

# **MX-3X**

*2.4GHz Digital High Response System*



## **OPERATING MANUAL**

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## PACKAGING

The packaging of your Airtronics MX-3X 2.4GHz FHSS-3 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 new Airtronics MX-3X 2.4GHz FHSS-3 radio control system. This Operating Manual is intended to acquaint you with the many unique features of your state of the art radio control system. Please read this operating manual carefully so that you may obtain maximum success and enjoyment from the operation of your new radio control system.


The MX-3X 2.4GHz FHSS-3 radio control system has been designed for the utmost in comfort and precise control of all types of model cars and boats. We wish you the best of success and fun with your new purchase.

 Additional 2.4GHz receivers can be purchased and paired with the MX-3X transmitter through the Binding operation. Please note that due to differences in the implementation of 2.4GHz technology among different manufacturers, only Airtronics brand 2.4GHz FHSS-2 and FHSS-3 receivers are compatible with your radio control system. Please see your Airtronics dealer for more information.

## SAFETY

 This is a high-output full-range radio control system that should well exceed the range needed for any surface model. For safety, the user should perform a range test 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. Rather than operating the model, we recommend that the user enlist the help of a fellow modeler to walk the model to the farthest reaches of the track (or for boats, to walk the shore line well in excess of the operational distance of the boat), then test for proper operation.

- 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 field, track, or lake where 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 R/C model boats.
- If you have little to no experience operating R/C 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 the minimum threshold. If this occurs, stop using the transmitter as soon as possible, then replace or recharge the transmitter battery.

 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.

## 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

This 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.

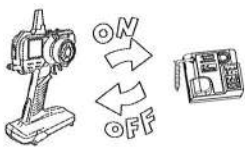
# USAGE PRECAUTIONS

In addition to the Safety and FCC Compliance sections on the previous page, please observe the following precautions when installing and using your new Airtronics MX-3X 2.4GHz FHSS-3 radio control system.

## 2.4GHZ FREQUENCY BAND PRECAUTIONS

- The 2.4GHz frequency band may be used by other devices, or 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 checks with the transmitter as distant as possible from your model.
- The response speed of the receiver can be affected if used where multiple 2.4GHz radio controllers are being used, therefore, carefully check the area before use. Also, if response seems slow during use, stop your model immediately and discontinue use.
- If the 2.4GHz frequency band is saturated (too many radio controllers 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.

## TRANSMITTER PRECAUTIONS

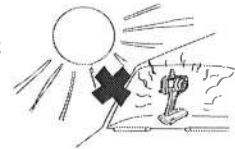


- Turn the transmitter ON first and then turn the receiver ON. After using your model, turn the receiver OFF first, then turn the transmitter OFF. It can be dangerous if you activate the components in reverse order as the servos may start up inadvertently.
- Before use, double-check that the transmitter and receiver batteries have sufficient power.



- Never touch the transmitter antenna during use. Doing so may cause loss of transmitter output, resulting in loss of signal.
- The antenna is flexible for extra safety. Do not bend or twist the antenna or damage could result.
- During use, the transmitter should be held so that the antenna is vertical at all times.

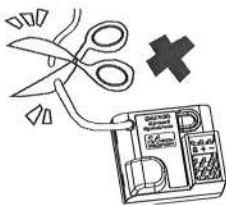
- Do not expose the transmitter or any other components to excessive heat, moisture, fuel, exhaust residue, etc.
- Do not press the Bind Button during use. The signal is interrupted while the Bind Button is pressed. It may also require a short time to restore the signal after releasing the Bind Button,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



- If the outer case becomes dirty, it can be cleaned with a soft dry cloth. If the outer case becomes soiled, it can be cleaned with a damp cloth and liquid detergent. Do not use any solvents to clean the outer case. Solvents will damage the finish.

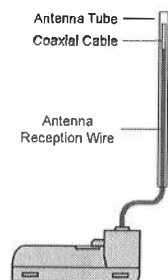
## RECEIVER PRECAUTIONS

- The receiver antenna consists of a coaxial cable and a reception wire (the thin tip at the end of the coaxial cable). When you mount the receiver antenna, do not bend the reception wire. Reception performance decreases if the reception wire is bent.



- The antenna wire is delicate, therefore, handle with care. Do not pull on the antenna wire with force. Do not cut or extend the antenna wire.
- The coaxial cable (the thicker portion of the antenna) can be bent into gentle curves, however, do not bend the coaxial cable acutely, or repeatedly bend it, or the antenna core can be damaged.
- The antenna wire should be installed into a vertical plastic tube per your particular model's assembly instructions. Keep the receiver antenna as far away from the motor, battery, and ESC as possible.

- There is a danger of runaway operation if connectors shake loose during use. Make sure that the receiver, servo(s), and switch connectors are securely fitted.
- The receiver is susceptible to vibration, shock, and moisture. Take appropriate measures to protect against vibration and moisture. Failure to take appropriate measures could result in runaway operation or damage to the receiver. We suggest wrapping the receiver in shock-absorbing foam when installing it into your model.
- When installing the receiver, avoid contact with any carbon or metal chassis components.
- Contact between metal parts mounted on a model can result in electrical noise, which can adversely effect receiver performance and possibly result in runaway operation or damage to your model.
- With electric-powered models, be sure to fit the motor with a noise suppression capacitor. Without a noise suppression capacitor, excessive electrical noise generation can cause runaway operation and/or result in damage to your model.
- Use rubber anti-vibration absorbers with servos. Direct transmission of engine vibration to servos can cause servo failure and possibly result in runaway operation with damage to your model.



# FEATURES AND SPECIFICATIONS

## SYSTEM FEATURES

- 3-Channel 2.4GHz Computer Radio with Advanced Programming for Competition Cars, Trucks, and Boats
- Compatible with All Current Airtronics 2.4GHz FHSS-3 and FHSS-2 Surface Receivers
- High-Power FHSS-3 Technology Provides the Best Reception and Connectivity, Giving Racers Added Assurance
- 4 Cell Dry Cell Battery for Lighter Weight - Also Accepts Optional 6 Cell Rechargeable Ni-MH Battery, 2 Cell Li-Po, or 2 Cell Li-Fe
- 18 Model Memory
- Servo Reversing
- Steering Dual Rate
- End Point Adjustment
- Exponential
- Adjustable Servo Speed
- Four Wheel Steering Mixing
- Dual Throttle Mixing w/Dig & Burn
- Brake Mixing with Brake Hold
- Auxiliary Channel 3 ON-OFF
- Step Auxiliary
- Point Auxiliary
- Auxiliary Mixing (ST>CH3, TH>CH3)
- Programmable Fail Safe
- Receiver Battery Voltage Fail Safe
- Digital Trims
- Programmable Trim Switch
- Adjustable Throttle Trigger
- Model Naming
- Model Select
- Model Clear
- Servo Sub-Trim
- Mode Type (FH2/FH3/FH3F/DS2)
- Audible Key Tone
- Low Voltage and Inactivity Alarms
- Battery Type Selectable (4 Cell or 6 Cell)
- Battery Voltage Monitor

## SYSTEM SPECIFICATIONS

### Transmitter

Model: MX-3X

Output Power: 100mW

Nominal Input Voltage: 4.8v ~ 7.2v

Power Supply: 4 Cell or 6 Cell

Weight: 1.19lbs (with Alkalines)

Weight: 1.27lbs (with 6 Cell Ni-MH)

Frequency: 2.4GHz FHSS-3

### Receiver

Model: 92744

Frequency: 2.4GHz FHSS-3

Nominal Input Voltage: 4.8v ~ 6.0v

Weight: 0.3oz (8.5gr)

Dimensions: 1.43 x 0.94 x 0.59in (36.5 x 24.0 x 15.0mm)

Fail Safe Limit: 3.8v Default / 3.5v ~ 5.0v Adjustable

### Optional Items

978411 Aluminum Carrying Case

99104 Wrist Strap

95054Z 6C 2200mAh Ni-MH TX Battery

OE-156C 110v AC Charger for 95054Z

## SERVO RECOMMENDATIONS

We recommend using Airtronics brand servos with your MX-3X 2.4GHz FHSS-3 radio control system. These are a few of our most popular servos. See your local Airtronics dealer for pricing, availability and more selection.

### 94102Z Standard Bushing Servo

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)

### 94775M Digital High-Power Metal Gear Dual Ball Bearing Servo

Torque: 124oz/in (8.9kg/cm @ 4.8v)  
151oz/in (10.9kg/cm @ 6.0v)

Speed: 0.17 sec/60° @ 4.8v  
0.13 sec/60° @ 6.0v

Dimensions: 1.54 x 0.78 x 1.50in  
(39.0 x 20.0 x 37.4mm)

Weight: 1.93oz (56gr)

### 94746M Digital Metal Gear Low-Profile Dual Ball Bearing Servo

Torque: 80oz/in (5.8kg/cm @ 4.8v)  
89oz/in (6.4kg/cm @ 6.0v)

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

Dimensions: 1.59 x 0.83 x 1.04in  
(40.4 x 21.1 x 26.4mm)

Weight: 1.77oz (50gr)

### 94780M Digital High-Power Metal Gear Dual Ball Bearing Servo

Torque: 361oz/in (26.0kg/cm @ 4.8v)  
423oz/in (30.5kg/cm @ 6.0v)

Speed: 0.19 sec/60° @ 4.8v  
0.15 sec/60° @ 6.0v

Dimensions: 1.60 x 0.83 x 1.50in  
(40.6 x 21.1 x 38.1mm)

Weight: 2.33oz (66gr)

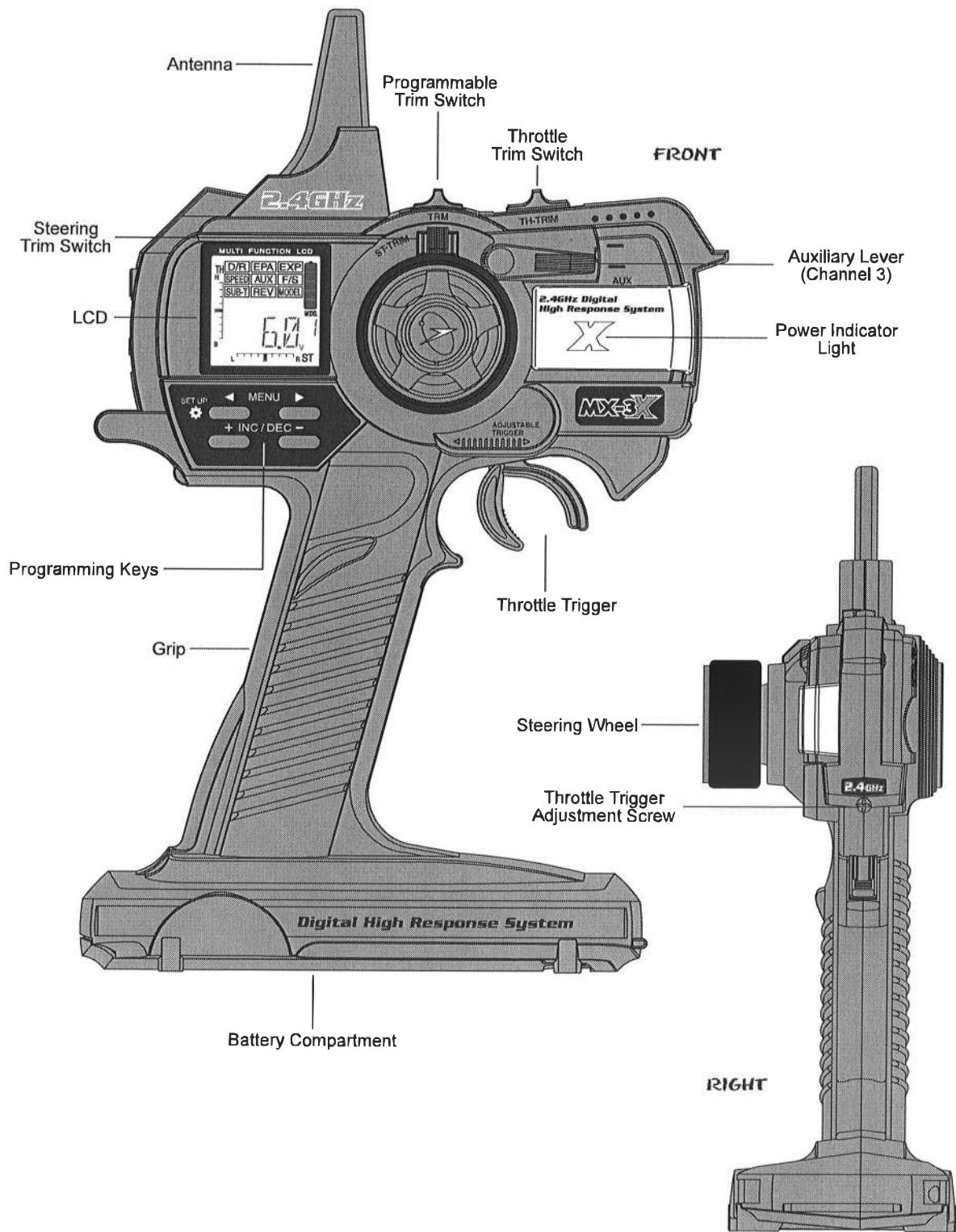


Both analog and digital servos will work with your MX-3X 2.4GHz FHSS-3 radio control system. To get the most out of your experience, we recommend the use of digital servos.

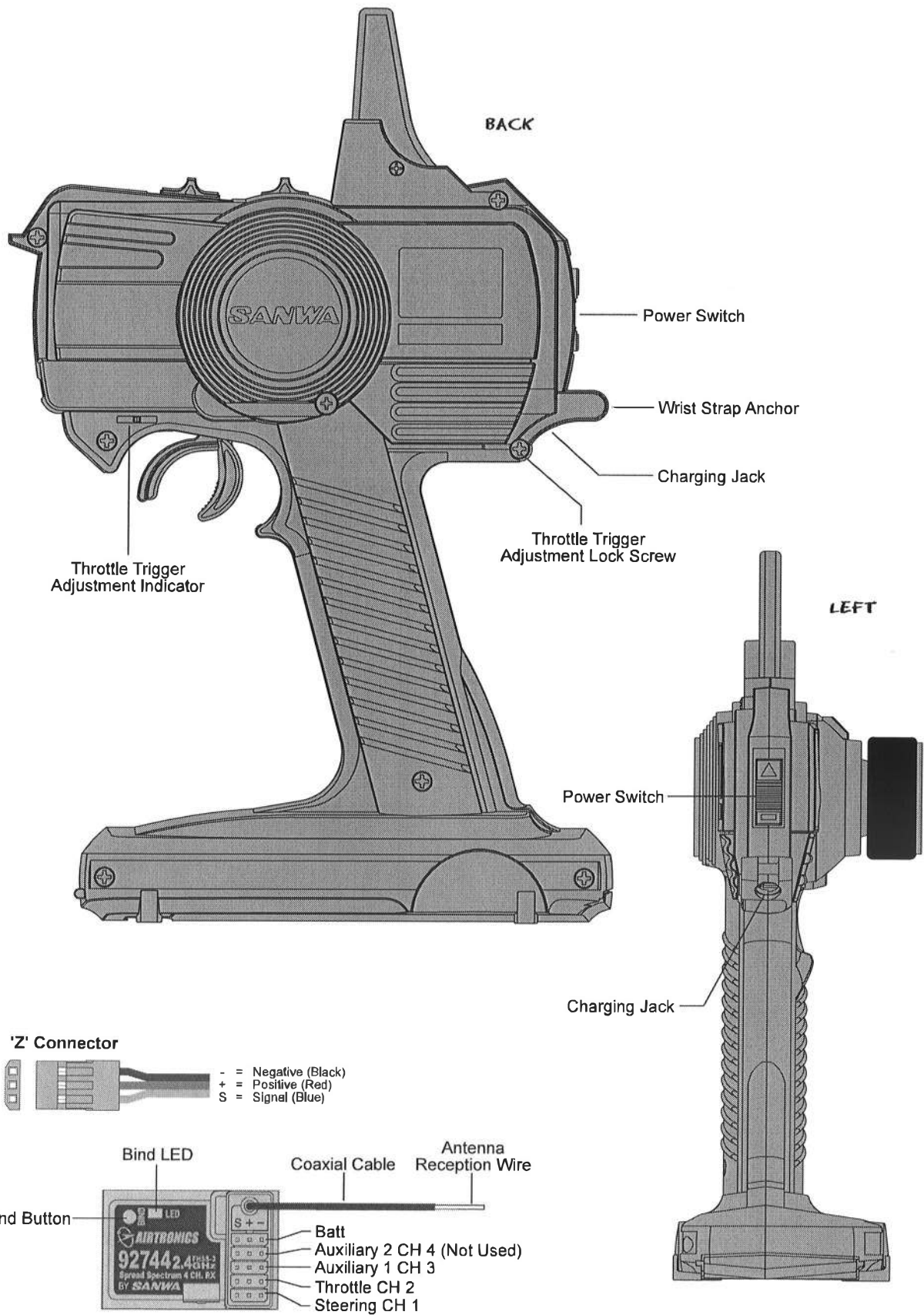
# FEATURES FAMILIARIZATION

## FEATURES DIAGRAMS

Use the diagrams below and on the next page to familiarize yourself with the different system controls on your new MX-3X 2.4GHz FHSS-3 transmitter and 92744 receiver. Descriptions of these features can be found on page 8.




# FEATURES FAMILIARIZATION




# FEATURES FAMILIARIZATION

## FEATURES DESCRIPTIONS

**Antenna:** Transmits the signal from the transmitter to the receiver in the model.

 Never touch the transmitter antenna during use. Doing so may cause loss of transmitter output, resulting in loss of signal. The antenna is flexible for extra safety. Do not bend or twist the antenna or damage could result. During use, the transmitter should be held so that the antenna is vertical at all times.


**Antenna Reception Wire:** The portion of the antenna that receives the transmitter signal.

 The Antenna Reception Wire should never be bent or it could be damaged and limit the range of your model.

**Battery Compartment:** Houses the 4 'AA' Alkaline cells that power the transmitter.

**Bind Button and Bind LED:** Used in the process of Binding the transmitter and receiver.

**Charging Jack:** Used for onboard charging of the optional 6 cell 2200mAh Ni-MH battery.

 Do not attempt to charge Alkaline batteries. Only the recommended Airtronics 110v AC charger should be used through the Charging Jack. If using an after-market Peak charger or other type of fast charger, the battery should be removed from the transmitter to avoid damage to the transmitter circuitry.

**Coaxial Cable:** The portion of the antenna that extends the Antenna Reception Wire. The Coaxial Cable can be bent into gentle curves, however, do not bend the Coaxial Cable acutely, or repeatedly bend it, or the antenna core can be damaged. The Coaxial Cable should be installed through a nylon tube (antenna tube) in the vertical position for the best reception.

**Grip:** The Grip is molded in an ergonomic shape for increased comfort, control and feel.

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

**Power Indicator Light:** Flashes slowly when the transmitter is turned ON and transmitting a signal. Flashes in rapid succession indicating that Mixing is Active. The Power Indicator Light is also used during the Binding process.

**Power Switch:** Turns the transmitter ON and OFF.

**Steering Wheel:** Proportionally operates the model's right and left steering control. The Steering Wheel features a foam grip for increased comfort, control and feel.

**Throttle Trigger:** Controls the speed of the model, both forward and backward, or the model's brake. The Throttle Trigger neutral position can be adjusted to best suit your driving style.

**Throttle Trim Switch:** Used to adjust the center trim of the throttle servo.

**Steering Trim Switch:** Used to adjust the center trim of the steering servo.

**Programmable Trim Switch:** The TRM Switch controls different options, depending on your programming preferences. In the default configuration, the TRM Switch controls the steering Dual Rate adjustment. The TRM Switch can also control Throttle High EPA, Throttle Brake EPA, Auxiliary Channel 3 High EPA, Auxiliary Channel 3 Low EPA, and more.

**Programming Keys:** The Programming Keys are used to facilitate transmitter programming. The four Programming Keys consist of two MENU Keys (Right and Left), one YES/+ (Increase) Key, and one NO/- (Decrease) Key.

**Auxiliary Lever (Channel 3):** The Auxiliary Lever controls different options, depending on your programming preferences. In the default configuration, the Auxiliary Lever controls Auxiliary Channel 3. In addition, the Auxiliary Lever is used to program and control the different Mixes that are available.

**Throttle Trigger Adjustment Screw:** Used to adjust the neutral position of the Throttle Trigger.

**Throttle Trigger Adjustment Lock Screw:** Used to lock the Throttle Trigger neutral position.

**Throttle Trigger Adjustment Indicator:** Indicates the current neutral position of the Throttle Trigger. As the neutral position is adjusted forward or backward, the Adjustment Indicator will move forward or backward. The molded hash mark indicates the default factory neutral position.

**Wrist Strap Anchor:** Used to connect the optional wrist strap (available separately) to the transmitter.



# TX AND RX OPTIONS AND CONNECTIONS

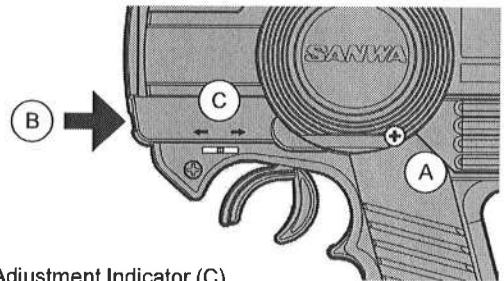
## THROTTLE TRIGGER ADJUSTMENTS

The neutral position of the throttle trigger can be adjusted forward or backward to suit your driving style. Some users may prefer the trigger neutral point to be farther forward, and some users may prefer the trigger neutral point to be farther back. It all depends on your personal preference.

Limiting the travel of the throttle trigger in one direction will increase the sensitivity of the throttle in that direction. Conversely, increasing the travel of the throttle trigger in one direction will decrease the sensitivity of the throttle. For example, if you move the throttle trigger neutral position forward, the physical movement of the throttle trigger will be increased on the throttle side, but decreased on the brake side. This will result in throttle control being less sensitive and brake control being more sensitive.

To adjust the throttle trigger neutral position, follow the steps below:

- 1) Using a # 1 philips head screwdriver, loosen the Throttle Trigger Adjustment Lock Screw (A) on the back of the transmitter.
- 2) To move the throttle trigger neutral position forward, use a # 1 philips head screwdriver to turn the Throttle Trigger Adjustment Screw (B) clockwise. To move the throttle trigger neutral position backward, turn the Throttle Trigger Adjustment Screw counter-clockwise.



⚠ As you adjust the throttle trigger neutral position, the Throttle Position Adjustment Indicator (C) will move, indicating the new throttle trigger neutral position.

- 3) When satisfied with the adjustment, gently tighten the Throttle Trigger Adjustment Lock Screw (A) to lock the throttle trigger neutral position.

⚠ Moving the throttle trigger neutral position does not affect the overall servo travel of the throttle servo in any way. Do not attempt to adjust the throttle trigger neutral position beyond the limits indicated by the Throttle Position Adjustment Indicator or damage to the transmitter may result.

## TRANSMITTER BATTERY OPTIONS

The MX-3X 2.4GHz FHSS-3 transmitter's Nominal Input Voltage is 4.8v ~ 7.2v. This means that the transmitter can be used with several different battery types, depending on your preference.

**Alkaline** - In the default configuration, the transmitter is designed to be powered using 4 'AA' Alkaline batteries (not included). This results in a transmitter that is lightweight and well-balanced for unmatched comfort.

**Ni-MH** - An optional 6 cell 2200mAh Ni-MH rechargeable battery (available separately) can be used. This option, while adding slightly more weight, still results in a lightweight, well-balanced transmitter with longer battery life.

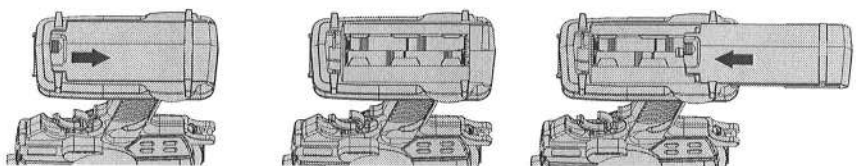
**Li-Po or Li-Fe (A123)** - A 2 cell Li-Po battery or a 2 cell Li-Fe (A123) battery (both available separately) can be used to power the transmitter. Please see the warnings on page 11 if you decide to use one of these types of batteries.

⚠ Transmitter power output, range, and speed is the same, regardless of the battery type/cell count used.

**IMPORTANT** In the default configuration, the transmitter is programmed to use 4 'AA' Alkaline cells. If you're using the optional Airtronics 6 cell 2200mAh Ni-MH rechargeable battery or a 2 cell Li-Po or 2 cell Li-Fe battery, the Battery Cell Count must be changed in the SETUP menu from 4 Cell to 6 Cell. For more information, see page 46.

## ALKALINE BATTERY INSTALLATION

- 1) Remove the battery cover on the bottom of the transmitter by pushing firmly on the battery cover in the direction of the arrow.



- 2) Install four fresh 'AA' Alkaline 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) Slide the battery cover back onto the transmitter and push it firmly until it 'clicks' closed.

# TX AND RX OPTIONS AND CONNECTIONS

## USING THE OPTIONAL 6 CELL NI-MH BATTERY AND 110V AC CHARGER

An optional Airtronics 6 cell 2200mAh Ni-MH rechargeable battery and 110v AC charger are available separately and can be used in place of the standard 4 cell Alkaline batteries. This option, while adding slightly more weight, still results in a lightweight, well-balanced transmitter, but provides much longer battery life with reduced cost over the life of the transmitter, since there is no need to continuously purchase 'AA' Alkaline batteries.

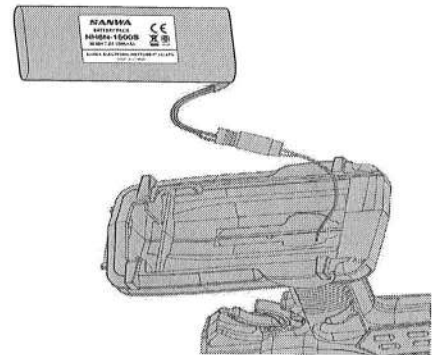
**95054Z - Optional Airtronics 6 cell 2200mAh Ni-MH Rechargeable Battery\*.**

**OE-156C - Optional Airtronics 110v AC Charger\*.**

\*For availability and pricing, please see your local Airtronics dealer.

To install the optional 6 cell 2200mAh Ni-MH rechargeable battery, follow the steps below:

- 1) Remove the battery cover from the transmitter.
- 2) Carefully pull the two pieces of foam rubber and the dry cell battery holder out of the transmitter and unplug it.
- 3) Plug the 6 cell 2200mAh Ni-MH rechargeable battery into the battery power plug in the transmitter, making sure that the polarity matches.
- 4) Place the battery into the middle of the transmitter, then cut the piece of foam rubber into four pieces and use them to hold the battery centered within the battery compartment. Reinstall the battery cover.



### Charging the Optional 6 Cell 2200mAh Transmitter Battery

The MX-3X 2.4GHz FHSS-3 transmitter features a Charging Jack located below the Wrist Strap Anchor, allowing you to recharge the optional 6 cell 2200mAh Ni-MH battery without removing it from the transmitter. Use **ONLY** the recommended optional Airtronics 110v AC charger OE-156C.

**WARNING** Do NOT attempt to recharge 'AA' Alkaline batteries. Do NOT attempt to charge any type of battery other than the optional Airtronics 6 cell 2200mAh Ni-MH battery using **ONLY** the recommended charger. Do not use the Charging Jack with any other after-market fast charger or Peak-Detection charger, or the transmitter could be damaged.

- Always follow the charging procedures described below to ensure safe and correct use of your Ni-MH battery.
  - The Ni-MH battery is not charged when purchased. It is necessary to charge the Ni-MH battery before operation.
  - Before charging the Ni-MH battery, double-check that the transmitter power switch is in the OFF position.
  - Overcharging reduces the life of the battery and can result in electrolyte spills, overheating, and bursting. This may cause personal injury and/or property damage.
  - Do not plug the recommended charger into anything other than an AC 110v power outlet. Plugging the charger into anything other than AC 110v outlet may result in smoking, sparks, or fire.
  - Do not throw the Ni-MH battery or abuse it in any manner. Do not dispose of the Ni-MH battery in the fire or allow it to overheat.
  - Do not short-circuit the Ni-MH battery terminals with wire or any other object.
- 1) Plug the OE-156C charger into a 110v AC wall socket. The charger LED will illuminate green, indicating that the charger is plugged in.
  - 2) Plug the round connector from the charger into the Charging Jack in the transmitter. The charger LED will illuminate red, indicating that the charger is charging.
  - 3) Transmitter charger output is 150mAh, therefore, it will take approximately 10 hours to recharge a fully-discharged battery. We suggest leaving the charger on overnight. Once fully-charged, the charger LED will once again illuminate green.

**WARNING** An after-market peak-detection charger and/or cyclor can be used to charge the Ni-MH transmitter battery, however, the battery must first be removed from the transmitter to be charged. The circuitry within the transmitter will interfere with the peak-detection charger's normal operation, resulting in over-charging and damaging the battery and possibly the transmitter itself. Damage caused by charging the battery through the transmitter or using an incorrect battery type will not be covered under warranty.