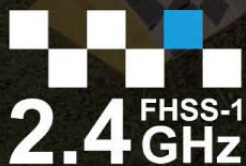


90406

DIGITAL PROPORTIONAL SYSTEM for AIRCRAFT and HELICOPTERS



OPERATING MANUAL

Spread Spectrum
Technology By **SANWA**

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PACKAGING

The packaging of your Airtronics 90406 2.4GHz FHSS-1 radio control system has been specially designed for the safe transportation and storage of the radio control system's components. **After unpacking your radio control system, do not discard the packaging materials.** Save the packaging materials for future use if you ever need to send your radio control system to us for service, or to store your radio control system if you don't plan on using it for an extended period of time.

INTRODUCTION


We appreciate your purchase of the Airtronics 90406 2.4GHz FHSS-1 radio control system. This Operating Manual is intended to acquaint you with the many unique features of your new radio control system. In designing the 90406 2.4GHz FHSS-1 radio control system, our engineers listened to input from our test-pilots and feedback from our users to design a radio control system that will allow you to extract the maximum performance from your model, while at the same time making the programming process as easy as possible to accomplish.

Because the 90406 2.4GHz FHSS-1 radio control system is advanced and is packed with many features for aircraft and helicopter models, this Operating Manual is quite long. Don't be intimidated! This Operating Manual is laid out in such a way as to make it as easy as possible to find, understand, and learn to use the features you require. Please read this Operating Manual carefully so that you may obtain maximum success and enjoyment from the operation of your new radio control system. This radio control system has been designed for the utmost in comfort and precise control of your aircraft and helicopter models. We wish you the best of success and fun with your new purchase.

 An index is provided in the back of this Operating Manual to make it easy to find the information that you're looking for. Keep this Operating Manual in a safe place with your 90406 transmitter so that you can use it as a reference book for any questions you might have regarding your radio control system.

ADDITIONAL RECEIVER INFORMATION

Additional Airtronics 2.4GHz FHSS-1 aircraft receivers can be purchased and paired with the 90406 transmitter through the Binding procedure. For more information about the current receivers available, please visit your local Airtronics dealer or our website at <http://www.airtronics.net>.

 Due to differences in the implementation of 2.4GHz technology among different manufacturers, only Airtronics brand 2.4GHz FHSS-1 aircraft receivers are compatible with your radio control system.

TRANSMITTER SIGNAL RANGE

This is a high-output full-range radio control system that should well exceed the range needed for any model. For safety, the user should perform a range check at the area of operation to ensure that the radio control system has complete control of the model at the farthest reaches of the operational area. A range check can be accomplished using Low-Power Mode. For more information, see page 19.

FCC COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the operating instructions, may cause harmful interference to radio communications, however, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference, and....
- 2) This device must accept any interference received, including interference that may cause undesired operation.

WARNING: Changes or modifications made to this equipment not expressly approved by Airtronics may void the FCC authorization to operate this equipment.


RF Exposure Statement

The 90406 transmitter has been tested and meets the FCC RF exposure guidelines when used with the Airtronics accessories supplied or designated for this product, and provided at least 20cm separation between the antenna the user's body is maintained. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

SAFETY AND USAGE PRECAUTIONS

GENERAL SAFETY

- Be certain to read this Operating Manual in its entirety.
- 'Safety First' for yourself, for others, and for your equipment.
- Observe all the rules of the flying site or anywhere you operate your radio control equipment.
- If at any time during the operation of your model should you feel or observe erratic operation or abnormality, end your operation as quickly and safely as possible. DO NOT operate your model again until you are certain the problem has been corrected. TAKE NO CHANCES.
- Your model can cause serious damage or injury, so please use caution and courtesy at all times.
- Do not expose the radio control system to water or excessive moisture.
- Please waterproof the receiver and servos by placing them in a water-tight radio box when operating model boats.
- If you have little to no experience operating models, we strongly recommend you seek the assistance of experienced modelers or your local hobby shop for guidance.
- The low voltage alarm will sound when the transmitter battery voltage drops to 6.7 volts. If this occurs, stop using the transmitter as soon as possible, then replace or recharge the transmitter batteries.

 This radio control system operates on the 2.4GHz frequency band. The 2.4GHz connection is determined by the transmitter and receiver pair. Unlike ordinary crystal-based systems, your model can be used without frequency control.

2.4GHZ FREQUENCY BAND PRECAUTIONS

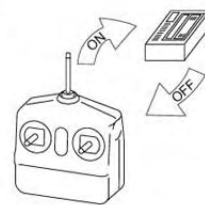
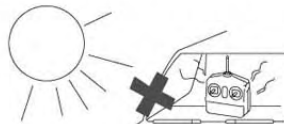
- The 2.4GHz frequency band may be used by other devices, and other devices in the immediate area may cause interference on the same frequency band. Always before use, conduct a bench test to ensure that the servos operate properly. Also, conduct a range check at the area of operation to ensure that the radio control system has complete control of the model at the farthest reaches of the operational area.
- The response speed of the receiver can be affected if used where multiple 2.4GHz transmitters are being used, therefore, carefully check the area before use. Also, if response seems slow during use, discontinue use as quickly as possible.
- If the 2.4GHz frequency band is saturated (too many transmitters on at once), as a safety precaution, the radio control system may not bind. This ensures that your radio control system does not get hit by interference. Once the frequencies have been cleared, or the saturation level has dropped, your radio control system should be able to bind without any problems.
- Observe any applicable laws and regulations in place at your flying site when using the 2.4GHz radio control system.
- Unlike frequency bands used with earlier radio control systems, reception with this 2.4GHz radio control system can be adversely affected by large obstructions and concrete or steel structures between your model and the transmitter. Also, wire mesh and similar barriers can adversely affect operation. Keep this mind to ensure the safety of your model.

TRANSMITTER PRECAUTIONS

- Turn the transmitter ON first, then turn the receiver ON. After using your model, turn the receiver OFF first, then turn the transmitter OFF. It can be dangerous if you activate the components in reverse order as the servos may start up inadvertently.
- Before use, double-check that the transmitter and receiver batteries have sufficient power and/or are sufficiently charged (if using Ni-Cd/Ni-MH batteries).
- Never touch the transmitter antenna during use. Doing so may cause loss of transmitter output, making it impossible to control your model.



- The transmitter antenna should be rotated and angled so that the antenna is as close to perpendicular to the ground as possible during use. After use, to prevent any chance of damaging the antenna, the antenna should be rotated and moved into the horizontal stowed position.



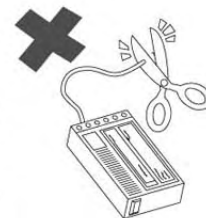
Do Not Expose to Moisture or Direct Sunlight

- Do not expose the transmitter to excessive heat, moisture, fuel, exhaust residue, etc.
- Do not expose the transmitter to excessive heat or direct sunlight. Leaving the transmitter in direct sunlight can damage the LCD.
- Do not press the Bind Button during use. The signal is interrupted while the Bind Button is pressed. It may also require a short time to restore the signal after releasing the Bind Button, which can be dangerous.

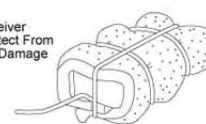
SAFETY AND USAGE PRECAUTIONS


RECEIVER PRECAUTIONS

- The receiver antenna wires consist of two coaxial cables and two reception wires (the thin tip at the end of the coaxial cables). When you mount the receiver antenna wires, do not bend the reception wires. Reception performance decreases if the reception wires are bent.
- The receiver antenna wires are delicate, therefore, handle with care. Do not pull on the receiver antenna wires with force. Do not cut or extend the receiver antenna wires.
- The coaxial cables can be bent into gentle curves, however, do not bend the coaxial cables acutely, or repeatedly bend them, or the antenna cores can be damaged.
- When installed in an electric-powered model, keep the receiver antenna wires as far away as possible from the motor, battery, and electronic speed control (ESC).
- There is a danger of runaway operation if connectors shake loose during use. Make sure that the receiver, servo(s), and switch harness connectors are securely fitted.
- The receiver is susceptible to vibration and moisture. Take appropriate measures to protect against vibration and moisture. The receiver should be wrapped in foam and the foam should be secured around the receiver to hold it in place. The foam should not be secured too tightly or the vibration dampening quality will be reduced. Failure to take appropriate measures could result in damage to the receiver.
- When installing the receiver, the antenna reception wires (the thin tip at the end of the coaxial cables) should not come into contact with any carbon or metal components (conductive components). Aircraft fuselages and helicopter frames may contain conductive components. If mounting the receiver surrounded by conductive materials (for example, a carbon fiber fuselage), mount the receiver so that the antenna reception wires can be extended outside of the model. Reception can be blocked if the antenna reception wires are shielded inside a carbon fiber fuselage.
- The manufacturer disclaims all responsibility for damages resulting from use of components other than genuine Airtronics components.



Wrap Receiver
in Foam to Protect From
Vibration and Damage



 It is extremely important to install the receiver and route the receiver antenna wires correctly in your model. This will ensure that your model receives control signals no matter what its posture, attitude, or heading. For more information, see page 18.

AMA INFORMATION

The Academy of Model Aeronautics (AMA) is a national organization representing modelers in the United States. We urge you to examine the benefits of membership, including liability protection in the event of certain injuries. The Academy has adopted simple and sane rules which are especially pertinent for radio controlled flight as the Official AMA National Model Aircraft Safety Code, which we have partially reprinted below:

- I will not fly my model aircraft in sanctioned events, airshows or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
- I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give the right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft. Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.
- I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
- I will not fly my model aircraft in the presence of spectators until I become a qualified flyer, unless assisted by an experienced helper.
- I will perform my initial turn after takeoff away from the pit or spectator areas, unless beyond my control.

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302
Phone (800) 435-9262
Fax (765) 741-0057
www.modelaircraft.org

FEATURES AND SPECIFICATIONS

GENERAL SYSTEM FEATURES

- 6-Channel 2.4GHz FHSS-1 Digital Proportional Computer Radio Control System for Aircraft and Helicopters
- Full-Range 92224 (RX600) 6-Channel 2.4GHz FHSS-1 Receiver
- 6 Cell Battery for Lighter Weight and Better Feel
- 10 Model Memory
- Direct Model Select (Models 1~3)
- Easy-to-Read Multi-Function LCD with Digital Voltage Display
- User-Selectable Model Type Templates
- Digital Trims
- Trainer System Compatible with SD-5G and SD-10G Transmitters
- Model Naming
- Model Select
- Audible Low Voltage Alarm
- Low-Power Range Check Mode
- Programmable Fail Safe
- User-Selectable Flight Modes
- Stop Watch and Count Up Timers
- Data Copy and Data Reset

AIRCRAFT-SPECIFIC FEATURES

- Servo Monitor
- 3 Flight Modes (FN/F1/F2)
- Aileron, Elevator, and Rudder Dual Rate
- Aileron, Elevator, and Rudder Exponential
- Servo Reversing
- Servo Centering Sub-Trim
- End Point Adjustment
- Throttle Cut
- 5-Point Programmable Throttle Curve
- Aileron Differential
- Flaperon Mixing
- Flap to Elevator Mixing
- Dual Elevator Mixing with End Point Adjustment
- Ailvator Mixing
- V-Tail Mixing with End Point Adjustment
- Delta (Elevon) Mixing with End Point Adjustment
- 2 Programmable Compensation Mixers
- Common or Flight Mode-Specific Trim with Throttle Trim Lock

HELICOPTER-SPECIFIC FEATURES

- Servo Monitor
- 3 Flight Modes (FN/F1/F2)
- 9 Preprogrammed Swashplate Templates
- Aileron, Elevator, and Rudder Dual Rate
- Aileron, Elevator, and Rudder Exponential
- Servo Reversing
- Servo Centering Sub-Trim
- Advanced Swashplate Adjustment
- CCPM End Point Adjustment
- End Point Adjustment
- Throttle Cut
- 5-Point Programmable Throttle Curve
- Throttle Hold
- 5-Point Programmable Pitch Curve
- Revolution Mixing
- 2 Remote Gyro Gains
- 2 Programmable Compensation Mixers
- Common or Flight Mode-Specific Trim with Throttle Trim Lock

SYSTEM SPECIFICATIONS

Transmitter

Model: 90406
Output Power: 100mW
Operating Voltage: 6.7v~9.6v
Current Drain: 130mA~200mA
Temperature Range: 32°F~122°F (0°C~50°C)
Pulse Width: 0.9msec~2.1msec
Weight with Batteries: 26.45oz (750gr)
Frequency/Modulation Type: 2.4GHz/FHSS-1
Model Memory: 10

Receiver

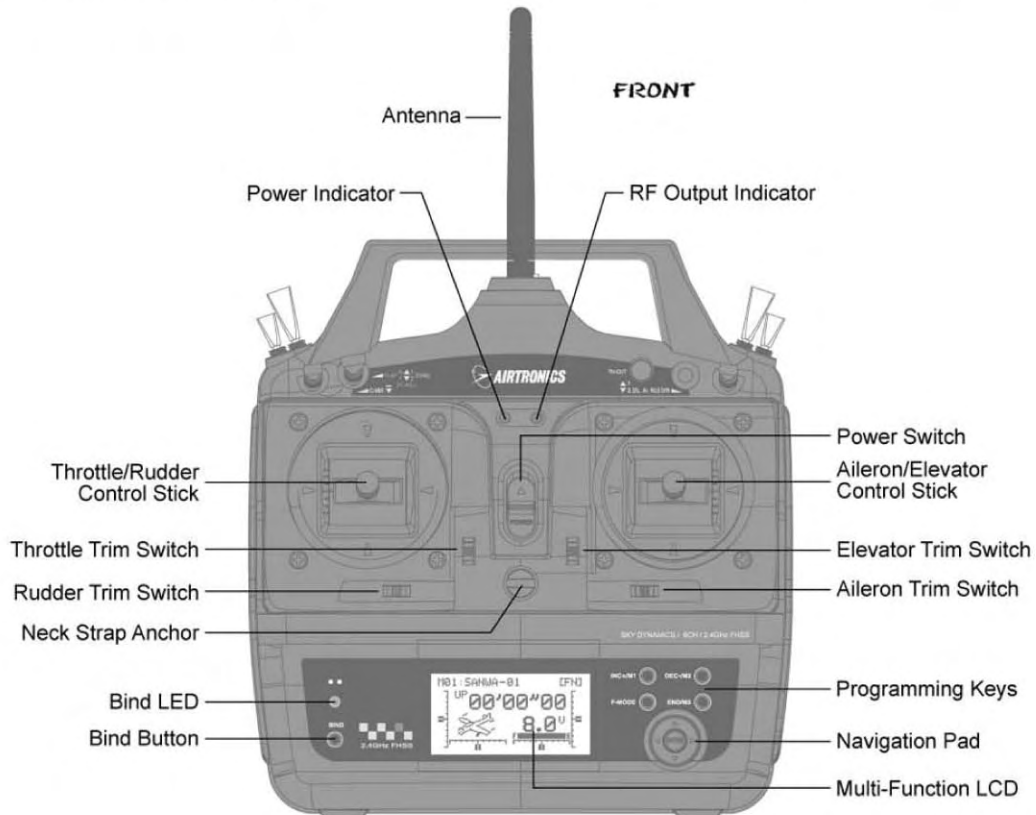
Model: 92224 (RX600)
Frequency/Modulation Type: 2.4GHz/FHSS-1
Nominal Input Voltage: 4.8v~6.0v
Weight: 0.27oz (7.8gr) with Case
Weight: 0.20oz (5.9gr) without Case
Dimensions: 1.64 x 0.85 x 0.47in (41.7 x 21.5 x 12.0mm)
Fail Safe Support: Yes (CH 1~CH 4)
Connector Type: Universal 'Z'

FEATURES FAMILIARIZATION

TRANSMITTER FEATURES DIAGRAMS

Use the diagrams below to familiarize yourself with the basic features of your 90406 2.4GHz FHSS-1 transmitter. Descriptions of these features can be found on pages 8 and 9.

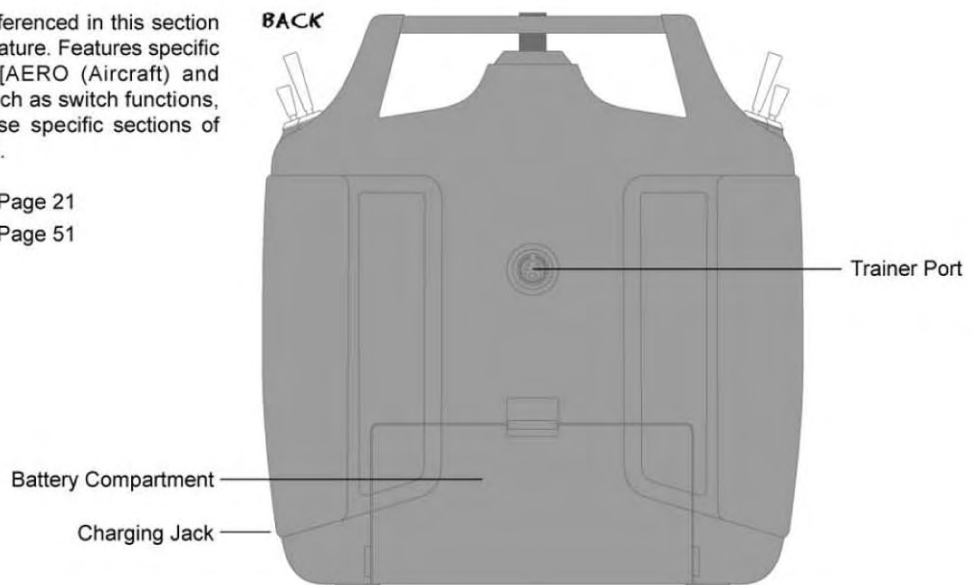
! The transmitter antenna is adjustable. It should be adjusted so that when you're holding the transmitter while you're flying, the antenna is orientated as close to perpendicular to the ground as possible at all times. This provides the best signal between the transmitter and the receiver. You should never point the antenna directly at your aircraft, as this results in a weakened signal. For more information, see page 4.



! The features referenced in this section are general in nature. Features specific to the Model Type [AERO (Aircraft) and HELI (Helicopter)], such as switch functions, can be found in those specific sections of this Operating Manual.

AERO Model Type: Page 21

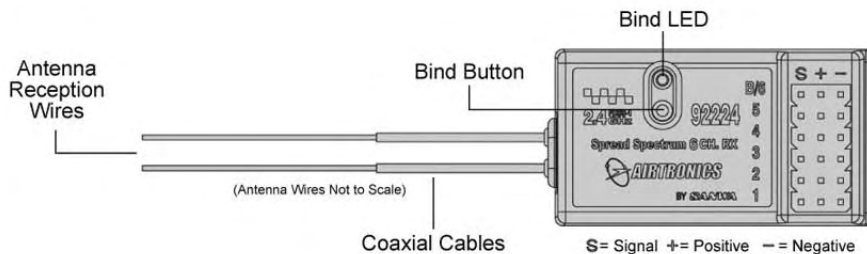
HELI Model Type: Page 51



FEATURES FAMILIARIZATION

RECEIVER FEATURES DIAGRAM

Use the diagram below to familiarize yourself with the 92224 (RX600) 6-Channel receiver included with your 90406 2.4GHz FHSS-1 radio control system. Descriptions of these features can be found below and on the next page.



CHANNEL SLOT	AERO CHANNEL ASSIGNMENT	HELI CHANNEL ASSIGNMENT
Channel Slot 1	Elevator	Elevator (Fore/Aft Cyclic)
Channel Slot 2	Aileron	Aileron (Left/Right Cyclic)
Channel Slot 3	Throttle	Throttle
Channel Slot 4	Rudder	Rudder (Tail Rotor)
Channel Slot 5	Gear	Gyro
Channel Slot 6/BATT*	Flaps	Pitch (Collective)

*To utilize this channel and power the receiver at the same time, you must use a Y-Harness (available separately). For more information, see page 13.

! The default channel slot assignments shown in the table above will vary based on the Model Type selection options you have programmed in the TYPE menu. For example, in AERO mode with TAIL>2xEL selected in the TYPE menu, Channel Slot 1 will control the Left Elevator and Channel Slot 5 will control the Right Elevator. For more information, see page 25.

FEATURES DESCRIPTIONS

Aileron/Elevator Control Stick: Controls the Aileron and Elevator axes. The Aileron/Elevator Control Stick length is adjustable to suit your preference. For more information, see page 19.

Aileron Trim Switch: Used to control the Aileron axis Right and Left trim.

Antenna: Transmits the signal from the transmitter to the receiver in the model. The Antenna should be pivoted into the vertical position during use. When not in use, the Antenna should be collapsed into the horizontal position to prevent damage during handling and transport.

Antenna Reception Wires: The portion of each of the receiver antenna wires that actually receives the transmitter signal. The Antenna Reception Wires should never be bent or they could be damaged and limit the range of the receiver.

Battery Compartment: Houses the 6 cells that power the transmitter. The transmitter uses 6 cells for lighter weight and better feel, while still providing long usage time and high power output.

Bind Button: Used to Bind the transmitter and receiver. Also used to enter Low-Power Range Check mode.

Bind LED: Displays the current status of the transmitter and receiver pair.

Charging Jack: Used for onboard charging of the Ni-Cd or Ni-MH batteries.

Coaxial Cables: The portion of each antenna wire that extends the Antenna Reception Wires. The Coaxial Cables can be bent into gentle curves, however, do not bend the Coaxial Cables acutely, or repeatedly bend them, or the antenna wire's cores can be damaged. For information on mounting the receiver and orientating the receiver antenna wires, see page 18.

Elevator Trim Switch: Used to control the Elevator axis Up and Down trim.

FEATURES FAMILIARIZATION

FEATURES DESCRIPTIONS, CONTINUED....

Multi-Function LCD: The heart of the programming and display features of the transmitter. All programming and transmitter display functions are shown on the Multi-Function LCD.

Navigation Pad: The Navigation Pad is used in conjunction with the Programming Keys to facilitate transmitter programming. The Navigation Pad allows you to quickly and easily move the Programming Cursor up and down, and right and left. The ENTER key in the center of the Navigation Pad is used to open the selected menu or programming option.

Neck Strap Anchor: Used to attach your neck strap (available separately) to the transmitter.

Power Indicator: Indicates that there is power to the transmitter. When the battery voltage drops to 6.7 volts, the audible Low Voltage Alarm will sound. For more information, see the Transmitter Alarms section below.

Power Switch: Turns the transmitter ON and OFF.

Programming Keys: The Programming Keys are used to facilitate transmitter programming and select models stored in memory. The four Programming Keys consist of the INC+/M1 (Increase/Model 1) key, the DEC-/M2 (Decrease/Model 2) key, the END/M3 (End/Model 3) key, and the F-MODE (Flight Mode) key.

Rudder Trim Switch: Used to control the Rudder axis Right and Left trim.

Throttle/Rudder Control Stick: Controls the Throttle and Rudder axes. The Throttle/Rudder Control Stick length is adjustable to suit your preference. For more information, see page 19.

Throttle Trim Switch: Used to control the Throttle axis Up and Down trim.

Trainer Port: The Trainer Port is where the trainer cable (available separately) is plugged into. An adapter to use the transmitter with a flight simulator can also be plugged into the Trainer Port.

RF Output Indicator: Illuminates when the transmitter is turned ON and transmitting a signal. If the RF Output Indicator fails to illuminate, RF output is limited or non-existent. In this case, you should not fly. The RF Output Indicator will flash when the transmitter Trainer mode is set to Slave.

SERVO CONNECTORS

The 92224 (RX600) 6-Channel receiver included with your 90406 2.4GHz FHSS-1 radio control system uses universal Airtronics 'Z' connectors which are electronically compatible with the servos of other radio control system manufacturers. The connectors are rugged, but should be handled with care.



⚠ When unplugging the servo connector, it's best not to pull on the servo wire itself. This could result in damage to the servo wire pins in the plastic plug. Always grasp the plastic connector itself.

TRANSMITTER ALARMS

The 90406 transmitter is equipped with several safety alarms to warn you of an abnormal transmitter condition.

Low Voltage Alarm

The 90406 transmitter is equipped with a Low Voltage Alarm to warn you when the transmitter batteries need to be replaced or recharged. The Low Voltage Alarm will sound when the transmitter batteries reach 6.7 volts. If the Low Voltage Alarm sounds while you are flying, you should land immediately, then replace or recharge the transmitter batteries. If the Low Voltage Alarm sounds after replacing or recharging the transmitter batteries, there may be a problem with the transmitter. If this occurs, please contact Airtronics Customer Service using the information on the back cover of this Operating Manual.

Flight Mode Warning Alarm

The 90406 transmitter is equipped with a safety feature that will not allow you to use the transmitter if the Flight Mode is not set to FN (Normal) when you turn the transmitter ON. If the Flight Mode is not set to FN when you turn the transmitter ON, the Flight Mode Warning alarm will sound continuously, the RF Output Indicator will flash, and the LCD will read F-MODE NOT 'N' ! To clear the Flight Mode Warning, set the Flight Mode to FN using the Flight Mode Switches (move both Flight Mode switches forward). The LCD will read normally, the Flight Mode Warning alarm will cease, and RF Output Indicator will stop flashing.


FEATURES FAMILIARIZATION

TRANSMITTER ALARMS, CONTINUED....

Trainer Mode Warning Alarm

The 90406 transmitter is equipped with a safety feature that will warn you when the transmitter is set to Trainer>Master or Trainer>Slave when the transmitter is turned ON. If the transmitter is set to Trainer>Master when you turn the transmitter ON, the Trainer Mode Warning alarm will sound continuously, the RF Output Indicator will blink, and the LCD will read TRAINER MODE MASTER ! If the transmitter is set to Trainer>Slave when you turn the transmitter ON, the Trainer Mode Warning alarm will sound continuously, the RF Output Indicator will blink, and the LCD will read TRAINER MODE SLAVE !

To clear either of the Trainer Mode Warnings, press any of the Programming Keys or the ENTER key. The LCD will read normally, the Trainer Mode Warning alarm will cease, and the RF Output Indicator will stop flashing (if set to Slave, the RF Output Indicator will continue to flash).

 Clearing the Trainer Mode Warning does not change the Trainer setting of the transmitter. When the Trainer Mode Warning is cleared, the transmitter will still be in Trainer Mode - either set to Master or set to Slave as indicated on the LCD.

SERVO RECOMMENDATIONS

Although most current brand servos will work with your 90406 2.4GHz FHSS-1 radio control system, we recommend using Airtronics brand servos. For pricing, availability, and more selection, please visit your local Airtronics dealer or our website at <http://www.airtronics.net>.

94102Z Standard Bushing

Torque: 42oz/in (3.0kg/cm @ 4.8v)
53oz/in (3.8kg/cm @ 6.0v)

Speed: 0.20 sec/60° @ 4.8v
0.16 sec/60° @ 6.0v

Dimensions: 1.54 x 0.79 x 1.42in
(39.1 x 20.0 x 36.0mm)

Weight: 1.59oz (45gr)

94091Z Super Micro Bushing

Torque: 18oz/in (1.3kg/cm @ 4.8v)
23oz/in (1.7kg/cm @ 6.0v)

Speed: 0.12 sec/60° @ 4.8v
0.10 sec/60° @ 6.0v

Dimensions: 0.91 x 0.44 x 0.87in
(23.0 x 11.2 x 22.1mm)

Weight: 0.32oz (9gr)

94802 Digital Sub-Micro Dual Ball Bearing

Torque: 22oz/in (1.6kg/cm @ 4.8v)
26oz/in (1.9kg/cm @ 6.0v)

Speed: 0.18 sec/60° @ 4.8v
0.15 sec/60° @ 6.0v

Dimensions: 0.91 x 0.35 x 0.90in
(23.0 x 9.0 x 22.8mm)

Weight: 0.26oz (7.4gr)

94162Z High Torque MG Dual Ball Bearing

Torque: 115oz/in (8.3kg/cm @ 4.8v)
144oz/in (10.4kg/cm @ 6.0v)

Speed: 0.23 sec/60° @ 4.8v
0.18 sec/60° @ 6.0v

Dimensions: 1.54 x 0.79 x 1.61in
(39.1 x 20.0 x 40.9mm)

Weight: 2.36oz (67gr)

94842 Digital Precision Dual Ball Bearing

Torque: 111oz/in (8.0kg/cm @ 4.8v)
132oz/in (9.5kg/cm @ 6.0v)

Speed: 0.16 sec/60° @ 4.8v
0.13 sec/60° @ 6.0v

Dimensions: 1.57 x 0.77 x 1.56in
(40.0 x 19.5 x 39.6mm)

Weight: 1.62oz (45.8gr)


94856 Digital High Speed MG Dual Ball Bearing

Torque: 125oz/in (9.0kg/cm @ 4.8v)
150oz/in (10.8kg/cm @ 6.0v)

Speed: 0.14 sec/60° @ 4.8v
0.11 sec/60° @ 6.0v

Dimensions: 1.50 x 0.79 x 1.49in
(38.0 x 20.0 x 37.8mm)

Weight: 2.04oz (58.0gr)

 Both analog and digital servos will work with your 90406 2.4GHz FHSS-1 radio control system. To get the most out of your experience though, we recommend the use of digital servos.

OPTIONAL ITEMS

The following optional items (available separately) can be used with your 90406 2.4GHz FHSS-1 radio control system. For pricing and availability, please visit your local Airtronics dealer or our website at <http://www.airtronics.net>.

233819 Hi-Energy 4.8v 2200mAh Ni-MH Square Receiver Battery*

97020Z 8" Y-Harness

233808 Hi-Energy 6.0v 2200mAh Ni-MH Flat Receiver Battery*

97011Z 12" Servo Extension

96750 Stick Tip Extensions

97107 Trainer Cable


99103 Adjustable Neck Strap

96506 Airtronics Baseball Cap

978411 Aluminum Carry Case

978425 Airtronics Folding Field Chair

*Not an Airtronics brand product, however, this product is available through most Airtronics dealers.

 Many more accessories, such as servos, servo extension leads, male and female plugs, receiver battery packs, and more are available through your local Airtronics dealer or our website at <http://www.airtronics.net>.

FEATURES FAMILIARIZATION

QUICK-START BASIC MODEL SETUP

The information in this section describes the basic steps that you can use to quickly setup a new model. Regardless of the model you are flying, using the basic functions of the 90406 transmitter for most applications is easy and will get your model setup quickly. It's a simple five-step process.



The information in this section is general in nature. For more in-depth instructions about the individual steps outlined below, please make sure to read the pertinent sections of this Operating Manual.

1) Bind the Receiver to the Transmitter and Install the Receiver:

- After connecting your airborne components and installing fully-charged transmitter and receiver batteries, turn the transmitter ON.
- Hold down the Bind Button on the receiver. While holding down the Bind Button on the receiver, turn the receiver ON.
- Release the Bind Button on the receiver. The Bind LED will slowly flash.
- Press the transmitter Bind Button. The receiver's Bind LED will flash rapidly, then the receiver's Bind LED will turn solid blue indicating the system is paired.
- Install the receiver in your model, making sure that the two receiver antenna wires are mounted 90° to each other.
- Rotate the transmitter antenna so that it is positioned at a 45° angle toward you.

2) Choose a Model Type:

- Navigate to the TYPE menu, then press the INC+/M1 or DEC-/M2 keys to select the Model Type that matches your model, either AERO (Aircraft) or HELI (Helicopter).

3) Make Model Type Selection Options:

- Scroll down to choose the various options related to the Model Type you've chosen.

AERO - Select what type of wing (Normal or Delta), the type of tail (Normal, V-Tail, or Dual Elevator servos), and the number of aileron servos in your wing (1 or 2).

HELI - Select what type of swashplate your model features, either Normal, or a CCPM swashplate. If choosing a CCPM swashplate option, make sure that the CCPM swashplate type matches your model exactly.

- After making your selections, press the ENTER key, then the INC+/M1 key. The pre-programmed model template will be loaded into the transmitter.

4) Name Your Model:

- Navigate to the MODEL NAME menu and input a name for your model. This will allow you to easily choose this model again for later use. The Model Name will be displayed on the Display screen so that you know which model is currently in use.

5) Plug In Servos and Setup Control Surfaces:

- Navigate to the SX MONITOR menu and use the information displayed on the Servo Monitor to plug your servos into the correct channel slots in the receiver based on the Model Type selection options you chose previously.
- Navigate to the REVERSE, CENTER, EPA, and D/R & EXPO menus to adjust direction of servo travel (REVERSE), servo centering sub-trim (CENTER), desired servo travel in both directions (EPA), and if desired, the Dual Rate and Exponential (D/R & EXPO) percentage values.

TIPS AND SUGGESTIONS

Many of the Tips and Suggestions on the following pages can be found throughout this Operating Manual, however, we have listed what we feel are the more important ones in this section for your convenience.

- When you see → in the lower right corner of a page, this indicates that the current section is continued at the top of the next page.
- The receiver's nominal input voltage is 4.8 volts to 6.0 volts. If your receiver battery's nominal voltage rating is greater than 6.0 volts, you must use a voltage regulator plugged between the switch harness and the receiver battery to drop your battery's voltage to 6.0 volts.

FEATURES FAMILIARIZATION

TIPS AND SUGGESTIONS, CONTINUED....

- An after-market peak-detection charger, cyclor, or fast charger should NOT be used to charge Ni-Cd or Ni-MH rechargeable batteries through the transmitter. The circuitry within the transmitter can interfere with the peak-detection charger's normal operation, resulting in over-charging and damaging the batteries, and possibly the transmitter itself. In addition, a fast charger can damage the transmitter's circuitry. These chargers can be used, but ONLY if the batteries are charged outside of the transmitter.
- Up to 6 servos can be plugged into the receiver separately. To utilize the Channel 6/BATT slot along with the receiver battery, you must plug a Y-Harness into the channel slot, then plug the servo into one side of the Y-Harness and the battery switch harness into the other side of the Y-Harness.
- It is extremely important that the receiver antenna wires be mounted as described. This will ensure that your model receives control signals no matter what its posture, altitude, or heading.
- The radio control system is range checked using the Low-Power Mode function. Do not attempt to fly with the transmitter in Low-Power Mode. You will be unable to control your model once it is a certain distance away from you.
- The SD-6G transmitter features a Type function which allows you to quickly set up the transmitter's low-level mixing based on the type of model you're flying. Common templates for AERO (Aircraft) and HELI (Helicopter) model types are provided. For example, if your model features two aileron servos and dual elevator servos, choosing these options will automatically change the transmitter's programming to accommodate this setup. This takes the guess-work out of setting up more complex models.
- The SD-6G transmitter features an audible Flight Mode Warning alarm. If you turn your SD-6G transmitter ON and it beeps, the transmitter is more than likely in Flight Mode F1 or Flight Mode F2. Putting the transmitter in Flight Mode FN (Normal), will silence the Flight Mode Warning alarm.
- In the default configuration, the Model Select List contains 5 AERO model types and 5 HELI model types. The Model Type for any of the 10 models in the Model Select List can be changed using the Type menu.
- The Direct Model Select function allows you to select one of three of your most-used models from memory without going through the Model Select menu. This makes it much quicker and easier to load the programming for your three favorite models.
- Pressing both the INC+/M1 and DEC-/M2 keys together will Reset the highlighted programming selection to the Factory Default Setting.
- When the Display screen is displayed, pressing the INC+/M1 key will Start and Stop the Timer. Pressing the INC+/M1 and DEC-/M2 keys together will Reset the Timer.
- Unless otherwise noted, all programming changes take effect immediately.
- An audible double-tone is heard when the trim switches reach the center position. This allows you to know when the trim switches reach the center position without the need to look at the Trim Indicators on the Display screen.
- The SD-6G transmitter features Digital Trim Memory. Any amount of control surface trim that you set during flight using the trim switches is automatically stored in memory for that specific channel and for that specific model. The Digital Trim values for each model will automatically be loaded when the transmitter is turned ON.
- There is always one Flight Mode Active at all times. In the default configuration, Flight Mode FN (Normal) is Active.
- The F-MODE key is used to facilitate programming the individual Flight Modes only and does not turn the Flight Modes ON or OFF. Flight Modes are turned ON and OFF using the two Flight Mode switches.
- Prior to takeoff, check the position of the Dual Rate switch to ensure that it is in the position you want.
- Use the Servo Monitor to determine which receiver channel slots to plug your servos into. The channels displayed on the Servo Monitor will vary based on the Model Type selection options chosen in the TYPE menu. For example, if you chose TAIL>2xEL and AILE>2 in the TYPE menu, LE (Left Elevator), RE (Right Elevator), LA (Left Aileron), and RA (Right Aileron) will be displayed along with the corresponding receiver channel slot numbers.
- Many menu functions feature Common or Separate choices. When set to COMMON the function settings will be the same regardless of which Flight Mode the transmitter is operating in. When set to SEPARATE, you can program different function settings separately for each Flight Mode.
- When setting up a CCPM swashplate helicopter, you may want to use the CP-EPA function instead of the standard EPA function. The CCPM End Point Adjustment function allows you to adjust servo travel in each direction for the elevator, aileron, and pitch servos independently. Unlike the standard End Point Adjustment function, which affects all the cyclic servos, CCPM End Point Adjustment allows you to adjust each cyclic servo independently without any affect on the other cyclic servos. This allows you to also quickly and easily level the swashplate.

SYSTEM SETUP AND INSTALLATION

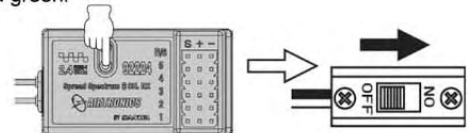
TRANSMITTER AND RECEIVER BINDING

The Binding function allows you to Bind the transmitter and receiver pair. When new, it is necessary to pair the transmitter and receiver to prevent interference from transmitters operated by other users. This operation is referred to as 'binding'. Once the binding process is complete, the setting is remembered even when the transmitter and receiver are turned OFF. Therefore, this procedure usually only needs to be done once.

! Before beginning the binding process, connect the switch harness, servos, and the receiver battery to your 92224 (RX600) 6-Channel receiver, using the diagram on page 13. Make sure that both the transmitter and the receiver are turned OFF.

- 1) Ensure that the throttle control stick is in the LOW position (pulled all the way back).
- 2) Turn the transmitter ON. The Bind LED on the transmitter will illuminate solid green.

- 3) While holding down the Bind Button on the receiver, turn the receiver ON. The Bind LED on the receiver will flash slowly. After ~2 seconds release the Bind Button. The Bind LED on the receiver will continue to flash slowly.



* * *

! Use the tip of a pencil or a 1.5mm hex wrench to press the Bind Button on the receiver.

- 4) Quickly press the Bind Button on the transmitter. The Bind LED on the receiver will flash rapidly for ~3 seconds, go out momentarily, then illuminate solid blue, indicating the Binding process is complete.



* * * * * → *

! When the binding procedure is successful, the Bind LED on the receiver will stay solid blue when both the transmitter and receiver are turned ON. If the Bind LED on the receiver is flashing rapidly or not ON at all, the transmitter and receiver are not paired. In this case, turn both the transmitter and receiver OFF, then repeat the binding procedure.

! Under some circumstances, the receiver may not operate after turning the transmitter and receiver ON. If this occurs, perform the binding process again.

FAIL SAFE PROGRAMMING

The Fail Safe function automatically sets the servos to a predetermined position in the event that the signal between the transmitter and the receiver is interrupted, whether due to signal degradation or to a low transmitter battery. For example, the Fail Safe function can be set so that the throttle returns to idle, the elevator moves slightly up, and the ailerons move slightly right or left to result in a shallow downward decent of your aircraft.

! The Fail Safe function is available on channels 1 through 4 only. We suggest programming the Fail Safe function prior to mounting the receiver into your aircraft if you will be unable to access the receiver's Bind Button after mounting.

Setting Fail Safe Positions

- 1) Turn the transmitter ON, then turn the receiver ON. Move the transmitter control sticks to verify correct servo movement.
- 2) Move the transmitter control sticks to the desired Fail Safe positions. While holding the transmitter control sticks in those positions (generally throttle at idle and a minimal amount of elevator and/or aileron), press and HOLD the Bind Button on the receiver. After ~2 seconds, the Bind LED will begin to flash slowly. Continue holding the Bind Button until the Bind LED begins to flash rapidly (~2 more seconds). Once the Bind LED begins to flash rapidly, release the Bind Button.
- 3) Turn the transmitter OFF to test the Fail Safe operation. The servos should move to the positions that you set in step 2.

! The Fail Safe settings will be erased if you re-bind the transmitter and receiver pair. If you bind the same transmitter and receiver pair you MUST repeat these procedures to setup the Fail Safe function again.

IMPORTANT If you don't program the Fail Safe function, if the signal between the transmitter and receiver is lost, the servos will stay in the last position they were in when the signal was lost. However, the servos will be free to move under load. They will NOT be locked in the last position they were in.

Clearing Fail Safe Settings

- 1) To clear the currently programmed Fail Safe settings, re-bind the transmitter and receiver pair.

SYSTEM CONNECTIONS

TRANSMITTER BATTERY INSTALLATION

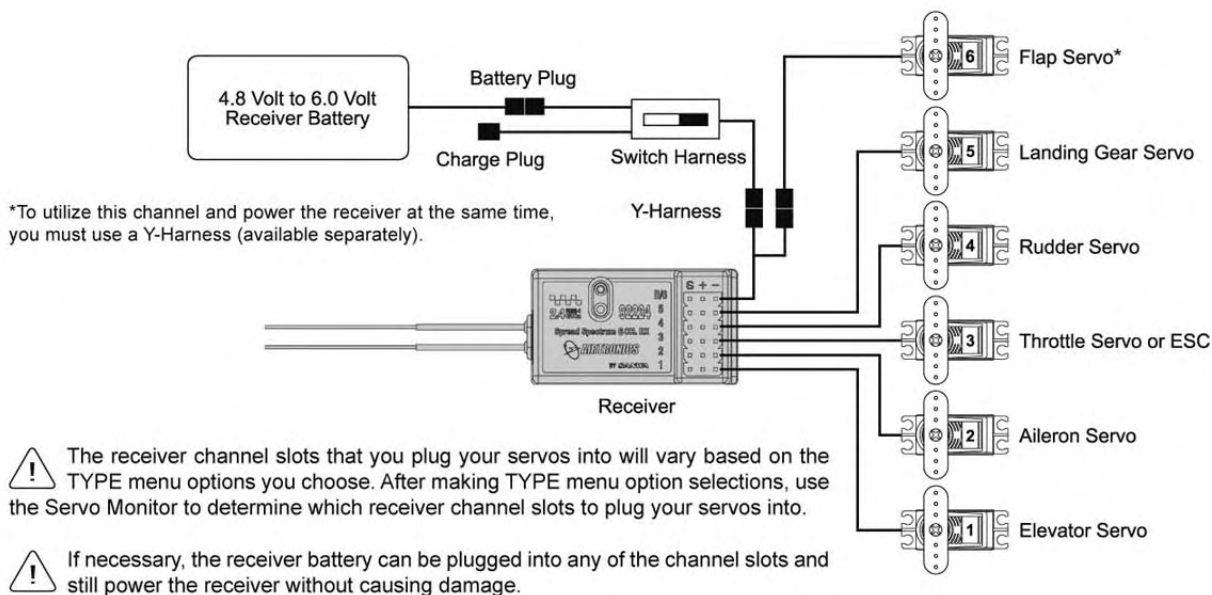
- 1) Remove the battery cover on the back of the transmitter by pushing down firmly on the tab in the top of the battery cover and pulling the battery cover out.
- 2) Install six 'AA' batteries into the battery tray, making sure that the polarity is correct. The direction that each battery should be installed is molded into the battery tray (+ Positive and - Negative).
- 3) Set the bottom of the battery cover back onto the transmitter and push it firmly until it 'clicks' closed.

AIRBORNE SYSTEM CONNECTIONS

Use the diagram below to familiarize yourself with how to connect the switch harness, servos (available separately), and receiver battery (available separately) to your 92224 (RX600) 6-Channel receiver.

! A receiver battery is not included. The receiver can be powered by a 4.8 volt (4 cell) or a 6.0 volt (5 cell) Ni-Cd or Ni-MH battery of desired capacity. The receiver can also be powered by a 2 cell Li-Fe/A123 or a 2 cell Li-Po battery of desired capacity as long as you use a voltage regulator. See **WARNING** below.

WARNING The receiver's nominal input voltage is 4.8 volts to 6.0 volts. If your receiver battery's nominal voltage rating is greater than 6.0 volts, you must use a voltage regulator plugged between the switch harness and the receiver battery to drop your battery's voltage to 6.0 volts. If you do not use a voltage regulator, damage to the receiver could result. We recommend a switching type regulator and it must be able to handle the amperage demands of the servos used in your model.



Using an Li-Fe/A123 or Li-Po Receiver Battery

WARNING The nominal voltage rating of a 2 cell Li-Fe/A123 battery or a 2 cell Li-Po battery is greater than 6.0 volts. Because of the higher voltage, you **MUST** use a voltage regulator plugged between the switch harness and the receiver battery to drop the battery voltage to 6.0 volts. If you do not use a voltage regulator, damage to the receiver could result.

If you decide to power the receiver using a 2 cell Li-Fe/A123 battery or a 2 cell Li-Po battery, please observe the following:

- Use **ONLY** a 2 cell Li-Fe or Li-Po battery of desired capacity with a voltage regulator. **You MUST use a voltage regulator.**
- When changing the plug on your battery to be compatible with the switch harness, please observe correct polarity. Connecting with reverse polarity could damage the switch harness and/or the receiver. See plug polarity diagram above.
- Observe all safety precautions provided with your battery before use, during use, and during the charging process.

