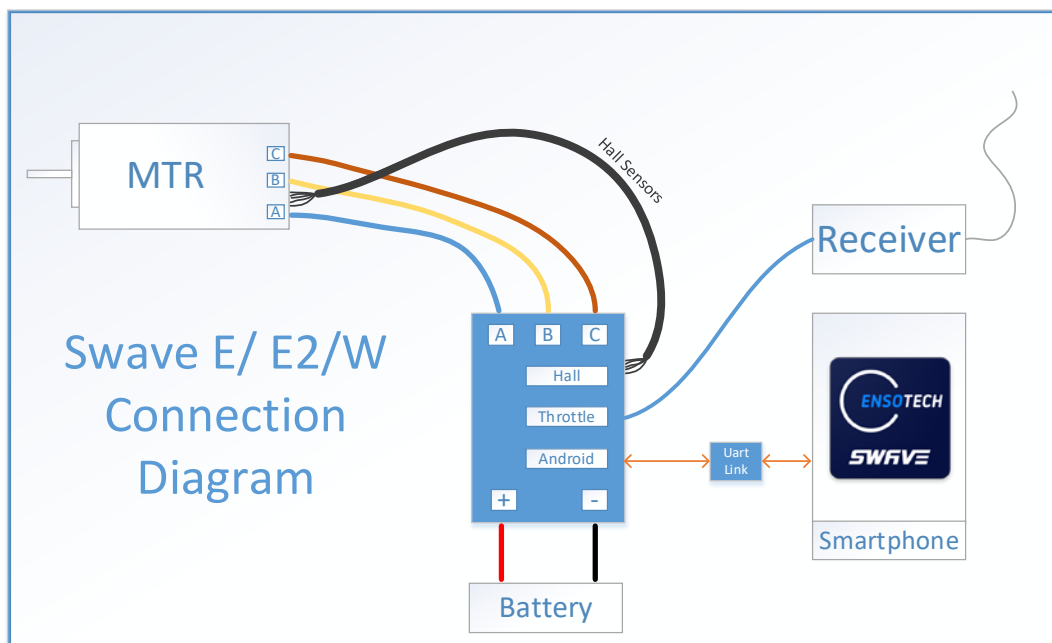
THROTTLE CALIBRATION

** 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.

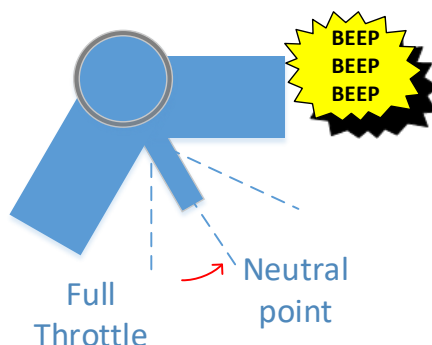** Beep sound came from the motor movement, there will be no sound without motor.

BEEP

Full Reverse
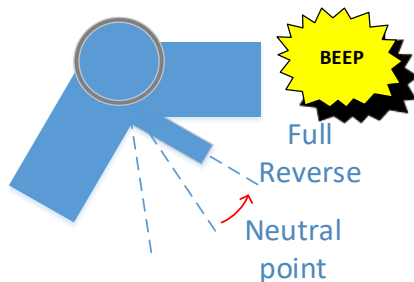
Neutral point

STEP 4

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

BEEP BEEP

Full Throttle
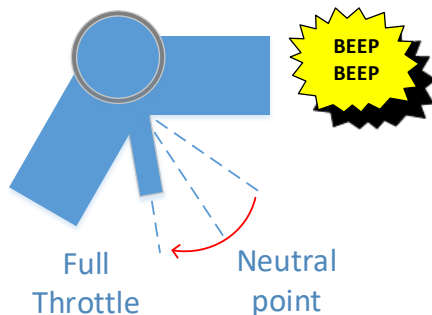
Neutral point

STEP 5

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

BEEP BEEP BEEP

Full Throttle

Neutral point

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 and transmitter also using non-original factory equipment.

THE ESC PARAMETERS ADJUSTMENT AND SWAVE programming App

Cables for changing the ESC settings and updating software

UARTLINK for Swave E (Optional)

UARTLINK-II for **Swave E2** and **Swave W** (Optional)

**ENSO BLUETH (Optional) – wireless device with BLE***

BLE – Bluetooth Low Energy is supported only with phones

that have an android upper 4.3 version and support Bluetooth

Not only has the same function as UARTLINK-II cable but it is wireless to change the esc setting without taking the car away from the track. It also provide telemetry reading of motor rpm, battery voltage, esc temperature, throttle movement during the car running on track.

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

** ENSO BLUETH Doesn't support Swave-E

** We are still trying to work out this Bluetooth for IOS system, please be patient **
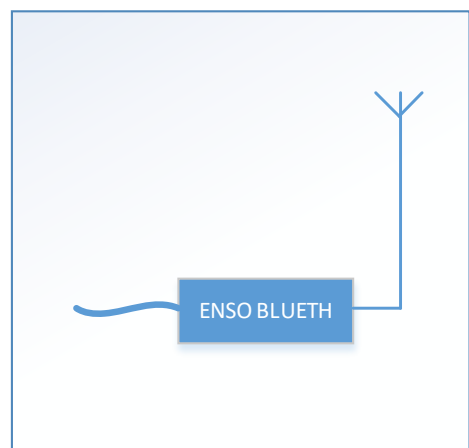
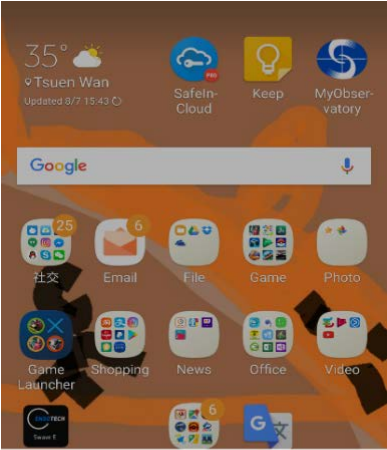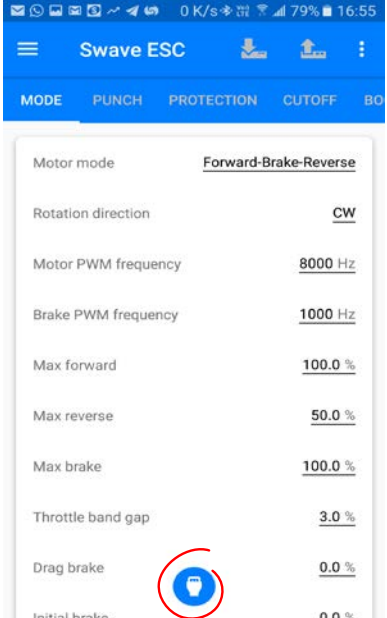Always switch off the ESC before connect and disconnect programming devices.

Important notice to IOS and Android Users

1) UARTLINK-II either ENSO BLUETH both support to change the ESC parameters from Android.   We are still trying to develop for IOS.

2) For Android user, you can download Swave ESC application from Google Play™ free of charge or download the installation apk file from Swave webstore software page to install manually.   If you decide to install the apk file manually, please make sure to un-install / remove the previous version before process to install the new version.

3) For IOS user, you can only download Swave ESC application from App Store (not available yet, we are still working on it)
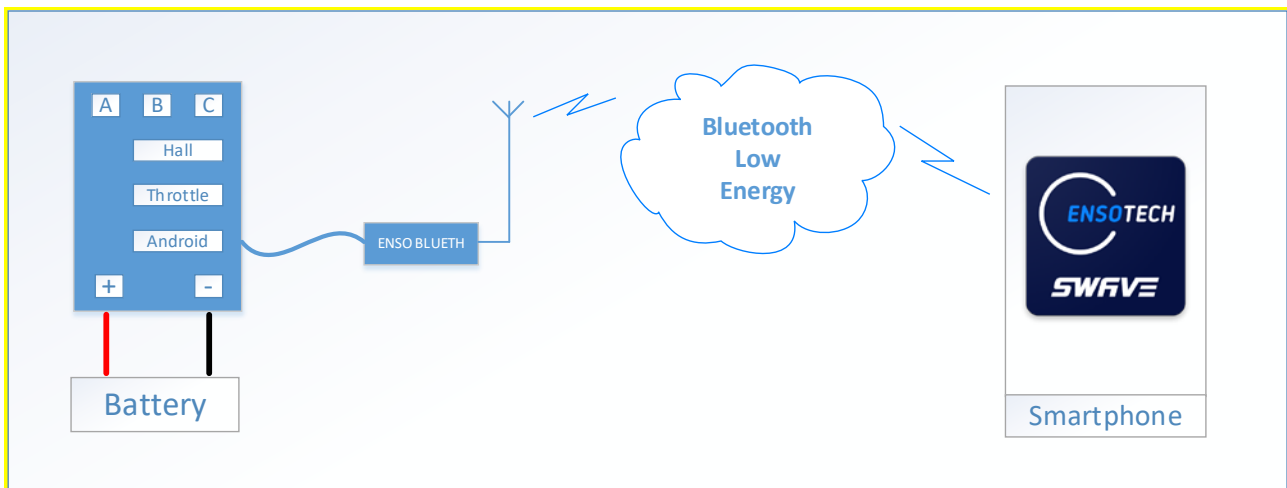
Cable (UARTLINK) connection

Connect 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.

<table>
<tr>
<td></td>
<td>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.</td>
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<tr>
<td></td>
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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.

</td>
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</table>

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.
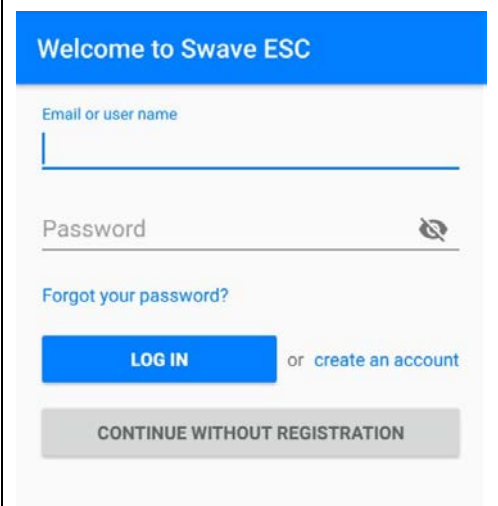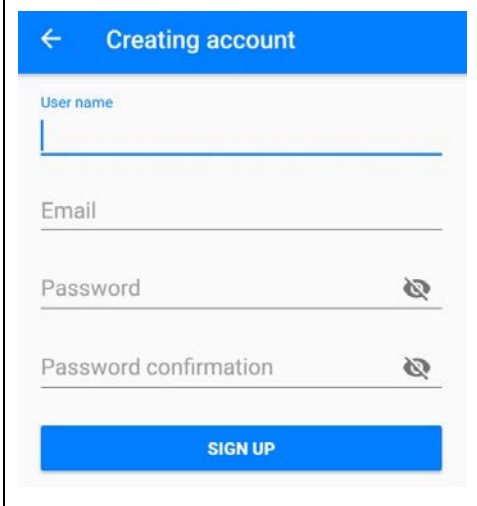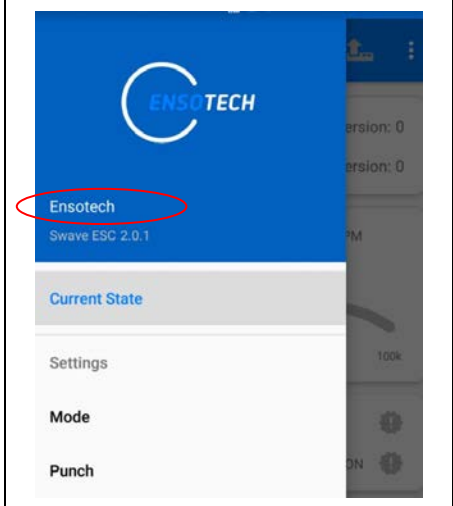

YOU SHOULD CONFIRM ALL REQUIRED PERMISSIONS TO USE WIRELESS MODE

Select Bluetooth connection from context menu at the right corner	Select your device name from list	Enter six-digit pairing pin-code
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.	*Device name listed on the label inside the package.*	*Pin Code listed on the label inside the package.* *If you lost the pin code, please contact Ensotech with provided your device name*

Registration
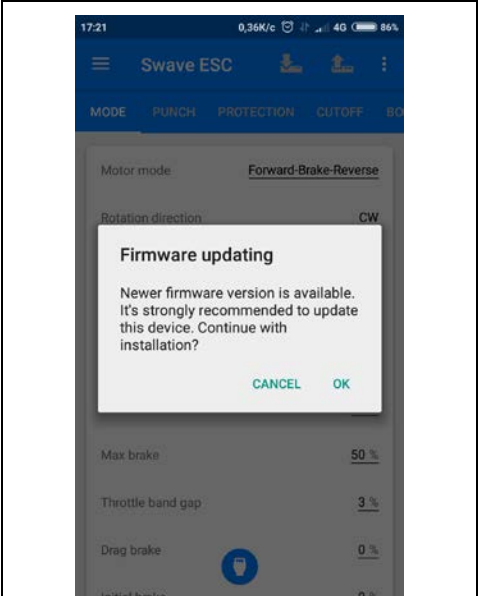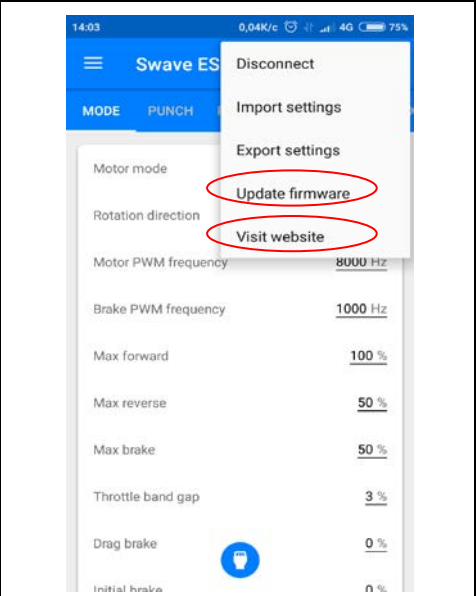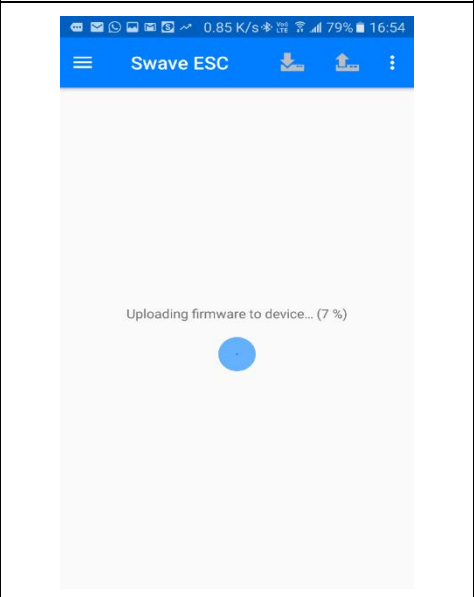
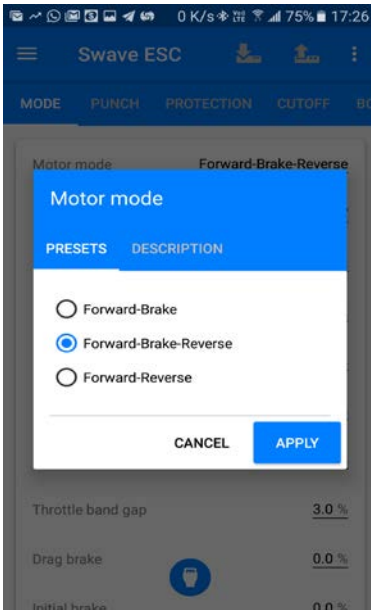| If you are already a user of Ensotech software management system, you can login with your Email/Username and password. Also, you can restore the password by Email..	To create an account, enter an unique user name, contacting email, and create a password. If everything is done right you will receive 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.
Welcome to Swave ESC Email or user name Password 👁 Forgot your password? **LOG IN** or create an account CONTINUE WITHOUT REGISTRATION	← **Creating account** User name Email Password 👁 Password confirmation 👁 **SIGN UP**	ENSOTECH Ensotech Swave ESC 2.0.1 **Current State** Settings Mode Punch

Device firmware updating

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.
Swave ESC MODE PUNCH PROTECTION CUTOFF BO Motor mode Forward-Brake-Reverse Rotation direction CW **Firmware updating** Newer firmware version is available. It's strongly recommended to update this device. Continue with installation? CANCEL OK Max brake 50 % Throttle band gap 3 % Drag brake 0 %	Swave ES Disconnect MODE PUNCH Import settings Export settings Motor mode Update firmware Rotation direction Visit website Motor PWM frequency 8000 Hz Brake PWM frequency 1000 Hz Max forward 100 % Max reverse 50 % Max brake 50 % Throttle band gap 3 % Drag brake 0 % Initial brake 0 %	**Swave ESC** Uploading firmware to device... (7 %)

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

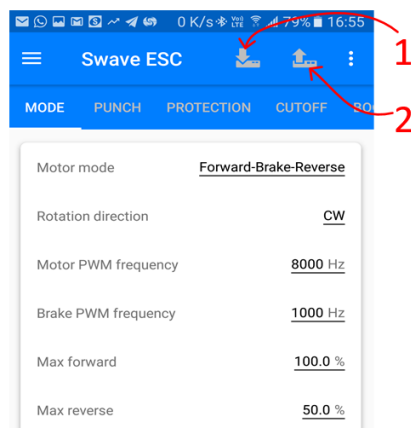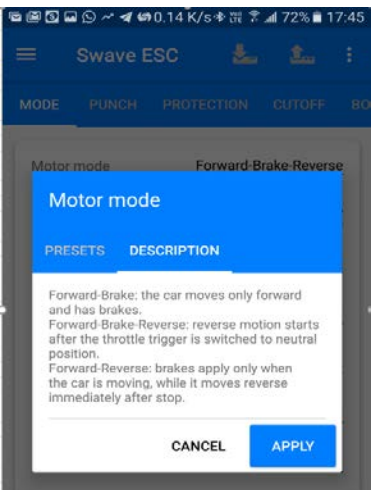***During upload or download the setting from the ESC, the phone power must be always present, keep the screen always on without entering sleep mode either power saving mode, otherwise ESC can be damaged!**

***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 E 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.
Note. For these operations, you should install any file manager to your device.
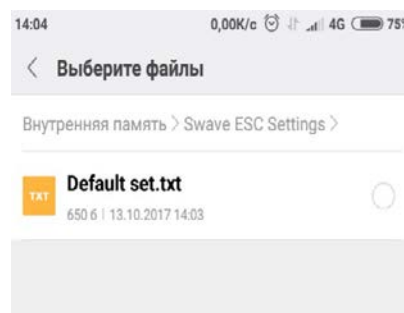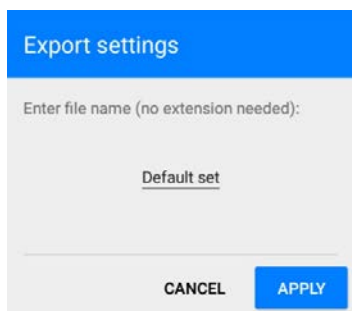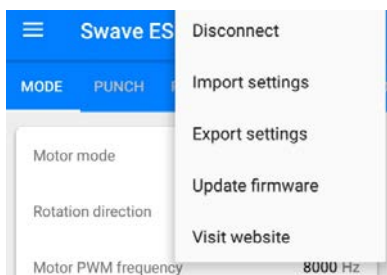
ESC PARAMETERS MONITORING

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
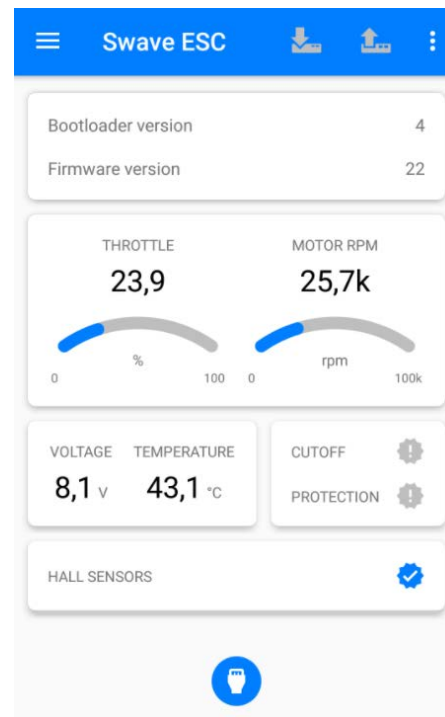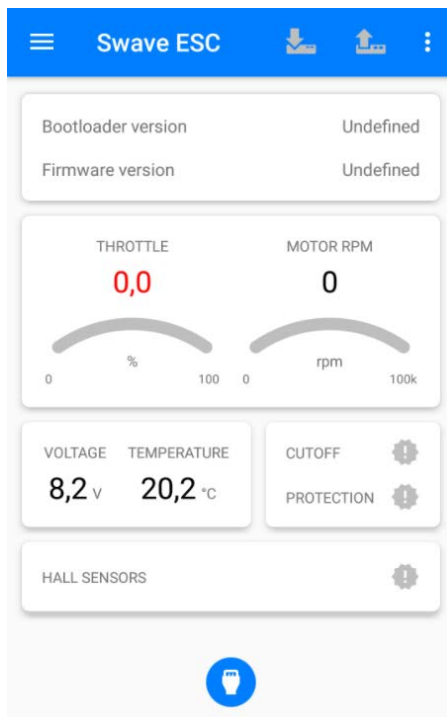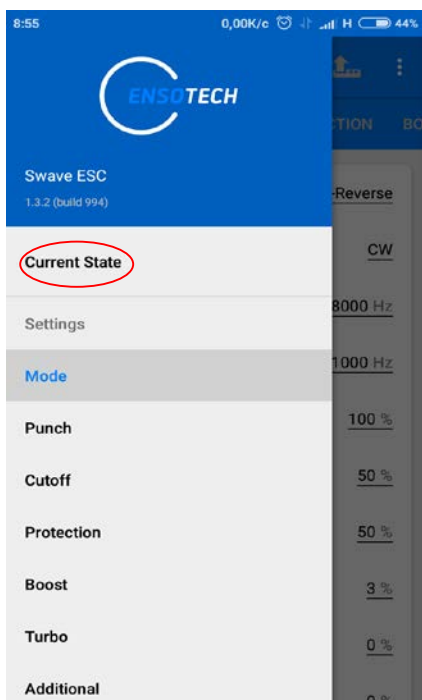
SENSORS RECOGNITION SYSTEM

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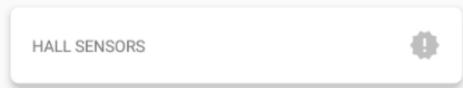 connected sensor cable and all is correct sensors icon becomes blue. If something is wrong ESC detects the error and show warning icon, also, red led will ON

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

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

ENSOTECH is registered trademarks of Ensotech Limited.

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SAFETY PRECAUTIONS AND MAINTENANCE

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

-Swave needs NO external capacitors or any other rework.

-Use Ensotech certified sensored motor with Ensotech Brushless ESC for best performance and protection.

-Using a not approved sensored motor may 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.

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