TAMIYA BRUSHLESS ELECTRONIC SPEED CONTROLLER OR（SENSORED）

Thank you for purchasing the Tamiya Brushless ESC 02 （Sensored）．This electronic speed controller is designated for use with the Tamiya Brushless Motor 01 （Sensored）series，and also Sport－Tuned Motors and brushed motors over 25 turns．Read ca－ refully and fully understand instructions prior to use．Make sure to read the following safety precautions as breakage and accidents due to improper use will void your warranty．
※Using servos with a current exceeding 1．5A may cause damage to the ESC．

## Specifications

ESC：Forward／Brake／Reverse
Max．Continuous Current：60A
Input Voltage：6．6－7．2V
Output：Forward－100\％Reverse－50\％
Dimensions： $45 \times 34 \times 25 \mathrm{~mm}$
Weight： 50.8 g
Compatible Motors：TBLM－01S series of Tamiya Brushless Motors （Sensored），Sport－Tuned Motor，motors over 25 turns
Receiver Output Voltage：6V／1．5A

## WARNING

Pay close attention to the following safety precautions as improper use can destroy the product and void your warranty or lead to proper－ ty damage and personal injuries．
OThis speed controller is intended for use with R／C models that operate on the ground．Do not use with other models．
OConnect receiver to ESC and servos securely．Connectors may become loose due to vibrations while running．
ONever operate any R／C model in electrical storms．
Avoid running in rain or through surface water．Water in the receiver may cause loss of control．
ODisconnect and remove battery when car is not being used．If left connected the car may run out of control，causing damage or injury．
OKeep receiver，battery and model etc．out of reach of small children．

## CAUTION

OMake sure the polarity is correct when connecting a battery pack and motor to prevent damage to ESC and receiver．
Continuous running may loosen battery connection．Battery，motor and ESC become extremely hot during or after operation and can cause burns if touched．
ONever short circuit battery or motor cables as it may damage the R／C unit．
OThis speed controller is not waterproof．
ODo not disassemble or modify the ESC．This ESC is only for use with Tamiya batteries and motors．Use of other products may damage the R／C unit．
ONever run an R／C model on roads or streets，or in crowded areas． ONever connect to a brushed motor when ESC is in brushless mode and vice versa，as this may damage the ESC．
OAvoid strong shocks or impacts that may damage the ESC．

## 《Part names》

$\star$ Always turn ON transmitter first，then receiver．Always turn OFF receiver first，then transmitter． Opposite order may lead to an out of control R／C car and an unexpected accident．


Receiver connector
$\star$ Connect to 2 （CH．2）on receiver．


Out off the tab when connecting to SANWA or JR receiver．Note direction and polarity when connec－ ting．

OConnection（Brushless motors）○Connection（Brushed motors）

| Blue | $=※$ Motor：Blue | Blue | $=$ M Motor：Minus（ - ） |
| :--- | :--- | :--- | :--- |
| Yellow | $=$ ※Motor：Yellow | Yellow | $=※$ Motor：Plus $(+)$ |
| Orange | $=※$ Motor：Orange | Orange | $=※$ Not used． |

《NOTICE》 This ESC is not equipped with cooling fan，and if paired with TBLM－01S Motor（10．5T）for off－road driving use，the heat protec－ tion function may frequently stop ESC operation．In that case，please adjust the gear ratio approximately to 10：1（4WD chassis）or 9：1（2WD chassis）．

## 《LED Flashing Pattern》Setup confirmation

 When the receiver is switched on，the LED will show the current settings with the number and length of its flashes to enable checking of reverse， low voltage protection and motor mode settings． As all 3 settings are shown by one LED，please refer to the diagrams．| Motor Setting | LED |
| :---: | :---: |
| Brushless Mode | Orange |
| Brushed Mode | Green |


| Reverse Function | Low Voltage Protection Setup | LED |  | Alarm |
| :---: | :---: | :---: | :---: | :---: |
| Enabled | ON | 湩 | Single flash | 10. |
| Disabled | ON | 㴆 渉 | Double flash | pre por |
| Enabled | OFF | 渵尚学 | Long single flash | Nun－ |
| Disabled | OFF |  | Long double flash | NMW－NMW－ |

Olf receiver is turned on while transmitter is off，LED will flash． If motor is connected an alarm will also sound．（Alarm will not sound if the Fail Safe Function of your transmitter is set to ON．）
OPlease note that parts such as ESC，motor，battery，and wires emit noise due to large amounts of electric current． Putting the receiver and antenna near such devices may lead to interference causing loss of control．The receiver and antenna must not touch the ESC．The antenna must not cross over with cables from the ESC．Cables should be tied up． Carbon or metal chassis may also transfer interference．

《High Point Setup》（refer to 《Throttle Operation and LED Indicator》）
（1）With receiver power switch off，remove motor cables and ensure that no motor output is being transmitted to the model．
（2）Position throttle trim in neutral，and put throttle reverse switch into reverse position．
$\star$ If transmitter throttle range has been adju－ sted，reset to factory settings．Turn off any ABS or acceleration functions．
（3）Switch on transmitter．
（4）Switch on receiver．
（5）While holding down set button，check that LED flashes in the order Red $\rightarrow$ Green $\rightarrow$ Orange $\rightarrow$ Red．
（6）Release set button when LED lights up Red． LED will start to single flash Red．
（7）Apply full throttle and press set button once．If procedure has been performed cor－ rectly，LED will start to double flash．
（8）Apply full brake and press set button once． If procedure has been performed correctly， LED will turn off．
（9）When LED turns off，setup is complete．
$\star$ All settings are stored once setup is com－ plete，and can not be stored separately．
$\star$ The settings will not be stored if the speed controller is turned off during setup，and pre－ vious settings will remain．
$\star$ Do not change transmitter settings after high point setup is complete．If transmitter settings are changed，perform high point setup again．
$\star$ Setup has to be done again if you change the transmitter．

## 《Neutral Brake Setup》Brushless Mode Only

（1）Switch on transmitter．
（2）Switch on receiver．Hold down set button and LED will flash in order． （3）Release set button when LED lights up Green．Count the number of flashes of the LED to check the value．For example， 2 flashes means Setting 2.
（4）Press the set button once to increase the setting value by one，and it returns to Setting 1 after Setting 10.
（5）Push and hold set button to end setup．When LED lights up Orange to show setup is complete，release set button．

| Setting | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Output（\％） | $0 \%$ | $5 \%$ | $10 \%$ | $15 \%$ | $20 \%$ | $25 \%$ | $30 \%$ | $35 \%$ | $40 \%$ | $45 \%$ |

## 《Brake Setup》Brushless Mode Only

（1）Switch on transmitter．
（2）Switch on receiver．Hold down set button and LED will flash in order．
（3）Release set button when LED lights up Orange．Count the number of flashes of the LED to check the value．For example， 5 flashes means Setting 5 ．
（4）Press the set button once to increase the setting value by one，and it returns to Setting 1 after Setting 10.
（5）Push and hold set button to end setup．When LED lights up Orange to show setup is complete，release set button．

| Setting | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Output（\％） | $10 \%$ | $20 \%$ | $30 \%$ | $40 \%$ | $50 \%$ | $60 \%$ | $70 \%$ | $80 \%$ | $90 \%$ | $100 \%$ |

## 《Factory Settings》



LED is Red：
High Point Setup
LED is Green：
Neutral Brake Setup

LED is Orange：
Brake Setup
LED remains off while throttle trigger is in neutral position，and turns on when trigger is moved forwards or backwards．When trigger reaches full throttle or full brake， LED turns off．

## 《Reverse Setup》

 button． is turned on／off．
## 《2 Protection Functions》

This item features 2 functions to protect ESC operation．
Overheat Protection：Stops power to the motor being cut off when FET overheats due to conti－ nued long running times or ex－ cessive load．Let the ESC cool down and it will automatically re－ start．
Overload Protection：If a current overload occurs，the motor will automatically shut down and will not restart automatically．Imme－ diately switch off R／C units， check short circuits or motor damage，and fix problem．Then， restart R／C units．

《Troubleshooting》 $\star$ Before sending your speed controller in for repair，check it again using the diagram below．

| Symptom | LED | Cause／Remedy |
| :--- | :--- | :--- |
| Motor does <br> not work． | Flashes Red／ <br> Green alternately | Motor is in Brushless mode but sensor cable is not connected．Connect cable． <br> Alternatively，motor is in Brushed mode with sensor connected．Disconnect cable． |
|  | Flashes Red | Low voltage protection function activated．Recharge the battery． |
|  | Flashes Red quickly | Overload protection function activated．Turn off ESC，check for damage and repair if <br> necessary． |
|  | Flashes Red slowly | Heat protection activated．Let the ESC cool down and it will automatically restart．In <br> case of frequent shutdowns，check gear ratio，ESC cooling，and drivetrain <br> movement． |
|  | Does not flash | Battery is not connected or recharged． |
|  | Flashes <br> Red or Orange | ESC has no signal input．Check transmitter switch，ESC／receiver connection，and <br> frequency band or transmitter／receiver pairing． |
|  | LED display is normal | Motor cables are not connected or motor is defective．Check motor connection or <br> replace motor if needed． |
| Model moves <br> opposite to <br> transmitter input． | LED display is normal | High point setup error，or transmitter settings changed after high point setup． <br> Perform high point setup procedure again． |
| Model does not <br> move backward． | LED display is normal | Transmitter settings changed after high point setup．Perform setup procedures again <br> if you changed transmitter．Also check if reverse function has been turned off． |

Contact your local Tamiya dealer for any questions regarding this speed controller including parts， defects and repairs．
$\star$ Send the product with detailed description of the malfunction to Tamiya Customer Service for repair request（Effective in Japan only）．

Neutral Brake：Setting 2 Brake Output：Setting 5 Reverse Function：ON Low Voltage Protection：ON Motor：Brushless Mode

## 《Throttle Operation and LED Indicator》

 Throttle trigger $\star$ Caution：Return the trigger to neu－ tral（stop）position， then push it for－ ward again to drive in reverse．
LED off
Full Throttle
Forward
LED on
Neutral
（1）Switch on receiver while holding down set
（2）LED flashes Red $\rightarrow$ Green $\rightarrow$ Orange $\rightarrow$ Red． Release set button when LED lights up Red．
（3）Each time setup is performed，reverse function
（4）When setup is complete，LED turns off then flashes to show current settings．See《LED Flas－ hing Pattern》 diagram．

## 《Low Voltage Protection Setup》

① Switch on receiver while holding down set button．
（2）LED flashes Red $\rightarrow$ Green $\rightarrow$ Orange $\rightarrow$ Red．
Release set button when LED lights up Green．
（3）Each time setup is performed，Low Voltage Protection function is turned on／off．
（4）When setup is complete，LED turns off then flashes to show current settings．See 《LED Flas－ hing Pattern》 diagram．

## 《Motor Mode Setup》

（1）Switch on receiver while holding down set button．
（2）LED flashes in the order Red $\rightarrow$ Green $\rightarrow$ Orange $\rightarrow$ Red．Release set button when LED lights up Orange．
（3）LED flashes Orange $\rightarrow$ Green $\rightarrow$ Orange．Press set button when LED is Orange to select Brushless Mode，or when LED is Green to select Brushed Mode．
（4）The LED will flash Orange in Brushless Mode and Green in Brushed Mode．If current mode is correct，press set button again to complete setup．To quit without storing settings，turn off receiver without pres－ sing set button．
（5）When setup is complete，LED turns off then flashes to show current settings．See 《LED Flashing Pattern》 diagram．

