Electronic Speed Controller Users' Manual
SAKER MODEL Advance ESCs for plane

Thank you for purchasing our products! For the high power of this brushless system, failure to use may result in injury yourself and damage of the whole device. So we highly recommend you to read carefully and abide by the operating procedures of this manual before the first flight. We are not responsible for your misuse of this product or any damage including incidental losses or indirect losses you may cause. Moreover, we have not any responsibility for the modification of our products without authorization. We have the right to change the design, features, functions and operating requirements of our products without any advanced notice!

- **IMPORTANT PRECAUTIONS:**
  - Read the manual correctly before your operating.
  - Do not connect oppositely the polarity between the battery pack and the Electronic Speed Controller (for short ESC). Wrong connecting of polarity will damage the ESC.
  - The working range of ESC do not exceed the corresponding voltage and current.
  - Do not disassemble any electronic components of ESC, or else it will cause permanent damage or information losses.
  - Do not allow any unqualified battery pack.
  - Do not connect a degaussed motors.
  - Do not use any substandard cable connector.
  - Do not allow chemical agent and water onto the ESC.
  - Do not take the battery away when the motor is rotating, or else it may cause high burst current to damage the 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:**

Type	Constant Current (A)	BEC	Size (mm)	Weight (g)	Lipo	Nixx
ESC-12A LBEC	12	5v, 2A	25x24x7	13.1	2-3s	5-10s
ESC-20A LBEC	20	5v, 2A	35x24x8	19.9	2-3s	5-10s
ESC-20A SBEC	20	5.5v, 3A	35x24x8	22.8	2-4s	5-12s
ESC-30A SBEC	30	5.5v, 3A	41x24x8	30.4	2-4s	5-12s
ESC-45A SBEC	45	5.5v, 5A	50x32x13	55.4	2-6s	5-18s
ESC-60A SBEC	60	5.5v, 5A	50x32x13	58.1	2-6s	5-18s
ESC-80A SBEC	80	5.5v, 5A	50x32x13	67.3	2-6s	5-18s
ESC-100A SBEC	100	5.5v, 5A	50x32x13	70.6	2-6s	5-18s

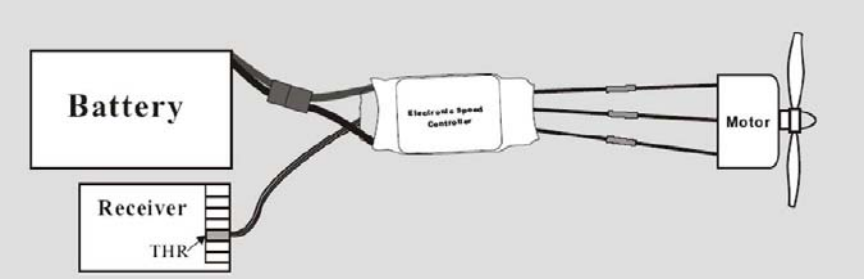
NOTE: LBEC shorted for Linear mode BEC, SBEC shorted for Switch mode BEC, BEC shorted for Battery Eliminator Circuit.

- **Features：**
  - Super fine and smooth touch of speed controlling, first-rate accurate linearity and quick-respond speed of throttle.
  - Separate voltage regulator IC for MCU(Micro Controller Unit), high capability of anti-interference to decrease the

possibility out of control.

- Low-voltage cut-off protection of battery, blocked rotation protection and throttle signal lose protection, etc. All these functions can prolong the service life of ESC effectively.
- It can be compatible with a programming card(optional component), which has a simple and visual surface so as to change the parameters conveniently at any time anywhere (reference to the manaul for programming card).
- Good and safe performance of power-on. The motor won't be started no matter which position the throttle stick is on when the battery is connected.

➢ **【Diagram for wire connection】**



- Plug the JR connector into the throttle control channel of the receiver.
- Switch "on" the transmitter and move the stick of throttle to the lowest position.
- Connect the main power pack to ESC (pay attention to the polarity).
- The motor transmits a single or double beeps to confirm the correct connection. The ESC is ready to be operated and the motor can be switched on
- A single beep announces that the brake is on; the double beep says that the brake is off.
- If you didn't hear the above "beep", please disconnect the ESC to battery pack and check whether the JR connector is connected correctly to the throttle control channel of receiver, and whether the throttle stick is at the lowest position or you choose the right direction of "NOR/REV" of throttle channel in the transimitter.
- The rotating direction of motor can be changed by exchanging two of three wires from ESC or setting the Prog-Card.

➢ **Option paremeter assistant by transmitter**

- The transmitter can set only one parameter of ESC at a time. If you want to set several parameters, please repeat the following procedures:
- Plug the JR connector into throttle control channel of receiver.
- Switch "on" the transmitter and move the stick of throttle to the highest position.
- Connect the main power pack to ESC (pay attention to the polarity).
- Wait for 5 seconds, you will hear 4 beeps, that means it entered the programming mode.
- And then you will hear 5 "single beep", then 5 "double beep", then 5 "triple beep", then 5 "quartet beeps" and then 5 "penta groups". And these sounds will circulate continuously.
- Each group of 5 sounds stands for a different parameter of ESC respectively.
- You can put the stick of throttle to the lowest position during one group of 5 sounds, then the corresponding mode is saved.
- Hear 1 "♪"(Brake-Medium) or "♪♪" (Brake-Off) , then you can exit the setting mode after saving the mode.
- When the mode is saved, you can disconnect the ESC to the battery pack.

✓ **Brake:** Hear the first "♪♪♪♪" in the above circulation, put the throttle stick to the lowest position, the braking mode is changed from Brake-off into Brake-Medium. If you want to change back, please repeat the above procedures, and vice versa.

✓ **Battery type:** When you hear 5 groups "♪" or "♪♪" or "♪♪♪", move the stick of throttle to the lowest position.

1 "beep": Li-XX battery

2 "beep": NiCd, NiMH battery

3 "beep": LiFe battery

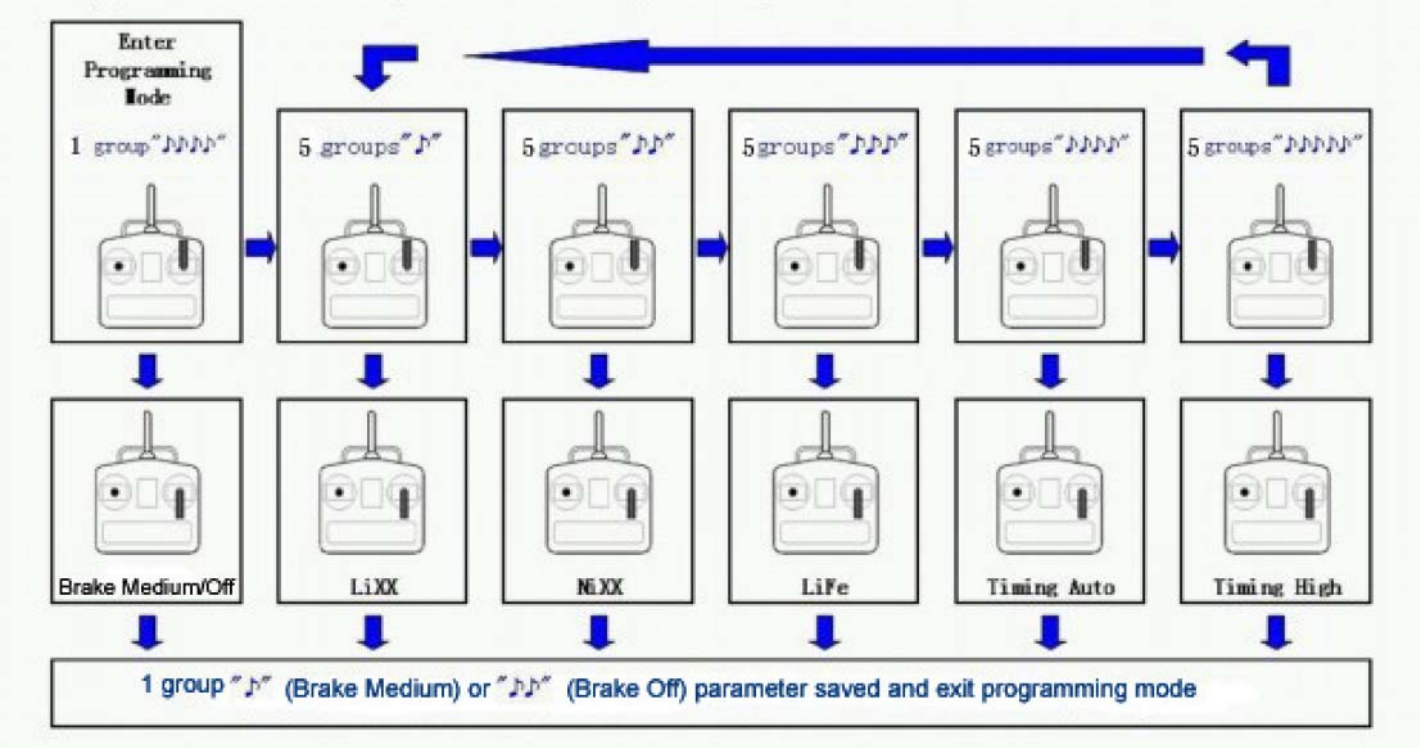
✓ **Timing:** Hear 5 groups "♪♪♪♪"or "♪♪♪♪♪" , move the stick of throttle to the lowest position.

4 “beep”: Automatically change the timing of motor（recommended for all types of motors）

5 “beep”: Timing-High（recommended for 10 (or more) poles motors and outrunner motors）

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

- **【Diagram for option paremeter assistant by transmitter】**



- **Operation----For ESC with Prog-Card**

  - Put the six jumper connector to the required positions.
  - Plug JR connector (part of ESC) to the specified socket on Prog-Card (orange wire-signal, brown wire-cathode(-), red wire-anode(+)).
  - Connect the motor to the ESC and connect the power to the ESC(Take care safety).
  - For OPTO ESC without BEC, connect the 4.8V of battery pack to the Prog-card.
  - 1 “beep” will be heared in a second, which means your setting has been saved(“beep” will not be heared if there is no change of parameter).
  - Disconnect the power pack (For OPTO ESC , disconnect the Prog-Card to it’s battery pack).

- **Option paremeter assistant by Prog-Card**

✓ **Brake Type:**

Brake —Off: Brake is switched off.

Brake — Medium: The brake is on and its middle effect is fit for gear drivers

Brake — Hard: The intensity of brake becomes much higher

✓ **Timing Mode:**

Timing — Automatic: automatic timing (for all types of motors)

Timing — High: hard timing（recommended for more than 10 poles motors and outrunners motors）

Timing — Low: soft timing（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.

✓ **Acceleration:**

Acceleration — High: fast acceleration or deceleration of motor

Acceleration — Medium: acceleration or deceleration in middle speed

Acceleration — Soft: slow acceleration or deceleration

✓ **Battery type：**：

Battery Type — Ni-XX: Ni-Cd & Ni-MH

Battery Type — Li-XX: Li-ion & Li-polymer

Battery Type — Li-Fe

✓ **Cut-off Voltage — Cut-off Voltage of ESC**

Cut-off Voltage — High: high cut-off voltage of battery type you selected

Cut-off Voltage — Medium: middle cut-off voltage of battery type you selected

Cut-off Voltage — Low: low cut-off voltage of battery type you selected

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

✓ **Cut-off Mode:**

Cut-off Mode — Hard：the motor is fully off immediately as the voltage drops to the cut-off voltage（Be suitable for Glide models）

Cut-off Mode — Slow down：the motor turns off slowly by the power reduction of ESC

✓ **Direction of motor rotation**

The direction of rotation of motor can be achieved by exchanging any two of three output wires from ESC. If you don't want to change the wire between the ESC and motor, you can set the ESC to change the direction of rotation. If the direction of rotation is needed, when the jumper connector is put to the position, the ESC only receives the change of direction of motor rotation but the other changes from the Prog-Card. Continuously "beep" will be heared until the power pack will be cut off. When the direction of rotation is changed, please put the jumper connector to the former position.

➢ **Factory Default Setting**

Brake	Brake is On, Medium effect
Timing of motor	Automatic
Acceleration	Medium
Battery Type	Li-ion & Li-polymer
Cut-off Voltage	Medium
Cut-off mode	Slow down
Direction of rotation	Rightward