

The Aura Professional series is a giant leap forward in Aircraft Flight Control System technology. It is compatible with most radios systems on the market with connections via Digital Serial Data or PPM or PWM. The Aura Professional series is optimized for medium to large sized aircraft and features two isolated, high powered battery inputs with automatic switching capability. With the same great feel and features of our original Aura 8, the Aura Professional series offers more robust power connectors, 8 or 12 servo output channels, additional Receiver Diversity options such as Dual-S.Bus inputs, and even Digital Serial Output data for additional expansion.

The Aura Professional is programmable through our Aura Config Tool PC program that includes built-in templates for all types of airframes and flying styles. Multiple Flight Modes allow independent gain adjustments for each axis as needed. All dual rate, expo, servo travel, servo reversing, servo subtrim, and output types are adjustable inside the Aura through the Aura Config Tool. An assignable master gain that is OFF by default can be enabled and assigned to a proportional dial or slider in your transmitter.

By default, CH5/Gear is used to select the Flight Modes by a 3-position transmitter switch. This channel may also be changed in the app.

## AURA CONFIG TOOL - WINDOWS PC APPLICATION

Visit [wiki.flexinnovations.com/wiki/Aura](http://wiki.flexinnovations.com/wiki/Aura) and follow the links to download and install the free Aura Config Tool program. In the Config Tool, select **File -> New Aura Config File Wizard**, which provides step-by-step guidance to create a brand-new model configuration for the Aura Professional.

The Aura Config Tool has fly-out help that appears when you hover your mouse cursor over key words in the program. The **Expanded Online User Guide** has detailed instructions on this configuration process.

**NOTE:** To Connect the Aura Professional to the Aura Config Tool via USB cable, Aura's **Switch must be ON or Removed**. The Aura does not need to be powered with batteries to connect and communicate with the PC.

## 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

This product is not intended for use by children under 14 years without direct adult supervision.

### ! WARNING

This product is only intended for use with unmanned, hobby-grade, remote-controlled aircraft. Flex Innovations will not provide warranty service for damage related to, nor will it claim liability for any use of this product outside of the scope of its intended use.



BEFORE CONTINUING WITH THIS INSTRUCTION MANUAL OR INSTALLATION IN YOUR AIRCRAFT, PLEASE VISIT OUR WIKI SUPPORT SITE FOR THE LATEST PRODUCT UPDATES, FEATURE CHANGES, MANUAL ADDENDUMS AND FIRMWARE CHANGES FOR YOUR AURA PROFESSIONAL ADVANCED FLIGHT CONTROL SYSTEM.

[wiki.flexinnovations.com/wiki/Aura/Professional](http://wiki.flexinnovations.com/wiki/Aura/Professional)

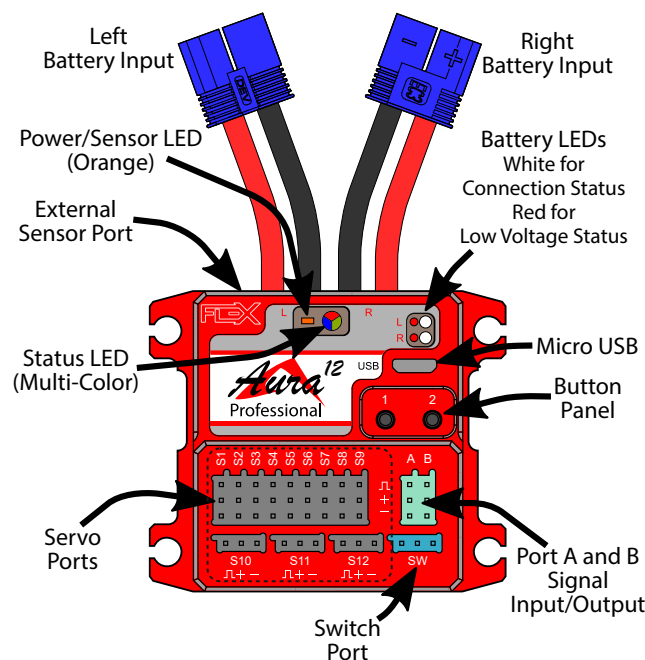
## ATTENTION

Read the ENTIRE instruction manual to become familiar with the features of this 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.

For advanced topics, there is a more in-depth manual available online.

Please visit [wiki.flexinnovations.com/aura](http://wiki.flexinnovations.com/aura) to view the **Expanded Online User Guide**.

The Aura Config Tool is required for programming the Aura Professional and found at the location shown above.



## AURA PROFESSIONAL AIRFRAME INSTALLATION

Mount the Aura Professional using the included grommets and screws. It is a good practice to remove the screws and put a small amount of CA glue into the holes to strengthen the screw interface. Bolts and Lock-Nuts can be used for high vibration environments if desired.

Please observe the following rules for properly mounting your Aura. Any deviation from these explicit conditions could cause improper function the device and may result in a crash.

- Insure that the mounting surface is solid and not susceptible to flexing or movement.
- Place a Velcro strap around the unit as an added layer of security.
- Mount the Aura in any convenient location in the fuselage.
- The Aura must be aligned with the axis of the aircraft. Use the Aura Config Tool to set the desired orientation.

**NOTE:** The Aura does **NOT** need to be mounted on the aircraft's center of gravity.

### ! WARNING

**DO NOT ATTEMPT RADIO OR AURA SETUP OR ADJUSTMENTS WITH PROPELLER INSTALLED OR POWER SYSTEM ENABLED. INADVERTENT POWER UP COULD CAUSE PERSONAL INJURY.**

## POWERING AURA PROFESSIONAL

Power your Aura 8 or 12 Professional by plugging two 5V to 9V DC power sources into the EC3 battery input connectors. Identical 7.4V Li-Po or 6.6V LiFe batteries are recommended. Make sure all of your servos and devices are capable of handling the voltage of your chosen power source.

The provided switch may optionally be installed in the "SW" port. Any switch that connects the "SW" port signal pin and ground pin can be used. With the switch removed, the unit will be switched ON

White LEDs in the upper right window indicate when the battery is providing power to the Aura. If one power source has a lower voltage than the other, the White LED will remain off until the batteries come into balance. The Red LEDs indicate when the batteries are below the programmable low voltage thresholds.

## TRANSMITTER SETUP

The Aura Professional defaults to 3 Flight Modes that are changed by your transmitter's Channel 5 (Gear). Assign Channel 5 (Gear) to a 3-position switch of your choice. For best results, start with a freshly reset (blank) transmitter model and make the changes per the chart below. Aura expects an aircraft type of 1 aileron, 1 elevator and 1 rudder from the transmitter. For more advanced models (such as those with flaps), see the *Expanded Online User Guide* in the Aura Wiki.

### TRANSMITTER CONFIGURATION GUIDE

ATV Setup	Aileron,Elevator,Rudder	125%*
	Throttle, CH5/Gear	100%*
Sub Trim	Verified neutral, not allowed	
Trim Levers	Verified neutral	
CH5 (Gear)	Assigned to a 3-position switch	
Reversing	All channels normal	

### NOTE

\*JR XBus Mode B users should set the throttle, aileron, elevator, rudder, and gear values to 88%

### WARNING

Exercise extreme caution when plugging in any lead that could potentially supply power, or short power buses. It is possible to 'reverse' or 'short' a power connection by even partially plugging in a connector. Examples (but not limited to):

- Connecting multiple batteries or power leads. Use switches, extensions, and Y harnesses with extreme care.
- Connecting PWM Cables. Install PWM cables with power removed from the system. Inspect carefully before powering the system.

**THE USER MUST PROVIDE AURA WITH A STABLE AND RELIABLE POWER SUPPLY. FAILURE TO DO SO COULD RESULT IN LOSS OF CONTROL OR CRASH.**

## CONNECTING A RECEIVER

The Aura Professional supports several connection methods. Supported signal formats include Serial Data (S,Bus, SRXL, etc), PPM stream, and PWM. In the case of Futaba S.Bus, it can accept up to two inputs allowing further receiver antenna diversity. See the diagrams that follow for examples of receiver connections.

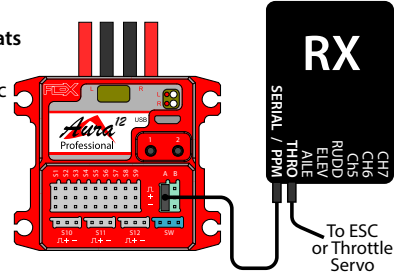
The full range of options (including dual serial input and serial output) can be found in the expanded online user guide. The Aura Config Tool will let you select your specific choice.

## Digital Serial Data or PPM Connection

### Supported Serial Formats

- Spektrum SRXL
- Futaba or FrSky or Hitec S.BUS
- Jeti UDI
- Graupner SUND
- JR DMSS Mode B

- PPM also Supported



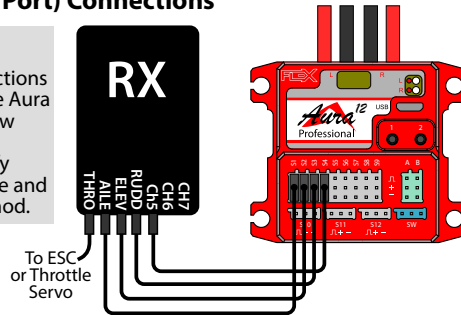
Insert one end of the included male to male extension into Port A or Port B on the Aura (Port A shown here). Connect the other end to your receiver's data port.

Refer to your radio manufacturer's instructions for specific information regarding configuring your system's Digital Serial Data (or PPM) communication settings for use with third party applications and hardware.

## PWM (Servo Port) Connections

### NOTE

For PWM Connections you must use the Aura Config tool's "New Aura Config File Wizard" to specify radio system type and PWM input method.



### NOTE

ESC/THROTTLE WILL CONNECT TO THE RECEIVER DIRECTLY.

RECEIVER OUT	AURA IN
Aileron	S1
Elevator	S2
Rudder	S3
CH5/Gear	S4

Use 4 male to male cables to connect the receiver to the Aura. All expected (typically 4) PWM input connections must be properly made before you will get control of the model (typically 4).

## BIND YOUR RECEIVER

The Aura Professional is not a receiver. Any Binding is done solely between the Receiver and the Transmitter.

Choose a receiver that is appropriate for your models size and type. Consult your radio manufacturer if you need assistance. Follow the instructions provided with your radio components and bind the receiver to your transmitter prior to configuring to the Aura Professional. Test your receiver function with a servo plugged into a receiver port.

## FLIGHT MODES

Flight Modes are an integral feature of the Aura. Each Flight Mode is assigned a specific set of dual rates, exponential values, and one or more Control Modes to suit a specific flying style or preference.

Flight Modes can be changed at any time during flight. Typically, the Flight Mode switch is assigned to the Channel 5/Gear channel on a 3-position switch (a 2-position switch may be used but the Aura will be limited to two (2) Flight Modes).

A common Flight Mode setup would be:

- Flight Mode 1: Low Rates with *Gyro Off*
- Flight Mode 2: Low Rates with *Low Gyro Gains*
- Flight Mode 3: High Rates with *High Gyro Gains*

## CONTROL MODES

Each Control Mode has specific gyro settings (such as gain, stick priority and more) and each Control Mode can be assigned to one or more flight modes depending on user preference. Aura defaults are listed below.

- Control Mode A: Manual Control (Gyro Off)
- Control Mode B: Low Gyro Gains
- Control Mode C: Medium Gyro Gains
- Control Mode D: High Gyro Gains

## ATTENTION

- The Aura Professional draws a small amount of electrical power even when switched OFF. Un-Plug the batteries when not in use for more than several hours.
- The receiver(s) will receive power from the Aura Professional via the A and/or B Port (or servo ports when using PWM) when the Aura power is ON. Be very careful to make sure the polarity of all connectors is correct.
- Do not use any type of BEC (Battery Eliminator Circuit) with the Aura Professionals. If a chosen ESC includes a BEC, disable it by removing the "+" pin from the connector and taping it back. Connect only the "-" and signal pins to the Aura. Power the Aura through the dual input power leads.

### TRANSMITTER COMMAND TEST

Refer to the chart below to determine the proper control surface directions when moving your transmitter sticks. If controls are reversed, change the *Servo Direction* under the *Servo Ports* tab using the *Aura Config Tool*.

DO NOT REVERSE CONTROLS IN THE TRANSMITTER.

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!

	Stick Movement	Proper Control Surface Deflection
AILERON	Stick Left	
	Stick Right	
ELEVATOR	Stick Aft	
	Stick Forward	
RUDDER	Stick Left	
	Stick Right	

### SENSOR TEST

The Aura outputs activate with a valid receiver signal. Perform these tests in the Flight Mode with the highest gain for best visibility. Repeat these tests in all gyro-enabled Flight Modes.

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.

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.

	Aircraft Movement	Proper Control Surface Deflection
AILERON		
ELEVATOR		
RUDDER		

### FAILSAFE AND CHECKS

#### ! WARNING

Perform a failsafe check before first flight and after making changes to your transmitter or the connection between your receiver and Aura.

Make your power plant inoperable. Make sure Fuel powered engines are OFF. Remove the propeller from electric models.

- If you are using a PWM receiver, during a failsafe event, if the input pulses are lost, the Aura will set the its ports will hold last position and you will see a Blue LED in the Aura's status window. The throttle is driven by your receiver
- If you used a PPM receiver, during a failsafe event, if the input pulses are lost, the Aura will set the throttle to the throttle value learned in the bind process. other channels will hold last position and you will see a Blue LED in the Aura's status window.
- If you use a serial linked receiver Aura will use any failsafe values that you have setup between your transmitter and receiver (In some cases, the Green Aura LED may remain on as Aura is getting valid failsafe positions from the receiver).

Remember, in all cases, if your receiver has a working throttle port, USE IT. Your throttle servo will be driven directly from your radio transmitter/receiver.

Warning: Some Spektrum SRXL receivers do NOT send a proper failsafe throttle position out in their SRXL serial data. Use the Spektrum receiver's throttle port.

### REPLACEMENT AND OPTION PARTS LISTING

FPZAURA08PRO	Aura 8 Professional Flight Control System
FPZAURA12PRO	Aura 12 Professional Flight Control System
FPZAU01	3pc Male to Male Servo/ Serial Bus Cable
FPZAU02	Micro USB Cable
FPZAU03	Aura Professional Remote Sensor
FPZAU04	Aura Professional Power Switch
FPZAU05	Aura Professional Screw and Grommet Set



## LIMITED WARRANTY

**Warranty Coverage** - Flex Innovations, Inc. and its authorized resellers ("Flex") warrant to the original purchaser that the product purchased (the "Product") it will be free from defects in materials and workmanship at the date of purchase.

**Outside of Coverage** - This warranty is not transferable and does not cover: (i) Products with more than 45 days after purchased date; (ii) Damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance; (iii) Modification of or to any part of the Product; (iv) Product not compliant with applicable technical regulations; (v) Shipping damage; (vi) Cosmetic damage.

**OTHER THAN THE EXPRESS WARRANTY ABOVE, FLEX MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND 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 Solution** - Flex's sole obligation and purchaser's sole and exclusive remedy shall be that Flex will, at its option, either (i) service, or (ii) replace, any Product determined by Flex to be defective. Flex reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of 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 PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF 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 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 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 PRIOR NOTICE.**

**Questions Assistance** - For customer support in your region, visit: <http://www.flexinnovations.com/articles.asp?ID=269>

**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 a shipping carton. Please note that original boxes needs to be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as 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 warranty conditions have been met, your Product will be replaced free of charge. Shipping charges are as follow: to Flex by customer, Flex out it is by Flex. Service or replacement decisions are at the sole discretion of Flex.

## COMPLIANCE INFORMATION FOR THE EUROPEAN UNION



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

Product(s): Aura 8 Professional  
 Aura 12 Professional  
 Item Number(s): FPZAURA08PRO  
 FPZAURA12PRO

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 55024	EN 61000-4-3
EN 55022	EN 55022/CISPR 22



### 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 this product.

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For information on flying responsibly, please visit this site:  
<http://knowbeforeyoufly.org/>

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