

FUSION

Exceed

SENSORED BRUSHLESS MOTOR & SPEED CONTROLLER COMBOS



OPERATING INSTRUCTIONS

Please keep for future reference

Thank you for purchasing this Exceed brushless motor and speed controller combo. We are sure you will be pleased with its performance and features. In order to ensure that you obtain the maximum benefit from its operation, please read the instructions carefully.

SPECIFICATIONS

| SENSORED BRUSHLESS MOTORS | EXCEED 13.5T | EXCEED 10.5T | EXCEED 6.5T | EXCEED 3.5T | EXCEED 550 7.5T |
|------------------------------------|--|---------------------|--------------------|---------------------|----------------------------|
| Size | 540 | 540 | 540 | 540 | 550 |
| Motor Turns | 13.5 | 10.5 | 6.5 | 3.5 | 7.5 |
| NiCd / NiMH | 4~7 Cells | 4~7 Cells | 4~7 Cells | 4~7 Cells | 12~14 Cells |
| LiPo | 2 Cells | 2 Cells | 2 Cells | 2 Cells | 4 Cells |
| RPM/V(kv) | 3,500 | 4,500 | 7,400 | 13,300 | 3,100 |
| Rated Current(7.2V) | 27A | 36A | 45A | 90A | 43A (@14.4V) |
| Commutation | Sensored Type | Sensored Type | Sensored Type | Sensored Type | Sensored Type |
| Magnet type | All Motors Sintered Neodymium (12.3mm) | | | | |
| Weight | 170g | 170g | 163g | 163g | 272g |
| Shaft Diameter | 3.17mm | 3.17mm | 3.17mm | 3.17mm | 5mm |
| Can Size (Diameter x Length) | 36mm x 53mm | 36mm x 53mm | 36mm x 53mm | 36mm x 53mm | 36mm x 74.5mm |
| BRUSHED / BRUSHLESS ESC | EXCEED SPORT | EXCEED RACE | EXCEED PRO | EXCEED COMP | EXCEED ULTRA 550 HV |
| Input: NiCd / NiMH | 4~8 Cells | 4~8 Cells | 4~6 Cells | 4~6 Cells | 6~14 Cells |
| Li-Po / Li-Fe | 2~3 Cells | 2~3 Cells | 2 Cells | 2 Cells | 2~4 Cells |
| Sensored / Sensorless Brushless | Yes | Yes | Yes | Yes | Only Sensored |
| Forward / Brake / Reverse | Yes | Yes | Yes | Yes | Yes |
| BEC (Volts/Amps) | 5.0V/3.0A | 5.0V/3.0A | 6.0V/3.0A | 6.0V/3.0A | 6.0V/3.0A |
| Continuous Current | 40A(2.5Ah battery) | 60A(2.5Ah battery) | 80A(4.4Ah battery) | 150A(4.4Ah battery) | 140A(4.4Ah battery) |
| Peak Current | 50A | 75A | 100A | 200A | 180A |
| Rated Current(Brushless) | 116A/phase | 260A/phase | 382A/phase | 764A/phase | 520A/phase |
| Rated Current (Brushed-Fwd&Brakes) | 348A | 780A | 1146A | 2292A | 1560A |
| Rated Current (Brushed-Fwd&rev.) | 116A | 260A | 382A | 764A | 520A |
| Motor Limit (Brushless) | Over 12.5 turns | Over 8.5 turns | Over 5.5 turns | Over 2.5 turns | Over 4.5 turns |
| Motor Limit (Brushed-Fwd&Brakes) | Over 8 turns | Over 6 turns | Over 4 turns | No Limit | No Limit |
| Motor Limit (Brushed-Fwd&Rev.) | Over 10 turns | Over 7 turns | Over 6 turns | Over 4 turns | Over 7 turns |
| Sensored Frequency | 2KHz | 2KHz | 2KHz | 2KHz | 2KHz |
| Sensorless Frequency | 32KHz | 32KHz | 32KHz | 32KHz | 32KHz |
| Brushed Frequency | 2KHz | 2KHz | 2KHz | 2KHz | 2KHz |
| Super Programming system | Yes | Yes | Yes | Yes | Yes |
| Overtemp. Protection | Yes | Yes | Yes | Yes | Yes |
| Low voltage cut-off Protection | Yes | Yes | Yes | Yes | Yes |
| Overcurrent. Protection | No | No | Yes | Yes | Yes |
| Power wires | 2.0mm ² | 2.0mm ² | 2.5mm ² | 4.0mm ² | 4.0mm ² |
| Motor wires | 2.0mm ² | 2.0mm ² | 2.5mm ² | 2.5mm ² | 2.5mm ² |
| Dimensions(mm) | 40 x 41 x 28.7 | 40 x 41 x 28.7 | 34 x 38 x 25.5 | 34 x 38 x 30.5 | 56.5 x 54.5 x 45 |
| Weight(w/o wires) | 43g | 43g | 50g | 61g | 150g |

FEATURES

- Fully proportional forward with on/off brake and reverse
- Smooth throttle response
- Selectable Motor types - Sensored BLDC, Sensorless BLDC (not Ultra) & Brushed DC
- Li-Po, Li-Fe, NiMH & NiCd battery compatible
- Selectable Start Current & Current Limit Function
- Various Brake Systems - Speed Mixing Brake, ABS Brake, Auto / Minimum / Maximum Brake
- Selectable One Way / Two Way
- Brushed (2KHz) Sensored (8 kHz switching frequency), Sensorless (32kHz)
- Thermal Cut Off Function

INSTALLATION

Attach suitable connectors for connection to the drive battery

Red + Positive

Black - Negative

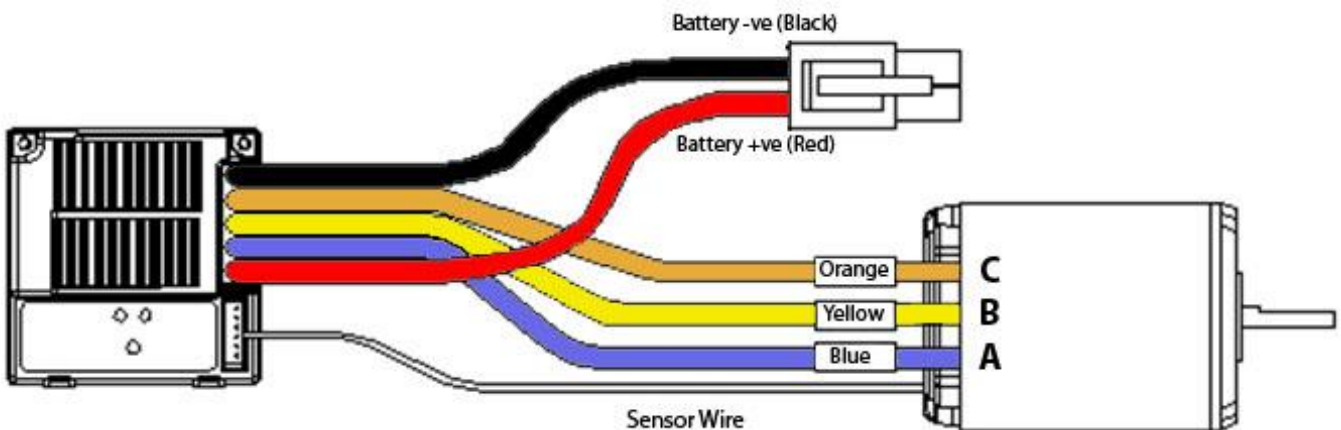
Ensure all of the connections are suitably insulated with heat shrink sleeving.

Please be very careful when soldering any connections, the excessive heat of a soldering iron next to the controller for more than 5 Seconds can cause damage.

BRUSHLESS MOTOR CONNECTION

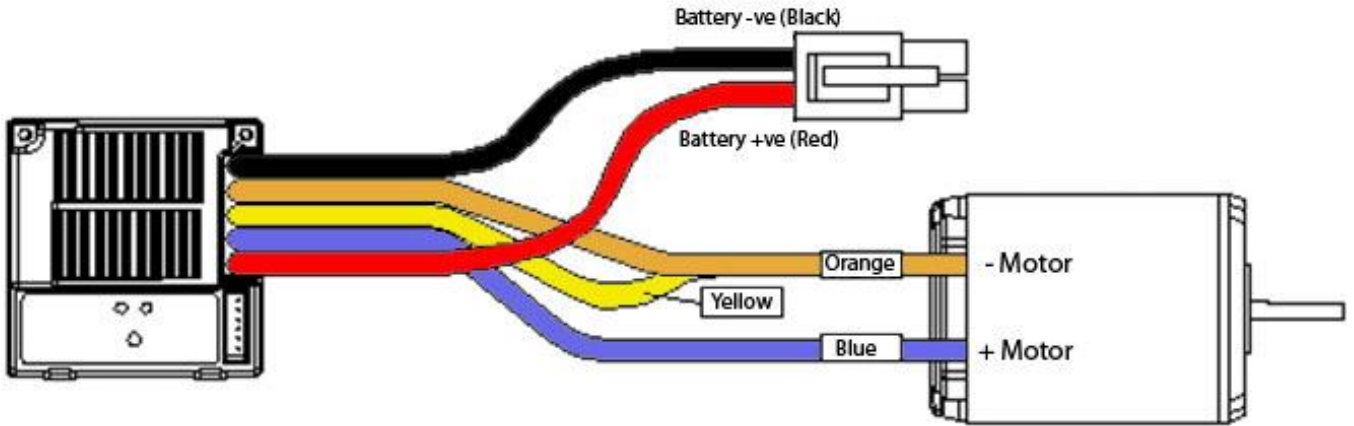
Connect the ESC to the motor as shown in the diagram below making sure that the blue wire is connected to the A phase on the motor, Yellow to the B phase and Orange to the C phase.

If you are using a sensored motor, then make sure the sensor wire is also connected.



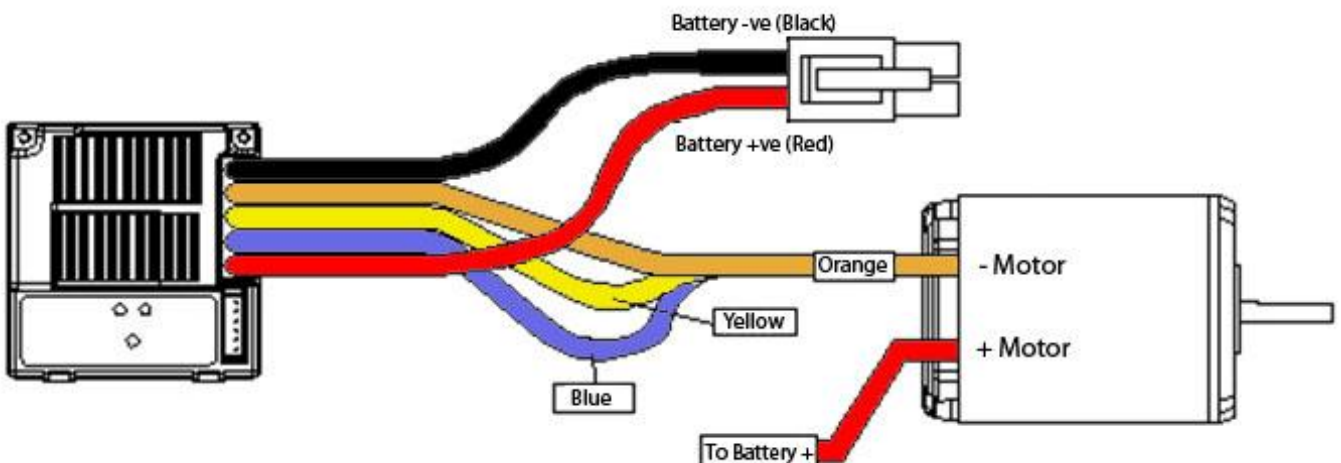
BRUSHED MOTOR CONNECTION (WITH REVERSE)

Connect the ESC to the motor as shown in the diagram below making sure that the Blue wire (A) is connected to the motor positive and the Orange (C) and Yellow (B) wires are both connected to the motor negative.



BRUSHED MOTOR CONNECTION (WITHOUT REVERSE)

Connect the ESC to the motor as shown in the diagram below making sure that the Blue (A), Orange (C) and Yellow (B) wires are all connected to the motor negative, then the motor positive is connected to the battery positive.



SETTING UP YOUR ESC

When using the controller (ESC), the motor will emit various musical notes (Do, Re, Mi, Fa, So, La, Ti). These musical notes are referred to in the instructions below and will help to identify the state of the ESC.

THROTTLE STICK CALIBRATION

- 1) Switch the transmitter "ON"
- 2) Switch the ESC "ON"
- 3) If all connections are correctly made, the motor will beep depending on the throttle stick location.
Do, Re ~~ Do, Re, Mi The throttle stick is at the neutral position.
Do, Re ~~ The throttle stick away from the neutral position.
- 4) With the throttle stick in the neutral position, press and hold the 'Setup' button on the ESC until the Green LED flashes. Release the button and the Green LED will remain ON and the motor will beep (So, So, La, La, So, So) to indicate that the neutral position has been set.
- 5) Move the throttle stick to the full power position, then the Red LED will come ON to indicate that the full power position has been set.
- 6) Move the throttle stick back to the full reverse or full brake position, the red and Green LEDs will now come ON to indicate that the full reverse or full brake position has been set.
- 7) Move the throttle stick to the neutral position, then the Red and Green LEDs will flash alternately, and the motor will beep (So, Fa, Mi, Re, Do), then the Green LED will come ON to indicate that the ESC is now ready to be used.

IMPORTANT NOTES

- i. It is only necessary to make this initial throttle setup again if you are using a different transmitter or the settings have been changed.
- ii. Stick position set up can only be performed after switching on the ESC and before the motor has run. If the motor has run, then please switch the ESC 'Off' and then back 'On' again.
- iii. If you are unable to set the full power position then the throttle channel will need reversing on your transmitter.

ADVANCED PROGRAMMING

The Exceed range of ESCs can be programmed very quickly and easily using the optional programmer. This device plugs directly into the controller and allows you to scroll through and change the settings on the LCD screen, then download all the new settings into the ESC. In addition, the programmer can also be used to read speed, temperature and other performance statistics from the ESC.

Without the programmer, all the settings can still be read and adjusted by referring to the programming charts on the following pages and using the throttle stick and the LEDs on the ESC.

ENTERING PROGRAMMING MODE (WITHOUT A PROGRAMMER)

- 1) Switch the transmitter "On"
- 2) Switch the ESC "On"
- 3) If all connections are correctly made, the motor will beep depending on the throttle stick location.

| | |
|----------------------|--|
| Do, Re ~~ Do, Re, Mi | The throttle stick is at the neutral position. |
| Do, Re ~~ | The throttle stick away from the neutral position. |
- 4) If you press and hold the setup button for over 4 seconds, the Green LED will flash then the Red LED will flash. When the Red LED flashes, release the button and the motor should beep (Mi, Re, Do, Re, Mi).

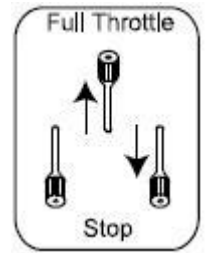
The single flash on the Red LED means that you have selected the first programmable setting of "motor type" (please refer to the programming charts on the following pages). Depending on the controller you have there are either 16 or 18 different programmable settings that can be adjusted using the throttle stick as detailed below.

If at any time the setup button is pressed, the ESC will exit the setup mode and will be ready for use.

PROGRAMMING

1) Selecting a Parameter

Every time the throttle stick is moved from the Stop (or Reverse/Brake) position to the Full Throttle position and back again to the Stop position (Stop > Full Throttle > Stop as a single cycle) the program will move onto the next parameter as listed on the programming charts on the following pages.

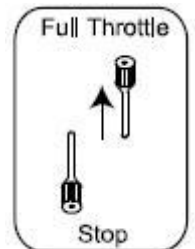


The number of flashes on the Red LED refers to the parameter number on the programming chart for your controller.

- i.e. 1 flash = Motor type setting
 2 flashes = Battery type setting

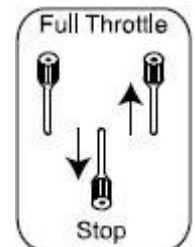
2) Entering a Parameter

When the correct parameter number is selected, move and hold the throttle stick in the full throttle position. After 4 seconds both LED's will flash showing the current option value for the selected parameter. The number of flashes is shown in brackets against each option in the programming chart.



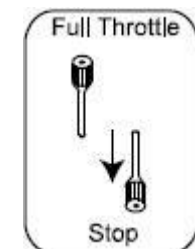
3) Changing a Parameter Option

You can move forward to the next option setting by moving the throttle stick to the stop position and then back to the full throttle position. Both LEDs will then flash out the next option value. Repeat this to select the option you require.



4) Exiting/Saving a Parameter

Once the desired option setting has been selected, move the throttle stick from the full throttle position to the Stop position. After 4 seconds the motor will beep (Mi, Re, Do, Re, Mi) to indicate that the selected parameter is stored in the ESC. The ESC is now back in the parameter selection mode with Red LED flashing to show selected parameter.



5) Exiting Programming Mode

When the programming is complete, press the 'Setup' button once.

PROGRAMMING CHART FOR RACE & SPORT ESCS

| Parameter (Flashes) | Parameter Name | Options | Default |
|---------------------|--------------------|--|----------|
| 1 | Motor Type | Sensorless(1)(not Ultra) / Sensored(2) / Brushed(3) | Sensored |
| 2 | Battery Type | LiPo(1) / LiFe(2) / NiMH (NiCd) (3) | NiMH |
| 3 | Cut Off Voltage | Auto*(1) / 3.0V(2) ~ 6.0V(8) or Voltage=(Flashes/2)+2, Flashes=(Voltage-2)x2 | Auto |
| 4 | Power Curve | Soft (1) / Linear(2) / Hard(3) | Linear |
| 5 | Advance Timing | 0` (1) ~ 25` (6) / 0(1) ~ 10(6) | 25' / 10 |
| 6 | Acceleration | Lowest(1) / Low / Normal / High / Highest(5) | Highest |
| 7 | Start Power | Lowest(1) / Low / Normal / High / Highest(5) | Lowest |
| 8 | Reverse Function | One Way(1) / Two Way(2) | One Way |
| 9 | Reverse Delay | 0.2s(1) / 0.5s / 0.8s / 1.3s / 1.8s / 2.5s (6) | 2.5s |
| 10 | Neutral Width | Narrow(1) / Normal(2) / Wide(3) | Normal |
| 11 | Motor Direction | Normal (1) / Reverse (2) | Normal |
| 12 | Speed Mixing Brake | 0%(1) ~ 100%(11) | 0% |
| 13 | A.B.S Brake | Off(1) / Weakest / Weak / Normal / Strong / Strongest(6) | Off |
| 14 | Auto Brake Amount | 0 % (1) ~ 100% (11) | 0% |
| 15 | Min Brake Amount | 0 % (1) ~ 100% (11) | 30% |
| 16 | Max Brake Amount | 0 % (1) ~ 100% (11) | 100% |
| 17 | Factory Setting | Reset to factory settings (2) | |

PROGRAMMING CHART FOR PRO, COMP & ULTRA ESCS

| Parameter (Flashes) | Parameter Name | Options | Default |
|---------------------|---------------------|---|----------|
| 1 | Motor Type | Sensorless(1)(not Ultra) / Sensored(2) / Brushed(3) | Sensored |
| 2 | Battery Type | LiPo(1) / LiFe(2) / NiMH (NiCd) (3) | NiMH |
| 3 | Cut Off Voltage | Auto*(1) / 3.0V(2) ~ 6.0V(8) / Ultra 14.0V(24) or Voltage=(Flashes/2)+2, Flashes=(Voltage-2)x2 | Auto |
| 4 | Power Curve | Soft (1) / Linear(2) / Hard(3) | Linear |
| 5 | Advance Timing | 0` (1) ~ 25` (6) / 0(1) ~ 10(6) | 25` / 10 |
| 6 | Acceleration | Lowest(1) / Low / Normal / High / Highest(5) | Highest |
| 7 | Start Power | Lowest(1) / Low / Normal / High / Highest(5) | Lowest |
| 8 | Start Current Limit | Off(1), 10% (2) ~ 100% (11) | Off |
| 9 | Current Limit | Off(1), 11% (2) ~ 100% (11) | Off |
| 10 | Reverse Function | One Way(1) / Two Way(2) | One Way |
| 11 | Reverse Delay | 0.2s(1) / 0.5s / 0.8s / 1.3s / 1.8s / 2.5s (6) | 2.5s |
| 12 | Neutral Width | Narrow(1) / Normal(2) / Wide(3) | Normal |
| 13 | Motor Direction | Normal (1) / Reverse (2) | Normal |
| 14 | Speed Mixing Brake | 0%(1) ~ 100%(11) | 0% |
| 15 | A.B.S Brake | Off(1) / Weakest / Weak / Normal / Strong / Strongest(6) | Off |
| 16 | Auto Brake Amount | 0 % (1) ~ 100% (11) | 0% |
| 17 | Min Brake Amount | 0 % (1) ~ 100% (11) | 30% |
| 18 | Max Brake Amount | 0 % (1) ~ 100% (11) | 100% |
| 19 | Factory Setting | Reset to factory settings (2) | |

* Automatic Cut Off Voltage

LiPo : 66% of voltage when switched on with 5.5V minimum

LiFe : 67% of voltage when switched on with 5.0V minimum

NiMh/ NiCd : 50% of voltage when switched on with 4.0V minimum

GENERAL OPERATION

Each time you turn on your ESC, and it is receiving clear signals from your receiver, you will hear;

Do, Re ~~ Do, Re, Mi

The throttle stick is at the neutral position.

Do, Re ~~

The throttle stick away from the neutral position.

This means that the ESC is ready for use.

If there are no beeps and the Red LED is flashing then the ESC is not receiving a signal from your receiver.

STATUS AND ERROR MESSAGES

| <i>LEDs</i> | <i>Meaning</i> |
|-------------------|----------------------------|
| Red LED on | Full Throttle |
| Blue LED on | Neutral |
| Both LEDs on | Full Reverse or Full Brake |
| | |
| Red LED 1 Flash | No Signal |
| Red LED 2 Flashes | Low Battery |
| Red LED 3 Flashes | Sensor Error |
| Red LED 4 Flashes | High Temperature |

www.LogicRC.com

Logic RC Limited
14 Hartham Lane
Hertford
SG14 1QN
United Kingdom

rev. 09/2009