Contents [hide]

TomCat

TomCat Skylord Series 30A Speed Controller

Product Specifications

Model	Cont. Current	Burst Current (10s)	BEC Mode	BEC Output	BEC Output Capacity				Battery Cell		Weight	Size (L*W*H, unit: mm)
					2S Li-Po	3S Li-Po	4S Li-Po	5S Li-Po	Li-Po	Ni-MH		
Skylord-6A	6A	8A	Linear	5V/1A	3 servos	-	-	-	2	5~6	5.5g	32*12*4.5
Skylord-12A	12A	15A	Linear	5V/2A	5 servos	4 servos	-	-	2~3	5~9	10g	38*18*7
Skylord-15A	15A	20A	Linear	5V/2A	5 servos	4 servos	-	-	2~3	5~9	17g	48*23*6
Skylord-20A	20A	25A	Linear	5V/2A	5 servos	4 servos	-	-	2~3	5~9	20g	42*25*8
Skylord-30A	30A	40A	Linear	5V/2A	5 servos	4 servos	-	-	2~3	5~9	38g	65*25*12
Skylord-40A-UBEC	40A	55A	Switch	5V/3A	5 servos	5 servos	5 servos	-	2~4	5~12	42g	65*25*12
Skylord-50A-UBEC-3A	50A	65A	Switch	5V/3A	5 servos	5 servos	5 servos	-	2~4	5~12	42g	65*25*12
Skylord-50A-UBEC-5A	50A	65A	Switch	5V/5A	8 servos	8 servos	6 servos	-	2~4	5~12	42g	65*25*12
Skylord-60A-UBEC	60A	80A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2~6	5~18	62g	77*35*14
Skylord-80A-UBEC	80A	100A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2~6	5~18	80g	86*38*12
Skylord-100A-UBEC	100A	120A	Switch	5V/10A	12 servos	12 servos	10 servos	10 servos	2~6	5~18	74g	70*30*20

Product Usage Instructions

Initial Setup:

1. Switch on the transmitter and move the throttle stick to the top position.
2. Switch on the transmitter and move the throttle stick to the bottom position.
3. Connect the battery pack to the ESC and wait for about 2 seconds. The beep-beep tone confirms the top position of the throttle range.
4. Move the throttle stick to the bottom position and wait for about 1 second. Several beeps will indicate the number of battery cells.
5. A beep tone confirms the lowest position of the throttle range.
6. Move the throttle stick upwards to start flying.

Power Supply Confirmation:

Connect the battery pack to the ESC. A special tone like “123” will be emitted, indicating that the power supply is OK. Several beeps will present the number of battery cells. A long beep tone will indicate that the self-test is finished. Move the throttle stick upwards to start flying.

TomCat Skylord ESC User Manual V1.1

Thanks for purchasing the Electronic Speed Controller (ESC). High-power systems for RC models can be very dangerous. Please read the manual carefully before use, since incorrect use can cause personal injury and equipment damage. We assume no liability for personal injury, property damage, or consequential damages resulting from the use of the product or unauthorized alteration of the product. Products and the user manual shall be subject to any changes without additional notice.

Product Introductions

Features

- All the electronic components in ESCs are genuine originals, to ensure the ESCs work with high quality and reliability.
- The microprocessor in the ESC is powered by a separate voltage regulator IC, with better anti-jamming capability, greatly reducing the possibility of being out of control.
- The ESCs have three start modes: Normal, Soft, and Super-soft. It can be used for both fixed-wing aircraft and helicopters.
- The ESCs have full protection features such as low-voltage protection, overheat protection, overload protection, and throttle signal loss protection, which can effectively extend the service life of the ESCs.
- The ESCs support selectable timing, compatible with aircraft motors and disc-type motors.
- The throttle range can be configured, fully compatible with the available transmitters. The ESCs have smooth and accurate speed control and excellent throttle linearity.
- The highest motor speed: 210000 RPM (2 poles), 70000 RPM (6 poles), 35000RPM (12 poles).
- An LED programming card with a very small size and an intuitive interface can be purchased additionally for easily programming the ESC (For details, please see the user manual of the programming card).

Programmable Items

Items Parameter Description

- **Brake** Values: OFF, ON. The default is OFF.
- **Battery Type** Values: Li-Po, Ni-MH. The default is Li-Po.

Low Voltage Protection Mode (Cut Off Type)

Values:

- Soft-Cut: Gradually reduce the output power.
- Cut-Off: Immediately shut off the output power. The default is Soft Cut.

CAUTION: When the ESC is in low-voltage protection mode, you need to move the throttle stick to the bottom to restart the motor. After the restart, the ESC will still be in low-voltage protection mode, so the output power will be low.

Low Voltage Protection Threshold (Cut Off Voltage)

Values: Low, Middle, High. The default is Middle.

- When the Battery Type is Li-Po, the number of battery cells is calculated automatically. Low, middle, and high cut-off voltages for each cell are 2.85V, 3.15V, and 3.3V. For example, for a 3S Li-Po battery pack, whenthe Middle cut-off threshold is set, the cut-off voltage will be 3.15*3=9.45V.
- When the Battery Type is Ni-MH, low, middle, and high cut-off voltages are 0%, 50% and 65% of the start voltage (i.e., the initial voltage ofthe battery pack), and 0% means the low voltage cut-off function is disabled. For example, for a 6-cell Ni-MH battery pack, fully charged voltage is 1.44*6=8.64V When the Middle cut-off threshold is set, the cut-off voltage will be 8.64*50%=4.3V.

Start Mode

- Values: Normal, Soft, Very Soft. The default is Normal. It takes 300 milliseconds for Normal mode, 1.5 seconds for Soft mode, or 3 seconds for Very Soft mode from initial throttle advance to full throttle.
- Normal mode is suitable for fixed-wing aircraft. Soft or Very Soft mode is suitable for helicopters.

Timing Mode

- Values: Low, Middle, High. The default is Middle.
- Low, middle, and high timing values are 3.75°, 5°, and 26.25°. Usually, a Low timing value can be used for most motors. Due to the large difference of the motor structure, please try each timing value to get a satisfactory effect. To get a higher speed, a

higher timing value can be chosen.

- **CAUTION:** After changing the timing setting, please test your RC model on the ground before flight.

Protection Function

- Start protection: If the motor fails to start up within 2 seconds while pushing up the throttle stick, the ESC will cut off the output power and then try to restart the motor after 2 seconds. Such a situation happens in the following cases:
  - The connection between the ESC and the motor is loose.
  - The propeller is blocked by other objects.
  - The gearbox is damaged.
- Over-heat protection: When the temperature of the ESC is over about 110 degrees Celsius, the ESC will gradually reduce the output power. To ensure that the motor can still get power to avoid a crash, the ESC will not shut down all the output power, maximum reduce it to 40% of the full power. After the temperature drops, the ESC will gradually recover to maximum power. Low voltage protection: If the battery voltage is lower than the cut-off threshold, the ESC will reduce the output power to zero according to the pre-set cut-off type.
- Throttle signal loss protection: The ESC will gradually reduce the output power if the throttle signal is lost for 1 second; further loss for 2 seconds will cause the output to be cut off. If the throttle signal is recovered within 2 seconds, the throttle control will be recovered immediately.
- Overload protection: If the load of the motor increases suddenly, the ESC will cut off the output power and then try to restart after 2 seconds.

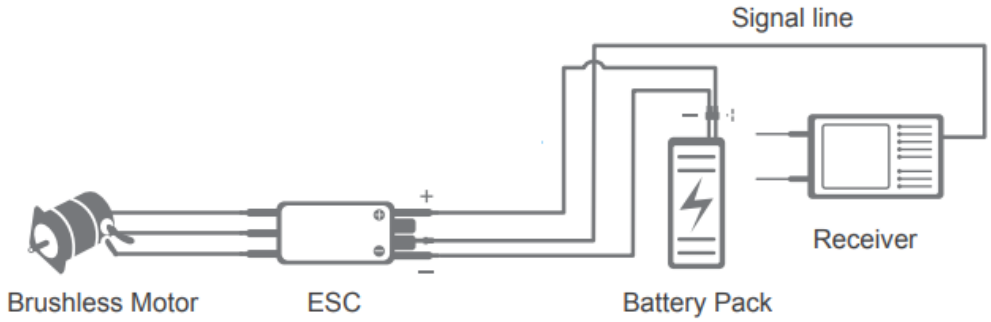
NOTE

- The ESC suffixed by UBEC means this is an ESC with a built-in UBEC. The ESC model without a suffix means this is an ESC with a built-in BEC. The ultra battery elimination circuit (UBEC) uses a switch-mode DC-DC regulator to output the power supply. Compared with the traditional linear mode BEC, the UBEC has higher efficiency, lower loss, and higher output driver capability. In heavy load conditions, the UBEC is more stable and reliable.

Instructions

As shown in the figure, the ESC is connected with the battery pack, brushless motor, and receiver to form a brushless power system.

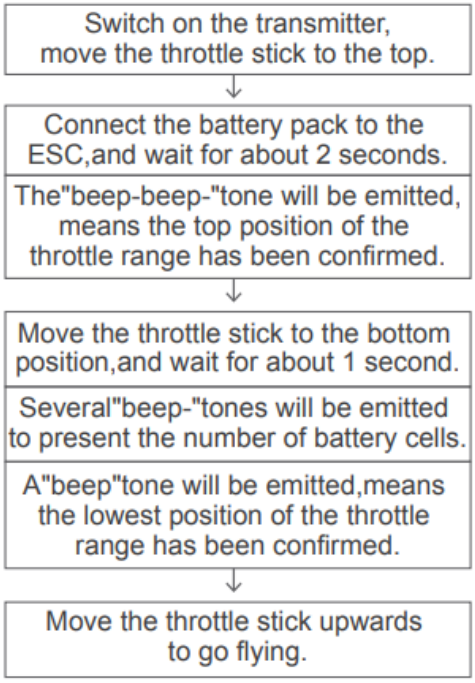
- The input lines of ESC are connected to the battery pack.
- The output lines of ESC are connected Signal line with the motor.
- The signal lines of ESC are connected to the throttle channel of the receiver.



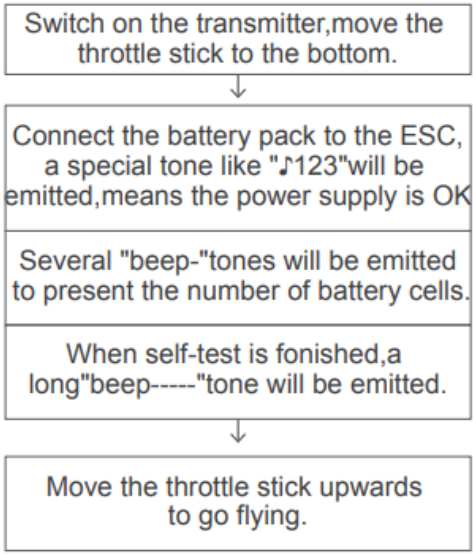
Begin to Use the ESC

CAUTION Different transmitters have different throttle ranges. When you use the ESC first time, or change to a new transmitter, please calibrate the throttle range before flying.

The throttle range setting is as shown in the figure. After setting the throttle range, you can begin to use the ESC according to the normal start procedure as shown in the figure.



Throttle Range Setting



Normal Start Procedure

Program the ESC with the transmitter

NOTE Before programming the ESC withthe transmitter, please check the throttle curve of the transmitter, and make sure the throttle output is set to 0 when the throttle stick is at the bottom position and 100% at the top position.

Steps:

1. Enter the programming mode.
    1. Switch on the transmitter, move the throttle stick to the top position, and connect the battery pack to the ESC.
    2. Wait for about 2 seconds, the motor will emit a warning tone like “beep-beep-”.
    3. Wait for another 5 seconds, a special warning tone like “♪56712” will be emitted, which means the programming mode is entered.
2. **Select the programmable items.**

    After entering the programming mode, you will hear 8 different tones in a loop in the following sequence as shown in the table below. If you move the throttle stick to the bottom within 3 seconds after one of the tones, this programmable item will be selected.

NO.	Tones	Items	Tone Description

1	beep-	Brake	1 short tone
2	beep-beep-	Battery Type	2 short tones
3	beep-beep-beep-	Cut Off Type	3 short tones
4	beep-beep-beep-beep-	Cut-Offf Voltage	4 short tones
5	beep——	Start Mode	1 long tone
6	beep—— beep-	Timing Mode	1 long 1 short
7	beep—— beep-beep-	Restore Factory Default	1 long 2 short
8	beep——beep——	Exit	2 long tones

NOTE

- A long tone “beep——” is equal to five short tones “beep-”; thus, the tone “beep—— beep-” means the sixth item.

3. **Set the item value.**
    1. After entering the programmable item, you will hear several tones in a loop. For details, please see the table below.
    2. Set the value by moving the throttle stick to the top when you hear the matched tone, then a special warning tone “♪1515” will be emitted, which means the value is set and saved.
        - If you need to set other programmable items, keep the throttle stick at the top; you will go back to step 2, and you can select other programmable items and set the value.
        - If you do not need to set other programmable items, move the throttle stick to the bottom position within 2 seconds, and you will exit the programming mode directly.

Tones	“beep-”	“beep-beep-”	“beep-beep-beep-”
Items	1 short tone	2 short tones	3 short tones

Brake	OFF	ON	–
Battery Type	Li-Po	Ni-MH	–
Cut Off Type	Soft-Cut	Cut-Off	–
Cut Off Voltage	Low	Middle	High
Start Mode	Normal	Soft	Very Soft
Timing Mode	Low	Middle	High

4. Exit the programming mode.
   There are two ways to exit the programming mode:
   - When setting the item value in step 3, after the special warning tone “♪ 1515”, please move the throttle stick to the bottom position within 2 seconds.
   - When selecting the programmable items in step 2, after the tone “beep—— beep ——” (i.e., the eighth item), please move the throttle stick to the bottom position within 3 seconds.

Trouble shooting

Faults

- **Possible Reasons**
  - **Solutions**

After powering on, the motor does not work, and no sound is emitted.

- The connection between the ESC and the battery pack is loose.’
  - Check the connection between the ESC and the battery pack, plug in or replace the connector, and make sure the connection is reliable.

After powering on, the motor does not work, a warning tone “beep-beep-, bbeep-beep, beep-beep-” (every “beep-beep-” has an interval of 1 second) is emitted.

- The voltage of the battery pack is abnormal (too high or too low).

- Check the voltage of the battery pack.

After powering on, the motor does not work, and a warning tone “beep-, beep-, beep” (every “beep- has an interval of 2 seconds) is emitted.

- **The throttle signal is abnormal:**
- The throttle signal in the C from the receiver is lost.
- The throttle channel of the receiver does not output the throttle signal.
  - Check whether the transmitter and receiver are matched, and then check the connection of the throttle channel.

After powering on, the motor does not work, and a warning tone “beep, beep, beep” (every “beep” has an interval of 250 milliseconds) is emitted.

- **There are two possible reasons:**
- The throttle stick is not at the bottom.
- The throttle range is too small.
  - Solution for each reason:
    - If the throttle stick is not at the bottom, move the throttle stick to the bottom.
    - If the throttle range is too small, reset the throttle range.

After powering on, the motor does not work, and a special tone “♪56712” is emitted after a warning tone “beep-beep-”.

- The direction of the throttle channel is reversed.
  - Set the direction of the throttle channel correctly.

The motor runs in the opposite direction.

- The line sequence of connection between the ESC and the motor is wrong.
  - Swap any two wire connections between the ESC and the motor.

TOMCAT MOTORS RC HOBBY CO., LTD

- Email sales@tdynam-rc.cn
- www.dynamrc.com

FAQs

Q: How do I change the timing mode for different motors?

A: The timing value can be adjusted for different motors. Experiment with each timing value to achieve the desired effect. Higher speed can be achieved by selecting a higher timing value. Remember to test your RC model on the ground after changing the timing setting.

Q: What should I do if the ESC is in low-voltage protection mode?

A: If the ESC is in low-voltage protection mode, move the throttle stick to the bottom to restart the motor. After restarting, the ESC will remain in low-voltage protection mode, resulting in reduced output power.

Documents / Resources

	TomCat Skylord Series 30A Speed Controller [pdf] User Manual 60A Speed Controller ESC, Skylord Series 30A Speed Controller, Skylord Series, 30A Speed Controller, Speed Controller, Controller

References

- User Manual

TOMCAT

30A Speed Controller, 60A Speed Controller ESC, controller, Skylord Series, Skylord Series 30A Speed Controller, Speed Controller, TOMCAT

Leave a comment

Your email address will not be published. Required fields are marked *

Comment *

Name

Email

Website

Save my name, email, and website in this browser for the next time I comment.

Post Comment

Search:

e.g. whirlpool wrf535swhz

Search