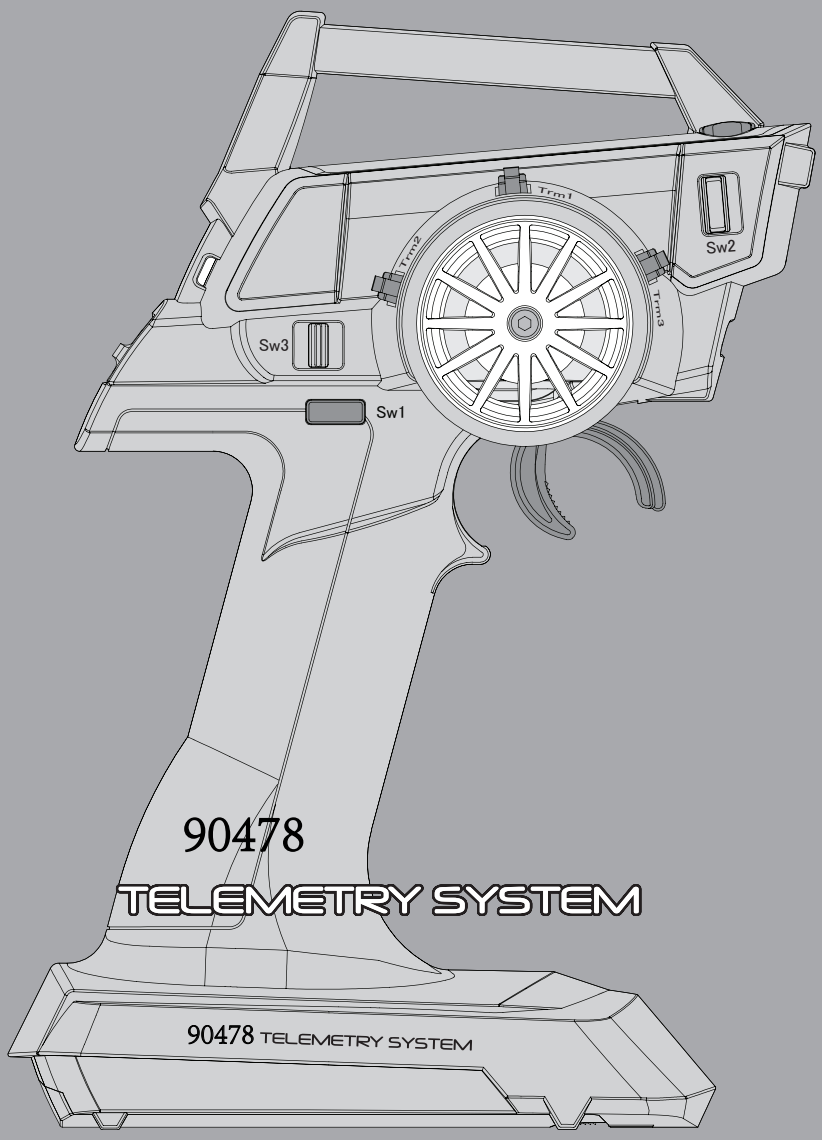


90478

TELEMETRY SYSTEM

SANWA

TABLE OF CONTENTS

GENERAL

INTRODUCTION

GENERAL

We appreciate your purchase of the new Airtronics 90478 2.4GHz FH4T radio control system. This User's Guide is intended to acquaint you with the many unique features of your state of the art Telemetry-capable radio control system. 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.

The 90478 has been designed for the utmost in comfort and precise control of all types of model cars and boats. We wish you the best of success and fun with your new purchase!

⚠ Additional 2.4GHz FH2, FH3 and FH4T surface receivers* can be purchased and paired with the 90478. Due to differences in the implementation of 2.4GHz technology among different manufacturers, only Airtronics brand 2.4GHz surface receivers are compatible with your radio control system. Telemetry functions are available only when used with Telemetry-capable receivers (available separately). Visit your local Airtronics dealer or our website at http://www.airtronics.net for more information.

*Not all Features are Supported by all Types of Receivers. Some Features Limited by Receiver Type.

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.

WHAT'S INCLUDED

GENERAL

The following items should be included with your radio control system. If an item is missing or appears damaged, please contact your local Airtronics distributor. For more information, see the Service and Support section on page 3.

- 90478 Digital High-Response Telemetry Transmitter
- RX-472 Super Response Receiver w/SSL Support
- On/Off Switch
- Dry Cell Receiver Battery Holder
- Wrist Strap Mount
- Optional Large Grip
- Optional Throttle Trigger Angle Brackets
- Receiver Dust Boot Covers

SERVICE AND SUPPORT — GENERAL

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 71 and 72. If you require further help, please contact us directly.

In North America Only:

Global Services
18480 Bandilier Circle
Fountain Valley, CA 92708

Telephone: 1-714-963-0329
Fax: 1-714-964-6236
Email: service@airtronics.net

If you made your purchase outside of North America, please contact your regional Airtronics or Sanwa agent for service and support. Global Services is unable to offer warranty support for products purchased outside of North America.

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. Rather than operating the model, we recommend that the user enlist the help of a fellow modeler to walk the model to the farthest reaches of the track (or for boats, to walk the shore line well in excess of the operational distance of the boat), then test for proper operation.

- Be certain to read this User's Guide in its entirety.
- 'Safety First' for yourself, others and your equipment.
- Observe all the rules of the field, track or lake where you operate your radio control equipment.
- If at any time during the operation of your Model, should you feel or observe erratic operation or abnormality, end your operation as quickly and safely as possible. DO NOT operate your model again until you are certain the problem has been corrected. TAKE NO CHANCES.
- Your model can cause serious damage or injury. Please use caution and courtesy at all times.
- Do not expose the radio control system to water or excessive moisture.
- Waterproof the receiver and servos by placing them in a water-tight radio box when operating R/C model boats.
- If you have little to no experience operating R/C models, we 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 low voltage threshold. If this occurs, stop using the transmitter as soon as is safely possible, then replace or recharge the transmitter batteries.

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

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:

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

This device complies with part 15 of the FCC Rules. 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 licence-exempt RSSs, Operation is subject to the following two conditions: (1) This device may not cause interference , and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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, Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisee aux deux conditions suivantes :

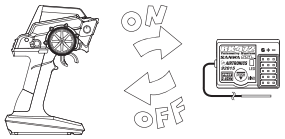
(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

2.4GHZ FREQUENCY BAND PRECAUTIONS — GENERAL

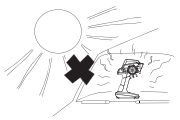
- The 2.4GHz frequency band may be used by other devices, or other devices in the immediate area may cause interference on the same frequency band. Always before use, conduct a bench test to ensure that the servos operate properly. Also, conduct checks with the transmitter as distant as possible from 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 Bind. This ensures that your radio control system does not get hit by interference. Once the frequencies have been cleared, or the saturation level has dropped, your transmitter and receiver should Bind 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.

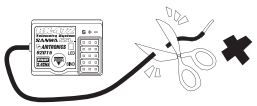
- The transmitter antenna is mounted internally and is located in the vertical back portion of the carrying handle. Do NOT cover the carrying handle in any way during use! Doing so can block the RF signal, resulting in loss of control of your model.
- During use, hold the transmitter so that its orientated 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 antenna consists of a coaxial cable and a reception wire (the thin tip at the end of the coaxial cable). When you mount the antenna, do not bend the reception wire. Reception performance decreases if the reception wire is bent.



- The antenna is delicate, therefore, handle with care. Do not pull on the antenna with force. Do not cut or extend the antenna.
- The coaxial cable (the thicker portion of the antenna) can be bent into gentle curves, however, do not bend the coaxial cable acutely, or repeatedly bend it, or the antenna core can be damaged.
- The antenna should be installed into a vertical plastic tube per your particular model's assembly instructions. Keep the receiver antenna as far away from the motor, battery and ESC as possible.
- There is a danger of runaway operation if connectors shake loose during use. Make sure that the receiver, servo(s) and switch connectors are securely fitted.
- The receiver is susceptible to vibration, shock and moisture. Take appropriate measures to protect against vibration and moisture. Failure to take appropriate measures could result in runaway operation or damage to the receiver. We suggest wrapping the receiver in shock-absorbing foam or securing it with double-sided foam tape when installing it into your model.
- When routing the antenna, avoid contact with any carbon or metal chassis components. Contact between metal or carbon parts can result in electrical noise, which can adversely effect receiver performance and possibly result in runaway operation and result in damage to your model.
- With electric-powered models, be sure to fit any brushed motors with a noise suppression capacitor. Without a noise suppression capacitor, excessive electrical noise generation can cause runaway operation and result in damage to your model.

TELEMETRY SUPPORT INFORMATION — GENERAL

- Full telemetry support requires the use of an Airtronics 2.4GHz FH4T telemetry-capable surface receiver, such as the RX-461 or RX-462, along with Airtronics Temperature and RPM Sensors (available separately). The included RX-472 receiver can send Telemetry Data for the voltage of the receiver battery pack only, unless used with the Airtronics Super Vortex ZERO ESC.
- Full Telemetry support is provided when used with an Airtronics Super Vortex ZERO ESC (available separately) plugged into the BATT/SSL port of the included RX-472 receiver.
- 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 signal.

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 NiCd/NiMH Batteries or 2S LiPo/LiFe Battery Packs
- Includes RX-472 2.4GHz FH4T Super Response Receiver w/Sanwa Synchronized Link Support
- 18 Model Memory
- Telemetry Logging
- Channel Set Menu
- Servo Reversing
- Steering, Throttle and Brake Dual Rate
- End Point Adjustment
- Exponential and ARC Adjustment
- Servo Speed Adjustment
- Anti-Lock Braking
- Throttle Offset
- Lap and Interval Timers
- Total, Best and Individual Lap Display
- Four Wheel Steering Mixing
- Dual Throttle Mixing w/Dig & Burn
- Normal, SSR and SHR Servo Modes
- Center or Parallel Trim Types
- CODE Auxiliary
- Step Auxiliary
- Point Auxiliary
- Auxiliary Mixing
- Programmable Fail Safe
- Receiver Battery Voltage Fail Safe
- Digital Trims
- Servo Sub-Trim
- Adjustable Throttle Trigger
- Programmable Switches, Lever and Dial
- Adjustable Steering Wheel
- Adjustable Grip
- Variable Rate Adjustment
- Model Naming
- Model Select
- Direct Model Select
- Model Clear
- Selectable Modulation Type
- Adjustable LCD Contrast and On-Time
- Adjustable Key Volume and Tone
- Programmable Low Voltage Alarm
- Inactivity and Over Voltage Alarms
- Digital Battery Voltage Monitor

SYSTEM SPECIFICATIONS

GENERAL

Transmitter:

- Model: 90478
- Output Power: 2mW
- Nominal Input Voltage: 4.8v to 7.4v
- Operating Voltage Range: 4.0v to 9.6v
- Dry Weight: 13.68oz (388g)
- Frequency: 2.4GHz FHSS
- Modulation Type: FH3, FH4T, FH3E, FH4TE(for EU only)

Receiver:

- Model: RX-472 Super Response w/SSL Support
- Nominal Input Voltage: 3.7v to 7.4v
- Weight: 0.23oz (6.6gr)
- Dimensions: 1.18 x 0.91 x 0.55in (30.0 x 23.3 x 14.0mm)
- 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)

ITEMS REQUIRED, BUT NOT INCLUDED

GENERAL

Transmitter Batteries:

- 4 'AA' Alkaline or NiCd/NiMH cells or 2S LiPo or 2S LiFe battery pack.

Receiver Batteries:

- 4 'AA' Alkaline or NiCd/NiMH cells, 4 to 6 cell NiCd/NiMH battery pack or 2S LiPo 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 90478 transmitter and RX-472 Super Response receiver, analog servos and many ESCs may not be compatible when used in SHR or SSR servo operating mode. To prevent compatibility issues, use analog servos only in NOR servo operating mode. If your ESC does not work in SHR servo operating mode, use NOR servo operating mode. Any brand and type of digital servo can be used in NOR or SHR servo operating mode. Only Airtronics/Sanwa SRG series digital servos are compatible for use with SSR servo operating mode.

OPTIONAL ITEMS

GENERAL

- RX-461 FH4T Telemetry Receiver (P/N 92010)
- RX-462 FH4T Telemetry Receiver w/Main Battery Meter (P/N 92011)
- Super Vortex ZERO Competition ESC (P/N 96338)
- SGS-01C Competition Gyro System (P/N 98015)
- Telemetry Temperature Sensor (P/N 99151)
- Telemetry RPM Sensor (P/N 99152)
- Dual Charger 4 to 6 Cell NiCd/NiMH (P/N 95034)
- Wrist Strap (P/N 479104)

TRANSMITTER OVERVIEW DIAGRAMS

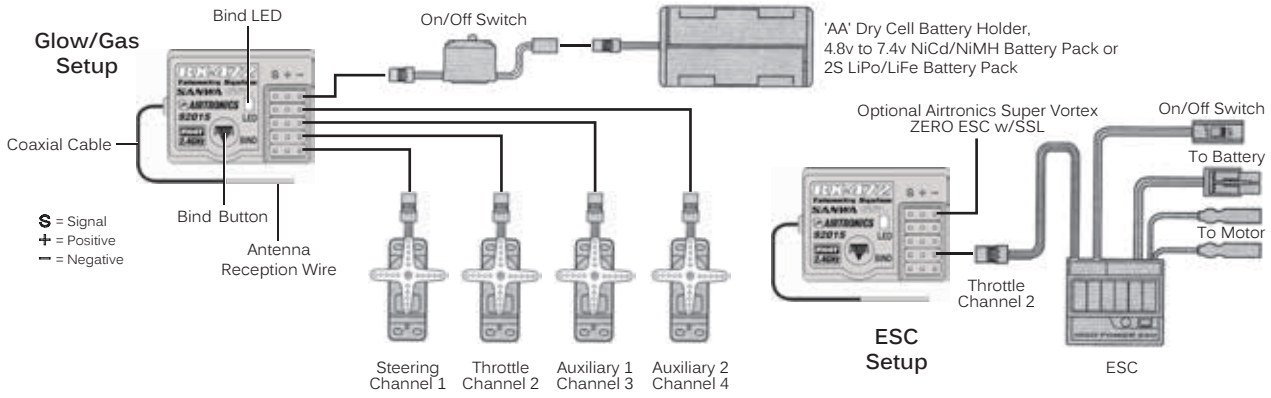
Use the diagrams in this section to familiarize yourself with the layout of your transmitter. Descriptions of these features can be found in the Transmitter and Receiver Overview Diagram Descriptions section on pages 8 and 9.

The transmitter antenna is mounted internally and is located in the vertical back portion of the carrying handle. Do NOT cover the carrying handle 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.

RECEIVER OVERVIEW DIAGRAMS — GENERAL

Use the diagrams in this section to make receiver connections and to familiarize yourself with the RX-472 4-Channel 2.4GHz FH4T Super Response receiver included with the 90478 transmitter. Descriptions of the features can be found in the Transmitter and Receiver Features Descriptions section below and on the next page.

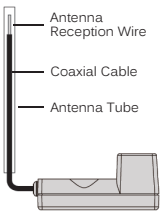
Receiver Connections and Mounting:



If using the Airtronics Super Vortex ZERO or other SSL compatible ESC, plug the ESC into the BATT/SSL port, otherwise SSL features and Telemetry Data will not be available. All other ESC's should be plugged into the Throttle Channel 2 port.

The receiver's Nominal Input Voltage is 3.7 to 7.4 volts. A 2 cell LiPo or LiFe battery pack can be used to power the receiver without the use of a voltage regulator. In addition, this allows you to take advantage of the Higher torque and speed provided by using 7.4 volt digital servos.

Use a 2 cell LiPo or LiFe battery pack ONLY if your servos are rated to handle the Higher voltage.



- We suggest binding the transmitter and receiver and making all receiver connections to check for correct operation prior to mounting the receiver in your model.
- The receiver should be mounted as far away from any electrical components as possible. When routing the antenna, avoid contact with any carbon or metal chassis components. Contact between metal or carbon parts can result in electrical noise, which can adversely effect receiver performance and possibly result in runaway operation and result in damage to your model.
- Route the receiver antenna up through a plastic tube so that it is in the vertical position. Do not bend the reception wire. Reception performance decreases if the reception wire is bent. Do not pull on the antenna with force. Do not cut or extend the antenna. The coaxial cable can be bent into gentle curves, however, do not bend the coaxial cable acutely, or repeatedly bend it, or the antenna core can be damaged.
- To protect the receiver from vibration and other damage, we recommend wrapping the receiver in shock absorbing foam or using double-sided foam tape when installing it in your model.

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 Condition Indicator:

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

TRANSMITTER AND RECEIVER OVERVIEW DIAGRAM DESCRIPTIONS — GENERAL

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.

Antenna Reception Wire: The portion of the receiver antenna that receives the transmitter signal. The Antenna Reception Wire should never be bent or it could be damaged and limit the range of your model.

TRANSMITTER AND RECEIVER OVERVIEW DIAGRAM DESCRIPTIONS, CONTINUED.... GENERAL

Auxiliary Lever: The Auxiliary Lever is programmable and will perform a different function depending on what function is assigned to it. For example, it can be used to control Auxiliary 1 Channel 3 or to control the Servo Speed function.

BACK/CANCEL Key: Pressing the BACK/CANCEL Key returns the Programming Cursor to the previous menu. Press and HOLD the BACK/CANCEL Key to return to the Top Screen. Display functions are shown on the LCD screen.

Battery Compartment: Houses the four 'AA' Alkaline cells that power the transmitter. Alternatively, the transmitter can be powered using four 'AA' NiCd or 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.

Charging Jack: Used for onboard charging of optional NiCd or NiMH batteries. Only the recommended Airtronics 110v AC charger (95034) should be used through the Charging Jack. If using an after-market Peak-Detection charger or other type of fast charger, the batteries should be removed from the transmitter to avoid damage to the transmitter circuitry and/or your batteries. Do not attempt to charge a LiPo or LiFe battery pack through the Charging Jack.

Coaxial Cable: The portion of the receiver antenna that extends the Antenna Reception Wire. The Coaxial Cable can be bent into gentle curves, however, do not bend it acutely, or repeatedly bend it, or the antenna core can be damaged.

Dial Knob: The Dial Knob can rotate 360º and is programmable to perform a different function depending on what function is assigned to it. For example, it can be used to increase and decrease Programming Values, control a Trim function or control an Auxiliary Channel.

Grip: The Grip is molded from rubber in an ergonomic shape for increased comfort, control and feel. An optional larger Grip is included that some users may find feels more comfortable.

LED 1/2: Displays the current signal output status of the transmitter (LED 1 - Blue) and the Telemetry connection (LED 2 - Red). In addition, one or both LEDs are used to indicate various transmitter conditions.

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.

Power Switch: Turns the transmitter ON and OFF.

Push-Button Rotary Dial: The Push-Button Rotary Dial (also referred to as the Up Key, Down Key, or Enter key) is used along with the BACK/CANCEL Key to facilitate transmitter programming. It allows you to quickly and easily navigate the various Programming Menus and switch between the Top Screen and the Telemetry Screen.

Push-Button Switch: The transmitter features two separate Push-Button Switches in different locations (Sw1 and Sw2). Each Push-Button Switch is programmable and will perform a different function depending on what function is assigned to it.

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 and travel limits 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, angle and spring tension can all be adjusted.

Throttle Trigger Position Adjustment Indicator: Indicates the current position of the Throttle Trigger. As the throttle trigger position is adjusted forward or backward, the Throttle Trigger Position Adjustment Indicator will move forward or backward.

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

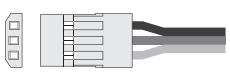
Throttle Trigger Position Adjustment Screw: Used to adjust the position of the Throttle Trigger either forward or backward.

Trim Switch: The transmitter features four separate Trim Switches positioned around the steering wheel (Trm1, Trm2, Trm3 and Trm4). 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 Trm4 and Trm5 can be used to adjust Dual Rate and steering EPA.

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

SERVO CONNECTORS GENERAL

The 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.



– = Negative (Black)
+ = Positive (Red)
S = Signal (Blue)

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.

TRANSMITTER SAFETY ALARMS AND LED CONDITION INDICATORS

The 90478 transmitter is equipped with several different safety alarms to warn you of an abnormal transmitter condition.

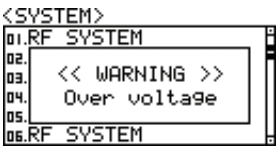
In addition, LED 1 and LED 2 can also be used to indicate various transmitter conditions.

Audible Warning Alarms

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

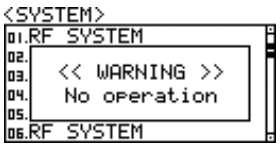
<u>Over Voltage Alarm:</u>

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.



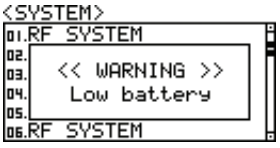
<u>Inactivity (Power ON) Alarm:</u>

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 BACK/CANCEL key or the Push-Button Rotary Dial.



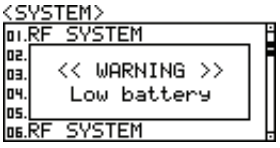
<u>Low Voltage Alert Alarm:</u>

The Low Voltage Alert alarm will sound when the transmitter batteries reach the Alert 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 BACK/CANCEL key or the Push-Button Rotary Dial. For more information, see the Voltage Alarm section on pages 61 and 62.



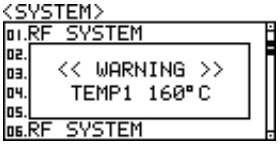
<u>Low Voltage Limit Alarm:</u>

The Low Voltage Limit alarm will sound when the transmitter batteries reach the Limit Voltage value programmed in the SYSTEM - ALARM menu. This alarm can only be cleared by turning the transmitter OFF and recharging or replacing the transmitter batteries. For more information, see the Voltage Alarm section on pages 61 and 62.



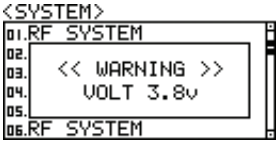
<u>Temperature Alert Alarm:</u>

The Temperature Alert alarm will sound when the TEMP1 and/or TEMP2 temperature reaches the Alert Temperature value programmed in the SYSTEM - TELEMETRY menu. To clear this alarm, press the BACK/CANCEL key or the Push-Button Rotary Dial. For more information, see the Changing the Alert Temperature Value section on pages 64 and 65.



<u>Voltage Alert Alarm:</u>

The Voltage Alert alarm will sound when the receiver battery in your model reaches the Alert Voltage value you've programmed in the SYSTEM - TELEMETRY menu. To clear this alarm, press the BACK/CANCEL key or the Push-Button Rotary Dial. For more information, see the Changing the Alert Voltage Value section on page 66.



LED Condition Indicators

LED 1 (Blue) and LED 2 (Red) can be used to determine various transmitter conditions at a glance. The LEDs will alert you to various warnings and other transmitter conditions, as shown in the table below.

LED COLOR	LED CONDITION	LED CONDITION DESCRIPTION
Blue	ON	RF Output Signal OK
Blue	Flash	Throttle Offset Value ON with Positive or Negative Value
Blue	Slow Flash	Telemetry Logger Function Operating
Blue	Fast Flash	Anti-Lock Braking Function Operating
Red	ON	No Transmitter/Receiver Telemetry Connection
Red	Flash	Telemetry Alarm Started
Red	Flash	Low Voltage Alert Alarm Started
Blue and Red	Flash Alternately	Bind Command Transmitted
Blue and Red	Flash	Inactivity (Power ON) Alarm Started
Blue and Red	Fast Flash Alternately	Low Voltage Limit Alarm Started
Blue and Red	Fast Flash Alternately	Over Voltage Alarm Started

TRANSMITTER BATTERY OPTIONS

The 90478 transmitter's Operating Voltage Range is 4.0 to 9.6 volts. This allows you to use several different battery options (not included), depending on your preference.

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.

NiCd/NiMH - Rechargeable NiCd or NiMH batteries of desired capacity can be used in place of the Alkaline batteries. Using rechargeable NiCd or 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.

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.

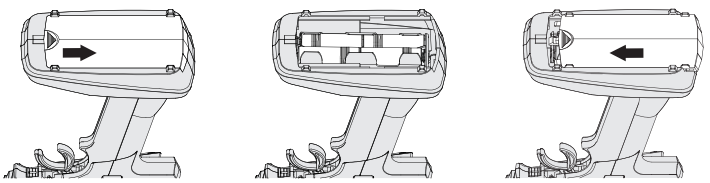
Transmitter power output, range and speed are the same, regardless of the battery type used. If using a LiPo or LiFe battery pack, please read the Warnings if Using a LiPo or LiFe Battery Pack section below.

ALKALINE BATTERY INSTALLATION

When installing the batteries, 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.

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

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

TRANSMITTER BATTERY CHARGING OPTIONS

The 90478 transmitter features a Charging Jack that can be used with the Airtronics 95034 Dual Output charger (available separately) to charge the optional NiCd or NiMH batteries. This allows you to charge these batteries without removing them from the transmitter. A Charging Jack is located on the Left side of the transmitter. For more information, see the Transmitter Overview Diagrams section on pages 6 and 7.

WARNING: Do NOT attempt to recharge Alkaline batteries. Only NiCd or NiMH batteries should be charged through the transmitter's Charging Jack, using only the Airtronics 95034 Dual Output charger or equivalent overnight/slow charger. Do NOT attempt to charge a LiPo or LiFe battery pack through the Charging Jack.

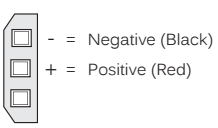
Do NOT use the Charging Jack with a fast charger or a peak-detection charger, or the transmitter could be damaged!

If you use a fast charger or a peak-detection charger to charge the transmitter batteries, the battery holder must be removed from the transmitter first. The circuitry within the transmitter will interfere with the peak-detection charger's normal operation, resulting in over-charging and damaging the batteries and possibly the transmitter itself. In addition, the higher charge rate common in many fast chargers can damage the transmitter's circuitry.

Damage caused by fast-charging through the transmitter or using an incorrect battery type will not be covered under warranty!

WARNINGS IF USING A LIPO OR LIFE BATTERY PACK

- Use ONLY a 2 Cell LiPo or LiFe battery pack of desired capacity.
- Do NOT charge your LiPo or LiFe battery pack through the Charging Jack. The battery pack MUST be removed from the transmitter prior to charging or the transmitter could be damaged. For more information, see the WARNING in the Transmitter Battery Charging Options section above.
- Use a balance charger specifically designed to charge LiPo or LiFe battery packs.
- 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.

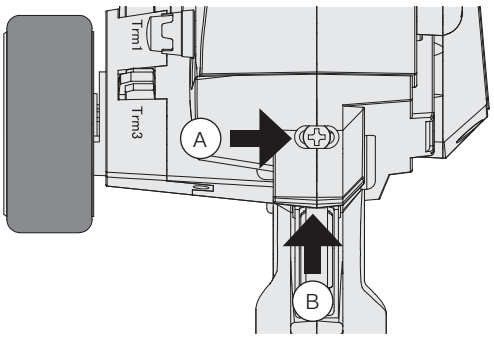


- Observe all safety precautions provided with your LiPo or LiFe battery pack.
- Damage to the transmitter caused by improper use, wrong battery type, incorrect voltage, reverse polarity or charging through the Charging Jack will not be covered under warranty!

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 my prefer the throttle trigger positioned farther back. It all depends on your personal preference.



To adjust the throttle trigger position, follow the step below:

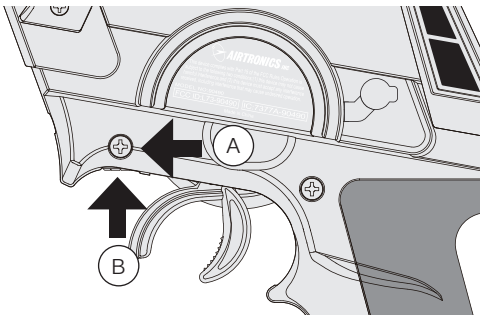
1) To move the throttle trigger backward, use a # 1 philips head screwdriver to turn the Throttle Trigger Position Adjustment Screw (A) counter-clockwise. To move the throttle trigger forward, turn the Throttle Trigger Position Adjustment Screw clockwise.

⚠ As you adjust the throttle trigger position, the Throttle Trigger Position Adjustment Indicator (B) will move, indicating the current position of the throttle trigger.

⚠ Moving the throttle trigger position does not affect the physical movement of the throttle trigger. 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.

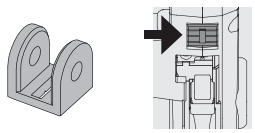
THROTTLE TRIGGER ANGLE ADJUSTMENT — GENERAL

The angle of the throttle trigger can be adjusted right or left to change the feel of the throttle trigger during use. Some users may prefer the throttle trigger straight while some users my prefer the throttle trigger angled toward the right or left. It all depends on your personal preference. Throttle trigger adjustment plates are included to fine-tune the angle.

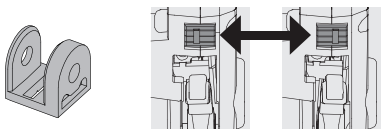


To adjust the throttle trigger angle, follow the steps below:

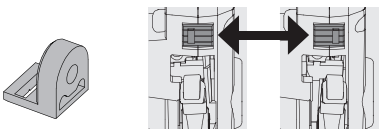
1) Use a # 1 philips head screwdriver to remove the throttle trigger mounting screw (A) from the left side of the transmitter.
2) Use the tip of a modeling knife to carefully pop the trigger adjustment plate (B) out of the transmitter.



A - Throttle Trigger Centered (Stock)



B - Throttle Trigger Angled Slightly. Angle Right or Left Depending on Orientation.

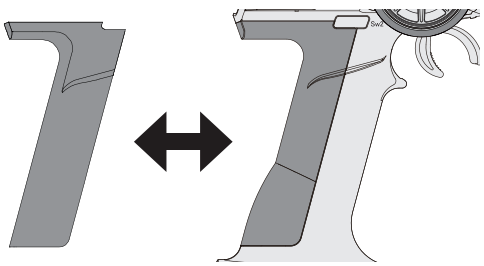


C - Throttle Trigger Angled More. Angle Right or Left Depending on Orientation.

3) Carefully press the desired trigger adjustment plate into the transmitter, making sure to orientate it in the direction you want to angle the throttle trigger, then reinstall and tighten the throttle trigger mounting screw.

OPTIONAL GRIP INSTALLATION — GENERAL

Included is an optional molded rubber grip that is shaped differently from the stock grip that's preinstalled on the transmitter. The optional grip is larger and straight near the bottom, which some users may find more comfortable.



To install the optional grip, follow the steps below:

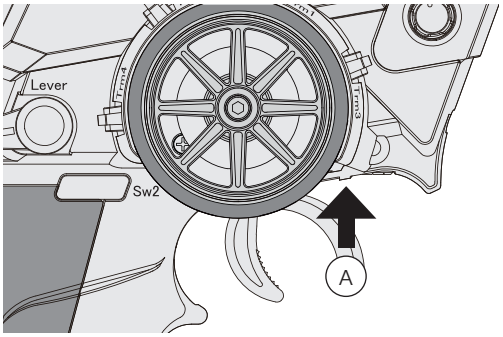
1) Remove the original grip from the handle by firmly pulling down on the back of the grip (at the top), then by pulling the grip out along its front edges.
2) To install the new grip, align the molded tabs in the grip with the matching slots in the handle, then firmly push the molded tabs into the slots, working your way around the grip until the edges of the grip are flush with the handle.

THROTTLE TRIGGER AND STEERING WHEEL SPRING TENSION ADJUSTMENT

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.

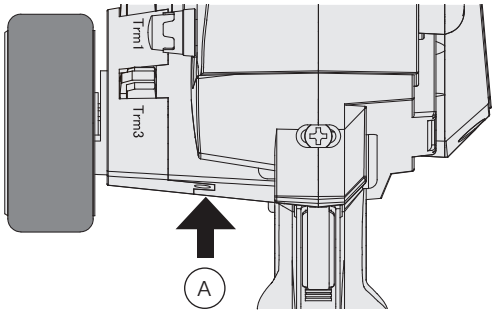
To adjust the throttle trigger spring tension, follow the step below:

1) To increase the spring tension of the throttle trigger (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 (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 (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 (looser), turn the Steering Wheel Tension Adjustment Screw counter-clockwise.

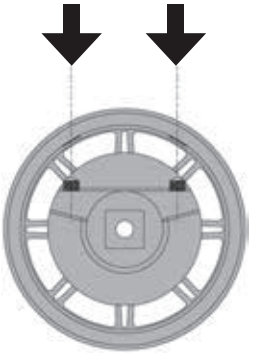


STEERING WHEEL TRAVEL ADJUSTMENT

The maximum right and left travel of the steering wheel can be adjusted to best suit the feel of the steering wheel and your driving style. Some drivers prefer to limit the travel of the steering wheel as it makes them feel more 'connected' to their model.

To adjust the maximum travel of the steering wheel, follow the steps below:

1) Remove the foam steering wheel grip from the steering wheel by firmly pulling it straight off.
2) To limit the maximum travel of the steering wheel, use a 1.5mm hex wrench to turn both grub screws (A) clockwise equally the desired amount. To maximize the travel of the steering wheel, turn both grub screws counter-clockwise equally the desired amount.



After making steering wheel travel adjustments, you must use the Variable Rate Adjustment function to ensure your steering servo travel limits are equal. For more information, see the Variable Rate Adjustment section on pages 68 and 69.

Limiting the maximum travel of the steering wheel will increase the sensitivity of the steering. We recommend setting negative Exponential to soften the control feel around Neutral. For more information, see the Exponential and ARC section on pages 21 through 23.

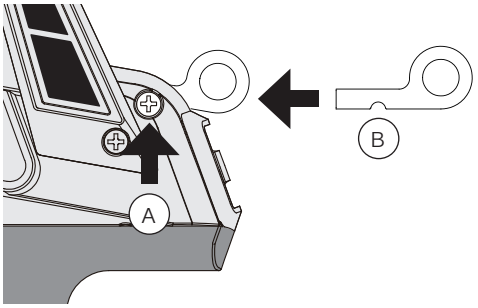
WRIST STRAP ANCHOR INSTALLATION

A wrist strap anchor is included that can be installed onto the transmitter to facilitate the use of a wrist strap (not included).

To install the wrist strap anchor, follow the steps below:

1) Remove the self-tapping screw (A) from the transmitter, using a # 1 philips head screwdriver.
2) Slide the wrist strap anchor into the mounting slot in the back of the transmitter, then reinstall and tighten the self-tapping screw.

When installing the wrist strap anchor, note its orientation. The U-Shaped groove in the base of the wrist strap anchor should be pointing down.



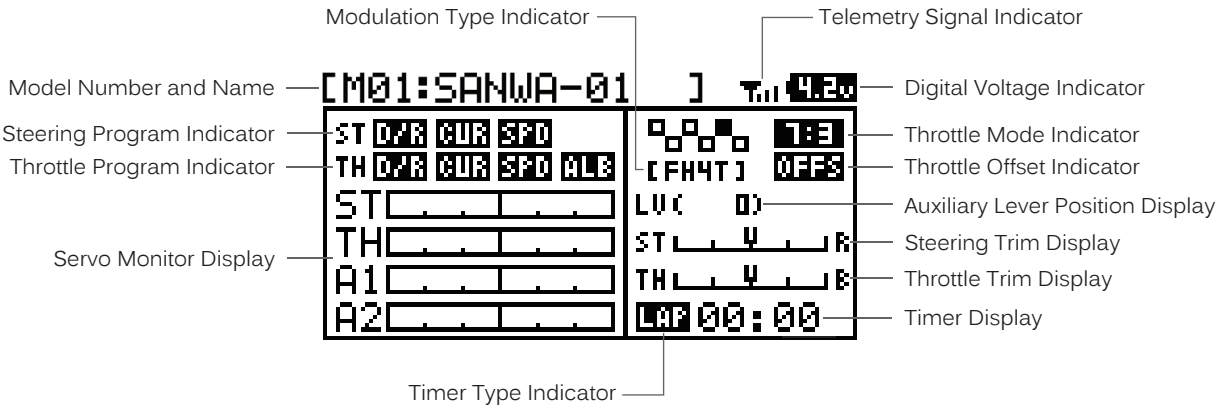
TOP SCREEN AND TELEMETRY SCREEN OVERVIEW — GENERAL

Use the information in this section to familiarize yourself with the layout and different indicators and displays that comprise the Top Screen and Telemetry Screen.

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

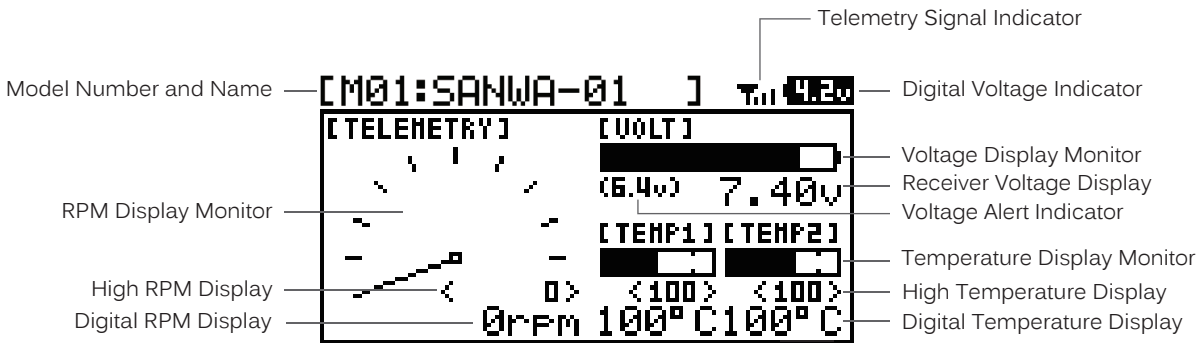
TOP Screen:

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



TELEMETRY Screen:

The Telemetry Screen displays all pertinent telemetry information, such as RPM, Temperature and Receiver Voltage. To display the Telemetry Screen, from the Top Screen scroll DOWN using the Push-Button Rotary Dial.



⚠ Full telemetry support requires the use of an Airtronics 2.4GHz FH4T telemetry-capable surface receiver, such as the RX-461 or RX-462, along with Airtronics Temperature and RPM Sensors (available separately). The included RX-472 receiver can send Telemetry Data for the voltage of the receiver battery pack only, unless used with the Airtronics Super Vortex ZERO ESC (available separately), plugged into the BATT/SSL port of the included RX-472 receiver.

Auxiliary Lever Position Display: Displays the current position of the Auxiliary Lever.

Digital RPM Display: Displays the current RPM from the RPM Sensor in digital format.

Digital Temperature Display: Displays the current temperature from the TEMP1 and TEMP2 Temperature Sensors in digital format.

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

High RPM Display: Displays the last highest RPM value. This value can be Reset. For more information, see the Telemetry Clear Function section on page 68.

High Temperature Display: Displays the last highest Temperature value. These values can be Reset. For more information, see the Telemetry Clear Function section on page 68.

Modulation Type Indicator: Indicates the current Modulation Type that the transmitter is set to.

Model Number and Name: Displays the Model Number and Model Name of the currently selected model.

TOP SCREEN AND TELEMETRY SCREEN OVERVIEW, CONTINUED.... GENERAL

Receiver Voltage Display: Displays the current voltage of the receiver battery.

RPM Display Monitor: Displays the current RPM from the RPM Sensor in graphical format.

Servo Monitor Display: Displays the output levels of the four different channels in bar graph form, allowing you to monitor servo operation in a virtual manner.

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.

Steering Trim Display: Displays the current position of the Steering Trim Switch.

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 Display Monitor: Displays the current TEMP1 and TEMP2 temperatures in bar graph format.

Throttle Mode Indicator: Indicates the current Throttle Mode type.

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.

Throttle Trim Display: Displays the current position of the Throttle Trim Switch.

Timer Display: Displays the time of the currently selected Timer.

Timer Type Indicator: Indicates the current Timer Type selected, either LAP or INT (Interval).

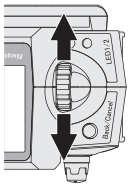
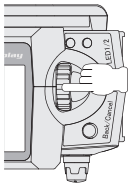
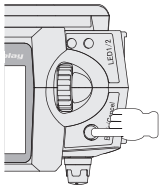
Voltage Alert Indicator: Indicates the currently programmed Voltage value that the receiver Voltage Alert alarm will sound at.

Voltage Display Monitor: Displays the current receiver battery voltage in bar graph format.

PROGRAMMING KEYS OVERVIEW AND FUNCTIONS GENERAL

The 90478 transmitter features a Push-Button Rotary Dial and a BACK/CANCEL key that are used to facilitate transmitter pro-gramming. This section summarizes the functions of the Push-Button Rotary Dial and the BACK/CANCEL key.

PRO TIP: While navigating Programming Menus and changing Programming Values, keep the following in mind: to choose an option to program, scroll UP or DOWN to highlight the desired option. Press the ENTER key and 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/CANCEL key and the highlighted option will stop flashing, indicating you can scroll UP or DOWN to highlight another programming option.

PROGRAMMING KEY	NAME	FUNCTION
	▲▼ Push-Button Rotary Dial (Scroll UP/DOWN)	Scrolls between TOP and TELEMETRY screens. Scrolls the Programming Cursor RIGHT or UP and LEFT or DOWN. Increases or Decreases Programming Values.
	Push-Button Rotary Dial (Push ENTER)	Opens the selected menu or programming option. Press and HOLD to reset the Selected programming option to its default value.
	BACK/CANCEL Key	Returns to the previous menu. Press and HOLD to return to the Top Screen.

BINDING THE TRANSMITTER AND RECEIVER — 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 process is complete, the setting is remembered even when the transmitter and receiver are turned OFF. Therefore, this procedure usually only needs to be done once.

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

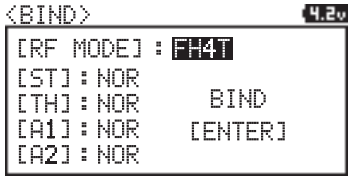
IMPORTANT: This section details Binding the RX-472 4-Channel 2.4GHz FH4T Super Response receiver with the Servo Operating Mode set to Normal mode. If you are Binding an FH2 or FH3 receiver, or if you prefer to change the Servo Operating Mode, see the BIND Menu section on pages 52 and 53.

⚠ Before beginning the Binding process, connect your servos and receiver battery pack to the receiver. For more information, see the Receiver Connections and Mounting section on page 8. The transmitter and the receiver should be turned OFF.

Transmitter and Receiver Binding:

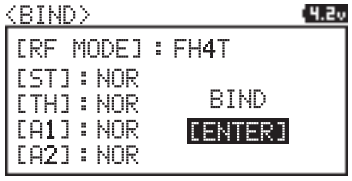
1) Turn the transmitter ON. The Top Screen will be displayed. Press the ENTER key (Push-Button Rotary Dial) to open the Programming Menu list, then scroll UP or DOWN to highlight the SYSTEM menu.

2) Press the ENTER key to open the SYSTEM menu, then scroll DOWN to highlight the BIND menu. Press the ENTER key to open the BIND menu.

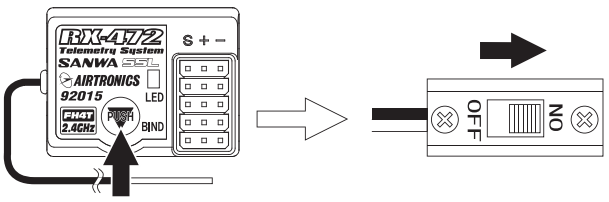


⚠ Verify that the Modulation is set to [RF MODE]:FH4T is displayed an that the Servo Operating Mode for each channel is set to NOR. If it isn't, change the Modulation Type to FH4T. If you need to change any of these settings, see the BIND Menu section on pages 52 and 53.

3) Scroll UP or DOWN to highlight the [ENTER] command. Do not press the ENTER key yet.

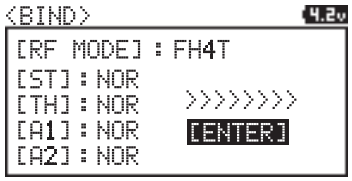


4) While holding down the Bind Button on the receiver, turn the receiver ON. The Bind LED on the receiver will flash slowly. After approximately 2 seconds, release the Bind Button. The Bind LED on the receiver will continue to flash slowly.



⚠ 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.

5) Press the ENTER key. The [ENTER] command will begin to flash and the Bind LED on the receiver will flash rapidly, then go out.



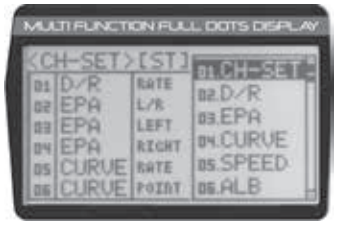
6) After the Bind LED on the receiver goes out, press the ENTER key a second time. The Bind LED on the receiver will illuminate solid blue and LED 2 on the transmitter will go out, indicating that the Binding procedure is complete and a Telemetry connection has been made.

7) Move the steering wheel and throttle trigger to verify that the servos are operating normally, then press and HOLD the BACK/CANCEL key to return to the Top Screen.

⚠ When the Binding procedure is successful, the Bind LED on the receiver and LED 1 on the transmitter will illuminate solid blue. If the Bind LED on the receiver is flashing rapidly or is not illuminated at all, the transmitter and receiver are not paired. In this case, turn both the transmitter and receiver OFF, then repeat the Binding procedure again.

PROGRAM

The Programming Menus allow you to program the various functions of the 90478 trans-mitter, in addition to being able to access the System Menu.



1) To access the various Programming Menus, turn the transmitter ON, then press the ENTER key (Push-Button Rotary Dial). A list of Programming Menus will be displayed along the right side of the screen and the last Programming Menu when the transmitter was turned OFF will be highlighted. The currently highlighted Programming Menu will be displayed in the background.

2) Use the Push-Button Rotary Dial to scroll UP or DOWN to highlight the desired Programming Menu, then press the ENTER key to open the highlighted Programming Menu.

PROGRAMMING MENUS

MENU	MENU NAME	MENU DESCRIPTION	PAGE
01.CH-SET	Channel Set	Change Common Programming Options From One Location	PG. 17
02.D/R	Dual Rate	Adjust Channel Dual Rates	PG. 18
03.EPA	End Point Adjustment	Adjust Channel End Points	PG. 19
04.CURVE	Curve	Adjust Channel Exponential or Adjustable Rate Control (ARC)	PG. 21
05.SPEED	Servo Speed	Slow Down Servo Speed in Both Directions	PG. 23
06.ALB	Anti-Lock Braking	Program the Anti-Lock Braking Function	PG. 24
07.OFFSET	Throttle Offset	Program the Throttle Offset Position	PG. 26
08.AUX1	Auxiliary 1	Adjust Auxiliary 1 Channel 3 Functions and Programming	PG. 27
09.AUX2	Auxiliary 2	Adjust Auxiliary 2 Channel 4 Functions and Programming	PG. 34
10.TRIM	Servo Trim	Adjust Servo Trim and Servo Sub-Trim	PG. 41
11.REV	Servo Reversing	Change the Direction that the Servos Travel	PG. 42
12.TIMER	Lap and Interval Timers	Program the Lap Timer and the Interval Timer	PG. 43
13.LAP	Lap Times	Displays Current, Past and Best Lap Times	PG. 46
14.F/S	Fail Safe	Program Fail Safe Settings	PG. 46
15.LOGGER	Telemetry Logging	View Logs of Temperature, Voltage and RPM Telemetry Data	PG. 47
16.SYSTEM	System Menu	Access the System Menu	PG. 49

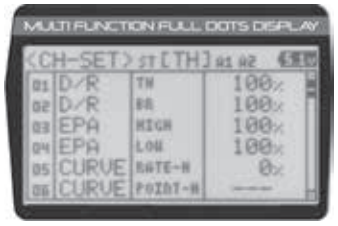
PRO TIP: Most Programming Menus feature a Servo Monitor at the bottom of the screen that you can use to see your programming changes in virtual real time.

01.CH-SET (CHANNEL SET) PROGRAM

The Channel Set function allows you to make programming changes to each of the four channels without the need to enter each Programming Menu separately. It encompasses the most common programming options in one convenient location. For example, you can make all of your desired programming changes, such as End Point Adjustment, Exponential, Servo Speed, Fail Safe settings, etc., for each channel, all from within the same menu.

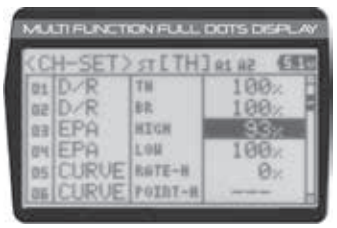
1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the CH-SET menu, then press the ENTER key. The CH-SET menu will be displayed and the cursor will default to [ST].



3) Scroll DOWN to move the cursor to the channel you would like to make Programming Value changes to. Choose from <CH-SET> [ST] (Steering), <CH-SET> [TH] (Throttle), <CH-SET> [A1] (Auxiliary 1) or <CH-SET> [A2] (Auxiliary 2).

01.CH-SET (CHANNEL SET) PROGRAM



4) Press the ENTER key to highlight the Programming Value in the upper right corner.

5) Scroll UP or DOWN to highlight the Programming Value you would like to change, then press the ENTER key to select it. The highlighted Programming Value will flash indicating you can change the Programming Value. Scroll UP or DOWN to change the Programming Value

6) After changing the desired Programming Value, press the ENTER key or the BACK/CANCEL key and the highlighted option will stop flashing, indicating you can scroll UP or DOWN to highlight another programming option.

7) To change to another channel, press the BACK/CANCEL key, then scroll UP or DOWN to select the desired channel. Repeat steps 4 and 5 above to change the desired Programming Values for that channel.

8) When complete, press and HOLD the BACK/CANCEL key to return to the Top Screen.

The following functions can be programmed from within the Channel Set menu:

[ST] STEERING	[TH] THROTTLE	[A1] AUXILIARY 1	[A1] AUXILIARY 2
01.D/R - RATE	01.D/R - TH	01.EPA - HIGH	01.EPA - HIGH
02.EPA - L/R	02.D/R - BR	02.EPA - LOW	02.EPA - LOW
03.EPA - LEFT	03.EPA - HIGH	03.CURVE - RATE	03.CURVE - RATE
04.EPA - RIGHT	04.EPA - LOW	04.CURVE - POINT	04.CURVE - POINT
05.CURVE - RATE	05.CURVE - RATE-H	05.CURVE	05.CURVE
06.CURVE - POINT	06.CURVE - POINT-H	06.CURVE	06.CURVE
07.SPEED - FORWARD	07.CURVE - RATE-B	07.SPEED - FORWARD	07.SPEED - FORWARD
08.SPEED - RETURN	08.CURVE - RATE-H	08.SPEED - RETURN	08.SPEED - RETURN
09.TRIM	09.SPEED - FORWARD	09.TRIM	09.TRIM
10.SUB-T	10.SPEED - RETURN	10.SUB-T	10.SUB-T
11.REV - NOR/REV	11.ALB - POINT	11.REV - NOR/REV	11.REV - NOR/REV
12.F/S	12.ALB - STROKE	12.F/S	12.F/S
	13.ALB - LAG		
	14.ALB - RELEASE		
	15.ALB - HOLD		
	16.TRIM		
	17.SUB-T		
	18.REV - NOR/REV		
	19.F/S		

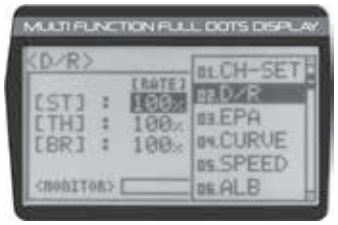
02.D/R (DUAL RATE) PROGRAM

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. If your model oversteers during turns, you can reduce the amount of Steering Dual Rate. Adjusting Steering Dual Rate affects both Right-hand and Left-hand 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, using the End Point Adjustment function. For more information, see the End Point Adjustment section on pages 19 through 21.

⚠ 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.

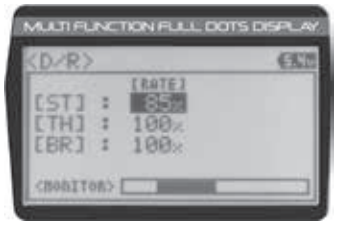
02.D/R (DUAL RATE) PROGRAM



Adjusting the Steering Dual Rate Percentage Value:

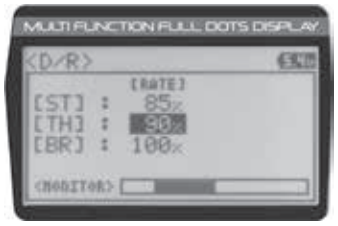
1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the D/R menu, then press the ENTER key. The D/R menu will be displayed and [ST]:RATE 100% will be highlighted.



3) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Steering Dual Rate percentage value. When the Steering Dual Rate percentage value is decreased, steering servo travel is decreased. When the Steering Dual Rate percentage value is increased, steering servo travel is increased.

D/R ST RATE setting range is 0% to 100%. The default setting is 100%.

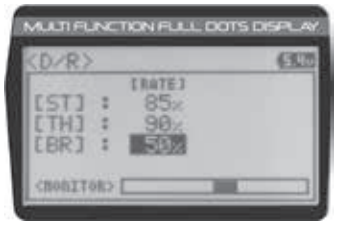


Adjusting the Throttle Dual Rate Percentage Value:

1) From within the D/R menu, scroll UP or DOWN to highlight [TH]:RATE 100%.

2) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Throttle Dual Rate percentage value. When the Throttle Dual Rate percentage value is decreased, Throttle High side servo travel is decreased. When the Throttle Dual Rate percentage value is increased, Throttle High side servo travel is increased.

D/R TH RATE setting range is 0% to 100%. The default setting is 100%.



Adjusting the Brake Dual Rate Percentage Value:

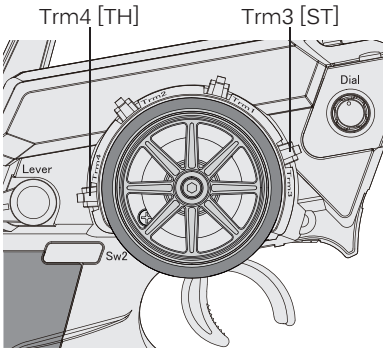
1) From within the D/R menu, scroll UP or DOWN to highlight [BR]:RATE 100%.

2) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Brake Dual Rate percentage value. When the Brake Dual Rate percentage value is decreased, Throttle Brake side servo travel is decreased. When the Brake Dual Rate percentage value is increased, Throttle Brake side servo travel is increased.

D/R BR RATE setting range is 0% to 100%. The default setting is 100%.

Controlling the Dual Rate Function:

1) By assigning the Steering, Throttle and Brake Dual Rate programming functions to one or more of the Trim Switches, Auxiliary Lever or Dial Knob, these functions can be adjusted while driving without accessing the Programming Menu. In addition, these functions can be toggled OFF and ON by assigning them to one or more Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.



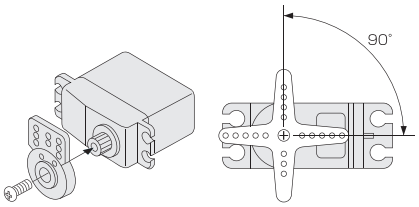
⚠ In the default configuration, the Steering and Throttle Dual Rate programming functions are adjusted using Trim Switch Trm3 and Trim Switch Trm4, respectively.

03.EPA (END POINT ADJUSTMENT) PROGRAM

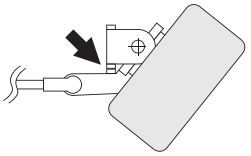
The End Point Adjustment function allows you to adjust servo travel in each direction. This makes it possible to balance servo travel in both directions and set the maximum desired amount of servo travel. For example, on a gas-powered model, if you pull the throttle trigger and the carburetor does not 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. The End Point Adjustment function can be adjusted for the Steering channel (Right and Left), the Throttle channel (Throttle High Side and Throttle Brake Side), Auxiliary 1 Channel 3 (High and Low) and Auxiliary 2 Channel 4 (High and Low).

03.EPA (END POINT ADJUSTMENT) — PROGRAM

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 Adjusting the Servo Sub-Trim Values section on page 41.

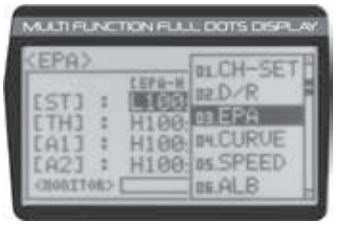


⚠ End Point Adjustment percentage values should not be increased to the point where your linkages and servos Bind when moved all the way to the Right or Left. Binding will cause the servos to 'buzz', resulting in a quicker loss of receiver battery power and eventual damage to the servos or to your Model.



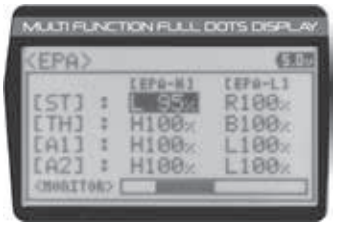
Adjusting the Steering End Point Adjustment Percentage Values:

Your model's turning radius can differ from left to right because of variations in linkage, suspension balance, tire diameter, or weight distribution. In such cases, Left Steering servo travel and Right Steering servo travel are adjustable using the End Point Adjustment function.

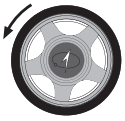


1) From the Top Screen, press the ENTER key to open the Programming Menu list.

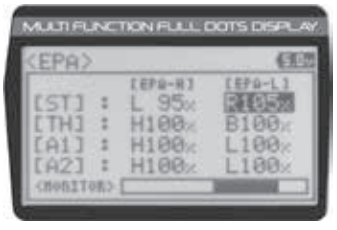
2) Scroll UP or DOWN to highlight the EPA menu, then press the ENTER key. The EPA menu will be displayed and [ST]:EPA L100% will be highlighted.



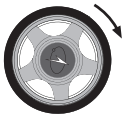
3) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Steering Left End Point Adjustment percentage value. Increasing the percentage value will increase steering servo travel in that direction and decreasing the percentage value will decrease steering servo travel in the that direction.



EPA ST L setting range is 0% to 150%. The default setting is 100%.



4) From within the EPA menu, scroll DOWN to highlight [ST]:EPA R100%. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Steering Right End Point Adjustment percentage value. Increasing the percentage value will increase steering servo travel in that direction and decreasing the percentage value will decrease steering servo travel in the direction.

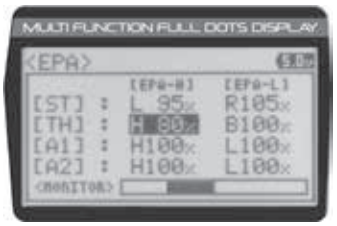


EPA ST R setting range is 0% to 150%. The default setting is 100%.

⚠ Steering EPA L/R can be adjusted from within the Channel Set menu. This option changes both Left and Right Steering End Point Adjustment percentage values equally at the same time, which is similar to adjusting Steering Dual Rate.

Adjusting the Throttle End Point Adjustment Percentage Values:

Your model's carburetor may not open completely, or it may open too much and cause the throttle servo to bind. If you're using an Electronic Speed Control, the Electronic Speed Control may not command full power, or the brake may not engage adequately. In such cases, Throttle High servo travel and Throttle Brake servo travel are adjustable using the End Point Adjustment function.



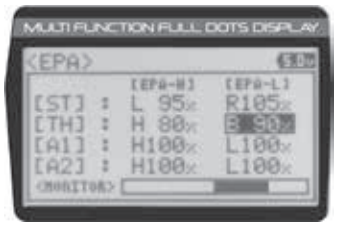
1) From within the EPA menu, scroll UP or DOWN to highlight [TH]:EPA H 100%.

2) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Throttle High End Point Adjustment percentage value. Increasing the percentage value will increase Throttle High servo travel in that direction and decreasing the percentage value will decrease Throttle High servo travel in that direction.

EPA TH H setting range is 0% to 150%. The default setting is 100%.

03.EPA (END POINT ADJUSTMENT) PROGRAM

3) From within the EPA menu, scroll DOWN to [TH]:EPA B100%. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Throttle Brake End Point Adjustment percentage value. Increasing the percentage value will increase Throttle Brake servo travel in that direction and decreasing the percentage value will decrease Throttle Brake servo travel in that direction.



EPA TH B setting range is 0% to 150%. The default setting is 100%.

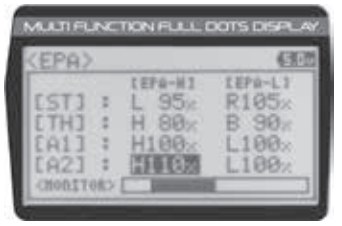
⚠ If you're using an Electronic Speed Control, the Throttle High and the Throttle Brake End Point Adjustment percentage values are both generally set to 100%, although the Throttle High direction may need to be increased to achieve full power. In some cases the End Point Adjustments can also be set directly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

Adjusting the Auxiliary 1 Channel 3 and Auxiliary 2 Channel 4 End Point Adjustment Percentage Values:

Auxiliary 1 Channel 3 and Auxiliary 2 Channel 4 can be used for a number of different uses. One of the more common uses would be for the reverse function in a glow-powered monster truck. Often, the transmission only requires a small amount of throw, but the servo binds because of too much servo travel. In such a case, Auxiliary High servo travel and Auxiliary Low servo travel are adjustable using the End Point Adjustment function.

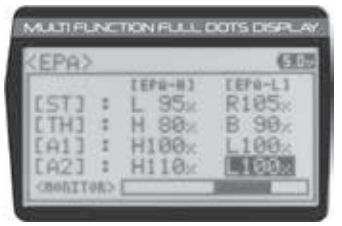
1) From within the EPA menu, scroll UP or DOWN to highlight [A1]:EPA H 100% or [A2]:EPA H 100%.

2) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Auxiliary High End Point Adjustment percentage value. Increasing the percentage value will increase auxiliary servo travel in that direction and decreasing the percentage value will decrease auxiliary servo travel in that direction.



EPA A1 H and EPA A2 H setting range is 0% to 150%. The default setting is 100%.

3) From within the EPA menu, scroll UP or DOWN to highlight [A1]:EPA L100% or [A2]:EPA L100%. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Auxiliary Low End Point Adjustment percentage value. Increasing the percentage value will increase auxiliary servo travel in that direction and decreasing the percentage value will decrease auxiliary servo travel in that direction.



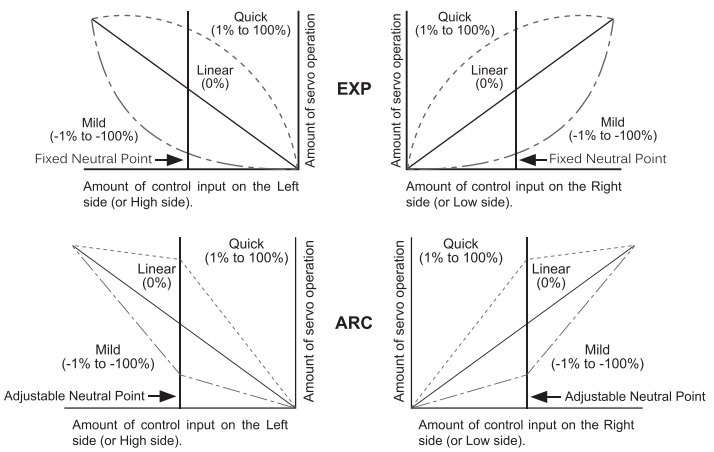
EPA A1 L and EPA A2 L setting range is 0% to 150%. The default setting is 100%.

04.CURVE (EXPONENTIAL AND ARC) PROGRAM

The Exponential and Adjustable Rate Control (ARC) functions allow you to vary the amount of servo travel in relation to the movement of the steering wheel, throttle trigger and auxiliary lever near the Neutral positions to change the way those functions react to control movement.

Decreasing the Exponential or Adjustable Rate Control percentage values will soften the control feel around Neutral and increasing the Exponential or Adjustable Rate Control percentage values 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 Exponential and Adjustable Rate Control functions can be adjusted for the Steering channel, the Throttle channel (Throttle High and Throttle Brake), Auxiliary 1 Channel 3 and Auxiliary 2 Channel 4. A graph that depicts the Exponential or Adjustable Rate Control curve is featured to help visualize the changes you make.



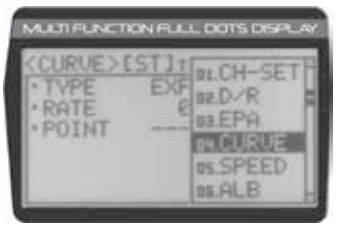
⚠ The Exponential and Adjustable Rate Control functions work the same, except the Exponential Rate percentage value is programmed from a fixed Neutral Point of 50% and the Adjustable Rate Control Rate percentage value is programmed from a user-adjustable Neutral Point, giving you even greater programming control.

04.CURVE (EXPONENTIAL AND ARC) PROGRAM

Choosing the Channel:

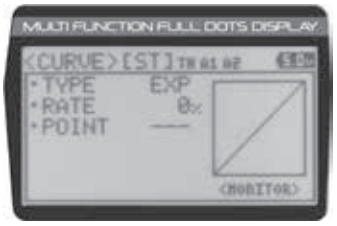
Exponential or Adjustable Rate Control percentage values can be adjusted from Mild through Linear to Quick to allow you to set the most effective control response for your model. For example, if your model over-steers, reduce the Steering Exponential or Adjustable Rate Control percentage value, and if your model under-steers, increase the Steering Exponential or Adjustable Rate Control percentage value.

As another example, reduce the Throttle Exponential or Adjustable Rate Control percentage value on a slippery track or with a model that has a higher-torque motor or engine, and increase the Throttle Exponential or Adjustable Rate Control percentage value on a high-grip track or with a model that has a lower-torque motor or engine.



1) From the Top Screen, press the ENTER key to open the Programming Menu list.

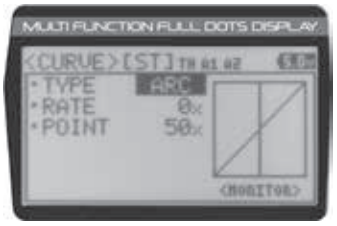
2) Scroll UP or DOWN to highlight the CURVE menu, then press the ENTER key. The CURVE menu will be displayed and the cursor will default to [ST].



3) Scroll DOWN to move the cursor to the channel you would like to make Programming Value changes to. Choose from <CURVE> [ST] (Steering), <CURVE> [TH] (Throttle), <CURVE> [A1] (Auxiliary 1) or <CURVE> [A2] (Auxiliary 2).

Choosing the Curve Type:

The Exponential and Adjustable Rate Control functions work the same, except the Exponential Rate percentage value is programmed from a fixed Neutral Point of 50% and the Adjustable Rate Control Rate percentage value is programmed from a user-adjustable Neutral Point, giving you even greater programming control. For more information, see the Adjusting the Point Percentage Value section below.

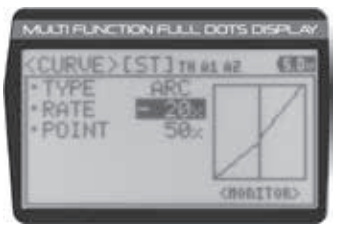


1) Press the ENTER key to highlight TYPE EXP. Press the ENTER key a second time, then scroll UP or DOWN to choose the desired Curve Type. If you are programming the Curve function for the Throttle channel, you have the option of adjusting the Curve Type for the Throttle High Side (TYPE-H) and the Throttle Brake Side (TYPE-B) independently.

CURVE TYPE setting range is EXP and ARC. The default setting is EXP.

Adjusting the Rate Percentage Value:

The Rate percentage value determines the desired amount and type of Exponential or Adjustable Rate Control, either Quick, Mild or Linear (see diagrams on the previous page).



1) From within the CURVE menu, scroll DOWN to highlight RATE 0%. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Rate percentage value. Using a negative Rate percentage value will soften the control feel around Neutral and using a positive Rate percentage value will heighten the control feel around Neutral.

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

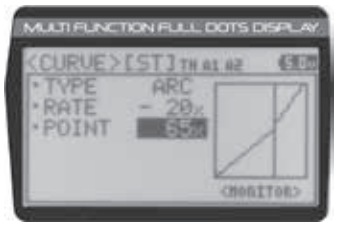
⚠ Changes to the Rate percentage value affects both the channel High side and Low side equally, except for the Throttle channel, in which the Throttle High and Throttle Brake sides can be adjusted independently.

Adjusting 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 Point to be centered between the High and Low End Points. You may want the Point to be offset from the center position.

⚠ The Point percentage value option is available ONLY when the TYPE ARC option is selected.

04.CURVE (EXPONENTIAL AND ARC) PROGRAM



1) From within the CURVE menu, scroll DOWN to highlight POINT 50%. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Point percentage value. Increasing the Point percentage value will shift the Neutral Point to one side of center and decreasing the Point percentage value will shift the Neutral Point to the opposite side of center.

CURVE POINT setting range is 5% to 95%. The default setting is 50% (Centered).

Controlling the Curve Function:

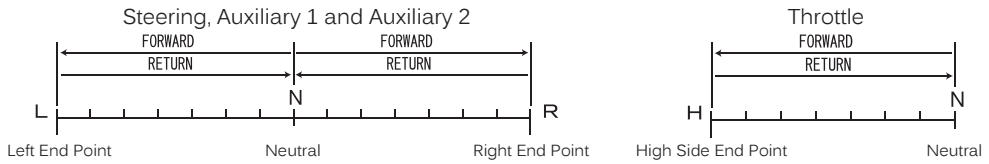
1) By assigning the Steering, Throttle High and Throttle Brake Rate and Point programming functions to one or more of the Trim Switches, Auxiliary Lever or Dial Knob, these functions can be adjusted while driving without accessing the Programming Menu. In addition, the Steering Curve and Throttle Curve functions can be Toggled OFF and ON by assigning them to one or more Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

⚠ Auxiliary 1 and Auxiliary 2 Rate and Point programming functions cannot be assigned.

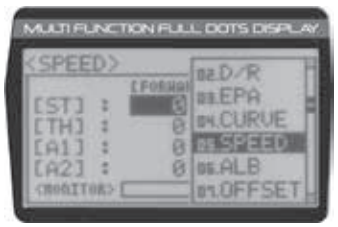
05.SPEED (SERVO SPEED) PROGRAM

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.

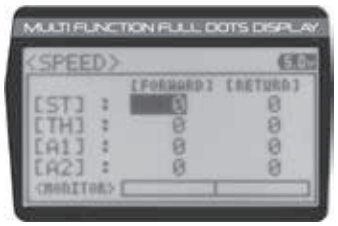


Adjusting the Forward Speed Value:

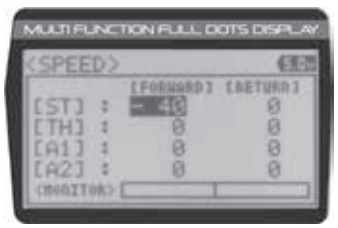


1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SPEED menu, then press the ENTER key. The SPEED menu will be displayed and [ST]:FORWARD 0 will be highlighted.



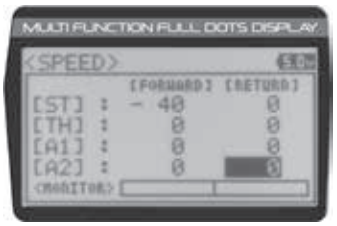
3) Scroll UP or DOWN to highlight the desired channel you would like to change the Forward Speed value for. Choose from either [ST]:FORWARD 0 (Steering), [TH]:FORWARD 0 (Throttle), [A1]:FORWARD 0 (Auxiliary 1) or [A2]:FORWARD 0 (Auxiliary 2).



4) Press the ENTER key, then scroll DOWN to decrease servo Speed in the Forward direction. Decreasing the Forward Speed value will cause the servo transit time to slow down when it moves from the Neutral position to either End Point.

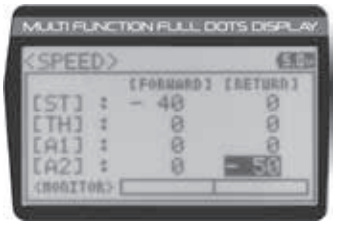
SPEED FORWARD setting range is -100 to 0. The default setting is 0 (Normal Speed).

05.SPEED (SERVO SPEED) PROGRAM



Adjusting the Return to Neutral Speed Value:

1) From within the SPEED menu, scroll UP or DOWN to highlight the desired channel you would like to change the Return to Neutral Speed value for. Choose from either [ST]:RETURN 0 (Steering), [TH]:RETURN 0 (Throttle), [A1]:RETURN 0 (Auxiliary 1) or [A2]:RETURN 0 (Auxiliary 2).



2) Press the ENTER key, then scroll DOWN to decrease servo Speed in the Return to Neutral direction. Decreasing the Return to Neutral Speed value will cause the servo transit time to slow down when it moves from either End Point to the Neutral position.

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

Controlling the Servo Speed Function:

1) By assigning the Steering and Throttle Forward and Return to Neutral Speed programming functions to one or more of the Trim Switches, Auxiliary Lever or Dial Knob, these functions can be adjusted while driving without accessing the Programming Menu. In addition, the Steering Speed and Throttle Speed functions can be Toggled OFF and ON by assigning them to one or more Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

⚠ Auxiliary 1 and Auxiliary 2 Forward and Return to Neutral Speed programming functions cannot be assigned.

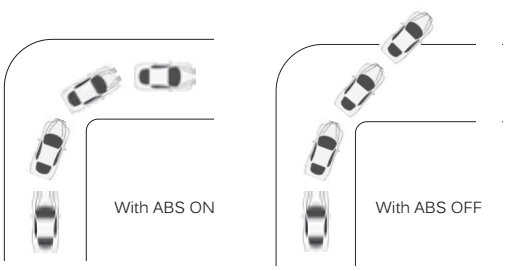
06.ALB (ANTI-LOCK BRAKING) PROGRAM

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. The Anti-Lock Braking function also enables you to set different braking characteristics depending on your particular model. Different Anti-Lock Braking function options can be custom programmed, including the how quickly the brake pulsates, the point at which the Anti-Lock Braking function starts and more.

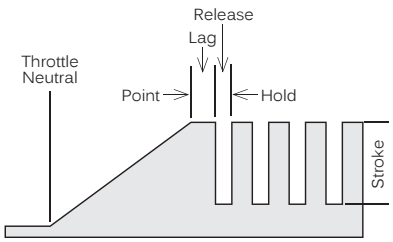
The Anti-Lock Braking function is primarily used on gasoline- or glow-powered models that feature a throttle servo. It can be used on an electric model that uses an Electronic Speed Control, however, if your Electronic Speed Control features a reverse function, the Anti-Lock Braking function will not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

⚠ When the Anti-Lock Braking function is Active, LED 1 (Blue) will flash rapidly.

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 Braking function will never result in your model losing traction under braking. It only improves braking under less than ideal conditions.



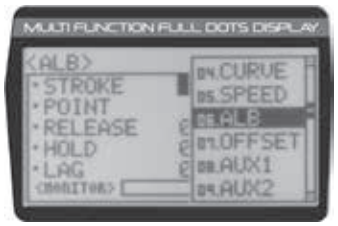
⚠ The diagram at Right illustrates the relationship between the Point, Lag, Release, Hold and Stroke functions, all of which can be programmed separately to suit your specific car type, track conditions and Anti-Lock Braking behavior.



Adjusting the Stroke Percentage Value:

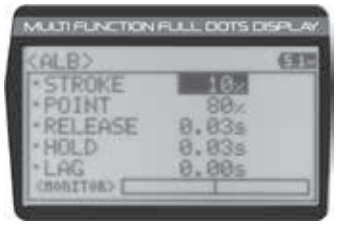
The Stroke percentage value determines the amount of Brake that's applied automatically when the Anti-Lock Braking function Activates. When set to OFF, the Anti-Lock Braking function will not work. A percentage value of 1% or greater must be programmed for the Anti-Lock Braking function to operate.

06.ALB (ANTI-LOCK BRAKING)



1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the ALB menu, then press the ENTER key. The ALB menu will be displayed and STROKE OFF will be highlighted.

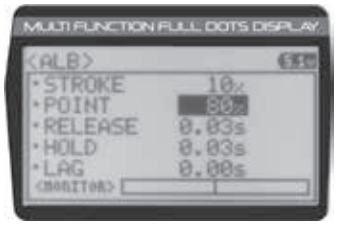


3) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Stroke percentage value. Increasing the Stroke percentage value will increase throttle servo travel in the Brake direction and decreasing the Stroke percentage value will decrease throttle servo travel in the Brake direction.

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

Adjusting the Point Percentage Value:

The Point percentage value determines the position along the servo travel that the Anti-Lock Braking function Activates. 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.



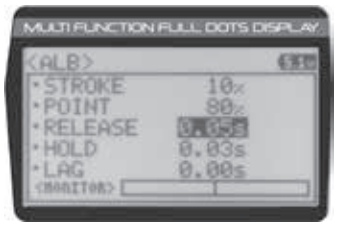
1) From within the ALB menu, scroll DOWN to highlight POINT 80%. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Point percentage value. Increasing the Point percentage value will cause the Anti-Lock Braking function to Activate later and decreasing the Point percentage value will cause the Anti-Lock Braking function to Activate sooner.

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

Adjusting the Release and Hold Values:

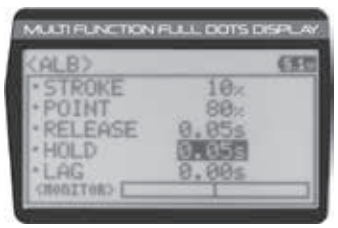
The Release and Hold values determine the speed at which the brake pulsates. By adjusting the Release and Hold values, you can make the brake pulsate faster or slower. The Release value determines how quickly the Brake moves from Neutral to the percentage value determined by the Stroke setting and the Hold value determines how quickly the Brake moves from the Stroke setting to Neutral.

⚠ We recommend using equal Release and Hold values, although different values can be used to fine-tune how the Brake pulsates. Using lower values make the Brake pulsate faster and using higher values make the Brake pulsate slower.



1) From within the ALB menu, scroll DOWN to highlight RELEASE 0.03s. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Release value. Increasing the Release value will cause the Brake to move from Neutral to the Stroke setting slower and decreasing the Release value will cause the Brake to move from Neutral to the Stroke setting faster.

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



2) From within the ALB menu, scroll DOWN to highlight HOLD 0.03s. Press the ENTER key, then scroll UP or DOWN to increase or decrease the Hold value. Increasing the Hold value will cause the Brake to move from the Stroke setting to the Neutral position slower and decreasing the Hold value will cause the Brake to move from the Stroke setting to the Neutral position slower.

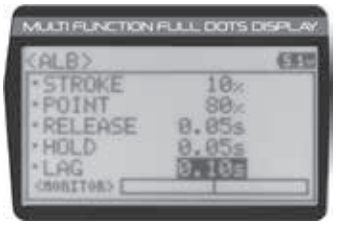
ALB HOLD setting range is 0.01s to 1.00s. The default setting is 0.03s.

06.ALB (ANTI-LOCK BRAKING) PROGRAM

Adjusting the Lag Value:

The Lag value determines the amount of delay before the Anti-Lock Braking function Activates after reaching the POINT setting.

1) From within the ALB menu, scroll DOWN to highlight LAG 0.00s. Press the ENTER key, then scroll UP and DOWN to increase or decrease the Lag value. 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.



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

Controlling the Anti-Lock Braking Function:

1) By assigning the Anti-Lock Braking Point, Stroke, Lag, Hold and Release programming functions to one or more of the Trim Switches, Auxiliary Lever or Dial Knob, these functions can be adjusted while driving without accessing the Programming Menu. In addition, the Anti-Lock Braking function can be Toggled OFF and ON by assigning it to one of the Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

07.OFFSET (THROTTLE OFFSET) PROGRAM

The Throttle Offset function allows you to shift the Neutral position of the throttle servo, either toward the High Side or the Brake Side. When used in conjunction with a Push-Button Switch, this function can be used several different ways. For example, if you're driving a glow- or gas-powered model, you can program the Throttle Offset function to shut down your engine with the press of a button. In addition, you can program the Throttle Offset function to increase to a steady idle while you're refueling during a race.

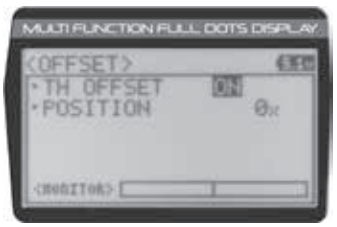
⚠ When a Position percentage value is programmed and the Throttle Offset function is Active, LED 1 (Blue) will flash rapidly and OFFS will be displayed on the Top Screen. The Throttle Offset function shifts the Neutral position of the throttle servo without affecting the High or Low End Points.

Turning the Throttle Offset Function ON or OFF:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the OFFSET menu, then press the ENTER key. The OFFSET menu will be displayed and TH OFFSET OFF will be highlighted.

3) Press the ENTER key, then scroll UP or DOWN to change the Throttle Offset value to ON or OFF.



OFFSET TH OFFSET setting range is OFF to ON. The default setting is OFF.

⚠ Although the Throttle Offset value is set to ON, the Throttle Offset function will not operate until a Position percentage value is programmed.

Adjusting the Throttle Offset Position Percentage Value:

1) From within the OFFSET menu, scroll DOWN to highlight POSITION 0%. Press the ENTER key, then scroll UP to shift the throttle servo Neutral position the desired amount toward the Throttle High Side or scroll DOWN to shift the throttle servo Neutral position the desired amount toward the Throttle Brake Side.

OFFSET POSITION setting range is H100% to B100%. The default setting is 0%.

Controlling the Throttle Offset Function:

1) By assigning the Throttle Offset Position programming function to one of the Trim Switches, Auxiliary Lever or Dial Knob, this function can be adjusted while driving without accessing the Programming Menu. In addition, the Throttle Offset function can be Toggled OFF and ON by assigning it to one of the Push-Button Switches. For more information, see the Key Assignments section on 53 through 58.

08.AUX1 (AUXILIARY 1 CHANNEL 3 PROGRAMMING) PROGRAM

The Auxiliary 1 Programming function allows you to program the six different Auxiliary Programming functions that are controlled by Auxiliary 1 **Channel 3**. Use the table below to determine the different functions that are available:

FUNCTION	FUNCTION NAME	FUNCTION DESCRIPTION
STEP AUX	Step Auxiliary	Controls Step Values That the Auxiliary Servo Travels
POINT AUX	Point Auxiliary	Control Specific Points That the Auxiliary Servo Travels
4WS MIX	Four Wheel Steering Mixing	Control Four Wheel Steering Options
MOA MIX	Motor on Axle Dual Throttle Mixing	Controls Dual Throttle Options (Dig and Burn)
AUX MIX	Auxiliary Mixing	Control User-Defined Auxiliary 1 Channel 3 Mixing Options
CODE AUX	CODE Auxiliary	Controls SSL Equipped Accessories, Such as ESCs

IMPORTANT: Prior to programming an Auxiliary 1 Programming function you must first choose the desired Auxiliary Programming function in the SYSTEM AUX TYPE menu. Only one Auxiliary 1 Programming function can be Active at any given time.

STEP AUX (Step Auxliary)

The Step Auxiliary function allows you to program the Auxiliary 1 servo to move a defined amount when toggled ON and OFF using a Push-Button Switch. For example, if you assign Auxiliary 1 to a Push-Button Switch, then program the Step Auxiliary percentage value to 50%, the Auxiliary 1 servo will travel from the Neutral position to 50% of travel when the Push-Button Switch is pressed. Press the Push-Button switch a second time and the Auxiliary 1 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.

⚠ The Step Auxiliary Position value can be adjusted while you're driving using one of the four Trim Switches, the Rotary Dial or the Auxiliary Lever. The Step Auxiliary function can be toggled OFF and ON by assigning Auxiliary 1 to one of the two Push-Button Switches. This allows you to control when the Auxiliary 1 servo travels to the programmed Step Auxiliary position.

Choosing the Step Auxiliary Function:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.
2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.
3) Press the ENTER key, then scroll UP or DOWN to choose the AUX1:STEP AUX function.

Adjusting the Step Auxiliary Value:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.
2) Scroll UP or DOWN to highlight the AUX1 menu, then press the ENTER key. The AUX1 STEP menu will be displayed and <AUX1 POSI> 0 will be shown.

3) Press the ENTER key, then scroll UP or DOWN to change the Auxiliary 1 Position value. Increasing the value toward the High side (H) or Low side (L) will cause the Auxiliary 1 servo to travel to that specific position when you Activate the Auxiliary 1 Step function.

AUX1 STEP AUX1 POSI setting range is H100 to L100. The default setting is 0. This value is a percentage of Auxiliary 1 servo travel.

Controlling the Step Auxiliary Function:

1) In the default configuration, Auxiliary 1 is controlled by the Rotary Dial which allows the Step Auxiliary function to be adjusted while driving. Turn the Rotary Dial clockwise to increase the Position High Side value and turn the Rotary Dial counter-clockwise to increase the Position Low Side value. In addition, Auxiliary 1 can be assigned to one of the four Trim Switches or the Auxiliary Lever. The Step Auxiliary function can be toggled OFF and ON by assigning Auxiliary 1 to one of the two Push-Button Switches. This allows you to control when the Auxiliary 1 servo travels to the programmed Step Auxiliary position. For more information, see the Key Assignments section on pages 53 through 58.

08.AUX1 (AUXILIARY 1 CHANNEL 3 PROGRAMMING) PROGRAM

POINT AUX (Point Auxliary)

The Point Auxiliary function allows you to program the Auxiliary 1 servo to move up to 6 different Points along its travel, then cycle through those Points using one of the Trim Switches or the Rotary Dial. For example, if your model requires a separate 3-position or more switch to operate a feature, the Point Auxiliary function can be customized to control this.

⚠ Use one of the four Trim Switches or the Rotary Dial to cycle through the Point positions while you're driving. The Point Auxiliary function can be toggled OFF and ON while you're driving by assigning Auxiliary 1 to one of the two Push-Button Switches. To ensure correct operation, make sure to refer the Important notice in the Controlling the Point Auxiliary Function below.

Choosing the Point Auxiliary Function and the Number of Points:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

3) Press the ENTER key, then scroll UP or DOWN to choose the AUX1:POINT AUX function.

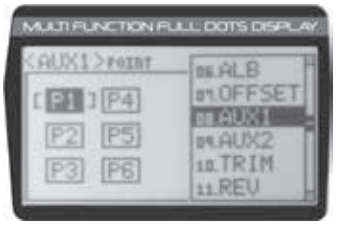
4) From within the AUX TYPE menu, scroll DOWN to highlight [MODE] 6 POINT. Press the ENTER key, then scroll UP or DOWN to choose the desired number of Points you would like to program.

AUX TYPE POINT setting range is 2point to 6point. The default setting is 6point.

Adjusting the Point Auxiliary Values:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

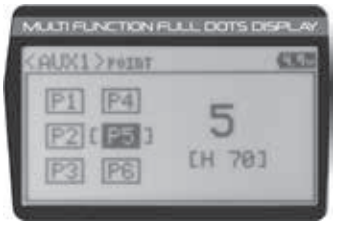
2) Scroll UP or DOWN to highlight the AUX1 menu, then press the ENTER key. The AUX1 POINT menu will be displayed and the last Point selected will be highlighted.



3) Scroll UP or DOWN to move the brackets to the Point you would like to change, then press the ENTER key to highlight that Point.

4) Press the ENTER key, then scroll UP or DOWN to change the Point value. Increasing the Point value toward the High side (H) or Low side (L) will cause the Auxiliary 1 servo to travel to that specific position when you cycle through the various Points.

5) Repeat steps 3 and 4 to change the desired remaining Point values.



AUX1 POINT setting range is H100 to L100. The default setting for Point 1 is L100, for Point 2 is L60, for Point 3 is L20, for Point 4 is H20, for Point 5 is H60, and for Point 6 is H100. These values are a percentage of Auxiliary 1 servo travel.

Controlling the Point Auxiliary Function:

1) In the default configuration, Auxiliary 1 is controlled by the Rotary Dial. Turn the Rotary Dial clockwise to cycle Forward through the programmed Point Auxiliary positions and turn the Rotary Dial counter-clockwise to cycle Backward through the programmed Point Auxiliary positions. The Auxiliary 1 servo will move to the specified Point positions as you cycle through the different Points.

   In addition, Auxiliary 1 can be assigned to one of the four Trim Switches. The Point Auxiliary function can be toggled OFF and ON by assigning Auxiliary 1 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

IMPORTANT: To operate correctly, the TRIM or DIAL Step value must be set to 1. If set to a value other than 1, Point positions will be skipped as you cycle through them. For more information, see the Key Assignments section on pages 53 through 58.

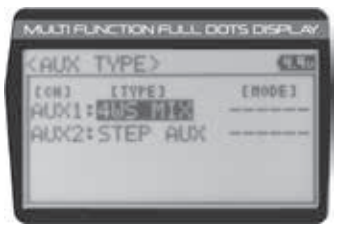
08.AUX1 (AUXILIARY 1 CHANNEL 3 PROGRAMMING) PROGRAM

4WS MIX (Four Wheel Steering Mixing)

The Four Wheel Steering Mixing function allows you to use Auxiliary 1 Channel 3 as a second steering channel, allowing you to use two separate steering servos for Front and Rear steering. The Four Wheel Steering Mixing function allows you to control either the Front or Rear steering independently, or Mix the Front and Rear steering to have Parallel Four Wheel Steering or Tandem Four Wheel Steering. Use one of the four Trim Switches or the Rotary Dial to cycle through the different Four Wheel Steering options while you're driving. The Four Wheel Steering Mixing function can be toggled OFF and ON while you're driving by assigning Auxiliary 1 to one of the two Push-Button Switches.

Choosing the Four Wheel Steering Function:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.
2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.
3) Press the ENTER key, then scroll UP or DOWN to choose the AUX1:4WS MIX function.



Choosing Four Wheel Steering Mixing Options:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.
2) Scroll UP or DOWN to highlight the AUX1 menu, then press the ENTER key. The AUX1 4WS menu will be displayed and the last Steering option selected will be highlighted.

3) Scroll UP or DOWN to move the brackets to the Four Wheel Steering option you would like to use, then press the ENTER key to highlight that option. The highlighted option is now Active.

The following Four Wheel Steering Mixing options are available:

FRONT Wheel Steering - When highlighted, only the Front Steering will operate.

REAR Wheel Steering - When highlighted, only the Rear Steering will operate.

NORMAL (Parallel/Crab) Four Wheel Steering - When highlighted, both the Front and Rear Steering will operate in Parallel.

REVERSE (Tandem) Four Wheel Steering - When highlighted, both the Front and Rear Steering will operate in Tandem.

⚠ If the steering servos do not operate as described above, use the Servo Reversing function to change the direction that each servo operates. For more information, see the Servo Reversing section on page 42.

08.AUX1 (AUXILIARY 1 CHANNEL 3 PROGRAMMING) PROGRAM

Controlling the Four Wheel Steering Mixing Function:

1) In the default configuration, Auxiliary 1 is controlled by the Rotary Dial. Turn the Rotary Dial clockwise to cycle Forward through the Four Wheel Steering options (FRONT > REAR > NORMAL > REVERSE) and turn the Rotary Dial counter-clockwise to cycle Backward through the Four Wheel Steering options (REVERSE > NORMAL > REAR > FRONT).

   In addition, Auxiliary 1 can be assigned to one of the four Trim Switches. The Four Wheel Steering Mixing function can be toggled OFF and ON by assigning Auxiliary 1 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

IMPORTANT: To operate correctly, the DIAL or TRIM Step value must be set to 1. If set to a value other than 1, Four Wheel Steering Mixing options will be skipped as you cycle through them. For more information, see the Key Assignments section on pages 53 through 58.

⚠ When using Four Wheel Steering, it's important to adjust the Steering Channel 1 and Auxiliary 1 Channel 3 Sub-Trim values to center both servos. This will ensure that your model tracks straight. In addition, remember that you are able to independently adjust the Auxiliary 1 Channel 3 Dual Rate, Exponential, Sub-Trim, Servo Speed settings and more to allow for the optimum Four Wheel Steering Mixing setup.

MOA MIX (Motor On Axle Mixing)

The Motor on Axle Mixing function allows you to use Auxiliary 1 Channel 3 as a second throttle channel, allowing you to use two separate throttle servos or ESCs. The Motor on Axle Mixing function is typically used in Rock Crawling and allows you to control either the Front and Rear motors together or independently, giving you Normal (Balanced), Dig and Burn functions. And when coupled with the ability to variably change the power distribution between the Front and Rear motors, allows the utmost in functionality.

⚠ When using the Motor on Axle function, it's important to adjust the Throttle Channel 2 and Auxiliary 1 Channel 3 Sub-Trim values so both motors' idle (or OFF) settings are equal. This will ensure correct function. In addition, remember that you are able to independently adjust the Auxiliary 1 Channel 3 Dual Rate, Exponential, Sub-Trim, Servo Speed settings and more to allow for the optimum Motor on Axle Mixing setup.

⚠ Use the Rotary Dial, one of the four Trim Switches or the Auxiliary Lever to Activate the Dig and Burn functions while you're driving. The Motor on Axle Mixing function can be toggled OFF and ON while you're driving by assigning Auxiliary 1 to one of the two Push-Button Switches.

Choosing the Motor on Axle Function:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

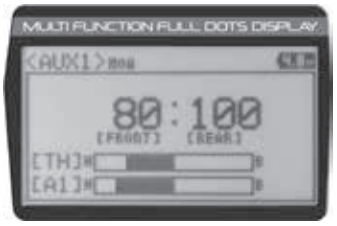
3) Press the ENTER key, then scroll UP or DOWN to choose the AUX1:MOA MIX function.

Changing Motor on Axle Power Distribution Options:

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

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the AUX1 menu, then press the ENTER key. The AUX1 MOA menu will be displayed.



3) Press the ENTER key, then scroll UP or DOWN to change the Power Distribution between the Front and Rear motors. Scrolling UP will reduce the available power to the Rear motor (Dig) and scrolling DOWN will reduce the power to the Front motor (Burn).

08.AUX1 (AUXILIARY 1 CHANNEL 3 PROGRAMMING) PROGRAM

The following Motor on Axle Mixing options can be programmed:

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

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

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

Controlling the Motor on Axle Mixing Function:

1) In the default configuration, Auxiliary 1 is controlled by the Rotary Dial. Turn the Rotary Dial clockwise to reduce the available power to the Rear motor (Dig) and turn the Rotary Dial counter-clockwise to reduce the power to the Front motor (Burn). In addition, Auxiliary 1 can be assigned to one of the four Trim Switches or to the Auxiliary Lever. The Motor on Axle Mixing function can be toggled OFF and ON by assigning Auxiliary 1 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

IMPORTANT: In the default configuration, the Rotary Dial Step value is set to 5. This allows you to adjust the Power Distribution in 5 percent increments. If you prefer to control the Dig and Burn functions as if they were assigned to an ON/OFF switch, change the DIAL Step value to 100. Alternately, the Motor on Axle Mixing function can be controlled by the Auxiliary Lever. This allows you to quickly switch between the Dig and Burn functions and still have the ability to variably change the Power Distribution between the Front and Rear motors. To set this up, change the Auxiliary Lever Function to AUX1, then change the TWEAK (H) value to +100 and the TWEAK (L) value to -100. For more information, see the Key Assignments section on pages 53 through 58.

AUX MIX (Auxiliary Mixing)

The Auxiliary Mixing function allows you to Mix either Steering Channel 1 or Throttle Channel 2 to Auxiliary 1 Channel 3, while maintaining separate Sub-Trim, End Point Adjustments, Servo Reversing and other channel-specific 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 Steering Mixing to operate both steering servos together and still be able to make adjustments to each servo separately.

In addition, if your model features a third-channel brake, you could use Throttle Mixing to control it along with the channel 2 brake.

The Auxiliary Mixing Rate percentage value can be adjusted while you're driving using one of the four Trim Switches, the Rotary Dial or the Auxiliary Lever. The Auxiliary Mixing function can be toggled OFF and ON while you're driving by assigning Auxiliary 1 to one of the two Push-Button Switches.

Choosing the Auxiliary Mixing Function and the Mixing Type:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

3) Press the ENTER key, then scroll UP or DOWN to choose the AUX1:AUX MIX function.

4) From within the AUX TYPE menu, scroll DOWN to highlight [MODE] ST-mix. Press the ENTER key, then scroll UP or DOWN to choose the desired Mixing type you would like to program. Choose from either ST-mix (Steering Mixing) or TH-mix (Throttle Mixing).

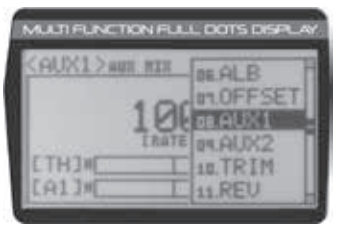
AUX TYPE MIX setting range is ST-mix and TH-mix. The default setting is ST-mix.

08.AUX1 (AUXILIARY 1 CHANNEL 3 PROGRAMMING) PROGRAM

Adjusting the Rate Percentage Value:

The Rate percentage value defines how far the Auxiliary 1 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).



1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the AUX1 menu, then press the ENTER key. The AUX1 AUX MIX menu will be displayed.

3) Press the ENTER key, then scroll UP or DOWN to change the Rate percentage value. Decreasing the Rate percentage value will reduce the amount the Auxiliary 1 servo travels relative to the Steering servo or Throttle servo and increasing the Rate percentage value will increase the amount the Auxiliary 1 servo travels relative to the Steering servo or Throttle servo.

AUX1 AUX MIX 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 1 servo will travel the same amount as the Steering servo. Additionally, if the Rate percentage value is set to 50%, the Auxiliary 1 servo will travel half the amount as the Steering servo.

⚠ In the default configuration, the Auxiliary 1 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. For more information, see the Servo Reversing section on page 42.

Controlling the Auxiliary Mixing Function:

1) In the default configuration, Auxiliary 1 is controlled by the Rotary Dial. Turn the Rotary Dial clockwise to increase the Rate percentage value and turn the Rotary Dial counter-clockwise to decrease the Rate percentage value. In addition, the Auxiliary Mixing Rate function can be assigned to one of the four Trim Switches or the Auxiliary Lever.

   In addition, the Auxiliary Mixing function can be toggled OFF and ON by assigning Auxiliary 1 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

⚠ Remember that you are able to independently adjust the Auxiliary 1 Channel 3 Dual Rate, Exponential, Sub-Trim, Servo Speed settings and more to allow for the optimum Auxiliary Mixing setup.

CODE AUX (CODE Auxiliary)

The CODE Auxiliary function is used with Airtronics or Sanwa brand accessories, such as the Airtronics Super Vortex ZERO ESC, that support Sanwa Synchronized Link (SSL). When used with an SSL equipped accessory item, the CODE Auxiliary function allows you to remotely change accessory Programming Mode values.

For example, when used with the Airtronics Super Vortex ZERO ESC, many of the ESC Programming Mode values, such as Drag Brake, Timing Advance, and more can be changed remotely from the transmitter while you're driving. In addition, you are able to rename the different CODE Programming Names (CODE1, CODE2, etc) to make them easier to keep track of.

⚠ Individual CODE Auxiliary Programming values (CODE1, CODE2, etc) can be changed while you're driving by assigning these functions to a Trim Switch, the Rotary Dial or the Auxiliary Lever. For more information, see the Key Assignments section on pages 53 through 58.

Choosing the CODE Auxiliary Function:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

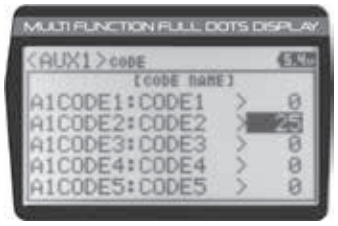
3) Press the ENTER key, then scroll UP or DOWN to choose the AUX1:CODE AUX function.

08.AUX1 (AUXILIARY 1 CHANNEL 3 PROGRAMMING) PROGRAM

Changing CODE Auxiliary Values:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the AUX1 menu, then press the ENTER key. The AUX1 CODE menu will be displayed.



3) Press the ENTER key to open the AUX1 CODE menu. A1CODE1:CODE1 > 0 will be highlighted.

4) Scroll UP or DOWN to highlight the desired CODE Auxiliary value you would like to change.

5) Press the ENTER key, then scroll UP or DOWN to choose the desired CODE Auxiliary value.

A1CODE1, A1CODE2, A1CODE3, A1CODE4 and A1CODE5 setting range is -100 to 100. The default setting for all CODE Auxiliary functions is 0.

6) Press the ENTER key again, then repeat steps 3 and 4 to change any other desired CODE Auxiliary values.

⚠ Refer to the Airtronics or Sanwa brand accessory's User's Guide for information about what CODE Auxiliary value (or values) control what accessory functions and what actual values to use.

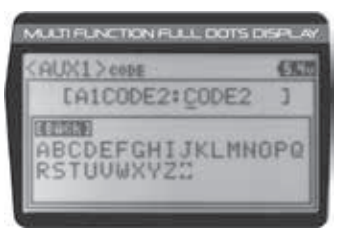
Controlling the CODE Auxiliary Function:

1) In the default configuration, Auxiliary 1 is controlled by the Rotary Dial. To adjust the CODE Auxiliary function while driving you must assign the desired CODE Auxiliary value (A1CODE1, A1 CODE2, etc) to either the Rotary Dial or one of the Trim Switches.

   In addition, the CODE Auxiliary function can be toggled OFF and ON by assigning Auxiliary 1 or the desired CODE Auxiliary value (A1CODE1, A1 CODE2, etc) to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

Changing CODE Programming Names:

You are able to rename the different CODE Programming Names (CODE1, CODE2, etc) to make them easier to keep track of. The CODE Programming Name can consist of up to 5 letters, numbers, or symbols. Choose from capital letters, lower case letters, numbers, and various symbols.



1) From within the AUX1 CODE menu, scroll UP or DOWN to highlight the desired CODE Auxiliary Name you want to change (CODE1, CODE2, etc.)

2) Press the ENTER key. The AUX1 CODE menu will be displayed, [BACK] will be highlighted and the underscore will be flashing under the first editable character in the CODE Programming Name.

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

4) Press the ENTER key, then scroll UP or DOWN to highlight a character in the Character List. Press the ENTER key a second time to select the highlighted character. That character will be displayed and the underscore will move to the next space in the CODE Programming Name.

5) Repeat steps 3 and 4 to enter the rest of the characters. Up to five characters can be entered. Press the BACK/CANCEL key to re-gain control of the underscore (the underscore will flash indicating you can scroll UP or DOWN to move it Forward or Backward). To select lower case letters, numbers or symbols, continue to scroll UP or DOWN through the various Character Lists. To add a space in your Model Name, use the □ icon. The □ icon can also be used to delete characters.

⚠ If you can't move the underscore, press the BACK/CANCEL key to re-gain control of the underscore (the underscore will flash indicating you can scroll UP or DOWN to move it Forward or Back).

09.AUX2 (AUXILIARY 2 CHANNEL 4 PROGRAMMING) PROGRAM

The Auxiliary 2 Programming function allows you to program the six different Auxiliary Programming functions that are controlled by Auxiliary 2 **Channel 4**. Use the table below to determine the different functions that are available:

FUNCTION	FUNCTION NAME	FUNCTION DESCRIPTION
STEP AUX	Step Auxiliary	Controls Step Values That the Auxiliary Servo Travels
POINT AUX	Point Auxiliary	Control Specific Points That the Auxiliary Servo Travels
4WS MIX	Four Wheel Steering Mixing	Control Four Wheel Steering Options
MOA MIX	Motor on Axle Dual Throttle Mixing	Controls Dual Throttle Options (Dig and Burn)
AUX MIX	Auxiliary Mixing	Control User-Defined Auxiliary 1 Channel 3 Mixing Options
CODE AUX	CODE Auxiliary	Controls SSL Equipped Accessories, Such as ESCs

IMPORTANT: Prior to programming an Auxiliary 2 Programming function you must first choose the desired Auxiliary Programming function in the SYSTEM AUX TYPE menu. Only one Auxiliary 2 Programming function can be Active at any given time.

STEP AUX (Step Auxliary)

The Step Auxiliary function allows you to program the Auxiliary 2 servo to move a defined amount when toggled ON and OFF using a Push-Button Switch. For example, if you assign Auxiliary 2 to a Push-Button Switch, then program the Step Auxiliary percentage value to 50%, the Auxiliary 2 servo will travel from the Neutral position to 50% of travel when the Push-Button Switch is pressed. Press the Push-Button switch a second time and the Auxiliary 2 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.

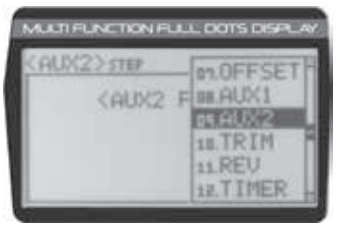
⚠ The Step Auxiliary Position value can be adjusted while you're driving using one of the four Trim Switches, the Rotary Dial or the Auxiliary Lever. The Step Auxiliary function can be toggled OFF and ON by assigning Auxiliary 2 to one of the two Push-Button Switches. This allows you to control when the Auxiliary 2 servo travels to the programmed Step Auxiliary position.

<u>Choosing the Step Auxiliary Function:</u>

1) From the Top Screen, press the ENTER key to open the Programming Menu list.
2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.
3) Press the ENTER key, then scroll UP or DOWN to choose the AUX2: STEP AUX function.

<u>Adjusting the Step Auxiliary Value:</u>

1) From the Top Screen, press the ENTER key to open the Programming Menu list.
2) Scroll UP or DOWN to highlight the AUX2 menu, then press the ENTER key. The AUX2 STEP menu will be displayed and <AUX2 POSI> 0 will be shown.



3) Press the ENTER key, then scroll UP or DOWN to change the Auxiliary 2 Position value. Increasing the value toward the High side (H) or Low side (L) will cause the Auxiliary 2 servo to travel to that specific position when you Activate the Auxiliary 2 Step function.

AUX2 STEP AUX2 POSI setting range is H100 to L100. The default setting is 0. This value is a percentage of Auxiliary 2 servo travel.

<u>Controlling the Step Auxiliary Function:</u>

1) In the default configuration, Auxiliary 2 is controlled by the Auxiliary Lever, however, we suggest re-assigning this function to the Rotary Dial or one of the Trim Switches to make it easier to adjust while driving. Turn the Rotary Dial clockwise to increase the Position High Side value and turn the Rotary Dial counter-clockwise to increase the Position Low Side value. The Step Auxiliary function can be toggled OFF and ON by assigning Auxiliary 2 to one of the two Push-Button Switches. This allows you to control when the Auxiliary 2 servo travels to the programmed Step Auxiliary position. For more information, see the Key Assignments section on pages 53 through 58.

09.AUX2 (AUXILIARY 2 CHANNEL 4 PROGRAMMING) PROGRAM

POINT AUX (Point Auxliary)

The Point Auxiliary function allows you to program the Auxiliary 2 servo to move up to 6 different Points along its travel, then cycle through those Points using one of the Trim Switches or the Rotary Dial. For example, if your model requires a separate 3-position or more switch to operate a feature, the Point Auxiliary function can be customized to control this.

⚠ Use one of the four Trim Switches or the Rotary Dial to cycle through the Point positions while you're driving. The Point Auxiliary function can be toggled OFF and ON while you're driving by assigning Auxiliary 2 to one of the two Push-Button Switches. To ensure correct operation, make sure to refer the Important notice in the Controlling the Point Auxiliary Function below.

Choosing the Point Auxiliary Function and the Number of Points:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

3) Press the ENTER key, then scroll UP or DOWN to choose the AUX2: POINT AUX function.

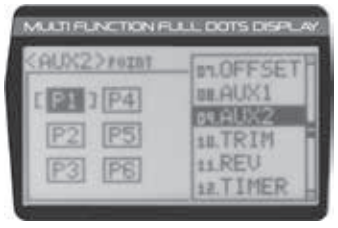
4) From within the AUX TYPE menu, scroll DOWN to highlight [MODE] 6 POINT. Press the ENTER key, then scroll UP or DOWN to choose the desired number of Points you would like to program.

AUX TYPE POINT setting range is 2point to 6point. The default setting is 6point.

Adjusting the Point Auxiliary Values:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

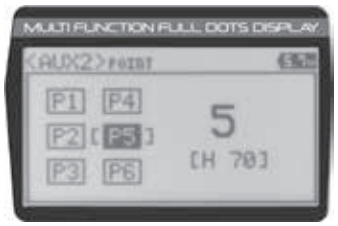
2) Scroll UP or DOWN to highlight the AUX2 menu, then press the ENTER key. The AUX2 POINT menu will be displayed and the last Point selected will be highlighted.



3) Scroll UP or DOWN to move the brackets to the Point you would like to change, then press the ENTER key to highlight that Point.

4) Press the ENTER key, then scroll UP or DOWN to change the Point value. Increasing the Point value toward the High side (H) or Low side (L) will cause the Auxiliary 2 servo to travel to that specific position when you cycle through the various Points.

5) Repeat steps 3 and 4 to change the desired remaining Point values.



AUX2 POINT setting range is H100 to L100. The default setting for Point 1 is L100, for Point 2 is L60, for Point 3 is L20, for Point 4 is H20, for Point 5 is H60, and for Point 6 is H100. These values are a percentage of Auxiliary 2 servo travel.

Controlling the Point Auxiliary Function:

1) In the default configuration, Auxiliary 2 is controlled by the Auxiliary Lever, however, we suggest re-assigning this function to the Rotary Dial or one of the Trim Switches to make it easier to adjust while driving. Turn the Rotary Dial clockwise to cycle Forward through the programmed Point Auxiliary positions and turn the Rotary Dial counter-clockwise to cycle Backward through the programmed Point Auxiliary positions. The Auxiliary 2 servo will move to the specified Point positions as you cycle through the different Points.

   In addition, the Point Auxiliary function can be toggled OFF and ON by assigning Auxiliary 2 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

IMPORTANT: To operate correctly, the TRIM or DIAL Step value must be set to 1. If set to a value other than 1, Point positions will be skipped as you cycle through them. For more information, see the Key Assignments section on pages 53 through 58.

09.AUX2 (AUXILIARY 2 CHANNEL 4 PROGRAMMING) PROGRAM

4WS MIX (Four Wheel Steering Mixing)

The Four Wheel Steering Mixing function allows you to use Auxiliary 2 Channel 4 as a second steering channel, allowing you to use two separate steering servos for Front and Rear steering. The Four Wheel Steering Mixing function allows you to control either the Front or Rear steering independently, or Mix the Front and Rear steering to have Parallel Four Wheel Steering or Tandem Four Wheel Steering. Use one of the four Trim Switches or the Rotary Dial to cycle through the different Four Wheel Steering options while you're driving. The Four Wheel Steering Mixing function can be toggled OFF and ON while you're driving by assigning Auxiliary 1 to one of the two Push-Button Switches.

Choosing the Four Wheel Steering Function:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

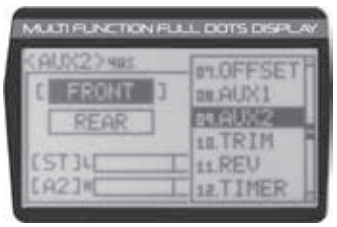
2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

3) Press the ENTER key, then scroll UP or DOWN to choose the AUX2:4WS MIX function.

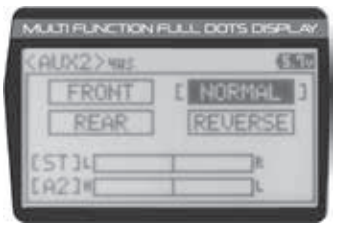
Choosing Four Wheel Steering Mixing Options:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the AUX1 menu, then press the ENTER key. The AUX2 4WS menu will be displayed and the last Steering option selected will be highlighted.



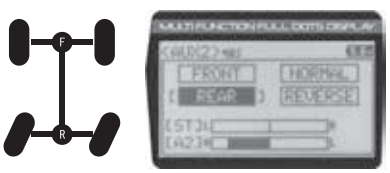
3) Scroll UP or DOWN to move the brackets to the Four Wheel Steering option you would like to use, then press the ENTER key to highlight that option. The highlighted option is now Active.



The following Four Wheel Steering Mixing options are available:

FRONT Wheel Steering - When highlighted, only the Front Steering will operate.

REAR Wheel Steering - When highlighted, only the Rear Steering will operate.



NORMAL (Parallel/Crab) Four Wheel Steering - When highlighted, both the Front and Rear Steering will operate in Parallel.

REVERSE (Tandem) Four Wheel Steering - When highlighted, both the Front and Rear Steering will operate in Tandem.

⚠ If the steering servos do not operate as described above, use the Servo Reversing function to change the direction that each servo operates. For more information, see the Servo Reversing section on page 42.

09.AUX2 (AUXILIARY 2 CHANNEL 4 PROGRAMMING) PROGRAM

Controlling the Four Wheel Steering Mixing Function:

1) In the default configuration, Auxiliary 2 is controlled by the Auxiliary Lever, however, we suggest re-assigning this function to the Rotary Dial or one of the Trim Switches to make it easier to adjust while driving. Turn the Rotary Dial clockwise to cycle Forward through the Four Wheel Steering options (FRONT > REAR > NORMAL > REVERSE) and turn the Rotary Dial counter-clockwise to cycle Backward through the Four Wheel Steering options.

   In addition, the Four Wheel Steering Mixing function can be toggled OFF and ON by assigning Auxiliary 2 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

IMPORTANT: To operate correctly, the DIAL or TRIM Step value must be set to 1. If set to a value other than 1, Four Wheel Steering Mixing options will be skipped as you cycle through them. For more information, see the Key Assignments section on pages 53 through 58.

⚠ When using Four Wheel Steering, it's important to adjust the Steering Channel 1 and Auxiliary 2 Channel 4 Sub-Trim values to center both servos. This will ensure that your model tracks straight. In addition, remember that you are able to independently adjust the Auxiliary 2 Channel 4 Dual Rate, Exponential, Sub-Trim, Servo Speed settings and more to allow for the optimum Four Wheel Steering Mixing setup.

MOA MIX (Motor On Axle Mixing)

The Motor on Axle Mixing function allows you to use Auxiliary 2 Channel 4 as a second Throttle Channel, allowing you to use two separate throttle servos or ESCs. The Motor on Axle Mixing function is typically used in Rock Crawling and allows you to control either the Front and Rear motors together or independently, giving you Normal (Balanced), Dig and Burn functions. And when coupled with the ability to variably change the power distribution between the Front and Rear motors, allows the utmost in functionality.

⚠ When using the Motor on Axle function, it's important to adjust the Throttle Channel 2 and Auxiliary 2 Channel 4 Sub-Trim values so both motors' idle (or OFF) settings are equal. This will ensure correct function. In addition, remember that you are able to independently adjust the Auxiliary 2 Channel 4 Dual Rate, Exponential, Sub-Trim, Servo Speed settings and more to allow for the optimum Motor on Axle Mixing setup.

⚠ Use the Rotary Dial, one of the four Trim Switches or the Auxiliary Lever to Activate the Dig and Burn functions while you're driving. The Motor on Axle Mixing function can be toggled OFF and ON while you're driving by assigning Auxiliary 2 to one of the two Push-Button Switches.

Choosing the Motor on Axle Function:

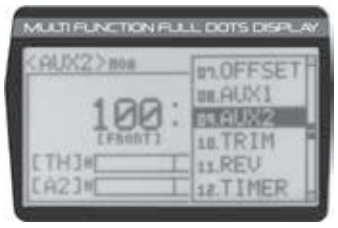
1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

3) Press the ENTER key, then scroll UP or DOWN to choose the AUX2:MOA MIX function.

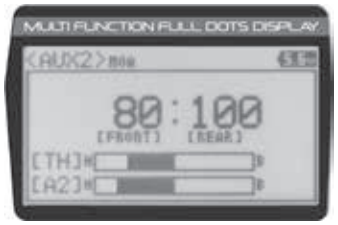
Changing Motor on Axle Power Distribution Options:

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



1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the AUX2 menu, then press the ENTER key. The AUX2 MOA menu will be displayed.



3) Press the ENTER key, then scroll UP or DOWN to change the Power Distribution between the Front and Rear motors. Scrolling UP will reduce the available power to the Rear motor (Dig) and scrolling DOWN will reduce the power to the Front motor (Burn).

09.AUX2 (AUXILIARY 2 CHANNEL 4 PROGRAMMING) PROGRAM

The following Motor on Axle Mixing options can be programmed:

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

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

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

Controlling the Motor on Axle Mixing Function:

1) In the default configuration, Auxiliary 2 is controlled by the Auxiliary Lever. This allows you to quickly switch between the Dig and Burn functions and still have the ability to variably change the Power Distribution between the Front and Rear motors. To set this up, change the Auxiliary Lever Function to AUX2, then change the TWEAK (H) value to +100 and the TWEAK (L) value to -100. For more information, see the Key Assignments section on pages 53 through 58. In addition, Auxiliary 2 can be assigned to the Rotary Dial or one of the four Trim Switches. The Motor on Axle Mixing function can be toggled OFF and ON by assigning Auxiliary 2 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

IMPORTANT: In the default configuration, the Rotary Dial Step value is set to 5. This allows you to adjust the Power Distribution in 5 percent increments. If you prefer to control the Dig and Burn functions as if they were assigned to an ON/OFF switch, change the DIAL Step value to 100. For more information, see the Key Assignments section on pages 53 through 58.

AUX MIX (Auxiliary Mixing)

The Auxiliary Mixing function allows you to Mix either Steering Channel 1 or Throttle Channel 2 to Auxiliary 2 Channel 4, while maintaining separate Sub-Trim, End Point Adjustments, Servo Reversing and other channel-specific 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 Steering Mixing to operate both steering servos together and still be able to make adjustments to each servo separately.

In addition, if your model features a third-channel brake, you could use Throttle Mixing to control it along with the channel 2 brake.

⚠ The Auxiliary Mixing Rate percentage value can be adjusted while you're driving using one of the four Trim Switches, the Rotary Dial or the Auxiliary Lever. The Auxiliary Mixing function can be toggled OFF and ON while you're driving by assigning Auxiliary 2 to one of the two Push-Button Switches.

Choosing the Auxiliary Mixing Function and the Mixing Type:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

3) Press the ENTER key, then scroll UP or DOWN to choose the AUX2:AUX MIX function.

4) From within the AUX TYPE menu, scroll DOWN to highlight [MODE] ST-mix. Press the ENTER key, then scroll UP or DOWN to choose the desired Mixing type you would like to program. Choose from either ST-mix (Steering Mixing) or TH-mix (Throttle Mixing).

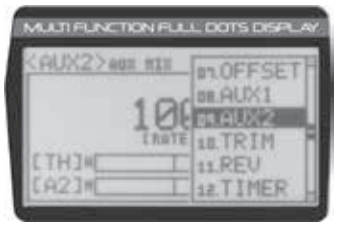
AUX TYPE MIX setting range is ST-mix and TH-mix. The default setting is ST-mix.

09.AUX2 (AUXILIARY 2 CHANNEL 4 PROGRAMMING) PROGRAM

Adjusting the Rate Percentage Value:

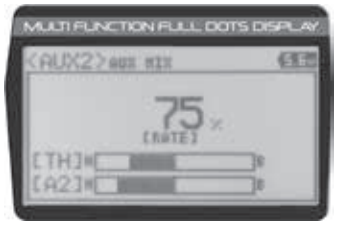
The Rate percentage value defines how far the Auxiliary 2 servo travels relative to either the Steering servo or the Throttle servo.

The Master channel (either Steering Channel 1 or Throttle Channel 2) always controls the Slave channel (Auxiliary 2 Channel 4).



1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the AUX2 menu, then press the ENTER key. The AUX2 AUX MIX menu will be displayed.



3) Press the ENTER key, then scroll UP or DOWN to change the Rate percentage value. Decreasing the Rate percentage value will reduce the amount the Auxiliary 2 servo travels relative to the Steering servo or Throttle servo and increasing the Rate percentage value will increase the amount the Auxiliary 2 servo travels relative to the Steering servo or Throttle servo.

AUX2 AUX MIX 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 2 servo will travel the same amount as the Steering servo. Additionally, if the Rate percentage value is set to 50%, the Auxiliary 2 servo will travel half the amount as the Steering servo.

In the default configuration, the Auxiliary 2 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 2 Channel 4. For more information, see the Servo Reversing section on page 42.

Controlling the Auxiliary Mixing Function:

1) In the default configuration, Auxiliary 2 is controlled by the Auxiliary Lever, however, we suggest re-assigning this function to the Rotary Dial or one of the Trim Switches to make it easier to adjust while driving. Turn the Rotary Dial clockwise to increase the Rate percentage value and turn the Rotary Dial counter-clockwise to decrease the Rate percentage value.

   In addition, the Auxiliary Mixing function can be toggled OFF and ON by assigning Auxiliary 2 to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

Remember that you are able to independently adjust the Auxiliary 2 Channel 4 Dual Rate, Exponential, Sub-Trim, Servo Speed settings and more to allow for the optimum Auxiliary Mixing setup.

CODE AUX (CODE Auxiliary)

The CODE Auxiliary function is used with Airtronics or Sanwa brand accessories, such as the Airtronics Super Vortex ZERO ESC, that support Sanwa Synchronized Link (SSL). When used with an SSL equipped accessory item, the CODE Auxiliary function allows you to remotely change accessory Programming Mode values.

For example, when used with the Airtronics Super Vortex ZERO ESC, many of the ESC Programming Mode values, such as Drag Brake, Timing Advance, and more can be changed remotely from the transmitter while you're driving. In addition, you are able to rename the different CODE Programming Names (CODE1, CODE2, etc) to make them easier to keep track of.

Individual CODE Auxiliary Programming values (CODE1, CODE2, etc) can be changed while you're driving by assigning these functions to a Trim Switch, the Rotary Dial or the Auxiliary Lever. For more information, see the Key Assignments section on pages 53 through 58.

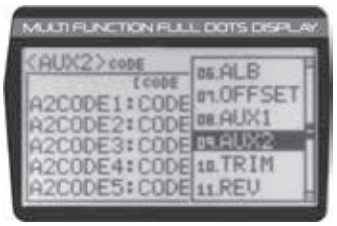
Choosing the CODE Auxiliary Function:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the SYSTEM menu, then press the ENTER key. Scroll DOWN to highlight the AUX TYPE menu, then press the ENTER key.

3) Press the ENTER key, then scroll UP or DOWN to choose the AUX2:CODE AUX function.

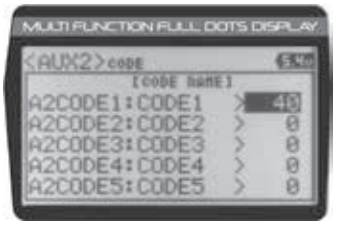
09.AUX2 (AUXILIARY 2 CHANNEL 4 PROGRAMMING) PROGRAM



Changing CODE Auxiliary Values:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the AUX2 menu, then press the ENTER key. The AUX2 CODE menu will be displayed.



3) Press the ENTER key to open the AUX2 CODE menu. A2CODE1:CODE1 > 0 will be highlighted.

4) Scroll UP or DOWN to highlight the desired CODE Auxiliary value you would like to change.

5) Press the ENTER key, then scroll UP or DOWN to choose the desired CODE Auxiliary value.

A2CODE1, A2CODE2, A2CODE3, A2CODE4 and A2CODE5 setting range is -100 to 100. The default setting for all CODE Auxiliary functions is 0.

6) Press the ENTER key again, then repeat steps 3 and 4 to change any other desired CODE Auxiliary values.

⚠ Refer to the Airtronics or Sanwa brand accessory's User's Guide for information about what CODE Auxiliary value (or values) control what accessory functions and what actual values to use.

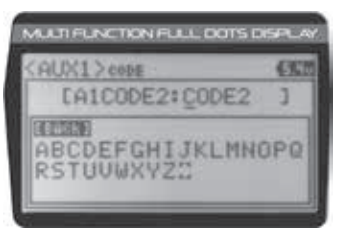
Controlling the CODE Auxiliary Function:

1) In the default configuration, Auxiliary 2 is controlled by the Auxiliary Lever. To adjust the CODE Auxiliary function while driving you must assign the desired CODE Auxiliary value (A2CODE1, A2 CODE2, etc) to either the Rotary Dial or one of the Trim Switches.

   In addition, the CODE Auxiliary function can be toggled OFF and ON by assigning Auxiliary 2 or the desired CODE Auxiliary value (A2CODE1, A2 CODE2, etc) to one of the two Push-Button Switches. For more information, see the Key Assignments section on pages 53 through 58.

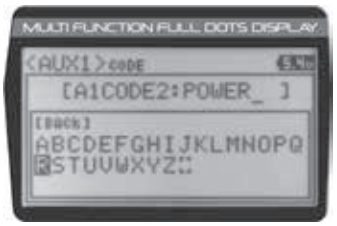
Changing CODE Programming Names:

You are able to rename the different CODE Programming Names (CODE1, CODE2, etc) to make them easier to keep track of. The CODE Programming Name can consist of up to 5 letters, numbers, or symbols. Choose from capital letters, lower case letters, numbers, and various symbols.



1) From within the AUX2 CODE menu, scroll UP or DOWN to highlight the desired CODE Auxiliary Name you want to change (CODE1, CODE2, etc.)

2) Press the ENTER key. The AUX2 CODE menu will be displayed, [BACK] will be highlighted and the underscore will be flashing under the first editable character in the CODE Programming Name.



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

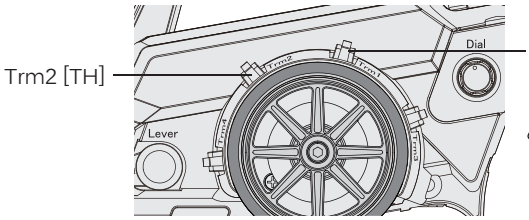
4) Press the ENTER key, then scroll UP or DOWN to highlight a character in the Character List. Press the ENTER key a second time to select the highlighted character. That character will be displayed and the underscore will move to the next space in the CODE Programming Name.

5) Repeat steps 3 and 4 to enter the rest of the characters. Up to five characters can be entered. Press the BACK/CANCEL key to re-gain control of the underscore (the underscore will flash indicating you can scroll UP or DOWN to move it Forward or Backward). To select lower case letters, numbers or symbols, continue to scroll UP or DOWN through the various Character Lists. To add a space in your Model Name, use the ⬚ icon. The ⬚ icon can also be used to delete characters.

⚠ If you can't move the underscore, press the BACK/CANCEL key to re-gain control of the underscore (the underscore will flash indicating you can scroll UP or DOWN to move it Forward or Back).

10.TRIM (TRIM AND SERVO SUB-TRIM) PROGRAM

The Trim function allows you to view the currently programmed Trim value of each of the four channels and, if desired, allows you to change the Trim values using the Push-Button Rotary Dial from within the Trim menu. In addition to the Trim function, the Servo Sub-Trim function allows you to fine-tune the Neutral position of each servo.

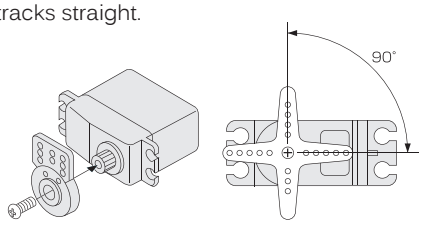


Before changing the Sub-Trim values you should set the Steering and Throttle Trim to 0 using the Trm1 and Trm2 Trim Switches.

Adjusting the Servo Sub-Trim Values:

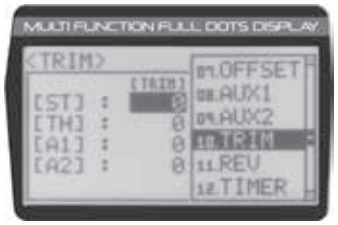
It's not unusual that when you center a servo and install the servo horn, the servo horn is not exactly centered. The Sub-Trim function allows you to center the servo horn exactly, without altering the servo End Point travel. This is especially useful when using a Mix, such as Four Wheel Steering Mixing. 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.

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 180º and reinstalling it.

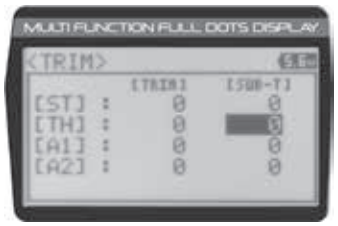


2) From the Top Screen, press the ENTER key to open the Programming Menu list.

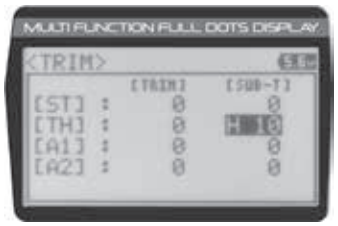
3) Scroll UP or DOWN to highlight the TRIM menu, then press the ENTER key. The TRIM menu will be displayed and [ST]:TRIM 0 will be highlighted.



4) Scroll UP or DOWN to highlight the desired channel you would like to change the Sub-Trim value for. Choose from either [ST]:[SUB-T] 0 (Steering), [TH]:[SUB-T] 0 (Throttle), [A1]:[SUB-T] 0 (Auxiliary 1) or [A2]:[SUB-T] 0 (Auxiliary 2).



5) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Sub-Trim value to center the servo horn.



TRIM SUB-T setting range for the Steering channel is R150 to L150, for the Throttle channel is H150 to B150 and for Auxiliary 1 Channel 3 and Auxiliary 2 Channel 4 is H150 to L150. The default setting for all channels is 0.

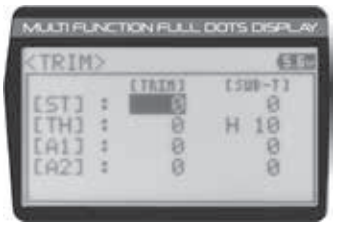
After adjusting the Sub-Trim value, use the End Point Adjustment function to set the desired amount of maximum servo travel in both directions. For more information, see the End Point Adjustment section on pages 19 through 21.

Adjusting the Trim Values:

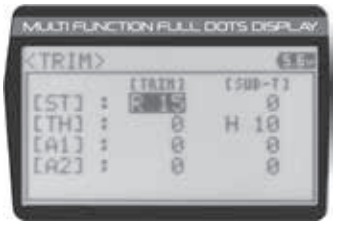
The 90478 transmitter features Digital Trim Memory. Any amount of Trim that you set using the Trim Switches is automatically stored in memory for that specific channel and for that specific model. The Trim values for each model will automatically be loaded when the transmitter is turned ON.

Before adjusting the Trim values, you should first adjust the servo Sub-Trim values to center the servo horns. For more information, see the Adjusting the Servo Sub-Trim Values section above.

10.TRIM (TRIM AND SERVO SUB-TRIM) PROGRAM



1) From within the TRIM menu, scroll UP or DOWN to highlight the desired channel you would like to change the Trim value for. Choose from either [ST]:[TRIM] 0 (Steering), [TH]:[TRIM] 0 (Throttle), [A1]:[TRIM] 0 (Auxiliary 1) or [A2]:[TRIM] 0 (Auxiliary 2).



2) Press the ENTER key, then scroll UP or DOWN to increase or decrease the Trim value in the desired direction.

TRIM TRIM setting range for the Steering channel is R100 to L100, for the Throttle channel is H100 to B100 and for Auxiliary 1 Channel 3 and Auxiliary 2 Channel 4 is H100 to L100. The default setting for all channels is 0.

Controlling the Trim Function:

1) In the default configuration, Trim Switch Trm1 controls the Steering Right and Left Trim and Trim Switch Trm2 controls the Throttle High and Brake Trim. When you move the Trim Switches, the Trim percentage value changes in 5% increments. When you use the Trim function to change the Trim value, the Trim value changes in 1% increments.

   Auxiliary 1 Trim and Auxiliary 2 Trim can be assigned to the remaining two Trim Switches, the Rotary Dial or the Auxiliary Lever. For more information, see the Key Assignments section on pages 53 through 58.

⚠ Each time you move a Trim Switch a single audible tone is heard. When the Trim value reaches 0 (Centered), an audible double-tone sounds. This indicates to you that the Trim is centered without the need to look down at the Trim Indicator on the Top Screen while you're driving.

PRO TIP: The Trim function features two different Trim Type options that you can choose from. Choose from either Center Trim or Parallel Trim. For more information, see the Trim Type section on page 59.

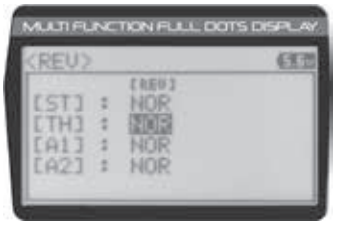
11.REV (SERVO REVERSING) PROGRAM

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.

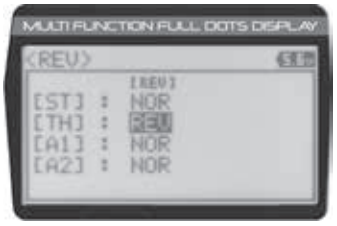
Changing the Servo Reversing Values:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the REV menu, then press the ENTER key. The REV menu will be displayed and [ST]:NOR will be highlighted.



3) Scroll UP or DOWN to highlight the desired channel you would like to change the Servo Reversing value for. Choose from either [ST]:NOR (Steering), [TH]:NOR (Throttle), [A1]:NOR (Auxiliary 1) or [A2]:NOR (Auxiliary 2).



4) Press the ENTER key, then scroll UP or DOWN to change the direction of servo travel.

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

⚠ 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 Adjusting the Servo Sub-Trim Values section on page 41.

12.TIMER (TRACK TIMERS)

The Track Timers function features three different Timers. Timers are provided for measuring Lap Times, Interval Times, and Countdown Times. Timers are displayed in the following format: 00:00.00 (Minutes:Seconds.1/100th of a Second). In the default configuration, Push-Button Switch Sw2 controls the selected timer. The selected timer is also displayed on the Top Screen in the following format: 00:00 (Minutes:Seconds).

Choosing the Timer Type:

1) From the Top Screen, press the ENTER key to open the Programming Menu list.

2) Scroll UP or DOWN to highlight the TIMER menu, then press the ENTER key. The TIMER menu will be displayed and [TYPE] LAP will be highlighted.

3) Press the ENTER key, then scroll UP and DOWN to select the desired Timer Type. Choose from LAP, INT (Interval) and DOWN (Countdown).

⚠ To program the Lap Timer function, see the Lap Timer section below. To program the Interval Timer function, see the Interval Timer section on pages 44 and 45. To program the Countdown Timer function, see the Countdown Timer section on page 45.

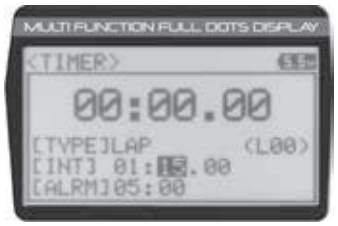
LAP (Lap Timer)

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 Timer menu, and when a lap is completed, the lap time is displayed momentarily on the Top 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) From within the TIMER menu, scroll DOWN to highlight [INT]:--.

2) Press the ENTER key, then scroll UP or DOWN to set the desired Interval Timer Minutes value.

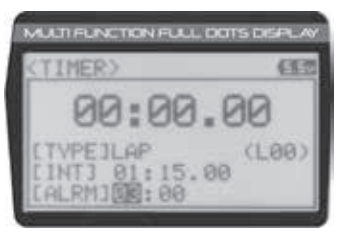


3) To set the Interval Timer Seconds value, press the ENTER key, then scroll DOWN to highlight --. Press the ENTER key a second time, then scroll UP and DOWN to set the desired Interval Timer Seconds value.

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

TIMER 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 30 Seconds, an audible double-tone will sound every 30 seconds.

Setting the Alarm (Goal Time):



1) From within the TIMER menu, scroll DOWN to highlight [ALRM] 05.

2) Press the ENTER key, then scroll UP or DOWN to set the desired Alarm Minutes value.

3) 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 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.

12.TIMER (TRACK TIMERS) PROGRAM

Starting the Lap Timer:

1) In the default configuration, Push-Button Switch Sw2 controls the Lap Timer. Press and HOLD the Push-Button Switch for 3 seconds. An audible double-tone will sound and LAP will flash on the Top Screen indicating the Lap Timer is in Stand-by.

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

   Pressing the Push-Button Switch a second time will store the first Lap Time, then begin counting a second Lap Time. Each time you press the Push-Button Switch, an audible tone sounds, the previous Lap Time is stored, a new Lap Time begins and the current Lap Time is displayed momentarily on the Top Screen.

⚠ If desired, the Timer Function can be assigned to Push-Button Switch Sw1. For more information, see the Key Assignments section on pages 53 through 58.

Stopping the Lap Timer:

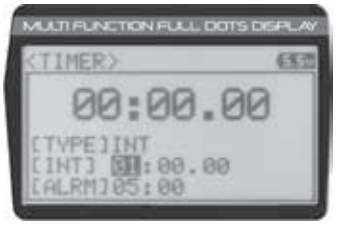
1) To stop the Lap Timer, press and HOLD Push-Button Switch Sw2 for 3 seconds. An audible double-tone will sound indicating the Lap Timer is stopped and the Cumulative Time will be displayed on the Top Screen and in the TIMER menu.

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

INT (Interval Timer)

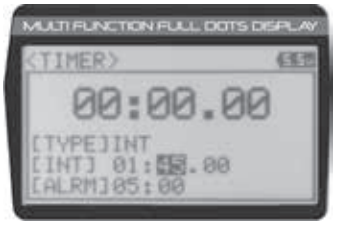
The Interval Timer (Target Time) function notifies you when a set interval elapses while you are driving, giving you an idea of how close you are to your Target Time. An Alarm (Goal Time) is featured that will sound when you reach your Goal Time. When the Interval Time is reached, an audible Double-Tone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

Setting the Interval Timer (Target Time):



1) From within the TIMER menu, scroll DOWN to highlight [INT]:--.

2) Press the ENTER key, then scroll UP or DOWN to set the desired Interval Timer Minutes value.

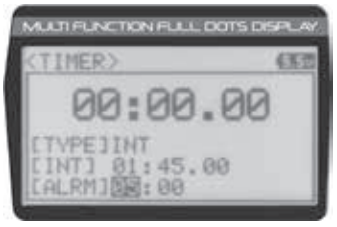


3) To set the Interval Timer Seconds value, press the ENTER key, then scroll DOWN to highlight --. Press the ENTER key a second time, then scroll UP and DOWN to set the desired Interval Timer Seconds value.

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

TIMER 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 value. For example, if you set the Interval Timer for 1 Minute, an audible double-tone will sound every Minute.

Setting the Alarm (Goal Time):



1) From within the TIMER menu, scroll DOWN to highlight [ALRM] 05.

2) Press the ENTER key, then scroll UP or DOWN to set the desired Alarm Minutes value.

3) 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 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.