

Skyshark R/C **Extra 300** Receiver Ready

PRE-FLIGHT AND OPERATION INSTRUCTIONS

Thank you for purchasing the Extra 300-RR from Skyshark R/C. Please look over this instruction sheet and inspect your kit for any missing/damaged parts. If this item does not meet your expectations, please call us for a Returned goods authorization BEFORE assembly.

The Skyshark Extra 300-RR is pre-assembled at the factory and only requires batteries and a receiver along with some simple assembly and pre-flight inspections. Failure to perform the inspections/settings detailed in the instructions could make the plane unsafe resulting in damage or injury.

This airplane is not designed for beginners. It is an aerobatic airplane that is designed for sport flying. We recommend being proficient at flying aerobatic or warbird type R/C airplanes before attempting to fly our Extra 300.

First, the legal stuff:

This aircraft is not a toy. It must be flown in a responsible manner according to the rules set forth by the Academy of Model Aeronautics. The builder assumes the responsibility for insuring the proper assembly and operation of this product. Skyshark R/C shall have no liability whatsoever, implied or expressed, arising out of the intentional or unintentional neglect, misuse, abuse, or abnormal usage of this product. Skyshark R/C shall have no liability whatsoever arising from the improper or wrongful assembly of the product nor shall it have any liability due to the improper or wrongful use of the assembled product. Skyshark R/C shall have no liability for any and all additions, alterations, and modifications of this product.

Time to prepare for a first flight:

Items required:

- 4 channel receiver/transmitter
- 600mAh battery pack 4.8 or 6.0v or BEC
- 5000mAh 14.8 or 18.5 volt Lithium Polymer Battery
- 12x6 - 14x8 prop (see Motor Instructions for correct use)
- Good flying ability!

1. Carefully unpack all items from the box and inspect each piece for damage.
2. Locate the landing gear and two M4 x 20mm bolts/washers. Attach the landing gear to the bottom of the plane using those bolts. Note: The tapered part of the wheel pants should face the rear of the airplane.
3. Pull on the control surfaces (elevator, rudder, ailerons) to insure they have been properly glued. If you find any loose hinges, use a few drops of thin CA to secure them in place.

4. Remove the cowl from the fuselage by unscrewing the four phillips head screws. Loosen the motor from the firewall and remove the motor wires from the center firewall hole. Route the motor wires around the outside of the firewall and connect them to the speed controller in any order. Re-attach the motor to the firewall and re-install the cowl.
5. Remove the battery hatch from the fuselage by lifting the rear of the hatch until it clears the fuselage. (The front of the hatch will have dowels that fit into the firewall). You may need to use light force the first few times you remove the hatch.
6. Locate the two rare earth magnets and allow them to self attach to the bottom of the magnet blocks on the fuselage. This will add extra power to the current magnets and help keep the hatch secured better.
7. Attach one side of the 2" x 3" velcro to the bottom of the battery tray. Attach the other side to your battery pack. Route the 1" x 12" velcro strap around the bottom of the battery tray. This will go around the battery and help secure it in place.
8. Attach an 8" extension to each aileron servo wire on the wing observing the correct polarity.
9. Slide the aluminum tube into the fuselage so half the tube is sticking out from each side. Slide each wing half over the aluminum tube until it is seated flush with the fuselage. Wooden dowels will align the wing correctly. When attaching the wing panels, route the servo wires through the hole and into the fuselage sides.
10. Locate the two M4 x 16mm hex head bolts, metal washers and 3/4" carbon fiber washers. Use these bolts/washers to secure the wing panels to the fuselage using the enclosed 3mm hex tool. (We have also included phillips head screws if you prefer to use a small screwdriver.)
11. Install the receiver and receiver battery/BEC in the fuselage. Location is not important because you will use the main battery to balance the airplane. Make all connections to the receiver.
12. Install the switch if needed. There is a pre-cut hole on the left side of the fuselage or you can hide the switch inside the fuselage.
13. Enlarge the prop and spinner backplate to 10mm or 25/64". Secure the spinner and prop to the motor shaft. Do not overtighten the spinner screws. If you strip the spinner screws, you can place a small amount of medium CA in the screw holes and re-thread the screws. Note: You may need to sand the back of the spinner backplate if it touches the cowl when installed.

14. Place the motor battery in the battery tray. Attach it with the Velcro strap. Replace the battery hatch and check the balance of the airplane by turning it upside down and balancing at the point where the wing meets the fuselage. Adjust the battery as necessary for correct balance. The balance point should be 3-1/4" - 3-3/4" back from the leading edge of the wing.

15. Turn on your transmitter/receiver and center the control surfaces by adjusting the servo arm or your computer transmitter. If your control surfaces are not centered correctly, it may be impossible to trim your airplane in flight. Also insure your control surfaces are operating in the correct direction.

16. Adjust your control throws as follows:

Ailerons:

Low rates: 3/8" Up, 3/8" Down

High rates: 1-1/2" Up, 1-1/2" Down

Elevator:

Low rates: 5/8" Up, 3/8" Down

High rates: 1-7/8", 1-7/8" Down

Rudder:

Low rates: 1" Left, 1" Right

High rates: 3-3/8" Left, 3-3/8" Right

Note: It will be necessary to use the enclosed long servo arms in order to obtain full high rate throws.

Secure the clevises closed by sliding the rubber retainers over them.

17. Secure the airplane, keep a safe distance from the prop and program the speed controller using the enclosed instructions. You should program for prop direction, battery cell count, timing and PWM. You can also opt to set throttle and brake settings. **WARNING: If you do not set the correct cell count on the speed controller, over-discharge of the battery is a possibility.**

18. Charge your batteries/transmitter and do a range check by walking 60 feet from the airplane with the antenna collapsed. If the control surfaces operate correctly, you are ready to fly. If you experience any reception problems, check your connections and antenna routing. **WARNING: Always remove lithium polymer batteries from the airplane before charging.**

19. Fly and have fun!

Note: The Ultra 60 speed controller is wired with Anderson Power Pole connectors. Skyshark batteries can be purchased with these connectors pre-attached. If you use any other connector, you can remove the Power Poles and solder your own connector.

Tips for flying the Skyshark Extra 300:

This airplane was designed to fly aerobatics. It will not fly like a trainer and should not be flown like one. Takeoffs should be done by slowly increasing the throttle and leaving the runway only after you have reached flying speed. If you try to pull the plane from the runway before you have enough speed, there is a chance it will tip stall.

The Skyshark Extra 300 will snap roll better than most planes currently available. Be advised that slow flight will cause the plane to drop a wing tip. Make sure you have enough room for recovery. Loops and other aerobatics should be done at higher speeds. Sharp turns in the air may also cause the airplane to stall. Correction and recovery is not difficult as long as you know what to watch for.

Landing speed should be somewhat fast. The plane is not very pitch sensitive on landing so you can fly the plane to about a foot above the runway and let the speed bleed off. The plane should be wheel landed in order to avoid dropping a wing tip.

Tips for long battery life:

Never fly the airplane to the voltage cutoff. Once you notice the battery is losing power, you should immediately land and charge the battery. You should not draw over 80% of the capacity out of a battery (eg. you should not draw over 4000 mAh from a 5000mAh battery)

Always balance the battery using the Skyshark Balancer before every flight - or during every charge. This will insure the cell voltage is even in all cells.

If you notice the battery is extremely warm (over 120 degrees), you need to check the amp draw using a watt meter and either use a smaller prop or try a new battery. Using our recommended props, a battery in good condition should stay below 120 degrees. If you check your amp draw and battery condition and still have a problem with heat, you may need to cut an air exit hole in the bottom rear fuselage or open the air inlet holes in the cowl.

If you notice any puffing or swelling of the battery, immediately discontinue use and contact the manufacturer.



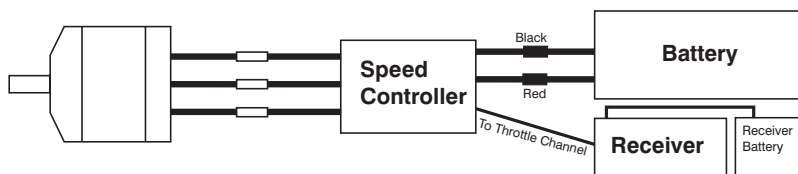
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Connection:

1. Use Rosin-core lead solder to solder female bullet connectors to the three black wires on the speed controller. (The motor will use male bullet connectors)
2. Solder or crimp your battery connector to the red (+) and black (-) wires. Insure that you maintain the correct polarity or you will burn out the controller when you connect the battery.
3. Connect the receiver lead to the throttle channel on your receiver. Be sure to maintain correct polarity. Connect a receiver battery (and switch) or separate BEC to the receiver.
4. Connect the three black wires in any order to the brushless motor. Later, if you notice your motor is running in reverse, you can either switch two black wires or program it to run in the correct direction using the programming instructions below.
5. Secure the speed controller to the aircraft. Make sure you have airflow over the controller so that it can cool properly. If you don't have enough airflow and find the controller gets very warm, you will need to use a larger controller to handle the heat.

Operation:

1. Follow the directions below to program your speed controller.
2. Insure your throttle is back all the way. (the controller will not operate unless the throttle is in the off position)
3. Connect the battery to the speed controller observing the correct polarity.
4. The controller will sound a tone to let you know that it is armed. Do not move the throttle until you hear the tone.
5. Once the tone has sounded, slowly advance the throttle and insure the motor is operating correctly. You are now ready to fly!

Do not leave the controller armed unless you are on the runway and everyone is clear of the prop.

If you are having trouble getting the speed controller to function correctly, make sure your throttle channel is set to 100% and the trim is lowered all the way. Also check to see if the throttle channel is set for normal (not reverse) operation. You may also want to try a different model number if you have a computer radio.

Programming your Ultra 60 Brushless Speed Controller:

1. Connect your speed controller and receiver battery/BEC to the motor and receiver.
2. Turn on your transmitter and move the throttle to the full position
3. Connect your main battery and you will hear a starting musical tone. After 3 seconds, the controller will start beeping in the sequence of tones indicated on the Options menu below. Each sequence of tones will repeat three times.
4. Wait until you hear the required series of tones as shown in our options chart, then move the throttle stick to **half** position to enter the sub-menu. At that time, you will hear a sequence of tones from the appropriate sub-menu.
5. When you hear the correct sequence for the setting you want, move the throttle back to **full** position. The controller will save the setting and confirm it with a long beep. The controller will then return to the options menu.
6. To complete the programming and save all options, move the throttle to the off position once you have set all the options. The controller will save all options and re-initialize in running mode so you can start your motor.

Skyshark R/C
Ultra 60
Brushless Speed Controller

Features:

- 60 amp continuous 80 amp burst
- No BEC
- For use with 6-20 NiMH or 2-7 LiPo
- Heat sink for more efficient cooling
- Programmable for cell number, cell type, motor direction, timing, throttle, brake and pulse width
- 2 year warranty
- 2 year crash free guarantee

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Options Menu		
Tone sequence	Tone	Sub-menu
• _	Music Tone +1 beep	Type & Number of Cells
• _ _	Music Tone +2 beeps	Throttle Setting
• _ _ _	Music Tone +3 beeps	Brake Setting
• _ _ _ _	Music Tone +4 beeps	Motor Direction & Cutoff
• _ _ _ _ _	Music Tone +5 beeps	Timing Menu
• _ _ _ _ _ _	Music Tone +6 beeps	Pulse Menu

Move throttle from full to half in order to access the sub-menus from this chart

To exit the options menu, move the throttle to the "off" position

Type & Number of Cells Menu		
Tone sequence	Tone	Description
• _	1 Short, 1 Long	NiMH/NiCD Auto Cell Count .8v/cell cut-off
• _ _	1 Short, 2 Long	7S LiPo 21v cut-off
• _ _ _	1 Short, 3 Long	6S LiPo 18v cut-off
• _ _ _ _	1 Short, 4 Long	5S LiPo 15v cut-off
• _ _ _ _ _	1 Short, 5 Long	4S LiPo 12v cut-off
• _ _ _ _ _ _	1 Short, 6 Long	3S LiPo 9v cut-off
• _ _ _ _ _ _ _	1 Short, 7 Long	2S LiPo 8v cut-off

* Indicates default setting

Throttle Setting Menu		
Tone sequence	Tone	Description
•• _	2 Short, 1 Long	Auto throttle setting *
•• __	2 Short, 2 Long	1.1ms to 1.8ms
•• ___	2 Short, 3 Long	Hard start *
•• ____	2 Short, 4 Long	Soft start

Use this option to control the speed at which the prop starts turning. For warbirds and other torque sensitive airplanes, we suggest using the soft start mode.

Brake Setting Menu		
Tone sequence	Tone	Description
••• _	3 Short, 1 Long	No Brake
••• __	3 Short, 2 Long	Soft Brake *
••• ___	3 Short, 3 Long	Medium Brake
••• ____	3 Short, 4 Long	Hard Brake

Brake setting controls how fast the prop will remain spinning once throttle is in "off" position.

When "no brake" option is selected, the prop will spin freely.

The "hard brake" option will stop the prop from spinning completely.

Motor Direction & Cut-off Menu		
Tone sequence	Tone	Description
•••• _	4 Short, 1 Long	Clockwise Rotation *
•••• __	4 Short, 2 Long	Counter-clockwise Rotation
•••• ___	4 Short, 3 Long	Soft Cut-off
•••• ____	4 Short, 4 Long	Hard Cut-off *

Soft cut-off will reduce power once battery voltage lowers to 3V per cell.

Hard cut-off will cut power until the throttle is pulled back to the off position. Power will then resume when throttle is advanced.

Timing Menu		
Tone sequence	Tone	Description (degrees)
••••• _	5 Short, 1 Long	1 - for 2-4 Pole Inrunner Motors *
••••• __	5 Short, 2 Long	7 - For 6-8 Pole Motors
••••• ___	5 Short, 3 Long	15 - For 10-14 Pole Outrunner Motors
••••• ____	5 Short, 4 Long	30 - for 10-14 Pole High RPM Outrunner Motors

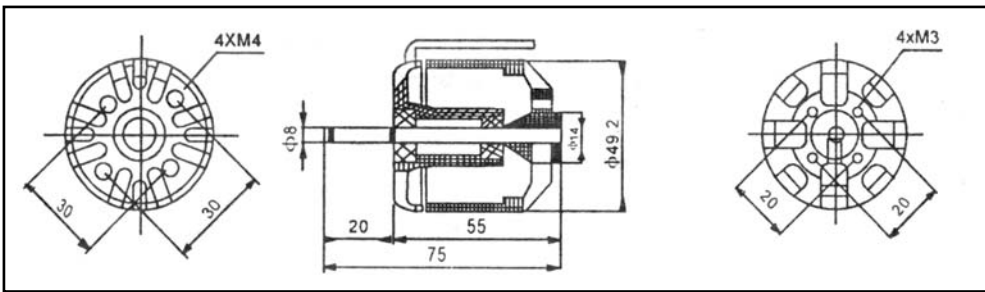
Use the 15 degree setting for Skyshark Lightning motors

Pulse Menu (Pulse Width Modulation PWM)		
Tone sequence	Tone	Description
•••••• _	6 Short, 1 Long	For low RPM and low pole count motors *
•••••• __	6 Short, 2 Long	For most outrunner motors

Manufacturer's Warranty

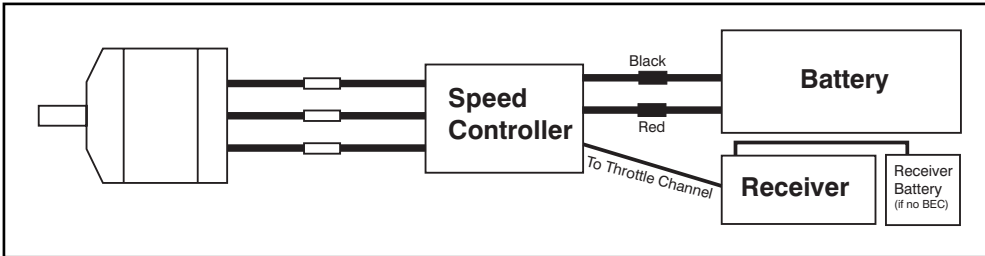
This product is warranted against manufacturer's defects in materials and workmanship for a period of 2 years from the date of purchase. Products covered by this warranty will be replaced at no charge upon inspection of the defective item. Not covered under this warranty are defects resulting from misuse, abuse, modification, alteration or any type of damage. See our website for complete warranty details.

Lightning 50 Outrunner Brushless Motor By Skyshark R/C



Features:

- Front and rear precision ball bearings for better efficiency and stronger performance.
- 81% Efficiency
- Heavy duty 8mm shaft
- High RPM to better simulate glow engine performance
- 2 Year Warranty
- 2 Year Crash-Free Guarantee
(Motor replaced at 50% list price if damaged or crashed)



Model	Voltage Range	KV (RPM per Volt)	Weight	Operating Current	Max Current	ESC	Battery
Lightning 50	8-24	600	10.6 ounces	20 - 55	65	60 amp	4-5 LiPo

Connecting your motor:

1. Locate the 3 wires and remove the female end of the 4mm connector. Solder the female connectors on to your speed controller wires.
2. If front mounting the motor, connect the wires from your speed controller to the motor wire of the same color.
3. If using the optional motor mounting kit, reverse two wires on your speed controller (eg. the black wire on your speed controller will connect to the yellow motor wire and the yellow speed controller wire will connect to the black motor wire) This will insure the motor operates in the correct direction. You will not damage the motor by connecting the wires wrong. If you find the motor is not operating in the correct direction, simply switch two of the wires. If using a Skyshark Ultra speed controller, you can connect the wires in order and program the motor to run in the correct direction later.
4. Refer to your speed controller documentation for instructions on connecting your speed controller and battery. If you plan to mount this motor to an existing firewall, you will need to purchase the SBA5075 Firewall Mount.

Lightning 50 4 cell 14.8 volt Skyshark Ultra LiPo Battery Skyshark Ultra 70 Controller Timing 15 degrees			
Prop (APC)	RPM	Amps	Watts
10 x 6	9600	22	340
11 x 6	9300	26	400
12 x 6	9050	29	450
12 x 8	8600	35	540
13 x 6	8500	34	530
13 x 8	8300	40	620
14 x 7	7800	45	700
14 x 8	7300	54	840

Lightning 50 5 cell 18.5 volt Skyshark Ultra LiPo Battery Skyshark Ultra 70 Controller Timing 15 degrees			
Prop (APC)	RPM	Amps	Watts
10 x 6	11,850	25	475
11 x 6	11,100	37	700
12 x 6	10,800	43	800
12 x 8	10,250	50	950
13 x 6	10,350	50	950
13 x 8	9900	57	1050
14 x 6	9800	58	1100
14 x 7	9200	64	1200

The above numbers are static measurements. In flight, amp draw will decrease approx 10 -15% and RPMs will increase slightly. Shaded area indicates max efficiency - for best performance use these prop sizes. Always use a watt meter to test your system's performance and amp draw before the first flight.

- For maximum power, set your computer radio's throttle setting to 140%
- Use of 30 degree timing on your speed controller will increase the rpm and amp draw and decrease the motor's efficiency
- **Always balance your prop.** Using a prop that is out of balance will cause bearing and shaft damage that is not covered under warranty.

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Manufacturer's Warranty

This product is warranted against manufacturer's defects in materials and workmanship for a period of 2 years from the date of purchase. Products covered by this warranty will be replaced at no charge upon inspection of the defective item. Not covered under this warranty are defects resulting from misuse, abuse, modification, alteration or any type of damage. See our website for complete warranty details.