

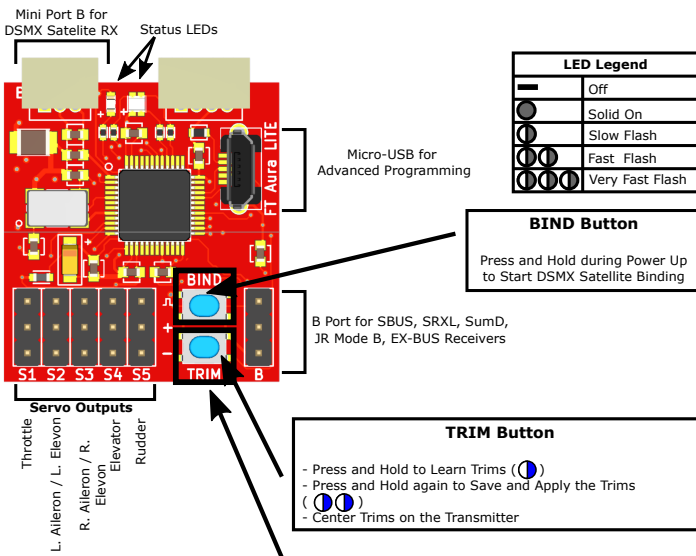
FP SERIES AIRPLANE / AURA 5 ADDENDUM

The Aura 5 Lite Advanced Flight Control System (AFCS) takes your FP Series airplane to the next level! By adding the Aura 5 to your airplane, your airplane will fly "bigger" with even more stability and precision while eliminating advanced transmitter setup, and have 3-Flight Modes expertly tuned by Jase "The Ace" Dussia, including Launch/Catch Flight Mode! The Aura 5 Lite can be purchased with the specific FP model config file preinstalled on the Aura 5 Lite directly from Flex Innovations.

Note, This addendum supercedes ALL radio settings mentioned in the FP Series airplane assembly manual if using the Aura 5 AFCS with your FP Series airplane.



Flex FP Aura 5



Basic Setup without Programming

- Make sure the Aura is Powered On with a Valid Signal from the Receiver (● ●)
- Press and Hold both the BIND and TRIM Buttons to enter Quick Change Mode (○ ○)
- After entering Quick Change Mode, you can:
 - Check Sensor Directions
 - Roll the Aircraft Wings RIGHT to confirm the Ailerons move in the direction to correct the Wings LEFT
 - Pitch the Aircraft Nose UP to confirm the Elevator moves in the direction to correct the Nose DOWN
 - Yaw the Aircraft Nose RIGHT to confirm the Rudder moves in the direction to correct the Nose LEFT
 - Change Servo Directions if needed
 - Hold the corresponding Transmitter Stick over for 6 seconds until the Servo reverses direction
- Press and Hold both the BIND and TRIM Buttons again to exit Quick Change Mode and Restart the Aura

For more complete setup information and resources on your FT Aura 5 Lite, please visit www.flexinnovations.com/product/aura-5-afcs/

LED Status

	Orange	Blue	Green	Red
Calibrating Sensor	—	●●●●	—	—
Searching for a Receiver (RX)	○ ○	○ ○	○ ○	○ ○
Powered On and Operating + Not Receiving RX Signal + Receiving Valid RX Signal + Receiving Invalid RX Signal + In Failsafe Condition + In Launch Assist Mode	● ● ● ●	—	● ● ● ●	—
Powered On While Moving (Bad Gyro Calibration) + Not Receiving RX Signal + Receiving Valid RX Signal + Receiving Invalid RX Signal + In Failsafe Condition	○ ○	—	● ●	—
Quick Trim Mode + Learning Trims + Trims Saved	—	● ●	—	—
Quick Change Mode + Direction Check and Servo Reversing	—	—	○ ○	—

Launch Assist

- Launch Assist will command a brisk climb while keeping the wings level
- To activate Launch Assist:
 - + HOLD full Left Aileron and full Up Elevator with Throttle Low and Rudder Centered for 3 seconds
- When Launch Assist is active:
 - + The Red LED will flash (○ ●)
 - + The Ailerons and Elevator will move to keep the wings level and command a climb
- If you are having trouble activating Launch Assist:
 - + Make sure your Trims are centered
 - + Keep the aircraft immobile for 5 seconds with the Throttle Low and Ail/Ele/Rud controls centered
- Launch Assist is deactivated and normal control resumes when the Aileron or Elevator is moved away from center after advancing the throttle

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AURA 5 CONFIG TOOL INSTALLATION

1. If you purchased your Aura 5 with a preinstalled config file, please proceed to Page 3.
2. To install the FP Aura 5 program to your Aura 5 Lite, or to make adjustments to the program you will need to use the Aura Config Tool.
3. Download the Aura Config Tool at <https://www.flexinnovations.com/aura-config-tool-install/>

Note, Windows or your browser may suggest the file is not safe and should be discarded. Override these suggestions and save the file to your PC.

4. Open/Run the setup.exe file to start the installation.

Note, Windows 7/8/10 Users - if you get a window stating "windows has protected your PC, click "More Info", then click "Run Anyway"



INSTALL THE AURA CONFIG TOOL

After confirming you meet the System Requirements listed below, download the Aura Config Tool will run and prompt you to Install the Aura USB Drivers. After installation, the Aura Config Tool will run and prompt you to Install the Aura USB Drivers.

SYSTEM REQUIREMENTS

- Windows XP (Service Pack 2+), Windows 7 (Service Pack 2+), Windows 10 (64-bit)
- 1024 x 768 Resolution or Higher
- USB Port
- Internet connection (only needed during install and Aura Firmware)
- Microsoft .NET framework 4.0 or higher

Note: Certain Virus and System Protection may try to block the Aura C, these features during installation.

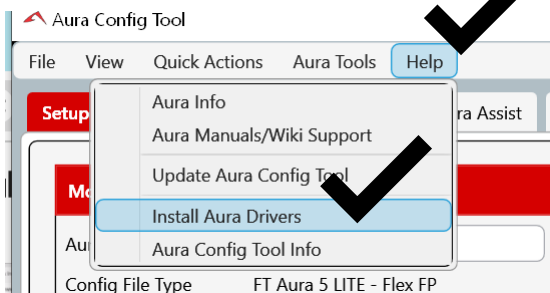
Note: You may need to know your administrative login and password.

[Download the Aura Config Tool PC Application](#)

AURA USB DRIVERS

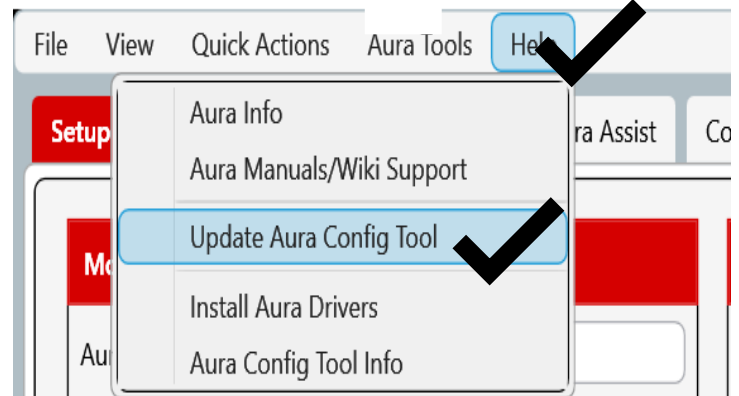
1. After completing the installation, The Aura Config Tool will open and prompt you to install the Aura USB Drivers. Follow the prompts to install the required USB Drivers.

Note, You can complete the Aura USB Driver Installation at any time. If not prompted when you start the Aura Config Tool, use the "Help" Tab and select "Install Aura Drivers". The USB Driver install will go through several steps including two separate install wizards and may take a couple minutes to complete.



UPDATE AURA CONFIG TOOL

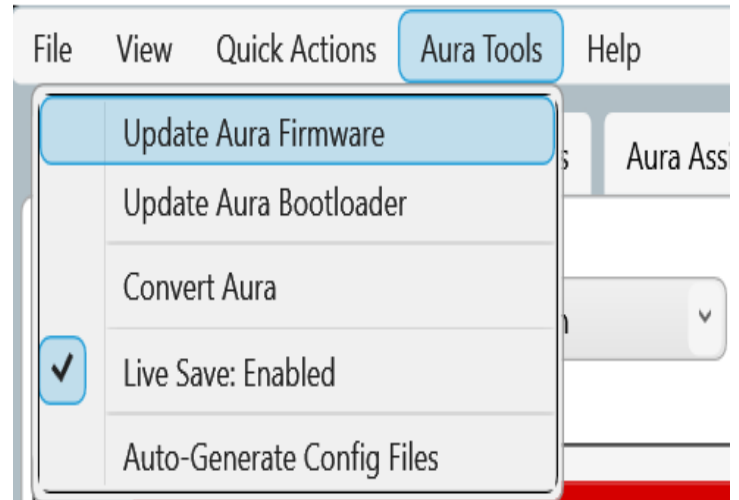
1. To ensure you have access to the latest Aura features and config files update the Aura Config Tool to the latest version.
2. Use the "Help" Tab and select "Update Aura Config Tool" and follow prompts.



UPDATE AURA FIRMWARE

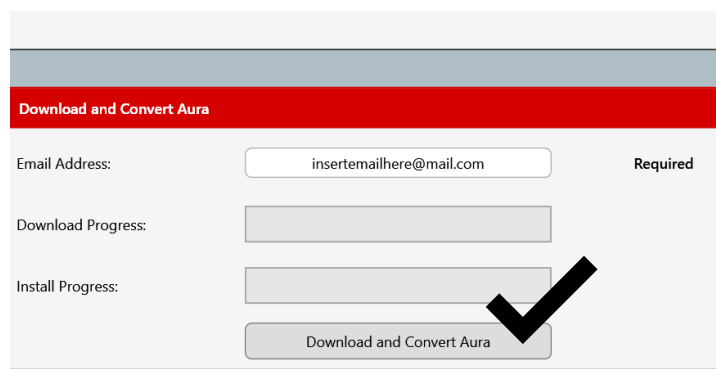
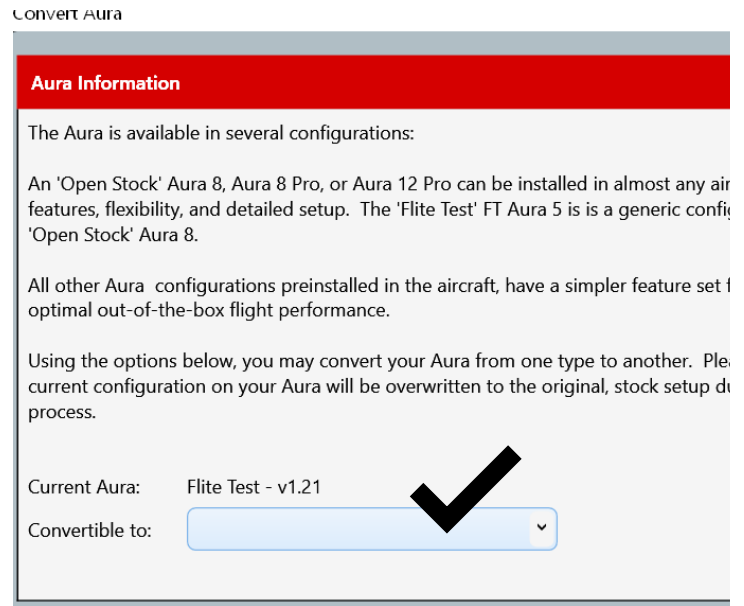
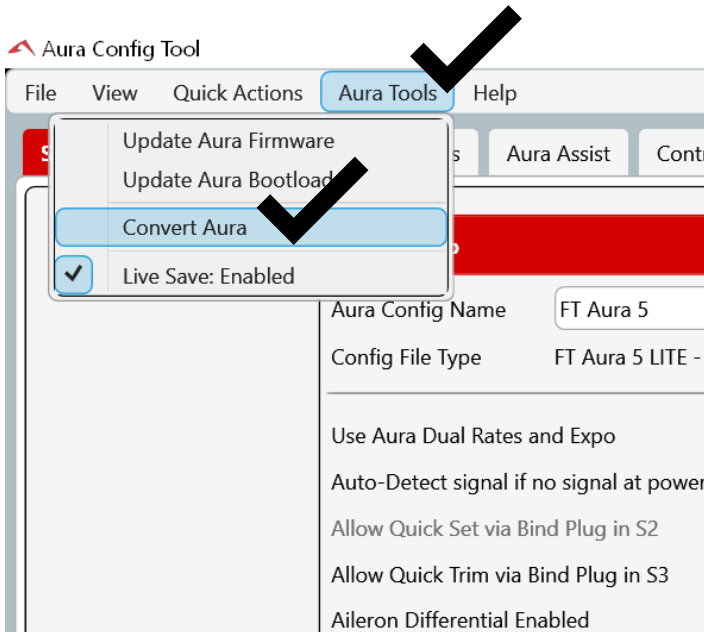
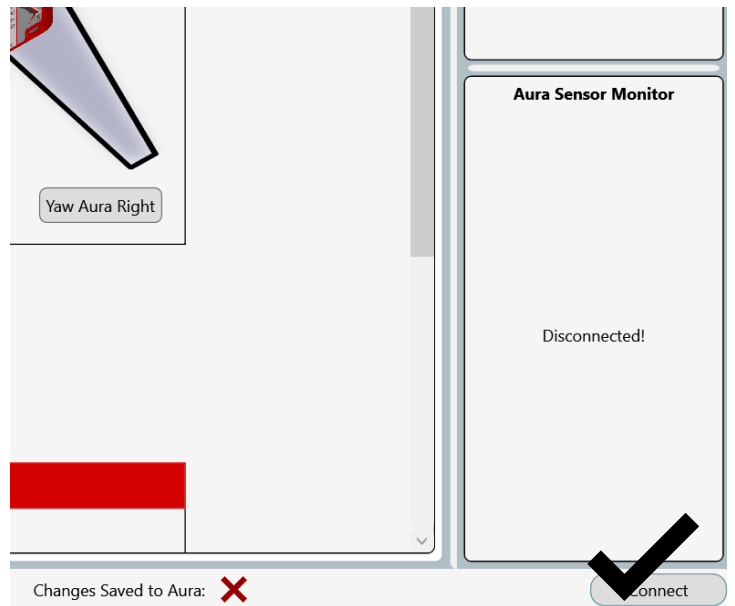
1. To ensure you have access to the latest Aura features update the Aura to the latest firmware.

Use the "Aura Tools" Tab and select "Update Aura Firmware" and follow prompts.



AURA 5 CONFIG FILE INSTALLATION

1. If you purchased your Aura 5 with a preinstalled config file, please proceed to Page 3.
2. If you need to install the specific FP model config file you can do so via the Aura Config Tool and the following steps:
3. Open the Aura Config Tool.
4. Connect the Aura 5 Lite to the device using the provided USB cable.
5. Click connect on the **Connect** button on the lower right corner of the Aura Config Tool.
6. Select "Convert Aura" from **Aura Tools** Tab.
7. Select the desired Config file.
8. Click Download and Convert Aura and follow any remaining prompts:



⚠ WARNING

DO NOT ATTEMPT RADIO SETUP WITH PROPELLER INSTALLED. INADVERTENT POWER UP COULD CAUSE DEATH OR SERIOUS INJURY.

TRANSMITTER SETUP

The Aura 5 Lite AFCS is designed to work seamlessly with all major transmitter and receiver brands, however, transmitter setup is significantly different than when setting up an FP Series airplane 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.
4. Should you want to make any adjustments to the Aura Config File, Please use the Aura Config tool, which is free to download, and can be used on any Windows-based PC or Windows Tablet.
5. Download at: www.flexinnovations.com/aura-config-tool-install/

TRANSMITTER CONFIGURATION GUIDE						
	Spektrum, Futaba, JR ¹ & Graupner		FrSky		Jeti	
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%	Ail/Ele/Rud	100%
	Thro/Gear	100%	Thro/Gear	84%	Thro/Gear	80%
Reversing²	None Required ²					
Sub Trim	Verify at zero, NOT ALLOWED					
Trim Levers	Verify at zero					
CH. 5 (Gear) - Flight Mode	Assigned to a 3-position switch					
CH. 7 (Aux 2) - Gyro On/Off	Assigned to a 2-position switch					
Timer³	Set to 4:00 for initial flights					

1. JR Customers should use JR XBUS Mode A, and follow the chart above. This is the preferred JR DMSS connection to Aura.
2. If you are using a Futaba transmitter, please note that some Futaba transmitters have the throttle set to reverse by default. We recommend that you leave the reversing set to the defaults and reverse it if needed after testing. NOTE, do all throttle testing with the prop removed!
3. This time is a safe starting point for most pilots. This aircraft can fly between 4-5 minutes (with 2S 600mAh LiPo), depending on an individual's flying style.

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

General Flex Wiki

wiki.flexinnovations.com/wiki/Aura/HitecSbusUse

wiki.flexinnovations.com

RECEIVER SETUP

Aura will auto-detect modern serial receiver connections. For use in the FP Series airplanes and Aura we recommend a lightweight serial receiver connection or a single Spektrum Remote Receiver. A few of our recommended receivers for the FP Series with Aura 5 are listed below, however this is not a complete list of compatible receivers, rather a short list to assist your receiver selection

Spektrum Remote Receiver - SPM9745

Spektrum SRXL2 - SPM4650C, SPM4651T

Futaba S.Bus - R2000SBM, R3104SB

FrSky S.Bus - TD MX, Access Archer Plus RS (requires soldering)

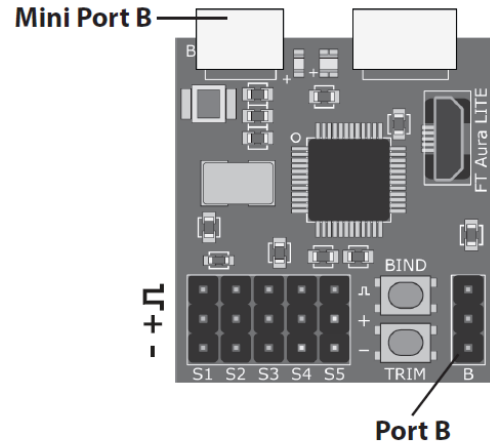
Jeti - R3 REX, R4I

RECEIVER INSTALLATION / SERVO CONNECTIONS

Aura will auto-detect modern digital receiver connection(s). Using a modern digital receiver connection gives the Aura access to precise data of each channel for additional gyro-enabled outputs, simplifies wiring, and allows for more advanced features. To connect a modern digital receiver connection, follow the steps on this page.

DEFAULT AURA SEVO CONNECTIONS

S1	Throttle (ESC/BEC)
S2	Aileron
S3	Elevator
S4	Rudder
S5	Open

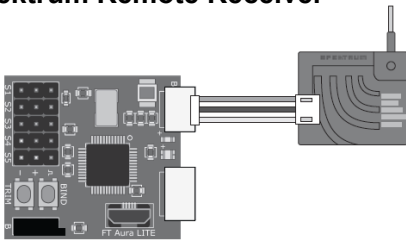


Connecting Your Receiver to Aura

Digital Receiver Connections

1. While Spektrum and Futaba usually output their digital data stream, it may be necessary for JR DMSS, Graupner HOTT, and Jeti users to program the transmitter/receiver to output the correct digital format listed on the previous page. Consult your transmitter and receiver manuals for further details.
2. Bind your transmitter and receiver per your manufacturer's instructions.
3. Connect the included male to male servo extension to the receiver's data port (ex: S.Bus, SRXL etc.) and connect to servo port 'B' on the face of the Aura. Refer to your radio manufacturer's instructions for specific information on appropriate serial port connections and system settings.
4. With the transmitter powered, power up the aircraft. Aura will search (sweeping LEDs) and lock onto the signal. You will then see solid orange (power and calibrated sensor) plus solid green (valid radio source), and have control of the model.

Spektrum Remote Receiver



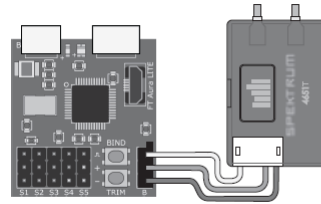
Binding a Remote Receiver

1. With your transmitter and receiver powered OFF, press and hold the bind button on the Aura 5 Lite.
2. Power on the Aura 5 Lite and your aircraft by connecting the flight battery to the ESC.
3. Release the bind button the Aura 5 Lite, and confirm that the remote receiver is rapidly flashing orange.
4. Follow your transmitter's manual for binding. This is typically done by holding the bind button on your transmitter while simultaneously powering it on.

Serial Receivers

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

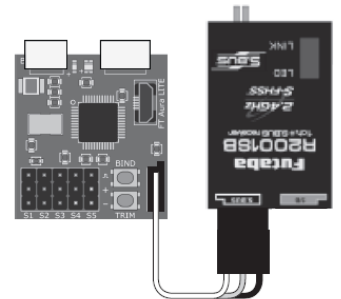
Spektrum Serial Receiver



Note: The Spektrum 4651T & 4650C receivers require the use of a different cable to connect to the 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)

Futaba Serial Receiver

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 with the FT Aura 5 Lite. Refer to your manufacturer's instructions for proper S.Bus use.



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.BUS 2 port, as it is not supported for use with the Aura 8. Refer to your manufacturer's instructions for proper S.Bus use.

Binding your Serial Receiver

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

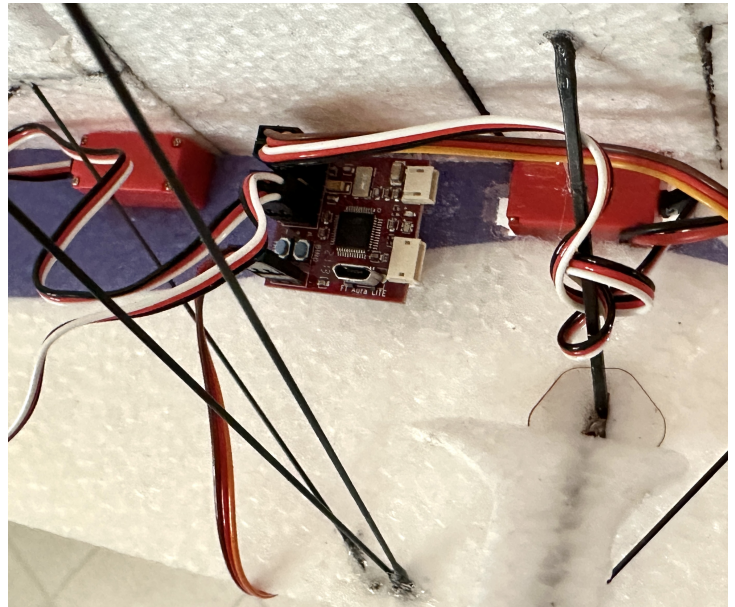
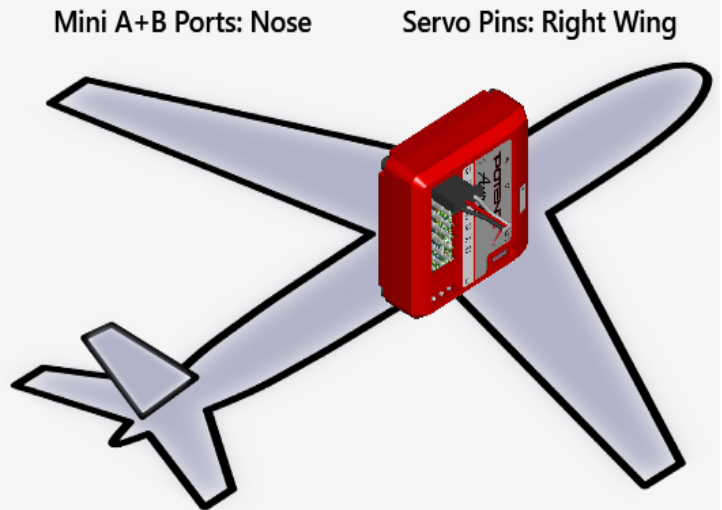
AURA 5 INSTALLATION

1. **Note, the Aura 5 MUST be mounted in the correct orientation, otherwise the gyro corrections will be incorrect.**
2. The correct orientation is servo pins closest the aft end of the airplane, and the Mini USB port mounted closest to the landing gear.
3. Mount the Aura 5 to the vertical fuselage below the horizontal fuselage. We recommend mounting near the Center Wing Spar as shown below:
4. Use Double-Sided tape provided with the Aura 5, or glue (building adhesive or hot glue are excellent options) to mount the Aura 5 to the FP airframe. **Note, do NOT use CA glue or "hook and loop" material to mount the Aura to the airframe.**

Note, we recommend mounting the receiver to the opposite side of vertical fuselage relative to the Aura. This is to maintain lateral CG.

Note, be mindful of carbon fiber bracing and USB port of Aura.

Aura Orientation



Description of Pre-Loaded Aura Flight Modes (FM)

Mode 1 (Launch/Catch Mode):

6-Axis Level Assist is activated to assist in Launching and Hand-catching the airplane. Airplane is set to hold a 65-degree pitch up with wings level with no transmitter input (hands off). This mode is only for launch and catching the airplane. General / Sport / XA flying is not possible in this mode.

Mode 2 (Sport):

Gyro gains are moderate and tuned for comfortable feel/best performance for general flight. All rates are set to low for general flight. Exponential is tuned for comfortable flight.

Mode 3 (XA):

Gyro gains are moderate and tuned for XA/3D flight. All rates are set to highest. Exponential is tuned for comfortable flight. Each of the modes has been tuned by Jase "The Ace" Dussia to offer a solid start. Because tastes in control feel are unique, if changes in rates and expo are needed, adjustments should be made through the Aura.

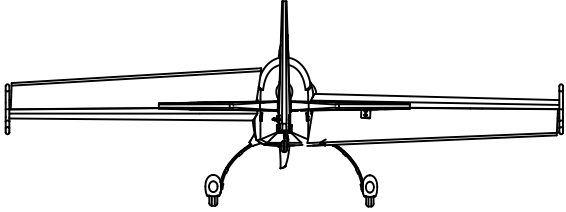
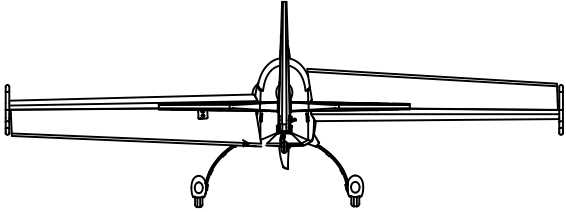
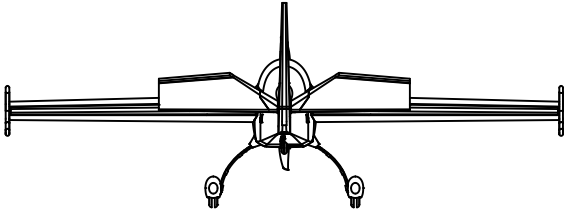
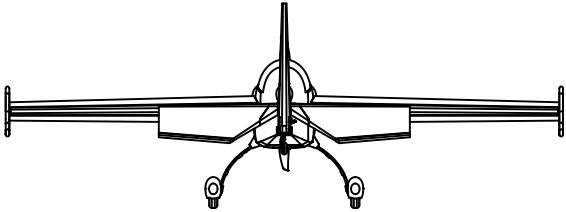
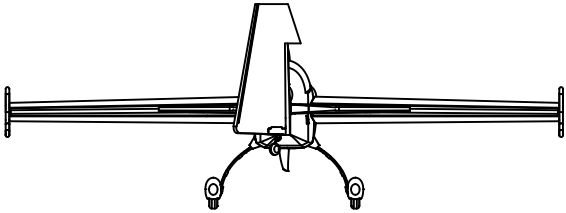
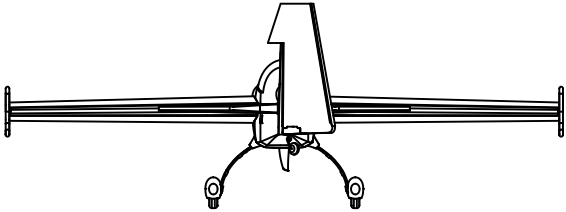
Changes in gain value can only be made through the Aura.

TRANSMITTER CONTROL DIRECTION TEST

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

Use Flight Mode 2 and Flight Mode 3 to test. If controls are reversed, DO NOT REVERSE CONTROLS IN THE TRANSMITTER OR THE AURA CONFIG TOOL. Email us at support@flexinnovations.com for corrective action. Note that BOTH the Transmitter Control Direction Test AND the Flight Controller Sensor Direction Test **MUST BOTH BE PASSED! IF ONE DOES NOT PASS, DO NOT FLY!**

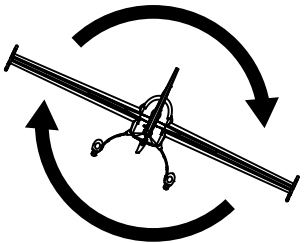
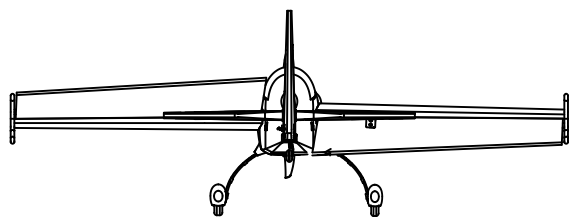
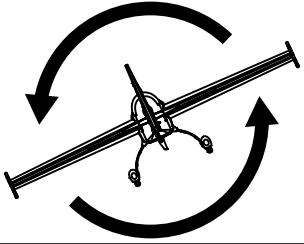
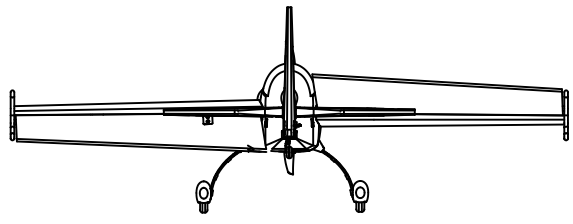
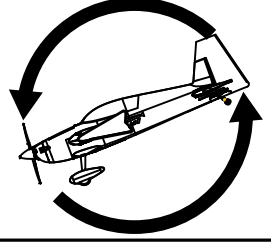
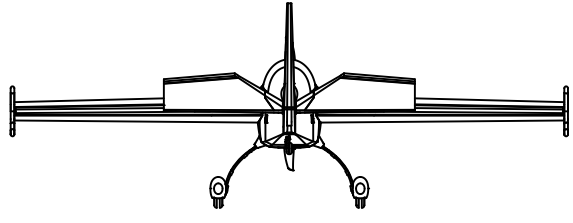
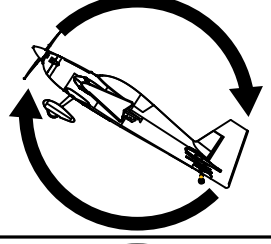
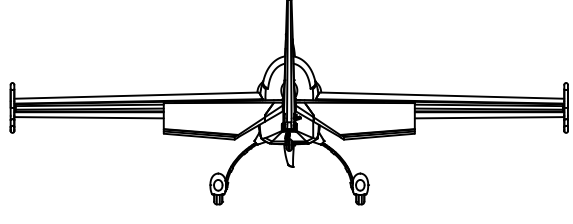
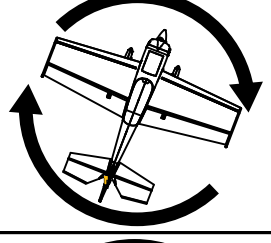
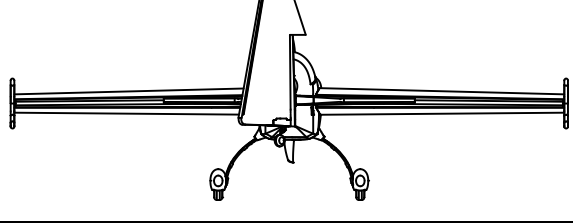
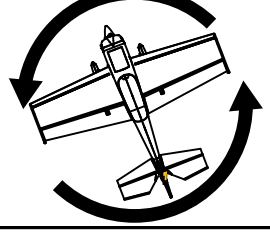
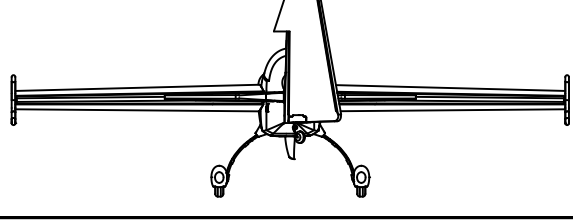
Note, movements have been exaggerated in the drawings below for clarity.

		Stick Movement	Proper Control Surface Deflection
AILERON	Stick Left		
	Stick Right		
ELEVATOR	Stick Aft		
	Stick Forward		
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 for the airplane's gyro system, **DO NOT FLY THE AIRPLANE**, and contact us by email at support@flexinnovations.com or by phone at (866) 310-3539.

The flight control system activates with RF broadcast. Perform these tests in Mode 3 (higher gain) for better visibility, and then again in Mode 2, (By default, Mode 1 is set to 6-axis level assist mode and should not be used for the Sensor Direction Test.) Control surface deflections are exaggerated in the drawings below for clarity. Please note that the control surfaces will move **ONLY** while the aircraft is **ROTATING**.

	Aircraft Movement	Proper Control Surface Deflection
AILERON		
		
ELEVATOR		
		
RUDDER		
		

FLYING YOUR FP SERIES AIRPLANE

WARNING!

Hand launching and catching an RC airplane carries inherent risks. By choosing to hand catch the airplane, you accept these risks and proceed at your own discretion. Flex Innovations is not liable for any injury, damage, or loss, including death, resulting from this activity.

Hand Launch

Select Flight Mode 1, hold the airplane from the top of the fuselage near the canopy. Set the airplane in a nose up attitude of approximately 65-degrees. Smoothly advance the throttle to 3/4 and release the airplane. The airplane will climb while keeping the wings level. Once you have both hands on the radio and are ready to take over full control of the airplane, select Flight Mode 2 until the aircraft is fully trimmed (see Aura Quick Trim instructions), and you are comfortable with it's 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. The airplane should fly straight and level at 1/4-1/2 power with no input from the sticks. 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, such as after gain adjustments, you experience unexpected control system inputs or oscillations, switch to Mode 2, and land and troubleshoot the issue. (Mode 2 has the lowest gains of all default flight modes with default programming)**

Landing

Be mindful of your flight time and allow adequate battery reserve for a couple of landing attempts, if necessary, on the first few flights. Your landing should be oriented into the wind and parallel to yourself. Select Flight Mode 2, Slow the airplane using 1/4-1/2 power for the majority of the decent. Once the airplane has slowed and is approximately at head height, select Flight Mode 1 Hover/Catch Mode. The airplane will begin maintaining a controlled harrier with approximately 65-degree nose high attitude. Use your throttle to maintain the airplane's altitude. Increasing throttle will increase altitude, and reducing throttle will lower altitude. Once the nose of the airplane has passed you while being mindful of the propeller carefully grab the airplane from the top of the fuselage near the canopy and immediately cut the throttle. **This Flight-Mode is NOT intended as a hands-off hover mode; rather, it is intended as a training aid for less experienced pilots to assist with "Launching and Catching" the airplane. The pilot is expected to make stick inputs as required to safely maintain control of the airplane.**

Trimming

The first several flights on your FP Airplane should be dedicated to trimming and setup. Fly the airplane at 1/2 power in Flight Mode 2 or Flight Mode 3 and trim for level flight. Land, adjust linkages and return the trim to zero, and fly again. Repeat until the airplane flies hands off, straight and level. Transmitter trim or sub-trim will cause trim shifts when different flight modes are selected. To eliminate this trim shift, you can mechanically trim the model, or you can complete Aura "Quick Trim".

Aura Quick Trim

The Aura 5 Lite features a Quick Trim Mode that eliminates the need for mechanical linkage adjustments during test flights. Aura will learn the trim values from your transmitter, and apply them to the control surfaces after power up when enabling quick trim mode.

NOTE: Quick Trim can also be used BEFORE flying to make small changes to center the control surfaces before flight.

NOTE: ENSURE AILERON/ELEVATOR/RUDDER TRANSMITTER SUB-TRIMS ARE ZERO BEFORE FLYING FOR QUICK TRIM PROCESS

NOTE: Quick Trim procedure may be repeated as needed for fine tuning, or if changesto the aircraft are made.

1. Fly the airplane in Flight Mode 2 or Flight Mode 3. Trim the aircraft with the transmitter and land. **DO NOT CHANGE FLIGHT MODES.**
2. Press and hold the trim button for 2-seconds, then release button to enter Quick Trim Mode. This is indicated by a slow blue flashing LED.
3. Press and hold the trim button for 2-seconds, then release button to save the trims. This is indicated by a fast flashing blue LED.
4. Center trims on transmitter.
5. Press and hold the trim button for 2-seconds, then release button again to restart the Aura with the new trims.

Notes