FLEX AVIATOR

DESIGNED BY:

SUPER PNP

Instruction Manual

FLEX INNOVATIONS™

VISIT THE FLEX AVIATOR 40E PRODUCT PAGE FOR THE LATEST PRODUCT UPDATES, FEATURE CHANGES, MANUAL ADDENDUMS, AND FIRMWARE CHANGES FOR BOTH YOUR FLEX AVIATOR 40E AND THE INSTALLED AURA 8 ADVANCED FLIGHT CONTROL SYSTEM.

https://www.flexinnovations.com/product/flex-aviator-40e-super-pnp/
https://wiki.flexinnovations.com/wiki/Aura

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INTRODUCTION

Flex Aviator: A Masterpiece of Classic Design and Modern Innovation

Inspired by the iconic aircraft of the Golden Age of 1950s civilian aviation, the **Flex Aviator** is an extraordinary fantasy aircraft with a super-wide flight envelope, offering exceptional ease of handling for pilots of all levels — from beginners to advanced experts.

New from **Flex Innovations**, the **Aura 8** system features 6-axis stabilization and takeoff assist, making the **Flex Aviator** the ideal trainer. The **computer-free** design allows pilots to effortlessly switch between two distinct **Aura flight profiles**, transitioning seamlessly from a stable trainer to an advanced aerobatic machine.

Designed by World Champion **Quique Somenzini**, the **Flex Aviator** is as stunning in performance as it is in appearance. It also boasts the versatility to carry a wide range of battery sizes, giving you flexibility for longer flight times and various performance needs.

The experience of flying the **Flex Aviator** is truly unique — a perfect blend of vintage design and modern innovation, delivering both thrill and ease in every flight.

For the latest updates, features, addendums and more, before assembly, please visit:

https://www.flexinnovations.com/product/flex-aviator-40e-super-pnp/

https://wiki.flexinnovations.com/wiki/Aura

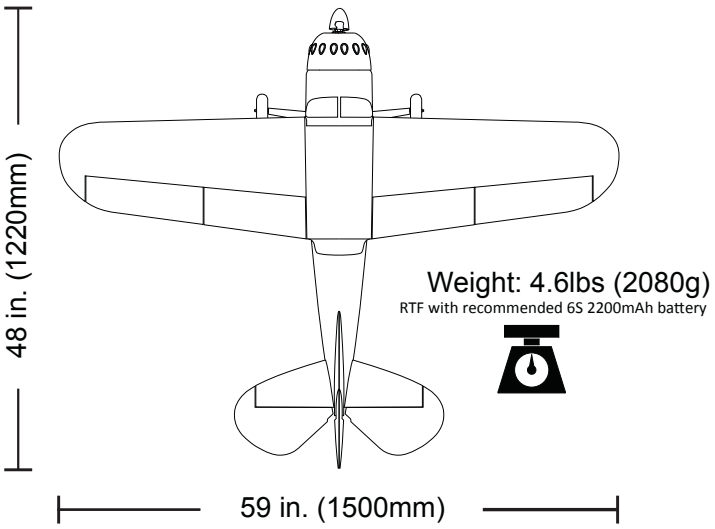
INCLUDES

- Flex Aviator 40e airframe with decals applied
- Aura 8 Advanced Flight Control System (programmed and ready to use)
- Dualsky ECO 3520C 510kv Brushless Motor
- 50A Hobby Wing ESC with 7.4v BEC
- (6) Potenza DS17HV Digital Sub-Micro Servos
- GemFan 13x6.5 2 Blade Plastic Propeller for Electric

REQUIRES

- 6+ Channel computer transmitter
- Serial capable receiver to match your transmitter, e.g. Spektrum 4651T, Futaba R2001SB or FrSky Archer Plus RS.
- 6S 1800mAh - 3500mAh 40C+ Li-Po Battery
- 6S Li-Po capable battery charger

SPECIFICATIONS



Recommended battery – 1800mAh - 3500mAh 6S 45C+ Li-Po

COMPLETION ITEMS

INSTALLED!		Dualsky ECO 3520C 510kv Brushless Motor (FPZMECO3520C-510)
INSTALLED!		50A Hobby Wing ESC with 7.4v BEC (HW50ABEC)
INSTALLED!		Potenza DS17HV Digital Metal Gear Servo (FPZDS17HV)
INSTALLED!		Aura 8 Advanced Flight Control System (FPZAURA08)
INCLUDED!		GemFan 13x6.5 2 Blade Plastic Propeller for Electric
NEEDED TO COMPLETE		6S 2200mAh 22.2V 45C Li-Po (FPZB22006S45) 6S 22.2V 1800-3500mAh 40C+ Li-Po
NEEDED TO COMPLETE		6+ Channel Computer Transmitter
NEEDED TO COMPLETE	 **RECEIVER**	Serial-Capable Receiver

REPLACEMENT PARTS LISTING

FPM5570A	Flex Aviator 40E: Super PNP Red Day
FPM5580A	Flex Aviator 40E: Super PNP Red Night
FPM5570B	Flex Aviator 40E: Super PNP Yellow Day
FPM5580B	Flex Aviator 40E: Super PNP Yellow Night
FPM557001	Flex Aviator 40E: Fuselage
FPM557002R	Flex Aviator 40E: Right Wing Panel
FPM557002L	Flex Aviator 40E: Left Wing Panel
FPM557003	Flex Aviator 40E: Horizontal Stabilizer Set
FPM557004	Flex Aviator 40E: Front and top Hatch
FPM557005	Flex Aviator 40E: Landing Gear wire with plastic fairing
FPM557006	Flex Aviator 40E: Main wheels
FPM557007	Flex Aviator 40E: Wing & Stab Tube Joiner
FPM557008	Flex Aviator 40E: Pushrod set
FPM557009	Flex Aviator 40E: Red/Black Decal Set
FPM557010	Flex Aviator 40E: Yellow/Black Decal Set
FPM557011	Flex Aviator 40E: Spinner 50mm
FPM557012	Flex Aviator 40E: Hardware Package
FPM557014	Flex Aviator 40E: Tail and wheel gear set
FPM557015	Flex Aviator 40E: Main Landing Gear Mount
FPM557016	Flex Aviator 40E: Vertical Fin Set
FPM557018	Flex Aviator 50E: Main Wheel wheel collar 4.5mm
FPM558001	Flex Aviator 40E: Fuselage with night LED
FPM558002R	Flex Aviator 40E: Right Wing with Night LED
FPM558002L	Flex Aviator 40E: Left Wing with Night LED
FPM558003	Flex Aviator 40E: Horizontal Stabilizer set night
FPM558004	Flex Aviator 40E: LED Light Tail Set
FPZMECO3520C-510	Dualsky ECO 3520C 510kv Brushless Motor
HW50ABEC	Hobby Wing 50A ESC G2 3s/6s w/8A BEC
FPMPGF1365	GemFan 13x6.5 2 Blade Plastic Propeller for Electric
FPMA1053	Flex Lock w/Plastic Housing (2)
FPZDS17HV	Potenza DS17HV Digital Metal Gear Servo
FPZAURA08ZZAVIATOR	Aura 8 for Flex Aviator 40e
FPZA1016	Potenza Advanced R/C LED Controller (6S)

OPTIONAL ITEMS

FPZB18006S45	Potenza 6S 1800mAh 45C Li-Po Battery
FPZB2206S45	Potenza 6S 2200mAh 45C Li-Po Battery
FPZB26006S45	Potenza 6S 2600mAh 45C Li-Po Battery
FPZB35006S40	Potenza 6S 3500mAh 40C Li-Po Battery
FPZB5003S25	Potenza 3S 500mAh 25C Li-Po Battery
FPM557017A	Flex Aviator 40E: Float Set w/Struts & Led Red/Black
FPM557017B	Flex Aviator 40E: Float Set w/Struts & LED Yellow/Black
FRSKY03022040	FrSky TW Mini 2.4GHz Receiver
FRYSKY03020117	FrSky Archer Plus RS 2.4GHz Receiver
FRYSKY03022018	FrSky Tandem MX Receiver
FUTR2001SB	Futaba R2001SB SFHSS SBus
SPM4651T	Spektrum DSMX SRXL2 Serial Receiver with Telemetry

BEFORE YOU BEGIN

SPECIAL LANGUAGE DEFINITIONS

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

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

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

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

⚠ WARNING

AGES 14+

This is NOT a toy! This product is not intended for use by children under 14 years of age without direct adult supervision.

ATTENTION

Read the ENTIRE instruction manual to become familiar with the features and assembly of the product before operating. Failure to assemble or operate the product correctly can result in damage to the product, personal property, and cause serious or fatal injury.

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Flex Innovations, LLC. For up-to-date product literature, please visit our website at www.flexinnovations.com and click on the Flex Aviator 40e and Aura 8 product pages.

NOTICE

Do not use thread locker when attaching plastic parts, the parts will soften and fail.

NOTICE

The assembly of the Flex Aviator 40e can be accomplished in a few hours. Prior to assembling the airplane, it is advisable to charge your battery so that you are ready to begin radio setup upon completion of the assembly of your model.

IMPORTANT INFORMATION REGARDING WARRANTY

Please read our *Warranty and Liability Limitations* section before building this product. If you as the purchaser and/or user are not prepared to accept the liability associated with the use of this product, you are advised to return this product immediately, in new and unused condition, to the place of purchase.

SAFETY WARNINGS AND PRECAUTIONS

Protect yourself and others by following these basic safety guidelines.

1. This manual contains instructions for safety, operation, and maintenance. It is essential to read and follow all the instructions in the manual, prior to assembly, setup, or use, in order to operate correctly and avoid damage or serious injury. In some cases, the written instructions may differ slightly from the photos. In those instances, the written instructions should be considered correct.
2. This model is not a toy, rather it is a sophisticated remote control hobby product and must be operated with caution and common sense. This product 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.
3. This model must be assembled according to these instructions. Do not alter or modify the model outside of these instructions provided by Flex Innovations, LLC, as doing so may render it unsafe and/or un-flyable. You must take time to build straight, true, and strong. It is your responsibility to ensure the air-worthiness of this product.
4. Use only compatible, appropriate components for the final assembly of this model. Ensure that the radio system is in functional condition, that the motor is appropriately sized for the model and that all other components are appropriate for use in this model as specified in this Flex Aviator 40e Instruction manual. All components must be installed correctly so that they operate correctly both on the ground and in the air.
5. Inspect and check operation of the model and all its components before every flight.

SAFETY WARNINGS AND PRECAUTIONS (CONTINUED)

6. If you are not an experienced pilot, or have not flown a high-performance model before, it is recommended that you seek assistance from an experienced pilot in your R/C club for your first flights. If you're not a member of a club, the Academy of Model Aeronautics (AMA) has information about clubs in your area whose membership includes experienced pilots.
7. Keep the propeller area clear from such items as loose clothing, jewelry, long hair, or tools, as they can become entangled. Keep your hands and body parts away from the propeller as injury can occur.

IMPORTANT BEFORE ASSEMBLY

Carefully unpack your aircraft and inspect the parts. Review the manual and gather all the required tools and supplies.

- Remove all parts from their plastic bags, inventory all items and closely examine all the major airframe components for damage. If any items are missing or you find damaged components, do not proceed, please contact customer support.
- Use thin CA to go over any important glue joints, such as the motor box, firewall, servo mounting rails and any other pre-assembled joints that may see high stress during flight.
- Gather all required components such as motor and radio equipment that will be used to equip the airplane. Create a new radio program in your transmitter and bind this model program to the receiver that will be used in the airplane

BATTERY CHARGING GUIDELINES

⚠ WARNING

Follow all instructions provided by your battery and charger manufacturer. Failure to comply can result in fire.

We recommend the use of an advanced LiPo balancing charger, such as the Spektrum Smart S2100 G2 AC 2X100W Charger for your batteries to get the maximum performance and lifespan from them.

Our airplanes are designed around our Potenza LiPo batteries, and we recommend the Potenza 6S 2200mAh 40C LiPo in the Flex Aviator 40e based on our extensive testing and development. These batteries feature an EC5 connector, so no soldering is required for use in your Flex Aviator 40e.

All are available online at www.flexinnovations.com and your local Flex Innovations retailer.

LOW VOLTAGE CUTOFF

LiPo batteries have a nominal (rated) voltage of 3.7v per cell, and fully charged, reach 4.2v per cell. Batteries are designed to be discharged below the nominal voltage, however, if they are discharged below 3.0v per cell, damage will occur and the pack will loose capacity. For best long term battery life, set a timer and land after a time that leaves approximately 15% of the battery's capacity remaining.

Low voltage cutoff is a feature that is built into the HobbyWing 50A ESC that is designed to protect the connected battery from being discharged too far and causing permanent damage to the cells. Circuitry within the ESC will automatically detect when the input voltage from the battery pack reaches below 3.0V per cell (average) and will remove power to the motor, but still deliver power to the servos so that a safe landing may be made. If the motor begins to lose power rapidly during flight, the LVC has sensed that the total voltage of the pack has dropped below 3.0V per cell average, and the airplane should be landed immediately.

MAIN LANDING GEAR INSTALLATION

Required Tools and Fasteners: #2 Phillips Screwdriver
1.5mm Hex Driver
(4) M3x10 Phillips Head Self-Tapping Screw
Blue Thread Lock


(QTY 4)

1. Remove the landing gear cover from the fuselage
2. Insert the landing gear into the fuselage, note that the wider side of the landing gear plastic fairing should face the rear side of the fuselage (as shown in the picture below)
3. Lining up the arrows, replace the landing gear cover and install it with (4) M3X10 Phillips head self-tapping screws using a #2 Phillips screwdriver.

4. Apply blue tread-locker on the set screw and install the inside collet onto the main landing gear shaft using a 1.5mm hex driver.
5. Slide the wheel over the shaft.
6. Apply blue tread-locker on the set screw and install the outside collet onto the main landing gear shaft using a 1.5mm hex driver. Ensure that the wheel spins freely and does not bind. If necessary adjust one or both of the gear collets.

7. Repeat for the other side.
8. Once the installation is complete it should look like the pictures below.

TAILWHEEL INSTALLATION

Required Tools and Fasteners: #1 Phillips Screwdriver (3) M2x6 self-tapping Phillips head cap screws

(QTY 3)

1. Locate the vertical fin assembly, tail wheel and tail wheel retaining plate. Insert the tail wheel assembly into the bottom of the rudder, being sure to orient it so that the tail wheel wire angles towards the tail as the wire moves away from the fuselage.
2. Insert the retaining plate into the cavity on the bottom of the rudder. Use a #1 Phillips screwdriver and the three M2x6 self-tapping screws to secure it in place.

VERTICAL STABILIZER INSTALLATION

Required Tools and Fasteners:

30-Minute Epoxy
Craft Sticks (for mixing epoxy)
Mixing Cup
Paper Towels
#2 Phillips Screwdriver
(1) M3x10 Phillips Head Self-Tapping Screw

(QTY 1)

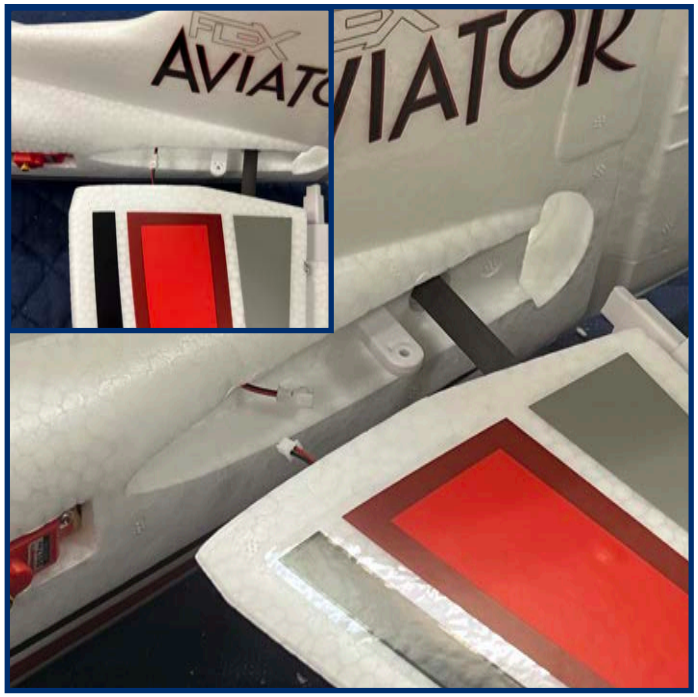
1. Test fit the vertical fin to the fuselage, making sure everything fits properly. Make any adjustments that may be necessary.Use the craft sticks and mixing cups to mix an adequate amount of 30-minute epoxy. Apply epoxy to the vertical fin as well as the fuselage parts that meet the vertical fin. Be sure to avoid the hinges when applying epoxy. Pro tip: cover the hinge pivot points with a drop of oil or with some petroleum jelly to avoid accidental adhesive boding the hinge together.
2. Assemble the parts, being sure to wipe up any excess epoxy with a paper towel. Confirm alignment, and wait for the epoxy to cure before proceeding to the next step. This area of the airplane sees a lot of load so ensure that you use epoxy for this joint for the extra strength it provides.
3. Temporarily insert the main wing tube and ensure that the vertical stabilizer is perpendicular to the wing tube.
4. Once the epoxy has cured, install the rudder hinge screw using a #2 Phillips screwdriver. Deflect the rudder in both directions by hand to check movement. While checking the movement, tighten the screw until the rudder begins to bind, then loosen the screw one quarter turn.

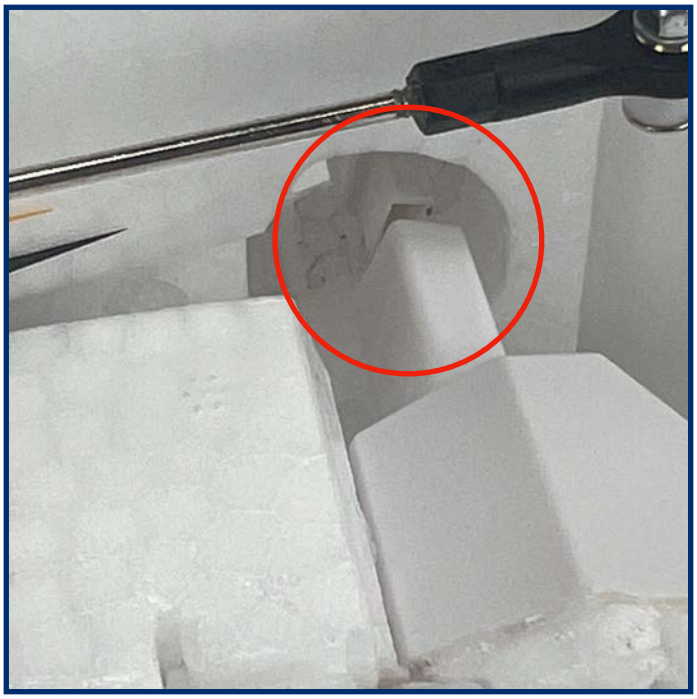
HORIZONTAL STABILIZER INSTALLATION

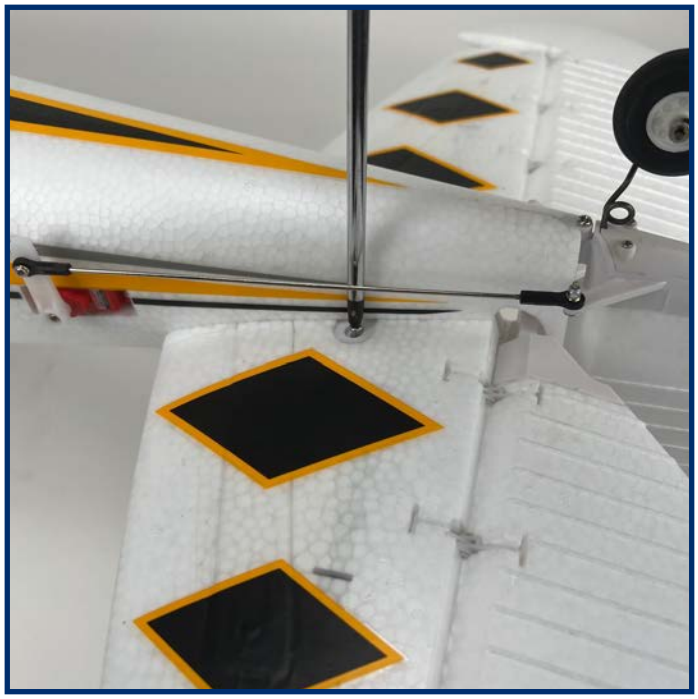
(QTY 2)

Required Tools and Fasteners: #2 Phillips Screwdriver, (2) M3x10 Phillips Head Self-Tapping Screw

1. Insert the horizontal stabilizer tube into the fuselage and roughly center.
2. Slide the left and right stabilizer halves onto the tube. Ensure that the control horn orients towards the belly of the airplane.
3. If you have the night version connect the LED lights in the horizontal stabilizers using the provided connectors.
4. Ensure and that the elevator joiner tabs are properly indexed and bring the two halves together. **Do not force the stabilizer into place**.
5. Use a #2 Phillips screwdriver and the two M3x10 self-tapping screws to secure each stabilizer half in place.



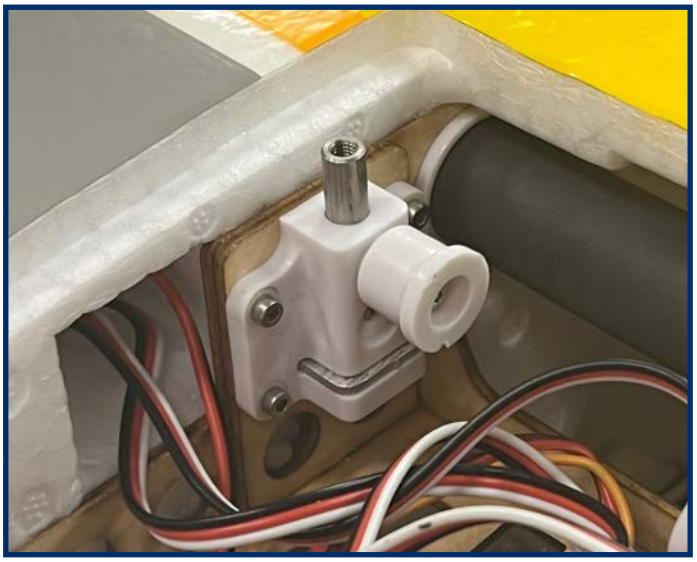


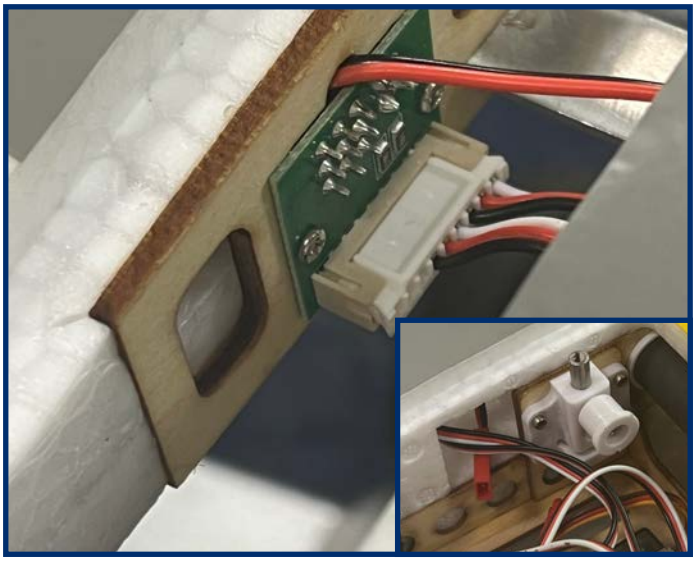


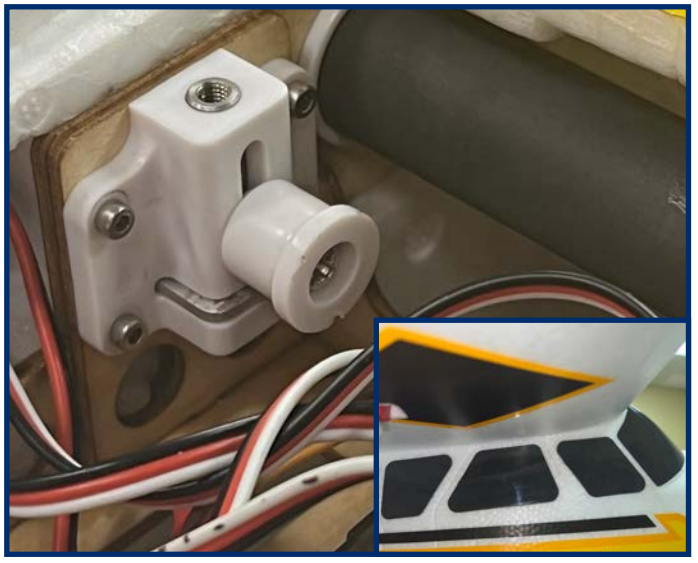
MAIN WING INSTALLATION

Required Tools and Fasteners: None!

1. Remove the top hatch from the fuselage by pulling the latch towards the front and lifting the hatch from the fuselage.
2. Unlock the Flex Speed-lock wing locks. Do this by pulling out on the knob (towards the center of the fuselage) and then slide the knob upwards until it stops, this is the raised/unlocked position.
3. Insert the main wing tube into the fuselage and roughly center.
4. Slide the left and right wing panels onto the tube. The servos and linkages are mounted on the underside of the wing.
5. Connect the all-in-one servo lead to the receptacle in the wing.
6. If you have a night version, feed the red LED lead into the fuselage through the opening and then connect the LED power leads.
7. Fully seat the wings into the fuselage while being careful to align the wing mounting tab with the slot in the fuselage. Be sure to avoid pinching any wires during this process.
8. Once the wing is completely seated, secure each wing to the fuselage by pushing down on the top aluminum rod of the Flex Speed-lock to lock the wing in place. When fully latched the knob in the Flex Speed-lock should seat properly in the provided notch.
9. Replace the hatch onto the fuselage.







FLIGHT PROFILES AND FLIGHT MODES

*The Flex Aviator 40e is equipped with a Flex Innovations Aura 8 that provides two different flight profiles. The default profile is called the **Stock Profile,** which Is recommended for beginner and intermediate pilots and the alternate profile is called the **Expert Profile,** which is recommended for intermediate to expert pilots.*

You can easily switch back and forth between the two profiles, without needing a computer.

*Before first flight, determine which profile you would like to use. If you are a beginner, or if you are not sure which of the two will best suit you, or if you are just curious how the plane will behave in it's default configuration then use the **Stock Profile**. If you are an experienced pilot and would like to get the most out of your Flex Aviator 40e starting with the first flight, feel free to switch profiles to the **Expert Profile**.*

Please note: flaps and preprogrammed mixes are enabled in both profiles.

The following two charts show the pre-configured flight modes of the two profiles included in the Aura 8 installed in the Flex Aviator 40e.

Flex Aviator 40e Aura - Stock Profile

This is the default, out-of-the-box profile for beginners to intermediate fliers.
The three flight modes allow great flexibility from learning to fly to aggressive sport aerobatics.
This profile is not recommended for Slow 3D. For Slow 3D maneuvers, switch to the **Expert Profile**.

Flight Mode 1: Level Assist (6 Axis - Gyro On)

- The is a beginner mode and ideal to learn to fly
- This is a self-leveling mode, when the sticks are released the plane will automatically return to straight and level flight
- Bank and pitch angles are limited, but very capable
- Rates are low and expos tuned for comfortable flight
- Gyro is set to low

Flight Mode 2: Sport (3 Axis - Gyro On)

- For general flight and basic sport aerobatics
- Rates are low and expos tuned for comfortable flight
- Gyro is set to low

Flight Mode 3: Advanced (3 Axis - Gyro On)

- For general flight and aggressive sport aerobatics
- Live Wing - Flaps work in conjunction with ailerons for added roll authority
- Rates are medium and expos are tuned for comfortable flight
- Gyro is set to low

Take-off/Launch Assist

- Can be enabled at the beginning of your flight
- Ideal to use when learning to fly or some weather or challenging field conditions

Flex Aviator 40e Aura - Expert Profile

This profile is for intermediate to expert fliers.
The three flight modes allow for a great spectrum of aerobatics.
If you intent to do 3D aerobatics, this is the profile you will use.

Flight Mode 1: Sport (3 Axis - Gyro On)

- For general flight and basic sport aerobatics
- Rates are low and expos tuned for comfortable flight
- Gyro is set to low

Flight Mode 2: Advanced (3 Axis - Gyro On)

- For general flying and aggressive sport aerobatics
- Live Wing - Flaps work in conjunction with ailerons for added roll authority
- Rates are medium and expos tuned for comfortable flight
- Gyro is set to low

Flight Mode 3: Slow Speed 3D (3 Axis - Gyro On)

- For slow speed, 3D flight
- Live Wing - Flaps work in conjunction with ailerons for added roll authority
- Rates are highest and expos are tuned for comfortable flight
- Gyro is set to its highest setting and may oscillate if the plane if flown over ½ throttle

Take-off/Launch Assist

- Can be enabled at the beginning of your flight
- Ideal to use for some weather or challenging field conditions

PROFILE SELECTION AND QUICK TRIM

Quick-Flip: How to Switch Between Stock and Expert Profiles

The following process outlines how you switch between the two included flight profiles. This process can be repeated to switch back and forth between the **Stock Profile** and **Expert Profile:**

1. Unplug the battery from the airplane and **Turn OFF** your transmitter.
2. Connect the battery to power up the Airplane. The Blue LED will flash indicating Gyro Calibration. After it stops flashing, orient the model with a straight down nose attitude and keep it still.
3. The Aura will detect this orientation, and switch the profile after a few seconds.
4. When the profile switches, the servos will power up and center. The elevator will then move 3 times to indicate the **Expert Profile** is being used or 6 times to indicate the **Stock Profile** is being used.
5. Once the elevator deflections complete, return the model to a level attitude and disconnect the battery.
6. Turn ON your transmitter and connect your battery as normal. Use your flight mode switch to check the Flight Modes act as expected and go fly!
7. To switch back to the other profile, just repeat this procedure.

Enable Take-off/Launch Assist Mode

Take-off/Launch Assist Mode is a special mode that can help beginners or during challenging take off conditions. Once Take-off/Launch Assist has been activated it will control the roll and pitch angle of your model, keeping the wings level and commanding a brisk climb out to get you to a safe altitude quickly. To enable Take-off/Launch Assist follow these steps:

1. Hold your transmitter sticks at the following positions for at least 3 seconds: Throttle low, rudder centered, full left aileron, full up elevator. The airplane must be still/stationary to enter Take-off/Launch Assist.
2. When Take-off/Launch Assist is enabled you will see the elevator go up and the ailerons move to try to keep the model level. You can now return the aileron and elevator sticks to center.
3. If you are having trouble activating Take-off/Launch Assist, make sure that all your trims are centered and keep the model level and immobile for at least 6 seconds holding the controls in the positions noted above.
4. Once Take-off/Launch Assist is active, you can proceed to take-off by advancing the throttle and using the rudder to steer. Do not move the aileron or elevator sticks from center after advancing the throttle as this will disable Take-off/Launch Assist.
5. Once you are at a comfortable altitude you can move the aileron and elevator, this will disable Take-off/Launch Assist and resume normal control.

First Flight and Quick Trim in 3-Axis Mode

We recommend that you fly the maiden flight using **Flight Mode 2** (Sport Mode) in the **Stock Profile** or **Flight Mode 1** (Sport Mode) in the **Expert Profile**. Trim the airplane until you achieve straight and level flight. Once you land, you can execute the Quick Trim procedure below but you **MUST** start the procedure with the Flight Mode switch in the same position as when you flew and trimmed the aircraft.

1. Power off the Flex Aviator 40e. Insert a bind plug into Aura Port S3 (you will need to remove the servo lead that is currently in S3). Check that the transmitter is powered on and re-power the Aura to enter Quick Trim.
2. Wait 5 seconds for the Aura to completely initialize. Confirm Quick Trim mode is active by checking the Blue LED is slowly flashing.
3. Remove the bind plug to save your trim settings, the Blue LED will now flash quickly indicating the new trim values have been stored successfully. Power off the Flex Aviator 40e and re-install the servo into port S3.
4. RE-center all control surface trims on the transmitter.
5. Re-power the Flex Aviator 40e, the control surfaces should be unchanged as the new trims have been applied.

First Flight and Quick Trim in 6-Axis Mode

The 6-Axis flight mode stores separate trim settings from the 3-Axis Flight modes, for this reason we recommend that you quick trim this flight mode separately. Fly the model using **Flight Mode 1**(Level Assist) in the **Stock Profile**. Trim the airplane until you achieve straight and level flight **using ¾ throttle**. Once you land, you can execute the Quick Trim procedure below but you **MUST** start the procedure with the Flight Mode switch in **Flight Mode 1**.

1. Power off the Flex Aviator 40e. Insert a bind plug into Aura Port S3 (you will need to remove the servo lead that is currently in S3). Check that the transmitter is powered on and re-power the Aura to enter Quick Trim.
2. Wait 5 seconds for the Aura to completely initialize. Confirm Quick Trim mode is active by checking the Blue LED is slowly flashing.
3. Remove the bind plug to save your trim settings, the Blue LED will now flash quickly indicating the new trim values have been stored successfully. Power off the Flex Aviator 40e and re-install the servo into port S3.
4. RE-center all control surface trims on the transmitter.
5. Re-power the Flex Aviator 40e, the control surfaces should be unchanged as the new trims have been applied.

TRANSMITTER SETUP

The included Aura 8 is designed to work seamlessly with all popular transmitter and receiver brands, however, transmitter setup is significantly different than when setting up a model without Aura. Follow these steps:

1. Start with a new model memory in your transmitter. Reset it to be certain it is set to defaults.
2. Adjust your transmitter settings according to the Transmitter Configuration Guide below.
3. **Make ONLY the changes shown in the Transmitter Configuration Guide.** No other changes are required.

Transmitter Configuration Guide

	Spektrum, Futaba, JR & Graupner	FrSky	Jeti (EX-Bus)
Wing/Tail Type	1 Aileron, 1 Elevator, 1 Rudder	1 Aileron, 1 Elevator, 1 Rudder	1 Aileron, 1 Elevator, 1 Rudder
End Points (Travel Adjust or ATV)	Ail/Ele/Rud – 125%	Ail/Ele/Rud – 100%	Aileron/Ele/Rud – 100%
	Thro/CH5/CH6 – 100%	Thro/CH5/CH6 – 84%	Thro/CH5/CH6 – 80%
Reversing	**Use Default Transmitter Model Direction**		
Sub-Trim	**Verify at Zero, NOT ALLOWED**		
Trim Levers	**Verify at Zero**		
CH5 (Gear) – Flight Mode	**Assign to a 3 Position Switch**		
CH6 (Aux 1) – Flaps	**Assign to a 3 Position Switch (Do NOT use the Flap System in your Transmitter)**		
CH7 (Aux 2) – Gyro Gain Kill Switch*	**Assign to a 2 Position Switch**		
CH8 (Aux 3) – Crow Switch*	**Assign to a 2 Position Switch**		
First Flight Timer	**With 2200mAh 6S, set to 5:00**		

** The default Aura program has the Gyro Gain Kill Switch disabled and the Crow disabled. See page 24 for detailed instructions on using **Quick Set** to enable the Gyro Gain Kill Switch (Ch7) or Crow (Ch8).*

NOTICE

FOR CUSTOMERS USING TRANSMITTERS OTHER THAN WHAT IS LISTED IN THE CHART ABOVE, PLEASE VISIT OUR WIKI PAGE FOR INSTRUCTIONS SPECIFIC TO YOUR TRANSMITTER AND RECEIVER BRAND

HITEC – wiki.flexinnovations.com/wiki/Aura/HitecSbusUse

RECEIVER INSTALLATION

Choosing a Receiver

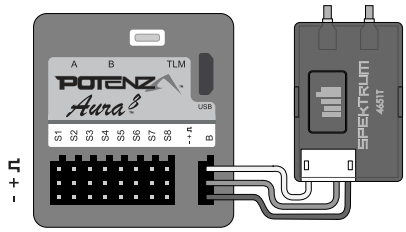
Aura will auto-detect modern serial receiver connections. For use in the Flex Aviator 40e, only a serial receiver connection can be used. Below are a few examples of serial receivers that can be used with the Aura 8. This is not a complete list of compatible receivers, rather a short list to assist in your receiver selection.

Spektrum SRXL – SPMAR6610T, SPMAR8020T, SPMAR10100T
Spektrum SRXL2 – SPM4651T, SPM4650
Futaba S.Bus – Futaba R7008SB, R2001SB, R6202SBW
FrSky S.Bus – TW Mini, Archer Plus RS
Hitec S.Bus – Optima SL, Maxima SL
Graupner HoTT (Sum D of 8) – GR12L, GR16L
JR XBus (Mode A & Mode B) – RG012BX, RG613BX, RG821BX
Jeti EX-Bus – REX10, R9 EX, REX6

CONNECTING YOUR RECEIVER TO AURA

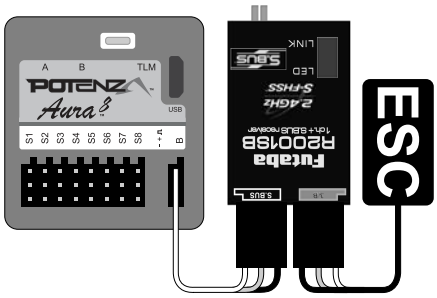
Serial Receivers

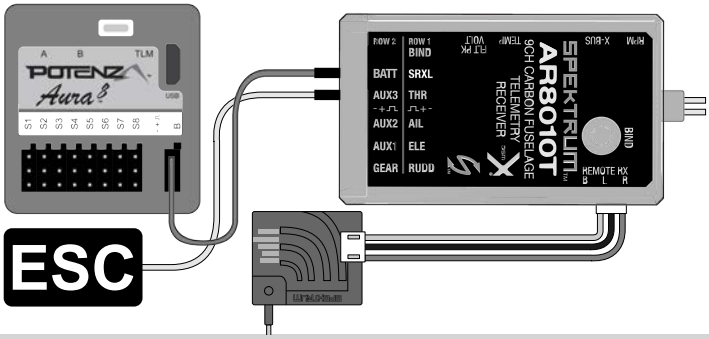
If using a standard serial receiver, connect the provided male to male cable to your receiver's serial port. Connect the other end of the cable to Aura Port B noting proper polarity.



Note: SRXL2 receivers like the 4651T require the use of a different cable to connect to Aura. The cable is included with the receiver when it is purchased directly from Flex Innovations. You can also purchase the cable itself at flexinnovations.com (FPZA1039). Other receivers like the AR6610T provide a standard servo port for the SRXL2 signal.

Note: If you are using Futaba S.Bus, be sure to use the proper S.Bus port in your receiver. DO NOT use the S.Bus2 port, as it is not supported for use with the Aura 8. Refer to your manufacturer's instructions for proper S.Bus use.





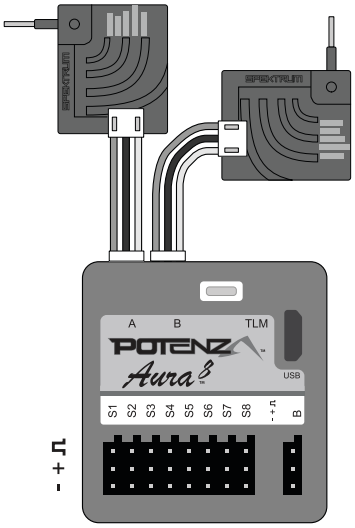
Note: When using Spektrum SRXL or SRXL2 to connect to the Aura, always connect the remote receivers to the Spektrum receiver, NOT to the Aura.

Binding Your Receiver

Bind your receiver to your transmitter per your receiver and transmitter manufacturer's instructions.

Spektrum Remote Receivers

If using two Spektrum Remote Receivers, connect them to Aura Mini Port A and Mini Port B using the cable provided with your receivers.



Binding Your DSMX Remote Receivers

1. With the transmitter and aircraft powered OFF, place a bind plug into Aura Port S8.
2. Power on the aircraft. Your remote receivers should flash rapidly, indicating it is in bind mode.
3. Bind your transmitter to the remote receivers per your transmitter manufacturer's instructions. This is typically done by pressing and holding the bind button on your Spektrum transmitter while powering it on.
4. Verify the receivers are bound by looking at the LED on the Remote Receivers. This is typically indicated by a solid orange LED on Spektrum Remote Receivers.
5. Remove the bind plug from Aura Port S8.

Aura 8 Auto-Detect

Note: Before powering up the airplane for the first time ensure that there is not trim or sub-trim on any of your main channels (aileron, elevator or rudder) as this may lead the Aura 8 Auto-Detect feature to fail or work improperly. Once your receiver is bound, powered, and connected to the Aura, the Aura will begin the Auto-Detect process to learn what type of receiver you are using and set itself up for that specific system. Auto-Detect is indicated by a series of sweeping LEDs of various colors. After Auto-Detect is completed, verify that Aura is on and receiving data from your receiver by looking at the LEDs on the Aura.

Ready-To-Fly:

Solid Orange LED: Aura On and Calibrated

Solid Green LED: Aura receiving Valid receiver data

Possible Errors:

Flashing Orange LED: Aura Moved During Power Up

No Green LED: Aura NOT receiving receiver data

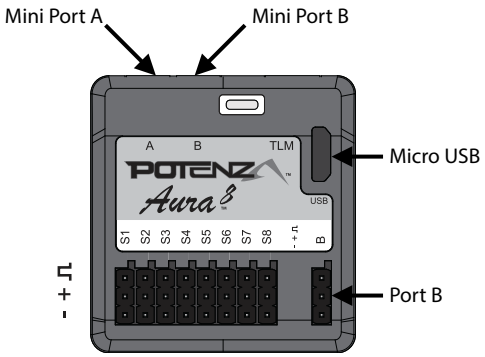
AURA 8 SERVO CONNECTIONS

DEFAULT AURA CONNECTIONS

- **S1 – Throttle**
- **S2 – Left Aileron**
- **S3 – Right Aileron**
- **S4 – Elevator**
- **S5 – Rudder**
- **S6 – Left Flap**
- **S7 – Right Flap**
- **S8 – Water Rudder (optional, with floats)**

Port B – Serial Receiver Input

Mini Port A&B – DSMX Remote Receiver Inputs



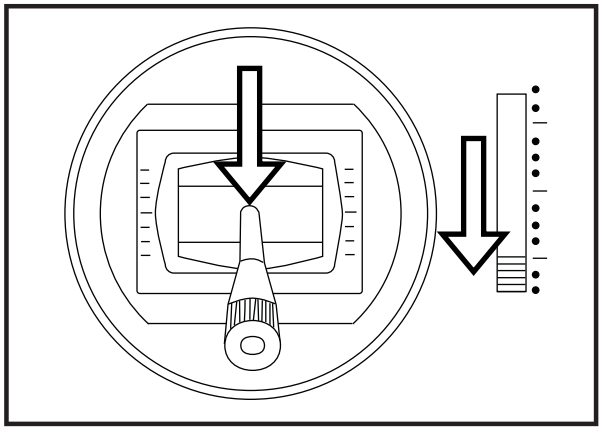
CONNECTING BATTERY/ARMING ESC

Observe the following procedures to safely power up your model after it has been bound. **Ensure propeller is removed unless this sequence is followed to power up before flight.**

1. Turn on the transmitter. **Lower the throttle stick AND throttle trim** to their lowest settings. Be sure to wait for your transmitter to indicate it the radio signal is being broadcast before proceeding.

If a battery is connected to the ESC with the throttle fully open on the transmitter, the ESC will enter programming mode. If this occurs, simply disconnect the battery, lower the throttle and reconnect the battery.

2. Ensure the aileron, elevator and rudder gimbals are centered.
3. With the airplane on a solid surface, connect the battery to the ESC and wait. The ESC will make the motor emit a series of audible tones during its initialization process.
4. The ESC will make the motor emit a short, final tone sequence indicating that the ESC is now armed and that the motor will spin in response to throttle stick movement.



⚠ CAUTION

Always connect the battery when the throttle stick and throttle trim are in the idle/cut-off position.

⚠ WARNING

When making adjustments to linkages, transmitter settings, or the Aura 8 flight control system, remove the propeller to guard against accidental spool up.

⚠ WARNING

Hold aircraft securely when connecting the battery before flight. Always ensure that the propeller is clear of any and all objects as they may become entangled.

ESC THROTTLE CALIBRATION

In order to map the full range of the ESC output to your throttle stick motion you will have to preform an ESC throttle calibration. **NOTE: Execute ESC throttle calibration with the propeller and spinner removed.**

1. Power on your transmitter, DISABLE any throttle hold or throttle kill switches, **completely lower the throttle trim** and set the stick to full throttle.
2. Connect the flight pack to your Flex Aviator 40e.
3. Listen for the tones coming from the ESC through the motor, about 2 seconds after RF is engaged you should hear two tones.
4. Pull your throttle stick back to idle.
5. Listen for the ESC arming tones from the motor.
6. Unplug the flight battery to complete calibration.

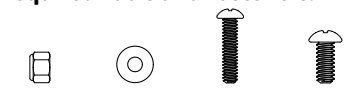
The ESC throttle range has now been properly calibrated, and is stored in the ESC's memory until it is calibrated again. You can repeat this process as many times as necessary.

⚠ CAUTION

Note: After throttle calibration is complete it is necessary to reset the failsafe on your receiver (see your radio documentation, this may require a re-bind).

RUDDER AND ELEVATOR LINKAGE INSTALLATION

Required Tools and Fasteners:



(QTY 4) (QTY 4) (QTY 4) (QTY 2)

Elevator and Rudder Pushrod Assemblies
(4) M2x10 Phillips Head Machine Screw
(4) M2 Flat Washer
(4) M2 Lock Nut
(2) M3x6 Phillips Head Machine Screw

#1 Phillips Screwdriver
#2 Phillips Screwdriver
Needle-Nosed Pliers (or Hemostats)
4mm Socket Hex Driver (optional)
Blue Thread Lock

1. Locate the rudder and elevator pushrod assemblies, as well as the servo arms and hardware. Note that both pushrods and servo arms are the same length, but the elevator servo arm will have the linkage installed one hole closer to the servo output shaft.
2. Power on your transmitter. While installing and adjusting your linkages ensure that the airplane is perfectly stationary so that they gyro does not move the servos. If you are moving the airplane while making adjustment you may get incorrect servo/linkage geometry. When done verify everything is correct with the airplane powered on a firm surface and no movement.
3. With the aircraft still powered on, install the rudder and elevator servo arms perpendicular to the servo case, being sure to orient the servo arm towards the bottom of the fuselage. Apply blue thread lock to the M3x6 Phillips head machine screw, and secure the servo arm in place using a #1 Phillips screwdriver.
4. Use a #1 Phillips screwdriver, M2x10 machine screw, M2 washer and M2 lock nut to secure the linkage to both the control horn and the servo arm. **DO NOT use thread lock, as thread lock can damage the plastic in the nut, as well as the control horn.** Use the chart on the next page for proper control horn and servo arm linkage locations. Note: details on correct elevator positioning are also shown on the next page, please read these before finalizing the elevator linkage length. The order of components is as follows:
   M2x10 Machine Screw
   M2 Washer
   Servo Arm or Control Horn
   M2 Lock Nut
5. Repeat the process for the other control linkage.

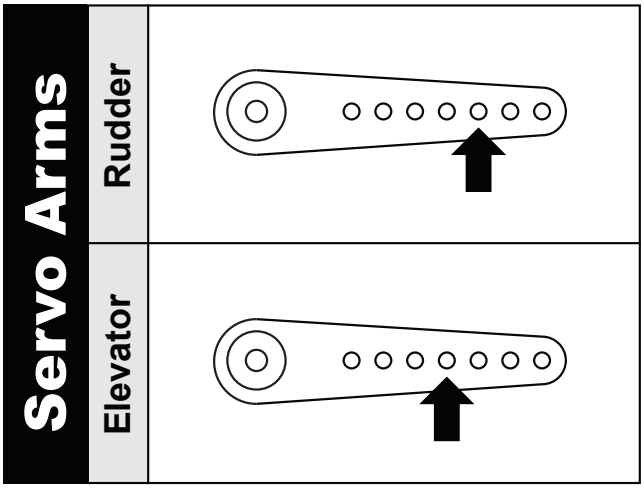
LINKAGE SETUP

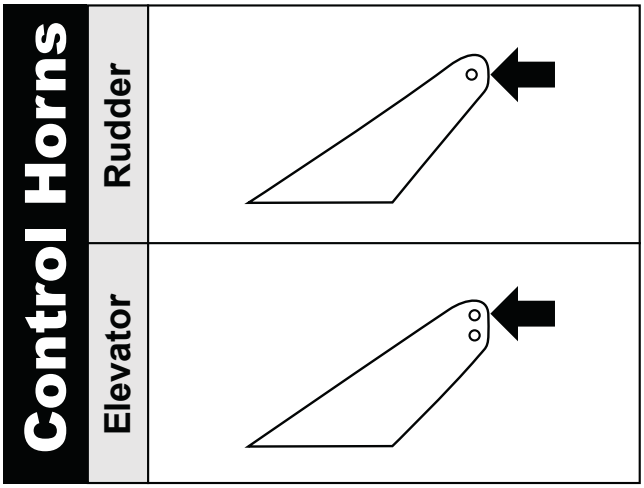
Mechanically adjust the control linkages so that the surfaces are neutral with zero trim and zero sub-trim in your radio. Please note the elevator trim described in the next section below.

Final trim adjustments may be required during flight. For more information on flight trimming, please refer to the trimming section located on page 13 of this manual.

Ball links are used on all control surfaces at both ends.

At the servo, the stock linkage attachment in the third hole from the outside in the servo arm for the rudder and the flaps and the fourth hole from the outside in the servo arm for the elevator. At the control horn, the stock attachment for the Elevator and Rudder are both located in the outermost hole.





NOTICE

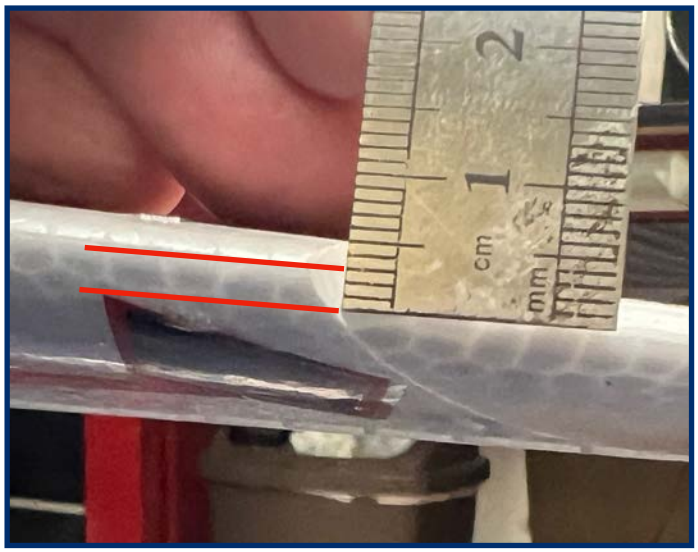
The DS17HV servos installed in your Flex Aviator 40E are high quality, digital servos with metal gear train and ultra-fine gear mesh. This fine resolution and high tooth count output shaft means that the servo arms pre-installed on the servos may inadvertently be misaligned, yet appear properly installed. It is critical to ensure the positive, perpendicular orientation of the arm to the case to ensure that the travel of the servos is even from side to side at extreme throws.

ELEVATOR TRIM

Please Note: The Flex Aviator uses a small amount of up elevator trim to fly level.

This is shown in the pictures below and measures 3mm at the counterbalance.

Use this as a starting point when setting your Linkage and adjust with quick trim after your maiden flight.



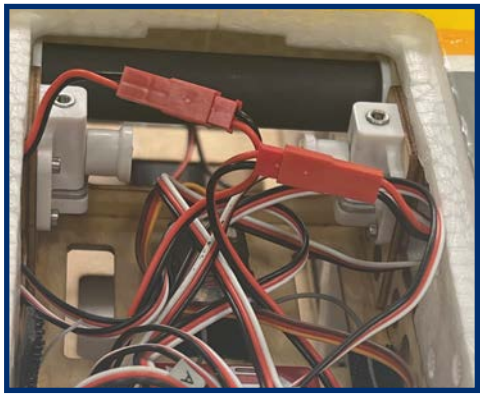
NIGHT FLEX AVIATOR 40E LED CONNECTIONS

If you have purchased the Night version of the Flex Aviator 40e, this page will cover all LED light connections. If you did not purchase the night version, skip ahead to the next page.

NOTICE

If you have the night version of the Flex Aviator 40e we recommend that you dry assemble the airframe and test all the lights before bonding anything permanently in place.

1. There is a connection for each horizontal stabilizer half. Connect each one of these connectors the horizontal stab half while installing them.
2. There is a connection for each wing panel under the top hatch. While installing the wings route these connectors into the fuselage through the opening provided for them. Connect each one of the two LED connectors to the provided leads.
3. If using the floats with lights, connect each connector for the float set to the provided connector on the bottom of the fuselage. For details on details on this see the installation manual for the Flex Aviator 40e floats.
4. The main light controller is present under the battery hatch, this is where you will plug in the LED battery pack as outlined below.



CONNECTING A BATTERY TO THE LED CONTROLLER

The LEDs on your aircraft are switchable via the transmitter, and are designed to be powered by 12 volts (3S Li-Po) through the 6S JST-XH balance tab on the LED controller. **By default, the LED controller is left unplugged. If the servo lead of the LED controller is not plugged into the Aura or a receiver, the LED controller will default in the ON position when powered, allowing the Night Version to be flown at night with a basic 6-channel transmitter or receiver.**

NOTICE

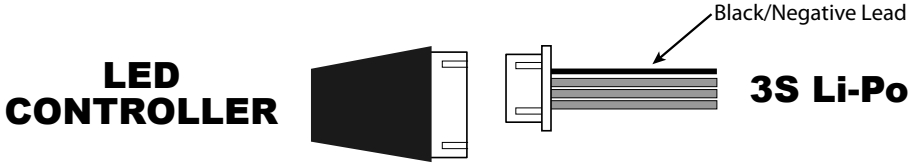
IN ORDER TO CONTROL THE LEDS FROM THE TRANSMITTER, YOU MUST USE A STANDARD RECEIVER THAT IS CAPABLE OF 7+ CHANNELS, AND KEEPS THE SERVO PORTS ACTIVE WHEN USING A DIGITAL DATA STREAM (like S.Bus, SRXL etc.).

⚠ WARNING

You MUST use an independent 3S Li-Po battery to power the LEDs in the Flex Aviator 40E. Failure to do so can damage your flight batteries. We recommend the use of the Potenza 3S 500mAh 25C Li-Po (FPZB5003S25).

⚠ WARNING

Do not leave the battery plugged into the LED controller for extended periods of time. Doing so can damage the battery. Average current draw for the lighting system is 2.2A/h

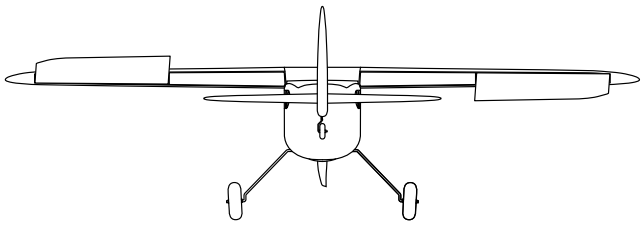
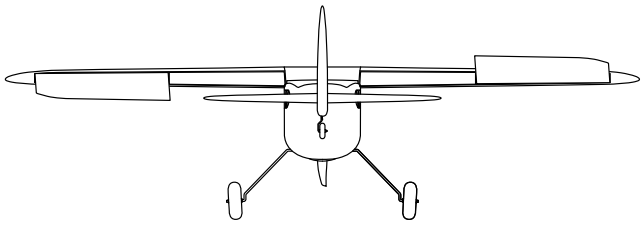
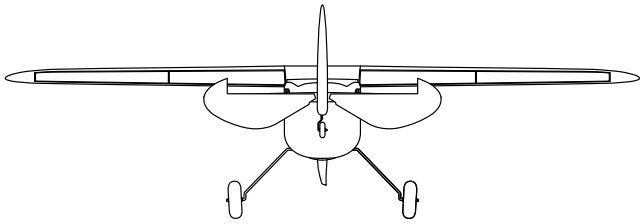
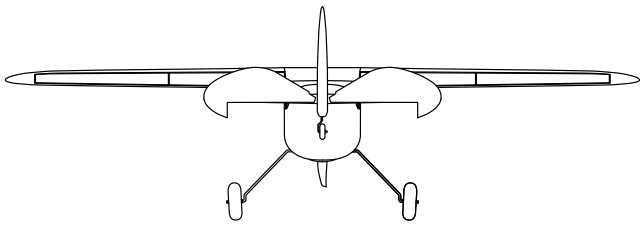
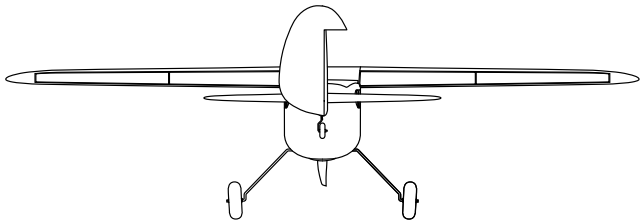
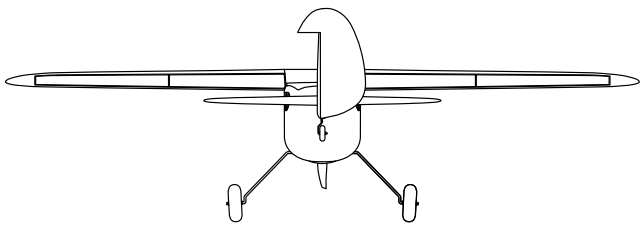


CONTROL DIRECTION TEST

Refer to the chart below to determine the proper control surface directions.

If the movement from the transmitter is reversed but the previous Sensor Direction test passed, you can reverse the Input in your transmitter or Aura Config Tool. If you are nervous or have any questions, email us at support@flexinnovatoins for corrective action. Note that BOTH the Transmitter Control Direction Test AND the Flight Controller Sensor Direction Test MUST BE PASSED! IF EITHER ONE DOES NOT PASS, DO NOT FLY!

NOTE: There is pre-configured rudder to aileron and rudder to elevator mixing programmed into the Aura. Simultaneous movement of these control surfaces with rudder input is intentional and completely **NORMAL**.

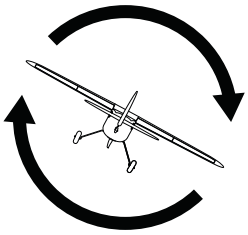
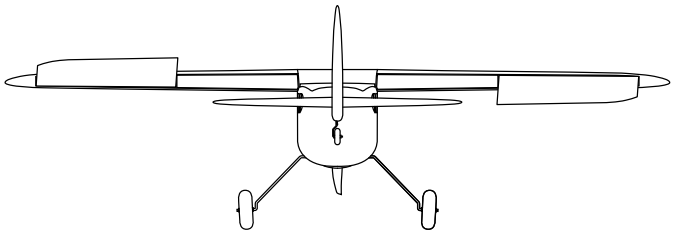
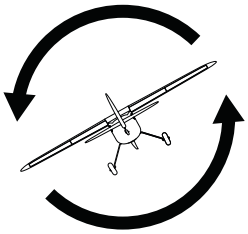
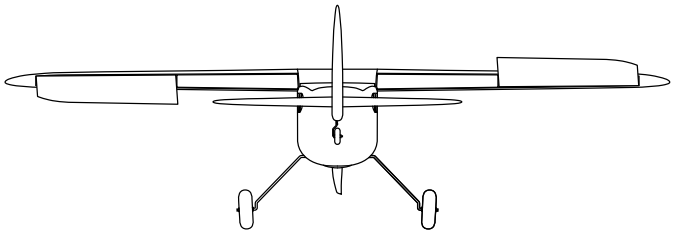
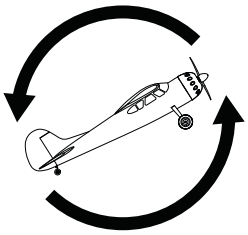
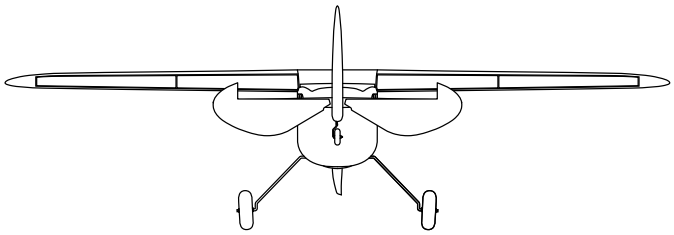
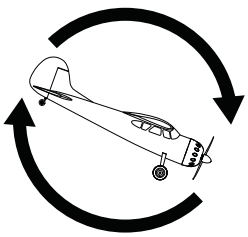
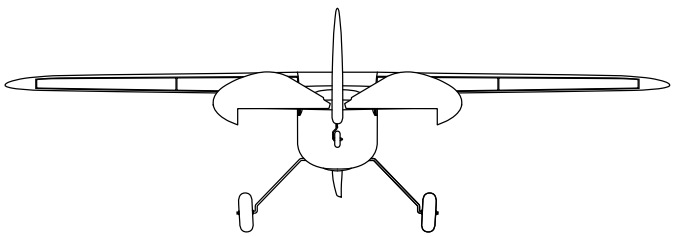
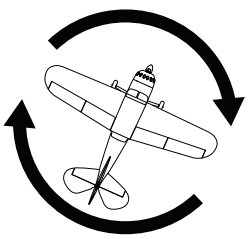
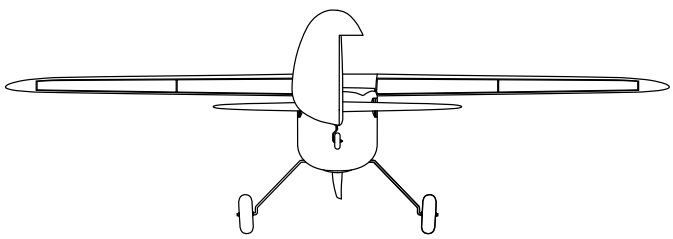
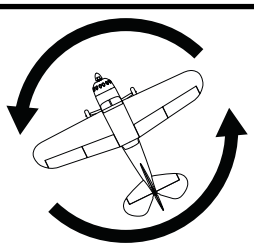
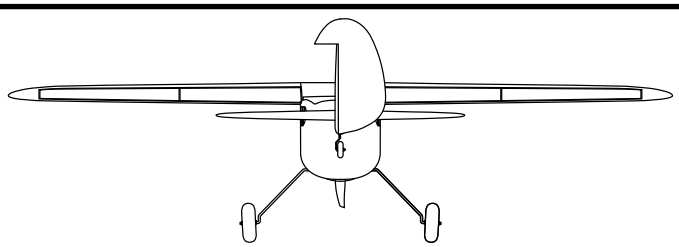
	Transmitter Command	Proper Control Surface Deflection
AILERON	**Stick Left**	
	Stick Right	
ELEVATOR	**Stick Forward**	
	Stick Aft	
RUDDER	**Stick Left**	
	Stick Right	

AURA SENSOR DIRECTION TEST

Perform a test of the gyro system to verify the corrections made for a given movement are correct. **If any of the tests do not result in the correct reaction from the airplane's gyro system, DO NOT FLY THE AIRPLANE, and contact us via email at support@flexinnovations.com**

Perform these tests in the high gain Flight Mode 3 (or a 6 Axis Level Assist mode) for better visibility. The Aura must be receiving control signals (Solid GREEN LED) to perform this test.

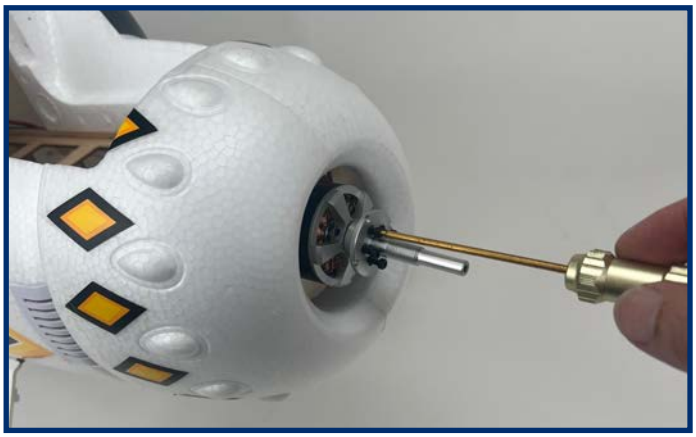
Control surface deflections are exaggerated in the pictures below for clarity. Please note the control surfaces will only move WHILE the aircraft is being ROTATED for 3 Axis Control Modes.

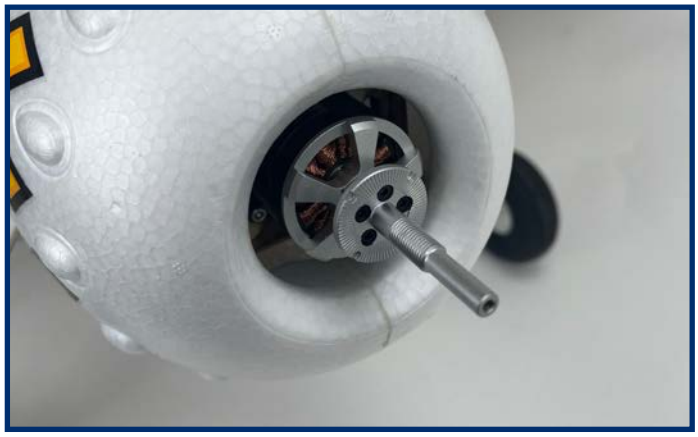
	Aircraft Movement	Proper Control Surface Deflection
AILERON		
		
ELEVATOR		
		
RUDDER		
		

MOTOR PROP ADAPTER INSTALLATION

Required Tools and Fasteners: Prop Adapter Assembly 2mm Hex Driver Blue Thread Lock
Blue Thread-lock

1. Locate the motor prop-shaft assembly.
2. Use a 2mm hex driver and blue thread-lock to attach it to the front of the motor using the five provided screws.





PROPELLER/SPINNER INSTALLATION

Required Tools and Fasteners: #2 Phillips Screwdriver, 13mm Box Wrench or adjustable wrench

1. Install the propeller on the prop adapter with the convex surface facing forward. The propeller size numbers are printed on the front face of the prop and should orient forward.
2. Slide the prop washer on the prop adapter with the widest face aft, followed by the propeller nut. Tighten the propeller nut fully.
3. Slide the spinner over the prop and prop shaft and secure it using the M3X6mm machine screw.

⚠ NOTICE

Spin the motor over by hand to ensure that the prop and spinner spin smoothly and true after installation.

BATTERY INSTALLATION

1. Push the spring-loaded battery latch tab back to release the battery hatch. Lift the hatch away from the fuselage, starting at the front.
2. Install the hook side of adhesive-backed hook and loop tape to the plywood battery tray in the fuselage, and the loop side to your battery.
3. Place the battery on the tray, and secure it in place with the hook and loop strap provided. If desired, the tray is removable to aid in this process.
4. Reinstall the hatch, and confirm that the latch has positively

⚠ CAUTION

Always keep limbs clear from the propeller when the battery is connected. After the ESC arms, the propeller will rotate when the throttle is moved. Unlike an internal combustion engine, electric motors apply more voltage to counteract resistance, therefore any object that is entangled in the propeller will be severely damaged before the motor will stop

⚠ WARNING

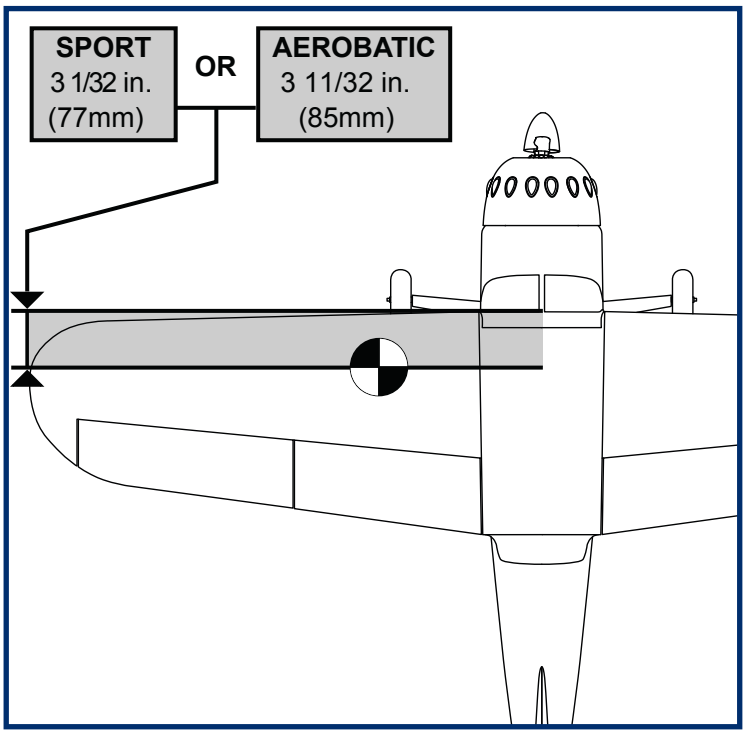
When making adjustments to linkages, transmitter settings, or the Aura 8 flight control system, remove the propeller to guard against accidental spool up.

CENTER OF GRAVITY

Setting the center of gravity (CG) is one of the most important steps for successful flight, particularly with a new airplane. The Flex Aviator 40e is an extremely capable airplane with large control surface throws and a high thrust to weight ratio. These factors make it an enjoyable aircraft to fly, but if the CG is not within an acceptable range, it will make the airplane difficult, if not impossible to control.

Prepare the aircraft to its flight-ready state. This means all hardware, components and flight battery should be installed before proceeding. The center of gravity (CG) is measured from the trailing edge of the main wing toward the nose of the aircraft. Lift the aircraft upright, with all components installed, from the bottom of the wing at the CG location noted.

The acceptable CG range for the Flex Aviator 40e is 77mm to 85mm (3 1/32 inches to 3 11/32 inches) measured perpendicular from the **Leading Edge** of the wing. Designer and multi-time world champion Quique Somenzini has found the Sport CG to be the sweet spot in the acceptable CG range based on his extensive test flights and experience.



⚠ NOTICE

The CG measurement should be made with the completed airframe with all components (batteries, servos, receiver, linkages, screws, bolts, hardware, etc.) installed. Failure to do so will result in inaccurate measurement.

PRE-FLIGHT CHECKLIST

To help ensure a successful first flight, as well as many flights after, perform a few simple pre-flight checks to be sure the aircraft is ready to fly:

1. Verify the ailerons, flaps, elevators and rudder are properly hinged and in good working order. Pinch a control surface between your thumb and forefinger and grasp the stabilizers with your other hand. Attempt to move the control surface back and forth perpendicular to the stabilizer (see Figure 1). Watch the hinges for movement. If you find any loose hinges, apply Foam-Cure or 15/30 minute Epoxy, being sure to stay away from the hinge pivot, to the loose side(s) of the hinge(s) and re-insert into its location. **DO NOT apply thin CA to pin hinges!** Ensure that the hinge moves freely.
2. Verify all control surfaces move freely when disconnected from the servo. If you have a tight or binding surfaces that use pin hinges, apply a small drop of light oil to each hinge pivot. Move the surface back and forth to work the oil into the hinge. Repeat as needed.
3. Verify that all hardware and other aircraft parts are properly secured, including those connections that require blue thread lock. This includes hardware and parts installed by the factory.
4. Verify your battery is fully charged and in good condition. Avoid using batteries with swollen cells, or batteries that do not charge back to their full capacity.
5. Verify that the CG is in the proper location and that the battery is secured in place.
6. Ensure the Aura is on and functioning properly. Power on your transmitter, followed by the aircraft. Ensure the Aura is calibrated properly and receiving a valid radio source (solid orange+solid green LEDs).
7. Verify transmitter stick inputs result in the proper control surface movements (reference page 20) and the Aura flight modes work properly.
8. Verify aircraft movement results in proper Aura sensor corrections (reference page 21).
9. Verify the motor and ESC function properly. Point the aircraft in a safe direction. Hold the airframe firmly, smoothly advance the throttle to full and back to idle. Listen and watch for any odd or unusual behavior for the motor or speed controller.

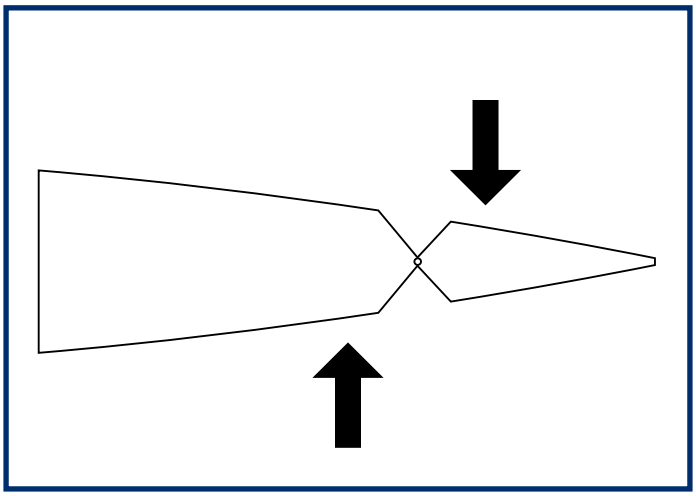


Figure 1 *- Test for hinge movement and loose hinges*

AMA SAFETY CODE

When flying your aircraft, we recommend following the guidelines set by the Academy of Model Aeronautics (AMA). You can find their safety handbooks as well as more information on the AMA at their website, located at the address below:

www.modelaircraft.org

FLEX AVIATOR 40E AURA OPTIONAL QUICK SET PROCEDURE

The Aura installed in your Flex Aviator 40e comes with the Quick Set feature. Quick Set allows the pilot to adjust options in the Aura without the use of a compGyro Gain Kill switch: A switch can be used to immediately kill the Gyro Gain in case of emergency such as the Aura becoming unmounted in the aircraft.

- Gyro Gain Kill switch: A switch can be used to immediately kill the Gyro Gain in case of emergency such as the Aura becoming unmounted in the aircraft.
- Crow Mode switch: A switch can be used to activate Crow Mode (sometimes called Butterfly) during any Flight Mode. Crow Mode simultaneously deflects the ailerons up and the flaps down to act as air brakes. The crow configuration is inversely proportional to throttle so that full crow deflection at 0% throttle reducing to zero crow deflection at 50% throttle .

To use both of these features, you will need a minimum 8 channel transmitter. If you wish to have a switchable Night LED setup, with crow, you will need a minimum 9 channel transmitter with the 9th channel enabled on your receiver.

Flex Aviator 40e Optional Feature Transmitter Setup

CH 7 (Aux 2) | Gyro Kill Switch (Optional) → Assign to 2-position switch

CH 8 (Aux 3) | Crow Switch (Optional) → Assign to 2-position switch

Flight Modes are as described in the table on page 12

Quick Set Procedure

Step 1 - Enter Quick Set Mode

1. Make sure all power is off on the Flex Aviator 40e
2. Remove the prop before making changes
3. Turn on your transmitter
4. Remove the Servo lead from Aura Port S2.
5. Install a bind plug in Aura Port S2.
6. Plug in the motor battery to power up the Flex Aviator 40e
7. After entering the Quick Set mode, the Orange LED will be off and the Green LED will be on **SOLID**. Initially the Blue LEDs will also be off.

Step 2 - Choose Option

After entering Quick Set mode as described above, you toggle the Gyro Gain Kill switch (CH7) on the transmitter to enable or disable this option.

8. If you want to activate the Gyro Gain Kill switch, toggle the CH7 switch on your transmitter .
   - If the Blue LED is **ON**, the Gyro Gain Kill switch is **ENABLED** .
   - If the Blue LED is **OFF**, the Gyro Gain Kill switch is **DISABLED** .
9. If you want to activate the Crow Model switch, toggle the CH7 switch on your transmitter .
   - If the Red LED is **ON**, the Crow Mode switch is **ENABLED** .
   - If the Red LED is **OFF**, the Crow Mode switch is **DISABLED** .

Step 3 - Saving your Selections

10. After setting the Gyro Gain Kill option as desired, remove the bind plug to save your settings. The Blue, Green, and Red LEDs will briefly turn on while the Aura is saving, the return to their previous state .
11. Completely power off the Flex Aviator 40e and Aura
12. Replace the Servo Lead in Aura Port S2
13. Power up and Fly with your updated Aura Settings!

Note: This process can be repeated as many times as desired to enable or disable the Gyro Gain Kill switch.

FLYING YOUR FLEX AVIATOR 40E

Selecting a Flying Site

Selecting a flying site is critical to a successful flight. Airplanes require a lot more room than other R/C products, therefore, a neighborhood or parking lot is less than ideal. A large open field with short grass and generous overfly area are the best candidates if no AMA field is available in your area. Know your overfly area - ensure that there are no houses, playgrounds, or other buildings that may be damaged if the airplane were to crash.

NOTICE

As a reminder, information on how to switch between profiles, enabling Take-off/Launch Assist mode and performing Quick Trims in both 3-Axis and 6-Axis modes can be found on page 13

Takeoff

Taxi or place the aircraft on the runway centerline, with the nose pointed into the wind. Select Flight Mode 1, then set throttle trim so that the motor spins at its lowest RPM without stopping. Smoothly advance the throttle to full while maintaining directional control with the rudder and slight back pressure on the elevator. The airplane should lift off smoothly before the throttle is fully open. Fly in Flight Mode 1 until the aircraft is fully trimmed (see special trimming instructions), and you are comfortable with its handling, then explore the other modes as desired.

Flying

Altitude is your friend on the first flight. Briskly climb to a safe altitude and trim the airplane out. The airplane should fly straight and level at 2/3 to 3/4 power with no hands on the transmitter. Try some basic maneuvers, and slowly progress into the airplane's flight envelope as you become more comfortable with the airplane's flight qualities and perfect your setup. Note: If at any time you experience unexpected control system inputs or oscillations, switch to Flight Mode 1 and reduce speed immediately, land and troubleshoot the issue.

Landing

Be mindful of your flight time and allow adequate battery reserve for a couple of go-arounds, if necessary, on the first few flights. Select Flight Mode 1 and slow the airplane and align with the runway, into the wind. The airplane should descend smoothly in this configuration with proper airspeed. Once you are close to the ground, gradually close the throttle fully and begin to smoothly apply up elevator as required to arrest descent and the airplane should gently touch down with a short roll out.

⚠ CAUTION

USE CAUTION WHEN FLYING YOUR FLEX AVIATOR 40E IN MODE 3 AT HIGH AIRSPEEDS. DOING SO WILL INDUCE CONTROL SURFACE OSCILLATIONS AND MAY CAUSE A CRASH.

AIRFRAME REPAIRS

The Flex Aviator 40e is molded from durable EPO foam and is repairable with most adhesives. Similar to building and repairing wood or composite airplanes, the correct glue for a given application is critical to the repair holding and not breaking again. For major repairs, such as a broken fuselage, epoxy is preferred because it allows time to correct any misalignment. For smaller repairs, such as a cracked control surface or small chunk of material missing from the airframe, regular CA is very effective. The use of odorless (foam safe) CA is not required and not recommended on EPO foam aircraft because it takes a longer period of time to cure than regular CA and the bond tends to be weaker.

NOTE: Avoid the use of CA accelerant in repairs. It can damage paint and will weaken the bond of the glue. If CA accelerant is used, be mindful of the locations of CA to prevent premature bonding of parts, or bonding a hand or clamp to the airframe.

If a part is damaged too badly to be repaired, please refer to the table on page 3 for a complete listing of spare airframe parts.

⚠ WARNING

Note: Do not use thread locker on any metal to plastic connection including the bolts holding the push rods to the servos or the control horns (they use lock nuts and will not back out)!

Using thread locker will weaken the plastic, void your warranty, and cause your airplane to crash!

⚠ NOTICE

If a crash is imminent, fully reduce the throttle to prevent further damage to the power system and reduce energy to lessen impact damage. Never allow the propeller to contact the ground under power, even idle.

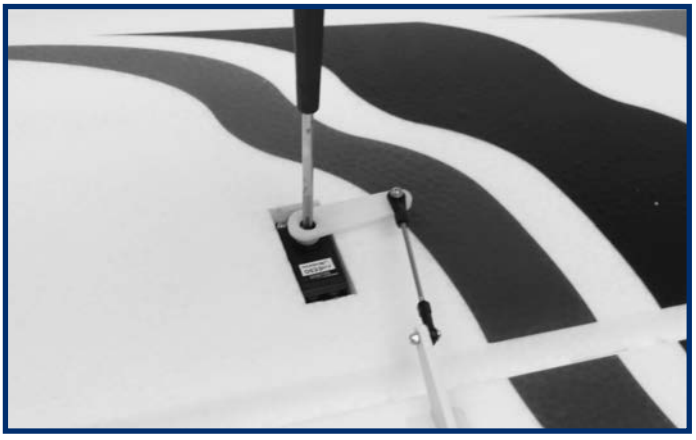
CRASH DAMAGE IS NOT COVERED UNDER ANY PRODUCT WARRANTY.

NOTE: Avoid keeping the airplane in direct sunlight when not flying. Excessive heat can damage the airplane's structure and UV damage can permanently discolor decals.

REPLACING SERVOS

Required Tools and Fasteners: #1 Phillips Screwdriver

1. Disconnect the servo from the Aura 8.
2. Unscrew the servo arm from the servo and remove the servo arm.
3. Unscrew the two servo mounting screws at each end of the servo and remove. Note that some servos may be connected to a servo extension. This extension should be left in the wing or fuselage when the servo is replaced.



AIRCRAFT TROUBLESHOOTING GUIDE

Should you encounter any abnormal situations with your Flex Aviator 40e, refer to the table below to determine the probable cause and a recommended solution for the issue. If the required solution does not rectify the problem, please contact product support at support@flexinnovations.com for further

⚠ NOTICE

Unless specifically required, ALWAYS troubleshoot the airplane with the propeller removed.

DISCREPANCY	PROBABLE CAUSE	RECOMMENDED SOLUTION
Motor non-responsive (no ESC initialization tones audible)	Throttle not at idle and/or throttle trim too high	Lower throttle stick and trim completely. If problem persists, ensure that the sub-trim and travel adjust are properly set in the radio's programming
	Motor disconnected from ESC	Ensure plugs are fully seated. Check battery and/or plugs for damage and replace any damaged components found - DO NOT ATTEMPT REPAIR
Motor non-responsive (throttle calibration tones received)	Throttle channel is reversed	Reverse throttle channel in radio programming
Motor turns in the wrong direction	The three motor wires are connected incorrectly to the ESC	Swap any TWO motor wires
Reduced flight time or aircraft underpowered	Battery not fully charged	Ensure battery is fully charged prior to installing in aircraft
	Propeller installed backwards	Install propeller so that the convex side faces forward (tractor configuration)
	Battery is too weak or damaged	Remove battery from service completely and replace with a different battery
	Ambient temperature is too cold	Ensure battery packs are adequately warm (70°F/21°C) before flight
	Battery capacity too small for intended use	Replace battery with one of proper capacity and discharge capacity
	ESC reaching preset LVC (low-voltage cutoff)	Recharge flight battery or reduce flight time
	Battery's discharge rating may be too small	Replace battery with one with higher 'C' rating
Excessive propeller noise and/or vibration	Damaged spinner and/or propeller, collet, or motor	Replace damaged components - DO NOT ATTEMPT REPAIR
	Propeller is not balanced	Balance or replace the propeller
	Prop nut is loose	Tighten prop nut with appropriate-sized wrench
	Spinner is not fully in place or tightened	Loosen the spinner bolt, adjust as required, retighten spinner bolt
	Propeller nut or propeller adapter threads not cut straight	Replace propeller nut or propeller shaft - DO NOT ATTEMPT REPAIR
Control surfaces nonresponsive	Airframe or control linkage system damage	Examine airframe for damage, repair as required; inspect control linkage system (servo, pushrod, control horn) for damaged components and replace as required
	Wire damaged or connector loose	Examine wires and connections, replace as necessary
	Transmitter bound incorrectly, incorrect active model memory, incorrect Aura data input configuration, incorrect Aura transmitter settings	Consult radio manual for proper binding and model selection instructions
	Battery voltage too low	Use volt meter to check battery; recharge or replace as necessary
	Battery disconnected from ESC	Check that the EC5 plugs are fully seated
	BEC (battery elimination circuit) damaged	Replace ESC - DO NOT ATTEMPT REPAIR
	Damaged Servo	Replace Servo - DO NOT ATTEMPT REPAIR
Failed control direction test	Incorrect Aura 8 or Transmitter Setting - DO NOT FLY!	Reference transmitter and receiver sections of this manual. Refer to control surface direction chart and transmitter setup; adjust appropriate settings as required. Check Flex Aviator 40e and Aura wiki web pages for additional information. If no solution is found, contact customer support at support@flexinnovations.com
Failed Sensor Direction Test	Aura 8 is not mounted in the proper orientation	Mount Aura in the proper orientation
	Aura 8 settings incorrect	Reference the transmitter and receiver sections of this manual. If no is solution is found, contact customer support at support@flexinnovations.com
Control surface oscillation	Exceeding maximum airspeed for configuration	Reduce airspeed
	Gains too high for aircraft/flight configuration	Refer to Aura 8 manual to decrease desired control surface gain
	Propeller/spinner not balanced	Balance or replace propeller and/or spinner
	Motor vibration	Inspect motor mounting bolts and re-tighten as necessary
	Loose Aura 8 mounting	Re-align and secure the Aura 8 to the aircraft
	Control linkage slop	Examine control system and repair or replace worn components
	Improper transmitter setup	Refer to Aura 8 manual to correctly configure transmitter
	Damaged propeller or spinner	Replace damaged component- DO NOT ATTEMPT REPAIR
	Improperly set master gain	Ensure master gain is set for proper gain value
Trim changes between flight modes	Trims are not properly zeroed	Readjust control linkage and re-center trims in radio
	Sub-trim is not properly zeroed	Remove sub-trim; adjust the servo arm or clevis to achieve proper geometry
	Transmitter is not properly calibrated (aileron/elevator/ rudder are not neutral with sticks centered; reference transmitter monitor	Calibrate transmitter (reference manufacturer's instructions, or return to manufacturer for calibration
Gyro doesn't respond to aircraft movements	Note: Gyro Kill is only available after enabling it using the quick set procedure, see page 23 for details on enabling gyro kill	
	Gyro kill switch not setup on transmitter	Follow the transmitter configuration guide, assign CH7/Aux2 to a two-position switch
	Gyro kill switch in gyro off position	Move the gyro kill switch to the on position

LIMITED WARRANTY

Warranty Coverage

Flex Innovations LLC and its authorized resellers ("Flex") warrant to the original purchaser that this product (the "Product") will be free from defects in materials and workmanship at the date of purchase.

Outside of Coverage

The warranty is not transferable and does not cover:

(a) Products with more than 45 days after the purchase date
(b) Damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation, or maintenance
(c) Damage to other components or assemblies associated with the use of the Product.
(d) Modification of or to any part of the Product
(e) Product not purchased from an authorized Flex Innovations dealer or distributor.
(f) Product that has been partially, or fully assembled
(g) Shipping damage
(h) Cosmetic damage
(i) Services or labor associated with the repair, use or assembly of the Product.

OTHER THAN THE EXPRESS WARRANTY ABOVE, FLEX MAKES NO OTHER WARRANTY REPRESENTATION, AND HEREBY DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NONINFRINGEMENT, 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

Flex's sole obligation and purchaser's sole and exclusive remedy shall be that Flex will, at its option, either (i) service, (ii) replace any part of the Product determined by Flex to be defective, or (iii) replace the Product determined by Flex to be defective. Flex reserves the right to inspect all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Flex. 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

FLEX SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF FLEX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Further, in no event shall the liability of Flex exceed the individual price of the Product on which liability is asserted. As Flex has no control over use, setup, assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage and/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 Florida law (without regard to conflict of law of principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. FLEX RESERVES THE RIGHT TO MODIFY THIS WARRANTY AT ANY TIME WITHOUT NOTICE.

Questions & Assistance

Contact Us By:

E-Mail – support@flexinnovations.com
Phone – 1 (866) 310-3539

Inspection or Services

If this Product needs to be inspected or serviced and is compliant in the region you live and use the Product in, please contact your regional Flex authorized reseller. Pack the Product securely using the original shipping carton. Please note that both the inner and outer boxes need to be included. The inner box is not designed to withstand the rigors of shipping without additional protection from the outer shipping carton. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Flex is not responsible for merchandise until it arrives and is accepted at our facility.

Warranty Requirements

For Warranty consideration, you must include your original sales receipt verifying the proof of purchase date. Provided any warranty conditions have been met, your Product or its defective parts will be replaced or serviced free of charge. Responsibility of shipping charges are as follows:

To Flex from customer, Customer is responsible.
To Customer from Flex, Flex is responsible.

Service or replacement decisions are at the sole discretion of Flex.

COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

CE Declaration of Conformity (In accordance with ISO/IEC 17050-1)

Product(s):	Flex Aviator 40e Super PNP
Item Number(s):	FPM5570A
	FPM5570B
	FPM5580A
	FPM5580B

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the EMC Directive 2004/108/EC.

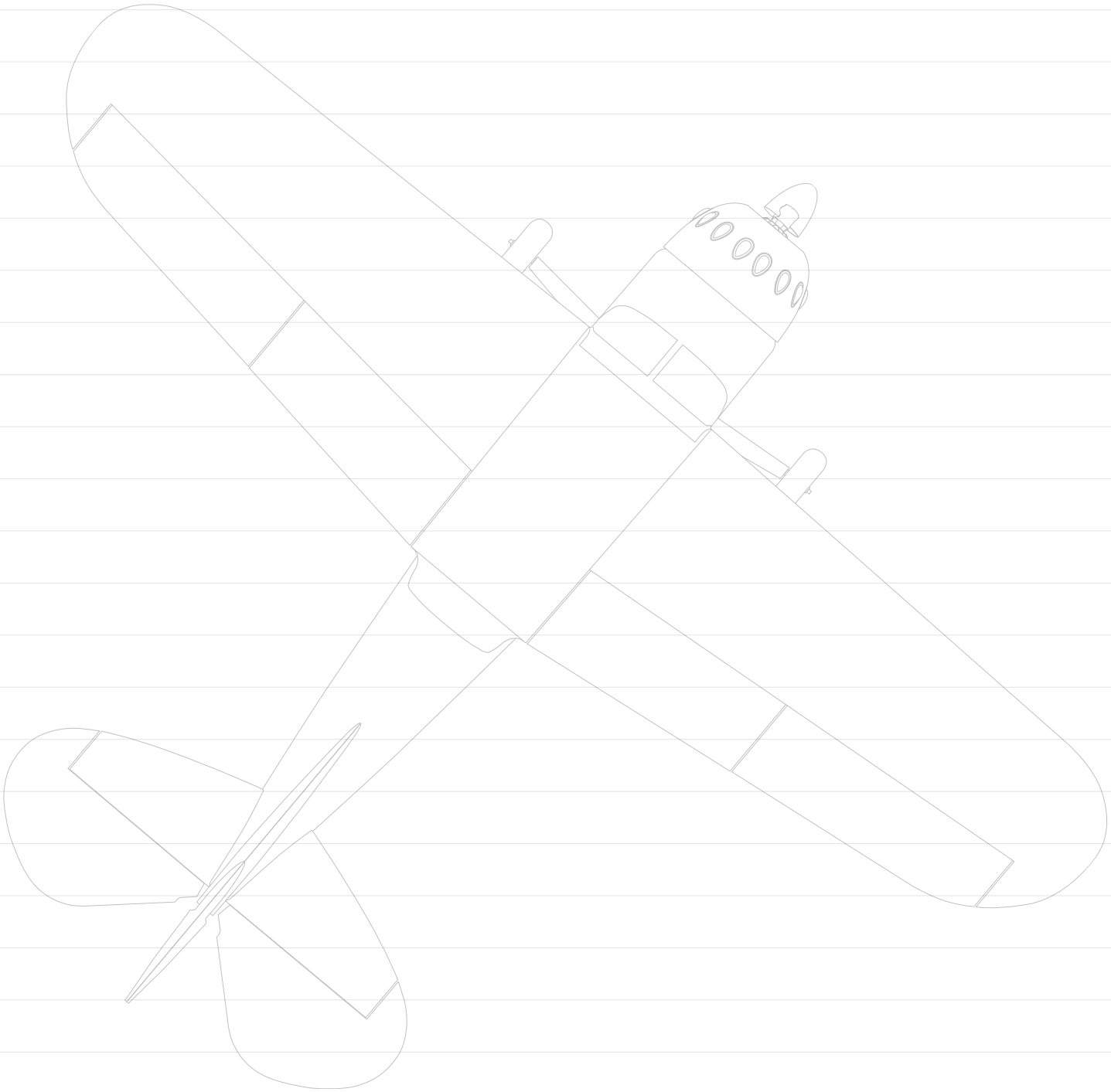
EN 55022: 2010+AC: 2011
EN 55024: 2010
EN 61000-3-2: 2006+A2:2009
EN 61000-3-3: 2013

EN 61000-6-3: 2007/A1:2011
EN 61000-6-1: 2007

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 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 to drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

Building and Flying Notes



Enjoy your Flex Innovations Flex Aviator 40e!

www.flexinnovations.com

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