Aura 8 Advanced Flight Control System

FPZAURA08 | User Guide

For more in depth information, please visit: www.flexinnovations.com/aura

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.

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.

Please visit www.flexinnovations.com/aura8 to view the full product manual and the PC programming app, which is required to realize complete, advanced programming capability for the Aura 8.

⚠ WARNING

AGES 14+

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.

The Aura 8 advanced flight control system is a giant leap forward in aircraft flight control system technology. Compatible with virtually every receiver on the market today via PWM connections, the Aura features special configurations for DSM systems via remote receiver connection(s) or SRXL, and serial data connection for Futaba S.Bus, Graupner HOTT, and JR XBus systems. Certain receivers that stream a PPM stream on one wire are also supported.

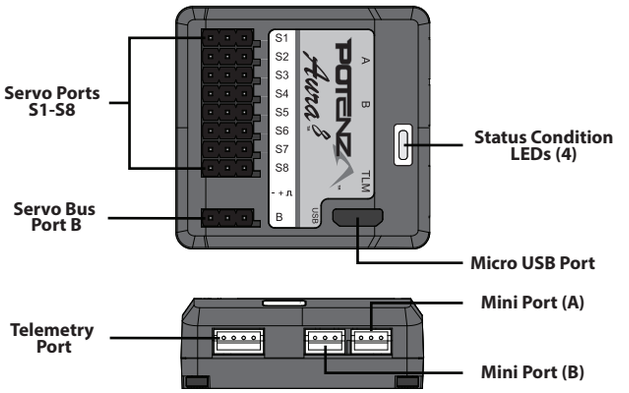
The Aura is programmable through a free PC application and every axis has independent gain adjustment for each flight mode. All dual rate, expo, servo travel, servo reversing, servo subtrim, and mode programs are adjusted inside the Aura through the PC application. An assignable master gain that is **OFF** by default can be enabled by the Aura application. If desired, assign it in your transmitter to CH8/AUX3 on a proportional dial or slider.

By default CH5/Gear is used to select the 3 flight modes by 3 position transmitter switch. This channel may also be changed in the app.

AURA 8 FEATURES

- Automatic detection of connected radio system
- Works conveniently with all major radio systems
- Accepts signals from DSM Remote Receiver(s), Futaba S.Bus, Graupner Hott, JR XBus, PPM stream, or any brand of Rx via male/male servo leads
- USB port allows loading model configurations, user programming, and firmware updates (cable included)
- 3+ flight modes allow precise or aggressive settings to be selected in flight
- Powerful 32-bit processor and 6 axis sensor for future updates and re-use

UNIT LAYOUT



RECEIVER BINDING

Except in the case of DSM2/DSMX remote receiver connections, the receiver should be bound prior to connecting to the Aura. Follow the instructions provided with your receiver. For DSM2/DSMX remote receiver connections:

1. A single remote receiver must always be connected to Mini Port 'A'. An additional remote receiver (optional, of matching type) may be plugged into Mini Port 'B'.
2. Insert a bind plug(s) in Port S8 on the Aura for DSMX remote receiver(s) OR into Ports S1 and S8 for DSM2 remote receivers.
3. Power the Aura with a 4.0VDC-10.0VDC power source. The LED on the remote receiver(s) will begin to blink rapidly indicating that the receiver is in bind mode.
4. Put the transmitter in bind mode as described in the instructions. Binding is complete when the receiver LED is solid. Remove and store bind plug(s) to complete the process.

⚠ WARNING

DO NOT ATTEMPT RADIO SETUP WITH PROPELLER INSTALLED. INADVERTENT POWER UP COULD CAUSE PERSONAL INJURY.

TRANSMITTER SETUP

The Aura 8 defaults to 3 flight modes that are changed via transmitter CH5/Gear which should be assigned to a 3-position switch of your choice.

TRANSMITTER CONFIGURATION GUIDE		
ATV Setup	Aileron/Elevator/Rudder	125%*
	Throttle, CH5/Gear	100%*
Sub Trim	Verified neutral, TX sub trim not allowed	
Trim Levers	Verified neutral	
CH 5 (Gear)	Assigned to a 3-position switch	
Reversing	All channels normal	

NOTE

For best results with all other non-JR brand transmitters, ATV values are expected to be between 90% and 140% with 125% being ideal.

***JR XBus Mode B users should set the throttle, aileron, elevator, rudder, & gear (CH5) values to 88%**

FLIGHT MODES

Flight modes are an integral feature of the Aura 8. Each flight mode can be programmed with a specific set of dual rates, exponential, and control modes to suit a specific type of flying style or preference. Flight modes can be changed at any time during flight. Typically, the flight mode switch is assigned to the CH5/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

Control modes define how/if the Aura sensors affect the servo outputs. Each control mode has specific settings such as gain, stick priority, gain scaling and each control mode can be assigned one or more flight modes depending on the desired flying style or preference.

A common control mode setup would be:

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

AURA 8 AIRFRAME INSTALLATION

Mount the Aura 8 to the airframe using the included double-sided foam tape. 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.

1. Throughly clean the area to which the Aura will be mounted. Any surface dirt, dust, grease, or oil will severely marginalize the foam tape's strength.
2. Ensure that the mounting surface is solid and not suceptible to flex or movement.
3. If installing in a high-performance airplane (larger than a typical park flyer), place a Velcro strap around the unit to prevent it from becoming dislodged during high-energy maneuvering.
4. The Aura may be installed in any convenient location in the fuselage, noting:
   - The unit may be mounted upright or inverted as required in your installation.
   - The unit may be mounted in the longitudinal or lateral axis in any orthogonal orientation. Use the Aura app to properly configure the orientation.

CONNECTING A RECEIVER

The Aura 8 supports three separate connection methods - direct connection of up to (2) DSM2/DSMX remote receivers; data connection for Futaba S.Bus, JR XBus (Mode B), Graupner HOTT, DSM SRXL, and certain PPM streams; and traditional PWM connections. Follow the diagrams below to appropriately connect the Aura to a receiver of your choice. Note that these connections are basic representations, and that the app provides much more flexibility in the types of setups possible with the AURA.

⚠ 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):

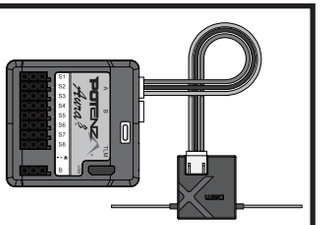
- **Connecting multiple batteries or power leads. Use switches, extensions, and Y harnesses with extreme care.**
- **Connecting PWM Cables. Install PWM cables with power removed from the system. Inspect carefully before powering the system.**

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

DSM Remote Receiver(s) Connection

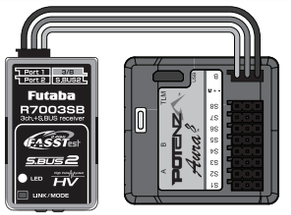
Connect up to two (2) remote DSM2/DSMX receivers to Mini Ports A and B on the front side of the unit. If only one (1) remote receiver is being used, it MUST be plugged in to Port 'A'

Attach the remote antenna securely to the fuselage using hook-and-loop tape or double sided foam tape.



Servo Bus Port B Data Connection

Insert the included male to male extension into Port 'B' on the face of the Aura and connect to your receiver's data port:
Futaba S.Bus - S.Bus port
JR XBus (Mode B) - XBus port
Graupner SumD of 8 - Port 8 (typical)
DSM via SRXL - SRXL Port
Certain PPM Streaming Recievers

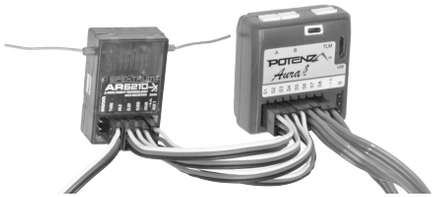


Refer to your radio manufacturer's instructions for specific information regarding configuring your system's serial bus communication settings for use with third party applications and hardware.

Traditional PWM Connection (Typical Connections)

NOTE

The stock Aura 8 (not pre-installed in any airframe) will not auto-detect PWM connections. Please use the Applications new model wizard to configure for PWM.



Lead to ESC/BEC

Leads to flight control servos

NOTE

ESC/THROTTLE WILL CONNECT TO THE RECEIVER DIRECTLY. NO CONNECTION FROM THE AURA TO RECEIVER WILL BE MADE FOR THE ESC.

CONNECTIONS IN		CONNECTIONS OUT	
RECEIVER	**AURA 8**	**AURA 8**	**CONTROL SURFACE**
Aileron	S1	S5	Left Aileron
Elevator	S2	S6	Right Aileron
Rudder	S3	S7	Elevator
CH5/Gear	S4	S8	Rudder

AURA 8 SOFTWARE CONFIGURATION- PC PROGRAM APP

For advanced users with complex airplanes, visit **http://www.flexinnovations.com/aura** and follow the links to download the free Aura PC programming app. Select the 'New' model wizard, which provides step-by-step guidance to create a brand new model program for the Aura 8. Basic installations and setups (non-PWM) can be accomplished following the "quick setup" instructions without the use of a PC.

REPLACEMENT PARTS LISTING

FPZAURA08	Aura 8 Flight Contol System (open stock)
FPZAU01	3pc Male to Male Servo/ Serial Bus Cable
FPZAU02	Micro USB Cable

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/index.php/reseller-sub 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

CE **Declaration of Conformity** (In accordance with ISO/IEC 17050-1)
Product(s): Aura 8 Advanced Flight Control System
Item Number(s): FPZAURA8

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 55022
EN 61000-4-3
EN 61000-4-3
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 the product.

KNOW BEFORE YOU FLY

Know Before You Fly is an education campaign founded by the Association for Unmanned Vehicle Systems International (AUVSI), the Academy of Model Aeronautics (AMA), and the Small UAV Coalition in partnership with the Federal Aviation Administration (FAA) to educate prospective users about the safe and responsible operation of unmanned aircraft systems (UAS). Please observe the following guidelines when operating your aircraft.

- Follow community-based safety guidelines, as developed by organizations such as the Academy of Model Aeronautics (AMA).
- Fly no higher than 400 feet and remain below any surrounding obstacles when possible.
- Keep your sUAS in eyesight at all times, and use an observer to assist if needed.
- Remain well clear of and do not interfere with manned aircraft operations, and you must see and avoid other aircraft and obstacles at all times.
- Do not intentionally fly over unprotected persons or moving vehicles, and remain at least 25 feet away from individuals and vulnerable property.
- Contact the airport or control tower before flying within five miles of an airport.
- Do not fly in adverse weather conditions such as in high winds or reduced visibility.
- Do not fly under the influence of alcohol or drugs.
- Ensure the operating environment is safe and that the operator is competent and proficient in the operation of the sUAS.
- Do not fly near or over sensitive infrastructure or property such as power stations, heavily traveled roadways, correctional/water treament/government facilities, etc.
- Check and follow all local laws and ordinances before flying over private property.
- Do not conduct surveillance or photograph persons in areas where there is an expectation of privacy without the individual's permission (see AMA's privacy policy).
- For more safety information, please download the Know Before You Fly brochure at www.knowbeforeyoufly.org.

FLEX INNOVATIONS™

© 2015 Flex Innovations, Inc.
Premier Aircraft™, Potenza™, and Top Value RC™ are trademarks or registered trademarks of Flex Innovations, Inc.
Android is a trademark of Google Inc. iPhone® is a trademark of Apple Inc registered in the US and other countries.
DSM®, DSM2™, and DSMX™ are trademarks of Horizon Hobby, Inc.
Futaba is a registered trademark of Futaba Denshi Kogyo Kabushiki Kaisha Corporation of Japan.
HoTT is a registered trademark of SJ, Inc.

Created 7/2015