Conscendo® Evolution 1.5m

Instruction Manual
Bedienungsanleitung
Manuel d'utilisation
Manuale di Istruzioni

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SAFE® Select Technology, Optional Flight Envelope Protection

Plug-N-Play®

BNF BASIC

MEANING OF SPECIAL LANGUAGE

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

<u>WARNING</u>: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.

<u>CAUTION</u>: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

<u>NOTICE</u>: Procedures, which if not properly followed, create a possibility of physical property damage AND little or no possibility of injury.

⚠ **WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not use with incompatible components or alter this product in any way outside of the instructions provided by Horizon Hobby, LLC. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

AGE RECOMMENDATION: Not for children under 14 years. This is not a toy.

Safety Precautions and Warnings

As the user of this product, you are solely responsible for operating in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

- Always keep a safe distance in all directions around your model to avoid collisions or injury. This model is controlled by a radio signal subject to interference from many sources outside your control. Interference can cause momentary loss of control.
- Always operate your model in open spaces away from full-size vehicles, traffic and people.
- Always carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.).
- Always keep all chemicals, small parts and anything electrical out of the reach of children.
- Always avoid water exposure to all equipment not specifically designed and protected for this purpose. Moisture causes damage to electronics.
- Never place any portion of the model in your mouth as it could cause serious injury or even death.

- Never operate your model with low transmitter batteries.
- Always keep aircraft in sight and under control.
- Always use fully charged batteries.
- Always keep transmitter powered on while aircraft is powered.
- Always remove batteries before disassembly.
- Always keep moving parts clean.
- Always keep parts dry.
- Always let parts cool after use before touching.
- Always remove batteries after use.
- Always ensure failsafe is properly set before flying.
- Never operate aircraft with damaged wiring.
- Never touch moving parts.

⚠ **WARNING AGAINST COUNTERFEIT PRODUCTS:** If you ever need to replace your Spektrum receiver found in a Horizon Hobby product, always purchase from Horizon Hobby, LLC or a Horizon Hobby authorized dealer to ensure authentic high-quality Spektrum product. Horizon Hobby, LLC disclaims all support and warranty with regards, but not limited to, compatibility and performance of counterfeit products or products claiming compatibility with DSM or Spektrum technology.

Quick Start Information

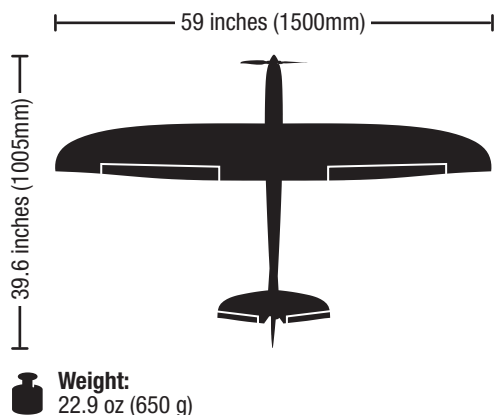| Quick Start Information			
Transmitter Setup	1. Blank (Acro) Model		
	2. Wing Type: Normal		
	3. Servo Reversing: All Channels Normal		
	4. Travel Adjust (All Surfaces): 100%		
Dual Rates*		High Rate	Low Rate
	Aileron	▲ = 15mm ▼ = 15mm	▲ = 10mm ▼ = 10mm
	Elevator	▲ = 10mm ▼ = 10mm	▲ = 7mm ▼ = 7mm
	Rudder	▶ = 18mm ◀ = 18mm	▶ = 13mm ◀ = 13mm
EXPO (Soft center)		High Rate	Low Rate
	Aileron	10%	5%
	Elevator	15%	5%
	Rudder	10%	5%
Center of Gravity (CG)	2-1/4" - 2-3/4" inches (57-71mm) back from the leading edge, measured at the wing root		
Flight Timer Setting	5 minutes		

Box Contents
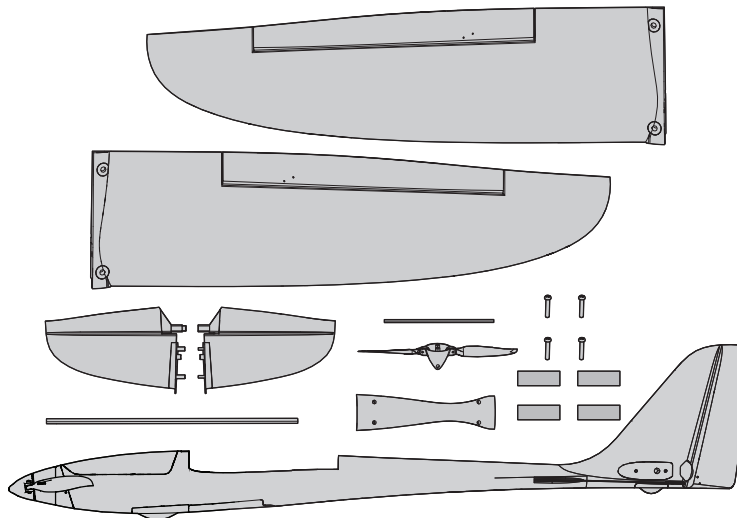
Specifications

	BNF® BASIC	PNP PLUG-N-PLAY
Motor: 3226-970Kv Brushless Outrunner (SPMX1200)	Installed	Installed
ESC: 30-Amp BEC Brushless ESC (EFLA1030E)	Installed	Installed
Servos: (4) 9g Mini Servo (SPMSA381)	Installed	Installed
Receiver: Spektrum™ AR637TA 6-Channel Sport Receiver (SPMAR637A)	Installed	Required to Complete
Battery: 11.1V 3S – 14.8V 4S, 1200mAh – 2200mAh Li-Po	Required to Complete	Required to Complete
Battery Charger: 3-4 cell Li-Po battery balancing charger	Required to Complete	Required to Complete
Transmitter: 6+ channel, Full-Range 2.4GHz with Spektrum™ DSM2®/DSMX® technology and adjustable dual rates	Required to Complete	Required to Complete

59 inches (1500mm)

39.6 inches (1005mm)

Weight: 22.9 oz (650 g)

Table of Contents

If you own this product, you may be required to register with the FAA. For up-to-date information on how to register with the FAA, please visit https://registermyuas.faa.gov/.
For additional assistance on regulations and guidance on UAS usage, visit knowbeforeyoufly.org/.

Preflight

1	Remove and inspect contents.
2	Read this instruction manual thoroughly.
3	Charge the flight battery.
4	Setup Transmitter using transmitter setup chart
5	Fully assemble the aircraft.
6	Install the flight battery in the aircraft (once it has been fully charged).
7	Check the Center of Gravity (CG).
8	Bind the aircraft to your transmitter.

9	Make sure all linkages move freely.
10	Perform the control direction test with the transmitter.
11	Perform the AS3X reaction test with the aircraft
12	Adjust the flight controls and transmitter as needed.
13	Perform a radio system range test.
14	Find a safe open area to fly.
15	Plan flight for flying field conditions.

Transmitter Setup (BNF)

IMPORTANT: After you set up your model, always rebind the transmitter and receiver to set the desired failsafe positions.

If your transmitter allows it, enable the throttle cut feature. Always engage throttle cut before approaching the aircraft.

Dual Rates
Low rate is recommended for the initial flights.

NOTICE: To ensure AS3X® technology functions properly, do not lower rate values below 50%. If lower rates are desired, manually adjust the position of the pushrods on the servo arm.

NOTICE: If oscillation occurs at high speed, refer to the Troubleshooting Guide for more information.

Expo
After first flights, you may adjust expo in your transmitter.

| Computerized Transmitter Setup (DX6i, DX6e‡, DX6‡, DX7, DX7S, DX8, DX9, DX10t, DX18, DX20 and iX12)	
Start all transmitter programming with a blank ACRO model (do a model reset), then name the model.	
Set Dual Rates to:	HIGH 100%
	LOW 70%
Set Servo Travel to:	100%
DX6i	1. Go to the SETUP LIST MENU
	2. Set MODEL TYPE: ACRO
DX7S DX8	1. Go to the SYSTEM SETUP
	2. Set MODEL TYPE: AIRPLANE
	3. Set WING TYPE: Normal
DX6e DX6 DX8e DX8 DX9 iX12† iX20†	1. Go to the SYSTEM SETUP (Model Utilities)†
	2. Set MODEL TYPE: AIRPLANE
	3. Set AIRCRAFT TYPE (Model Setup, Aircraft Type)†: WING: Normal

† Some of the terminology and function locations used in the iX12 programming may be slightly different than other Spektrum AirWare™ radios. The names given in paranthesis correspond to the iX12 programming terminology. Consult your transmitter manual for specific information about programming your transmitter.

Model Assembly

Installing the Tail

1. Slide the horizontal stabilizer tube into the hole in the rear of the fuselage.
2. Install the 2 piece (left and right) horizontal stabilizer as shown. Ensure the control horn faces down.
3. Secure the 2 piece tail in place with the 2 included pieces of tape. Install a piece of tape on the top and bottom of each horizontal tail section as shown.
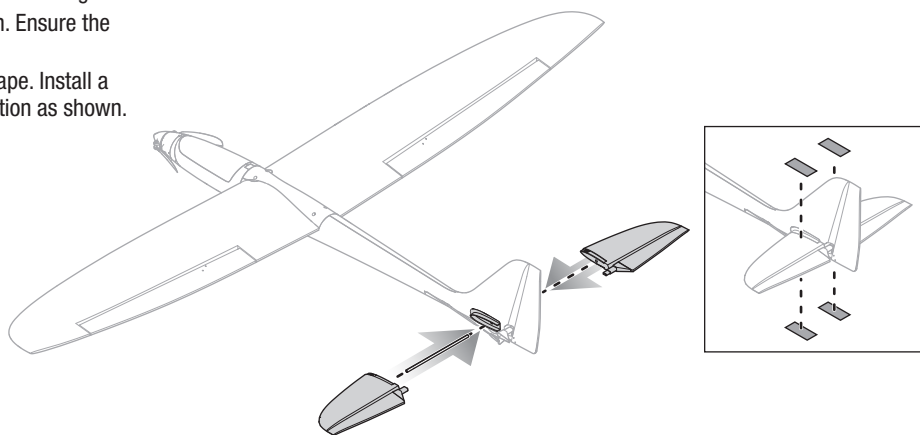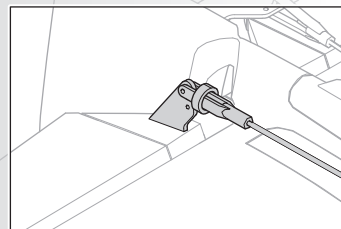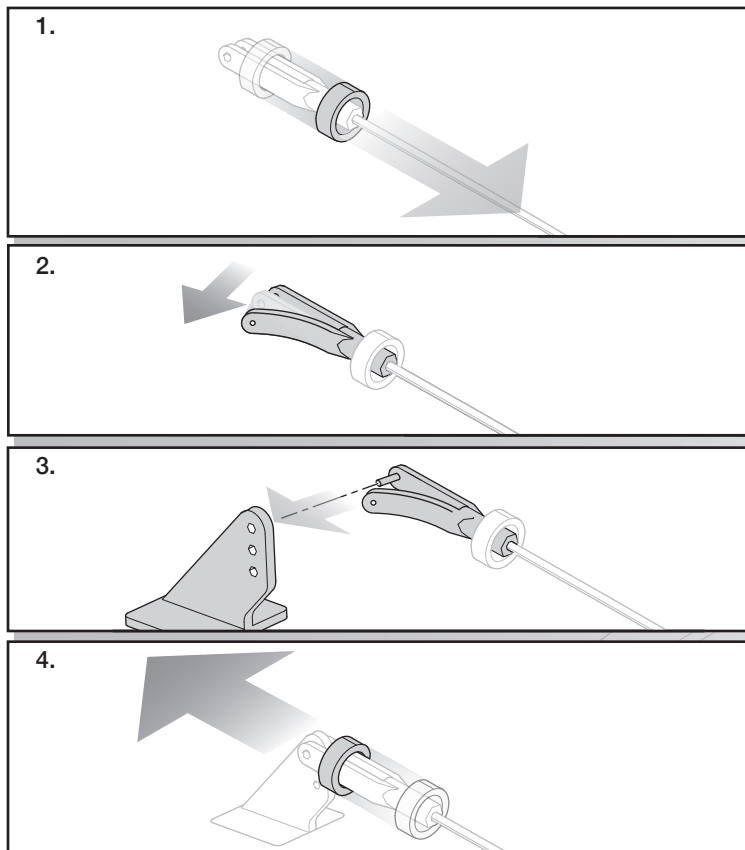
Model Assembly

The illustration shows recommended hole settings in the servo arms
and control horns.

**Control Horn and Servo Arm Settings**

	Elevator	Ailerons	Rudder
Arms			
Horns			

Connect the clevises to the control horns as shown

1.

2.

3.

4.

Model Assembly (Continued)

Wing Installation continued

1. Slide the wing halves together on the wing tube.
2. Install the plastic center cap on the center of the wing.
3. Connect the aileron servos to the Y-harness. The left and right aileron servos can be connected to either side of the Y-harness.
4. Be sure not to pinch the wiring between the wing and fuselage and when you install the wing, .
5. Tighten the four 12mm x 3mm machine screws to secure the wing assembly to the fuselage.
6. Disassemble in reverse order.
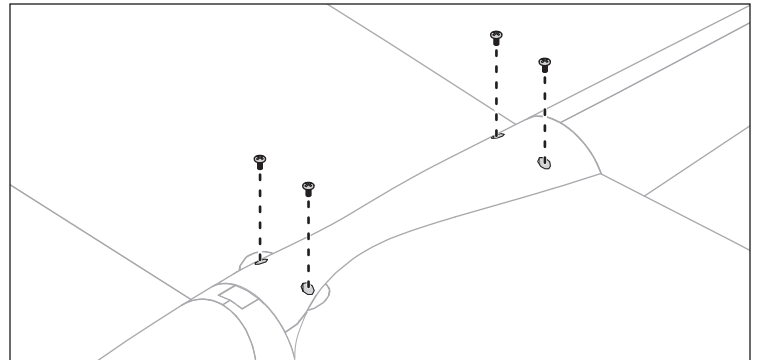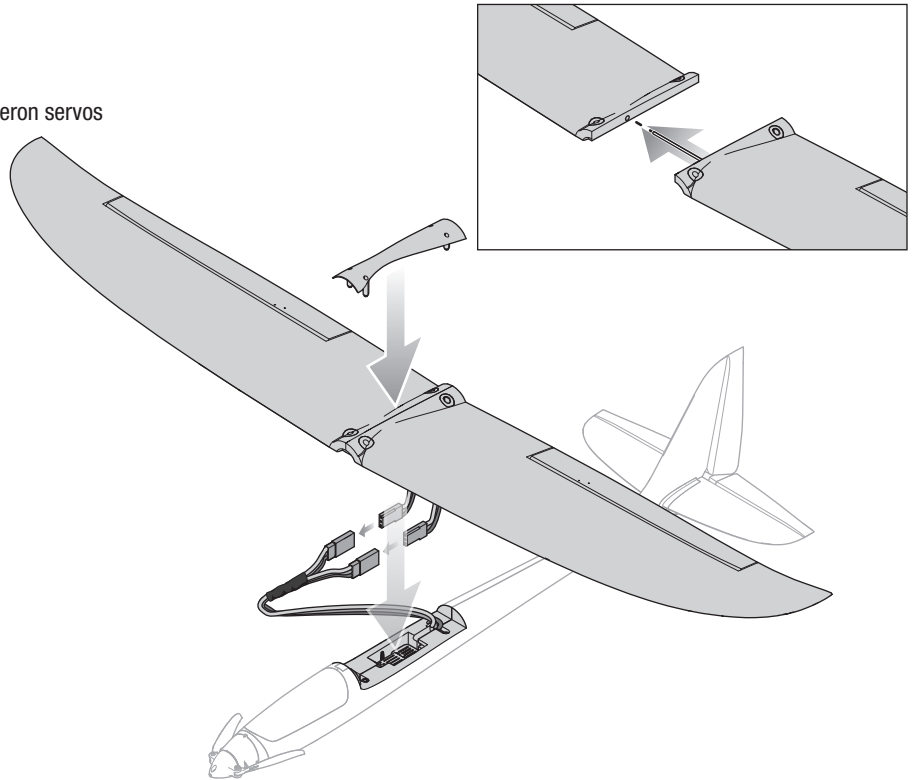
PNP Receiver Selection and Installation

The recommended receiver for this aircraft is the Spektrum AR637T.
If you choose to install a different receiver, it needs to be a 4 channel or more full range (sport) receiver. Refer to the manual of your chosen receiver for correct installation and operation instructions.

AR637T Installation

1. Remove the hatch on the bottom of the fuselage.
2. Attach the appropriate control surfaces to their respective ports on the receiver using the table at the right.
3. Using double-sided servo tape, mount the receiver to the flat area ahead behind the ESC, as shown. The receiver should be mounted in the orientation shown, parallel to the length of the fuselage, with the label facing down and the servo ports facing the rear of the aircraft. The orientation of the receiver is critical for all AS3X® and SAFE® technology setups.

⚠️ **CAUTION:** Incorrect installation of the receiver could cause a crash.

1 = Throttle
2 = Aileron
3 = Elevator
4 = Rudder
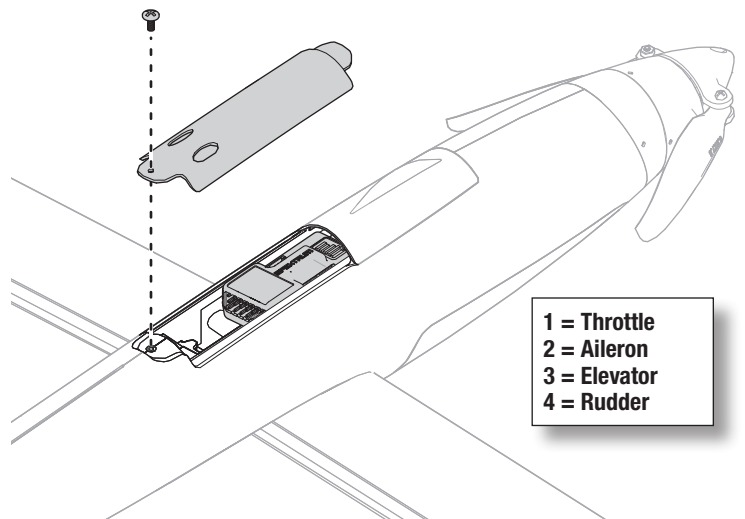
Battery Installation and ESC Arming

⚠️ **CAUTION:** Always disconnect the Li-Po flight battery from the aircraft receiver when not flying to avoid over-discharging the battery. Batteries discharged to a voltage lower than the lowest approved voltage may become damaged, resulting in loss of performance and potential fire when batteries are charged.

⚠️ **CAUTION:** Always keep hands away from the propeller. When armed, the motor will turn the propeller in response to any throttle movement.

Battery Selection

We recommend the Spektrum 2200mAh 14.8V 4S 30C Li-Po (SPMXB22004S30). If using another battery, the battery must be at least a 1200mAh 3S or 4S battery. Be sure to verify the center of gravity is correct with your selected battery before flying.

Battery Installation

1. Lower the throttle and throttle trim to the lowest settings.
2. Power on the Transmitter, then wait 5 seconds.
3. Push the button on top of the fuselage, behind the hatch and remove the battery hatch.
4. Remove the battery hatch and install the battery all the way to the front of the battery compartment. See the Adjusting the Center of Gravity instructions for more information.
5. Make sure the flight battery is secured using the hook and loop strap.
6. Connect the battery to the ESC and keep the aircraft immobile on the ground and away from wind for 5 seconds.
   • The ESC will sound a series of tones (refer to step 5 of the binding instructions for more information).

If the ESC sounds a continuous double beep after the flight battery is connected, recharge or replace the battery.

7. Reinstall the battery hatch. Push the rear of the battery hatch securely to ensure the latch is fully engaged.
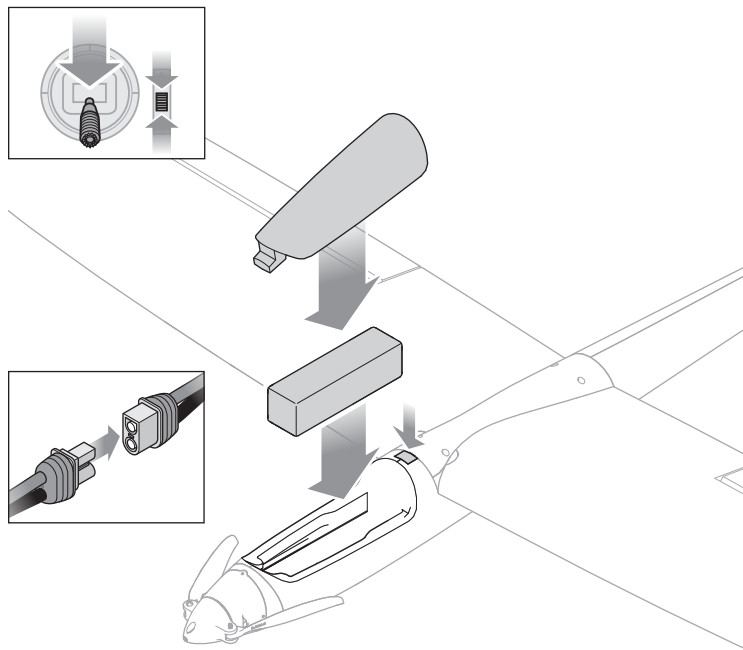
Keep upright, immobile and out of the wind for 5 seconds
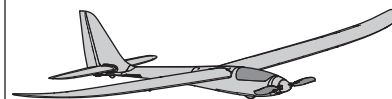
Center of Gravity (CG)

An aircraft with correct CG has its weight balanced on the center of the aircraft for safe, stable flight.

Balance the aircraft on your fingertips near the fuselage under the wings. Adjust the battery position as needed.

- If the nose goes down, move the flight battery back until the aircraft balances.
- If the nose goes up, move the flight battery forward until the aircraft balances.

2-1/4" - 2-3/4" inches back from the leading edge of the wing at the root.

57-71mm
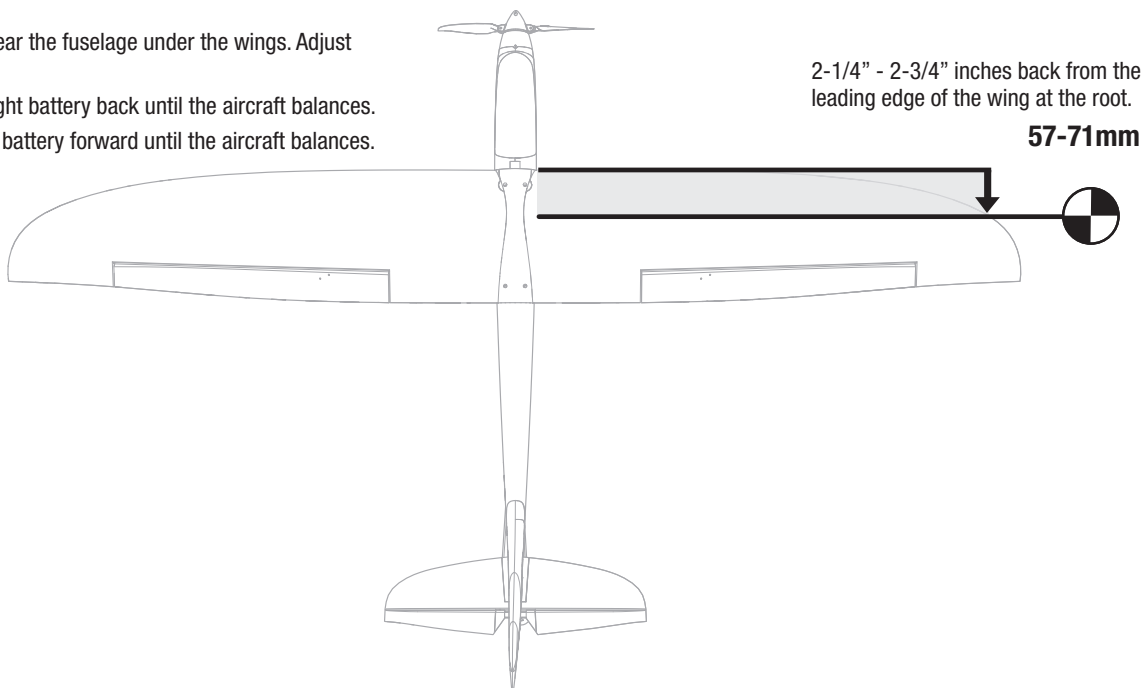
Transmitter and Receiver Binding / Enabling and Disabling SAFE Select

General Binding Tips

- The included receiver has been specifically programmed for operation of this aircraft. Refer to the receiver manual for correct setup if the receiver is replaced.
- Keep away from large metal objects while binding.
- Do not point the transmitter's antenna directly at the receiver while binding.
- The orange LED on the receiver will flash rapidly when the receiver enters bind mode.
- Once bound, the receiver will retain its bind settings for that transmitter until you re-bind.
- If the receiver loses transmitter communication, the failsafe will activate. Failsafe moves the throttle channel to low throttle. Pitch and roll channels move to actively level the aircraft in flight.
- If problems occur, refer to the troubleshooting guide or if needed, contact the appropriate Horizon Product Support office.

SAFE® Select Technology, Optional Flight Envelope Protection

The BNF Basic version of this airplane includes SAFE Select technology, enabling you to choose the level of flight protection. SAFE mode includes angle limits and automatic self leveling. AS3X mode provides the pilot with a direct response to the control sticks. SAFE Select is enabled or disabled during the bind process.
With SAFE Select disabled the aircraft is always in AS3X mode. With SAFE Select enabled the aircraft will be in SAFE Select mode all the time, or you can assign a switch to toggle between SAFE Select and AS3X modes.
Thanks to SAFE Select technology, this aircraft can be configured for full-time SAFE mode, full-time AS3X mode, or mode selection can be assigned to a switch.

IMPORTANT: Before binding, read the transmitter setup section in this manual and complete the transmitter setup table to ensure your transmitter is properly programmed for this aircraft.

IMPORTANT: Move the transmitter flight controls (rudder, elevators, and ailerons) and the throttle trim to neutral. Move the throttle to low before and during binding. This process defines the failsafe settings.

You can use either the bind button on the receiver case or the conventional bind plug to complete the binding and SAFE Select process.

Using the Bind Button:

SAFE Select Enabled

Lower Throttle — Connect Power — Press and hold Bind Button

Orange Flashing LED — Bind TX to RX — Release Bind Button

When SAFE Select is enabled, the control surfaces cycle back and forth **twice** with a slight pause at neutral position every time the receiver is powered on.

SAFE Select Disabled

Lower Throttle — Connect Power — Press Bind Button

Orange Flashing LED — Release Bind Button — Bind TX to RX

When SAFE Select is disabled, the control surfaces cycle back and forth **once** every time the receiver is powered on.

Using the Bind Plug:

SAFE Select Enabled

Install Bind Plug — Lower Throttle — Connect Power

Orange Flashing LED — Remove Bind Plug — Bind TX to RX

When SAFE Select is enabled, the control surfaces cycle back and forth **twice** with a slight pause at neutral position every time the receiver is powered on.

SAFE Select Disabled

Install Bind Plug — Lower Throttle — Connect Power

Orange Flashing LED — Bind TX to RX — Remove Bind Plug

When SAFE Select is disabled, the control surfaces cycle back and forth **once** every time the receiver is powered on.

SAFE Select Switch Designation

Once SAFE Select is enabled, you can choose to fly in SAFE mode full-time, or assign a switch. Any switch on any channel between 5 and 9 can be used on your transmitter.

If the aircraft is bound with SAFE Select disabled, the aircraft will be in AS3X mode exclusively.

⚠ **CAUTION:** Keep all body parts well clear of the propeller and keep the aircraft securely restrained in case of accidental throttle activation.

IMPORTANT: To be able to assign a switch, first verify:

- The aircraft was bound with SAFE Select enabled.
- Your choice for the SAFE Select switch is assigned to a channel between 5 and 9 (Gear, Aux1-4), and travel is set at 100% in each direction.
- The aileron, elevator, rudder and throttle direction are set to normal, not reverse.
- The aileron, elevator, rudder and throttle are set to 100% travel. If dual rates are in use, the switches need to be in the 100% position.

See your transmitter manual for more information about assigning a switch to a channel.
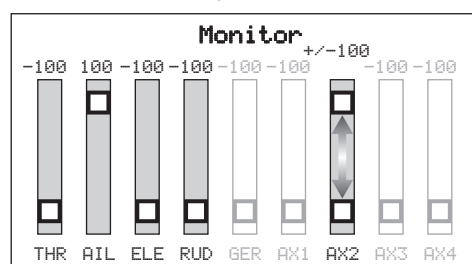
Assigning a Switch

1. Power on the transmitter.
2. Power on the aircraft.
3. Hold both transmitter sticks to the inside bottom corners, and toggle the desired switch 5 times quickly (1 toggle = full up and down).
4. The control surfaces of the aircraft will move, indicating the switch has been selected.

Repeat the process to assign a different switch or to deactivate the current switch.

SAFE Select Switch Assignment Stick Positions

Mode 1 and 2 transmitters

Assigned Switch

100%

X 5

100%
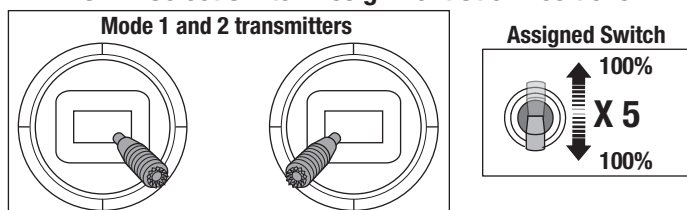
TIP: Use the channel monitor to verify channel movement.

This example of the channel monitor shows the stick positions for assigning a switch, the switch selection on Aux2, and +/- 100% travel on the switch.

Integrated ESC Telemetry

This aircraft includes telemetry between the ESC and receiver, which can provide information like battery voltage and temperature.

To View Telemetry:

1. Begin with the transmitter bound to the receiver
2. Power on the transmitter.
3. Power on the aircraft.
4. A signal bar appears in the top left corner of the screen when the telemetry information is being received.
5. Scroll past the servo monitor to view the technology screens.

For more information about compatible transmitters, firmware updates, and how to use the telemetry technology on your transmitter, visit www.SpektrumRC.com.

Control Surface Centering

After assembly and transmitter setup, confirm that the control surfaces are centered. The model must be powered up bound to the transmitter in AS3X mode, with the throttle left at zero. When enabled, SAFE mode is active at power up. AS3X mode is activated when the throttle is raised above 25% for the first time after being powered on. It is normal for the control surfaces to respond to aircraft movement if the aircraft is in AS3X or SAFE modes.

1. Verify the trims and subtrims on your transmitter are zero
2. Power up the model in AS3X mode and leave the throttle at zero
3. Look at the tip of each control surface and verify it is mechanically centered.
4. If adjustment is required, turn the ball link on the linkage to change the length of the linkage between the servo arm and the control horn.
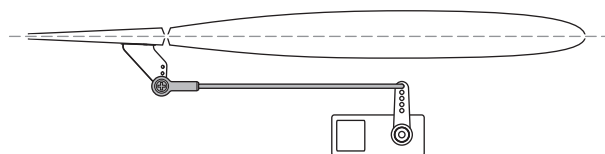
Control Surface Direction

Switch on the transmitter and connect the battery. Use the transmitter to operate the aileron and elevator controls. View the aircraft from the rear when checking the control directions.
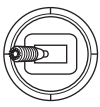
Ailerons
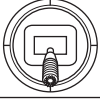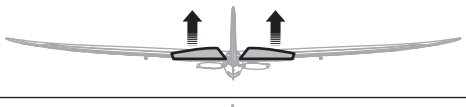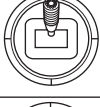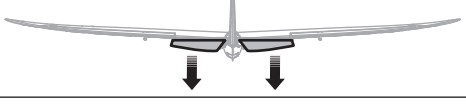
1. Move the aileron stick to the left. The right aileron should move down and the left aileron up, which will cause the aircraft to bank left.
2. Move the aileron stick to the right. The right aileron should move up and the left aileron down, which will cause the aircraft to bank right.

Elevators

3. Pull the elevator stick back. The elevators should move up, which will cause the aircraft to pitch up.
4. Push the elevator stick forward. The elevators should move down, which will cause the aircraft to pitch down.

Rudder

5. Move the rudder stick to the left. The rudder should move to the left, which will cause the aircraft to yaw left.
6. Move the rudder stick to the right. The rudder should move to the right, which will cause the aircraft to yaw right.
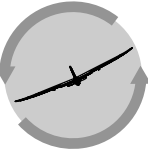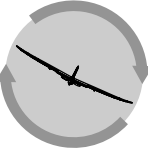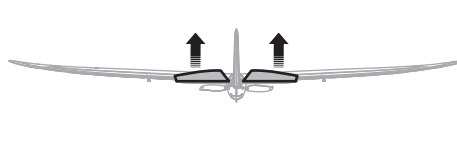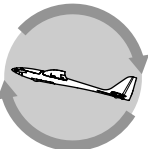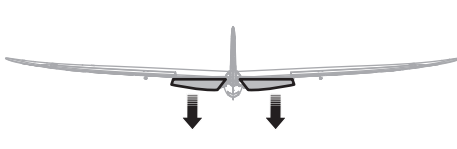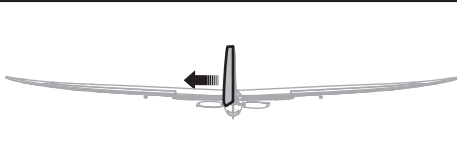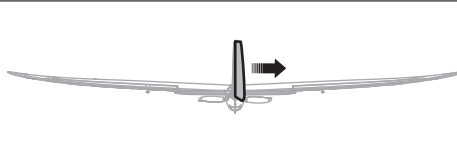
	Stick Movement	Surface Movement
Aileron		
Elevator		
Rudder		

AS3X Control Direction Test (BNF Basic)

This test ensures that the AS3X® control system is functioning properly. Assemble the aircraft and bind your transmitter to the receiver before performing this test.

1. Raise the throttle just above 25%, then lower the throttle to activate AS3X technology.
2. Move the entire aircraft as shown and ensure the control surfaces move in the direction indicated in the graphic. If the control surfaces do not respond as shown, do not fly the aircraft. Refer to the receiver manual for more information.
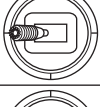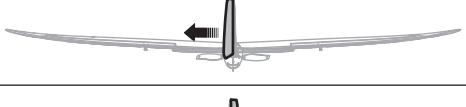
Once the AS3X system is active, control surfaces may move rapidly. This is normal. AS3X remains active until the battery is disconnected.

	Aircraft movement	AS3X Reaction
Aileron		
Elevator		
Rudder		

Dual Rates and Control Throws

Program your transmitter to set the rates and control throws to the values given. These values have been tested and are a good starting point to achieve successful flight.

After flying, you may choose to adjust the values for the desired control response.

	High Rate	Low Rate
Aileron	▲ = 15mm ▼ = 15mm	▲ = 10mm ▼ = 10mm
Elevator	▲ = 10mm ▼ = 10mm	▲ = 7mm ▼ = 7mm
Rudder	▶ = 18mm ◀ = 18mm	▶ = 13mm ◀ = 13mm

In Flight Trimming

During your first flight, trim the aircraft for level flight at 3/4 throttle. Make small trim adjustments with your transmitter's trim switches to straighten the aircraft's flight path. After adjusting trim do not touch the control sticks for 3 seconds. This allows the receiver to learn the correct settings to optimize AS3X performance. After landing, adjust the linkages mechanically to account for trim changes and then reset the trims to neutral. Ensure the aircraft will fly straight and level with no trim or sub-trim.

Failure to do so could affect flight performance.
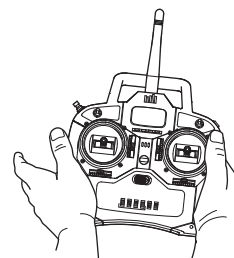
3 Seconds

Flying Tips and Repairs

Consult local laws and ordinances before choosing a flying location.

Range Check your Radio System

Before you fly, range check the radio system. Refer to your specific transmitter instruction manual for range test information.

Oscillation

Once the AS3X system is active (after advancing the throttle for the first time), the control surfaces will react to aircraft movement. In some flight conditions oscillation may occur (the aircraft rocks back and forth on one axis due to overcontrol). If oscillation occurs, refer to the Troubleshooting Guide for more information.

Location

Always choose a wide-open space for flying. It is ideal to fly at a sanctioned flying field. If you are not flying at an approved site, always avoid flying near houses, trees, wires and buildings. Never fly over people.
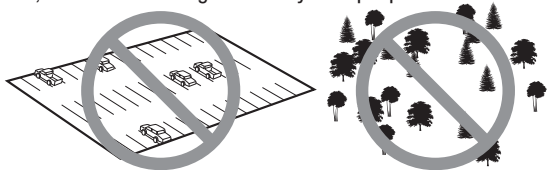
Hand Launching

When hand-launching your aircraft alone, hold the aircraft in one hand and the transmitter in the other.

Apply about 1/2–3/4 throttle. Hold the aircraft on the underside behind the wing launch the aircraft directly into the wind, angled slightly up (5 to 10 degrees above the horizon). Avoid a baseball style throw where your throwing hand follows an arc. Your throw should instead be more like throwing a javelin; imagine guiding the aircraft onto a flight path. Allow the aircraft to climb to a safe altitude before maneuvering.

Flight Time

For your first few flights with the recommended battery pack (SPMX18004S30), set your transmitter timer or a stopwatch to 5 minutes, then land. Adjust your timer for longer or shorter flights once you have flown the model. **If at any time the motor pulses, land the aircraft immediately and recharge the flight battery.** See the Low Voltage Cutoff (LVC) section for more details on maximizing battery health and run time.

Landing

Land into the wind. This sailplane will require more room to land than many parkflyers because it won't slow down as easily as most parkflyers. Plan your flight path and stay clear of trees, buildings and cars. Make a few practice approaches to get used to the aircraft's sink rate during the landing approach. During landing approach manage the descent so the aircraft bleeds off speed as it descends. If the approach is too steep, the aircraft will pick up speed and overshoot the landing. When the aircraft settles into ground effect, feed in a small amount of up elevator to flare and land.

NOTICE: If a crash is imminent, reduce the throttle and trim fully. Failure to do so could result in extra damage to the airframe, as well as damage to the ESC and motor.

NOTICE: After any impact, always ensure the receiver is secure in the fuselage. If you replace the receiver, install the new receiver in the same orientation as the original receiver or damage may result.

NOTICE: Crash damage is not covered under warranty.

NOTICE: When you are finished flying, never leave the aircraft in direct sunlight or in a hot, enclosed area such as a car. Doing so can damage the aircraft.

Low Voltage Cutoff (LVC)

When a Li-Po battery is discharged below 3V per cell, it will not hold a charge. The ESC protects the flight battery from over-discharge using Low Voltage Cutoff (LVC). Before the battery charge decreases too much, LVC removes power supplied to the motor. Power to the motor pulses, showing that some battery power is reserved for flight control and safe landing.

Disconnect and remove the Li-Po battery from the aircraft after use to prevent trickle discharge. Charge your Li-Po battery to about half capacity before storage. During storage, make sure the battery charge does not fall below 3V per cell. LVC does not prevent the battery from over-discharge during storage.

NOTICE: Repeated flying to LVC will damage the battery.

TIP: Monitor your aircraft battery's voltage before and after flying by using a Li-Po cell voltage checker (SPMXBC100, sold separately).

Repairs

Thanks to the EPO foam material in this aircraft, repairs to the foam can be made using virtually any adhesive (hot glue, regular CA, epoxy, etc). When parts are not repairable, see the Replacement Parts List for ordering by item number .

SAFE Select Flying Tips

When flying in SAFE Select mode the aircraft will return to level flight any time the aileron and elevator controls are at neutral. Applying aileron or elevator control will cause the airplane to bank, climb or dive. The amount the stick is moved will determine the attitude the airplane flies. Holding full control will push the aircraft to the pre-determined bank and roll limits, but it will not go past those angles.

When flying with SAFE Select, it is normal to hold the control stick deflected with moderate aileron input when flying through a turn. To fly smoothly with SAFE Select, avoid making frequent control changes and don't attempt to correct for minor deviations. Holding deliberate control inputs will command the aircraft to fly at a specific angle, and the model will make all corrections to maintain that flight attitude.

When flying with SAFE Select, throttle will make the aircraft climb or descend. Full throttle will cause the aircraft to pitch up and climb slightly. Mid throttle will keep the airplane flying level. Low throttle will cause the airplane to descend slightly nose-down.

Return the elevator and aileron controls to neutral before switching from SAFE Select mode to AS3X mode. If you do not neutralize controls when switching into AS3X mode, the control inputs used for SAFE Select mode will be excessive for AS3X mode and the aircraft will react immediately.

Differences between SAFE Select and AS3X modes

This section is generally accurate but does not take into account flight speed, battery charge status, and other limiting factors.

		SAFE Select	AS3X
Control Input	Control stick is neutralized	Aircraft will self level	Aircraft will continue to fly at its present attitude
	Holding a small amount of control	Aircraft will bank or pitch to a moderate angle and maintain the attitude	Aircraft will continue to pitch or roll slowly
	Holding full control	Aircraft will bank or pitch to the predetermined limits and maintain the attitude	Aircraft will continue to roll or pitch rapidly
	Throttle	Full throttle: Climb Neutral: Level flight Low throttle: Decsend nose-down	Throttle will not affect flight response.

Post Flight

1	Disconnect the flight battery from the ESC (Required for Safety and battery life).
2	Power OFF the transmitter.
3	Remove the flight battery from the aircraft.
4	Recharge the flight battery.

5	Repair or replace all damaged parts.
6	Store the flight battery apart from the aircraft and monitor the battery charge.
7	Make note of the flight conditions and flight plan results, planning for future flights.

Power Components Service

⚠ **CAUTION:** Always disconnect the flight battery before performing service on any of the power system components.

Disassembly

1. Remove the 3mm machine screws from the spinner.
2. Remove the folding propeller from the motor.
3. Remove the four 2mm self tapping screws from the cowl, remove the cowl.
4. Remove the four screws securing the motor mount to the fuselage
5. Remove the four 3mm screws from the back of the motor to remove the motor mount.

Assembly

- Assemble in reverse order.
- Correctly align and connect the motor wire colors with the ESC wires.
- Ensure the spinner is fully secured for safe operation.
- Ensure no wiring is pinched by any of the power components.
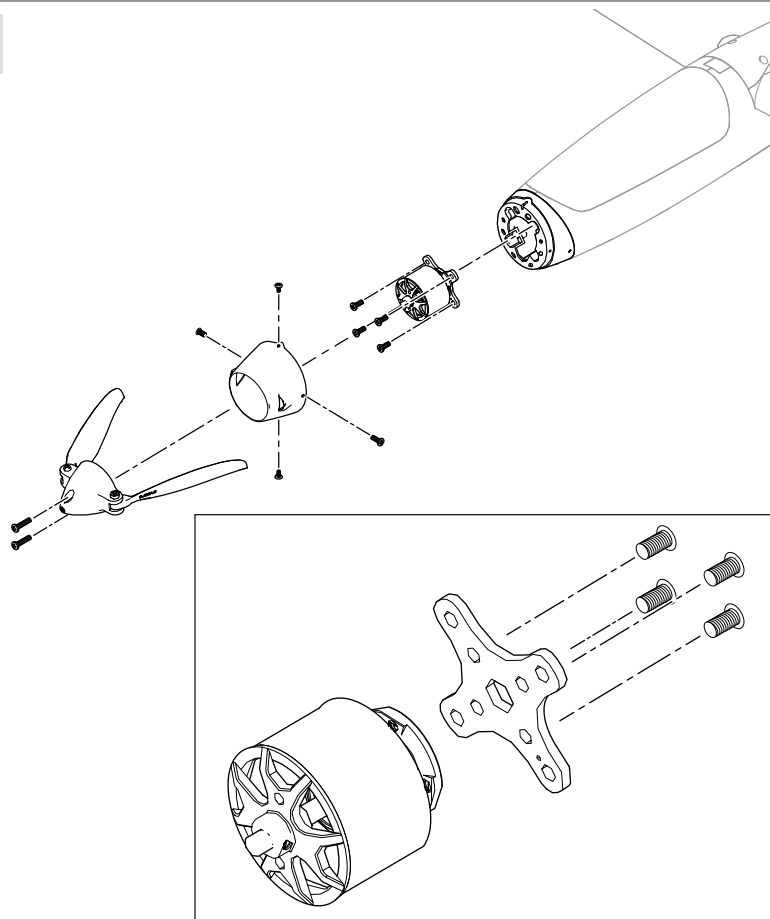
Troubleshooting Guide AS3X

Problem	Possible Cause	Solution
Oscillation	Damaged propeller or spinner	Replace propeller assembly
	Motor vibration	Replace parts or correctly align all parts and tighten fasteners as needed
	Loose receiver	Align and secure receiver in fuselage
	Loose aircraft controls	Tighten or otherwise secure parts (servo, arm, linkage, horn and control surface)
	Worn parts	Replace worn parts (especially propeller, spinner or servo)
	Irregular servo movement	Replace servo
Inconsistent flight performance	Trim is not at neutral	If you adjust trim more than 8 clicks, adjust the clevis to remove trim
	Sub-trim is not at neutral	No sub-trim is allowed. Adjust the servo linkage
	Aircraft was not kept immobile for 5 seconds after battery connection	With the throttle stick in lowest position. Disconnect battery, then reconnect battery and keep the aircraft still for 5 seconds
Incorrect response to the AS3X Control Direction Test	Incorrect direction settings in the receiver, which can cause a crash	DO NOT fly. Correct the direction settings (refer to the receiver manual), then fly

Troubleshooting Guide

Problem	Possible Cause	Solution
Aircraft will not respond to throttle but responds to other controls	Throttle not at idle and/or throttle trim too high	Reset controls with throttle stick and throttle trim at lowest setting
	Throttle servo travel is lower than 100%	Make sure throttle servo travel is 100% or greater
	Throttle channel is reversed	Reverse throttle channel on transmitter
	Motor disconnected from ESC	Make sure motor is connected to the ESC
Extra propeller noise or extra vibration	Damaged propeller and spinner, or motor	Replace damaged parts
	Propeller is out of balance	Balance or replace propeller
	Spinner screw is too loose	Tighten the prop nut
Reduced flight time or aircraft underpowered	Flight battery charge is low	Completely recharge flight battery
	Flight battery damaged	Replace flight battery and follow flight battery instructions
	Flight conditions may be too cold	Make sure battery is warm before use
	Battery capacity too low for flight conditions	Replace battery or use a larger capacity battery
Aircraft will not Bind (during binding) to transmitter	Transmitter too near aircraft during binding process	Move powered transmitter a few feet from aircraft, disconnect and reconnect flight battery to aircraft
	Aircraft or transmitter is too close to large metal object, wireless source or another transmitter	Move aircraft and transmitter to another location and attempt binding again
	Bind process not followed	Reference the page in this manual on binding
	Flight battery/transmitter battery charge is too low	Replace/recharge batteries
	Bind switch or button not held long enough during bind process	Repeat bind process.
Aircraft will not connect (after binding) to transmitter	Transmitter too near aircraft during connecting process	Move powered transmitter a few feet from aircraft, disconnect and reconnect flight battery to aircraft
	Aircraft or transmitter is too close to large metal object, wireless source or another transmitter	Move aircraft and transmitter to another location and attempt connecting again
	Bind plug left installed in bind port	Rebind transmitter to the aircraft and remove the bind plug before cycling power
	Aircraft bound to different model memory (ModelMatch™ radios only)	Select correct model memory on transmitter
	Flight battery/Transmitter battery charge is too low	Replace/recharge batteries
	Transmitter may have been bound to a different aircraft using different DSM protocol	Bind aircraft to transmitter

Problem	Possible Cause	Solution
Control surface does not move	Control surface, control horn, linkage or servo damage	Replace or repair damaged parts and adjust controls
	Wire damaged or connections loose	Do a check of wires and connections, connect or replace as needed
	Transmitter is not bound correctly or the incorrect airplanes was selected	Re-bind or select correct airplanes in transmitter
	Flight battery charge is low	Fully recharge flight battery
	BEC (Battery Elimination Circuit) of the ESC is damaged	Replace ESC
Controls reversed	Transmitter settings are reversed	Perform the Control Direction Test and adjust the controls on transmitter appropriately
Motor power pulses then motor loses power	ESC uses default soft Low Voltage Cutoff (LVC)	Recharge flight battery or replace battery that is no longer performing
	Weather conditions might be too cold	Postpone flight until weather is warmer
	Battery is old, worn out, or damaged	Replace battery
	Battery C rating might be too small	Use recommended battery

Replacement Parts

Part #	Description
EFL01651	Fuselage: Conscendo Evolution
EFL01652	Wing Set: Conscendo Evolution
EFL01653	Horizontal Stab: Conscendo E
EFL01654	Hatch: Conscendo Evolution
EFL01655	Pushrod Set: Conscendo Evolution
EFL01656	Decal Sheet: Conscendo Evolution
EFL01657	Wing Tube: Conscendo Evolution
EFL01658	Prop, Spinner: Conscendo Evolution
EFL01659	Cowl, Motor Mount: Conscendo Evolution
SPMXAE1030	Spektrum Smart 30A Smart ESC
SPMAR637T	AR637T 6CH SAFE and AS3X TelemRX
SPMAX1200	Brushless Motor: 3226-970kV
SPMSA381	9g Mini Servo: 400mm Lead
SPMSA3811	Servo Arms, Gears SA381 Servo

Recommended Parts

Part #	Description
SPMX13003S30M	SMART 1300mAh 3S 11.1V Smart 30C LiPo Battery, IC3
SPMX22004S30	SMART 2200mAh 4S 14.8V Smart 30C LiPo Battery, IC3
SPMX22003S30	SMART 2200mAh 3S 11.1V Smart 30C LiPo Battery, IC3
SPMXC1000	Smart S1200 DC Charger, 1x200W
SPMXC1010	Smart S1200 AC Charger, 2x100W
SPMXC1020	Smart S120 USB-C Charger, 1x20W
SPMXC1070	Smart S150 AC/DC Charger, 1x50W
SPMXC1050	Smart S1500 DC Charger, 1x500W
SPMXBC100	Smart Battery Checker and Servo Driver
SPMR8100	DX8e 8CH Transmitter Only
SPMAR637T	AR637T 6 Channel AS3X Receiver
	iX12 12 Channel Transmitter Only
	iX20 20 Channel Transmitter Only
	DX9 Black Transmitter Only MD2

AMA National Model Aircraft Safety Code

Effective January 1, 2014

A. GENERAL

A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.

1. Model aircraft will not be flown:

   (a) In a careless or reckless manner.

   (b) At a location where model aircraft activities are prohibited.

2. Model aircraft pilots will:

   (a) Yield the right of way to all man carrying aircraft.

   (b) See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)

   (c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport, without notifying the airport operator.

   (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.

   (e) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Aircraft program. (AMA Document 520-A.)

   (f) Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors).

   (g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.

   (h) Not operate model aircraft while under the influence of alcohol or while using any drug which could adversely affect the pilot's ability to safely control the model.

   (i) Not operate model aircraft carrying pyrotechnic devices which explode or burn, or any device which propels a projectile or drops any object that creates a hazard to persons or property.

   Exceptions:

   - Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.
   - Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.
   - Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document (AMA Document #718).

   (j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A.)

3. Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:

   (a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.

   (b) An inexperienced pilot is assisted by an experienced pilot.

4. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. RADIO CONTROL

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.

2. A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.

3. At all flying sites a safety line(s) must be established in front of which all flying takes place (AMA Document #706.)

   (a) Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.

   (b) At air shows or demonstrations, a straight safety line must be established.

   (c) An area away from the safety line must be maintained for spectators.

   (d) Intentional flying behind the safety line is prohibited.

4. RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.

5. RC model aircraft will not operate within three (3) miles of any pre-existing flying site without a frequency-management agreement (AMA Documents #922 and #923.)

6. With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flight line.

7. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.

8. RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.

9. The pilot of a RC model aircraft shall:

   (a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.

   (b) Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.

   (c) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

Please see your local or regional modeling association's guidelines for proper, safe operation of your model aircraft.

Limited Warranty

What this Warranty Covers
Horizon Hobby, LLC, (Horizon) warrants to the original purchaser that the product purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase.

What is Not Covered
This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, (vi) Product not compliant with applicable technical regulations, or (vii) use that violates any applicable laws, rules, or regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

Purchaser's Remedy
Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability
HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law
These terms are governed by Illinois law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

WARRANTY SERVICES

Questions, Assistance, and Services
Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please visit our website at www.horizonhobby.com, submit a Product Support Inquiry, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

Inspection or Services
If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. An Online Service Request is available at http://www.horizonhobby.com/content/service-center_render-service-center. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for service. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

NOTICE: Do not ship LiPo batteries to Horizon. If you have any issue with a LiPo battery, please contact the appropriate Horizon Product Support office.

Warranty Requirements
For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

Non-Warranty Service
Should your service not be covered by warranty, service will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for service you are agreeing to payment of the service without notification. Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website http://www.horizonhobby.com/content/service-center_render-service-center.

ATTENTION: Horizon service is limited to Product compliant in the country of use and ownership. If received, a non-compliant Product will not be serviced. Further, the sender will be responsible for arranging return shipment of the un-serviced Product, through a carrier of the sender's choice and at the sender's expense. Horizon will hold non-compliant Product for a period of 60 days from notification, after which it will be discarded.

10/15

Warranty and Service Contact Information

Country of Purchase	Horizon Hobby	Contact Information	Address
United States of America	Horizon Service Center (Repairs and Repair Requests)	servicecenter.horizonhobby.com/RequestForm/	2904 Research Rd Champaign, IL 61822
	Horizon Product Support (Product Technical Assistance)	productsupport@horizonhobby.com 877-504-0233	
	Sales	websales@horizonhobby.com 800-338-4639	
European Union	Horizon Technischer Service	service@horizonhobby.eu	Hanskampring 9 D 22885 Barsbüttel, Germany
	Sales: Horizon Hobby GmbH	+49 (0) 4121 2655 100	

FCC Information

FCC ID: BRWTIARLGTNG1
This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠️ **CAUTION:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

Supplier's Declaration of Conformity

EFL Conscendo 1.5m BNF Basic and PNP EFL01650, EFL01675
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠️ **CAUTION:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  • Reorient or relocate the receiving antenna.
  • Increase the separation between the equipment and receiver.
  • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  • Consult the dealer or an experienced radio/TV technician for help.
Horizon Hobby, LLC
2904 Research Rd.,
Champaign, IL 61822
Email: compliance@horizonhobby.com
Web: HorizonHobby.com

IC Information

IC ID: 6157A-TIARLGTNG1
This device complies with Industry Canada licence-exempt RSS standard(s).
Operation is subject to the following two conditions:
(1) this device may not cause interference, and (2) this device must accept any
interference, including interference that may cause undesired operation of the device.

Compliance Information for the European Union

EU Compliance Statement:
EFL Conscendo 1.5m BNF Basic and PNP, EFL01650
Horizon Hobby, LLC hereby declares that this product is in compliance with the essential requirements and other relevant provisions of the RED and EMC Directives.
A copy of the EU Declaration of Conformity is available online at:
http://www.horizonhobby.com/content/support-render-compliance.

EFL Conscendo 1.5m BNF Basic and PNP, EFL01675
Horizon Hobby, LLC hereby declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.
A copy of the EU Declaration of Conformity is available online at:
http://www.horizonhobby.com/content/support-render-compliance.

Instructions for disposal of WEEE by users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

E328