Ritewing Electronic Speed Controller programing guide

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Important Precautions:

- Read the manual correctly before your operation.
- Wrong polarity connection will damage the ESC.
- Do not use any substandard cable connector.
- Do not allow any unqualified battery pack.
- Do not exceed the ESC voltage and current limit.
- Do not disassemble any electronic components of ESC, or else it will cause permanent damage or information losses.
- Do not leave soldering tin or water on the ESC.
- Do not take the battery away when motor is rotating, or else it may cause high burst current to damage ESC.
- The ESC should be in a position which allows good airflow and heat dissipation.
- Always disconnect the battery from the ESC when not in use.

Specification:

Model No.	Current	BEC	Li-Ion/Li-Po	LiFe	NIXX
12A-LBEC	12A	5V/2A	2—3	2—4	6—10
20A-LBEC	20A	5V/2A	2—3	2—4	6—10
25A-LBEC	25A	5V/2A	2—3	2—4	6—10
30A-LBEC	30A	5V/2A	2—3	2—4	6—10
35A-LBEC	35A	5V/2A	2—3	2—4	6—10
40A-LBEC	40A	5V/3A	2—3	2—4	6—10
45A-LBEC	45A	5V/3A	2—3	2—4	6—10
20A-SBEC	20A	5.5V/3A	2—4	2—5	6—16
25A-SBEC	25A	5.5V/3A	2—4	2—5	6—16
30A-SBEC	30A	5.5V/3A	2—4	2—5	6—16
35A-SBEC	35A	5.5V/3A	2—4	2—5	6—16
40A-SBEC	40A	5.5V/6A	2—6	2—7	6—16
45A-SBEC	40A	5.5V/6A	2—6	2—7	6—16
60A-SBEC	60A	5.5V/6A	2—6	2—7	6—16
65A-SBEC	65A	5.5V/6A	2—6	2—7	6—16
70A-SBEC	70A	5.5V/6A	2—6	2—7	6—16
80A-SBEC	110A	5.5V/6A	2—6	2—7	6—16
100A-SBEC	110A	5.5V/6A	2—6	2—7	6—16
150A-SBEC	150A	5.5V/6A	2—6	2—7	6—16
40A-OPTO	40A	NO	2—6	2—7	6—16
60A-OPTO	60A	NO	2—6	2—7	6—16
70A-OPTO	70A	NO	2—6	2—7	6—16
110A-OPTO	110A	NO	2—6	2—7	6—16
100A-HV	100A	NO	3—10	3—12	8—30
200A-HV	200A	NO	3—10	3—12	8—30

NOTE: BEC--Battery Eliminator Circuit; OPTO--NO BEC; HV--High Voltage

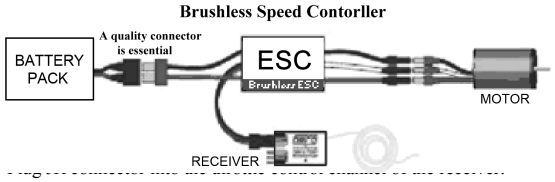
Factory Default Value:

Brake Mode	Medium
Timing Mode	Automatic
Acceleration	Medium
Battery Type	Li-Ion/Li-Po
Cut-off Voltage	Medium
Cut-off Type	Slow Down
Motor Rotation Direction	Rightward

Features:

- Excellent startup performance, great throttle linear and quick throttle response, excellent low-speed performance.
- Separate voltage regulator IC for MCU (Micro Controller Unit), high capability of anti-interference.
- Low-voltage protection, block-rotation protection and signal lose protection, etc. All these functions can effectively prolong ESC service life.
- Programmable by Trx or by a programming card (optional). Program-Card has a simple and visual surface to conveniently change parameters at any time anywhere.
- Safe start-up. The motor won't be started no matter which position the throttle stick is on when battery connected.
- Motor rotating direction can be changed by exchanging two of three wires from ESC or setting by the Prog-Card.

Normal Startup Procedure:



- Switch on the transmitter and move the throttle stick to the lowest position.
- Connect the main power pack to ESC (pay attention to the polarity).
- The motor emits *"♪"* or *"♪♪"*to confirm the correct connection. *(A single"♪" means the brake Mediun; "♪♪" means brake off.)* The ESC is ready for flight.
- If you didn't hear the above *"♪"* or *"♪♪"*, please disconnect the ESC to battery pack and check whether the JR connector is well connected to the throttle control channel, or whether the throttle stick is at the lowest position or you choose the right direction of "NOR/REV" of throttle channel in transmitter.

Programming ESCs by Transmitter:

- Programmable parameters by Transmitter:
  1. Brake Mode
  2. Battery Type
  3. Timing Mode

  By transmitter, one parameter can be set at a time. To set several parameters, please repeat the following procedures.

- Program Brake Mode (Factory Default: Medium)
  1. Plug JR connector to throttle control channel of receiver;
  2. Switch "on" the transmitter and move the stick to "full throttle" (highest position);
  3. Connect the main power pack to the ESC (pay attention to the polarity). For ESC without BEC, switch on the power to receiver;
  4. Wait 5 seconds;
  5. After 5 seconds, you will hear 4 continuous "♪";
  6. Swiftly move the throttle stick to position "close" (lowest position);
  7. After moving, if you hear 1 "♪" that means the brake is Medium; if you hear "♪♪" that means the brake is off.

  If you want to change the brake mode again, disconnect the motor battery pack and then repeat the procedure.

- Program Battery Type (Factory Default: Li-Ion/Li-Po)
  1. Switch "on" the transmitter and move the stick to "full throttle" (highest position);
  2. Connect the main power pack to the ESC (For ESC without BEC, switch on the power to receiver) and wait 5 seconds;
  3. After 5 seconds, you will hear 4 continuous "♪" (Here don't move the stick);
  4. After further 5 seconds, you will hear:
     (1) 5 continuous "♪", which means Li-XX battery; if you require this function, move throttle stick to the lowest position;
     (2) then 5 continuous "♪♪", which means NiCd/NiMH battery; If you require it, move throttle stick to the lowest position;
     (3) then 5 continuous "♪♪♪", which means LiFe battery; If you require it, move throttle stick to the lowest position.
  5. After moving throttle stick, you will hear one "♪" or "♪♪", which means the setting saved.

  If you want to change the battery type again, disconnect the motor battery pack and repeat the procedure.

- Program Timing Mode (Factory Default: Automatic)
  1. Switch "on" the transmitter and move the stick to "full throttle" (highest position);
  2. Connect the main power pack to the ESC(For ESC without BEC, switch on the power to receiver) and wait 5 seconds;
  3. After 5 seconds, you will hear 4 continuous "beeps"(Here don't move the stick);
  4. After another 5 seconds, you will hear: 5 continuous "♪", (Li-XX battery), then 5 continuous "♪♪", (NiCd, NiMH battery), 5 continuous "♪♪♪" (LiFe battery). (Here don't move the stick);

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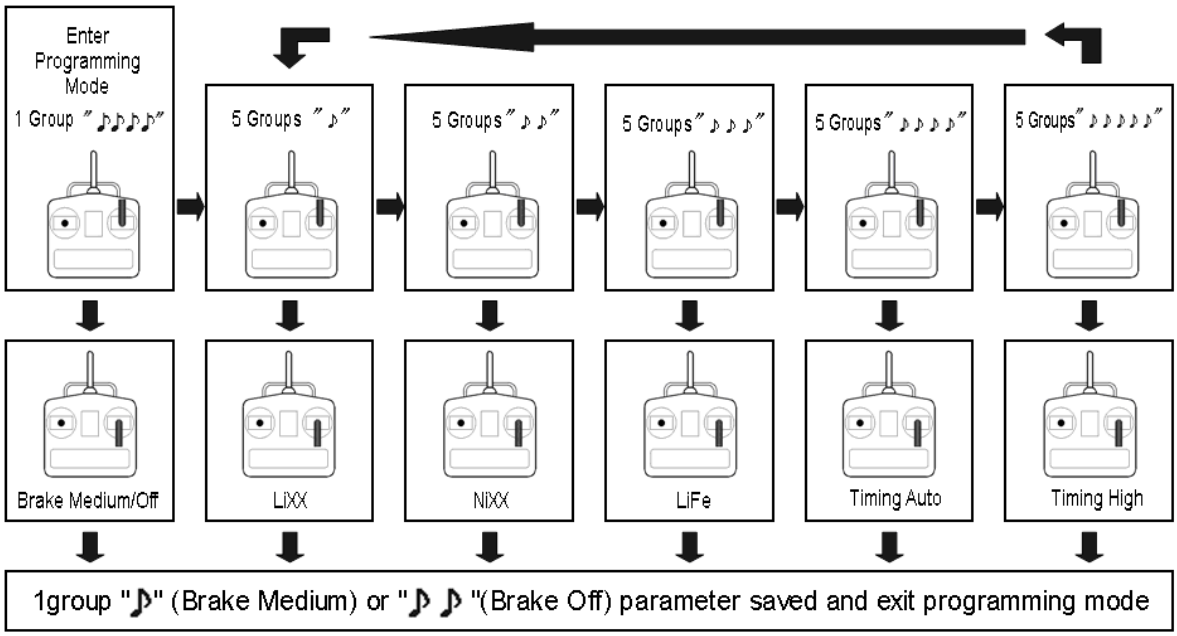
5. After further 5 seconds, you will hear:
   (1)5 continuous "♪♪♪♪", which means the Timing Mode Automatic; If you require this function, move throttle stick to the lowest position;
   (2) then 5 continuous "♪♪♪♪♪", which means the Timing Mode High; If you require this function, move throttle stick to the lowest position;
6. After 1-2 seconds, you will hear one "♪" or "♪♪", which means the setting has been saved.

If you want to change the timing mode again, disconnect the motor battery pack and repeat the procedure.

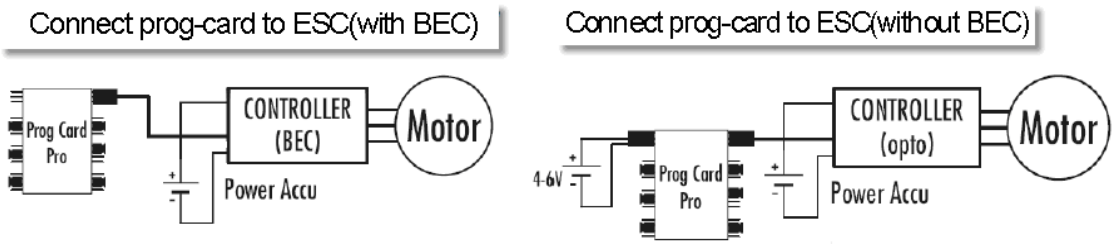
Note: When the timing mode is saved, please adjust the motor on the ground before flight.

Diagram: Program Parameters by Transmitter



Program parameters by Prog-card ***(For OPTO ESC,please connect the 4-6 V battery pack to Prog-card.)*** **:**

Connection as below:



By using A Prog-card, the above functions can be programmed quickly and simply.

1. Put the six jumpers to the required positions.
2. Plug JR connector of ESC to the specified socket on Prog-Card (orange wire-Signal, brown wire-Negative (-), red wire-Positive (+)).
3. Connect the motor to the ESC and connect ESC to power.
4. 1 "♪" will be heard in a second, means your setting has been saved ("♪" will not be heard if there is no change of parameters).
5. Disconnect the power pack (For OPTO ESC, disconnect the Prog-Card to its battery pack).

- **Programmable parameters by Prog-Card:**

1. Brake Mode
   Off: Brake is off
   Medium: less forceful and brake time is longer(for glider)
   Hard: more forceful and brake time is shorter (for glider)

2. Timing Mode
   Automatic: for all motor types
   High: hard (recommended for more than 10 poles motors and outrunners motors）
   For some high KV motors, if it shakes while rotating in high speed, the "High" timing mode is recommended.
   Low: soft（recommended for motors of 2-8 poles motors and inrunner motors）
   Note: When the timing mode is saved, please adjust the motor on the ground before the flight.

3. Acceleration
   High: fast acceleration or deceleration of motor
   Medium: acceleration or deceleration at middle speed
   Low: slow acceleration or deceleration

4. Battery type
   Ni-XX: Ni-Cd & Ni-MH
   Li-XX: Li-ion & Li-polymer
   Li-Fe Battery

5. Cut-off Voltage

Cut-off Voltage mode	Li-ion&Li-polymer	Ni-Cd & Ni-Mh	Li-Fe
High	3.2V	0.9V	2.8V
Medium	3.0V	0.8V	2.5V
Low	2.8V	0.6V	2.2V

6. Cut-off Mode
   Hard: the motor immediately stops as voltage drops to the cut-off voltage（Be suitable for Glide models）
   Slow down: motor slowly reduces power when voltage drops.

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7. Motor rotation Direction

In most cases motor rotation is usually reversed by swapping two motor wires. However, in cases where the motor cables have been directly soldered the ESC cables, motor rotation can be reversed by changing ESC setting.

Put jumper in the required position. Meanwhile, ESC only receives the change of motor rotation direction, no other changes. Continuously "♪" will be heard until the power pack cut off. After rotation direction changed, please put jumper to the former position.