



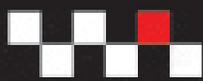
# Innovative Middle Entry-Level Telemetry System



# MT-S

(90478)

**THE CHOICE OF  
CHAMPIONS**



**2.4 GHz** FH4T Spread Spectrum  
Technology By **SANWA**



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## INTRODUCTION

GENERAL

Thank you for your purchase of the Airtronics MT-S 2.4GHz FH4T radio control system. This User's Guide is intended to acquaint you with the many unique features of your new radio control system.

The MT-S is designed for the user who wants more than an entry-level system, but doesn't need a top of the line system. The MT-S falls perfectly between these two extremes, providing true Telemetry capability and Sanwa Synchronized Link (SSL) support, with many additional programming features typically found only in higher end systems, all at a reasonable price that makes the MT-S affordable for most users.

The MT-S 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! Please read this User's Guide carefully prior to use so that you may obtain maximum success and enjoyment from the operation of your new radio control system.

## LIABILITY STATEMENT

GENERAL

Airtronics shall not be liable for any damage resulting from the use of this product. As Airtronics has no control over the use, setup, modification or misuse of this product, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of using this product, the user accepts all resulting liability. **In No Case Shall Airtronics' liability exceed the original cost of the purchased product.**

**IMPORTANT:** Due to differences in the implementation of 2.4GHz technology among manufacturers, only Airtronics and Sanwa branded FH3, and FH4T 2.4GHz surface receivers are compatible with your radio control system. Compatibility may vary by region.

Full Telemetry support is available only when used with an Airtronics or Sanwa RX-461 or RX-462 FH4T Telemetry receiver, or when the included RX-482 2.4GHz FH4T Super Response SSL receiver is used along with a Sanwa Super Vortex series ESC.

Sanwa Synchronized Link (SSL) support is available only when used with an Airtronics or Sanwa SSL receiver and a Sanwa Super Vortex series ESC or other SSL accessory. Additional accessories are available through your local Airtronics or Sanwa retailer.

Not all features are supported by all receiver types. Some features are limited by receiver type.

 The included RX-482 2.4GHz FH4T Super Response SSL receiver does not feature full Telemetry support (e.g., Temperature data and RPM data). Full Telemetry capability is supported only when used with a Sanwa Super Vortex series ESC plugged into the BATT/SSL port. This is due to the fact that full internal Telemetry support slows the Response Time of the receiver and we've chosen to include a receiver that will allow you fastest Response Time possible.

## PACKAGING

GENERAL

The packaging of your 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.

## SAFETY

GENERAL

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. We recommend that the user enlist the help of a fellow modeler to walk the model to the farthest reaches of the track or other operational area, then test for proper operation.

In addition to the above, please observe the following and also make sure to read the various precautions on page 5.

- Be certain to read this User's Guide in its entirety. Think 'Safety First' for yourself, others and your equipment. Always observe all the rules of the track or other operational area 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.
- Your model can cause serious damage or injury. Please use caution and courtesy at all times during use.
- Do not expose the radio control system to water or excessive moisture. If using in a wet environment, waterproof the receiver by placing it in a water-tight radio box or wrapping it in a water-tight balloon.
- If you have little to no experience operating R/C models, we recommend you seek the assistance of an experienced modeler or your local hobby shop for guidance.
- The Low Voltage Alert alarm will sound when the transmitter battery voltage drops to the default threshold of 4.6 volts. If this occurs, stop using the transmitter as soon as is safely possible, then replace or recharge the transmitter batteries.

 The RX-482 2.4GHz FH4T Super Response SSL receiver included features an internal antenna. Do to the internal antenna position, **this receiver is not suitable for use in R/C boats.** It should be used in R/C cars and trucks only.

 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.

### SERVICE AND SUPPORT

### GENERAL

This product is warranted against manufacturer defects in materials and workmanship, at the original date of purchase. This warranty does not cover components worn by use or damage caused by improper voltage, tampering, modification, misuse, abuse, improper wiring, reverse polarity, moisture or using outside its intended scope of use.

**Terms of this warranty can vary by region. Please read the warranty card included with your radio control system for specific warranty information.**

If you have any questions or concerns, we're here to help. If you encounter a problem with your radio control system, first check the Troubleshooting Guide section on pages 65 and 66.

If you require further help that cannot be solved using the Troubleshooting Guide, or if you have technical questions, please contact the Airtronics or Sanwa service center in your region.

**For a complete list of distributors in your region, please visit [www.sanwa-denshi.com/rc/distributors.html](http://www.sanwa-denshi.com/rc/distributors.html).**

#### For Service In North America:

Global Services/Airtronics  
18480 Bandilier Circle  
Fountain Valley, CA 92708

Telephone: (714) 963-0329

Fax: (714) 964-6236

Email: [service@airtronics.net](mailto:service@airtronics.net)

#### Factory Service:

**Sanwa Electronic Instrument CO., LTD.**

1-2-50 Yoshida-Honmachi

Higashiosaka, Osaka, 578-0982 Japan

Telephone: 81-729-62-1277

Fax: 81-729-64-2831

Email: [rcintl@sanwa-denshi.co.jp](mailto:rcintl@sanwa-denshi.co.jp)

**Product features and specifications can vary by region. Not all products are legal for use in all regions.**

 Please note that products purchased outside of North America cannot be serviced under warranty by Global Services. In some cases, we can make repairs for products purchased outside of North America, however, applicable repair costs and shipping charges will be applicable. For warranty claims outside of North America, please contact the service center in your region.

### FCC COMPLIANCE STATEMENT

### GENERAL

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: (A) Reorient or relocate the receiving antenna, (B) Increase the separation between the equipment and the receiver, (C) connect the equipment into an outlet on a circuit different from that to which the receiver is connected and/or (D) consult the dealer or an experienced technician for help.

This device complies with Part 15 of the FCC Rules. 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.

This device complies with Industry Canada's license-exempt RSSs, 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et...
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

 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.

## 2.4GHZ FREQUENCY BAND PRECAUTIONS

GENERAL

- 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 transmitters are being used, therefore, carefully check the area before use. If response seems slow during use, stop your model immediately and discontinue use.
- If the 2.4GHz frequency band is saturated (too many transmitters turned ON at once), as a safety precaution, the transmitter and receiver may not pair. 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 transmitter and receiver should pair without any problems.

## TRANSMITTER PRECAUTIONS

GENERAL



- To prevent possible damage to your servos or a runaway model, turn the transmitter ON first, then turn the receiver ON. After running your model, turn the receiver OFF first, then turn the transmitter OFF.
- Before use, double-check that the transmitter and receiver batteries have sufficient power.

- The transmitter antenna is mounted internally and is located in the left front side portion of the transmitter, below the carrying handle (see diagram on page 7). Do NOT cover this area in any way during use! Doing so can block the RF signal, resulting in loss of control of your model.
- During use, hold the transmitter so that its orientated as close to vertical as possible at all times. This provides the best RF signal between the transmitter and the receiver. Try not to ever 'follow' your model with the transmitter, as this can result in a weakened RF signal.



- Do not expose the transmitter or any other components to excessive heat, moisture, fuel, exhaust residue, etc.
- 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

GENERAL

**!** The RX-482 2.4GHz FH4T Super Response SSL receiver features an internal antenna. Do to the internal antenna position, **this receiver is not suitable for use in R/C boats.** It should be used in R/C cars and trucks only. The MT-S radio system can be used with R/C boats if you use a compatible receiver that features an external antenna, such as the RX-472 2.4GHz FH4T Super Response SSL receiver.

- Although the reception capability of this receiver is equal to our other receivers that feature an external antenna, because the internal antenna is positioned lower in your model, the reception distance will be shorter in actual use.
- For the best reception distance possible, the top of the receiver **MUST** be toward the top of your model and the receiver should be mounted as high as possible in your model. The receiver can be mounted inside a receiver box, however, the antenna position will be lower and the reception distance may be shorter.
- Analog servos are not compatible with SHR or SSR Channel Response Modes. If using analog servos, you must use the NOR Channel Response Mode. Analog servos can be damaged if you use them with SHR or SSR Channel Response Modes.
- Any brand and type of digital servo can be used with the SHR Channel Response Mode, however, only Airtronics or Sanwa Super Response SRG digital servos can be used with the SSR Channel Response Mode. If your ESC does not operate correctly with the Throttle Channel Response Mode set to SHR or SSR, change the Throttle Channel Response Mode to NOR.
- The receiver is susceptible to vibration, shock and moisture. Take appropriate measures to protect against vibration and moisture. It's okay to wrap the receiver in protective foam rubber if desired. Doing so will not affect the reception distance.
- There is a danger of runaway operation if connectors loosen during use. Make sure that all connectors are securely fitted.
- With electric-powered models, be sure to fit any brushed motors with a noise suppression capacitor. Without a suppression capacitor, excessive electrical noise generation can cause runaway operation and result in damage to your model.

## SERVO CONNECTORS

GENERAL

The RX-482 2.4GHz FH4T Super Response SSL receiver uses 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.



**!** If using another brand of servo, double-check the polarity of the servo connector prior to plugging it into the receiver.

**!** When unplugging the servo connector, don't 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.

## SYSTEM FEATURES

GENERAL

- 4-Channel 2.4GHz FH4T Digital High-Response Telemetry System with Advanced Programming
- Backlit LCD Screen Allows You to Easily View Programming Options and Telemetry Data in All Types of Conditions
- High-Power FH4T Technology Provides the Best Reception and Connectivity, Giving Racers Added Assurance
- 4-Cell Dry Battery Holder for Lighter Weight - Also Accepts Optional NiMH Batteries or 2S LiPo or 2S LiFe Battery Packs
- Includes RX-482 2.4GHz FH4T Super Response Receiver w/Sanwa Synchronized Link Support
- Simplified Programming Menus
  - Normal, SHR and SSR Channel Response Modes
- Setup Wizard with Eight Car Types
  - Dual Throttle Mixing with Dig and Burn for Rock Crawlers
- 20 Model Memory
  - CODE Auxiliary
  - Programmable Switches
- Telemetry Logging
  - Step Auxiliary
  - Variable Rate Adjustment
- Servo Reversing
  - Point Auxiliary
  - Model Naming
- Steering, Throttle and Brake Dual Rate
  - Auxiliary Mixing
  - Model Select
- End Point Adjustment
  - Programmable Fail Safe
  - Model Clear
- Adjustable Rate Control (ARC) Adjustment
  - Receiver Battery Voltage Fail Safe
  - Selectable Modulation Type
- Servo Speed Adjustment
  - Digital Trims and Servo Sub-Trim
  - Adjustable LCD Contrast
- Anti-Lock Braking
  - Throttle Offset
  - Adjustable Key Volume and Tone
- Lap, Interval and Down Timers
  - Adjustable Throttle Trigger Position
  - Programmable Low Voltage Alarm
- Total, Best and Individual Lap Display
  - Adjustable Throttle Trigger Spring Tension
  - Inactivity and Over Voltage Alarms
- Four Wheel Steering Mixing
  - Adjustable Steering Wheel Tension
  - Digital Battery Voltage Monitor

## WHAT'S INCLUDED

GENERAL

The following accessories are included with your MT-S. If an accessory is missing or if any parts appear damaged in any way, please contact the Airtronics or Sanwa service center in your region. For more information, see the Service and Support section on page 4. **Contents may vary and are subject to change without notice.**

- MT-S 2.4GHz FH4T Digital High-Response Transmitter
- RX-482 (92082) Super Response SSL Receiver
- Receiver On/Off Switch
- Receiver Dust Boot Covers

## ITEMS REQUIRED, BUT NOT INCLUDED

GENERAL

### Transmitter Batteries:

- Four 'AA' Alkaline or NiMH cells or one 2S LiPo or 2S LiFe battery pack.

### Servos and ESCs:

- We recommend using digital servos and ESCs that support a high frame rate whenever possible. Due to the extremely high frame rate of the MT-S transmitter and RX-482 Super Response SSL receiver, analog servos and many ESCs may not be compatible when used with SHR or SSR Channel Response Modes. To prevent compatibility issues, use analog servos only in the NOR Channel Response Mode. If your ESC does not work using the SHR Channel Response Mode, use the NOR Channel Response Mode. Any brand and type of digital servo can be used with NOR or SHR Channel Response Modes. Only Airtronics or Sanwa SRG series digital servos are compatible for use with the SSR Channel Response Mode.

### Accessories:

- For a complete list of accessories, such as receivers, Telemetry sensors, ESCs, gyros and much more, please visit [www.airtronics.net](http://www.airtronics.net) (in North America only) or your local Airtronics or Sanwa authorized dealer. For a list of Sanwa distributors in your region, visit [www.sanwa-denshi.com/rc/distributors.html](http://www.sanwa-denshi.com/rc/distributors.html).

## SYSTEM SPECIFICATIONS

GENERAL

### Transmitter:

- Model: MT-S (90478)
- Output Power: 60mW
- Nominal Input Voltage: 4.8v to 7.4v
- Operating Voltage Range: 4.0v to 9.6v
- Dry Weight: 12.9oz (366g)
- Frequency: 2.4GHz FHSS
- Modulation Type: FH3, FH4T (Varies by Region)

### Receiver:

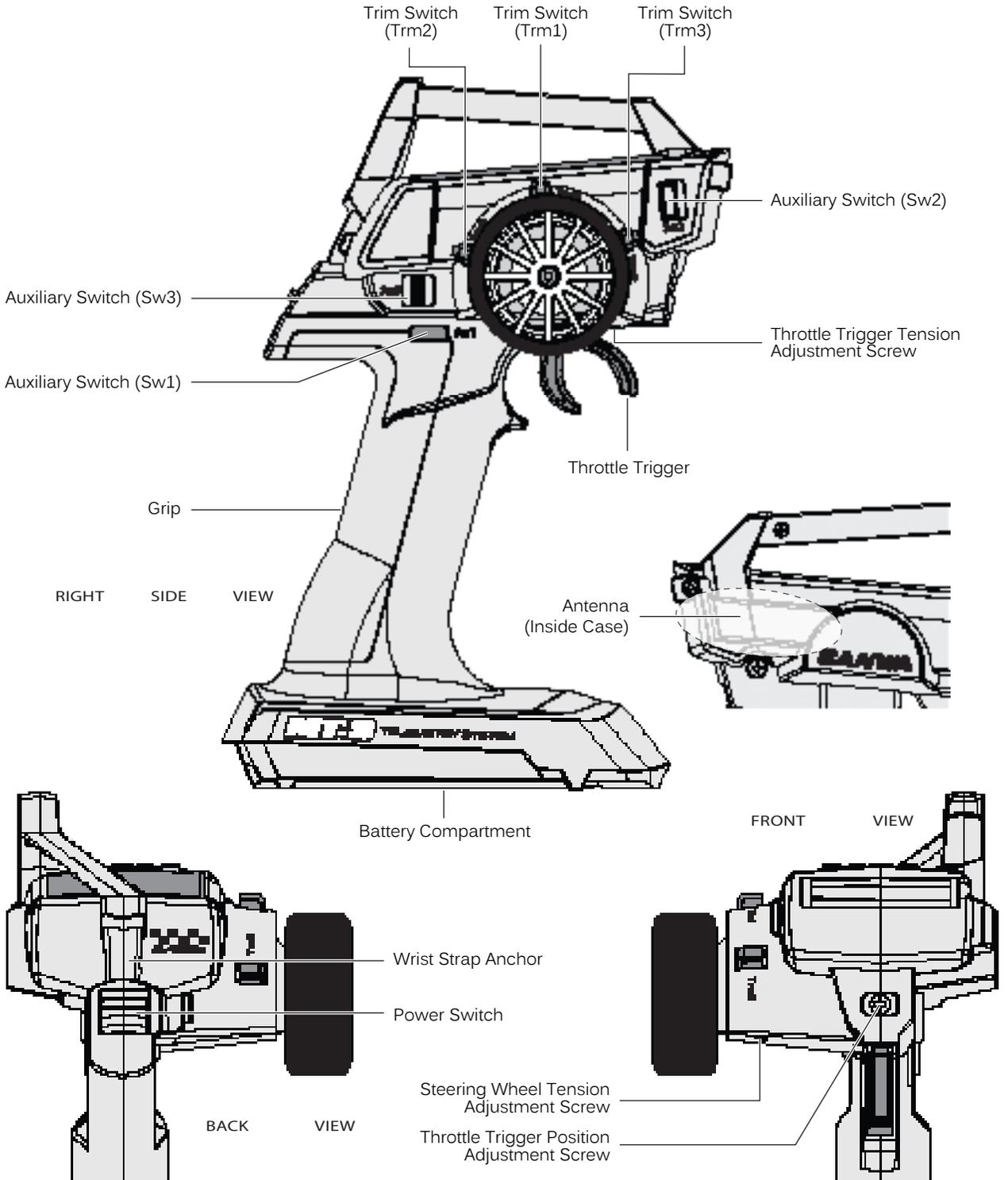
- Model: RX-482 (92082) Super Response SSL
- Nominal Input Voltage: 3.7v to 7.4v
- Weight: 0.25oz (7.1g)
- Dimensions: 0.71 x 0.96 x 1.06in (18.2 x 24.4 x 27.1mm)
- Frequency: 2.4GHz FH3/FH4T Selectable Via Transmitter
- Fail Safe Support: Yes (All Channels)
- Battery Voltage Fail Safe Limit: 3.5 to 5.0v (FH3) / 3.5 to 7.4v (FH4T)

## TRANSMITTER OVERVIEW DIAGRAMS

## GENERAL

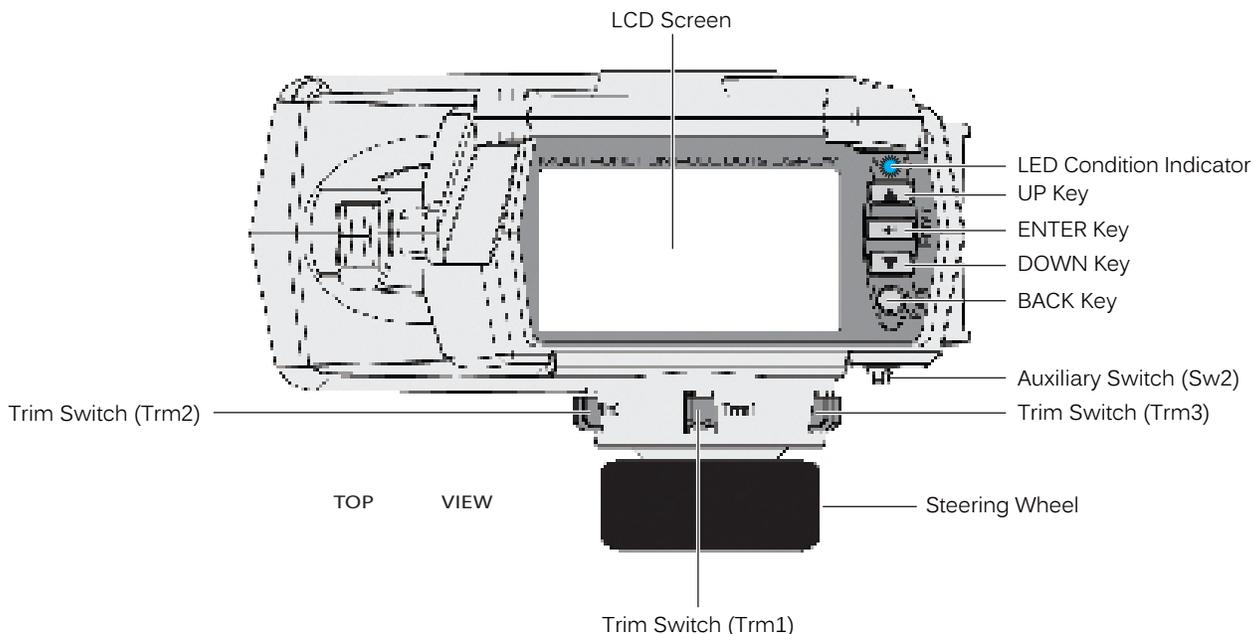
Use the diagrams in this section to familiarize yourself with the layout of your transmitter. Descriptions of these features can be found in the Transmitter and Receiver Overview Diagram Descriptions section on pages 9 and 10.

**!** The transmitter antenna is mounted internally and is located in the left front side portion of the transmitter, below the carrying handle. Do NOT cover this area in any way during use! Doing so can block the RF signal, resulting in loss of control of your model. During use, hold the transmitter so that its orientated as close to vertical as possible at all times. This provides the best RF signal between the transmitter and the receiver. Try not to ever 'follow' your model with the transmitter, as this can result in a weakened RF signal.



### TRANSMITTER OVERVIEW DIAGRAMS

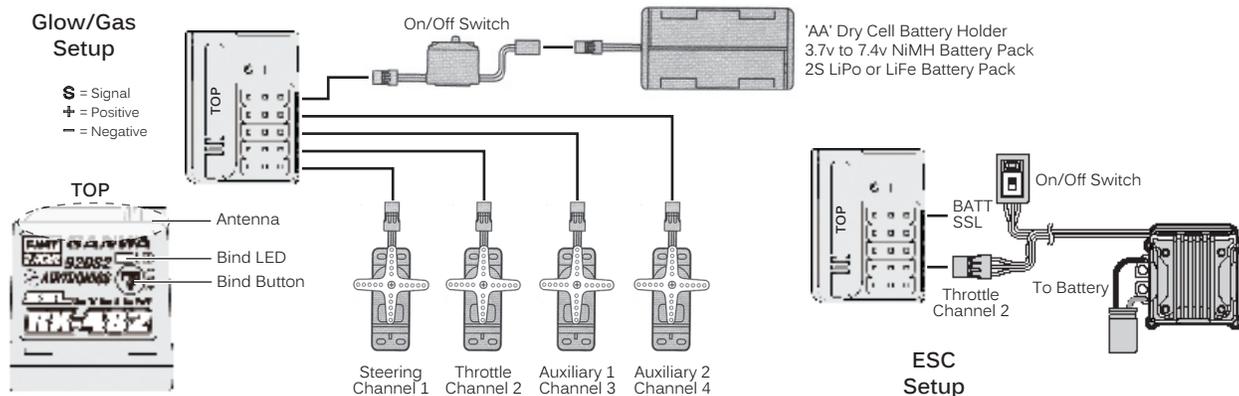
GENERAL



### RECEIVER OVERVIEW DIAGRAM, CONNECTIONS AND MOUNTING

GENERAL

Use the diagrams in this section to make receiver connections and to familiarize yourself with the RX-482 2.4GHz FH4T Super Response SSL receiver included with your MT-S radio control system. Descriptions of the features can be found in the Transmitter and Receiver Features Descriptions on the next two pages.



**!** If using a Sanwa Super Vortex series ESC, plug the ESC into the SSL slot, otherwise SSL features and Telemetry Data will not be available. All other ESC's should be plugged into CH 2.

**IMPORTANT:** The RX-482 2.4GHz FH4T Super Response SSL receiver does not feature full Telemetry support (e.g., Temperature data and RPM data). Full Telemetry capability is supported only when used with a Sanwa Super Vortex series ESC plugged into the BATT/SSL port.

#### Powering the Receiver:

The receiver's Nominal Input Voltage range is 3.7 to 7.4 volts. If you're using the receiver in a glow- or gas-powered model, you can use up to a 2S 7.4V LiPo battery pack to power the receiver and your servos. If you're using the receiver in an electric model, you can adjust your ESC's BEC power output to 7.4 volts (if applicable - refer to your ESC User's Guide for information) to power the receiver and your servos. This allows you to take advantage of the higher torque and speed provided by 7.4 volt digital servos commonly used today.

**!** Most "standard voltage" servos are designed to be used with a nominal input voltage of 4.8 to 6.0 volts. High voltage servos are designed for use with a nominal input voltage of 6.6 to 7.4 volts. Do NOT use "standard voltage" servos with a nominal input voltage higher than 6.0 volts or your servos can be damaged!

**Mounting Tips:**

- For the best reception distance possible, the top of the receiver MUST be toward the top of your model (as shown in the illustration on the previous page) and the receiver should be mounted as high as possible in your model.
- The receiver can be mounted inside a receiver box, however, when mounting inside a receiver box, the antenna position will be lower and the reception distance may be shorter.
- The receiver should be mounted securely to your model using a piece of double-sided foam tape to help minimize vibration. It's okay to wrap the receiver in protective foam rubber, if desired. Doing so will not affect the reception distance.
- Do to the internal antenna position, **this receiver is not suitable for use in an R/C boat.** It should be used in R/C cars and trucks only.



As a safety precaution, set your model on a stand so the wheels are off the ground before turning on your radio control system or connecting your motor for the first time.

**Bind LED:**

The Bind LED on the receiver can be used to determine receiver condition at a glance. The Bind LED will alert you to various receiver conditions, as shown in the table below.

LED COLOR	LED CONDITION	RECEIVER STATUS
Blue	ON	Receiving RF Signal
Blue	Slow Flash/Fast Flash	Binding Operation
Red & Blue	Flash	Receiver Battery Fail Safe Activates
Red	ON	No RF Signal After Receiver Battery Fail Safe Activates

**Antenna:** Transmits the signal from the transmitter to the receiver in the model. Never touch the Antenna during use. Doing so may result in a weakened RF signal or complete loss of control of your model. The receiver also features an antenna that receives the RF signal from the transmitter.

**Auxiliary Switch:** The transmitter features three separate Auxiliary Switches (Sw1, Sw2 and Sw3). Each Auxiliary Switch is programmable and will perform a different function depending on what function is assigned to it. Auxiliary Switch (Sw1) is a push-button switch, Auxiliary Switch (Sw2) is a 2-position sliding switch and Auxiliary Switch (Sw3) is a 3-position sliding switch.

**BACK Key:** Pressing the BACK Key returns the Programming Cursor to the previous menu. Press and HOLD the BACK Key to return to the STATUS screen.

**Battery Compartment:** Houses the four 'AA' Alkaline cells that power the transmitter. Alternatively, the transmitter can be powered using four 'AA' NiMH rechargeable batteries or a 2S LiPo or 2S LiFe battery pack.

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

**Bind LED:** Displays the current status of the receiver.

**DOWN Key:** Pressing the DOWN Key scrolls between the STATUS and TELEMETRY screens, scrolls the Programming Cursor DOWN or LEFT and Decreases Programming Values.

**ENTER Key:** Pressing the ENTER Key opens the selected menu or Programming Option. Press and HOLD to reset the selected Programming Option to its default value.

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

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

**LED Condition Indicator:** Displays the current RF signal output status of the transmitter, in addition to various other transmitter conditions.

**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. In addition, the Steering Wheel spring tension can be adjusted.

**Steering Wheel Tension Adjustment Screw:** Used to adjust the spring tension of the Steering Wheel to best suit the feel of the user.

**Throttle Trigger:** Controls the speed of the model, both forward and backward, or the model's brake. The Throttle Trigger position and spring tension can both be adjusted.

**Throttle Trigger Tension Adjustment Screw:** Used to adjust the spring tension of the Throttle Trigger to best suit the feel of the user.

## TRANSMITTER AND RECEIVER OVERVIEW DIAGRAM DESCRIPTIONS

GENERAL

**Throttle Trigger Position Adjustment Screw:** Used to adjust the position of the Throttle Trigger either forward or backward.

**Trim Switch:** The transmitter features three separate Trim Switches positioned around the Steering Wheel (Trm1, Trm2 and Trm3). Each Trim Switch is programmable and will perform a different function depending on what function is assigned to it. For example, Trm1 and Trm2 can be used to adjust steering and throttle Trim and Trm3 can be used to adjust steering Dual Rate.

**UP Key:** Pressing the UP Key scrolls between the STATUS and TELEMETRY screens, scrolls the Programming Cursor RIGHT or UP and Increases Programming Values.

**Wrist Strap Anchor:** Used to attach the wrist strap anchor to the transmitter.

## TRANSMITTER LED CONDITION INDICATOR AND WARNING ALARMS

GENERAL

The MT-S is equipped with several different Audible Warning Alarms to warn you of an abnormal transmitter condition. In addition, the LED Condition Indicator is used to indicate various conditions at a glance.

### LED Condition Indicator

The LED Condition Indicator is used to indicate various transmitter conditions at a glance. Some of the conditions indicated by the LED may also be accompanied by an audible alarm and/or and on-screen warning.

TRANSMITTER STATUS	LED	REMARK
RF Output Signal	ON	Normal Operation
Anti-Lock Braking Function Active	Flash Rapidly	
Throttle Offset Function Active	Flash Rapidly, Then Pause	
Low Voltage Alert Alarm Active	Flash Slowly	Press ENTER or BACK Key to Cancel
Telemetry Alarm Active	Flash Rapidly, Then Pause	
Inactivity Alarm Active	Flash Rapidly, Then Pause	Press ENTER or BACK Key to Cancel
Low Voltage Limit Alarm Active	Flash Rapidly	Replace Batteries
Over Voltage Alarm Active	Flash Rapidly	Battery Voltage Too High
RF Binding - Sending Bind Code	Flash Slowly	
Telemetry Logger Function Active	Flash Slowly	

### Audible Warning Alarms

The audible alarms listed below and on the next page may also be accompanied by an on-screen warning.

#### **Inactivity (Power ON) Alarm:**

The Inactivity Alarm will sound if the transmitter is left on for a period of 10 minutes without any control input from the user. This alarm alerts you to prevent unwanted draining of the transmitter battery.

To clear this alarm, either turn the transmitter OFF or press the ENTER or BACK key.

#### **Over Voltage Alarm:**

The Over Voltage Alarm will sound if the transmitter battery voltage is greater than 9.6 volts.

To clear this alarm, turn the transmitter OFF and replace the transmitter battery with one that when fully charged does not exceed 9.6 volts.

#### **Low Voltage Alert Alarm:**

The Low Voltage Alert alarm will sound when the transmitter batteries reach the Low Voltage Alert alarm voltage value programmed in the SYSTEM > ALARM menu. The alarm will sound each time the transmitter battery voltage Decreases by 0.1 volt.

To clear this alarm, press the ENTER or BACK key.

#### **Low Voltage Limit Alarm:**

The Low Voltage Limit alarm will sound when the transmitter batteries reach the Low Voltage Limit alarm voltage value programmed in the SYSTEM > ALARM menu.

This alarm can only be cleared by turning the transmitter OFF and replacing or recharging the transmitter batteries.

#### **Telemetry Alarm:**

The Telemetry alarm will sound when the Temperature 1 Alert alarm, Temperature 2 Alert alarm and/or the Voltage Alert alarm reach the Alert value programmed in the SYSTEM > TELEMETRY menu.

To clear this alarm, press the ENTER or BACK key.

## TRANSMITTER BATTERY OPTIONS

GENERAL

The MT-S transmitter has a Nominal Input Voltage range of 4.8 to 7.4 volts and an Operating Voltage Range of 4.0 to 9.6 volts. This allows you to use several different battery types, depending on your preference. Use the information below to determine what type of battery to use.

**Alkaline** - In the default configuration, the transmitter is designed to be powered using four 'AA' Alkaline batteries. This results in a transmitter that is lightweight and well-balanced for unmatched comfort. Install the four 'AA' Alkaline batteries into the battery holder included.

**NiMH** - Rechargeable NiMH batteries of desired capacity can be used in place of the Alkaline batteries. Using rechargeable NiMH batteries is more convenient and cheaper in the long run. The higher capacity batteries will also provide longer usage time than most Alkaline batteries. Install the four NiMH batteries into the battery holder included.

**LiPo or LiFe** - A 2-cell LiPo or LiFe battery pack can be used to power the transmitter. These battery packs are popular due to their light weight and high capacity for long usage time between charges. Remove the battery holder first, then install the LiPo or LiFe battery pack.

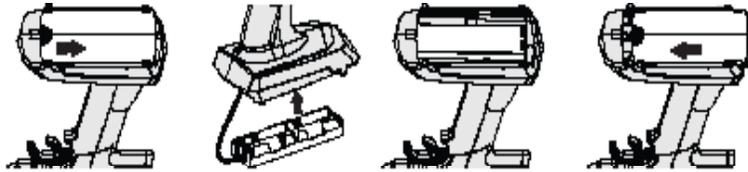
 Transmitter power output, range and speed are the same, regardless of the battery type used. **If using a LiPo or LiFe battery pack, please read the Warnings if Using a LiPo or LiFe Battery Pack section below.**

## ALKALINE BATTERY INSTALLATION

GENERAL

- 1) Remove the battery cover from the bottom of the transmitter by pushing firmly on the battery cover in the direction of the arrow and sliding it off.

 Remove the battery holder and double-check that the battery holder is plugged in. If it isn't, plug the connector on the battery holder into the matching connector in the transmitter.



- 2) Install four fresh 'AA' Alkaline batteries into the battery holder, making sure that the polarity is correct. The direction that each battery should be installed is molded into the bottom of the battery holder (+ Positive and - Negative).
- 3) Reinstall the battery holder into the transmitter, making sure that the batteries toward bottom of the transmitter (so the smooth bottom of the battery holder will be toward the battery cover). This will prevent the battery cover from hitting or catching on the batteries when you reinstall it.
- 4) Slide the battery cover back onto the transmitter and push it firmly until it 'clicks' closed.

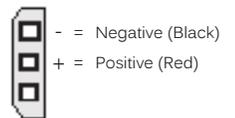
**IMPORTANT:** You must change the transmitter battery Low Voltage Alert and Low Voltage Limit alarms to match the battery type you're using or else you may receive erroneous low voltage alarms during use, or worse run your battery down so low as to damage it. For more information, see the BATTERY Menu section on pages 60 through 62.

Your battery pack must not exceed 9.6 volts when fully charged or the transmitter Over Voltage alarm will sound when the transmitter is turned ON.

## WARNINGS IF USING A LIPO OR LIFE BATTERY PACK

GENERAL

- Use ONLY a 2-Cell LiPo or LiFe battery pack of desired capacity.
- The MT-S transmitter does not feature a charge jack. For the safety of both the battery pack and the transmitter itself, the battery pack must be removed from the transmitter during the charging process.
- Use a balance charger specifically designed to charge LiPo or LiFe battery packs. Charge the battery pack in an open area free of any obstructions.
- When changing the connector on your battery pack to match the battery connector in the transmitter, please observe correct polarity. Connecting with reverse polarity will damage the transmitter.
- Observe all safety precautions provided with your LiPo or LiFe battery pack.
- Do not leave the battery pack unattended during the charging process.
- If the battery pack appears swollen or otherwise damaged, do not use it or charge it. It should be discarded and replaced.
- Damage to the transmitter caused by improper use, wrong battery type, incorrect voltage or reverse polarity will not be covered under warranty!



 The transmitter has a Nominal Input Voltage range of 4.8 to 7.4 volts. **DO NOT USE A 3-CELL LiPo or LiFe battery pack or the transmitter will be damaged!** Use a 2-Cell LiPo or LiFe battery pack only!

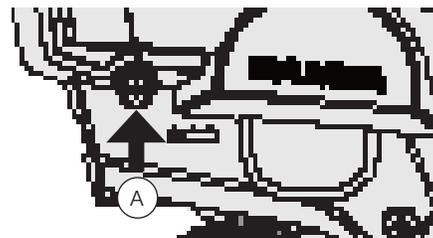
## THROTTLE TRIGGER POSITION ADJUSTMENT

GENERAL

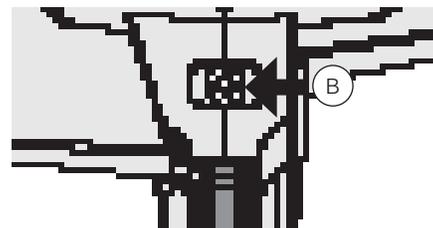
The position of the Throttle Trigger can be adjusted forward or backward to change the feel of the Throttle Trigger during use. Some users may prefer the Throttle Trigger positioned farther forward and some users may prefer the Throttle Trigger positioned farther back. It all depends on your personal preference.

To adjust the Throttle Trigger position, follow the steps below:

- 1) Use a # 1 Philips screwdriver to loosen the Throttle Trigger Lock Screw (A).

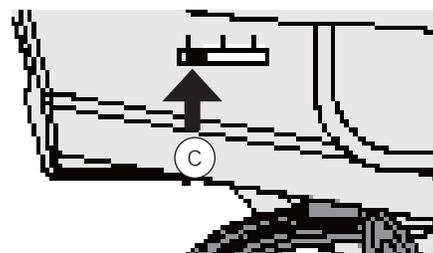


- 2) Use a # 1 Philips screwdriver to move the Throttle Trigger forward or backward. To move the Throttle Trigger backward, turn the Throttle Trigger Position Adjustment Screw (B) counter-clockwise. To move the Throttle Trigger forward, turn the Throttle Trigger Position Adjustment Screw (B) clockwise.



 As you adjust the Throttle Trigger position, the Throttle Trigger Position Adjustment Indicator (C) will move, indicating the current position of the Throttle Trigger.

- 3) After adjusting the Throttle Trigger, tighten the Throttle Trigger Lock Screw (A) to lock the Throttle Trigger in position.



**IMPORTANT:** The Throttle Trigger adjustment range is approximately 7mm. Do not attempt to adjust the Throttle Trigger position beyond the limits indicated by the Throttle Trigger Position Adjustment Indicator or damage to the transmitter may result. Moving the Throttle Trigger position does not affect the physical end points of the Throttle Trigger.

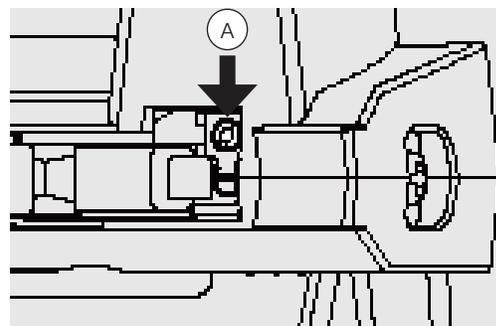
## THROTTLE TRIGGER AND STEERING WHEEL SPRING TENSION ADJUSTMENT

GENERAL

The spring tension of the Throttle Trigger and Steering Wheel can be adjusted to best suit the user. Some users may prefer the Throttle Trigger and/or Steering Wheel to feel firmer and some users may prefer them to feel softer. It all depends on your personal preference.

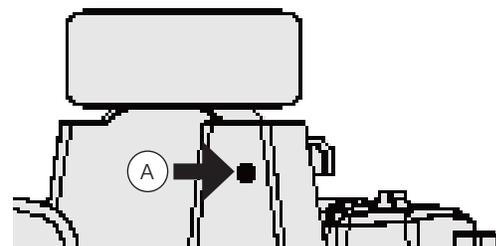
To adjust the Throttle Trigger spring tension, follow the step below:

- 1) To Increase the spring tension of the Throttle Trigger (make firmer), use a 1.5mm hex wrench to turn the Throttle Trigger Tension Adjustment Screw (A) clockwise. To Decrease the spring tension of the Throttle Trigger (make looser), turn the Throttle Trigger Tension Adjustment Screw counter-clockwise.



To adjust the Steering Wheel spring tension, follow the step below:

- 1) To Increase the spring tension of the Steering Wheel (make firmer), use a 1.5mm hex wrench to turn the Steering Wheel Tension Adjustment Screw (A) clockwise. To Decrease the spring tension of the Steering Wheel (make looser), turn the Steering Wheel Tension Adjustment Screw counter-clockwise.



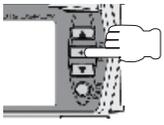
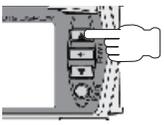
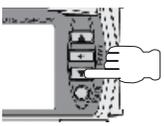
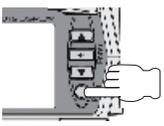
## PROGRAMMING KEYS OVERVIEW AND FUNCTIONS

GENERAL

Navigating through the Status screen, Telemetry screen, the various Programming Menus and changing Programming Values is done using the ENTER, UP, DOWN and BACK keys.

**PRO TIP:** While navigating Programming Menus and changing Programming Values, keep the following in mind:

- (A) To open the PROGRAMMING MENU screen from the STATUS screen or the TELEMETRY screen, press the ENTER key.
- (B) To open a Programming Menu, press the UP or DOWN keys to highlight the desired Programming Menu, then press the ENTER key to open it.
- (C) To choose an option to program, press the UP or DOWN keys to highlight the desired option, then press the ENTER key. The highlighted option will flash, indicating the Programming Value can be changed. Once you've changed the Programming Value, press the ENTER key again or press the BACK key and the highlighted option will stop flashing, indicating you can scroll UP or DOWN to highlight another Programming Option.
- (D) To reset a Programming Option to its default Programming Value, highlight the option and press the HOLD the ENTER key.

PROGRAMMING KEY	NAME	FUNCTION
	ENTER Key	Opens the selected Programming Menu or Programming Option. Press and HOLD to reset the selected Programming Option to its default Programming Value.
	UP Key	Used to select STATUS and TELEMETRY screens and various Programming Menus. Used to select specific channels in some Programming Menus. Increases Programming Values.
	DOWN Key	Used to select STATUS and TELEMETRY screens and various Programming Menus. Used to select specific channels in some Programming Menus. Decreases Programming Values.
	BACK Key	Returns to the previous Programming Menu. Repeatedly press to return to the STATUS screen.

## STATUS SCREEN AND TELEMETRY SCREEN OVERVIEW

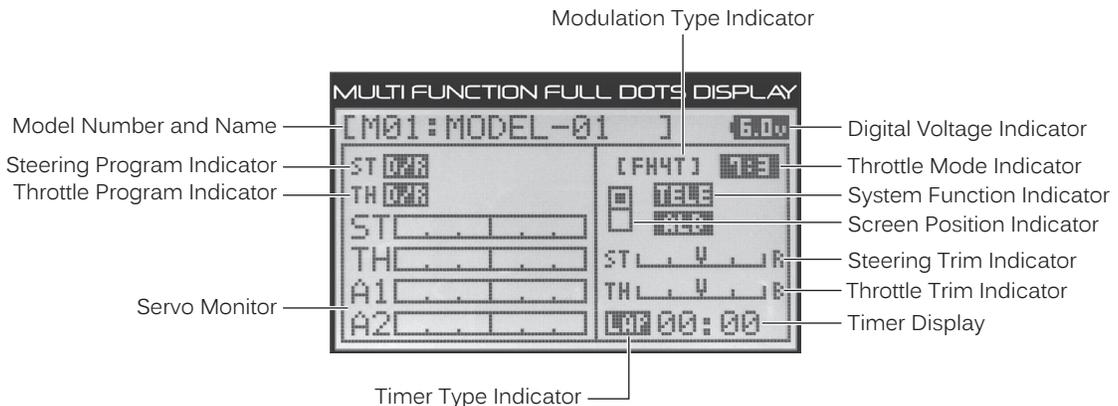
GENERAL

Use the information in this section to familiarize yourself with the layout and different indicators that comprise the STATUS screen and TELEMETRY screen.

The STATUS screen will always be displayed when you turn the transmitter ON, regardless of which screen was last displayed.

### STATUS Screen:

The STATUS screen is displayed when you turn the transmitter ON. The STATUS screen displays all pertinent information, such as the Model Name, Modulation Type, Timer, Servo Monitor and much more.





SETUP WIZARD (CAR TYPE TEMPLATES)

GENERAL

The Setup Wizard allows you to quickly and easily program the transmitter based on the type of model you're driving. Eight Car Type Templates are provided. When a Car Type Template is selected, functions are automatically Assigned to the correct channel and to the Auxiliary Switches and Trim Switches. This takes the guess-work out of setting up more complex models.

For example, if your Rock Crawler features Front and Rear Steering servos and Front and Rear Motors, choosing the CRAWLER 4WS/MOA Car Type Template will automatically program the transmitter for Four Wheel Steering Mixing and Motor on Axle Mixing. In addition, various functions will be Assigned to the Auxiliary Switches and Trim Switches. The Setup Wizard will also display what receiver channel ports to plug the servos into since this will vary depending on the Car Type Template chosen.

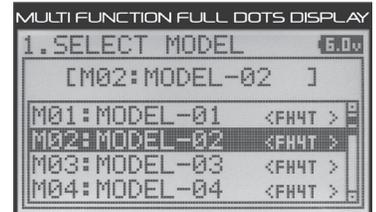
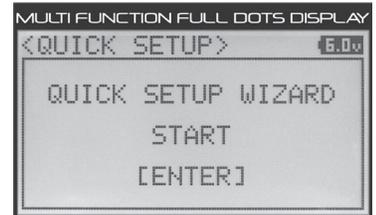
After choosing the desired Car Type Template, you can then choose the desired Modulation Type of your receiver, choose the desired Channel Response Mode for each of the four channels, then Bind the transmitter and receiver. After Binding, you can then change Servo Reversing, Sub-Trim and EPA programming values to finish the Setup Wizard.

**WARNING:** the Setup Wizard is designed to be used when setting up a new model and should be done prior to making any programming changes to your model. When you run the Setup Wizard, all Programming Data (including custom Programming Data) for the selected model will be LOST!

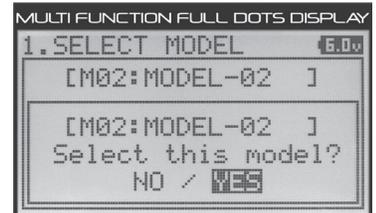
⚠ For detailed information about specific programming options that can be changed through the Setup Wizard, such as Binding the transmitter and receiver, Modulation Type, Channel Response Mode, Servo Reversing, etc., please refer to those specific sections in this User's Guide.

**Starting the Setup Wizard and Choosing a Car Type Template:**

- 1) Turn the transmitter OFF.
- 2) Press and HOLD the ENTER key, then turn the transmitter ON to open the Setup Wizard.
- 3) Press the ENTER key to start the Setup Wizard and open the SELECT MODEL menu.
- 4) Press the UP or DOWN keys to highlight the model you would like to set up.

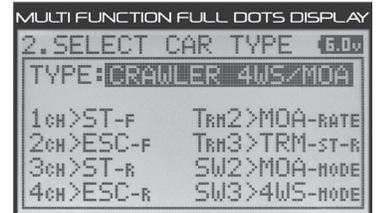


- 5) Press the ENTER key. Select this model? NO/YES will be displayed. Press the UP or DOWN keys to highlight YES, then press the ENTER key to open the SELECT CAR TYPE menu.



⚠ If you want to go back and select a different model or you don't want to create the new Car Type Template for any reason, choose NO or press the BACK key.

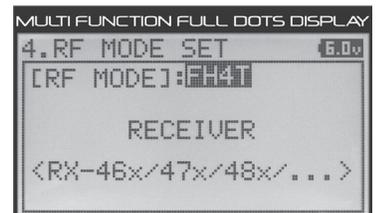
- 6) Press the UP or DOWN keys to select the Car Type that matches the type of model you're setting up, for example, CRAWLER 4WS/MOA. What channel ports to plug the servos into your receiver and what functions will be controlled by what Auxiliary Switches and Trim Switches will be displayed.
- 7) Press the ENTER key. INITIALIZE? NO/YES will be displayed. Press the UP or DOWN keys to highlight YES, then press the ENTER key. INITIALIZING will flash momentarily, then the RF MODE SET menu will open.



⚠ If you want to go back and select a different Car Type Template or you don't want to create the new Car Type Template for any reason, choose NO or press the BACK key before Initializing.

**Changing the Modulation Type, Channel Response Mode and Binding:**

- 1) After selecting the Car Type Template, the RF MODE SET menu will be open. Press the UP or DOWN keys to select the desired Modulation Type, then press the ENTER key. The RESPONSE MODE menu will open. **The Modulation Type should match the Modulation Type of the receiver you're using!**



**Changing the Modulation Type, Channel Response Mode and Binding, Continued:**

2) Press the UP or DOWN keys to highlight the desired channel you would like to change the Channel Response Mode for.

The following Channel Response Modes are available:

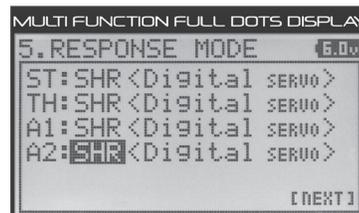
**NOR** - Use with any brand of Analog or Digital servos (Slowest Response Time).

**SHR** - Use with any brand of Digital servos only (Faster Response Time).

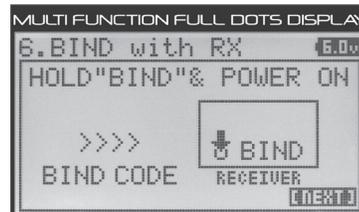
**SSR** - Use with Airtronics or Sanwa Super Response SRG Digital servos only (Fastest Response Time) - FH4T Only.

3) Press the ENTER key, then press the UP or DOWN keys to choose the desired Channel Response Mode value for the selected channel.

4) Press the ENTER key, then repeat steps 1 and 2 to choose the Channel Response Mode for any desired remaining channels.



5) Press the UP or DOWN keys to highlight NEXT, then press the ENTER key to open the BIND to RX menu. NEXT will be highlighted.



6) Hold the Bind button down on the receiver, then turn the receiver ON. The Bind LED on the receiver will flash slowly. Release the Bind Button. The Bind LED will continue to flash slowly.

\*—\*—\*—

7) Press the ENTER key. The NEXT command and the LED on the transmitter will begin to flash and the Bind LED on the receiver will flash rapidly, then go out.

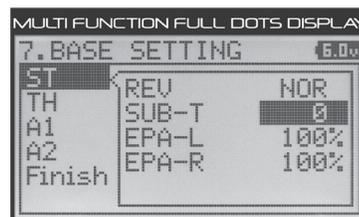
\* \* \* \* \* ⇨ ▀

8) After the Bind LED on the receiver goes out, press the ENTER key a second time. Both the Bind LED on the receiver and the LED on transmitter will illuminate solid, indicating that the Binding procedure is complete and the BASE SETTING menu will open.

\* \* \* \* \* ⇨ ▀ ⇨ \*

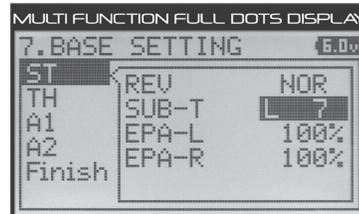
**Changing the Base Setting Programming Values:**

1) After completing the Binding process, the BASE SETTING menu will be open. Press the UP or DOWN keys to highlight the desired Programming Option you want to change for the ST (Steering), TH (Throttle), A1 (Auxiliary 1) or A2 (Auxiliary 2) channels.

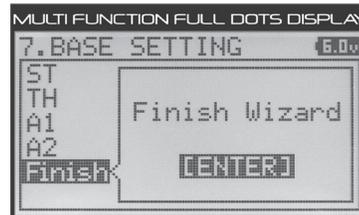


2) Press the ENTER key, then press the UP or DOWN keys to choose the desired value for the selected Programming Option.

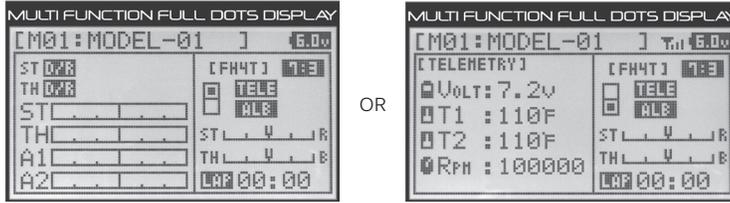
3) Press the ENTER key, then repeat steps 1 and 2 to change the values for any remaining Programming Options.



4) After making all your desired programming changes, press the UP or DOWN keys to highlight FINISH, then press the ENTER key twice to finish the Setup Wizard. The Setup Wizard will close and the STATUS screen will be displayed.

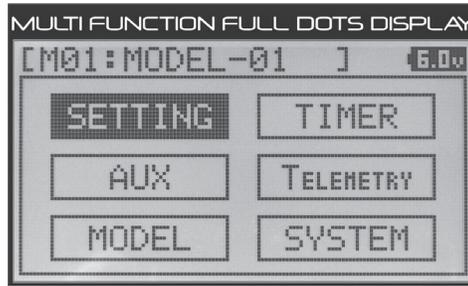


The MT-S features a PROGRAMMING screen that is accessed by pressing the ENTER key from either the STATUS screen or the TELEMETRY screen.



OR

Press ENTER Key



The PROGRAMMING screen contains all of the MT-S's various Programming Menus, categorized into six different menus. To access these menus, press the UP or DOWN keys to highlight the desired menu, then press ENTER key to open the selected menu.

SETTING	AUX	MODEL	TIMER	TELEMETRY	SYSTEM
D/R	STEP	MODEL SELECT	LAP	LOGGER	BIND
SPEED	POINT	MODEL NAME	INT	ALERT SETTING	KEY ASSIGN
CURVE	4WS	MODEL COPY	DOWN	TELEMETRY SETTING	BUZZER
F/S	MOA	MODEL CLEAR			BATTERY
BASE	AUX MIX				LCD
FUNC	CODE				VR ADJUST

**!** Some Programming Menu contain more sub-menus than those shown, and those sub-menus will vary depending on the channel selected. For example, The FUNC>ST menu contains the TRIM menu, however, the FUNC>TH menu contains the TRIM menu, in addition to Throttle-specific programming, such as the ALB, OFFSET and TH TYPE menus.

### Navigating Programming Menus:

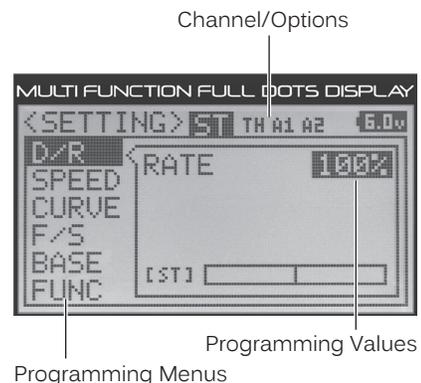
When you open a Programming Menu, the cursor will flash over the Channel/Options along the top of the Programming Menu screen, which consists of either four channels (ST, TH, A1 and A2) or other options (CH, SET, etc.).

**To Select the Desired Channel or Option** - When the cursor is flashing over a channel or option, press the UP or DOWN keys to highlight the desired channel or option you want to make programming changes to, then press the ENTER key to select it. The cursor will stop flashing and the first Programming Value that can be changed will be highlighted.

**To Change Programming Values** - After selecting the desired channel or option, the cursor will stop flashing and the first Programming Value that can be changed will be highlighted. Press the UP or DOWN keys to select the desired Programming Value you want to change, then press the ENTER key. The cursor will flash over the selected Programming Value. Press the UP or DOWN keys to change the highlighted Programming Value.

**To Select Another Channel or Option** - At any time you want to select another channel or option to make programming changes to, press the BACK key until the cursor is flashing over one of the four channels or options. You can then press the UP or DOWN keys to highlight another channel or option, then press the ENTER key to select it.

**To Select Another Programming Menu** - Press either the ENTER key or the BACK key so that no cursor is flashing. Press the UP or DOWN keys to highlight the desired Programming Menu, then press the ENTER key to open it. You can then select the desired channel or option and change the desired Programming Value as described above.



### TRANSMITTER AND RECEIVER BINDING

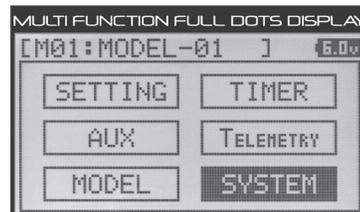
### GENERAL

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 procedure 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.

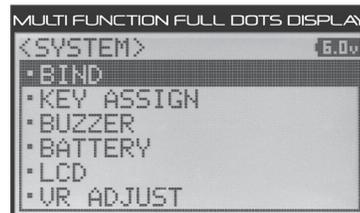
**IMPORTANT:** This section details Binding the RX-482 2.4GHz FH4T Super Response SSL receiver with the Channel Response Mode set to SHR. If you are Binding an FH3 receiver, or if you prefer to change the Channel Response Mode, see the BIND Menu section on pages 55 and 56.

**!** Before beginning the Binding procedure, connect the switch harness, servos and the receiver battery to your receiver, using the diagram in the Receiver Overview Diagram, Connections and Mounting section on pages 8 and 9. **Make sure that both the transmitter and the receiver are turned OFF.**

- 1) Turn the transmitter ON. The STATUS screen should be displayed.
- 2) Press the ENTER key to open the PROGRAMMING screen, then press the UP or DOWN keys to highlight the SYSTEM menu.

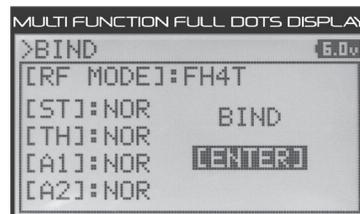


- 3) Press the ENTER key to open the SYSTEM menu, then press the ENTER key to open the BIND menu.



- 4) Press the UP or DOWN keys to highlight the ENTER command. Do not press the ENTER key yet.

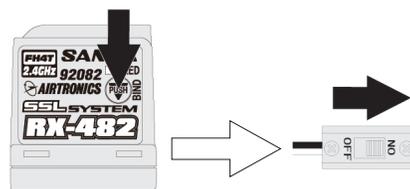
**!** Verify that the Modulation Type is set to RF MODE : FH4T and that the Channel Response Mode for each channel is set to NOR. If you need to change any of these settings, see the BIND Menu section on pages 55 and 56.



- 5) While holding down the Bind Button on the receiver, turn the receiver ON. The Bind LED on the receiver will flash slowly. Release the Bind Button. The Bind LED will continue to flash slowly.

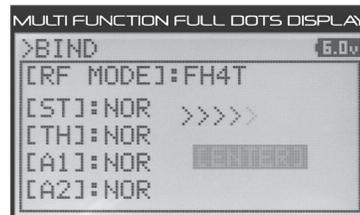
\*—\*—\*—

**!** You must complete step 5 below within 10 seconds or the Bind LED will go out, indicating the receiver has timed out. If this occurs, turn the receiver OFF, then repeat step 4.



- 6) With ENTER highlighted, press the ENTER key. The ENTER command and the LED on the transmitter will begin to flash and the Bind LED on the receiver will flash rapidly, then go out.

\* \* \* \* \* ⇨ •



- 7) After the Bind LED on the receiver goes out, press the ENTER key a second time. Both the Bind LED on the receiver and the LED on transmitter will illuminate solid, indicating that the Binding procedure is complete.

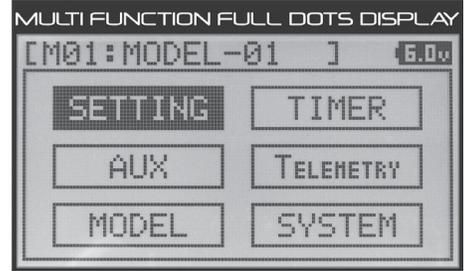
\* \* \* \* \* ⇨ • ⇨ \*

- 8) Move the Steering Wheel and Throttle Trigger to verify that the servos are operating normally, then repeatedly press and HOLD the BACK key to return to the STATUS screen.

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

To access the various SETTING menu Programming Menus, turn the transmitter ON, then press the ENTER key to open the PROGRAMMING screen.

Press the UP or DOWN keys to highlight the SETTING menu, then press the ENTER key to open the SETTING menu.



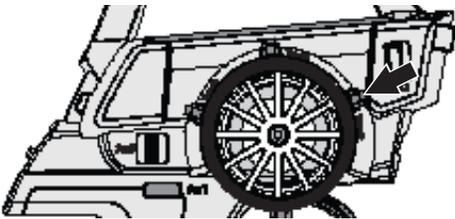
The following Programming Menus are available within the SETTING menu:

MENU	MENU DESCRIPTION	PAGE #
D/R	Adjust Steering, Throttle and Brake Dual Rates	PG. 19
SPEED	Adjust Servo Speed in the Forward and the Return to Neutral Directions	PG. 20
CURVE	Adjust Channel Adjustable Rate Control (ARC)	PG. 21
F/S	Program Fail Safe Settings and Receiver Battery Voltage Fail Safe	PG. 22
BASE	Adjust Channel Servo Reversing, Sub-Trim and End Points	PG. 24
FUNC	Adjust Channel Trim, Anti-Lock Brake, Throttle Offset and Throttle Type	PG. 26

D/R MENU (DUAL RATE)

The Dual Rate function allows you to change the control authority of the Steering, Throttle High Side and Throttle Brake Side by changing the amount of servo travel relative to control input. For example, by increasing the Steering Dual Rate, you can make the Steering servo travel more, which might prevent your model from pushing during turns. Alternately, if your model over-steers during turns, you can reduce the amount of Steering Dual Rate. **Adjusting Steering Dual Rate affects both Right Side and Left Side steering equally, however, you are able to adjust Throttle Dual Rate on the Throttle High Side and Throttle Brake Side independently.**

**IMPORTANT:** Prior to programming the Dual Rate function, you should adjust the maximum Left and Right (or High and Low) End Points. For more information, see the EPA Menu section on pages 25 and 26.

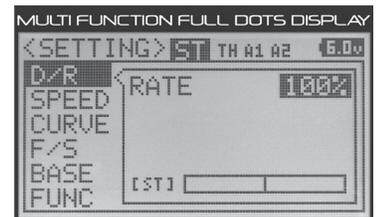


**!** In the default configuration, Trim Switch Trm3 controls Steering Dual Rate. Throttle and/or Brake Dual Rate can be changed while you're driving by Assigning these functions to a Trim Switch. In addition, the Dual Rate function can be toggled ON and OFF while you're driving by assigning this function to an Auxiliary Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

**Changing the Dual Rate Percentage Values:**

- From within the SETTING menu, press the UP or DOWN keys to highlight the channel you want to adjust the Dual Rate percentage value for, then press the ENTER key to open the D/R menu. RATE 100% will be highlighted.

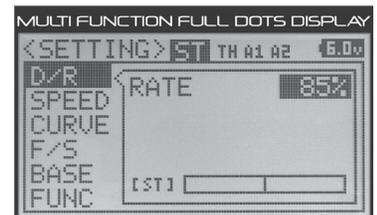
**!** If the cursor isn't flashing over Channel/Options, press the BACK key.



**IMPORTANT:** Dual Rate percentage values cannot be changed for A1 (Auxiliary Channel 1) or A2 (Auxiliary Channel 2).

- Press the ENTER key, then press the UP or DOWN keys to Increase or Decrease the Dual Rate percentage value for the selected channel. When the Dual Rate percentage value is Decreased, servo travel is Decreased. When the Dual Rate percentage value is Increased, servo travel is Increased.

D/R RATE setting range is 0% to 100%. The default setting for all channels is 100%.

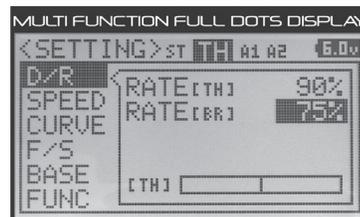


### D/R MENU (DUAL RATE)

SETTING

#### Changing the Dual Rate Percentage Values, Continued:

**!** You are able to adjust the Dual Rate percentage values for the Throttle High Side and the Throttle Brake Side separately by pressing the UP or DOWN keys to highlight the selected Rate percentage value, either RATE TH or RATE BR.



**IMPORTANT:** Dual Rate is a percentage of End Point Adjustment. For example, if you set the Steering Dual Rate percentage value to 100%, the Steering will travel the same amount defined by your End Point Adjustment programming. Alternately, if you set the Steering Dual Rate percentage value to 50%, the Steering will travel half the amount defined by your End Point Adjustment programming.

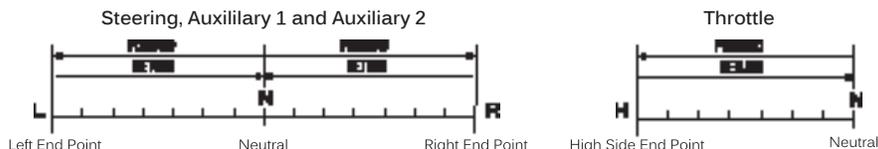
### SPEED MENU (SERVO SPEED)

SETTING

The Servo Speed function allows you to slow the transit speed of the Steering, Throttle, Auxiliary 1 and Auxiliary 2 servos. Servo transit speed can be slowed in both the Forward and the Return to Neutral directions independently.

When driving your model, proper steering and throttle control are vital. For example, lowering the transit speed of the steering servo can help to limit excessive steering, which will enable you to achieve smoother cornering. In addition, lowering the throttle servo speed can help to ensure smooth throttle control.

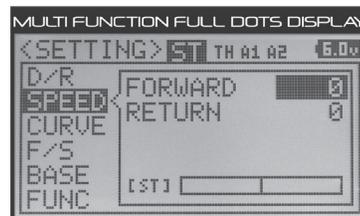
**!** Throttle Servo Speed affects only the Throttle High Side. The Throttle Brake Side is unaffected.



**!** Servo Speed Programming Values can be changed while you're driving by Assigning these functions to a Trim Switch. In addition, the Servo Speed function can be toggled ON and OFF while you're driving by assigning this function to an Auxiliary Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

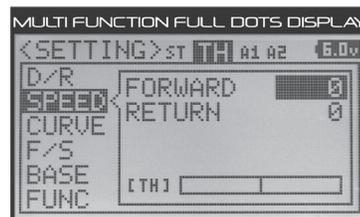
#### Selecting the Menu and Channel:

1) From within the SETTING menu, press the UP or DOWN keys to highlight the SPEED menu. SPEED ST FORWARD 0 will be highlighted.



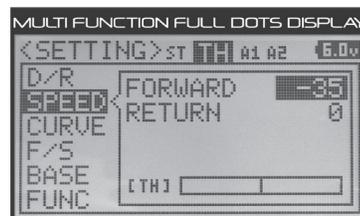
**!** If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the SPEED menu.

- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the desired channel you would like to change Forward and Return to Neutral values for, then press the ENTER key.



#### Changing the Forward Speed Value:

1) Press the ENTER key, then press the DOWN key to Decrease the Forward Servo Speed value. When 0 is selected, the servo will travel at its normal transit speed in the Forward direction. When a Negative value is selected, the servo transit speed will slow down in the Forward direction.



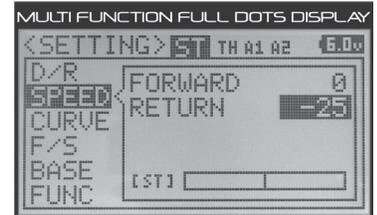
SPEED FORWARD setting range is 0 to -100. The default setting for all channels is 0 (Normal Speed).

## SPEED MENU (SERVO SPEED)

SETTING

### Adjusting the Return to Neutral Speed Value:

- 1) Press the DOWN key to highlight RETURN 0.
- 2) Press the ENTER key, then press the DOWN key to Decrease the Return to Neutral Speed value. When 0 is selected, the servo will travel at its normal transit speed in the Return to Neutral direction. When a Negative value is selected, the servo transit speed will slow down in the Return to Neutral direction.



SPEED RETURN setting range is 0 to -100. The default setting for all channels is 0 (Normal Speed).

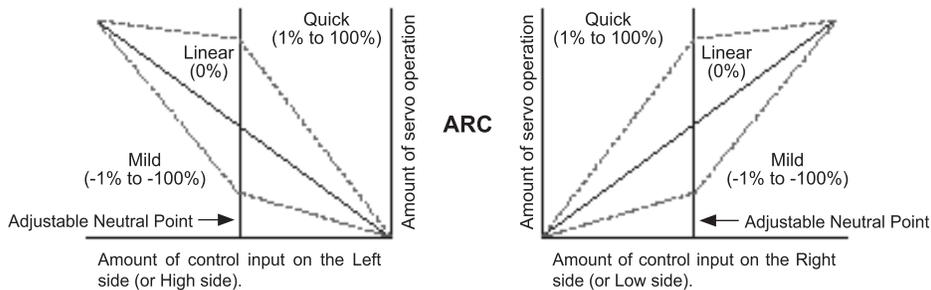
## CURVE MENU (ADJUSTABLE RATE CONTROL)

SETTING

The Curve function allows you to use Adjustable Rate Control (ARC) to vary the amount of servo travel in relation to the amount of control movement near the Neutral positions, to change the way those functions react to control movement.

Decreasing the CURVE Rate percentage value will Soften the control feel around Neutral and Increasing the CURVE Rate percentage value will Heighten the control feel around Neutral. Using a Lower Negative value allows for smoother control. Using a Higher Positive value may result in more 'twitchy' control response.

The Curve function uses Adjustable Rate Control, which works like Exponential, except that the Adjustable Rate Control features the added benefit of being able to move the Neutral Point, whereas Exponential features a fixed Neutral Point. In addition, an ARC Curve is more Linear than an Exponential Curve.



CURVE Rate percentage values can be adjusted from Mild through Linear to Quick to allow you to set the most effective control response for your model. For example, if your model over-steers, reduce the Steering CURVE Rate percentage value and if your model under-steers, Increase the Steering CURVE Rate percentage value. Alternately, reduce the Throttle High Side CURVE Rate percentage value on a slippery track or with a model that has a higher-torque motor or engine, and Increase the Throttle High Side CURVE Rate percentage value on a high-grip track or with a model that has a lower-torque motor or engine.

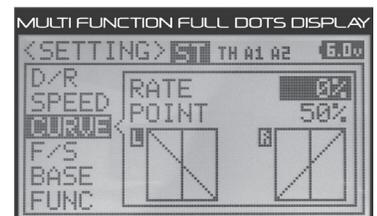
For the utmost in precision control, CURVE Point and Rate values can be adjusted separately for the Throttle High Side and the Throttle Brake Side. A graph that depicts the control output and ARC Curve relationship is featured to help visualize the changes you make.

**!** Curve Rate Values for the Steering, Throttle and Brake can be changed while you're driving by Assigning these functions to a Trim Switch. In addition, the Curve function can be toggled ON and OFF while you're driving by assigning this function to an Auxiliary Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

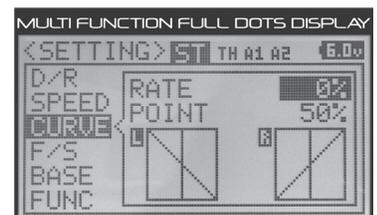
### Selecting the Menu and Channel:

- 1) From within the SETTING menu, press the UP or DOWN keys to highlight the CURVE menu. CURVE ST RATE 0% will be highlighted.

**!** If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the CURVE menu.



- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the desired channel you would like to change Rate and Point percentage values for, then press the ENTER key.



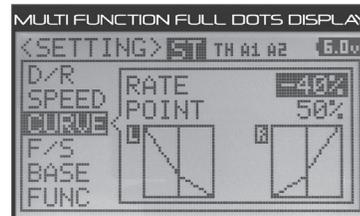
## CURVE MENU (ADJUSTABLE RATE CONTROL)

SETTING

### Changing the Rate Percentage Value:

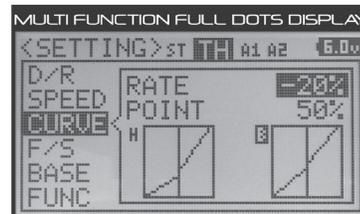
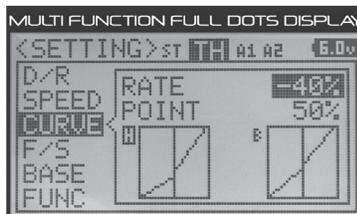
The Rate percentage value determines the amount of Adjustable Rate Control, either Quick, Mild or Linear (see diagram on the previous page). When a Positive or Negative Rate percentage value is programmed, a Linear Curve will be created from the Neutral Point.

- 1) Press the ENTER key, then press the UP or DOWN keys to Increase or Decrease the Rate percentage value. Using a Negative Rate percentage value will Soften the control feel around the Neutral Point and using a Positive Rate percentage value will Heighten the control feel around the Neutral Point.



CURVE RATE setting range is -100% (Mild) to 100% (Quick). The default setting for all channels is 0% (Linear).

⚠ You are able to adjust the Rate percentage value for the Throttle High Side and the Throttle Brake Side separately. To do this, pull or push the Throttle Trigger to highlight H (for High Side) or B (for Brake Side), prior to programming the Rate percentage value.

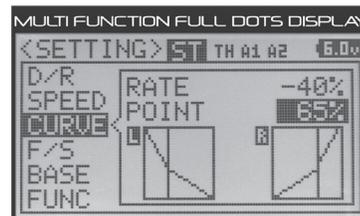


⚠ The Rate percentage value for the Steering, Auxiliary 1 and Auxiliary 2 channels effects both sides equally.

### Changing the Point Percentage Value:

The Point percentage value determines the Neutral Point where the Rate percentage value begins. For example, you may not want the Neutral Point to be centered between the High and Low End Points. You might want the Neutral Point shifted to the Right or to the Left.

- 1) Press the DOWN key to highlight POINT 50%.
- 2) Press the ENTER key, then press the UP or DOWN keys to Increase or Decrease the Point value. Increasing the Point value will shift the Neutral Point to one side of center and Decreasing the Point value will shift the Neutral Point to the opposite side of center.



CURVE POINT setting range is 5 to 95. The default setting is for all channels 50 (Centered).

⚠ Like the Rate percentage value, you are able to adjust the Point percentage value for the Throttle High Side and the Throttle Brake Side separately.

## F/S MENU (FAIL SAFE)

SETTING

The Fail Safe function automatically moves 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 low transmitter battery voltage. The Fail Safe function can be programmed to HOLD the servos in the last position they were in when the signal was lost or the servos can be programmed to move to a custom position when the signal is lost. For example, the Throttle servo (or ESC) can be programmed to move toward the Brake Side to engage the Brakes and stop your model, or, if you're driving a boat, the Fail Safe function could be set to Lower the Throttle servo (or ESC) to idle and turn the rudder slightly Left or Right so that the boat will continue in slow circles.

In addition, a Receiver Battery Voltage Fail Safe function is featured that can alert you when your receiver battery requires recharging. This ensures that the receiver battery's voltage doesn't drop so low that your servos aren't provided adequate voltage to operate optimally.

⚠ Fail Safe settings can be programmed for each of the four channels individually. Fail Safe settings are model-specific, meaning you can have different Fail Safe settings for each of your models.

**IMPORTANT:** The Fail Safe settings will be retained even if the transmitter loses power or if the transmitter and receiver must be paired again.

Three Fail Safe options are available for each channel as described below:

**FREE** - Fail Safe is Disabled for this channel. Servos can move freely when the signal is lost.

**HOLD** - When Fail Safe Activates, the servo will be held in the last position it was in when the signal was lost.

**% (PERCENTAGE)** - When Fail Safe Activates, the servo will travel to the programmed position when the signal is lost.

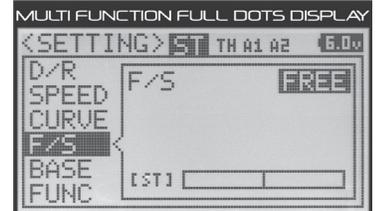
**WARNING:** The Fail Safe function will NOT OPERATE if the receiver loses power. For example, if the receiver battery were to die or come unplugged. It will operate only if the transmitter and receiver signal is interrupted or if the transmitter loses power.

### Selecting the Menu and Channel:

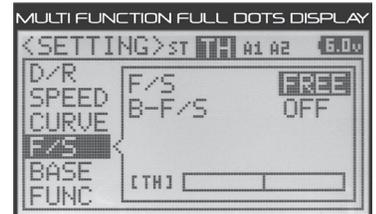
- 1) From within the SETTING menu, press the UP or DOWN keys to highlight the F/S menu. F/S ST F/S FREE will be highlighted.



If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the F/S menu.



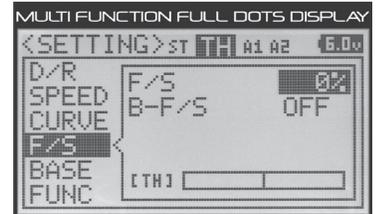
- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the desired channel you would like to change the Fail Safe value for, then press the ENTER key.



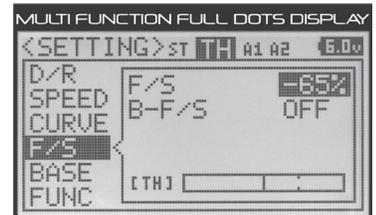
### Choosing the Fail Safe Settings:

- 1) Press the ENTER key, then press the UP or DOWN keys to choose the desired Fail Safe value for that channel. If you choose to program a % value, see step 2 below.

F/S setting range is FREE, HOLD or %. The default setting for all channels is FREE.



- 2) To program a Fail Safe % value do the following: While the cursor is flashing over the Fail Safe 0% value, move the transmitter control (e.g., the Throttle Trigger) the desired amount, then press and HOLD the ENTER key until an audible Tone sounds. The direction and percentage the servo will travel will be displayed. For example, to set the Brakes to Engage when the Fail Safe function Activates, push the Throttle Trigger toward the Brake Side the desired amount, HOLD the Throttle Trigger in that position, then press and HOLD the ENTER key.



### Setting the Receiver Battery Voltage Fail Safe Function:

The Receiver Battery Voltage Fail Safe function is designed to alert you when your receiver battery requires recharging. This ensures that the receiver battery's voltage doesn't drop so low that your servos aren't provided adequate voltage to operate optimally. When Activated, the Throttle servo will move to the predetermined position that you programmed in step 5 in the Choosing the Fail Safe Settings section above to indicate your receiver battery's voltage has dropped below the programmed Voltage value.

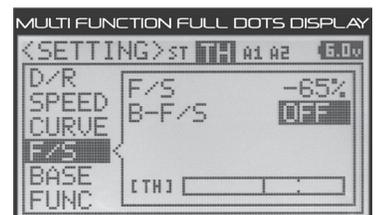
**IMPORTANT:** This function is designed for use with glow- or gas-powered models that use a separate receiver battery pack. We don't recommend using this function with an electric model that uses a motor battery to power the servos and receiver.

- 1) Follow the steps in the Selecting the Menu and Channel, and Choosing the Fail Safe Settings sections above to program a Throttle Fail Safe percentage value.



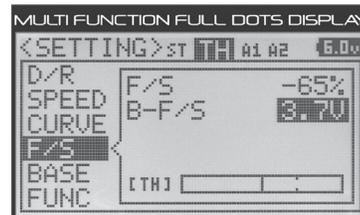
If FREE or HOLD is chosen for the Throttle channel, you cannot Activate the Receiver Battery Voltage Fail Safe function. A % value must be chosen for the Throttle channel to be able to program and use the Receiver Battery Fail Safe function.

- 2) From within the F/S TH menu, press the DOWN key to highlight B-F/S OFF.



### Setting the Receiver Battery Voltage Fail Safe Function, Continued:

- Press the ENTER key, then press the UP or DOWN keys to choose the desired Receiver Battery Fail Safe Voltage value. Many factors, such as the current draw of your servos and how many servos you're using, etc., will determine what value to use. A good starting point would be 3.7V.



**!** If it appears your servos are slow or not producing adequate torque when the Receiver Battery Voltage value is reached, increase the Receiver Battery Voltage value. Conversely, if your servos are still operating normally when the Receiver Battery Voltage value is reached, it's safe to decrease the Receiver Battery Voltage value.

F/S B-F/S setting range for FH4T receivers is OFF and 3.5V to 7.4V. F/S B-F/S setting range for FH3 receivers is OFF and 3.5V to 5.0V. The default setting is OFF regardless of the Modulation Type chosen.

### Checking the Fail Safe Settings:

- Make sure that both the transmitter and receiver are turned ON.
- While someone is holding your model, turn the transmitter OFF. The servos should react correctly based on the Fail Safe values chosen.

The BASE menu contains Servo Reversing, Servo Sub-Trim and End Point Adjustment function programming in one convenient Programming Menu.

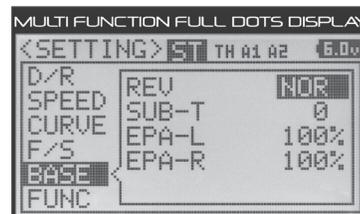
### REV MENU [Servo Reversing]

The Servo Reversing function allows you to electronically switch the direction of servo travel. For example, if you rotate the Steering Wheel to the Right, and the Steering servo moves to the Left, you can use the Servo Reversing function to make the Steering servo move to the Left. The Servo Reversing function is available for all four channels.

**IMPORTANT:** When you change the direction of servo travel, the servo horn may no longer be centered. If this occurs, use the Servo Sub-Trim function to center the servo horn. For more information, see the SUB-T Menu section on page 25.

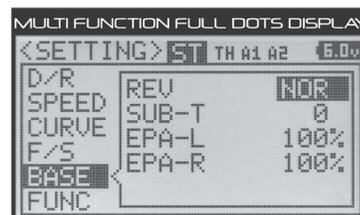
### Selecting the Menu and Channel:

- From within the SETTING menu, press the UP or DOWN keys to highlight the BASE menu. BASE ST REV NOR will be highlighted.



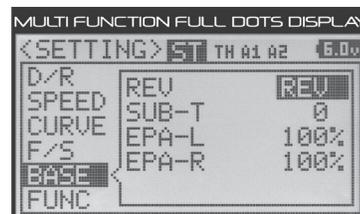
**!** If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the BASE menu.

- Press the BACK key so that the cursor is flashing over Channel/Options.
- Press the UP or DOWN keys to highlight the desired channel you would like to change the Servo Reversing value for, then press the ENTER key.



### Changing the Servo Reversing Values:

- Press the ENTER key, then press the UP or DOWN keys to choose the desired Servo Reversing value. Choose from either NOR (Normal) or REV (Reverse).

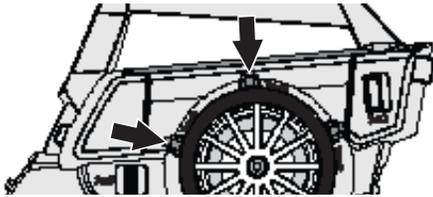


BASE REV setting range is NOR and REV. The default setting for all channels is NOR.

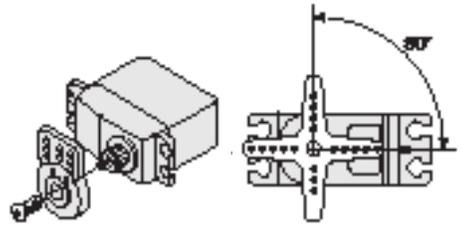
**SUB-T MENU [Servo Sub-Trim]**

The Sub-Trim function allows you to correct the Neutral Trim setting for the Steering, Throttle, Auxiliary 1 and Auxiliary 2 channels, making it possible to center the Trim Switches while ensuring the servo horns remain centered.

It's not unusual that when you center a servo and install the servo horn, the servo horn is not exactly centered. The Sub-Trim function allows you to center the servo horn exactly, without altering the servo End Point travel. This is especially useful when using a Mix, such as Four Wheel Steering Mixing. For example, you can use the Sub-Trim function to adjust the Neutral Trim setting of your Front and Rear Steering servos independently to ensure your model tracks straight.



⚠ Before changing the Sub-Trim values you should set the Steering and Throttle Trim to 0% using the Trm1 and Trm2 Trim Switches.



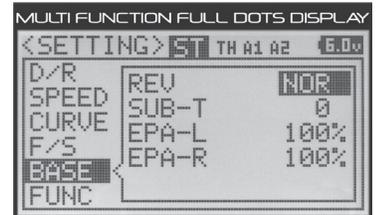
**Installing the Control Servo Horns:**

- 1) Install the servo horn (or servo saver for the Steering servo) onto your servo, making sure that the servo horn (or servo saver) is as close to being centered as possible. In some cases, you can get the servo horn closer to being centered by rotating the servo horn 180° and reinstalling it.

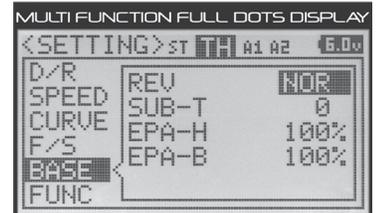
**Selecting the Menu and Channel:**

- 1) From within the SETTING menu, press the UP or DOWN keys to highlight the BASE menu. BASE ST REV NOR will be highlighted.

⚠ If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the BASE menu.

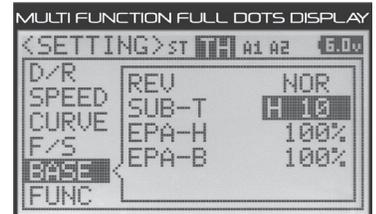


- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the desired channel you would like to change the Sub-Trim value for, then press the ENTER key.



**Changing the Servo Sub-Trim Values:**

- 1) Press the DOWN key to highlight SUB-T 0.
- 2) Press the ENTER key, then press the UP or DOWN keys to Increase or Decrease the Sub-Trim value only enough to center the servo horn.



BASE SUB-T setting range is R150 to L150 (or H150 to B150, or H150 to L150). The default setting for all channels is 0.

**IMPORTANT:** Changing the Sub-Trim values will alter the servo's End Points. After changing the Sub-Trim values, use the End Point Adjustment function to Reset the servo End Point Adjustment Percentage Values. For more information, see the EPA Menu section on pages 25 and 26.

**EPA MENU [End Point Adjustment]**

The End Point Adjustment function allows you to adjust servo travel in each direction. This makes it possible to balance servo travel in both directions and set the maximum desired amount of servo travel. For example, on a gas-powered model, if you pull the Throttle Trigger and the carburetor does not open completely, you can Increase the Throttle High End Point Adjustment so that the carburetor opens completely. Another example is with steering. If your model turns sharper to the Right than to the Left, you can Increase the Steering Left End Point Adjustment to balance the steering.

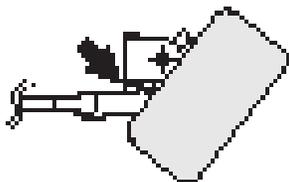
## BASE MENU (SERVO REVERSING, SUB-TRIM AND END POINT ADJUSTMENT)

SETTING

### EPA MENU [End Point Adjustment]

The End Point Adjustment function can be adjusted for the Steering channel (Right and Left), the Throttle channel (High and Brake), the Auxiliary 1 channel (High and Low) and the Auxiliary 2 channel (High and Low).

**IMPORTANT:** Before making End Point Adjustments, the servo horn needs to be centered. Install the servo horn onto the servo, making sure it's as close to being centered as possible, then use the Servo Sub-Trim function to center the servo arm exactly. For more information, see the SUB-T Menu section on the previous page.

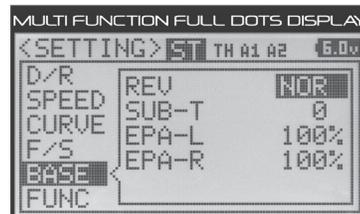


**!** End Point Adjustment percentage values should not be Increased to the point where your linkages and servos bind when moved all the way to the Right or Left (or High or Low). Binding will cause the servos to 'buzz', resulting in a quicker loss of receiver battery power and eventual damage to the servos or to your model.

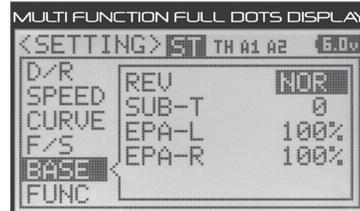
### Selecting the Menu and Channel:

- 1) From within the SETTING menu, press the UP or DOWN keys to highlight the BASE menu. BASE ST REV NOR will be highlighted.

**!** If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the BASE menu.

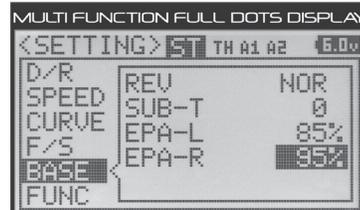


- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the desired channel you would like to change the EPA value for, then press the ENTER key.



### Changing the EPA Percentage Values:

- 1) Press the DOWN key to highlight the EPA percentage value you want to change.
- 2) Press the ENTER key, then press the UP or DOWN keys to Increase or Decrease the End Point Adjustment percentage value. Increasing the percentage value will Increase servo travel in that direction and Decreasing the percentage value will Decrease servo travel in the that direction.



BASE EPA setting range is 0% to 150%. The default setting for all channels is 100%.

**!** If you're using an ESC, the Throttle High and the Throttle Brake End Point Adjustment percentage values are both generally set to 100%, although the Throttle High direction may need to be Increased to achieve full power. In some cases, Throttle and Brake End Point Adjustments can also be set directly via the Electronic Speed Control.

## FUNC MENU (TRIM, ANTI-LOCK BRAKE, THROTTLE OFFSET AND THROTTLE TYPE)

SETTING

The FUNC menu contains Trim, Anti-Lock Brake, Throttle Offset and Throttle Type function programming in one convenient Programming Menu.

### TRIM MENU [Servo Trim]

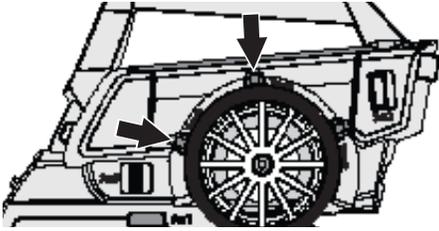
The Trim function allows you to view the current Trim value for each of the four channels and, if desired, allows you to change the Trim values using the UP and DOWN keys from within the TRIM menu. For example, if you don't Assign Auxiliary 1 Trim to a Trim Switch, you can still Trim the Auxiliary 1 channel from within the TRIM menu.

The MT-S features Digital Trim Memory. Any amount of Trim that you set during use using the Trim Switches or through the TRIM menu is automatically stored in memory for that specific channel and for that specific model. The Trim values for the selected model will automatically be loaded when the transmitter is turned ON.

Each time you move a Trim Switch a short audible Tone is heard. When the Trim value reaches 0 (Centered), a longer audible Tone sounds. This indicates to you that the Trim is centered without the need to look at the transmitter.

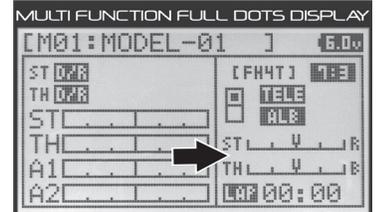
TRIM MENU [Servo Trim]

**!** In the default configuration, Trim Switch Trm1 and Trm2 move the Steering and Throttle/Brake Trim in 5% increments. If you want to Increase or Decrease the Trim Resolution, see the Changing the Trim Switch Step Value section on page 59.



**!** In the default configuration, Trim Switch Trm1 controls Steering Trim and Trim Switch Trm2 controls Throttle/Brake Trim. Auxiliary 1 Trim and Auxiliary 2 Trim can be changed while you're driving by Assigning one of these functions to another Trim Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

**!** The current Trim positions for the Steering and Throttle channels is shown on the STATUS screen.

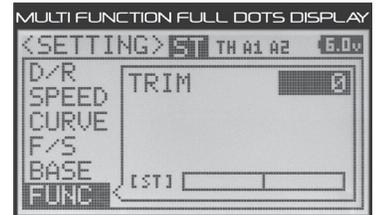


**!** Before changing the Trim values, first verify that all Trim values are set to 0, then adjust the servo Sub-Trim values to center the servo horns perfectly. For more information, see the SUB-T Menu section on page 25.

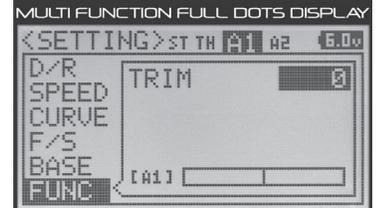
**Selecting the Menu and Channel:**

1) From within the SETTING menu, press the UP or DOWN keys to highlight the FUNC menu. FUNC ST TRIM 0 will be highlighted.

**!** If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the FUNC menu.



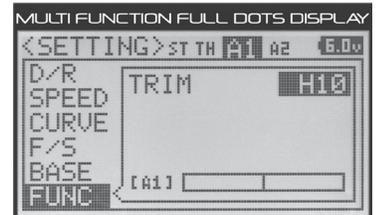
- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the desired channel you would like to change Trim values for, then press the ENTER key.



**Changing the Trim Values:**

1) Press the ENTER key, then press the UP or DOWN keys to Increase or Decrease the Trim value in the desired direction.

FUNC TRIM setting range is 0 to 100 in each direction. The default setting for all channels is 0.

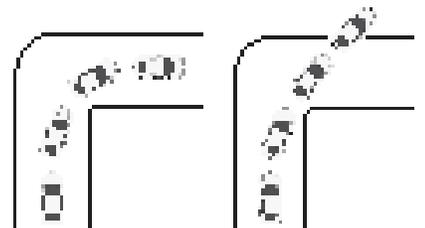


ALB MENU [Anti-Lock Brake]

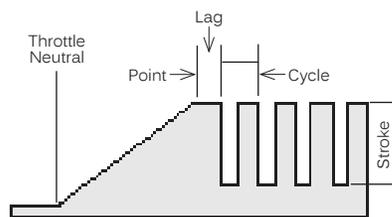
The Anti-Lock Braking function makes it possible to achieve stable braking even on a slippery surface. With stable braking, your model is better able to trace an exact line under braking. When the Anti-Lock Braking function is turned ON, the Throttle servo will pulse when you apply Brake. Different Anti-Lock Braking options can be programmed, including how quickly the Brake pulsates, the Point at which the Anti-Lock Braking function Starts and more.

The Anti-Lock Braking function is primarily used on gasoline- or glow-powered models that feature a Throttle servo. It can be used on an electric model that uses an ESC, however, if your Electronic Speed Control's reverse function is turned ON, the Anti-Lock Braking function will not operate properly.

**!** The Anti-Lock Braking function operates only when the Throttle Trigger is moved from Neutral to the Brake Side. Set the hardest Braking you can obtain from your model by carefully setting the Anti-Lock Braking function right before the tires fully lock up but do not slip and lose traction. Be aware that using the Anti-Lock Brake function will never result in your model losing traction under braking. It only improves braking under less than ideal conditions.



ALB MENU [Anti-Lock Brake]

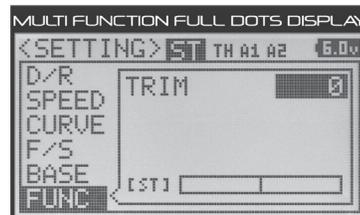


⚠ Anti-Lock Braking Programming Values can be changed while you're driving by Assigning these functions to a Trim Switch. In addition, the Anti-Lock Braking function can be toggled ON and OFF while you're driving by assigning this function to an Auxiliary Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

The diagram at right illustrates the relationship between the Point, Lag, Cycle and Stroke functions, all of which can be programmed separately to suit your specific model, track conditions and Anti-Lock Braking behavior.

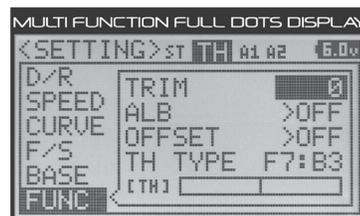
**Selecting the Menu and Channel:**

- 1) From within the SETTING menu, press the UP or DOWN keys to highlight the FUNC menu. FUNC ST TRIM 0 will be highlighted.



⚠ If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the FUNC menu.

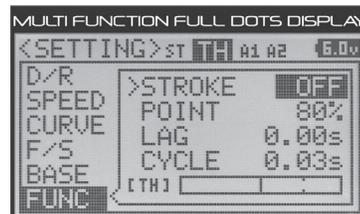
- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the Throttle channel, then press the ENTER key.



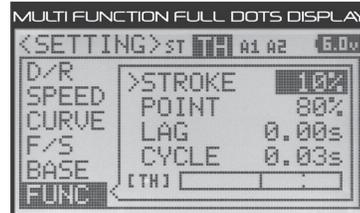
**Changing the Stroke Percentage Value:**

The Stroke percentage value determines the amount of Brake that's applied automatically when the Anti-Lock Braking function is toggled ON.

- 1) Press the DOWN key to highlight ALB >OFF, then press the ENTER key to open the ALB sub-menu. STROKE OFF will be highlighted.



- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Stroke percentage value. Increasing the Stroke percentage value will increase Throttle servo travel in the Brake direction and Decreasing the Stroke percentage value will Decrease Throttle servo travel in the Brake direction.



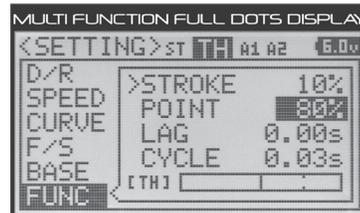
FUNC ALB STROKE setting range is OFF to 100%. The default setting is OFF.

**IMPORTANT:** A Stroke percentage value of 1% or greater must be programmed for the Anti-Lock Braking function work. If a Stroke value of OFF is chosen, the Anti-Lock Braking function will not work.

**Changing the Point Percentage Value:**

The Point percentage value determines the position along the length of Brake Side servo travel that the Anti-Lock Braking function Activates at when toggled ON. For example, if set to 80%, you will have Normal Braking from the Throttle Neutral Point to 79% of servo travel. At 80% of servo travel and beyond, the Anti-Lock Braking function will Activate when turned ON.

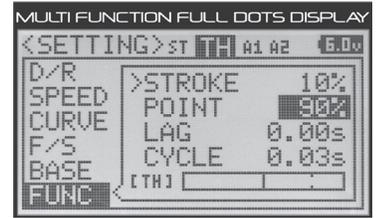
- 1) From within the ALB sub-menu, press the UP or DOWN keys to highlight POINT 80%.



ALB MENU [Anti-Lock Brake]

**Changing the Point Percentage Value, Continued:**

- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Point percentage value. Increasing the Point percentage value will cause the Anti-Lock Braking function to Activate later and Decreasing the Point percentage value will cause the Anti-Lock Braking function to Activate sooner.

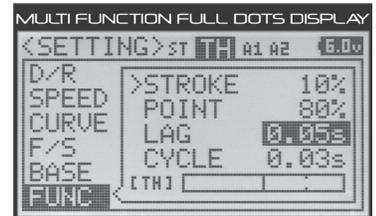


FUNC ALB POINT setting range is 5% to 100%. The default setting is 80%.

**Changing the Lag Value:**

The Lag value determines the amount of Delay in Seconds before the Anti-Lock Braking function Activates after reaching the Point setting.

- 1) From within the ALB sub-menu, press the UP or DOWN keys to highlight LAG 0.00s.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Lag value in Seconds. Increasing the Lag value increases the Delay time to Activate the Anti-Lock Braking function after reaching the Point setting and Decreasing the Lag value decreases the Delay time to Activate the Anti-Lock Braking function after reaching the Point setting.

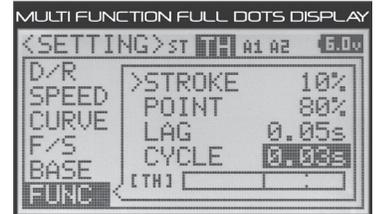


FUNC ALB LAG setting range is 0.00s to 1.00s. The default setting is 0.00s.

**Changing the Cycle Value:**

The Cycle value determines the speed at which the Brake pulsates in Seconds. By changing the Cycle value, you can make the Brake pulsate Faster or Slower. The Cycle value determines how quickly the Brake moves from the Point setting to the Stroke setting and how quickly the Brake moves from the Stroke setting back to the Point setting.

- 1) From within the ALB sub-menu, press the UP or DOWN keys to highlight CYCLE 0.03s.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Cycle value in Seconds. Increasing the Cycle value will cause the Brake to pulsate Slower and Decreasing the Release value will cause the Brake to pulsate Faster.



FUNC ALB CYCLE setting range is 0.01s to 1.00s. The default setting is 0.03s.

OFFSET MENU [Throttle Offset]

The Throttle Offset function allows you to shift the Neutral Point of the Throttle servo to a fixed position, either toward the High Side or the Brake Side, while still allowing you full control of the Throttle. For example, if you're driving a glow- or gas-powered model, you can use the Throttle Offset function to raise the engine idle for starting or you can program the Throttle Offset function to Increase the engine to a steady idle while you're refueling during a race. Alternately you can use the Throttle Offset function to apply Brake and shut your engine off.

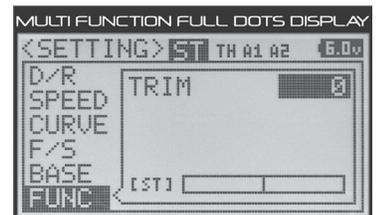
**!** The Throttle Offset function shifts the Neutral Point of the Throttle servo without affecting the High Side or Brake Side End Points. This allows you to have full control over the Throttle even when the Throttle Offset function is turned ON.

**!** Throttle Offset Programming Values can be changed while you're driving by Assigning this function to a Trim Switch. In addition, the Throttle Offset function can be toggled ON and OFF while you're driving by assigning this function to an Auxiliary Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

**Selecting the Menu and Channel:**

- 1) From within the SETTING menu, press the UP or DOWN keys to highlight the FUNC menu. FUNC ST TRIM 0 will be highlighted.

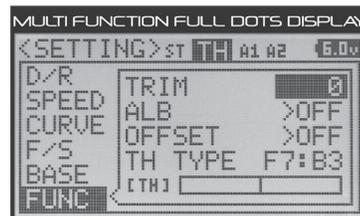
**!** If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the FUNC menu.



OFFSET MENU [Throttle Offset]

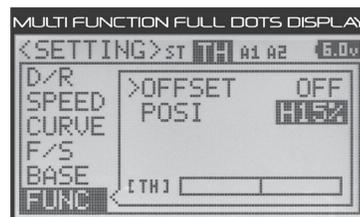
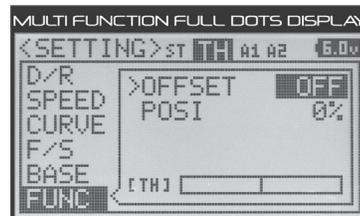
**Selecting the Menu and Channel, Continued:**

- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the Throttle channel, then press the ENTER key.



**Changing the Position Percentage Value:**

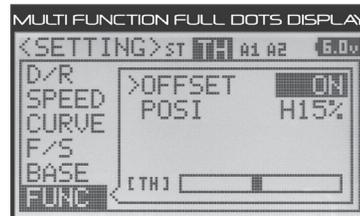
- 1) Press the DOWN key to highlight OFFSET >OFF, then press the ENTER key to open the OFFSET sub-menu. OFFSET OFF will be highlighted.
- 2) Press the UP or DOWN keys to highlight POSI 0%.
- 3) Press the ENTER key, then press the UP or DOWN keys to choose the desired High Side (H) or Brake Side (B) Position percentage value. The Position percentage value determines the position the Throttle servo Neutral Point will shift to when the Throttle Offset function is turned ON.



FUNC POSI setting range is H100% to B100%. The default setting is 0%.

**Turning the Throttle Offset Function ON and OFF:**

- 1) From within the OFFSET sub-menu, press the UP or DOWN keys to highlight OFFSET OFF.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Offset value, either ON or OFF.



FUNC OFFSET setting range is ON and OFF. The default setting is OFF.

**IMPORTANT:** Remember, the Throttle Offset function can be toggled ON and OFF using an Auxiliary Switch without needing to access the OFFSET menu to turn it ON and OFF, although the Offset function must be turned ON first within the OFFSET menu as described in the Turning the Throttle Offset Function ON and OFF section above.

TH TYPE MENU [Throttle Type]

The Throttle Type function allows you to change the ratio between Throttle High Side servo travel and Throttle Brake Side servo travel. In the default configuration, the Throttle Type is set to F70:B30. This Throttle Type shifts the Throttle Neutral Point toward the Brake Side, resulting in more servo travel toward the High Side and less servo travel toward the Brake Side.

Some users may prefer the ratio between Throttle High Side servo travel and Throttle Brake Side servo travel to be balanced (F50:B50) so that servo travel is equal. The F70:B30 Throttle Type is most common for general-use and racing, while the F50:B50 Throttle Type is most common for Rock Crawling.

Two Throttle Types are available:

**F70:B30** - When selected, the Throttle Neutral Point is shifted toward the Brake Side which provides more High Side servo travel (70%) and less Brake Side servo travel (30%). This is most common for general-use and racing.



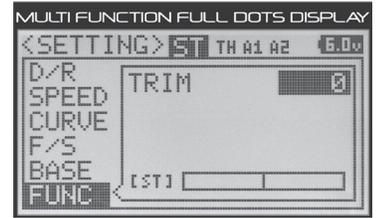
**F50:B50** - When selected, the Throttle Neutral Point is centered, which provides the same amount of High Side and Brake Side servo travel (50% each). This is most common for Rock Crawling or boats.

TH TYPE MENU [Throttle Type]

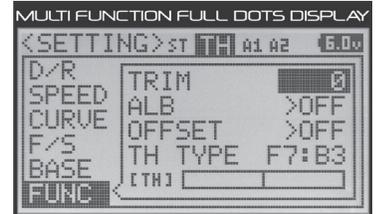
**Selecting the Menu and Channel:**

- 1) From within the SETTING menu, press the UP or DOWN keys to highlight the FUNC menu. FUNC ST TRIM 0 will be highlighted.

 If the cursor is flashing over Channel/Options, press the ENTER key to stop the cursor flashing, then press the UP or DOWN keys to select the FUNC menu.

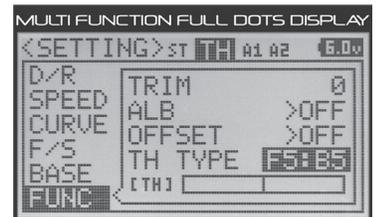


- 2) Press the BACK key so that the cursor is flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the Throttle channel, then press the ENTER key.



**Changing the Throttle Type Value:**

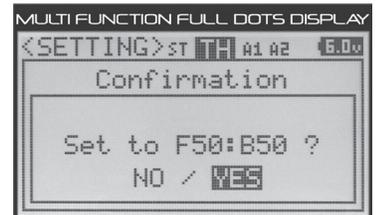
- 1) Press the DOWN key to highlight TH TYPE F7:B3.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Throttle Type value.



FUNC TH TYPE setting range is F7:B3 and F5:B5. The default setting is F7:B3.

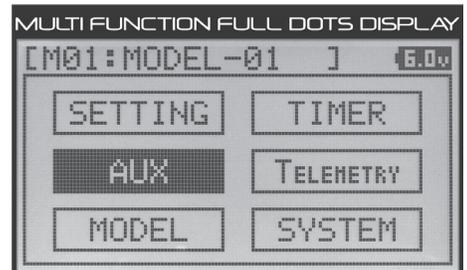
- 3) Press the ENTER key. Either Set to F70:B30? NO/YES will be displayed or Set to F50:B50? NO/YES will be displayed. Press the UP or DOWN keys to highlight YES, then press the ENTER key.

 If you want to go back and change the Throttle Type or if you don't want to change the Throttle Type for any reason, choose NO or press the BACK key.



To access the various AUX menu Programming Menus, turn the transmitter ON, then press the ENTER key to open the PROGRAMMING screen.

Press the UP or DOWN keys to highlight the AUX menu, then press the ENTER key to open the AUX menu.



The following Programming Menus are available within the AUX menu:

MENU	MENU DESCRIPTION	PAGE #
STEP	Program Step Values That the Auxiliary Servo Travels	PG. 32
POINT	Program Specific Points That the Auxiliary Servo Travels	PG. 33
4WS	Program Four Wheel Steering Options	PG. 35
MOA	Program Dual Throttle Options (Dig and Burn)	PG. 37
AUX MIX	Program Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4) Mixing Options	PG. 39
CODE	Program CODE Auxiliary Options to Control SSL Accessories (Super Vortex ZERO, etc.)	PG. 40

## STEP AUX MENU (STEP AUXILIARY)

AUX

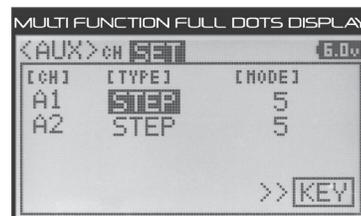
The Step Auxiliary function allows you to program the Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4) servos to move a defined amount when toggled using an Auxiliary Switch. For example, when AUX1 STEP is Assigned to Auxiliary Switch Sw1 and the Step Auxiliary Position value is set to 50, the Auxiliary 1 (Channel 3) servo will travel from the Neutral position to 50% of travel when the Auxiliary Switch Sw1 is pressed. Press Auxiliary Switch Sw1 a second time and the Auxiliary 1 (Channel 3) servo will travel back to the Neutral position. This is useful to control simple ON/OFF functions, such as a reverse servo for a transmission or a mechanical switch to turn lights ON and OFF, etc.

**!** This section details programming the Step Auxiliary function for both Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4), since programming each of them is the same. Choose either CH A1 for Auxiliary 1 (Channel 3) or CH A2 for Auxiliary 2 (Channel 4), depending on which channel you want to program the Step Auxiliary function for.

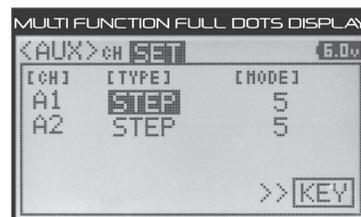
### Choosing the Step Auxiliary Function:

- 1) From within the AUX menu, press the UP or DOWN keys to highlight AUX SET.

**!** If the cursor isn't flashing over Channel/Options, press the BACK key, then press the UP or DOWN keys to highlight the AUX SET menu Option.



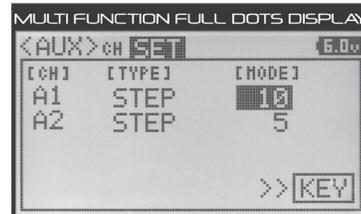
- 2) Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 TYPE or CH A2 TYPE, depending on which Auxiliary channel you want to program, either Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4).



- 3) Press the ENTER key, then press the UP or DOWN keys to choose the STEP option for the selected channel.

### Changing the Step Mode Value:

- 1) Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 MODE or CH A2 MODE, depending on which Auxiliary channel you're programming.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Step Mode value. The Step Mode value determines the increments that the Step Auxiliary Position value will change when setting it in the AUX CH menu.

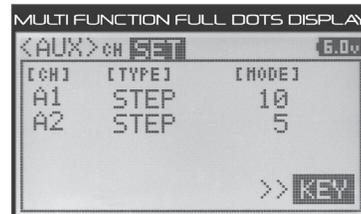


AUX SET STEP MODE setting range is 1, 2, 5, 10, 20, 25, 50 and 100. The default setting for both channels is 5. Use a smaller value (e.g. 2) if you want to set the Step Auxiliary Position value in the AUX CH menu to a lower value (such as 8) or use a higher value (e.g. 10) if you want to set the Step Auxiliary Position value in the AUX CH menu to a higher value (such as 30).

### Choosing the Key Option (Key Assign Function):

In the default configuration, AUX1 STEP is controlled by Auxiliary Switch Sw2 and AUX2 STEP is controlled by Auxiliary Switch Sw3. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Step Auxiliary function to a different Auxiliary Switch or a Trim Switch. The Step Auxiliary function is best suited to be controlled by Auxiliary Switch Sw1 or Sw2, since these are 2-position switches. **Auxiliary Switch Sw3 is not suitable for controlling the Step Auxiliary function, since it's a 3-position switch. A Trim Switch is not suitable either.**

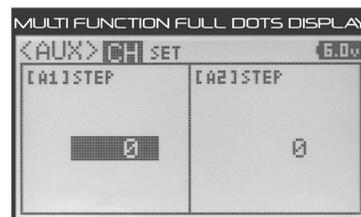
- 1) Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- 2) Press the ENTER key to open the KEY ASSIGN menu, then Assign AUX1 STEP or AUX2 STEP to Auxiliary Switch Sw1 or Sw2. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.



### Changing the Step Auxiliary Position Value:

The Step Auxiliary Position value determines the amount the Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) servos will move when the Step Auxiliary function is toggled.

- 1) From within the AUX SET menu, press the BACK key so the cursor is flashing over Channel/Options.
- 2) Press the UP or DOWN keys to highlight AUX CH, then press the ENTER key to open the AUX CH menu.



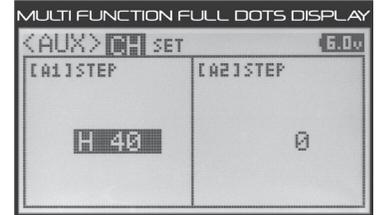
## STEP AUX MENU (STEP AUXILIARY)

AUX

### Changing the Step Auxiliary Position Value, Continued:

- Press the UP or DOWN keys to choose A1 STEP or A2 STEP, depending on which Auxiliary channel you want to change the Step Auxiliary Position value for.
- Press the ENTER key, then press the UP or DOWN keys to change the Step Auxiliary Position value. Increasing the value toward the High side (H) or Low side (L) will cause the Auxiliary servo to travel to that specific position when you toggle the Step Auxiliary function using an Auxiliary Switch.

AUX CH STEP setting range is H100 to L100. The default setting for both channel is 0. This value is a percentage of Auxiliary servo travel.



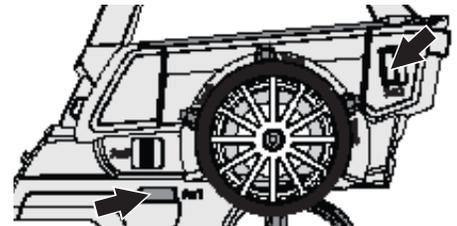
**!** The Step Auxiliary Position value will change in increments that you programmed in the Step Mode Value section previously. If you need the Step Auxiliary Position value to change in different increments to achieve a different value, change the Step Mode value to something different (e.g. 1, 2, 5, etc.).

### Controlling the Step Auxiliary Function:

Auxiliary Switch Sw3 and a Trim Switch are not suitable for controlling the Step Auxiliary function. The Step Auxiliary function is better suited to be controlled by Auxiliary Switch Sw1 or Sw2, since these are 2-position switches. If you haven't already Assigned the AUX1 STEP or AUX2 STEP function to one of these Auxiliary Switches, you should do that now. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

- Toggle Auxiliary Switch Sw1 or Sw2 to move the Auxiliary servo back and forth between neutral and its programmed position.

**!** If the servo moves the wrong direction, program the Step Auxiliary Position value opposite of what you currently have (i.e. change from H50 to L50).



AUX MENU

## POINT AUX MENU (POINT AUXILIARY)

AUX

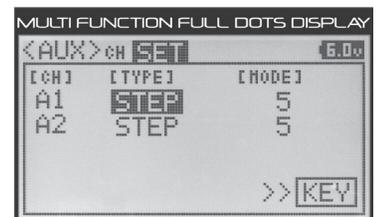
The Point Auxiliary function allows you to program the Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4) servos to move up to 3 different Points along its travel, then cycle through those Points using one of the Trim Switches or Auxiliary Switch Sw3. For example, if your model requires a separate 3-position switch to operate a feature, such as a multi-position wing, the Point Auxiliary function can be customized to control this.

**!** This section details programming the Point Auxiliary function for both Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4), since programming each of them is the same. Choose either CH A1 for Auxiliary 1 (Channel 3) or CH A2 for Auxiliary 2 (Channel 4), depending on which channel you want to program the Point Auxiliary function for.

### Choosing the Point Auxiliary Function:

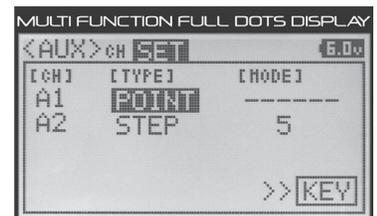
- From within the AUX menu, press the UP or DOWN keys to highlight AUX SET.

**!** If the cursor isn't flashing over Channel/Options, press the BACK key, then press the UP or DOWN keys to highlight the AUX SET menu Option.



- Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 TYPE or CH A2 TYPE, depending on which Auxiliary channel you want to program, either Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4).

- Press the ENTER key, then press the UP or DOWN keys to choose the POINT option for the selected channel.

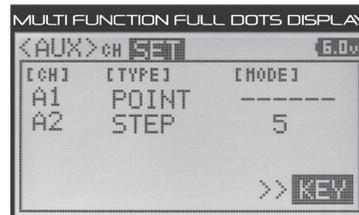


### Choosing the Key Option (Key Assign Function):

In the default configuration, AUX1 POINT is controlled by Auxiliary Switch Sw2 and AUX2 POINT is controlled by Auxiliary Switch Sw3. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Point Auxiliary function to a different Auxiliary Switch or a Trim Switch. The Point Auxiliary function is best suited to be controlled by Auxiliary Switch Sw3 or a Trim Switch. **Auxiliary Switch Sw1 and Sw2 are not suitable for controlling the Point Auxiliary function, since these are 2-position switches.**

### Choosing the Key Option (Key Assign Function), Continued:

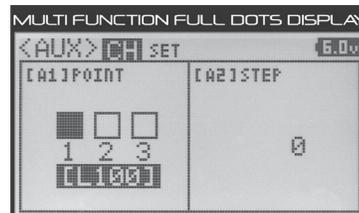
- 1) Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- 2) Press the ENTER key to open the KEY ASSIGN menu, then Assign AUX1 POINT or AUX2 POINT to Auxiliary Switch Sw3 or a Trim Switch (Trim Switch Trm3). For more information, see the KEY ASSIGN Menu section on pages 56 through 60.



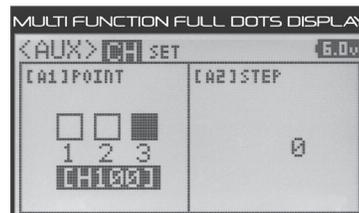
### Changing the Point Auxiliary Position Values:

The Point Auxiliary Position values determine the positions the Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) servos will move when you cycle through the various Points.

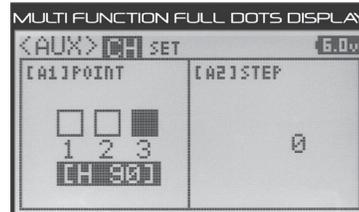
- 1) From within the AUX SET menu, press the BACK key so the cursor is flashing over Channel/Options.
- 2) Press the UP or DOWN keys to highlight AUX CH, then press the ENTER key to open the AUX CH menu.



- 3) Press the UP or DOWN Keys to choose A1 POINT or A2 POINT, depending on which Auxiliary channel you want to change the Point Auxiliary Position value for.
- 4) Press the ENTER key, then move the Auxiliary Switch (or Trim Switch) you've programmed to control the Point Auxiliary function to highlight the Point Auxiliary Position you want to change Point Auxiliary Position values for, either 1, 2 or 3.



- 5) Press the ENTER key, then press the UP or DOWN keys to change the selected Point Auxiliary Position value. Increasing the value toward the High side (H) or Low side (L) will cause the Auxiliary servo to travel to that specific position when you cycle the Point Auxiliary function.



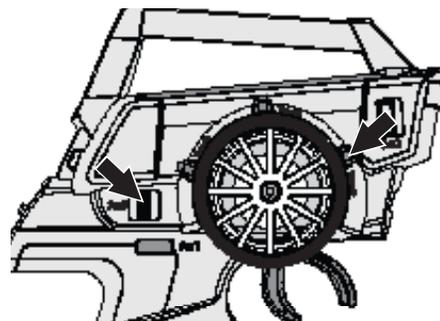
- 6) Press the BACK key, then repeat steps 4 and 5 to change the remaining Point Auxiliary Position values.

AUX CH POINT setting range is H100 to L100. The default setting for all three Points and both channels is 0. These values are a percentage of Auxiliary servo travel.

### Controlling the Point Auxiliary Function:

Auxiliary Switch Sw1 and Sw2 are not suitable for controlling the Point Auxiliary function. We suggest controlling the Point Auxiliary function with Auxiliary Switch Sw3 or a Trim Switch. If you haven't already Assigned the AUX1 POINT or AUX2 POINT function to one of these Auxiliary Switches, you should do that now. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

- 1) Slide the Auxiliary Switch back and forth or press the Trim Switch forward and backward to cycle the Auxiliary servo forward and backward through the programmed Points.



 If the servo moves the wrong direction, program the Point Auxiliary Position values opposite of what you currently have (i.e. change from H50 to L50, etc.).

## 4WS MIX MENU (FOUR WHEEL STEERING MIXING)

AUX

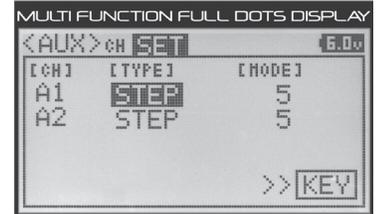
The Four Wheel Steering Mixing function provides you with two Steering channels. It allows you to control either the Front or Rear Steering independently or Mix the Front and Rear Steering to have Parallel Four Wheel Steering (Crab) or Tandem Four Wheel Steering. Use one of the Trim Switches to cycle through the different Four Wheel Steering options while you're driving and use Auxiliary Switch Sw1 to toggle the Four Wheel Steering Mixing function ON and OFF.

**!** This section details programming the Four Wheel Steering Mixing function for both Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4), since programming each of them is the same. Choose either CH A1 for Auxiliary 1 (Channel 3) or CH A2 for Auxiliary 2 (Channel 4), depending on which channel you want to program the Four Wheel Steering Mixing function for.

### Choosing the Four Wheel Steering Function:

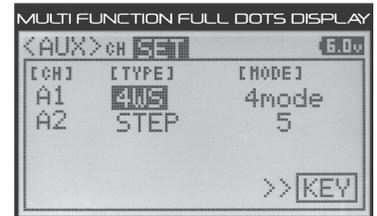
- 1) From within the AUX menu, press the UP or DOWN keys to highlight AUX SET.

**!** If the cursor isn't flashing over Channel/Options, press the BACK key, then press the UP or DOWN keys to highlight the AUX SET menu Option.



- 2) Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 TYPE or CH A2 TYPE, depending on which Auxiliary channel you want to program, either Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4).

- 3) Press the ENTER key, then press the UP or DOWN keys to choose the 4WS option for the selected channel.

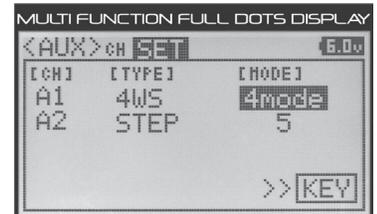


### Changing the Four Wheel Steering Mixing Mode Value:

The Four Wheel Steering Mixing Mode value determines the number and type of Four Wheel Steering Mixing Modes that can be selected in the AUX CH menu. For example, if you choose 2MODE, F-ST (Front Wheel Steering) or REV (Tandem Steering) can be selected. If you choose 4MODE, all four Four Wheel Steering Mixing Modes can be selected. This allows you to choose only the specific Four Wheel Steering Mixing Modes you want and none that you don't.

- 1) Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 MODE or CH A2 MODE, depending on which Auxiliary channel you're programming.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Four Wheel Steering Mode value. Choose from either 2MODE, 3MODE or 4MODE.

**!** For a description of each Four Wheel Steering Mixing Mode, see the Choosing the Four Wheel Steering Mixing Mode section on the next page.



AUX SET 4WS MODE setting range is 2MODE, 3MODE and 4MODE. The default setting for both channels is 4MODE.

2MODE - F-ST <> REV | 3MODE - F-ST <> NOR <> REV | 4MODE - F-ST <> NOR <> REV <> R-ST

### Choosing the Key Option (Key Assign Function):

In the default configuration, AUX1 4WS is controlled by Auxiliary Switch Sw2 and AUX2 4WS is controlled by Auxiliary Switch Sw3. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Four Wheel Steering Mixing function to a different Auxiliary Switch or a Trim Switch. The Four Wheel Steering Mixing function can be controlled several different ways, depending on what Auxiliary Switch or Trim Switch you Assign the AUX1 4WS or AUX2 4WS function to and how many Four Wheel Steering Mixing Modes you want to cycle between remotely. The function will behave as described below:

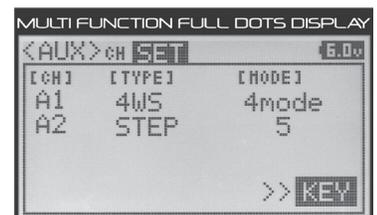
**Auxiliary Switch Sw1** - Toggle the Four Wheel Steering Mixing function ON and OFF.

**Auxiliary Switch Sw2** - Switch between (F-ST) Front Wheel Steering and the Four Wheel Steering Mixing Mode value selected in the AUX CH menu. For more information, see the Choosing the Four Wheel Steering Mixing Mode section on the next page.

**Auxiliary Switch Sw3** - Switch between (F-ST) Front Wheel Steering, (NOR) Parallel Steering and (REV) Tandem Steering, regardless of the Four Wheel Steering Mixing Mode value selected previously.

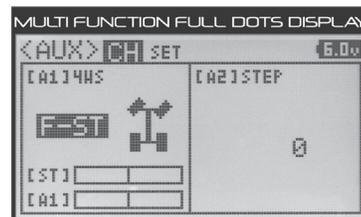
**Trim Switch Trm3** - Cycle back and forth between all four Four Wheel Steering Mixing Modes, regardless of the Four Wheel Steering Mixing Mode value selected previously.

- 1) Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- 2) Press the ENTER key to open the KEY ASSIGN menu, then Assign AUX1 4WS or AUX2 4WS to the desired Auxiliary Switch or Trim Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.



### Choosing the Four Wheel Steering Mixing Mode:

- 1) From within the AUX SET menu, press the BACK key so the cursor is flashing over Channel/Options.
- 2) Press the UP or DOWN keys to highlight AUX CH, then press the ENTER key to open the AUX CH menu.
- 3) Press the ENTER key, then press the UP or DOWN keys to select which Four Wheel Steering Mixing Mode along with (F-ST) Front Wheel Steering, you want to be controlled by Auxiliary Switch Sw2. Up to four Four Wheel Steering Mixing Modes can be selected from depending on the Four Wheel Steering Mixing Mode you selected previously (2MODE, 3MODE or 4MODE).



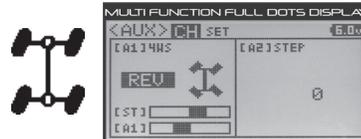
**F-ST: FRONT Wheel Steering** - When Active, only the Front Steering will operate.



**NOR: NORMAL (Parallel) Four Wheel Steering** - When Active, both the Front and Rear Steering will operate in Parallel.



**REV: REVERSE (Tandem) Four Wheel Steering** - When Active, both the Front and Rear Steering will operate in Tandem.



**R-ST: REAR Wheel Steering** - When Active, only the Rear Steering will operate.



 If the Steering servos do not operate as described above, you can use the Servo Reversing function to change the direction that each servo operates. For more information, see the REV Menu section on page 24.

### Controlling the Four Wheel Steering Function:

The Four Wheel Steering Mixing function can be controlled several different ways, depending on what Auxiliary Switch or Trim Switch you Assign the AUX1 4WS or AUX2 4WS function to and how many Four Wheel Steering Mixing Modes you want to cycle between remotely. The function will behave as described below:

**Auxiliary Switch Sw1** - Toggle the Four Wheel Steering Mixing function ON and OFF.

**Auxiliary Switch Sw2** - Switch between (F-ST) Front Wheel Steering and the Four Wheel Steering Mixing Mode value selected in the AUX CH menu. For more information, see the Choosing the Four Wheel Steering Mixing Mode section on the next page.

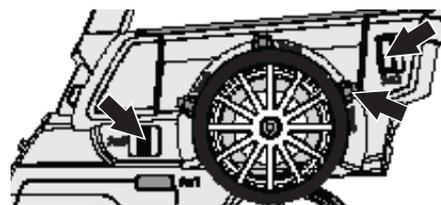
**Auxiliary Switch Sw3** - Switch between (F-ST) Front Wheel Steering, (NOR) Parallel Steering and (REV) Tandem Steering, regardless of the Four Wheel Steering Mixing Mode value selected previously.

**Trim Switch Trm3** - Cycle back and forth between all four Four Wheel Steering Mixing Modes, regardless of the Four Wheel Steering Mixing Mode value selected previously.

- 1) Slide the Auxiliary Switch back and forth or press the Trim Switch forward and backward to cycle through the various Four Wheel Steering Mixing Modes. If programmed, press Auxiliary Switch Sw1 to toggle the Four Wheel Steering Mixing function ON and OFF.

 If you're unable to cycle through the Four Wheel Steering Mixing Modes, verify that the AUX1 4WS or AUX2 4WS function isn't toggled OFF.

 When using the Four Wheel Steering Mixing function, it's important to adjust the Steering channel and Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) Sub-Trim values to center both servos. This will ensure that your model tracks straight. In addition, you are able to independently adjust the Steering channel and Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) Dual Rate, ARC, Sub-Trim, EPA and Servo Speed settings to fine tune each channel for the best Four Wheel Steering Mixing setup.



## MOA MIX MENU (MOTOR ON AXLE MIXING)

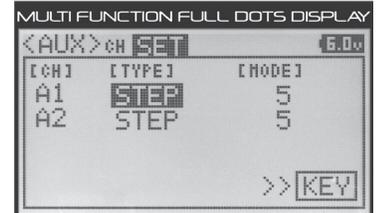
AUX

The Motor on Axle Mixing function provides you with two Throttle channels. It is typically used for Rock Crawlers and allows you to control either the Front and Rear motors together or independently, giving you Dig and Burn functions. For example, you can use Auxiliary Switch Sw2 to switch between Dig or Burn and OFF (Balanced), or you can use Trim Switch Trm3 to variably change the power distribution between the Front and Rear motors, allowing you the utmost in functionality while you're driving. In addition, you can use Auxiliary Switch Sw1 to toggle the Motor on Axle Mixing function ON and OFF.

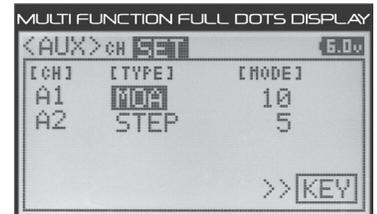
**!** This section details programming the Motor on Axle Mixing function for both Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4), since programming each of them is the same. Choose either CH A1 for Auxiliary 1 (Channel 3) or CH A2 for Auxiliary 2 (Channel 4), depending on which channel you want to program the Motor on Axle Mixing function for.

### Choosing the Motor on Axle Function:

- From within the AUX menu, press the UP or DOWN keys to highlight AUX SET.
  - !** If the cursor isn't flashing over Channel/Options, press the BACK key, then press the UP or DOWN keys to highlight the AUX SET menu Option.



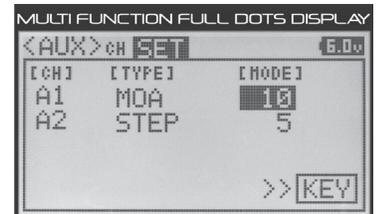
- Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 TYPE or CH A2 TYPE, depending on which Auxiliary channel you want to program, either Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4).
- Press the ENTER key, then press the UP or DOWN keys to choose the MOA option for the selected channel.



### Changing the Motor on Axle Mixing Mode Value:

The Motor on Axle Mixing Mode value determines the increments that the Motor on Axle Mixing Power Distribution Option values will change when setting them in the AUX CH menu.

- Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 MODE or CH A2 MODE, depending on which Auxiliary channel you're programming.
- Press the ENTER key, then press the UP or DOWN keys to choose the desired Motor on Axle Mixing Mode value.



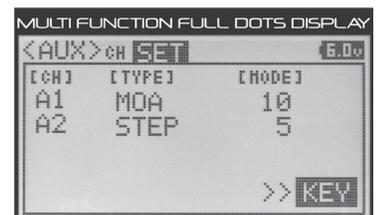
AUX SET MOA MODE setting range is 1, 2, 5, 10, 20, 25, 50 and 100. The default setting for both channels is 10. Use an odd value (e.g. 5) if you want to set the Motor on Axle Power Distribution Option values in the AUX CH menu to an odd value (such as 75) or use a smaller value (e.g. 1) if you want to set the Axle Power Distribution Option values in the AUX CH menu to a higher resolution value (such as 68).

### Choosing the Key Option (Key Assign Function):

In the default configuration, AUX1 MOA is controlled by Auxiliary Switch Sw2 and AUX2 MOA is controlled by Auxiliary Switch Sw3. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Motor on Axle Mixing function to a different Auxiliary Switch or a Trim Switch.

How you control the Motor on Axle Mixing function will depend on how you want to use it. For example, if you want to switch only between Dig or Burn and OFF (Balanced), you can Assign AUX1 MOA or AUX2 MOA to Auxiliary Switch Sw2. Or, if you want to have both Dig and Burn on the same switch, you can Assign AUX1 MOA or AUX2 MOA to Auxiliary Switch Sw3 and use it to switch between them, then use Auxiliary Switch Sw1 to toggle between Dig or Burn and OFF (Balanced). You could even Assign AUX1 MOA or AUX2 MOA to Trim Switch Trm3 and variably control the amount of Dig or Burn on the fly, then use Auxiliary Switch Sw1 to toggle the Motor on Axle Mixing function ON and OFF (Balanced).

- Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- Press the ENTER key to open the KEY ASSIGN menu, then Assign AUX1 MOA or AUX2 MOA to the desired Auxiliary Switch or Trim Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

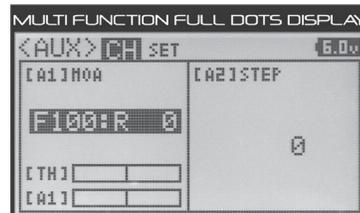
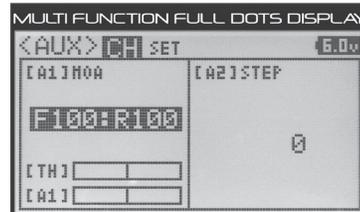


AUX MENU

### Changing the Motor on Axle Mixing Power Distribution Options:

You are able to program OFF (Balanced), Dig and Burn functions by changing the Power Distribution between the Front and Rear motors.

- 1) From within the AUX SET menu, press the BACK key so the cursor is flashing over Channel/Options.
- 2) Press the UP or DOWN keys to highlight AUX CH, then press the ENTER key to open the AUX CH menu.
- 3) Press the UP or DOWN Keys to choose A1 MOA or A2 MOA, depending on which Auxiliary channel you want to change the Motor on Axle Power Distribution Values for.
- 4) Press the ENTER key, then press the UP or DOWN keys to change the Power Distribution between the Front and Rear motors. Reducing the R value will reduce the available power to the Rear motor (Dig) and reducing the F value will reduce the power to the Front motor (Burn).



**OFF (Balanced)** - When set to 100:100 or other balanced value, power will be evenly distributed between the Front and Rear motors.



**REAR Throttle (BURN)** - When set to 0:100, power will only be distributed to the Rear motor. Power can be distributed proportionally between the Front and Rear motors from 0:100 to 99:100.



**FRONT Throttle (DIG)** - When set to 100:0, power will only be distributed to the Front motor. Power can be distributed proportionally between the Front and Rear motors from 100:0 to 100:99.

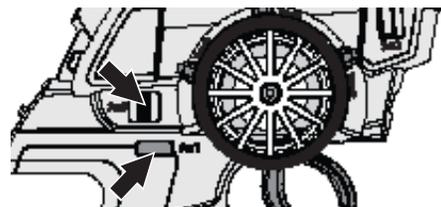


### Controlling the Motor on Axle Mixing Function:

How you control the Motor on Axle Mixing function will depend on how you want to use it. For example, if you want to switch only between Dig or Burn and OFF (Balanced), you can Assign AUX1 MOA or AUX2 MOA to Auxiliary Switch Sw2. Or, if you want to have both Dig and Burn on the same switch, you can Assign AUX1 MOA or AUX2 MOA to Auxiliary Switch Sw3 and use it to switch between them, then use Auxiliary Switch Sw1 to toggle between Dig or Burn and OFF (Balanced). You could even Assign AUX1 MOA or AUX2 MOA to Trim Switch Trm3 and variably control the amount of Dig or Burn on the fly, then use Auxiliary Switch Sw1 to toggle the Motor on Axle Mixing function ON and OFF (Balanced).

- 1) Slide the Auxiliary Switch back and forth to switch between Dig and Burn or press the Trim Switch forward and backward to variably change Power Distribution values on the fly. If programmed, press Auxiliary Switch Sw1 to toggle the Motor on Axle Mixing function ON and OFF.

! If you're unable to switch between Motor on Axle Mixing Modes, verify that the AUX1 MOA or AUX2 MOA function isn't toggled OFF.



**IMPORTANT:** If you want Dig, OFF and Burn functions all on the same Auxiliary Switch, without needing to toggle the Motor on Axle Mixing function ON and OFF with a separate switch, Assign AUX1 MOA or AUX2 MOA to Auxiliary Switch Sw3. Verify that the Tweak values are set to TWEAK1 (2) +100, (3) -100 / TWEAK 2 (1) +100, (3) -100, then make sure F100:R100 is programmed in the AUX CH menu. This will give you full Dig, OFF (Balanced) and full Burn when the Auxiliary Switch Sw3 is in the (1), (2) and (3) positions, respectively.

! When using the Motor on Axle Mixing function, it's important to adjust the Throttle channel and Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) Sub-Trim values so both motors are OFF when the Throttle Trigger is in the Neutral position. In addition, you are able to independently adjust the Throttle channel and Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) ARC, Sub-Trim, EPA and Servo Speed settings to fine tune each channel for the best Motor on Axle Mixing setup.

### AUX MIX MENU (AUXILIARY CHANNEL MIXING)

AUX

The Auxiliary Channel Mixing function allows you to Mix either Steering Channel 1 or Throttle Channel 2 to Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4), while maintaining separate Sub-Trim, EPA, Servo Reversing and other settings. For example, if your monster truck features dual front Steering servos, instead of using a Y-Harness to join the two Steering servos, you can use the Auxiliary Channel Mixing function to operate both steering servos together and still be able to make adjustments to each servo separately. In addition, if your 1/5th scale model features a third-channel Brake, you could use the Auxiliary Channel Mixing function to control it along with the Throttle channel Brake.

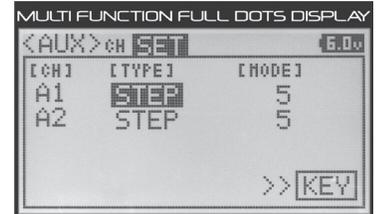
The Auxiliary Channel Mixing function can be toggled ON and OFF while you're driving using Auxiliary Switch Sw1 and the Auxiliary Mixing Rate percentage value can be adjusted on the fly using a Trim Switch.

**!** This section details programming the Auxiliary Channel Mixing function for both Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4), since programming each of them is the same. Choose either CH A1 for Auxiliary 1 (Channel 3) or CH A2 for Auxiliary 2 (Channel 4), depending on which channel you want to program the Auxiliary Channel Mixing function for.

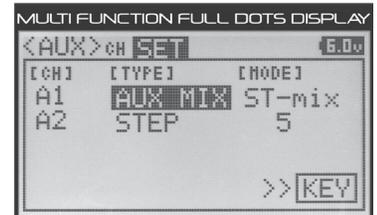
#### Choosing the Auxiliary Channel Mixing Function:

- 1) From within the AUX menu, press the UP or DOWN keys to highlight AUX SET.

**!** If the cursor isn't flashing over Channel/Options, press the BACK key, then press the UP or DOWN keys to highlight the AUX SET menu Option.



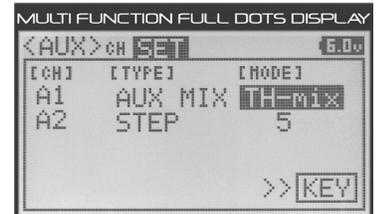
- 2) Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 TYPE or CH A2 TYPE, depending on which Auxiliary channel you want to program, either Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4).
- 3) Press the ENTER key, then press the UP or DOWN keys to choose the AUX MIX option for the selected channel.



#### Changing the Auxiliary Channel Mixing Mode Value (Mixing Type):

The Auxiliary Channel Mixing Mode value determines which channel, either the Steering channel or the Throttle channel, will be Mixed with the selected Auxiliary channel.

- 1) Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 MODE or CH A2 MODE, depending on which Auxiliary channel you're programming.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Auxiliary Channel Mixing Mode value, either ST-MIX or TH-MIX.



AUX SET AUX MIX MODE setting range is ST-MIX and TH-MIX. The default setting is ST-MIX.

#### Choosing the Key Option (Key Assign Function):

In the default configuration, AUX1 AMIX is controlled by Auxiliary Switch Sw2 and AUX2 AMIX is controlled by Auxiliary Switch Sw3. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Auxiliary Channel Mixing function to a different Auxiliary Switch or a Trim Switch.

How you control the Auxiliary Channel Mixing function will depend on how you want to use it. For example, if you want to change the Mixing Rate within the AUX CH menu to a fixed Rate percentage value and simply toggle the Auxiliary Channel Mixing function ON and OFF as required, you can Assign AUX1 AMIX or AUX2 AMIX to Auxiliary Switch Sw1 or Sw2. Alternately, if you want to be able to variably change the Mixing Rate percentage value on the fly, you can Assign AUX1 AMIX or AUX2 AMIX to Trim Switch Sw3, then toggle the Auxiliary Channel Mixing function ON and OFF by Assigning AUX1 AMIX or AUX2 AMIX to Auxiliary Switch Sw1 or Sw2. **Auxiliary Switch Sw3 is not suitable for controlling the Auxiliary Channel Mixing function, so we don't recommend using it.**

- 1) Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- 2) Press the ENTER key to open the KEY ASSIGN menu, then Assign AUX1 AMIX or AUX2 AMIX to the desired Auxiliary Switch or Trim Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.



AUX MENU

## AUX MIX MENU {AUXILIARY CHANNEL MIXING}

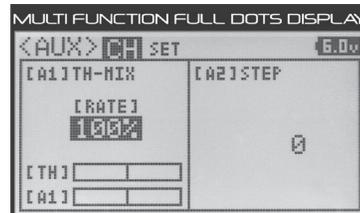
AUX

### Changing the Rate Percentage Value:

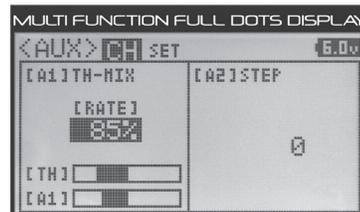
The Rate percentage value defines how far the Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) servo travels relative to either the Steering servo or the Throttle servo.

**!** The Master channel (either Steering Channel 1 or Throttle Channel 2) always controls the Slave channel [Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4)].

- 1) From within the AUX SET menu, press the BACK key so the cursor is flashing over Channel/Options.
- 2) Press the UP or DOWN keys to highlight AUX CH, then press the ENTER key to open the AUX CH menu. RATE 100% will be highlighted.



- 3) Press the ENTER key, then press the UP or DOWN keys to change the Rate percentage value. Decreasing the Rate percentage value will reduce the amount the Auxiliary servo travels relative to the Steering servo or Throttle servo and Increasing the Rate percentage value will Increase the amount the Auxiliary servo travels relative to the Steering servo or Throttle servo.



AUX CH RATE setting range is 100% to 0%. The default setting is 100%. This Mix is Linear. For example, if the Rate percentage value is set to 100%, the Auxiliary servo will travel the same amount as the Steering (or Throttle) servo. Additionally, if the Rate percentage value is set to 50%, the Auxiliary servo will travel half the amount as the Steering (or Throttle) servo.

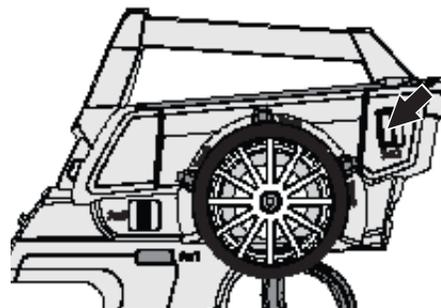
**!** In the default configuration, the Auxiliary servo will travel in the same direction as the Steering servo or Throttle servo. To apply the Mix in the opposite direction, change the Servo Reversing value of Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4). For more information, see the REV Menu section on page 24.

### Controlling the Auxiliary Channel Mixing Function:

How you control the Auxiliary Channel Mixing function will depend on how you want to use it. For example, if you want to change the Mixing Rate within the AUX CH menu to a fixed Rate percentage value and simply toggle the Auxiliary Channel Mixing function ON and OFF as required, you can Assign AUX1 AMIX or AUX2 AMIX to Auxiliary Switch Sw1 or Sw2. Alternately, if you want to be able to variably change the Mixing Rate percentage value on the fly, you can Assign AUX1 AMIX or AUX2 AMIX to Trim Switch Sw3, then toggle the Auxiliary Channel Mixing function ON and OFF by Assigning AUX1 AMIX or AUX2 AMIX to Auxiliary Switch Sw1 or Sw2. **Auxiliary Switch Sw3 is not suitable for controlling the Auxiliary Channel Mixing function, so we don't recommend using it.**

- 1) Slide Auxiliary Switch Sw2 back and forth to toggle the Auxiliary Channel Mixing function ON and OFF, or press Trim Switch Trm3 back and forth to variably adjust the Mixing Rate percentage value on the fly and use Auxiliary Switch Sw1 to toggle the Auxiliary Channel Mixing function ON and OFF.

**!** Remember that you are able to independently adjust the Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4) Dual Rate, ARC, Sub-Trim and Servo Speed settings to allow for the optimum Auxiliary Mixing setup.



**IMPORTANT:** If you've programmed the AUX1 AMIX or AUX2 AMIX function to a Trim Switch, the Trim Switch Step value can be Increased or Decreased to change the amount the Mixing Rate percentage value changes when the Trim Switch is pressed. For more information, see the KEY ASSIGN Menu section on pages 55 through 56.

## CODE AUX MENU {CODE AUXILIARY}

AUX

The CODE Auxiliary function is used with SSL-compatible accessories, such as the Sanwa Super Vortex series ESCs, whose Programming Parameters can be changed directly via the transmitter. For example, you can change individual ESC Driving Modes directly (Timing Advance, Boost, etc.) using Trim Switch Trm3 to suit different conditions while you're driving.

Three Code Types are available - One to suit a custom setup, one preset specifically for use with a Sanwa Super Vortex ZERO ESC and second preset specifically for use with a Sanwa Super Vortex DRIFT ESC.

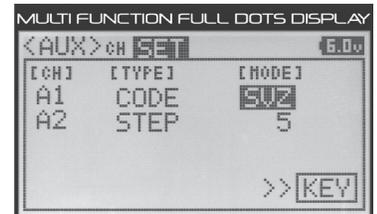
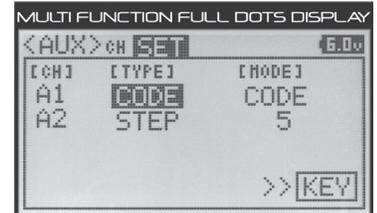
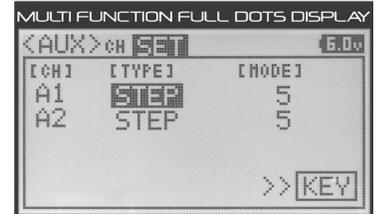
## CODE AUX MENU (CODE AUXILIARY)

## AUX

**!** This section details programming the CODE Auxiliary function for both Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4), since programming each of them is the same. Choose either CH A1 for Auxiliary 1 (Channel 3) or CH A2 for Auxiliary 2 (Channel 4), depending on which channel you want to program the CODE Auxiliary function for.

### Choosing the CODE Auxiliary Function:

- From within the AUX menu, press the UP or DOWN keys to highlight AUX SET.
  - !** If the cursor isn't flashing over Channel/Options, press the BACK key, then press the UP or DOWN keys to highlight the AUX SET menu Option.
- Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 TYPE or CH A2 TYPE, depending on which Auxiliary channel you want to program, either Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4).
- Press the ENTER key, then press the UP or DOWN keys to choose the CODE option for the selected channel.



### Changing the CODE Auxiliary Mode Value:

- Press the ENTER key, then press the UP or DOWN keys to highlight either CH A1 MODE or CH A2 MODE, depending on which Auxiliary channel you're programming.
- Press the ENTER key, then press the UP or DOWN keys to choose the desired CODE Auxiliary Mode value, either CODE, SVZ or SVD. For more information, see below.

**CODE** - Choose if You Want to Program Custom CODE AUX Values

**SVZ** - Choose if You Have a Sanwa Super Vortex ZERO ESC

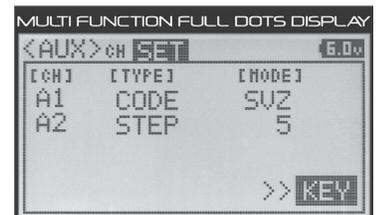
**SVD** - Choose if You Have a Sanwa Super Vortex DRIFT ESC

AUX SET CODE MODE setting range is CODE, SVZ and SVD. The default setting is CODE.

### Choosing the Key Option (Key Assign Function):

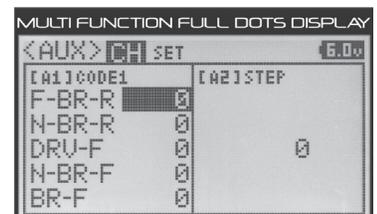
In the default configuration, AUX1 CODE is controlled by Auxiliary Switch Sw2 and AUX2 CODE is controlled by Auxiliary Switch Sw3. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the CODE Auxiliary function to a Trim Switch. For example, you can control individual Code functions while you're driving, such as Timing Advance or Boost, by using Trim Switch Trm3 to control AUX1 CODE2 or AUX1 CODE3, etc. **The Auxiliary Switches are not suitable for controlling the CODE Auxiliary function, so we don't recommend using them.**

- Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- Press the ENTER key to open the KEY ASSIGN menu, then Assign the desired AUX1 CODE or AUX2 CODE to the desired Auxiliary Switch or Trim Switch. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.



### Changing the CODE Auxiliary Values:

- From within the AUX SET menu, press the BACK key so the cursor is flashing over Channel/Options.
- Press the UP or DOWN keys to highlight AUX CH, then press the ENTER key to open the AUX CH menu.



**!** The Custom CODE Auxiliary Value Names (CODE1, CODE2, etc.), cannot be named and the preset SVZ and SVD CODE Auxiliary Value Names cannot be renamed.

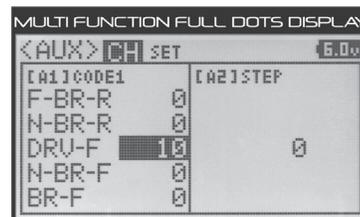
AUX MENU

## CODE AUX MENU (CODE AUXILIARY)

AUX

### Changing the CODE Auxiliary Values, Continued:

- 3) Press the UP or DOWN keys to highlight which CODE Auxiliary value you want to change.
- 4) Press the ENTER key, then press the UP or DOWN keys to change the desired CODE Auxiliary value. Refer the User's Guide of the SSL-compatible product you're controlling to know what CODE Auxiliary values to use.
- 5) Press the ENTER key, then repeat steps 3 and 4 to change any other desired CODE Auxiliary values.

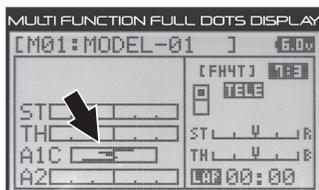


AUX CH CODE setting range is -100 to 100. The default setting for all CODE Auxiliary functions is 0.

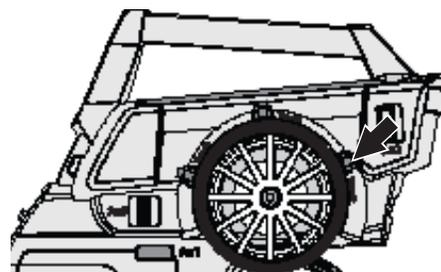
### Controlling the CODE Auxiliary Function:

You can control individual Code functions while you're driving, such as Timing Advance or Boost, by using Trim Switch Trm3 to control AUX1 CODE2 or AUX1 CODE3, etc. **The Auxiliary Switches are not suitable for controlling the CODE Auxiliary function, so we don't recommend using them.**

- 1) Press Trim Switch Trm3 back and forth to variably adjust the programmed CODE Auxiliary value on the fly.



Up to five currently programmed CODE Auxiliary values are displayed on the STATUS screen, so you can quickly see their basic values.



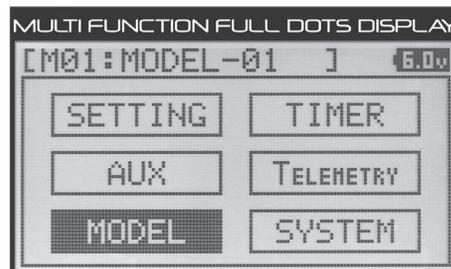
**IMPORTANT:** The Trim Switch Step value can be Increased or Decreased to change the amount the CODE Auxiliary value changes when the Trim Switch is pressed (Trim Resolution). For more information, see the KEY ASSIGN Menu section on pages 55 through 56.

## MODEL MENU OVERVIEW

MODEL

To access the various MODEL menu Programming Menus, turn the transmitter ON, then press the ENTER key to open the PROGRAMMING screen.

Press the UP or DOWN keys to highlight the MODEL menu, then press the ENTER key to open the MODEL menu.



The following Programming Menus are available within the MODEL menu:

MENU	MENU DESCRIPTION	PAGE #
MODEL SELECT	Select Saved Model Programming Data	PG. 42
MODEL NAME	Name or Rename the Selected Model	PG. 43
MODEL COPY	Copy Model Programming Data From One Model to Another Model	PG. 44
MODEL CLEAR	Clear Model Programming Data From the Selected Model	PG. 45

## MODEL SELECT MENU (MODEL SELECT)

MODEL

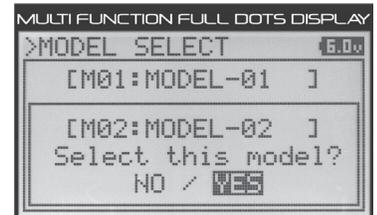
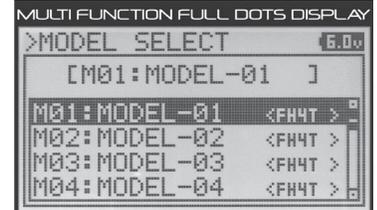
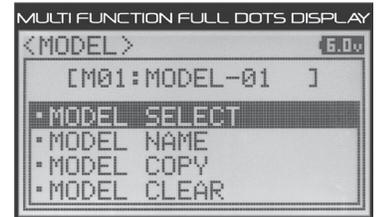
The Model Select function allows you to load the Programming Data for the particular model you wish to drive. The MODEL SELECT menu displays the currently selected model, along with a list of available models that can be selected. The Modulation Type for each model is also displayed. The transmitter can store Programming Data for up to 20 different models. When a model is selected and loaded, the Programming Data for that model will be loaded immediately. Modulation Type, Channel Response Mode, Key Assignments, Trim, Auxiliary Type and Throttle Type options, in addition to all Programming Menu function options are model-specific.

## MODEL SELECT MENU {MODEL SELECT}

MODEL

### Selecting a Model:

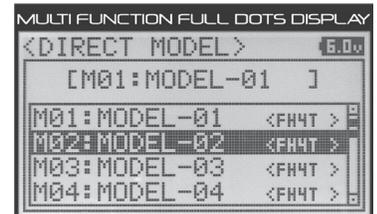
- 1) From within the MODEL menu, press the UP or DOWN keys to highlight the MODEL SELECT menu.
- 2) Press the ENTER key. The MODEL SELECT menu will be displayed and the currently selected model in the Model Select List will be highlighted.
- 3) Press the UP or DOWN keys to highlight the model you would like to select, then press the ENTER key. Select this model? NO/YES will be displayed.
- 4) Press the UP or DOWN keys to highlight YES, then press the ENTER key. The model that you just selected will be displayed above the Model Select List and that model's Programming Data will be loaded.



### Model Select Shortcut (Direct Model):

The Model Select Shortcut function allows you to jump directly to the DIRECT MODEL menu when you turn the transmitter ON. This menu works the same as the MODEL SELECT menu and makes it much quicker to select your desired model.

- 1) Turn the transmitter OFF.
- 2) Press and HOLD the BACK key, then turn the transmitter ON. The DIRECT MODEL menu will be displayed. To select a model, follow steps 3 and 4 in the Selecting a Model section above.



## MODEL NAME MENU {MODEL NAMING}

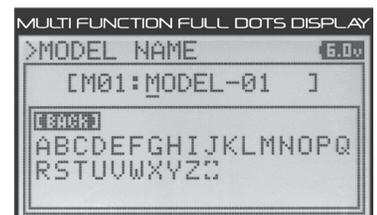
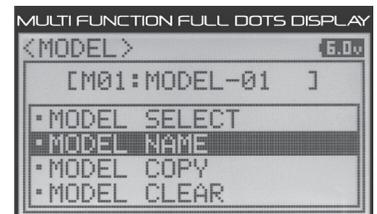
MODEL

The Model Naming function allows you to name each of the 20 individual models. This makes it easy to keep track of multiple models. The Model Name can consist of up to 10 letters, numbers, or symbols. Choose from capital letters, lower case letters, numbers and various symbols.

**!** A model must be selected before a Model Name can be changed. In the default configuration, M01 : MODEL-01 is selected. To enter a Model Name for another model, that model must first be selected using the Model Select function or the Direct Model function. For more information, see the MODEL SELECT Menu section on pages 42 and 43.

### Changing the Model Name:

- 1) From within the MODEL menu, press the UP or DOWN keys to highlight the MODEL NAME menu.
- 2) Press the ENTER key. The MODEL NAME menu will be displayed, BACK will be highlighted and the underscore will be flashing under the first editable character in the Model Name.



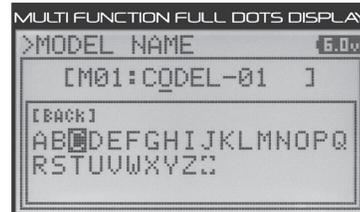
## MODEL NAME MENU {MODEL NAMING}

MODEL

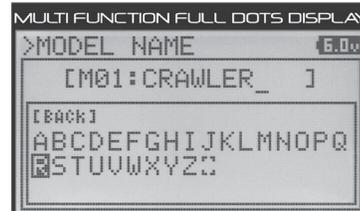
### Changing the Model Name, Continued:

3) Press the UP or DOWN keys to move the underscore to the character you would like change.

4) Press the ENTER key, then press the UP or DOWN keys to highlight a character in the Character List. Press the ENTER key to select the highlighted character. That character will be displayed in the Model Name and the underscore will advance to the next space in the Model Name. **If at any time you can't move the underscore, press the BACK key to re-gain control of the underscore (it will be flashing).**



5) Press the UP or DOWN keys to highlight the next desired character in the Character List, then press the ENTER key to select the highlighted character. Repeat to enter the rest of the characters. Up to 10 characters can be entered. If desired, press the BACK key to re-gain control of the underscore, then press the UP or DOWN keys to move the underscore RIGHT or LEFT. To add a space (or spaces) in your Model Name, use the [ ] character.



**!** To select lower case letters, numbers or symbols, continue to press the UP or DOWN keys to advance through the various Character Lists.

### Deleting a Character:

- 1) If necessary, press the BACK key to re-gain control of the underscore (it will be flashing). Press the UP or DOWN keys to move the underscore under the character in your Model Name you want to delete.
- 2) Press the ENTER key, then press the UP or DOWN keys to highlight the [ ] character in the Character List. Press the ENTER key. The character in your Model Name will be deleted and the underscore will advance to the next space.

### Deleting a Model Name:

- 1) If necessary, press the BACK key to re-gain control of the underscore (it will be flashing). Press the UP or DOWN keys to move the underscore under the first character in your Model Name.
- 2) Press the ENTER key, then press the UP or DOWN keys to highlight the [ ] character in the Character List. Continuously press the ENTER key to delete each character in your Model Name.

## MODEL COPY MENU {COPY MODEL PROGRAMMING DATA}

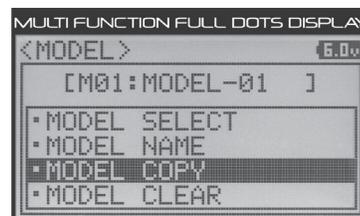
MODEL

The Model Copy function allows you to copy the Programming Data FROM the currently selected model TO another model. For example, if you have two models that are similar, you can copy the Programming Data from the first model to the second model to use as a base to start fine-tuning the programming for the second model.

**!** The Model Copy function allows you to copy Programming Data FROM the currently selected model TO any other model in the Model Copy List. Make sure that prior to using the Model Copy function, you first select and load the desired Model Programming Data you want to copy FROM, using the Model Select function.

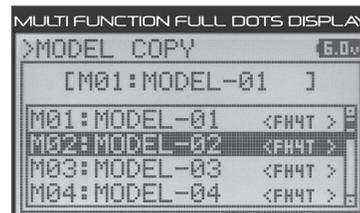
### Copying Model Programming Data:

1) From within the MODEL menu, press the UP or DOWN keys to highlight the MODEL COPY menu.



2) Press the ENTER key to open the MODEL COPY menu. The currently selected model will be displayed in brackets above the Model Copy List.

3) Press the UP or DOWN keys to highlight the model within the Model Copy List you would like to copy the current Model's Programming Data TO.

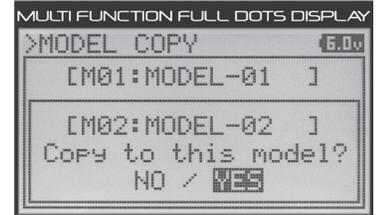


## MODEL COPY MENU (COPY MODEL PROGRAMMING DATA)

MODEL

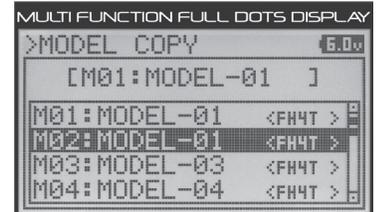
### Copying Model Programming Data, Continued:

- 4) Press the ENTER key. COPY TO THIS MODEL? NO/YES will be displayed. Press the UP or DOWN keys to highlight YES, then press the ENTER key.



**!** All Model-specific Programming Data, including the Model Name will be copied to the highlighted model. If you want to go back and change models or you don't want to Copy the Programming Data for any reason, choose NO or press the BACK key prior to EXECUTING.

- 5) EXECUTED will be displayed and the model you just copied Programming Data TO will be highlighted in brackets and the top of the Model Copy List.



## MODEL CLEAR MENU (CLEAR MODEL PROGRAMMING DATA)

MODEL

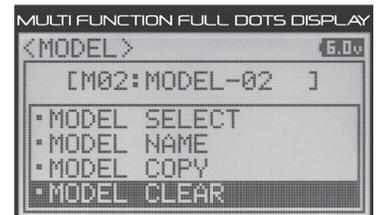
The Model Clear function allows you to reset model-specific Programming Data for the currently selected model back to the Factory Default settings. Make sure that prior to using the Model Clear function, you first select and load the desired model you want to clear the Programming Data for, using the Model Select function.

**!** When the Model Clear function is EXECUTED, all custom Programming Data for the currently selected model will be reset to the Factory Default settings!

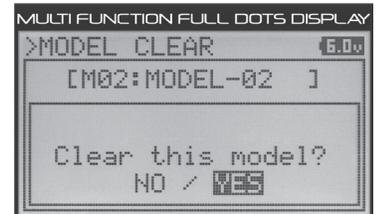
### Clearing Model Programming Data:

- 1) Using the Model Select function, select the model you would like to clear the Programming Data for and Reset it back to the Factory Defaults.

- 2) From within the MODEL menu, press the UP or DOWN keys to highlight the MODEL CLEAR menu.



- 3) Press the ENTER key. CLEAR THIS MODEL? NO/YES will be displayed. Press the UP or DOWN keys to highlight YES, then press the ENTER key. EXECUTED will be displayed and all Programming Data for the currently selected model will be Reset to the Factory Default settings.

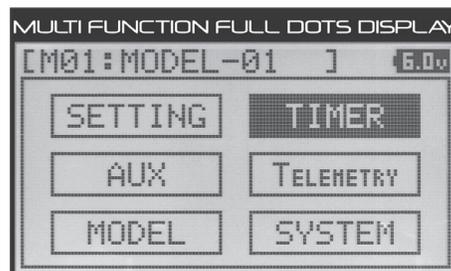


**!** All model-specific Programming Data, including the Model Name, Modulation Type, Channel Response Mode, Key Assignments, Trim, Auxiliary Type and Throttle Type options will be Reset to the default values. If you want to go back and change models or you don't want to Clear the Programming Data for any reason, choose NO or press the BACK key prior to EXECUTING.

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To access the various TIMER menu Programming Menus, turn the transmitter ON, then press the ENTER key to open the PROGRAMMING screen.

Press the UP or DOWN keys to highlight the TIMER menu, then press the ENTER key to open the TIMER menu.



The following Programming Menus are available within the TIMER menu:

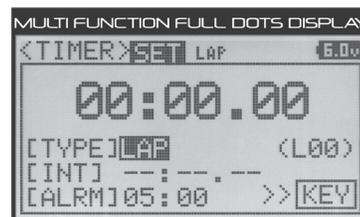
MENU	MENU DESCRIPTION	PAGE #
LAP	Program the Lap Timer, Target Time and Goal Time	PG. 46
INT	Program the Interval Timer and Goal Time	PG. 48
DOWN	Program the Countdown Timer	PG. 49

### Changing the Timer Type:

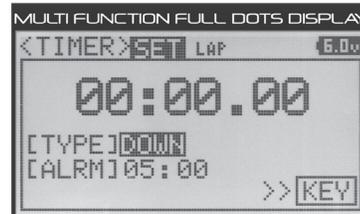
- 1) From within the TIMER menu, press the UP or DOWN keys to highlight the TIMER SET option, then press the ENTER key to open the TIMER SET menu.



If the cursor isn't flashing over Channel/Options, press the BACK key.



- 2) Press the UP or DOWN keys to highlight TYPE LAP.
- 3) Press the ENTER key, then press the UP or DOWN keys to choose the desired Timer Type. Choose from LAP (Lap Timer), INT (Interval Timer) or DOWN (Countdown Timer).

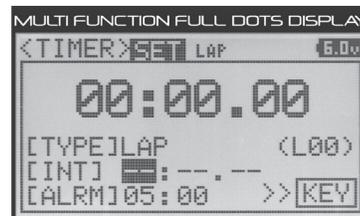


To program the Lap Timer function, see the LAP Menu section below. To program the Interval Timer function, see the INT Menu section on pages 48 and 49. To program the Countdown Timer function, see the DOWN Menu section on pages 49 and 50. To learn how to view Lap Times, see the Viewing Lap Times section on page 50.

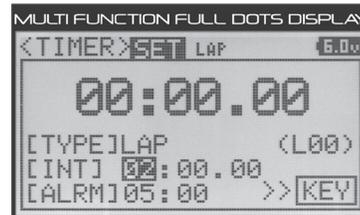
The Lap Timer function allows you to measure and record times for up to 99 Laps. The number of Laps completed is displayed in the LAP menu, and when a Lap is completed, the Lap Time is displayed momentarily on the STATUS screen. An Alarm (Goal Time) is featured that will sound when you reach your Goal Time and, if desired, the Interval Timer (Target Time) can be programmed within the Lap Timer to alert you of your Target Time separately from your Goal Time.

### Setting the Interval Timer (Target Time):

- 1) Following the steps in the Changing the Timer Type section above, choose the TYPE LAP option.
- 2) From within the TIMER menu, press the UP or DOWN keys to highlight INT --.



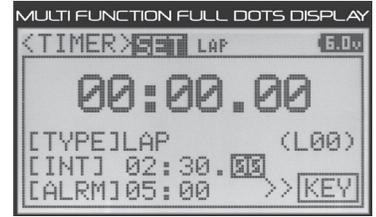
- 3) Press the ENTER key, then press the UP or DOWN keys to set the desired Interval Timer Minutes value.



### Setting the Interval Timer (Target Time), Continued:

- To set the Interval Timer Seconds value, press the ENTER key, then press the DOWN key to highlight 00. Press the ENTER key a second time, then press the UP or DOWN keys to set the desired Interval Timer Seconds value.

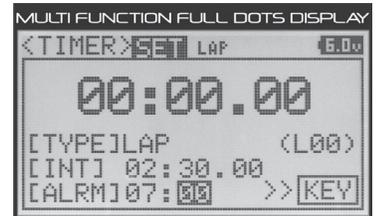
- To set the Interval Timer 1/100th Seconds value, press the ENTER key, then press the DOWN key to highlight 00. Press the ENTER key a second time, then press the UP or DOWN keys to set the desired Interval Timer 1/100th Seconds value.



TIMER SET INT setting range is --:-- . -- to 99:59.99. The default setting is --:-- . -- (OFF). When the Lap Timer is counting Up, an audible double-tone will sound each time the Lap Timer reaches the Interval Timer value. For example, if you set the Interval Timer for 01:30.00, an audible double-tone will sound every 1 minute and 30 seconds.

### Setting the Alarm (Goal Time):

- From within the TIMER menu, press the DOWN key to highlight ALRM 05.
- Press the ENTER key, then press the UP or DOWN keys to set the desired Alarm Minutes value.
- To set the Alarm Seconds value, press the ENTER key, then press the DOWN key to highlight 00. Press the ENTER key a second time, then press the UP or DOWN keys to set the desired Alarm Seconds value.

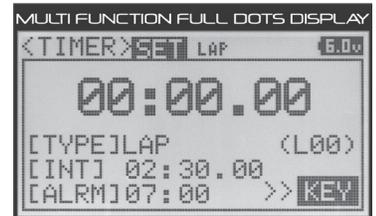


TIMER SET ALRM setting range is 00:00 to 99:59. The default setting is 5:00 minutes. An audible tone will sound in 1 second intervals 5 seconds before reaching the Goal Time. When the Goal Time is reached, a long audible tone will sound.

### Choosing the Key Option (Key Assign Function):

In the default configuration, the Timer function is controlled by Auxiliary Switch Sw1. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Timer function to Auxiliary Switch Sw1 if another function has been Assigned to it. **The Timer function can only be Assigned to Auxiliary Switch Sw1.**

- Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- Press the ENTER key to open the KEY ASSIGN menu, then Assign TIMER to Auxiliary Switch Sw1. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.

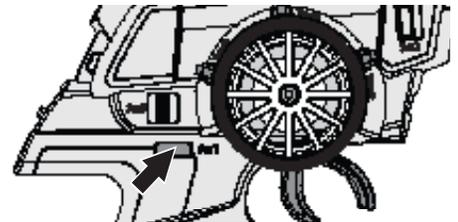
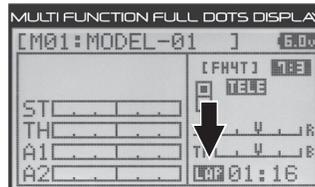


### Starting the Lap Timer:

- In the default configuration, Auxiliary Switch Sw1 controls the Timer function (the Timer function can only be Assigned to Auxiliary Switch Sw1). Press and HOLD Auxiliary Switch Sw1 for 3 seconds. An audible double-tone will sound, the TIMER screen will appear for a short time and LAP will flash on the STATUS screen indicating the Lap Timer is in Stand-by.

To start the Lap Timer, press Auxiliary Switch Sw1 a second time or pull the Throttle Trigger. An audible double-tone will sound and the Lap Timer will start counting Up.

After the Lap Timer is started, pressing Auxiliary Switch Sw1 a second time will store the first Lap Time, then begin counting a second Lap Time. Each time you press Auxiliary Switch Sw1, an audible tone sounds, the previous Lap Time is stored, a new Lap Time begins and the current Lap Time is displayed momentarily.



### Stopping the Lap Timer:

- To stop the Lap Timer, press and HOLD Auxiliary Switch Sw1 for 3 seconds. An audible double-tone will sound indicating the Lap Timer is stopped and the Cumulative Time will be displayed on the STATUS screen and in the TIMER menu.

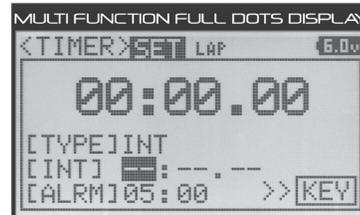


The Cumulative Time cannot be manually cleared. It will be automatically cleared when the Lap Timer is put in Stand-by again.

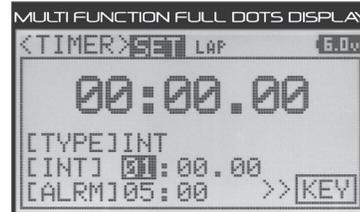
The Interval Timer (Target Time) function notifies you when a set Interval elapses while you are driving, giving you an idea of how close you are to your Target Time. An Alarm (Goal Time) is featured that will sound when you reach your Goal Time. When the Interval Time is reached, an audible Double-Tone will sound, then the Interval Timer will Reset and begin counting Up again from zero.

### Setting the Interval Timer (Target Time):

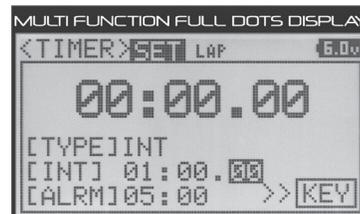
- 1) Following the steps in the Changing the Timer Type section on page 46, choose the TYPE INT option.
- 2) From within the TIMER menu, press the UP or DOWN keys to highlight INT --.



- 3) Press the ENTER key, then press the UP or DOWN keys to set the desired Interval Timer Minutes value.



- 4) To set the Interval Timer Seconds value, press the ENTER key, then press the DOWN key to highlight 00. Press the ENTER key a second time, then press the UP or DOWN keys to set the desired Interval Timer Seconds value.

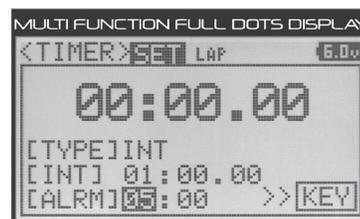


- 5) To set the Interval Timer 1/100th Seconds value, press the ENTER key, then press the DOWN key to highlight 00. Press the ENTER key a second time, then press the UP or DOWN keys to set the desired Interval Timer 1/100th Seconds value.

TIMER SET INT setting range is --:-- .-- to 99:59.99. The default setting is --:-- .-- (OFF). When the Interval Timer is started, an audible double-tone will sound each time the Interval Timer reaches the Interval Timer (Target Time) value. For example, if you set the Interval Timer for 01:00.00, an audible double-tone will sound every 1 minute.

### Setting the Alarm (Goal Time):

- 1) From within the TIMER menu, press the DOWN key to highlight ALRM 05.
- 2) Press the ENTER key, then press the UP or DOWN keys to set the desired Alarm Minutes value.
- 3) To set the Alarm Seconds value, press the ENTER key, then press the DOWN key to highlight 00. Press the ENTER key a second time, then press the UP or DOWN keys to set the desired Alarm Seconds value.

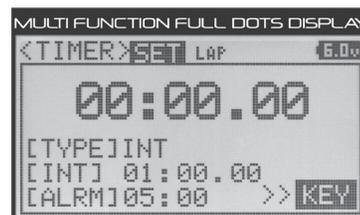


TIMER SET ALRM setting range is 00:00 to 99:59. The default setting is 5:00 minutes. An audible tone will sound in 1 second intervals 5 seconds before reaching the Goal Time. When the Goal Time is reached, a long audible tone will sound.

### Choosing the Key Option (Key Assign Function):

In the default configuration, the Timer function is controlled by Auxiliary Switch Sw1. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Timer function to Auxiliary Switch Sw1 if another function has been Assigned to it. **The Timer function can only be Assigned to Auxiliary Switch Sw1.**

- 1) Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- 2) Press the ENTER key to open the KEY ASSIGN menu, then Assign TIMER to Auxiliary Switch Sw1. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.



**INT MENU (INTERVAL TIMER)**

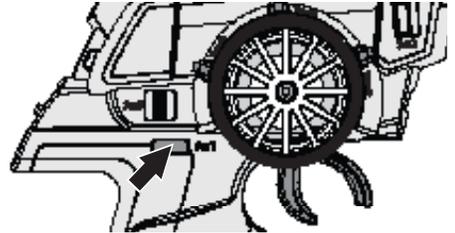
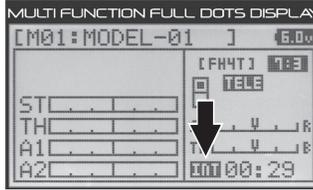
**TIMER**

**Starting the Interval Timer:**

- 1) In the default configuration, Auxiliary Switch Sw1 controls the Timer function (the Timer function can only be Assigned to Auxiliary Switch Sw1). Press and HOLD Auxiliary Switch Sw1 for 3 seconds. An audible double-tone will sound, the TIMER screen will appear for a short time and INT will flash on the STATUS screen indicating the Interval Timer is in Stand-by.

To start the Interval Timer, press Auxiliary Switch Sw1 a second time or pull the Throttle Trigger. An audible double-tone will sound and the Interval Timer will start counting Up.

Each time the programmed Interval Time elapses, an audible double-tone will sound and the Interval Timer will restart from zero and the Cumulative Time will be displayed on the STATUS screen.



You can manually restart the Interval Timer from zero by pressing Auxiliary Switch Sw1 while the Interval Timer is running.

**Stopping the Interval Timer:**

- 1) To stop the Interval Timer, press and HOLD Auxiliary Switch Sw1 for 3 seconds. An audible double-tone will sound indicating the Interval Timer is stopped and the Cumulative Time will be displayed on the STATUS screen and in the TIMER menu.

 The Cumulative Time cannot be manually cleared. It will be automatically cleared when the Interval Timer is put in Stand-by again.

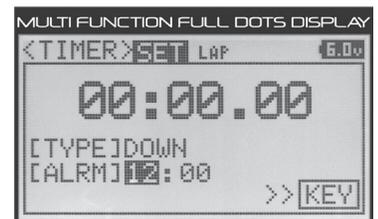
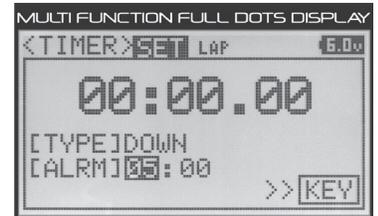
**DOWN MENU (COUNTDOWN TIMER)**

**TIMER**

The Countdown Timer function can be used to notify you of your model's running time. For example, you can set the Countdown Timer to alert you when it's time to refuel. When the Countdown Timer expires, a long audible tone will sound and the Count Up Timer function begins automatically. This allows you to check the time elapsed since the Countdown Timer ran out.

**Setting the Countdown Alarm:**

- 1) Following the steps in the Changing the Timer Type section on page 46, choose the TYPE DOWN option.
- 2) From within the TIMER menu, scroll DOWN to highlight ALRM 05.
- 3) Press the ENTER key, then scroll UP or DOWN to set the desired Alarm Minutes value.
- 4) To set the Alarm Seconds value, press the ENTER key, then scroll DOWN to highlight 00. Press the ENTER key a second time, then scroll UP and DOWN to set the desired Alarm Seconds value.

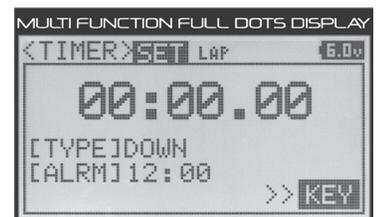


TIMER SET ALRM setting range is 00:00 to 99:59. The default setting is 5:00 minutes. An audible tone will sound in 1 second intervals 5 seconds before reaching the Countdown Alarm Time. When the Countdown Alarm Time is reached, a long audible tone will sound.

**Choosing the Key Option (Key Assign Function):**

In the default configuration, the Timer function is controlled by Auxiliary Switch Sw1. The Key option is a shortcut to the KEY ASSIGN menu, which allows you to Assign the Timer function to Auxiliary Switch Sw1 if another function has been Assigned to it. **The Timer function can only be Assigned to Auxiliary Switch Sw1.**

- 1) Press the ENTER key, then press the UP or DOWN keys to highlight KEY.
- 2) Press the ENTER key to open the KEY ASSIGN menu, then Assign TIMER to Auxiliary Switch Sw1. For more information, see the KEY ASSIGN Menu section on pages 56 through 60.



TIMER MENU

**DOWN MENU {COUNTDOWN TIMER}**

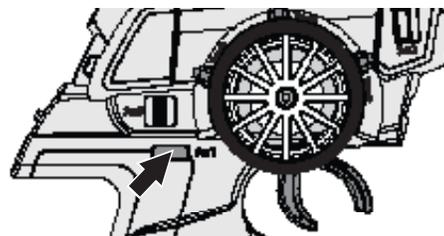
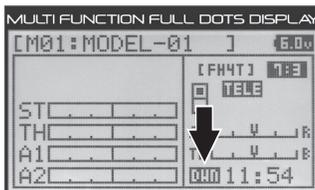
**TIMER**

**Starting the Countdown Timer:**

- 1) In the default configuration, Auxiliary Switch Sw1 controls the Timer function (the Timer function can only be Assigned to Auxiliary Switch Sw1). Press and HOLD Auxiliary Switch Sw1 for 3 seconds. An audible double-tone will sound, the TIMER screen will appear for a short time and DWN will flash on the STATUS screen indicating the Countdown Timer is in Stand-by.

To start the Countdown Timer, press Auxiliary Switch Sw1 a second time or pull the Throttle Trigger. An audible double-tone will sound and the Countdown Timer will start counting down.

An audible tone will sound in 1 second intervals 5 seconds before reaching zero. When zero is reached, a long audible tone will sound and the Countdown Timer will begin counting Up.



You can manually stop the Countdown Timer at any time by pressing Auxiliary Switch Sw1 and pressing Auxiliary Switch Sw1 again will start the Countdown Timer from where it was stopped.

**Stopping the Countdown Timer:**

- 1) To stop the Countdown Timer, press and HOLD Auxiliary Switch Sw1 for 3 seconds. An audible double-tone will sound indicating the Countdown Timer is stopped and either the remaining Countdown Time or elapsed Count Up Time will be displayed on the STATUS screen and in the TIMER menu.

 The remaining Countdown Time or Count Up Time cannot be manually cleared. It will be automatically cleared when the Countdown Timer is put in Stand-by again.

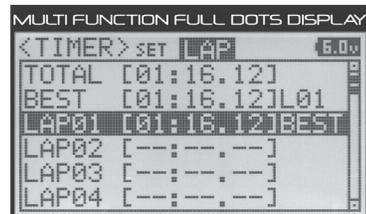
**VIEWING LAP TIMES**

**TIMER**

The Lap Times are displayed in the LAP menu. A total of up to 99 laps can be recorded using the Lap Timer function. Each Lap Time is displayed along with the Best Lap Time and the Total (Cumulative) Lap Time.

**Viewing Lap Times:**

- 1) From within the TIMER menu, press the BACK key so the cursor is flashing over Channel/Options.
- 2) Press the UP or DOWN keys to highlight the LAP option, then press the ENTER key to open the LAP menu.
- 3) Press the UP or DOWN keys to view the stored Lap Times. Lap Times are stored from the time you start the Lap Timer to the time you Stop the Lap Timer. The Total (Cumulative) Lap Time and your Best Lap Time are always displayed at the top of the list.



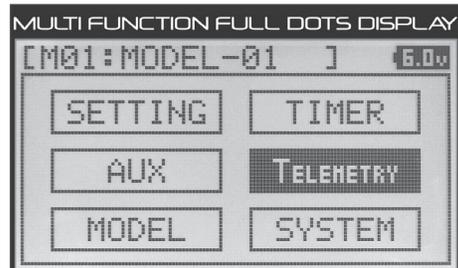
 Lap Times are stored until you restart the Lap Timer function. When the Lap Timer function is restarted, old Lap Times are cleared and new Lap Times are stored.

**TELEMETRY MENU OVERVIEW**

**TELEMETRY**

To access the various TELEMETRY menu Programming Menus, turn the transmitter ON, then press the ENTER key to open the PROGRAMMING screen.

Press the UP or DOWN keys to highlight the TELEMETRY menu, then press the ENTER key to open the TELEMETRY menu.



The following Programming Menus are available within the TELEMETRY menu:

MENU	MENU DESCRIPTION	PAGE #
LOGGER	View Temperature 1, Temperature 2, Voltage and RPM Telemetry Data Logs	PG. 51
ALERT SETTING	Program Telemetry Alert Alarms	PG. 52
TELEMETRY SETTING	Turn the Telemetry Function ON and OFF and Change Telemetry Settings	PG. 52

### LOGGER MENU (VIEW TELEMETRY DATA LOGS)

### TELEMETRY

The **LOGGER** menu allows you to view a log of the Telemetry Data that is sent from the receiver to the transmitter. You are able to view Telemetry Data for both Temperature outputs, the RPM output and the receiver's Voltage. This information can be used to track specific information about your model, such as cylinder head temperature if you're running a nitro-powered model, or battery temperature if you're running an electric model, plus much more. The interval that Telemetry Data is read and stored can be adjusted so that Telemetry Data can be stored for up to 90 minutes of use. The Telemetry Log can store 120 different data entries at intervals ranging from 00.1 seconds to 45.9 seconds.

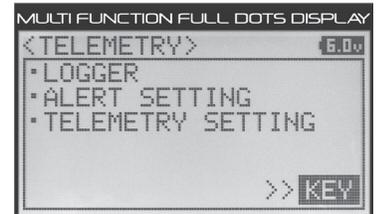
**IMPORTANT:** Full telemetry support requires the use of an Airtronics or Sanwa RX-461 or RX-462 FH4T Telemetry receiver and associated Temperature and RPM Sensors, or when the included RX-482 2.4GHz FH4T Super Response SSL receiver is used along with a Sanwa Super Vortex series ESC. On its own, the included RX-482 2.4GHz FH4T Super Response SSL receiver can send Telemetry Data for the voltage of the receiver battery pack only. In addition, the Modulation Type must be set to FH4T.

**!** For information about using an optional Airtronics or Sanwa RX-461 or RX-462 Telemetry receiver with your MT-S and installing Telemetry Sensors into your model, see the RX-461 and RX-462 Receiver Telemetry Connections and Mounting section on pages 64 and 65. In addition, to be able to read and log Telemetry Data, the Telemetry System must be turned ON. For more information, see the Turning the Telemetry System ON and OFF section on pages 52 and 53.

#### Starting and Stopping the Telemetry Log:

The Telemetry Log function must be Started in order for the transmitter to read and store Telemetry Data from the receiver. You must first Assign the **LOGGER** function to Auxiliary Switch Sw1 before you can Start and Stop the Telemetry Logger.

- 1) From within the **TELEMETRY** menu, press the UP or DOWN keys to highlight **KEY**.
- 2) Press the **ENTER** key to open the **KEY ASSIGN** menu, then Assign the **LOGGER** function to Auxiliary Switch Sw1. For more information, see the **KEY ASSIGN** Menu section on pages 56 through 60. **The **LOGGER** function can only be Assigned to Auxiliary Switch Sw1.**

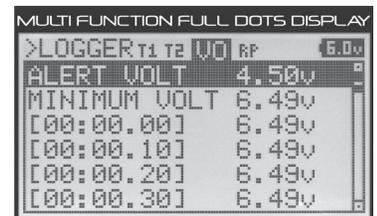
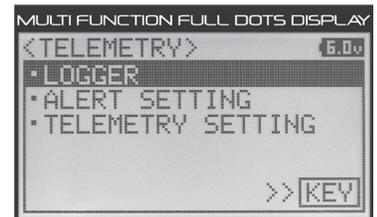


- 3) To start the Telemetry Log, press Auxiliary Switch Sw1. The Condition LED will flash, indicating the Telemetry Log is storing Telemetry Data. Data is stored for all four Telemetry functions, whether the Telemetry Sensors are hooked up or not.
- 4) To stop the Telemetry Log, press Auxiliary Switch Sw1 a second time.

**!** Each time the Telemetry Log is Started, any old Telemetry Data is automatically erased. In addition, the Telemetry Log will Stop automatically once the Telemetry Log is filled. The Telemetry Log can store 120 separate entries. If the Log Interval is set to 00.1 seconds, the Telemetry Log can record for 12 seconds. If the Log Interval is set to 45.1 seconds, the Telemetry Log can record for 90 minutes. To change the Log Interval value, see the Changing the Telemetry Log Step Value section on page 53.

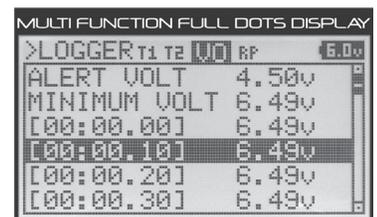
#### Viewing Telemetry Data:

- 1) From within the **TELEMETRY** menu, press the UP or DOWN keys to highlight the **LOGGER** menu.
- 2) Press the **ENTER** key to open the **LOGGER** menu. The cursor will be flashing over Channel/Options.
- 3) Press the UP or DOWN keys to highlight the desired Telemetry function you would like to view Telemetry Data for. Choose from T1 (Temperature 1), T2 (Temperature 2), VO (Receiver Battery Voltage) or RP (RPM).
- 4) Press the **ENTER** key to open the highlighted Telemetry Log.



- 5) Press the UP or DOWN keys to scroll through the Telemetry Data entries. The Alert (or Max) value is always displayed at the top, followed by the Minimum (or Max) value, depending on the Telemetry function selected. **Pressing the **ENTER** key will skip ahead 6 entries to make scrolling faster.**

**!** You can Start and Stop the Telemetry Log function while viewing Telemetry Data by pressing the **HOLDING** the **ENTER** key.



## ALERT SETTING MENU (CHANGE TELEMETRY ALERTS)

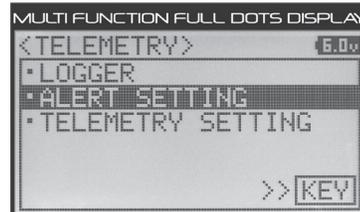
TELEMETRY

The ALERT SETTING menu allows you to change the values at which the different Telemetry Alert alarms will sound. For example, you can change the Temperature Alert value for Temperature 1 to alert you when your nitro engine's cylinder head temperature is getting too hot or you can change the Voltage Alert value to alert you when your receiver battery is getting too low for proper servo function.

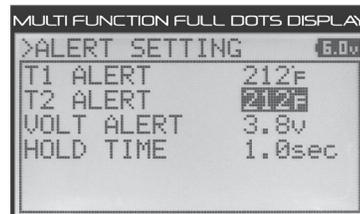
 When the Alert value is reached, the Telemetry Alert alarm will sound and the Condition LED will flash. The audible portion of the Telemetry Alert alarm can be cleared by pressing the BACK key or the ENTER key.

### Changing the Telemetry Alert Alarm Values:

1) From within the TELEMETRY menu, press the UP or DOWN keys to highlight the ALERT SETTING menu.

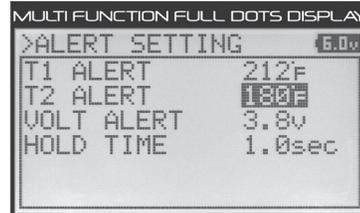


2) Press the ENTER key to open the ALERT SETTING menu, then press the UP or DOWN keys to highlight the Alert value you would like to change. Choose from T1 ALERT (Temperature 1), T2 ALERT (Temperature 2) or VOLT ALERT (Receiver Voltage).



3) Press the ENTER key, then Press the UP or DOWN keys to choose the desired Alert value.

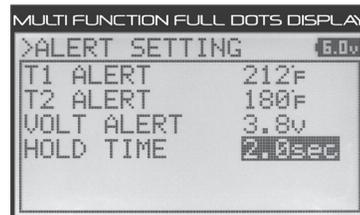
ALERT SETTING T1 ALERT and T2 ALERT setting range is 68°F to 302°F (0°C to 150°C). The default setting is 212°F (100°C). ALERT SETTING VOLT ALERT setting range is 3.0v to 9.0v. The default setting is 3.8v.



### Changing the Hold Time Value:

The Hold Time value allows you to program a Voltage Alert delay to prevent voltage drops under load from falsely alerting you to a low voltage situation. A higher Hold Time value makes the Voltage Alert alarm function more steady.

- 1) From within the ALERT SETTING menu, press the UP or DOWN keys to highlight HOLD TIME 1.0sec.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Hold Time value. Increasing the Hold Time value will reduce the chance of voltage drops under load causing the Voltage Alert alarm to sound.



ALERT SETTING HOLD TIME setting range is 0.0sec to 5.0sec. The default setting is 1.0sec.

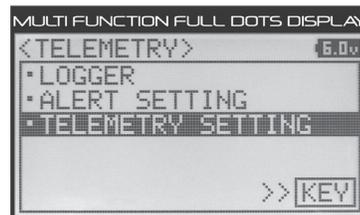
## TELEMETRY SETTING MENU (CHANGE TELEMETRY SETTINGS)

TELEMETRY

The TELEMETRY SETTING menu allows you to turn the Telemetry System ON and OFF, change the Telemetry Log Step value to customize the interval at which Telemetry Data is recorded, change the Telemetry Temperature values between Fahrenheit and Celsius, and change the RPM Ratio value to be able to read actual motor or engine RPM even though your RPM sensor may be mounted to your model's spur gear and not to your motor's pinion gear or your engine's flywheel.

### Turning the Telemetry System ON and OFF:

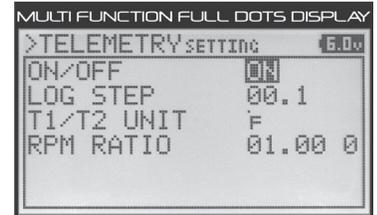
1) From within the TELEMETRY menu, press the UP or DOWN keys to highlight the TELEMETRY SETTING menu.



### Turning the Telemetry System ON and OFF, Continued:

- 2) Press the ENTER key to open the TELEMETRY SETTING menu. ON/OFF ON will be highlighted.
- 3) Press the ENTER key, then press the UP or DOWN keys to choose the desired option, either ON or OFF. When ON is selected, the Telemetry System is turned ON. When OFF is selected, the Telemetry System is turned OFF.

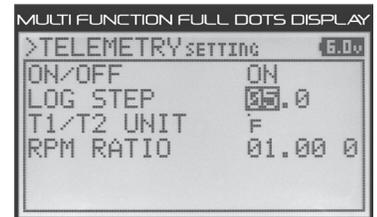
TELEMETRY SETTING ON/OFF setting range is ON or OFF. The default setting is ON.



### Changing the Telemetry Log Step Value:

The Telemetry Log Step value can be changed to customize how much Telemetry Data and the time interval Telemetry Data is recorded at. The Telemetry Log can store up to 120 separate entries. If the Log Step value is set to 00.1 seconds, the Telemetry Log can record for 12 seconds. If the Log Step value is set to 45.1 seconds, the Telemetry Log can record for 90 minutes.

- 1) From within the TELEMETRY SETTINGS menu, press the UP or DOWN keys to highlight LOG STEP 00.1.
- 2) Press the ENTER key, then press the UP or DOWN keys to change the first Telemetry Log Step value.
- 3) Press the ENTER key, then scroll DOWN to highlight the second Log Step value. Press the ENTER key a second time, then scroll UP or DOWN to choose the desired second Log Step value.



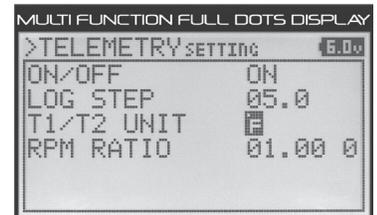
Programming a lower Telemetry Log Step value results in narrower, higher resolution readings, but for a shorter period of time. Programming a higher Telemetry Log Step value results in broader, lower resolution readings, but for a longer period of time.

TELEMETRY SETTING LOG STEP setting range is 00.1 to 45.9. The default setting is 00.1.

### Changing the Temperature Unit Value:

If desired, the Temperature Unit value can be changed from Fahrenheit to Celsius. This setting changes both Temperature 1 and Temperature 2 Unit values. They cannot be changed independently.

- 1) From within the TELEMETRY SETTINGS menu, press the UP or DOWN keys to highlight T1/T2 UNIT F°.
- 2) Press the ENTER key, then press the UP or DOWN keys to change the Temperature Unit value. Choose from F° (Fahrenheit) or C° (Celsius).



TELEMETRY SETTING T1/T2 UNIT setting range °F and °C. The default setting is °F.

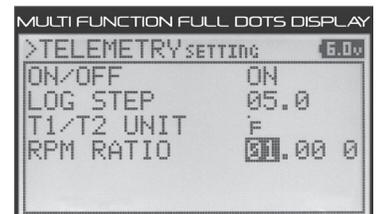
### Changing the Ratio Value (Calibrating the RPM Sensor):

The Ratio value can be changed to allow you to read actual motor or engine RPM even though your RPM sensor may be mounted to your model's spur gear and not to your motor's pinion gear or your engine's flywheel.

**!** This Ratio value only needs to be changed if your RPM sensor isn't mounted directly to your motor's pinion gear or your engine's flywheel.

- 1) From within the TELEMETRY SETTINGS menu, press the UP or DOWN keys to highlight RPM RATIO 01.00 0.

**!** The Ratio value is the gear ratio between the two gears that your RPM sensor is mounted to. For example, if your RPM sensor is mounted to your spur gear, the Ratio value will be the gear ratio of your spur gear and pinion gear.

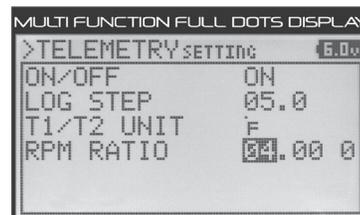


**IMPORTANT:** To calculate the gear ratio, divide the number of teeth in the spur gear by the number of teeth in the pinion gear. For example, if your spur gear is 60T and your pinion gear is 14T, the gear ratio is  $60 / 14 = 4.28$ .

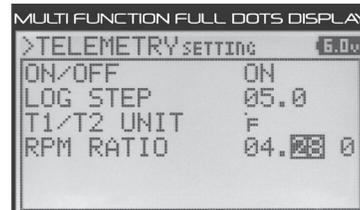
### TELEMETRY SETTING MENU (CHANGE TELEMETRY SETTINGS)

TELEMETRY

2) Press the ENTER key, then press the UP or DOWN keys to choose the desired first Ratio value. If using the example on the previous page, choose 04.



3) Press the ENTER key, then scroll DOWN to highlight the second Ratio value. Press the ENTER key a second time, then scroll UP or DOWN to choose the desired second Ratio value. If using the example on the previous page, choose 28.



4) If necessary, press the ENTER key, then scroll DOWN to highlight the third ratio value. Press the ENTER key, then scroll UP or DOWN to choose the desired third Ratio value.

TELEMETRY SETTING RPM RATIO setting range is 1.00 0 to 64.99 9. The default setting is 1.00 0.

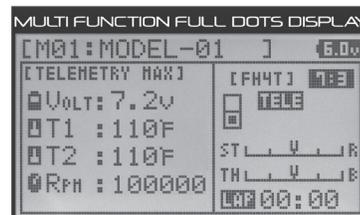
**!** If the RPM sensor is mounted to your engine's flywheel or your motor's pinion gear to read the RPM directly, the Ratio value should be set to 1.00 0.

### TE-CLR (TELEMETRY CLEAR FUNCTION)

TELEMETRY

When viewing the TELEMETRY screen, press and HOLD the DOWN key to display the Telemetry Data Max (Maximum) values, then release the DOWN key to revert to viewing current Telemetry Data values. The Telemetry Clear function allows you to Reset the Telemetry Data Maximum values displayed on the TELEMETRY MAX screen to the current values.

The Telemetry Clear function can be assigned to Auxiliary Switch Sw1. When you press Auxiliary Switch Sw1, the Temperature 1, Temperature 2 and RPM Maximum values will be Reset to the Current values read by the Telemetry Sensors. For more information, see the KEY ASSIGN Menu section on pages 56 through 60. **The TE-CLR function can only be Assigned to Auxiliary Switch Sw1.**



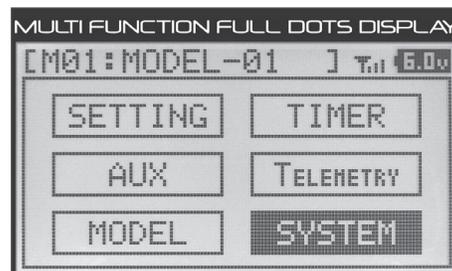
**!** This function will only work if with an Airtronics or Sanwa RX-461 or RX-462 FH4T Telemetry receiver. In addition, only the TEMP1, TEMP2 and RPM Maximum values will be Reset. The VOLT Maximum value is unaffected.

### SYSTEM MENU OVERVIEW

SYSTEM

To access the various SYSTEM menu Programming Menus, turn the transmitter ON, then press the ENTER key to open the PROGRAMMING screen.

Press the UP or DOWN keys to highlight the SYSTEM menu, then press the ENTER key to open the SYSTEM menu.



The following Programming Menus are available within the SYSTEM menu:

MENU	MENU DESCRIPTION	PAGE #
BIND	Binding, Select Modulation Type and Channel Response Mode	PG. 55
KEY ASSIGN	Assign Functions to the Auxiliary Switches and Trim Switches	PG. 56
BUZZER	Adjust Audible Key Tone Volume and Tone	PG. 60
BATTERY	Specify Transmitter Battery Low Voltage and Limit Alarms	PG. 60
LCD	Adjust LCD Contrast and Backlight Options	PG. 62
VR ADJUST	Calibrate Steering and Throttle Controls	PG. 63

## BIND MENU (BINDING, MODULATION TYPE AND CHANNEL RESPONSE MODE)

SYSTEM

The BIND menu allows you to change the transmitter's Modulation Type, change the Channel Response Mode and Bind the transmitter and receiver pair. All settings are model-specific, so you can have different settings to suit different models.

**!** The Modulation Type must be chosen prior to Binding the transmitter and receiver. If these options are changed after Binding, you will need to Bind the transmitter and receiver pair again for the changes to take affect.

**\*\*Make sure the Modulation Type you choose matches the Modulation Type of the receiver you're using!\*\***

The following Modulation Types are available\*:

**FH3** - Select this Modulation Type when using Airtronics or Sanwa 2.4GHz FH3 surface receivers.

**FH4T** - Select this Modulation Type when using Airtronics or Sanwa 2.4GHz FH4 or FH4T surface receivers (default).

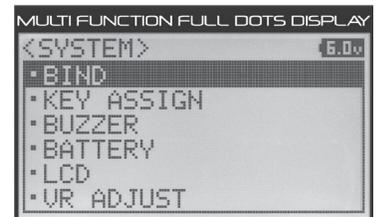
\*Other Modulation Types May Be Shown and Will Vary By Region. Not All Modulation Types are Legal to Use in All Regions.

**IMPORTANT:** Not all BIND menu functions are supported by all Modulation Types. Only supported functions will be displayed once a Modulation Type is chosen. For example, the FH3 Modulation Type does not support the SSR Channel Response Mode. FH3 Modulation Type does not support Telemetry.

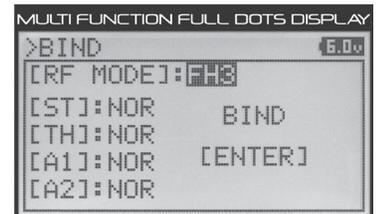
### Changing the Modulation Type:

The Modulation Type function allows you to choose the transmitter Modulation Type. The Modulation Type should be changed to match the receiver you're using. For example, if you use an Airtronics or Sanwa 2.4GHz FH3 surface receiver with your transmitter, you would need to change the Modulation Type to FH3. The Modulation Type should be chosen prior to Binding the transmitter and receiver pair.

1) From within the SETTING menu, press the UP or DOWN keys to highlight the BIND menu.



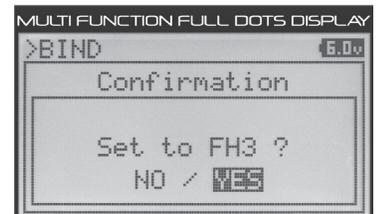
2) Press the ENTER key to open the BIND menu, then press the UP or DOWN keys to highlight RF MODE : FH4T.



3) Press the ENTER key, then press the UP or DOWN keys to choose the desired Modulation Type, either FH3 or FH4T.

BIND RF MODE setting range is FH3 and FH4T. The default setting is FH4T.

4) Press the ENTER key. SET TO FH3? (or the Modulation Type you selected) NO/YES will be displayed. Press the UP or DOWN keys to highlight YES, then press the ENTER key. The Modulation Type will be changed.

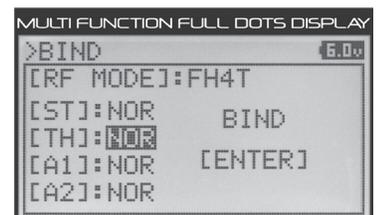


**!** If you want to go back and change the Modulation Type or if you don't want to change the Modulation Type for any reason, choose NO or press the BACK key.

### Changing the Channel Response Mode:

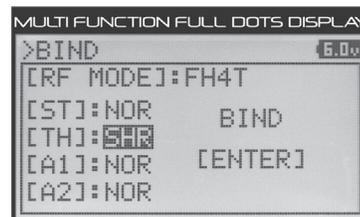
The Channel Response Mode function is used to change the Response Mode of each channel to suit the type of servos you're using. The combination of using Digital servos and using the correct Channel Response Mode results in increased reaction speed and improved feel, making you feel more connected to your model than ever. For example, using the SHR Channel Response Mode with any brand of Digital servo will increase the servo's Response Time, even above the manufacturer's specification. For the fastest Response Time possible, use the SSR Channel Response Mode with Airtronics or Sanwa Super Response SRG Digital servos.

1) From within the BIND menu, press the UP or DOWN keys to highlight the desired channel you would like to change the Channel Response Mode for.



### Changing the Channel Response Mode, Continued:

- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Channel Response Mode value for the selected channel.
- 3) Press the ENTER key, then repeat steps 1 and 2 to choose the Channel Response Mode for any desired remaining channels.



BIND CHANNEL RESPONSE MODE setting range is NOR, SHR and SSR. The default setting is NOR.

The following Channel Response Modes are available:

**NOR** - Use with any brand of Analog or Digital servos (Slowest Response Time).

**SHR** - Use with any brand of Digital servos only (Faster Response Time).

**SSR** - Use with Airtronics or Sanwa Super Response SRG Digital servos only (Fastest Response Time) - FH4T Modulation Only.

**WARNING:** If you're using Analog servos in your model, DO NOT use the SHR or SSR Channel Response Modes for those channels. Use the NOR Channel Response Mode with Analog servos. Using SHR or SSR Channel Response Modes with Analog servos can result in poor performance or even damage to the servos.

SHR and SSR Channel Response Modes should only be used with Digital servos. While the SHR Channel Response Mode can be used with any brand of Digital servo, the SSR Channel Response Mode should ONLY be used with Airtronics or Sanwa Super Response SRG Digital servos.

Not all ESCs are compatible with SHR or SSR Channel Response Modes. If your ESC does not operate correctly, change the Throttle Channel Response Mode to NOR.

SSR Channel Response Mode is only available when used with compatible FH4 or FH4T Super Response receiver.

When switching between SHR and SSR Channel Response Modes, your model's End Point Adjustment (EPA) settings may be altered. In this case, you should double-check the EPA settings and readjust them if necessary.

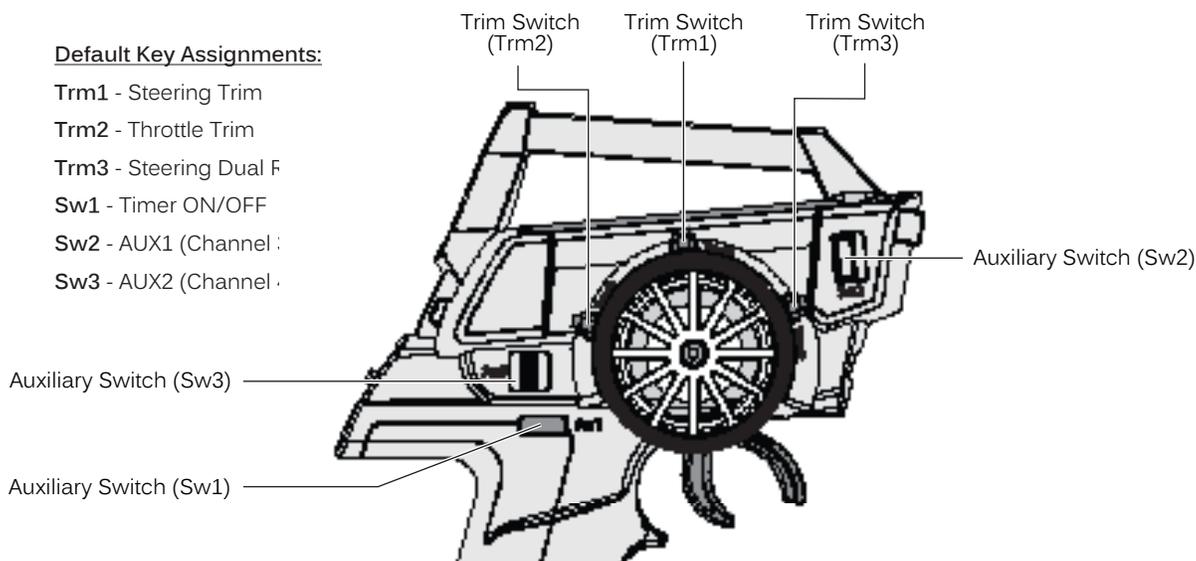
### Binding the Transmitter and Receiver:

To Bind the transmitter and receiver, please see the Transmitter and Receiver Binding section on page 18. Prior to Binding the transmitter and receiver, make sure to choose the desired Modulation Type.

The KEY ASSIGN menu allows you to assign different functions to each of the three Auxiliary Switches and the three Trim Switches. In addition, the ON/OFF behavior of some Auxiliary Switch functions can be changed. The Key Assignments function also allows you to change the Direction of Travel and the Trim Resolution of the three Trim Switches. This allows you to fine-tune the movement of the servos or programmed function when the Trim Switches are pressed.

#### Default Key Assignments:

- Trm1 - Steering Trim
- Trm2 - Throttle Trim
- Trm3 - Steering Dual F
- Sw1 - Timer ON/OFF
- Sw2 - AUX1 (Channel :
- Sw3 - AUX2 (Channel :



### Auxiliary Switch Function Assignments

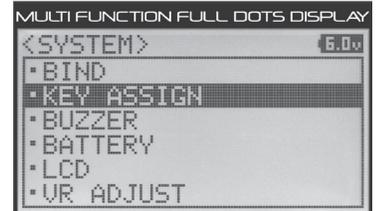
The Auxiliary Switch Assign function allows you to Assign various functions to the three Auxiliary Switches Sw1, Sw2 and Sw3. This allows you to use the Auxiliary Switches to control various functions while you're driving.

Auxiliary Switch Sw1 is ideal for turning functions ON and OFF. For example, you can use it to Start and Stop the Lap Timer or turn the Throttle Offset function ON and OFF. The ON/OFF behavior of Auxiliary Switch Sw1 can be changed to either PUSH or TOGGLE to suit the programmed function and your specific requirements.

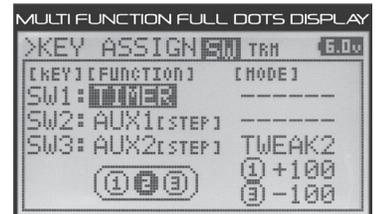
Auxiliary Switch Sw2 and Sw3 are also ideal for turning functions ON and OFF, but are also suited to controlling functions that don't require proportional control, such as the various Auxiliary 1 (Channel 3) and Auxiliary 2 (Channel 4) functions. Auxiliary Switch Sw3 is a three-way switch that has adjustable Tweak values that determine the amount of servo travel and direction, and can also control function parameters, such as Steering Curve Rate, Brake Dual Rate and more.

### Changing the Auxiliary Switch Function Assignments:

1) From within the SYSTEM menu, scroll UP or DOWN to highlight the KEY ASSIGN menu.



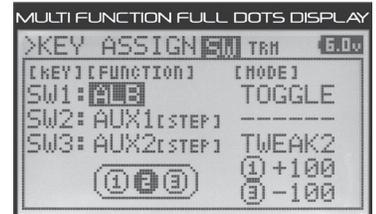
2) Press the ENTER key to open the KEY ASSIGN menu. The cursor will be flashing over Channel/Options.



! If the cursor isn't flashing over Channel/Options, press the BACK key.

3) Press the UP or DOWN keys to highlight KEY ASSIGN SW, then press the ENTER key to open the KEY ASSIGN SW menu. SW1 : TIMER will be highlighted.

4) Press the UP or DOWN keys to highlight the function you would like to change for either SW1, SW2 or SW3.



5) Press the ENTER key, then press the UP or DOWN keys to choose the desired function for the selected Auxiliary Switch.

The tables below show the different functions that can be Assigned to the Auxiliary Switches.

AUXILIARY SWITCH SW1	
MENU	FUNCTION
OFF	Inhibited
ASIST-ST	Steering Macro*
D/R-ST	Dual Rate-Steering
D/R-TH	Dual Rate-Throttle
D/R-BR	Dual Rate-Brake
CUR-ST	Curve-Steering
CUR-TH	Curve-Steering
SPD-ST	Servo Speed-Steering
SPD-TH	Servo Speed-Throttle
ALB	Anti-Lock Brake
OFFSET	Throttle Offset
AUX1	Auxiliary 1 (Channel 3)**
AUX2	Auxiliary 2 (Channel 4)**
TIMER	Timers
TE-CLR	Telemetry Clear
LOGGER	Telemetry Logger

AUXILIARY SWITCH SW2	
MENU	FUNCTION
OFF	Inhibited
ASIST-ST	Steering Macro*
D/R-ST	Dual Rate-Steering
D/R-TH	Dual Rate-Throttle
D/R-BR	Dual Rate-Brake
CUR-ST	Curve-Steering
CUR-TH	Curve-Steering
SPD-ST	Servo Speed-Steering
SPD-TH	Servo Speed-Throttle
ALB	Anti-Lock Brake
OFFSET	Throttle Offset
AUX1	Auxiliary 1 (Channel 3)**
AUX2	Auxiliary 2 (Channel 4)**

\*This function turns any programmed Steering Dual Rate, Steering Servo Speed and Steering Curve functions ON and OFF at the same time.

AUXILIARY SWITCH SW3	
MENU	FUNCTION
OFF	Inhibited
D/R-ST	Dual Rate-Steering
D/R-TH	Dual Rate-Throttle
D/R-BR	Dual Rate-Brake
CUR-R-ST	Curve-Rate-Steering
CUR-R-TH	Curve-Rate-Throttle
CUR-R-BR	Curve-Rate-Brake
SP-ST-F	Speed-Steering-Forward
SP-ST-R	Speed-Steering-Return
SP-TH-F	Speed-Throttle-Forward
SP-TH-R	Speed-Throttle-Return
ALB-ST	Anti-Lock Brake-Stroke
ALB-LG	Anti-Lock Brake-Lag
ALB-CY	Anti-Lock Brake-Cycle
OFFSET	Throttle Offset
AUX1	Auxiliary 1 (Channel 3)**
AUX2	Auxiliary 2 (Channel 4)**

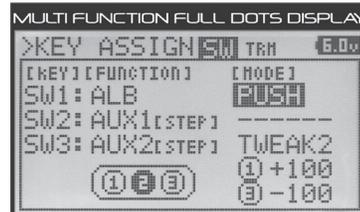
\*\*Varies by programmed Auxiliary function, either STEP, CODE, etc.

### Changing the Switch Mode:

Some functions allow you to change how Auxiliary Switch Sw1 operates. The following Switch Modes are available:

- TOGGLE** - When selected, press Auxiliary Switch Sw1 to turn the function ON and press Auxiliary Switch Sw1 a second time to turn the function OFF.
- PUSH** - When selected, press and HOLD Auxiliary Switch Sw1 to turn the function ON. When Auxiliary Switch Sw1 is released, the function will be turned OFF.

- From within the KEY ASSIGN SW menu, press the UP or DOWN keys to highlight MODE for Auxiliary Switch Sw1.
- Press the ENTER key, then press the UP or DOWN keys to choose the desired Switch Mode setting, either TOGGLE or PUSH for the selected Auxiliary Switch Sw1 function.



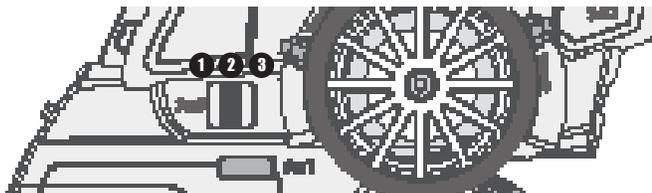
**!** The Switch Mode can only be changed for Auxiliary Switch Sw1 and it cannot be changed for all functions. When MODE ----- is displayed, Auxiliary Switch Sw1 will act as if it were in Toggle Mode.

### Changing the Tweak1 and Tweak2 Values:

The Tweak1 and Tweak2 values determine how far and in which direction Auxiliary Switch Sw3 controls the function Assigned to it, regardless if Auxiliary Switch Sw3 is controlling a servo, such as Auxiliary 2 (Channel 4) or a function parameter, such as CUR-R-ST (Curve-Rate-Steering). For example, if you Assign AUX2 to Auxiliary Switch Sw3 and adjust the Tweak values to +50 and -50, the Auxiliary 2 (Channel 4) servo will travel 50% in one direction when Auxiliary Switch Sw3 is moved Forward and travel 50% in the other direction when Auxiliary Switch Sw3 is moved Backward. Alternately, if you Assign CUR-R-ST to Auxiliary Switch Sw3 and adjust the Tweak values to -25 and -50, you can change Steering Curve Rate from 0 to -20 to -50 by simply moving Auxiliary Switch Sw3.

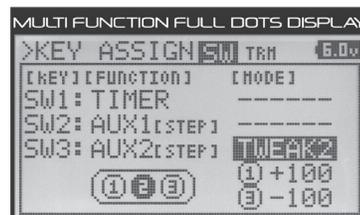
The Neutral position of Auxiliary Switch Sw3 can be changed from Position 1 to Position 2 to suit the programmed function and your specific requirements.

- TWEAK1** - When selected, Position 1 will be Neutral and Position 2 and Position 3 will be End Points.
- TWEAK2** - When selected, Position 2 will be Neutral and Position 1 and Position 3 will be End Points.

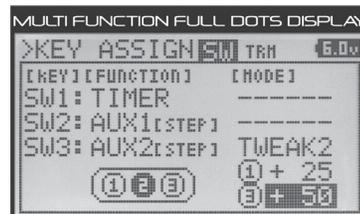


	①	②	③
TWEAK1	Neutral	P1	P3
TWEAK2	P1	Neutral	P3

- From within the KEY ASSIGN SW menu, press the UP or DOWN keys to highlight MODE TWEAK1 (or TWEAK2).
- Press the ENTER key, then press the UP or DOWN keys to choose either TWEAK1 or TWEAK2. Which value you choose will determine how Auxiliary Switch Sw3 functions, as described above.



- Press the ENTER key, then press the UP or DOWN keys to choose the desired Position Tweak value you want to change, either TWEAK1 ② or ③, or TWEAK2 ① or ③. Increasing the Tweak value will increase travel in the High Side direction and Decreasing the Tweak value will decrease travel in the High Side direction. Using a Negative value will change the direction of travel.
- Press the ENTER key, then repeat step 3 to change the Tweak value for the second Position.



KEY ASSIGN SW TWEAK setting range is -100 to +100. The default setting for TWEAK1 Position 2 is +100 and the default setting for TWEAK2 Position 1 is +100 and the default setting for TWEAK2 Position 3 is -100.

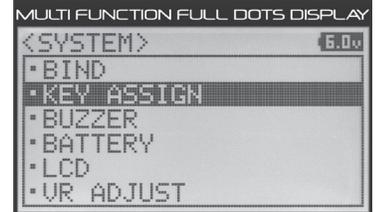
**!** TWEAK1 and TWEAK2 cannot be controlled at the same time. You can control only one or the other at any one time.

### Trim Switch Function Assignments

The Trim Switch Assign function allows you to Assign various functions to the three Trim Switches Trm1, Trm2 and Trm3. This allows you to use the Trim Switches to control those functions while you're driving. In addition, the Trim Resolution (Step value) and the Direction of Travel (REV) of each Trim Switch can be changed to suit the programmed function and your specific requirements.

### Changing the Trim Switch Function Assignments:

- From within the SYSTEM menu, scroll UP or DOWN to highlight the KEY ASSIGN menu.

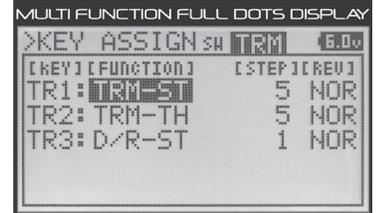


- Press the ENTER key to open the KEY ASSIGN menu. The cursor will be flashing over Channel/Options.



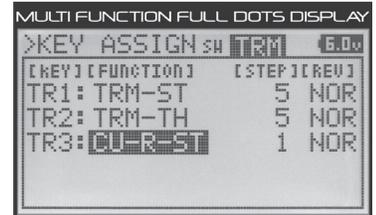
If the cursor isn't flashing over Channel/Options, press the BACK key.

- Press the UP or DOWN keys to highlight KEY ASSIGN TRM, then press the ENTER key to open the KEY ASSIGN TRM menu. TR1 : TRM-ST will be highlighted.



- Press the UP or DOWN keys to highlight the function you would like to change for either TR1, TR2 or TR3.

- Press the ENTER key, then press the UP or DOWN keys to choose the desired function for the selected Trim Switch.



The table below shows the different functions that can be Assigned to the Trim Switches.

TRIM SWITCH SW1, SW2 and SW3					
MENU	FUNCTION	MENU	FUNCTION	MENU	FUNCTION
OFF	Inhibited	D/R-BR	Dual Rate-Brake	SP-TH-R	Speed-Throttle-Return
TRM-ST	Trim-Steering	CU-R-ST	Curve-Rate-Steering	ALB-PO	Anti-Lock Brake-Point
TRM-TH	Trim-Throttle	CU-R-TH	Curve-Rate-Throttle	ALB-ST	Anti-Lock Brake-Stroke
TRM-A1	Trim-Auxiliary 1	CU-R-BR	Curve-Rate-Brake	ALB-LG	Anti-Lock Brake-Lag
TRM-A2	Trim-Auxiliary 2	SP-ST-F	Speed-Steering-Forward	ALB-CY	Anti-Lock Brake-Cycle
D/R-ST	Dual Rate-Steering	SP-ST-R	Speed-Steering-Return	OFFSET	Throttle Offset
D/R-TH	Dual Rate-Throttle	SP-TH-F	Speed-Throttle-Foward	AUX1	Auxiliary 1 (Channel 3)*
				AUX2	Auxiliary 2 (Channel 4)*

### Changing the Trim Switch Step Value:

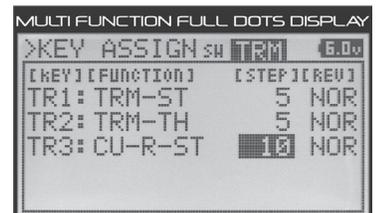
\*Varies by programmed Auxiliary function, either STEP, CODE, etc.

The Step function allows you to adjust how far a servo travels or a function moves when a Trim Switch is pressed. You can Increase the Trim Resolution by Decreasing the Step value, so that the amount of travel is less when you press the Trim Switches. This makes it possible to fine-tune travel extremely accurately. Alternately, you could Decrease the Trim Resolution by Increasing the Step value, so that the amount of travel is more when you press the Trim Switches. This may not be as accurate, but it allows you to command large amounts of travel or function movement at a time.

- From within the KEY ASSIGN TRM menu, press the UP or DOWN keys to highlight the Trim Switch Number you would like to change the Step value for. Choose from TR1 STEP, TR2 STEP or TR3 STEP.
- Press the ENTER key, then press the UP or DOWN keys to choose the desired Trim Switch Step value.

KEY ASSIGN SW STEP setting range is 1 to 100. The default setting TR1 is 5, the default setting for TR2 is 5 and the default setting for TR3 is 1. The Step value is a percentage of travel.

- Press the ENTER key, then repeat step 2 to change any other desired Trim Switch Step values.



## KEY ASSIGN MENU {KEY ASSIGNMENTS}

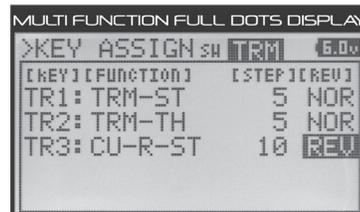
SYSTEM

### Changing the Trim Switch Direction of Travel:

The direction that the Trim Switches move the servos or function parameter values can be changed from Normal to Reverse. In Normal mode, the Trim Switches will move the servos toward the High Side or Increase function values when the Trim Switches are pushed Forward. In Reverse mode, the Trim Switches will move the servos toward the Low Side or Decrease function values when the Trim Switches are pushed Forward.

- 1) From within the KEY ASSIGN TRM menu, press the UP or DOWN keys to highlight the Trim Switch Number you would like to change the Reverse value for. Choose from TR1 REV, TR2 REV or TR3 REV.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Trim Switch Reverse value.
- 3) Press the ENTER key, then repeat step 2 to change any other desired Trim Switch Reverse values.

KEY ASSIGN SW REV setting range is NOR and REV. The default setting for all Trim Switches is NOR.



## BUZZER MENU {AUDIBLE KEY TONES}

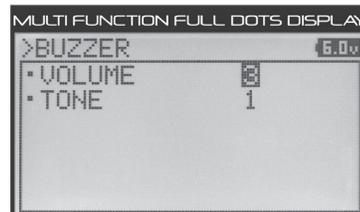
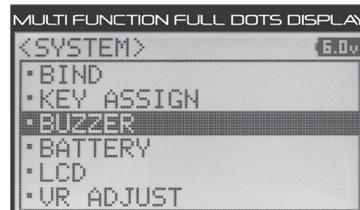
SYSTEM

The Buzzer function allows you to change the Volume and Tone of the audible sounds that are made when you use the Trim Switches, Auxiliary Switches and the Timer function. The Volume can be Increased or Decreased (or Muted) and the Tone can be changed to suit your preference.

**!** Changes made using the Buzzer function also affect audible sounds that are part of the Timer function. For example, if you Mute (select OFF) the Audible Key Tones, the sounds that are part of the Timer function will also be Muted. **Transmitter warning alarms, such as the Low Voltage Alert alarm, are unaffected.**

### Changing the Audible Key Tone Volume:

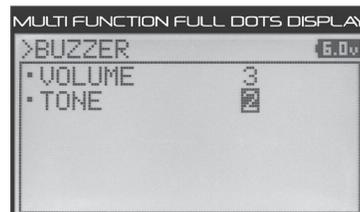
- 1) From within the SYSTEM menu, press the UP or DOWN keys to highlight the BUZZER menu.
- 2) Press the ENTER key to open the BUZZER menu. VOLUME 4 will be highlighted.
- 3) Press the ENTER key, then press the UP or DOWN keys to choose the desired Volume value. Increasing the Volume value will Increase the Volume of the Audible Key Tones and Decreasing the Volume value will Decrease the Volume of the Audible Key Tones. Choosing OFF will Mute Audible Key Tones.



BUZZER VOLUME setting range is OFF to 5. The default setting is 4. When OFF is selected, Audible Key Tones will be Muted.

### Changing the Audible Key Tone:

- 1) From within the BUZZER menu, press the UP or DOWN keys to highlight TONE 1.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Tone value. Increasing the Tone value will Increase the pitch of the Audible Key Tones and Decreasing the Tone value will Decrease the pitch of the Audible Key Tones.



BUZZER TONE setting range is 1 to 7. The default setting is 1.

## BATTERY MENU {TRANSMITTER LOW VOLTAGE ALERT AND LIMIT ALARMS}

SYSTEM

The Battery function allows to specify the voltage at which the transmitter Low Voltage Alert and Low Voltage Limit alarms will sound. Presets for different battery types allow you to quickly and easily choose the recommended values to use, based on the type of transmitter battery you're using. For example, if you're using 4 'AA' Alkaline cells or a 2S LiPo battery pack, you can choose the DRYx4 or the LiPox2 Battery Type option respectively, and the Alert Voltage and Limit Voltage values will be automatically adjusted to suit. You are also able to program Custom Alert Voltage and Limit Voltage values if you prefer not to use one of the Battery Type Presets.

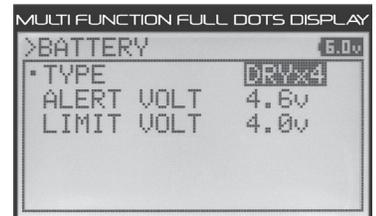
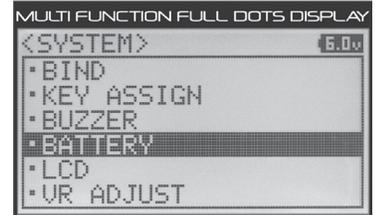
The MT-S transmitter features two different programmable Low Voltage alarms.

**ALERT VOLT** - The Low Voltage Alert alarm will sound to indicate the transmitter batteries are getting low and should be replaced or recharged. We suggest stopping use as soon as safely possible and replacing or recharging the transmitter batteries. The Low Voltage Alert alarm will sound each time the transmitter battery voltage decreases by 0.1 volt. To clear this alarm, press the ENTER or BACK key.

**LIMIT VOLT** - The Low Voltage Limit alarm will sound to indicate the transmitter batteries are low and should be replaced or recharged right away. The Low Voltage Limit alarm cannot be cancelled. When the Low Voltage Limit alarm sounds, you should stop use as soon as it's safe, then replace or recharge the transmitter batteries. This alarm can only be cleared by turning the transmitter OFF and replacing or recharging the transmitter batteries.

**Changing the Battery Type Preset:**

- 1) From within the SYSTEM menu, press the UP or DOWN keys to highlight the BATTERY menu.
- 2) Press the ENTER key to open the BATTERY menu. TYPE DRYx4 will be highlighted.
- 3) Press the ENTER key, then press the UP or DOWN keys to choose the desired Battery Type Preset. Choose a Preset that matches the type of transmitter battery you're using. If you choose CUSTOM, skip to the Changing the Low Voltage Alert Alarm Value and the Changing the Low Voltage Limit Alarm Value sections below.



The table below shows the different Battery Type Presets.

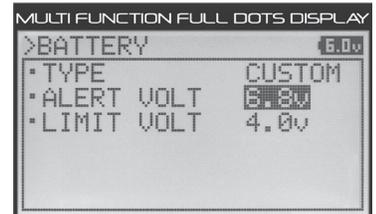
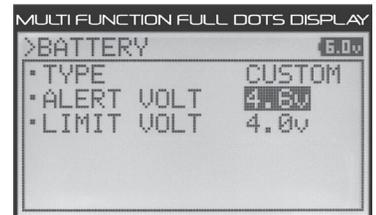
PRESET	BATTERY TYPE	ALERT VOLTAGE	LIMIT VOLTAGE
DRYx4	4-Cell Alkaline	4.6 Volts	4.0 Volts
NI-MHx4	4-Cell Ni-CD/NiMH	4.2 Volts	4.0 Volts
LiFex2	2S LiFe	6.3 Volts	6.1 Volts
LiPox2	2S LiPo	7.2 Volts	7.0 Volts

**!** If a Battery Type Preset is selected, you cannot change Alert Voltage or Alert Limit values. To be able to change these values you must choose BATTERY TYPE CUSTOM.

**Changing the Low Voltage Alert Alarm Value (Custom):**

If you choose a Custom battery type, you can change the Alert Voltage value to something different than the Preset value, which might better suit your specific battery type.

- 1) From within the BATTERY menu, press the UP or DOWN keys to highlight ALERT VOLT 4.6v.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Alert Voltage value. Increasing the Alert Voltage value will cause the Low Voltage Alert alarm to sound at a higher voltage and Decreasing the Alert Voltage value will cause the Low Voltage Alert alarm to sound at a lower voltage. **The Alert Voltage value cannot be set lower than the Limit Voltage value.**

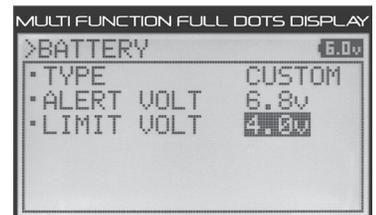


BATTERY ALERT VOLT setting range is 4.1v to 9.0v. The default setting is 4.6v.

**Changing the Low Voltage Limit Alarm Value (Custom):**

If you choose a Custom battery type, you can change the Limit Voltage value to something different than the Preset value, which might better suit your specific battery type.

- 1) From within the BATTERY menu, press the UP or DOWN keys to highlight LIMIT VOLT 4.0v.



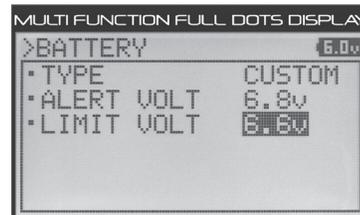
SYSTEM MENU

## BATTERY MENU (TRANSMITTER LOW VOLTAGE ALERT AND LIMIT ALARMS)

SYSTEM

### Changing the Low Voltage Limit Alarm Value (Custom), Continued:

- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired Limit Voltage value. Increasing the Limit Voltage value will cause the Low Voltage Limit alarm to sound at a higher voltage and Decreasing the Limit Voltage value will cause the Low Voltage Limit alarm to sound at a lower voltage. **The Limit Voltage value cannot be set higher than the Alert Voltage value.**



BATTERY LIMIT VOLT setting range is 4.0v to 4.9v. The default setting is 4.4v.

**WARNING:** When using a Lithium battery in your transmitter, NEVER allow the battery to discharge below 3.0V per cell (LiFe) or 3.3V per cell (LiPo), or damage to the battery can occur, which can also result in damage to the transmitter, or even your home or your person, if severe enough.

Continuing to use the transmitter after the Low Voltage Limit alarm sounds can result in loss of control of your model. When the Low Voltage Alert alarm sounds, stop use as soon as is safe, then replace or recharge the transmitter batteries.

## LCD MENU (LCD CONTRAST AND BACKLIGHT OPTIONS)

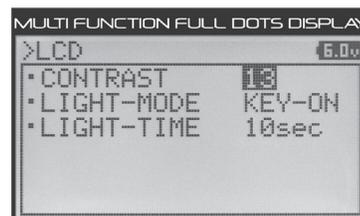
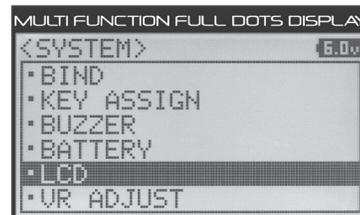
SYSTEM

The LCD menu allows you change the contrast of the LCD, the Backlight Mode and the Backlight On-Time. Changing the Contrast settings can make it easier to view the LCD in different lighting conditions and changing the Backlight Mode and Backlight On-Time affects how the Backlight is turned ON and how long the Backlight stays ON.

**IMPORTANT:** Leaving the LCD Backlight ON at all times will Increase battery consumption. In addition, Decreasing the Contrast value near the Lower limit can result in the LCD becoming nearly impossible to read. Be careful not to set the Contrast value too low.

### Changing the LCD Contrast Value:

- 1) From within the SYSTEM menu, press the UP or DOWN keys to highlight the LCD menu.
- 2) Press the ENTER key to open the LCD menu. CONTRAST 15 will be highlighted.
- 3) Press the ENTER key, then press the UP or DOWN keys to choose the desired Contrast value. Increasing the Contrast value will Increase the contrast of the LCD and Decreasing the Contrast value will Decrease the contrast of the LCD.



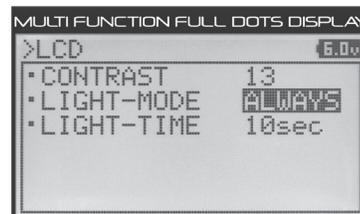
LCD CONTRAST setting range is 0 to 30. The default setting is 15.

**!** Decreasing the LCD Contrast value too much will make the LCD nearly impossible to read. We do not suggest using an LCD Contrast value lower than 7.

### Changing the LCD Backlight Mode:

The LCD Backlight Mode determines how the LCD Backlight operates. When set to OFF, the LCD Backlight will be turned OFF. When set to KEY-ON, the LCD Backlight will turn ON when a key-press is made. When set to ALWAYS, the LCD Backlight will stay ON at all times.

- 1) From within the LCD menu, press the UP or DOWN keys to highlight LIGHT-MODE KEY-ON.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired LCD Backlight Mode value. Choose from OFF, KEY-ON or ALWAYS.



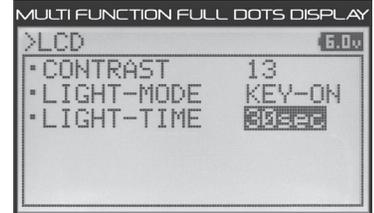
LCD LIGHT-MODE setting range is OFF, KEY-ON and ALWAYS. The default setting is KEY-ON.

### Changing the LCD Backlight On-Time:

The LCD Backlight On-Time determines how long the LCD Backlight will stay ON before turning OFF automatically.

- 1) From within the LCD menu, press the UP or DOWN keys to highlight LIGHT-TIME 10sec.
- 2) Press the ENTER key, then press the UP or DOWN keys to choose the desired LCD Backlight On-Time value (in seconds).

 If the Backlight Mode is set to ALWAYS or OFF, changing the LCD Backlight On-Time value will have no effect.



LCD LIGHT-TIME setting range is 1 to 30 seconds. The default setting is 10 seconds.

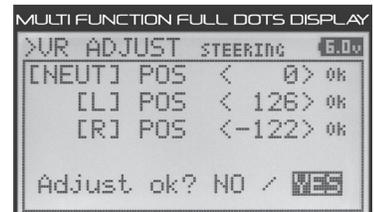
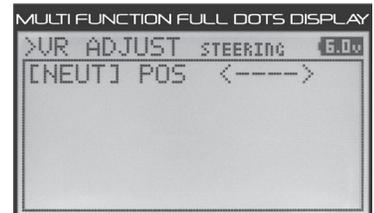
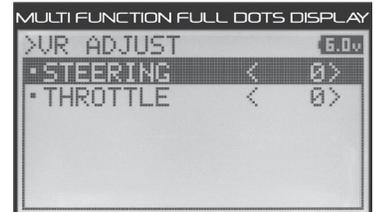
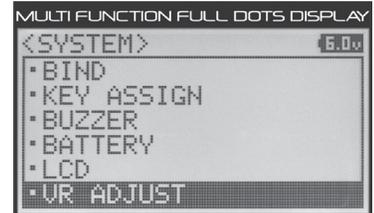
The Variable Rate Adjustment function allows you to calibrate the operation of the Steering Wheel and Throttle Trigger End Points and Neutral positions. Over time, it's possible that the End Points and/or Neutral positions of these controls may change slightly. Being able to calibrate these controls ensures precise operation at all times. **We recommend using the Variable Rate Adjustment function as part of a periodic maintenance schedule.**

**IMPORTANT:** After using the Variable Rate Adjustment function, you should double-check the End Point Adjustments of each saved model. If the End Points have moved, they will need to be readjusted using the End Point Adjustment function.

 The steps required to calibrate the operation of the Steering Wheel and Throttle Trigger are the same. The example shown in this section details calibrating the Steering Wheel.

### Calibrating the Steering and Throttle Controls:

- 1) From within the SYSTEM menu, press the UP or DOWN keys to highlight the VR ADJUST menu.
- 2) Press the ENTER key to open the VR ADJUST menu. STEERING < 0 > will be highlighted. **Depending on the current state of calibration, a value other than 0 may be highlighted.**
- 3) Press the UP or DOWN keys to choose which control you would like to calibrate, either STEERING or THROTTLE.
- 4) With the Steering Wheel (or the Throttle Trigger) in the Neutral position, press the ENTER key. NEUT POS < ---- > will be displayed.
- 5) Press the ENTER key a second time. A menu with several position indicators will be displayed and OK will be displayed next to the NEUT POS value.
- 6) Move the Steering Wheel (or the Throttle Trigger) all the way in one direction, then allow the control to return to Neutral. Move the Steering Wheel (or the Throttle Trigger) all the way in the opposite direction, then allow the control to return to Neutral. A series of values and Adjust ok? NO/YES will be displayed.
- 7) Press the UP or DOWN keys to highlight YES, then press the ENTER key. Executed will flash, indicating that the calibration process is complete. If you want to cancel the calibration process for any reason, choose NO or press the BACK key.
- 8) If desired, repeat steps 3 through 7 to calibrate the remaining control, either STEERING or THROTTLE.



## RX-461 AND RX-462 RECEIVER TELEMETRY CONNECTIONS AND MOUNTING

REFERENCE

When used with an Airtronics or Sanwa RX-461 or RX-462 2.4GHz FH4T Telemetry receiver (available separately), up to two Temperature Sensors and an RPM Sensor (available separately) can be connected and installed in your model to view RPM, Temperature and Receiver Voltage Telemetry Data on the MT-S transmitter's TELEMETRY screen.

**IMPORTANT:** The information in this section only pertains if you are using an Airtronics or Sanwa RX-461 or RX-462 2.4GHz FH4T Telemetry receiver and associated Telemetry Sensors with your MT-S transmitter.

### Overview:

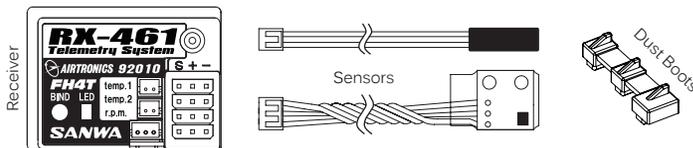
The RX-461 and RX-462 receivers each feature two Temperature Sensor Inputs and one RPM Sensor Input, in addition to the Voltage Sensor built into the receiver. Temperature and RPM Sensors can be installed into your model to give you Temperature and RPM feedback in real-time displayed on the transmitter's TELEMETRY screen.

 The range of the Telemetry System is approximately 260 feet (80 meters), although the range can vary based on many environmental factors. Use the Telemetry Signal Indicator to determine the quality of the Telemetry Signal.

### Connecting the Telemetry Sensors to the Receiver:

- 1) Carefully pry up and remove the plastic cover from over the Telemetry Sensor Input Ports on the receiver.
- 2) Plug the Telemetry Sensor(s) into their respective Input Ports in the receiver. The Temperature Sensor can be plugged into either the TEMP1 or the TEMP2 Input Port and the RPM Sensor is plugged into the RPM Input Port. The Sensor Plugs are indexed so they can be plugged in only one way.

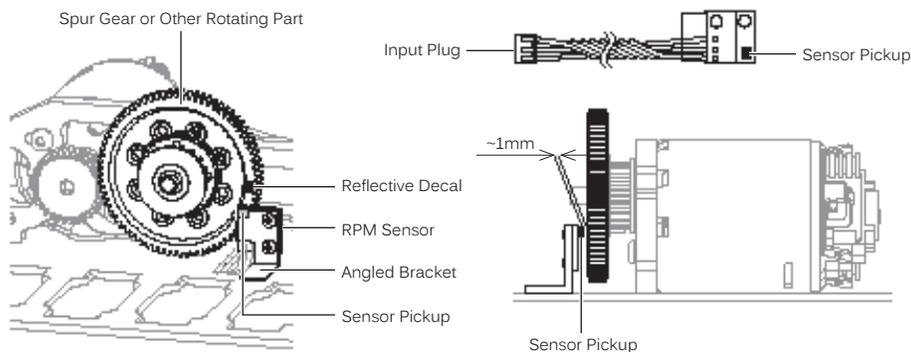
 Make sure to push the Sensor Plugs firmly in place to ensure a good connection. When routing Sensor Wires inside your model, be careful that they cannot come into contact with any moving parts. The Sensor Wires should be securely mounted and protected against damage.



**The Sensor Wires can be lengthened to suit your specific requirements by splicing similar gauge stranded wire of the required length.** For the best results, solder the spliced connections together and insulate the solder joints with heat-shrink tubing. Install the dust covers included with your receiver to prevent dirt and debris from getting into any unused Input Ports.

### Mounting the RPM Sensor:

The RPM Sensor uses infrared technology to record RPM data from a rotating part, such as a flywheel or a spur gear. One Black and one White reflective decal is included that is attached to the rotating part so the Sensor Pickup can 'see' it.



- 1) Mount the RPM Sensor to an aluminum or ABS angled bracket, then mount the bracket to your model, making sure that it's held securely in place. **For optimal operation, the Sensor Pickup should be positioned approximately 1mm away from the rotating part (flywheel, spur gear, pinion gear etc.)**
- 2) Cut one of the two reflective decals included with the RPM Sensor into an ~2mm diameter and apply it to the rotating part, so that as the part rotates, the reflective decal passes in Front of the Sensor Pickup. **If the rotating part is metallic-colored (silver, aluminum, chrome, etc.), use the Black reflective decal and if the rotating part is dark-colored (black, blue or another dark color), use the White reflective decal.**

**IMPORTANT:** When installed, it's important that the Sensor Pickup face the rotating part and that the reflective decal is positioned so that it passes in Front of the Sensor Pickup. It's also important that the reflective decal contrasts with the rotating part it's applied to and that the Sensor Pickup is mounted approximately 1mm away from the rotating part.

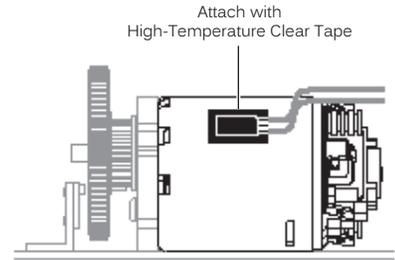
 After installing the RPM Sensor and connecting it to your receiver, the RPM Sensor must be calibrated. For more information, see the Changing the Ratio Value (Calibrating the RPM Sensor) section on pages 53 and 54.

## RX-461 AND RX-462 RECEIVER TELEMETRY CONNECTIONS AND MOUNTING

REFERENCE

### Mounting the Temperature Sensor:

- Secure the Sensor End directly against the part of your engine, motor, battery or other object you want to monitor temperature readings from, using either a nylon cable tie or high-temperature clear tape. For example, to monitor the cylinder head temperature of your glow-powered model, the best place to secure the Sensor End is where the bottom of the cylinder head meets the top of the engine case. The Sensor End can be held in place using a nylon cable tie wrapped around your engine. To monitor the temperature of your battery pack or electric motor, high-temperature clear tape can be used to secure the Sensor End to the exact spot you want to monitor.



## TROUBLESHOOTING GUIDE

REFERENCE

This troubleshooting guide can help you diagnose and solve some of the more common problems that you might encounter with your radio control system. If you cannot solve the problem using this troubleshooting guide, please contact us directly using the information in the Service and Support section on page 4.

PROBLEM	CAUSE	SOLUTION
Transmitter does not turn ON	Transmitter batteries installed incorrectly	Reinstall batteries, observing correct polarity
	Battery tray not plugged in	Plug in battery tray
	Transmitter batteries are dead	Replace or recharge transmitter batteries
	Damage caused by misuse or using incorrect battery type	Contact Customer Service
Transmitter will not bind to receiver	Modulation Type incorrect	Change Modulation Type to match receiver
	Too much time elapsed after pressing receiver Bind Button	Quickly press ENTER key in BIND menu after releasing receiver Bind Button
	Attempting to Bind incompatible receiver	Use only Airtronics or Sanwa 2.4GHz FH3, FH4 or FH4T surface receivers
	Using Electronic Speed Control (ESC)	Disconnect ESC and use dry cell battery for Binding procedure, then reconnect ESC after Binding
	Receiver batteries are dead	Replace or recharge receiver batteries
	Using incorrect Binding procedure	Follow Binding procedure carefully
Receiver won't power ON	Receiver batteries are dead	Replace or recharge receiver batteries
	Receiver batteries not installed correctly	Reinstall receiver batteries, observing correct polarity
	Loose connection	Double-check all connections including switch
Audible alarm beeps continuously	Low transmitter battery voltage	Replace or recharge transmitter batteries
	Transmitter left ON 10 minutes or more without control input	Move Steering Wheel or Throttle Trigger, or press any key to clear alarm and continue operation
	Transmitter battery voltage too high	Use transmitter battery whose voltage is 9.6 volts or less when fully charged
Transmitter LED flashing	Indicates transmitter status	For more information, see LED Condition Indicators table on page 10.
No key-press or Timer function sounds	Audible Key Tones are Muted	Increase Volume setting in BUZZER menu
Servo movement is slow	Low receiver battery voltage	Replace or recharge receiver batteries
	Control linkages binding	Adjust control linkages to operate smoothly
	Using a negative Servo Speed value	Increase Servo Speed value
Servo does not move when using Trim Switch	Trim is outside of operational range	Center Trim Switches to '0', center the servo horn and control linkages
Inadequate transmitting range	Low transmitter battery voltage	Replace or recharge transmitter batteries
	Low receiver battery voltage	Replace or recharge receiver batteries
	Receiver not mounted correctly	Mount receiver exactly as recommended
Servo(s) move the wrong direction	Incorrect Servo Reversing setting	Change Servo Reversing setting
Servo Horn(s) not centered	Servo horn not installed correctly	Turn servo horn 180° and reinstall
	Servo Sub-Trim out of adjustment	Adjust Servo Sub-Trim setting to center servo horn

## TROUBLESHOOTING GUIDE

REFERENCE

PROBLEM	CAUSE	SOLUTION
Control linkage(s) bind	Too much servo travel	Decrease servo travel using EPA function
Servo moves too much or not enough when Trim Switch is pressed	Trim Step resolution requires adjustment	Adjust Trim Step resolution
Throttle servo moves to programmed position without input	Receiver battery voltage has reached programmed Receiver Battery Voltage Fail Safe voltage value	Replace or recharge the receiver batteries
Can't program Receiver Battery Voltage Fail Safe	Throttle channel Fail Safe value set to FREE or HOLD	Set Throttle channel Fail Safe to a percentage value
No Telemetry connection	Telemetry System turned OFF	Turn Telemetry System ON
	Out of Telemetry receiving range	Shorten distance between transmitter and receiver
	Not using a Telemetry-capable receiver	Use Airtronics or Sanwa FH4T Telemetry-capable receiver or Sanwa Super Vortex series ESC
LCD is difficult to read	Contrast setting too high or too low	Readjust contrast setting
	Transmitter left in direct sunlight too long	Place transmitter in shade until LCD clears
There is no LCD Backlight	LCD Backlight is turned OFF	Set LCD LIGHT-MODE to Key-On or Always
LCD Backlight keeps turning OFF	LCD LIGHT-MODE is set to Key-On	This is normal to save battery power. Increase LIGHT-TIME value or set LCD LIGHT-MODE to Always
Throttle servo pulsates	ABS function is turned ON	This is normal under Braking with ABS function ON
Model veers right or left without control input	Steering out of trim	Use Steering Trim Switch to adjust Steering Trim so model drives straight
Model accelerates without control input	Throttle out of trim	Use Throttle Trim Switch to adjust Throttle Neutral Point
	Throttle Offset function turned ON	Turn Throttle Offset function OFF
Model seems extremely sensitive to control input	Dual Rate value(s) set too high	Decrease Dual Rate value(s)
	No or positive ARC value programmed	Program a negative ARC value
Servo(s) and/or ESC don't operate at all or operate erratically	Using incorrect Channel Response Mode setting	Use correct Channel Response Mode setting based on the type of servos and/or ESC you're using
Direction of travel shown on Servo Monitor is different from control input travel	This is normal	Direction of travel displayed will vary depending on Servo Reversing settings
Can't control underscore when changing Model Name	Cursor is Active in Character Select screen	Press BACK key to re-gain control of underscore
Can't clear Lap Timer	This is normal	Lap Timer will clear when you Start the Lap Timer again
Steering Wheel and/or Throttle Trigger won't center	Spring tension set too loose	Tighten spring tension
Steering Wheel or Throttle Trigger controls not centered or otherwise not working as expected	Controls require calibration	Calibrate control End Points and Neutral positions using VR Adjust function
CODE Auxiliary function does not work	Using incorrect receiver and/or Accessories	Must use Airtronics or Sanwa receiver and accessories that support Sanwa Synchronized Link (SSL)
Cannot control Auxiliary functions	Auxiliary Type not selected and/or AUX1 or AUX2 not assigned to a Trim Switch or Auxiliary Switch	Must first choose Auxiliary Type and ensure AUX1 and/or AUX2 are assigned to a Trim Switch or Auxiliary Lever and that the function is turned ON

## GLOSSARY OF TERMS

REFERENCE

**Activate:** To turn ON a particular function.

**Adjustable Rate Control (ARC):** Allows you to vary the amount of servo travel in relation to the movement of the Steering Wheel or Throttle Trigger near the Neutral positions to change the way those functions react to control movement. The ARC function works like Exponential, except that the ARC function features the added benefit of being able to move the Neutral Point, whereas Exponential has a fixed Neutral Point. In addition, the ARC Curve is more Linear than an Exponential Curve.

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

**Anti-Lock Braking:** Makes it possible to achieve stable braking even on slippery surfaces. With stable braking, your model is better able to trace an exact line under braking.

**Assist Steering** - A function that allows you turn Steering Dual Rate, Steering Servo Speed and Steering Curve functions ON and OFF at the same time.

## GLOSSARY OF TERMS

## REFERENCE

**Audible Key Tone:** An audible tone that is emitted from the transmitter to provide an audible indication each time the ENTER, UP, DOWN or BACK keys and Trim Switches are pressed.

**Auxiliary Switch:** The transmitter features three separate Auxiliary Switches (Sw1, Sw2 and Sw3). Each Auxiliary Switch is programmable and will perform a different function depending on what function is assigned to it. Auxiliary Switch (Sw1) is a push-button switch, Auxiliary Switch (Sw2) is a 2-position sliding switch and Auxiliary Switch (Sw3) is a 3-position sliding switch.

**Auxiliary Mixing:** Allows you to Mix either Steering or Throttle to Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4), while maintaining separate Sub-Trim, End Point Adjustments, Servo Reversing and other channel-specific settings. The Auxiliary Mixing function is used when a custom Mix is necessary.

**BACK Key:** Pressing the BACK Key returns the Programming Cursor to the previous menu. Press and HOLD the BACK Key to return to the STATUS screen.

**Battery Compartment:** Houses the four 'AA' Alkaline cells that power the transmitter. Alternatively, the transmitter can be powered using four 'AA' NiMH rechargeable batteries or a 2S LiPo or 2S LiFe battery pack.

**Binding:** The act of pairing the transmitter and receiver to prevent interference from transmitters operated by other users.

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

**Bind LED:** Displays the current operating status of the receiver.

**Brake Side:** Refers to the Throttle Trigger stroke that Engages the Brakes on your Model (pushing the Throttle Trigger).

**Burn:** Used mostly in Rock Crawling and in conjunction with the Motor on Axle function, power to the Front motor is reduced or turned OFF while keeping full control of the Rear motor.

**Car Type Templates:** Allows you to quickly set up transmitter options based on the type of model you're driving. Common templates for Car or Truck and Crawler Car Types are provided.

**Channel Response Mode:** Used to change the Response Mode of each channel to suit the type of servos you're using.

**CODE Auxiliary:** The CODE Auxiliary function is used with SSL-compatible accessories, such as a Super Vortex series ESC, whose Programming Parameters can be changed directly via the transmitter.

**Countdown Timer:** This timer is used to notify you of your model's running time. For example, you can set the Countdown Timer to alert you when it's time to refuel.

**Crab Steering:** Used with Four Wheel Steering, both Front and Rear wheels pivot right and left together. Also referred to as Parallel Steering.

**Cycle:** The Cycle value determines the speed at which the Brake pulsates in Seconds when the Anti-Lock Braking function is Active.

**Dig:** Used mostly in Rock Crawling and in conjunction with the Motor on Axle function, power to the Rear motor is reduced or turned OFF while keeping full control of the Front motor.

**Digital Trim Memory:** Allows the transmitter to store Trim values in its memory. Any amount of Trim that you set during use using the Trim Switches is automatically stored in memory for that specific channel and for that specific model. The Trim values for each model will automatically be loaded when the transmitter is turned ON.

**Digital Voltage Indicator:** Indicates the current Voltage of the transmitter batteries.

**Direct Model:** Allows you to jump directly to the DIRECT MODEL menu when you turn the transmitter ON. This menu works the same as the MODEL SELECT menu and makes it much quicker to select your desired model.

**DOWN Key:** Pressing the DOWN Key scrolls between the STATUS and TELEMETRY screens, scrolls the Programming Cursor DOWN or LEFT and Decreases Programming Values.

**Dual Rate:** Allows you to change the control authority of the Steering, Throttle High Side and Throttle Brake Side by changing the amount of servo travel relative to control input.

**End Point Adjustment:** Used to adjust the desired amount of servo travel in both directions independently. This makes it possible to balance servo travel in both directions.

**ENTER Key:** Pressing the ENTER Key opens the selected menu or Programming Option. Press and HOLD to reset the selected Programming Option to its default value.

**Fail Safe:** Automatically moves 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 low transmitter battery.

**FH3 Modulation:** Frequency Hopping 3rd generation FHSS technology. FH3 Modulation is used in newer-generation Airtronics and Sanwa radio control systems, such as the M11X and MX-3X.

**FH4T Modulation:** Frequency Hopping 4th generation FHSS technology. FH4T Modulation is the latest Airtronics and Sanwa 2.4GHz frequency modulation that supports Telemetry.

**FHSS:** Frequency Hopping Spread Spectrum. FHSS is a Modulation Type which transmits data across the entire frequency spectrum by transmitting data on different channels at an extremely fast interval.

**Four Wheel Steering Mixing:** Used to control either the Front or Rear steering independently, or Mix the Front and Rear steering so that they can be used together. Front or Rear Independent Steering, Parallel Four Wheel Steering and Tandem Four Wheel Steering options are available.

**Goal Time:** Used in conjunction with the Lap Timer, the Goal Time is designed to alert you when you reach the maximum desired elapsed time during your race or during practice.

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

**High Side:** Refers to the Throttle Trigger stroke that opens the Throttle and powers your Model (pulling the Throttle Trigger).

**Inactivity Alarm (Power ON Alarm):** The Inactivity Alarm will sound if the transmitter is left on for a period of 10 minutes without any control input from the user. This alarm alerts you to prevent unwanted draining of the transmitter battery.

**Inhibit:** To deactivate or turn OFF a particular function.

**Interval Timer:** Used separately or in conjunction with the Lap Timer, notifies you when a set Interval elapses while you are driving.

**Lag:** Controls the amount of delay before the Anti-Lock Brake Activates after reaching the Point setting.

**Lap Timer:** Allows you to measure and record Lap Times for up to 99 Laps. Lap Times are displayed in the following format: 00:00".00 (Minutes : Seconds : 1/100th of a Second).

**Latency:** The Response Time between the transmitter and receiver. The MT-S and 2.4GHZ FH4T Super Response SSL receiver combination offer an incredibly fast Response Time, making you feel more connected to your model than ever.

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

**LED Condition Indicator:** Displays the current RF signal output status of the transmitter, in addition to various other transmitter conditions.

**Low Voltage Alert Alarm:** The Low Voltage Alert alarm will sound when the transmitter batteries reach the Alert Voltage value programmed in the BATTERY menu. The alarm will sound each time the transmitter battery voltage decreases by 0.1 volt.

**Low Voltage Limit Alarm:** The Low Voltage Limit alarm will sound when the transmitter batteries reach the Limit Voltage value programmed in the BATTERY menu. This alarm can only be cleared by turning the transmitter OFF and recharging or replacing the transmitter batteries.

**Model Clear:** Used to reset the selected model's Programming Data to the default values. All model-specific Programming Data, including the Model Name and Modulation Type will be Reset to the default values.

**Model Naming:** Used to name the different models you have saved in the transmitter. This makes it easy to keep track of multiple models. The Model Name can consist of up to 10 letters, numbers, or symbols. Choose from capital letters, lower case letters, numbers and various symbols.

**Model Number and Name:** Displays the Model Number and Model Name of the currently selected model.

**Model Select:** Allows you to load the Programming Data for the particular model you wish to drive. The transmitter can store Programming Data for up to 20 different models.

**Modulation Type Indicator:** Indicates the current Modulation Type that the transmitter is set to.

**Motor on Axle Mixing:** Used to control either the Front and Rear motors together or independently, giving you Dig and Burn functions.

**NOR Channel Response Mode:** Used with Analog servos or ESCs that don't support SHR or SSR Channel Response Modes. This mode has the slowest Response Time, but is compatible with all servos and ESCs.

**Operating Voltage:** The safe voltage that the transmitter or receiver can operate within. Exceeding the minimum operating voltage can result in loss of power to the device(s). Exceeding the maximum operating voltage can result in damage to the devices(s).

**Output Power:** The power (in Milliwatts) that your transmitter transmits a signal. Output power is defined by government guidelines and differs by region.

**Over Voltage Alarm:** The Over Voltage Alarm will sound if the transmitter battery voltage is greater than 9.6 volts. To clear this alarm, turn the transmitter OFF and replace the transmitter battery with one that when fully charged does not exceed 9.6 volts.

**Parallel (Crab) Steering:** Used with Four Wheel Steering, both front and rear wheels pivot right and left together.

**Parallel Trim:** A Trim technology that when selected, the servo End Points move in equal amounts as the Trim when you use the Trim Switches. This results in balanced servo travel without the need to manually readjust the End Points.

**Point Auxiliary:** Used to program Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) to move the servo to up to 3 different points along its travel, then cycle through those Points.

**Point Setting:** Locates the actual point in the servo travel that you want a specific programming setting to occur. This setting can vary depending on the actual programming setting the Point setting is controlling.

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

## GLOSSARY OF TERMS

## REFERENCE

**Receiver Battery Voltage Fail Safe:** Used to set a custom voltage that the Receiver Battery Fail Safe function will Activate at to alert you when your receiver battery needs recharging. This ensures that your servos continued to operate optimally at all times.

**Receiver Voltage Indicator:** Indicates the current Voltage of the receiver battery on the TELEMETRY screen.

**RPM Indicator:** Indicates the current RPM from the RPM Telemetry Sensor (available separately).

**Screen Position Indicator:** Indicates the current Active screen, either the STATUS screen or the TELEMETRY screen.

**Servo Monitor:** Displays the output levels of the four different channels in bar graph form, allowing you to monitor servo operation in a virtual manner.

**Servo Reversing:** Used to electronically switch the direction of servo travel.

**Servo Speed:** Used to slow down the transit speed of the servos. Servo transit speed can be slowed in both the Forward and the Return to Neutral directions.

**Setup Wizard:** Allows you choose from eight preset Model Templates that makes programming the transmitter faster.

**SHR Channel Response Mode:** When used with Digital servos, this will increase the servo's Response Time, even above the manufacturer's stated specification. Do not use with Analog servos!

**SSR Channel Response Mode:** When used with Airtronics or Sanwa Super Response SRG Digital servos, this will provide the fastest Response Time. This results in the ultimate feel and response, making you feel more in control of your model than ever. Use only with Airtronics or Sanwa Super Response SRG Digital servos!

**Steering Program Indicator:** Indicates up to four different programming options that are currently programmed to the Steering channel. The Steering Program Indicator will only be displayed if a Steering channel Programming Value is programmed. For example, Steering Dual Rate.

**Steering Trim Indicator:** Indicates the current position of the Steering Trim Switch.

**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. In addition, the Steering Wheel spring tension can be adjusted.

**Steering Wheel Tension Adjustment Screw:** Used to adjust the spring tension of the steering wheel to best suit the feel of the user.

**Step Auxiliary:** Allows you to program Auxiliary 1 (Channel 3) or Auxiliary 2 (Channel 4) to move a defined amount when toggled ON and OFF.

**Step Value:** A preset amount that the servo will travel when a Trim Switch is pressed once. The step value can be adjusted so that the servo either moves more or moves less when the Trim Switch is pressed.

**Stroke:** Determines the amount of Brake that's applied automatically when the Anti-Lock Braking function Activates.

**Sub-Trim:** Used to correct the Neutral Trim setting for the servos, making it possible to center the Trim switches while ensuring the servo horns remain centered.

**Suppression Capacitor:** Primarily used on brushed electric motors, a suppression capacitor helps eliminate electrical noise that could interfere with the operation of your radio control system.

**System Function Indicator:** Indicates current System Functions, such as TELE (Telemetry) or LOG (Logger) that are turned ON.

**Tandem Steering:** Used with Four Wheel Steering, the front wheels pivot opposite to the rear wheels.

**Telemetry:** A connection between the receiver and the transmitter that transfers Sensor data from the receiver to the transmitter that can be viewed in real-time on the TELEMETRY screen. Data such as Temperature, Receiver Voltage and RPM can be viewed.

**Telemetry Signal Indicator:** Indicates the current signal strength of the Telemetry connection between the transmitter and receiver. The Telemetry Signal Indicator will only be displayed when the receiver is turned ON and there is a Telemetry connection Active.

**Temperature 1 Indicator:** Indicates the current Temperature from the Temperature 1 Telemetry Sensor (available separately).

**Temperature 2 Indicator:** Indicates the current Temperature from the Temperature 2 Telemetry Sensor (available separately).

**Temperature Alert Alarm:** The Temperature Alert alarm will sound when the TEMP1 and/or TEMP2 temperature reaches the Alert Temperature value programmed in the TELEMETRY menu.

**Throttle Mode Indicator:** Indicates the current Throttle Mode type, either 7:3 or 5:5.

**Throttle Offset:** Allows you to shift the Neutral position of the throttle servo, either toward the High Side or the Brake Side.

**Throttle Offset Indicator:** Indicates that the Throttle Offset function is programmed. The Throttle Offset Indicator will only be displayed if a Throttle Offset percentage value is programmed.

**Throttle Program Indicator:** Indicates up to four different programming options that are currently programmed to the Throttle channel. The Throttle Program Indicator will only be displayed if a Throttle channel Programming Value is programmed.







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