



ENSOTECH LIMITED

www.ensotech.ltd

Swave E Electronic Speed Controller USER MANUAL v2.2

In this document included how to use the product / cautions / maintains / warranty / disclaimer / terms & conditions

Introduction

Thank you for choosing Swave ESC, its novel technology provides smoothest and ultra-efficient performance. Please, read this manual and terms and conditions carefully before installing your new Swave E electronic speed controller. All Ensotech products was sealed with a label shows the hyper link to download this manual.

Once the seal is broken and the package opened, the acceptance of the below terms & conditions.

If you have any queries and uncertain please do not open the package, consults with your seller or Ensotech.

Swave E ESC

One of the smallest size and weight in the mini R/C market among brushless ESCs. It is special designed for use with both sensed / sensorless of diameter 15mm motors up to 7000kv for mini R/C races and drift on 1/27 and 1/28 scaled car models. It shows excellent performance and is fully functional in sensed mode.

Links

[Product Page](#)

[Configuration App](#)

[Swave E Manufacturer's Page](#)

Ensotech Limited

Website <http://www.ensotech.ltd> / <http://swave.ensotech.ltd/>

Address Unit F, 6 Floor, Cheung Hing Shing Centre,

No.23 Sha Tsui Road, Tsuen Wan,

New Territories, Tsuen Wan, Hong Kong

Tel +852-3421 1446

@mail support@ensotech.ltd / info@ensotech.ltd

PARTS INCLUDED IN THE PACKAGE

- Swave E ESC x 1
- Signal Cable (JR type) x 1
- Signal Cable (JST type) x 1
- Battery Cable x 1
- Spare On/Off button x 1
- Spare case locking pin x 1



OPTIONAL MOTOR (Purchase Separately)

Aurora 5500/6200/7000kv Sensored Brushless Motor
available at [PPM racing store](#)

- Motor power cable x 3
- Motor sensor cable x 1



UARTLINK (Optional)

Programming ESC



REGISTERED TRADEMARK

ENSOTECH is registered trademarks of Ensotech Limited.

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

SAFETY PRECAUTIONS AND MAINTENANCE

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

-Swave E 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 E 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.

-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.

-Always switch off the ESC before connect and disconnect programming cable.

SPECIFICATION

Dimensions (mm)	12x22x7
Const./Burst Current (A)	10/30
Supply Voltage	2s
Resistance (Ohm)	0.0223
BEC Output	5V
Weight(g)	2.73
Sensor Input	1
Programming input	1 – Caution with the connector plug direction
Car applicable	1:27/1:28 scaled touring car and other mini R/C model
Support motors	15mm diameter motor, brushless, sensored and sensorless DC motors up to 7000Kv

FEATURES

Stunning size and weight

Easy-to-use programming

Firmware update when connecting to programming system

Programmed by Android system, via Ensotech - UARTLINK (optional)

Professional set of customized parameters for difficult race track

Idle switch off delay

ESC protection in case of one or two Hall sensor wire break

Automatic recognition of Hall sensor's position even when wire connections are swapped

Blinky mode

Fail-safe wheels block feature (When receiver disconnect or loses radio signal, wheels are blocked to avoid runaway car.)

Settings configurations export and import. (You can save and load configuration or send your settings to you friend.)

ENSOTECH CERTIFIED SENSORED MOTORS

Working in sensored mode requires from the motor well assembly and precisely positioned sensors according to winding magnetic axes. Also, sensor board schematic design should be confirmed with Ensotech.

Using Swave E with low-quality motors can damage ESC. Ensotech shall not be responsible for damage that may result from the use of products with uncertified motors and sensor cables. Visit our [website](#) to watch the list of certified motors.

To request service for the motor that was not provided under the brand of Enostech, please contact the motor supplier. Ensotech not responsible for motor quality, usage, and after-sales services.

SOLDERING THE CABLE

-DO NOT OVERHEAT SOLDER TABS, consider of small size electronics components are very sensitive and easy to damage by over heat, Ensotech recommend it should not soldering each connection point more than 1 second with maximum of 300 degree Celsius. Beside, please make sure the cable and soldering material are well covered the conductive surfaces as possible, and fully isolated from any other conductive surfaces.

If weak connecting of conductive surfaces cause the ESC failure, it is not under warranty.

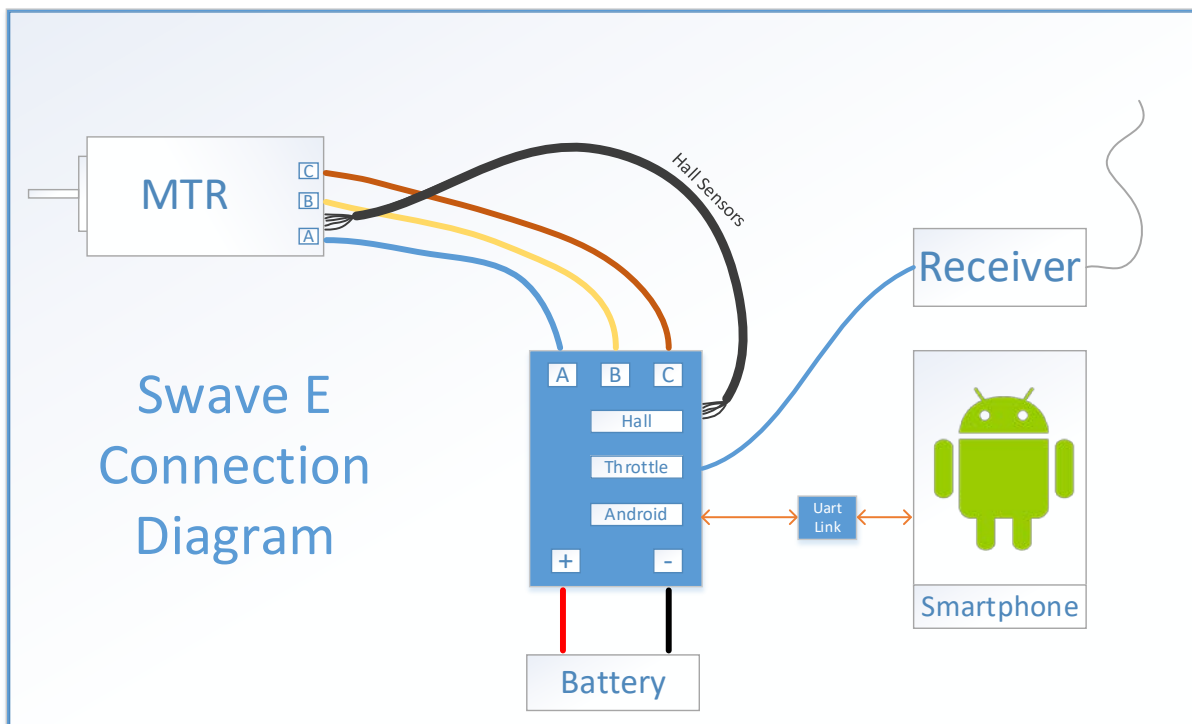
Better soldering work gives advantage of decrease the electronic resistance, the calibration beep sound become louder and the ESC will perform better performance.

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 receivers.

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



THROTTLE CALIBRATION

STEP 1

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

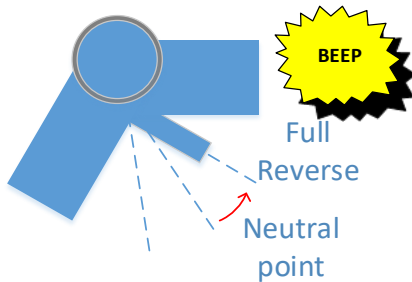
STEP 2

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

STEP 3

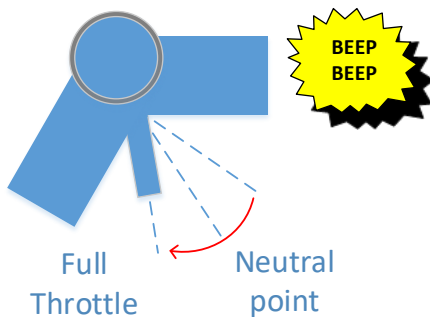
Turn on the ESC and wait for **one** short beep – switch-on beep (motor must be connected to the ESC, or there will be no sounds). After that wait for **another** beep – calibration beep. (it will be in a second). Do not release the trigger before calibration beep.

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



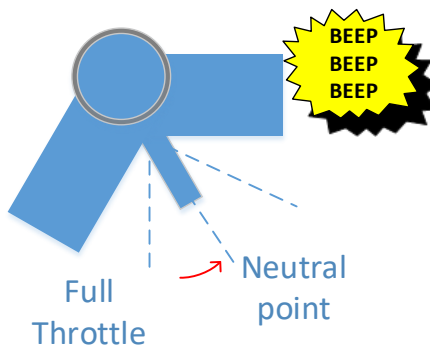
STEP 4

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!

PLEASE NOTE THAT 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 E** 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.

Without properly done calibration the ESC can be damaged.

Enrotech is not responsible and warranty is not covered if fail occurs because of the compatibility of radio and transmitter or using non-original equipment.

If you are not certain about the compatibility with your radio system, please do not open the package. Consult with your seller.

THE ESC PARAMETERS ADJUSTMENT AND Swave E programming App

In order to change the ESC parameters, you should purchase an optional UARTLINK programming cable.

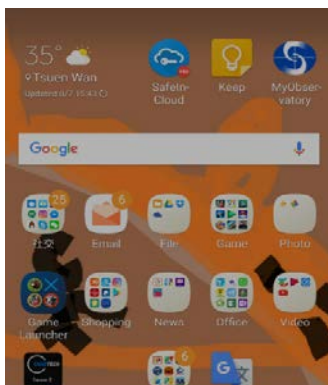
Download [Swave ESC](#) application from [Google Play™](#) free of charge or download the installation apk file from Swave website to install manually. If you decide to install the apk file manually, please make sure to un-install / remove the previous version before process to install the new version.

This application supported by Android system only.



Click on and purchase

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.



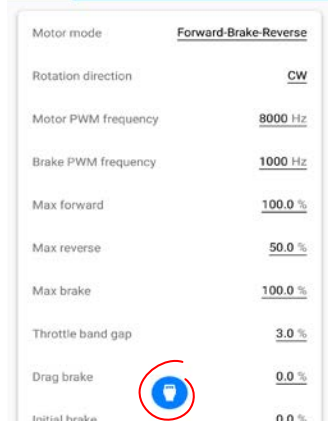
Connect the battery and switch on the ESC, your Android device will automatically detect the USB device and ask you to choose an app for it. Otherwise you can launch the app manually.



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**.



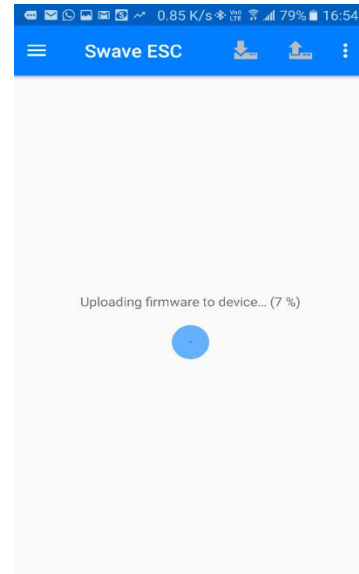
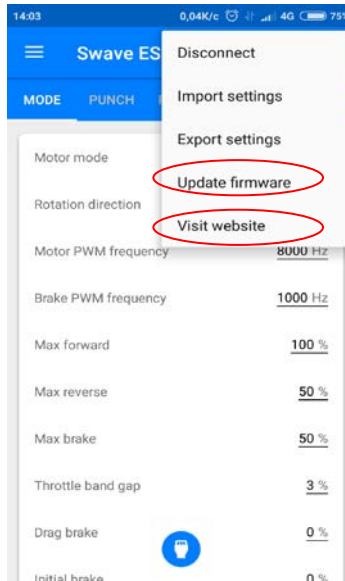
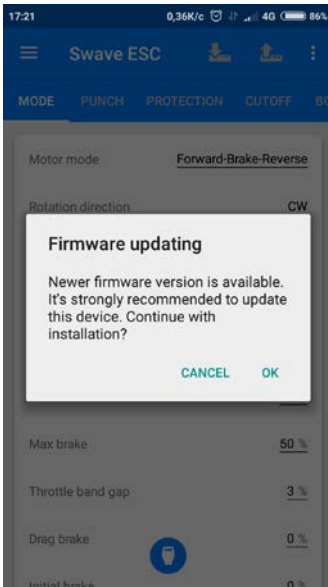
If your device uses TYPE-C USB, please make sure to use an adaptor has OTG. If you are uncertain please do not open the package. Consults with your sellers and other users their advice for supported model.

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.

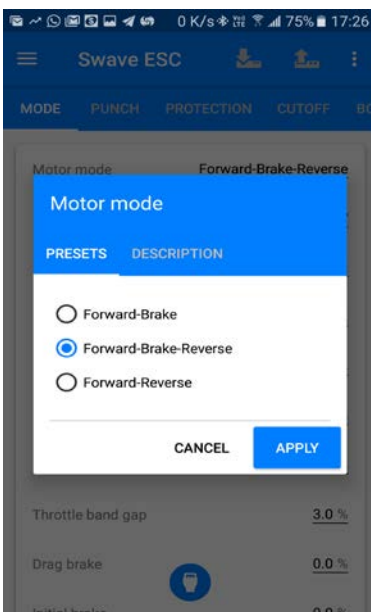
When update is completed successfully, ESC performs one beep and turns on a blue LED.

Also you can find this manual at our website

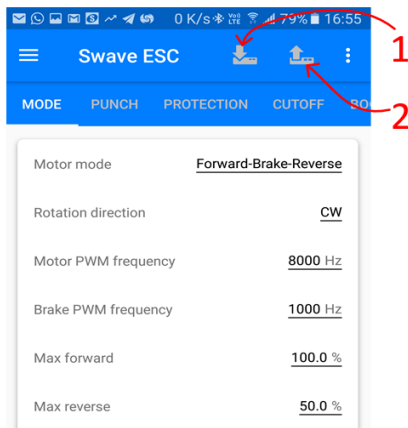


***During update power must be always present, otherwise ESC can be damaged!**

Before starting Firmware update you should be sure that your phone cache memory and temporary file is quite clear also not many un-necessary apps are running at the background. Some phone system has included this kind of apps to optimize the phone memory and un-used apps running at background. If your device do not have such features, there are many third party apps available on the Google Store free of charge.



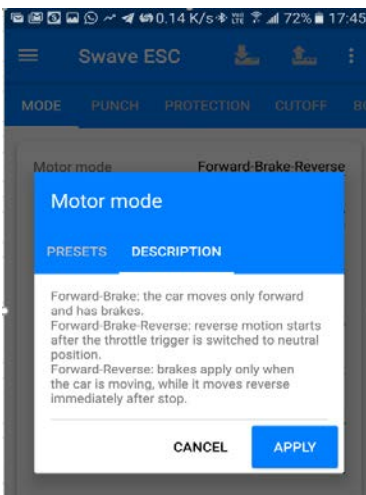
Now you can start to manage the settings, press "APPLY" to accept changes



After you complete managing the settings, you need to upload all new settings to the ESC, so click the icon on the top left corner. 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

Important: during either upload or download the settings from the ESC, power must be always present, otherwise ESC can be damaged!

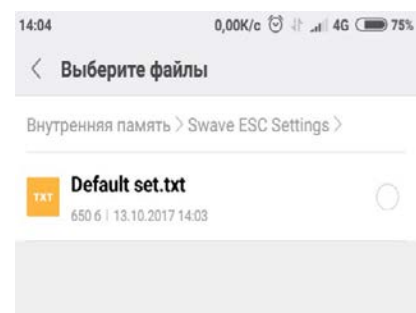
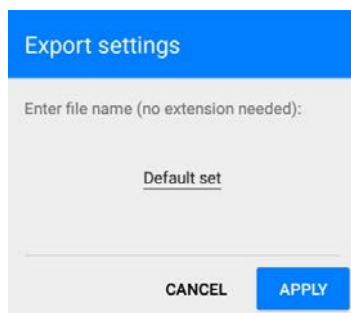
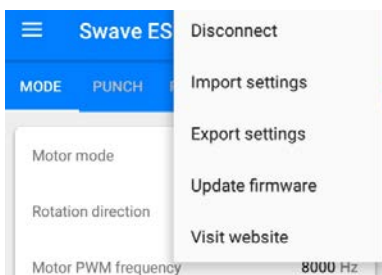


Each parameter has a detailed description

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

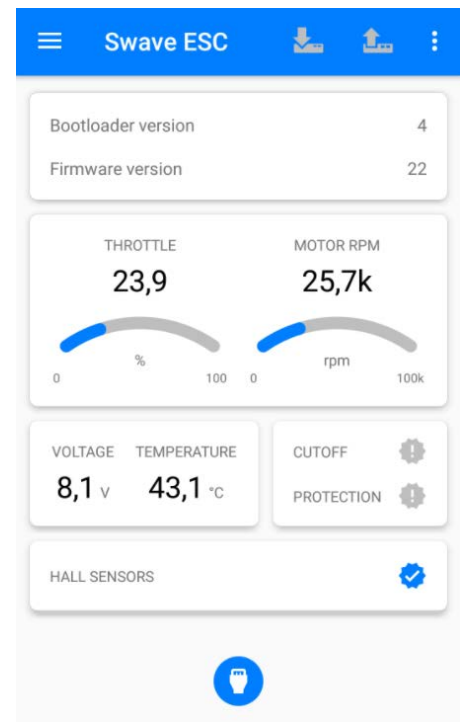
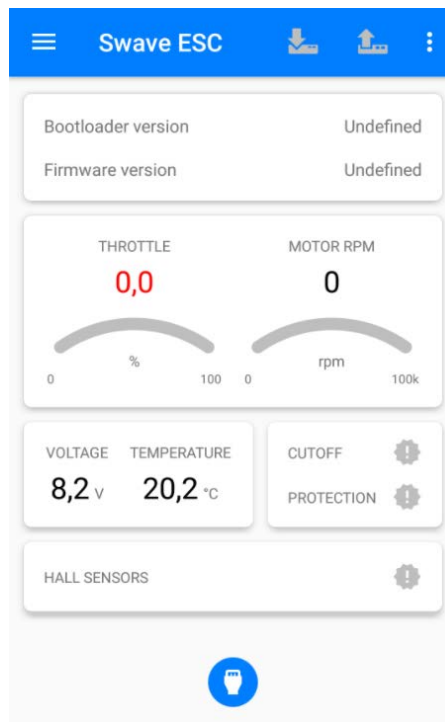
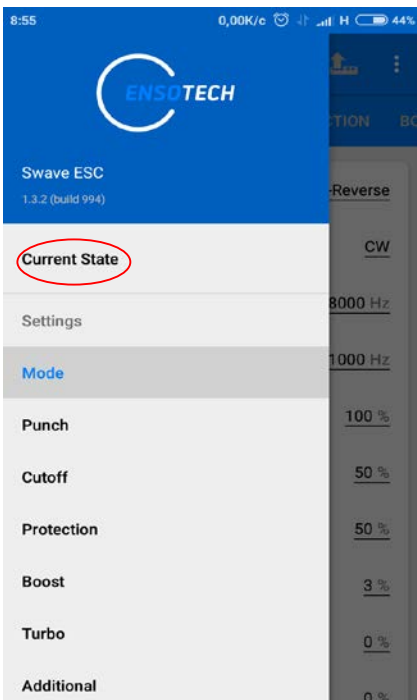
Swave Android Apps allows you control ESC state in real time. To open the state monitor you should chose "Current state" tab in App menu.

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

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

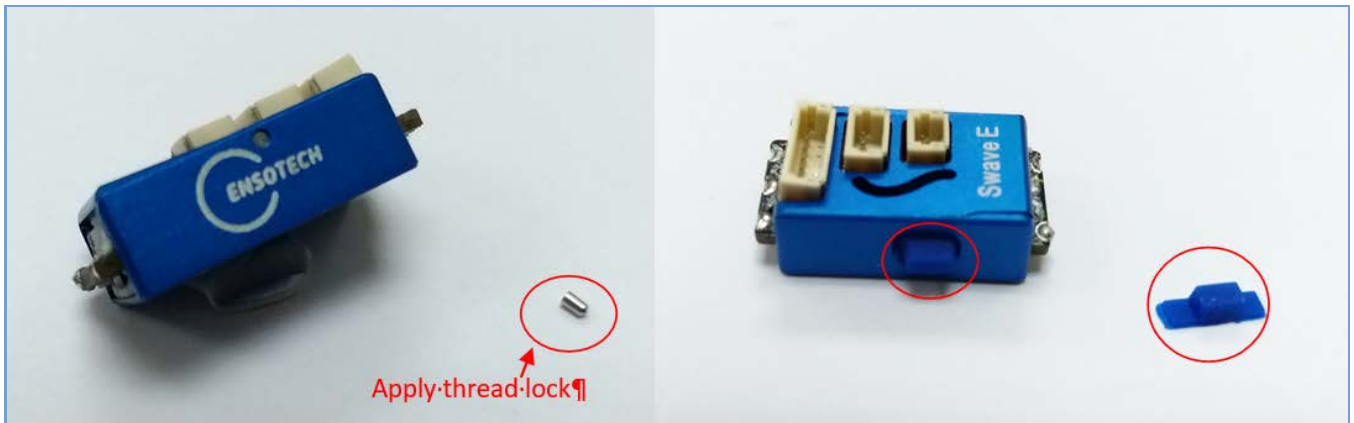
Sensor issue occurs – **RED** LED blinks

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

SPARE PARTS

Each ESC included the spare parts - On/Off button & case locking pin



MORE ABOUT TERMS & CONDITIONS

Duration of Warranty: **Ninety (90) Days from the day of purchase**

Request for RMA

* You must present original / receipt (original copy) issued by your seller, otherwise repair service will be on chargeable basis.

* Please contact Ensotech support@ensotech.ltd to request RMA form and return together with the product.

*After inspection if the result of wrong or improper used, the cost of repairs will inform and approved by customer before the repair work started. Repairing process will take no more than 14 days.

* If the result of manufacturing quality issues, Ensotech will repair either replace to the same model without repairing charges. If the return model are no longer available, Ensotech reserve the right to provide the same value model or a higher grade model.

Shipping and Return (Under warranty & non-warranty)

Customer will be responsible for postage charges send the product back to Ensotech for inspection, after repair Ensotech will pay for returning the product by post office registered air post service. The shipping time would take 15 to 30 days depends on regions and traffics. If request for faster delivery, please contact Ensotech support@ensotech.ltd for additional express service charge.

Warranty also will not applied to the following matters:

- Wrong polarity connection of the product
- Physical damage
- Contact with water or other fluids
- Un-authorized parts utilization.
- Using accessories not specified by Ensotech
- Using over 5V servo
- Using programing socket for other applications.
- Not use for 1/27 and 1/28 scaled touring car models
- Not use 15mm diameters motor the kv value more than 7000kv
- Using external capacitors
- Failure or defect normal wear, incorrect use, improper installation, repair or modification.

Ensotech Limited reserves rights to modify such list without notice.

In case of disputes, the decision of Ensotech Limited shall be final.