TACTIC™

PURE RELIABLE 2.4

TTX850

TTX850

2.4GHz 8-CHANNEL COMPUTER RADIO INSTRUCTION MANUAL

Tactic's TTX850 computer transmitter uses the advanced 2.4GHz spread spectrum SLT "Secure Link Technology" protocol for solid, interference-free control of R/C models. A large backlit LCD, wired and wireless trainer systems, 30 model memories, plus advanced programming options are just a few of the benefits which can be used for models of all sizes. Tactic 2.4GHz transmitters are compatible only with Tactic brand receivers and those utilizing the SLT protocol.

SLT™

SECURE LINK TECHNOLOGY

STOP **For safe operation and best results, it's strongly recommended to read this manual in its entirety before use!** Also read and understand the instructions included with the model. Damage resulting from misuse or modification will void your warranty.

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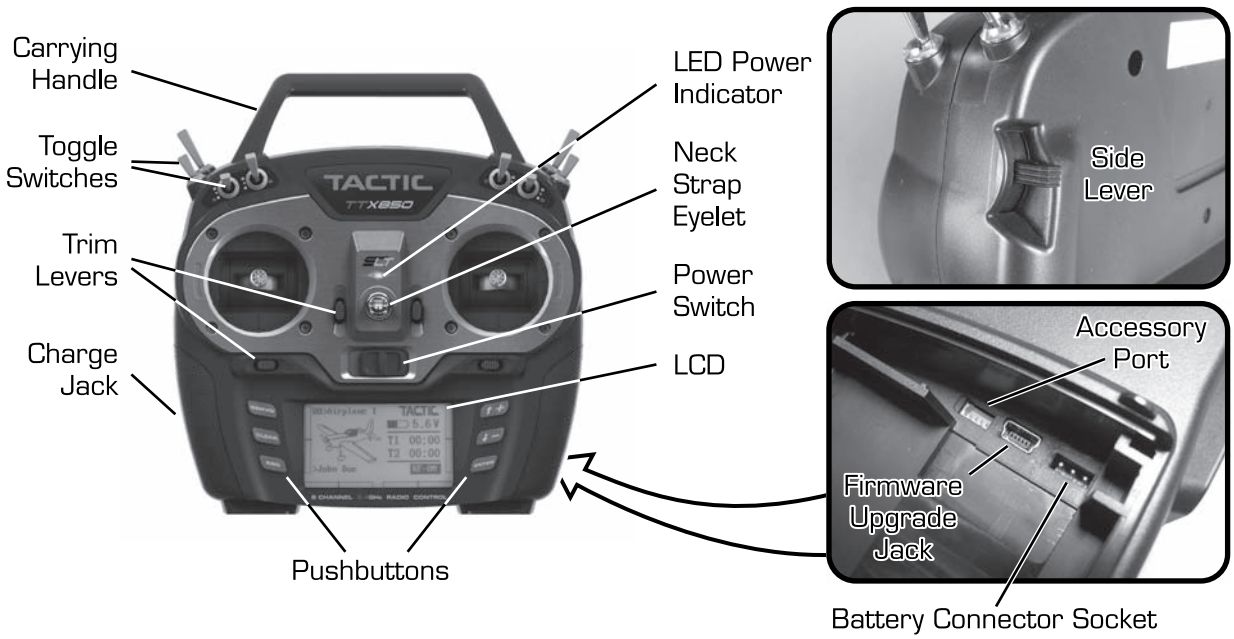


SLT TECHNOLOGY, Tx-R, AND COMPATIBLE RECEIVERS

SECURE LINK TECHNOLOGY

SLT technology ensures that transmitters emit a strong, clear, frequency-hopping 2.4GHz signal, and that your compatible receiver accepts no signal except *yours*. Linking Tactic brand receivers is as simple as pushing a button, which creates a locked-in, interference free *link*. The TTX850 is also compatible with non-Tactic brand receivers which use the *SLT protocol, for the ultimate in convenience and flexibility.

* Make sure optional receivers have the *genuine SLT protocol* before use with the TTX850.

The TTX850 is also compatible with all transmitter-ready aircraft bearing the "Tx-R" logo. Such aircraft include receivers having the SLT protocol.

Tx-R TRANSMITTER-READY

RECEIVER INSTALLATION

Always mount the optional receiver, servos, switch harness, battery, electronic speed control, etc. as explained in the manual included with such equipment and/or the model. Keep the Rx and its antenna(s) as far away from the engine/motor, servos, and ESC and other electronic items as possible. It may also be a good idea to mount the Rx inside certain models using Velcro,® and wrap it in foam rubber to prevent damage from strong vibrations or crash damage (except in extremely warm environments). It's best to have as few items surrounding the receiver's antenna tips as possible inside the model, to allow for the most obstruction-free signal path to the transmitter. Exposing the receiver's antenna tip outside the model is recommended if possible. For receivers with two antennas, position the antennas at 90 degree angles with the tips resting at least 5 inches apart. If possible, allow one antenna to point vertically above the receiver itself.

TTX850 POWER SYSTEM

INPUT POWER

One assembled 4.8V 1000mAh nickel-metal hydride (NiMH) battery pack is included. Optional 1.2V NiCd or 1.5V alkaline batteries can be used with an optional 4-cell flat battery holder with universal connector. Do not mix cell types, or old and new cells, etc.

Battery voltage is shown on the LCD's home screen for easy monitoring. A "LOW BATTERY" warning will show when battery power drops to the voltage value shown in the BATTERY ALARM screen as described on page 8.

WARNING! Never operate an R/C model with weak Tx batteries! Reduced operational range and/or possible loss of control of the aircraft could result. Replace weak alkaline batteries, or re-charge NiCd or NiMH batteries, before attempting a flight!

A "Tx Battery" timer in the TIMER menu described on page 18 can track the total amount of time the transmitter has been operational.

See the ACCESSORIES section on page 28 for optional batteries and chargers available at local hobby retailers.

CHARGE JACK AND CHARGING RECHARGEABLE BATTERIES

TTX850 Charge Jack

The charge jack should *only* be used for rechargeable batteries. Do not try to recharge alkaline batteries. Charge adapters for Futaba® brand transmitters are compatible, with the center pin being positive polarity. The Tx power switch must be in the OFF position to recharge batteries. For depleted batteries, connect the included TC100 charger to the Tx charge jack and allow to charge for 10 to 12 hours. Charge is being delivered to the battery when the charger's LED is red. The battery is fully charged when this LED is green, and the charger should be disconnected. Do not allow charger to remain connected indefinitely. Do not charge batteries at greater than 1 amp. Cycling of the Tx batteries can be accomplished through this jack. Misuse, improper charging, or over-charging of rechargeable cells can result in damage to the cells that could include cell rupture, explosion, or fire!!

WARNING! Do not accidentally short circuit the terminals inside the charge jack, as this can cause permanent damage to the radio's charge circuitry and battery and void the warranty.

POWER LED

The blue LED illuminates when the power switch is turned on and ample voltage is supplied by the battery. This LED will flash if battery voltage drops to the voltage set in the BATTERY ALARM setting described on page 8.

FLIGHT CONTROLS

All channels are fully proportional, depending if controlled by a switch or mixed to another proportional channel. Channels 5-8 can be controlled by a non-proportional switch or proportional side lever. However, if a proportional channel (1-4) is mixed *to* channel 5-8 these channels can provide proportional control.

Aircraft control is accomplished through various devices by the *pilot* (sticks, switches, etc.), and other control inputs can be manipulated *electronically* by the Tx to alter the control signals before they are delivered to the

receiver (mixes, exponential, etc.). Some electronic functions can be turned on/off by the pilot during flight such as a timer. Other functions can only be altered while the model is on the ground, such as changing travel limits or reversing for a particular channel.

For multi-rotors, sideways movement of the aileron control (right stick for radios set on mode 2) controls right / left movement. Up/down movement of the elevator control (right stick for mode 2) controls forward/backwards movement. Pushing the stick towards the Tx handle moves the nose of the model forward; pulling the stick down away from the handle moves the nose of the model backwards. Up/down movement of the throttle control (left stick for mode 2) increases motor speed (RPM) and controls the up / down movement. Pushing the stick up (towards the Tx handle) moves the model up vertically. Pulling the stick down (away from the handle) moves the model downward. Sideways movement of the rudder control (left stick for mode 2) controls clockwise/counter-clockwise rotation of the model.

GIMBAL STICKS

Ball-bearing construction allows both sticks to provide the ultimate in smooth, precise control. Stick *length* can be adjusted for optimum feel and control. Each stick consists of a base and a tip. To adjust, hold the base tightly, then loosen the tip by turning it counter-clockwise. Adjust the stick tip to the desired length. Tighten the stick by holding the tip in place and turning the base counter-clockwise until it's tight against the tip.

STICK TENSION AND THROTTLE RATCHET

Each control stick can be adjusted for softer or stiffer movement tension. A ratchet is also included for the throttle stick which can be adjusted for feel depending on personal preference. Adjustment of either feature requires removal of the rear of the Tx case as explained in the CASE SEPARATION AND ASSEMBLY section below.

CASE SEPARATION AND ASSEMBLY

WARNING! Failure to follow these instructions for separating and re-assembling the Tx case can result in permanent damage to the transmitter and void the warranty. Contact Hobby Services if you do not feel comfortable that you can safely and accurately perform these steps.

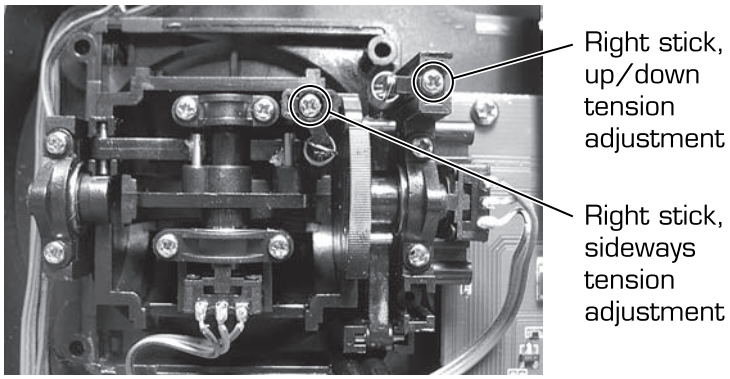
ALWAYS disconnect and remove the batteries from the battery compartment FIRST. Failure to do so can result in permanent damage to the Tx.

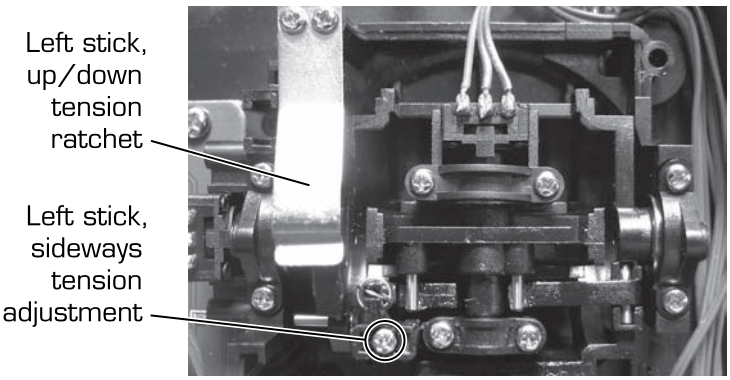
Remove the six screws from the back of the Tx case. Carefully pull the case rear away from the case front and note exactly how all wires are routed inside the case.

After adjustments are made as described in other sections of this manual, close the case by first carefully tucking all cables back inside as when the case was opened. Align the case rear back onto the case front, making sure that no wires are pinched between the case parts. Press the case halves together. Insert the screws back into their positions and carefully tighten them *until snug* - making sure not to cross the threads or over-tighten the screws. Re-connect the battery holder's connector to the socket inside the Tx. Insert the battery into the compartment, and carefully tuck the wires inside the cavity so they do not become pinched when the door is closed. Close the battery door.

STICK TENSION: Silver screws on the back of each gimbal are used to adjust the stick tension. Turn the screw clockwise to make stick tension more firm. Turn the screw counter-clockwise to make stick tension more light.

THROTTLE RATCHET: A silver ratchet bar is mounted across the throttle gimbal. For smooth throttle feel for helicopter use, you may wish to remove this bar. Remove both screws which hold the ratchet bar then remove the bar.





DIGITAL STICK TRIMS

The trim controls for the four main channels are digital. Holding the trim lever will cause the servo output to move repeatedly. Trim positions are visible on the LCD's home screen, and stored into that respective memory. Changing the model memory will also cause trim settings to change accordingly.

For aircraft with glow engines, the precise position of the trim lever is helpful when determining the engine's preferred idle point. When the throttle stick is above 50% full throttle it will not be possible to trim the throttle servo – even though the indicator on the LCD will move.

The amount of servo movement for each increment of a digital trim can be adjusted as desired, as explained in the TRIM STEP SETTING section on page 12.

TOGGLE SWITCHES

Each switch can be assigned to control one of a variety of functions as desired and described throughout this manual. The identification of each switch by letter is marked on the Tx. The factory default switch assignments are as follows:

		Default Functions		
Switch	**Type**	**Airplane**	**Helicopter**	**Multi-Rotor**
A	3-position	Elevator D/R	Timer Control	Timer Control
B	3-position	Flaps	Gyro Gain	Gyro Gain
C	3-position	(no setting)	(no setting)	(no setting)
D	3-position	Aileron D/R	Ail/Ele/Rud D/R	Ail/Ele/Rud D/R
E	3-position	Rudder D/R	Normal/Idle-up	(no setting)
F	2-position mom.	Trainer	Throttle Cut	(no setting)
G	3-position	(no setting)	(no setting)	(no setting)
H	2-position	(no setting)	Throttle Hold	Throttle Hold
I	Sweep Lever	(no setting)	(no setting)	(no setting)
J	Sweep Lever	(no setting)	(no setting)	(no setting)

LCD, PROGRAMMING CONTROLS, MENU NAVIGATION

LCD contrast and backlight intensity are adjustable for optimum viewing. Six pushbuttons navigate the menus and settings. Single button pushes will result in a single incremental adjustment on-screen. Holding a button for a short time will result in slow scrolling of adjustments; continued holding will result in fast adjustments.

LEFT SIDE BUTTONS

Press any time to see the servo position screen. Indicators for certain channels will change depending on model type, wing type, etc. Moving any Tx control will graphically be shown on this screen. When setting / adjusting mixes to determine if the mix is as desired, set the mix and then view this screen. Move all controls to determine if the mix moves each respective channel as needed.

Quickly resets certain values and settings back to factory defaults. Press to backspace in the model and user name screens.

Jumps back to the previous screen, and removes certain pop-up messages from the screen.

RIGHT SIDE BUTTONS

Adjustment of values on-screen.

Moves the cursor up, and increases highlighted values/settings.

Moves the cursor down, and decreases highlighted values/settings.

To select or de-select a setting, or enter a screen. Press briefly to access the SETTINGS menu. Press and hold to access the MODEL SETUP menu.

MENUS

The TTX850 has three types of menus.

The **SYSTEM SETUP** menu allows for setting basic operational functions for the radio itself.

Selecting and managing the model memories, configuring the radio for the structure of the airplane, helicopter, or multi-rotor is done in the **MODEL SETUP** menu. Most functions apply for all model types. Select functions are available for certain model types only.

Setting various radio functions to control the model is done in the **SETTINGS** menu. Some settings apply for all model types, while certain functions are available for certain model types only.

SYSTEM SETUP

Fundamental settings for the transmitter itself are located in this menu. With the power switch in the OFF position, press and hold **ENTER**, turn the power switch ON and wait for the SYSTEM SETUP screen to show. Move the cursor and press **ENTER** to select any setting. Press + and – to change settings. Press **ENTER** to confirm the setting.

USER NAME

Enter your name to identify the radio. The cursor will be under the first character. Press **ENTER** to highlight this character. Press ↑+ and ↓– to find the desired character, then **ENTER** to confirm. The cursor will automatically move to the next cursor. Repeat as necessary for up to 11 characters. Pressing **CLEAR** will move the cursor back one space and erase the character in that space. Press **ESC** when finished.

STICK MODE

The TTX850 is factory set to Mode 2 configuration, but can be changed to Mode 1, 3, or 4 as explained below. To change modes in the programming, move the cursor to the STICK MODE line, highlight and press **ENTER**, then press ↑+ or ↓– to find the desired mode. Press **ENTER** to confirm.

Mode	Left Stick	Right Stick
1	elevator/rudder	throttle/aileron
2	throttle/rudder	aileron/elevator
3	aileron/elevator	throttle/rudder
4	throttle/aileron	elevator/rudder

In addition to programming changes, stick mode changes require relocation of gimbal stick parts to achieve the proper control. Go to www.tacticrc.com and click on the TTX850 link to find directions for how to change gimbal settings.

CONTRAST

Adjust the LCD's contrast level for optimum viewing.

SPEAKER VOLUME

Adjust the loudness of the radio's beeper as desired. This volume setting affects all tones that are emitted from the radio including trim adjustments, alarms, programming changes, etc. Speaker volume for all alarms is not adjustable.

BATTERY ALARM

An alarm will sound and the display will show a warning when the Tx battery's voltage drops to the level shown in this setting. Do NOT set this value too low, as the radio could lose power very rapidly as the battery nears full discharge and cause a loss of control of the model. Land the model immediately once this alarm has sounded!

VIBRATION POWER

Turn the vibration feedback ON or OFF.

BACK LIGHT

Adjust the intensity of the LCD's red backlight.

Once all functions in this menu are set, press **ESC** to return to the home screen.

MODEL SETUP MENU – AIRPLANES

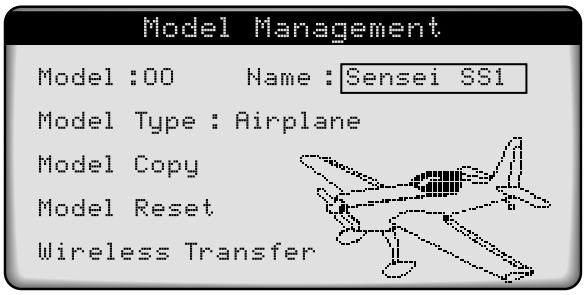
From the home screen, press and hold **ENTER** for 2 seconds to find the MODEL SETUP menu for setting of fundamental operating parameters as explained here.

MODEL SELECT

Memories are available to store parameters for up to 30 different models. With this selection highlighted press **ENTER**. Press ↑+ or ↓– to move the cursor up/down the screen to find the desired memory to make active, and press **ENTER** twice to confirm the selection and automatically return to the home screen. Or press **ESC** to return to the home screen.

Changing the model memory is not possible if the Tx battery voltage is too low. See the INPUT POWER section on page 4. It's a good idea to keep a record of all settings in each memory as a backup in case parameters in a particular memory are accidentally changed, etc.

MODEL MANAGEMENT



Shows basic information regarding the model setup in the "Model" memory number at top-left. Move the cursor up or down to select / change the function to adjust, and press **ENTER** to adjust the function.

Name: With the cursor on this line press **ENTER**. The method for setting the model name is the same as for entering the USER NAME as described on page 7. The maximum number of characters is eleven. Press **ESC** when finished.

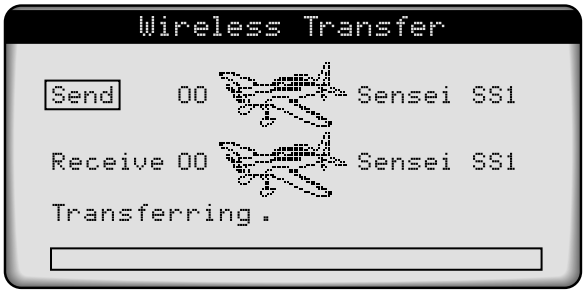
Model Type: Press ↑+ to place the cursor on this line, and **ENTER** to highlight the selection. Press ↑+ or ↓− to select the model type as airplane, helicopter, or quadcopter. Press **ENTER** to confirm.

Model Copy: To copy all parameters from one model memory to another, place the cursor at this line and press **ENTER**. The "COPY FROM" page will show. Highlight the memory to copy FROM and press **ENTER**. Now the "COPY TO" page will show.

Place the cursor over the memory number to copy TO, and press **ENTER**. The "COPY CONFIRM" screen will show. To abandon the copy function as shown on-screen, highlight "NO" and press **ENTER** to return to the "COPY TO" screen. Press **ESC** to return to the "MODEL MANAGEMENT" screen.

Otherwise, press ↓− to highlight "YES" and press **ENTER**. All settings that previously existed in the receiving memory will be permanently erased. The display will return to the COPY TO screen. Return to the "MODEL SELECT" screen to confirm the copy function was successful by looking at the memory that was copied "to".

Model Reset: Use this function to clear all parameters of any single memory *except model type* back to factory defaults. Enter this screen, move the cursor over the memory to reset and press **ENTER**. Select "NO" to cancel or "YES" to proceed with the reset, and press **ENTER**. The display will then return to the "MODEL RESET" screen.



Wireless Transfer: To transfer all parameters of one memory in this transmitter to another Tactic TTX850 transmitter, move the cursor to this line and press **ENTER**. Press ↑+ or ↓− to select "Send" or "Receive". Press **ENTER**, then ↑+ or ↓− to select the model number to send or receive data. Press **ENTER** to perform the function, or **ESC** to cancel.

WING TYPE

This is for setting the type of tail and wing configuration for the model. Depending on the mixes used and setup of the aircraft, it might be necessary to change the aileron, elevator, or rudder reversing settings to achieve the proper throw directions for the model.

For best results, selecting certain tail or wing types might require some servos to be connected to different outputs on the receiver (not the normal channel slots). The TTX850 will automatically map all controls accordingly. See the servo connection charts in this section for details.

TAIL SETTINGS

"Normal" is the factory default setting for the "TAIL" type. Move the cursor over "Normal", press **ENTER** then ↑+ or ↓− to select from V-Tail, Delta (elevon), and 2 Elevator options. Press **ENTER** to confirm the selection. The charts below can aid in determining the preferred tail and flap setting for the model.

Normal: One servo each is used for aileron(s), elevator(s), and rudder.

V-tail: Elevator and rudder channels are mixed. Two servos are used in the tail – one for each control surface, with connections as shown in the graphic below. V-tail mixing controls the airplane's "pitch" and "yaw" axis at the same time. If the elevator and rudder functions appear reversed at the control surfaces, it may be necessary to swap the channel 2 and channel 4 servo plug positions in the Rx. The travel limits for each servo can be adjusted independently.

Delta wing (elevon): Elevator and aileron channels are mixed, useful for aircraft such as flying wings and other models not having a tail. Elevon mixing controls the airplane's "pitch" and "roll" axis at the same time. One servo is used for each control surface. Travel limits for each servo can be adjusted separately. If the elevator and aileron functions appear reversed at the control surfaces, it may be necessary to swap the channel 1 and channel 2 servo plug positions at the Rx for the delta wing mix. If the delta wing option is selected, and the "FLAP" option below is set to 2AI1FL, the elevator channel will mix 100% to the aileron channel.

2-Elevators: Elevator channel 2 and another channel are mixed for aircraft which have two separate servos moving separate elevator surfaces. Both elevators move independently, and are independently adjustable for travel limits, etc. See the charts below for details.

FLAP SETTINGS

The "FLAP" setting allows for configuration of the ailerons and/or flaps of the airplane. Move the cursor over "1AI" to select from the following options:

1AI: Use this "1 aileron" setting for normal wing types having one aileron on each wing connected with a Y-harness or where one servo controls the movements of both ailerons simultaneously.

1AI & Normal		1AI & V-tail		1AI & 2 Elev	
CH 1	Aileron	CH 1	Aileron	CH 1	Aileron
CH 2	Elevator	CH 2	V-tail 1	CH 2	Elevator 1
CH 3	Throttle	CH 3	Throttle	CH 3	Throttle
CH 4	Rudder	CH 4	V-tail 2	CH 4	Elevator 2
CH 5	Aux 1	CH 5	Aux 1	CH 5	Aux 1
CH 6	Aux 2	CH 6	Aux 2	CH 6	Rudder
CH 7	Aux 3	CH 7	Aux 3	CH 7	Aux 2
CH 8	Aux 4	CH 8	Aux 4	CH 8	Aux 3

1AI1FL: This "1 aileron + 1 flap" setting is for wings having one servo (or 2 servos on a Y-harness) that controls the ailerons on both wings, and another servo that controls the flaps on both wings (both servos moving in the same direction). Connect the aileron servo to Rx channel 1, and the flap servo to channel 5 (not available for delta). See the CH5-CH8 Set section for switch assignments for flaps.

1AI1FL & Normal		1AI1FL & V-tail		1AI1FL & 2 Elev	
CH 1	Aileron	CH 1	Aileron	CH 1	Aileron
CH 2	Elevator	CH 2	V-tail 1	CH 2	Elevator 1
CH 3	Throttle	CH 3	Throttle	CH 3	Throttle
CH 4	Rudder	CH 4	V-tail 2	CH 4	Elevator 2
CH 5	Flap	CH 5	Flap	CH 5	Flap
CH 6	Aux 1	CH 6	Aux 1	CH 6	Rudder
CH 7	Aux 2	CH 7	Aux 2	CH 7	Aux 1
CH 8	Aux 3	CH 8	Aux 3	CH 8	Aux 2

2AI & Normal		2AI & V-tail		2AI & Delta		2AI & 2 Elev	
CH 1	Aileron 1	CH 1	Aileron 1	CH 1	Ailevator 1	CH 1	Aileron 1
CH 2	Elevator	CH 2	V-tail 1	CH 2	Ailevator 2	CH 2	Elevator 1
CH 3	Throttle	CH 3	Aileron 2	CH 3	Throttle	CH 3	Aileron 2
CH 4	Aileron 2	CH 4	V-tail 2	CH 4	Rudder	CH 4	Elevator 2
CH 5	Aux 1	CH 5	Throttle	CH 5	Aux 1	CH 5	Throttle
CH 6	Rudder	CH 6	Aux 1	CH 6	Aux 2	CH 6	Rudder
CH 7	Aux 2	CH 7	Aux 2	CH 7	Aux 3	CH 7	Aux 1
CH 8	Aux 3	CH 8	Aux 3	CH 8	Aux 4	CH 8	Aux 2

2AI: This "2 ailerons" setting is for airplanes having one aileron servo for each wing. Connect one aileron servo to Rx channel 1, and the other to another channel as listed in the tables above. This setting allows each aileron servo to function independently of the other.

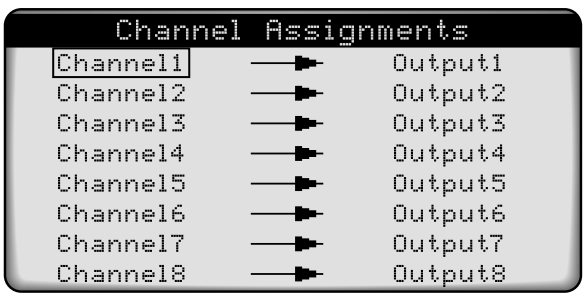
2AI1FL & Normal		2AI1FL & V-tail		2AI1FL & Delta	
CH 1	Aileron 1	CH 1	Aileron 1	CH 1	Ailevator 1
CH 2	Elevator	CH 2	V-tail 1	CH 2	Ailevator 2
CH 3	Throttle	CH 3	Aileron 2	CH 3	Throttle
CH 4	Aileron 2	CH 4	V-tail 2	CH 4	Rudder
CH 5	Flap	CH 5	Throttle	CH 5	Flap
CH 6	Rudder	CH 6	Flap	CH 6	Aux 1
CH 7	Aux 1	CH 7	Aux 1	CH 7	Aux 2
CH 8	Aux 2	CH 8	Aux 2	CH 8	Aux 3

2AI1FL: This "2 ailerons + 1 flap" setting is for airplanes having two separate aileron servos, requiring one servo to control each aileron, and also one servo (or 2 servos on a Y-harness) that will control flaps for both wings simultaneously (not available for 2-elevator tail settings).

CHANNEL ASSIGNMENTS

This function allows transmitter channels to be re-assigned to different outputs before being sent to the receiver. This can be useful for models having unusual configurations.

Some small electric flight models use only elevator, throttle, and rudder channels (not aileron). Here, it's often preferred that the rudder be controlled with the opposite stick (right stick for Mode 2 configurations). Such channel re-assignment can be done in this screen.



Determine which Tx channel input on the left should control which output channel at the receiver as shown on the right. Move the cursor to the desired output on the left. Press **ENTER** then ↑+ or ↓− to adjust the output channel as desired. Press **ENTER** when finished.

WARNINGS

Warnings can be set to alert you of undesireable switch or throttle positions when the radio power switch is first turned on. For example, if the throttle is at full when the radio is turned on you would see and hear an alarm. The alarms shown can be set to “ACT” (active) or “INH” (inhibit).

Thro Pos: The throttle position warning sounds when the throttle stick is over 25%. Clear the alarm by moving the stick down. Note: if in heli mode and you have an idle-up programmed, this alarm will also sound to indicate that you have an idle-up switch active.

Thro Cut: The warning will sound when the throttle cut function is set and this switch is turned on. Turn off the switch to clear the alarm.

Thro Hold: The warning will sound when this switch is on. Turn off the switch to clear the alarm.

TRAINER

The process of linking transmitters for wireless training purposes is explained on page 22. When in training mode with the TTX850 being used by the teacher, this radio can allow the teacher to transfer control of all *or only certain* channels to the student if desired.

Enter this screen. Press ↑+ or ↓– to select a channel to set. Press **ENTER** to toggle the setting. Repeat with other channels as desired. Setting a channel to SLAVE means the student will have control of that channel when the teacher pulls the trainer switch on the master radio. Those channels which are set to MASTER will be controlled by the teacher at all times.

The teacher can select which switch will control the training function at the CTRL line at bottom. The control positions for the trainer switch can also be selected as described on page 13 (for the Control function). Press **ESC** to confirm settings and return to the MODEL SETUP menu.

TRIM STEP SETTING

The number of degrees a servo will rotate with each increment of digital trim deflection can be adjusted from very small up to large steps. Enter this screen, select the channel trim to adjust ranging from “1” for the smallest steps to “8” for the largest steps.

SETTINGS MENU – AIRPLANES

This menu is for setting servo control functions for airplane use. Press **ENTER** briefly to access this menu.

SERVO SET

Enter this function to adjust any channel’s reversing, travel limits, or sub-trim settings. Press ↑+ or ↓– to select the desired function to adjust and press **ENTER**.

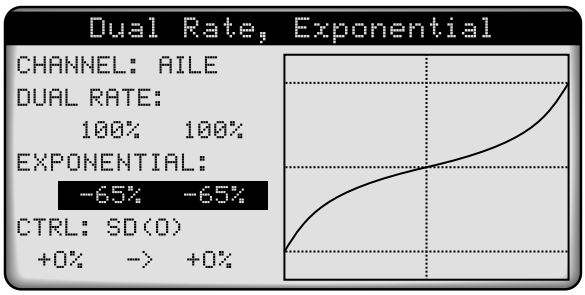
Reverse: Sets the rotational direction for a channel’s output relative to the movement of the control stick. Move the cursor to the channel to adjust. Set to “NOR” normal or “REV” reverse. Adjust all reversing settings *before* making any other settings or adjustments in the programming.

Travel limits: Sets the maximum travel limits for each channel. Limits can be set for *each side* of center. If two channels are mixed, adjusting the travel limits of *each individual channel* may be necessary to adjust the travel limits for the entire mix. Move the cursor to the channel to adjust. Deflect the control stick for that channel to one side and notice the cursor on-screen will move accordingly. Set the percent for that direction of travel as needed. Move the stick to the opposite direction and repeat. Repeat for all channels as needed.

Sub-trim: *Finely* adjusts a channel's center position. Be aware that extreme adjustments of sub-trim could possibly result in servo binding if the servo's output arm moves too far in the model. This is available for all channels.

DUAL-RATES, EXPONENTIAL

For setting dual-rates and/or exponential travel for the aileron, elevator, and rudder channels. Dual-rates allows a channel's maximum travel limits to be switched between two limits. Exponential changes the *rate* at which a servo rotates per degree of control stick deflection. The rate of servo movement is non-linear in relation to the movement of the stick. The higher the exponential percentage, the more the servo will rotate as the stick is moved away from center position.



To select the desired channel to adjust, press **ENTER**, then ↑+ or ↓−. Press **ENTER** when finished.

To assign a different switch to change the dual-rate / exponential setting, move the cursor to the CTRL line and press **ENTER**. Select the switch that will control this function as explained on page 12. Press **ESC** when finished.

Different dual rate and exponential settings can be set for each position of the switch. Highlight the dual-rate percentage and move the assigned switch to the position that will allow for the furthest servo travel. Adjust this percentage to the widest travel distance as needed for this channel. Note that the slope of the diagonal line in the graph changes as the percent is adjusted. Deflect the control switch to the opposite position, and adjust the percentage to the lowest travel distance needed. The diagonal line on-screen will now show the slope for the low dual-rate setting. A high rate can allow for better control of the model while on the ground, at low altitudes, or while performing certain maneuvers. A low rate can allow for optimum control of the aircraft in mid-flight.

To set an exponential value, move the cursor to the EXPO line and repeat the steps explained above to set a different value for each position of the control switch. This function reduces the sensitivity around the stick's center position, and can be handy for optimum control of the model - especially around center-stick position, and when performing stunts or aerobatic maneuvers.

Moving the control stick for the channel shown on-screen will change the position of the vertical line in the graph. The point where the vertical line intersects the diagonal line is shown at the bottom-left on the screen. The "x" (horizontal) coordinate is on the left, and "y" (vertical) coordinate is on the right.

Repeat the above steps for each the aileron, elevator, and rudder channels as desired.

CH5-CH8 SET

Enter this screen to set the functions of channels 5 through 8. At the INPUT line select the desired channel to adjust. Then, follow the steps below.

Name: A name for the function of this channel can be set as desired. The method for setting this name is the same as for setting the USER NAME as described on page 8.

Control: Choose which switch will control the selected channel. Switches are identified by letters A through H, as printed on the transmitter next to each switch.

On screen the switches will be identified as "SA" for switch A, "SH" for switch H, and so on. Deflect the switch which will ultimately control this function.

The display will show a graphic representing the switch, and the different control positions of the switch as shown here (0, 1, and 2 if applicable). The default position for “0” will always be in the up direction. The control positions of the switch can be assigned to fit personal preference. To use the default settings, simply press **ESC** to confirm. To change the control locations of the switch to be high “H”, medium “M”, or low “L” position, press ↑+ or ↓– to move the cursor to the position to be changed. Press **ENTER** to highlight the function at this position. Then press ↑+ or ↓– to change the control function. Repeat as necessary for all switch positions. Press **ESC** when finished.

To remove the switch that has been set in the Control function, press **ENTER** to highlight the switch selection and press **CLEAR**.

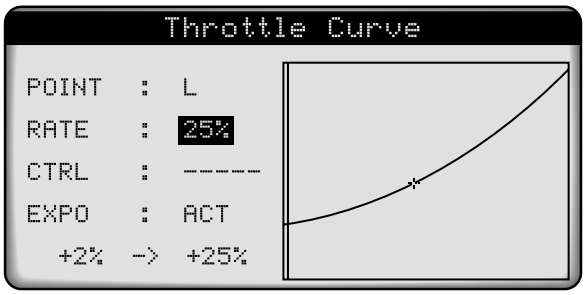
Other functions in this radio allow for assigning a switch to a specific function. Refer back to this section as needed.

Offset: Move the cursor to this function. Press **ENTER**, then ↑+ or ↓– to find the percent to offset the center position of the channel shown on this screen.

Speed: When a control input for channels 5 through 8 is deflected, the speed at which the device connected to that channel moves can be custom set. This can be useful for some accessory type items for certain models. Move the cursor to this function. Press **ENTER**, then ↑+ or ↓– to find the desired speed (100% = life speed).

While the output channel is being operated normally, any movement of the input channel will be mixed to - *and also affect* the movement of - the output channel.

THROTTLE CURVE



The throttle’s output is normally linear in relation to movement of the throttle stick. A non-linear relation between the two - or curve - can allow for optimum power control in certain models or for specific types of flying styles.

Make sure the model’s full throttle position can be achieved when the throttle stick is at maximum deflection. The throttle trim must be able to minimize throttle control completely when the throttle is at minimum.

Enter this function. Up to twelve points can be placed on the throttle curve, as designated next to “Point” on the graph. Points L (low) and H (high) are each limited to a fixed range on the curve. Points 1, 2, 3, and 4, etc. can be set if desired with respect to the position of the throttle stick.

As the throttle stick is advanced note the point where the vertical line (throttle position) intersects the diagonal line (curve). The coordinates of this point are shown at the bottom. The “x” (horizontal) coordinate is on the left, and the “y” (vertical) coordinate on the right.

To set points on the curve, start at the minimum throttle position which will be noted as point “L”. A point for “L” is not marked on the graph, but is the left-most end of the curve line. The vertical position of this point can be adjusted by moving the cursor to the RATE percentage, press **ENTER** then ↑+ or ↓– as desired. Press **ENTER** when finished.

To set point 1 on the graph, advance the throttle stick until * shows next to “Point”. Find the desired throttle stick position and press **ENTER**. A + symbol will be placed on the curve to mark this point.

Pressing ↑+ or ↓– will adjust the vertical position of curve at this exact point. Adjust as desired.

Repeat these steps to set additional points on the graph as desired. A point for "H" is not marked on the graph, but is the right-most end of the curve line. The vertical position of this point can be adjusted by moving the cursor to the RATE percentage, pressing **ENTER**, then ↑+ or ↓– buttons. Press **ENTER** when finished.

To clear any point on the graph, place the cursor on the RATE percent, move the throttle stick until the graph's vertical line intersects the point, press **ENTER** and then **CLEAR**.

A switch can be assigned to toggle between the linear curve (for starting the engine, etc.) and the user-defined curve (for forward flight, stunts, etc.). Select the switch on the CTRL line.

The exponential control of the user-defined throttle curve (but not the linear curve) can be active or inhibited. This will soften or make the transition of the throttle curve more smooth. Move the cursor next to the EXPO line and toggle between "ACT" and "INH". Press **ENTER** when finished.

THROTTLE CUT

Allows the throttle channel's output to be quickly moved to a user-defined position by flipping a switch. This is to reduce engine / motor power for safety reasons. Default setting is -100% (idle).

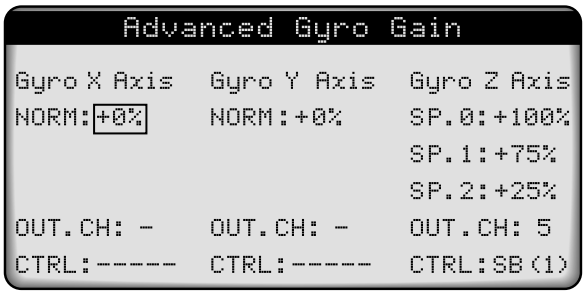
Select a switch to control the throttle cut function on the CTRL line. Press **ESC**.

The throttle cut function will only work when the throttle stick position is below the trig point. To set this point, move the cursor next to TRIG but do not press **ENTER**. Move the throttle stick to the desired position that will trigger the throttle channel to move to the cutoff position. The graph will move accordingly as will the percent shown on the THRO line at bottom. Press **ENTER**. The arrow on the left will now move and mark this selected trigger position.

Move the cursor to the CUT percentage, press **ENTER** and adjust this cutoff value by pressing ↑+ or ↓– to the desired position for the throttle channel's output to move to when the throttle cut function is activated. This position will be marked by the arrow on the right. Press **ENTER** to confirm this mark.

When the throttle cut switch is in the ON position and the throttle stick is positioned *above* the trigger mark, reducing the throttle stick to the trigger mark will automatically drop the throttle channel to the throttle cutoff mark. The throttle channel will remain in this position. To regain full control of the throttle channel, move the control switch to the OFF position.

ADVANCED GYRO GAIN



This screen is for setting gain sensitivities if using a stabilization gyro in the aircraft. Up to three sensitivity adjustments can be set for a gyro's X, Y, and Z axes (if applicable).

For each respective axis, move the cursor to the rate percentage at top and press **ENTER**. Adjust this value to the desired gain sensitivity for this axis. Then move the cursor to the output channel "OUT.CH" selection at bottom to set which channel that this sensitivity will control. A control switch can also be selected by moving the cursor to the "CTRL" line at bottom and selecting a switch as explained earlier in the manual. Once all gyro gain sensitivities are set press **ESC** to exit this screen.

NOTE: The method for setting the various following mixer screens is the same for each mixer. Refer to the instructions for the DIFFERENTIAL mixer screen for adjustment of all other mixer screens. Any difference in any one mixer screen will be noted accordingly. Normal wing mixing is the factory default setting. Depending on the mixes used and setup of the aircraft, it might be necessary to change the setting of the aileron, elevator, or rudder reversing settings to achieve the proper throw directions for the model.

AILERON MIXER

The aileron channel can be mixed to the rudder channel, which can be useful with certain wing/airplane types.

To make this AILE → RUDD mix active at all times do NOT assign a switch at the CTRL line. Adjust the mixture percentage and press **ENTER**. On/off control of this mix can be assigned to a switch. Set the mix rates as desired for each switch position. Press **ESC** when finished.

RUDDER MIXER

Mixing the rudder channel to the aileron and/or elevator channels can be very useful for trimming an airplane to be neutral when using the rudder. Select the rudder channel to mix to the aileron or elevator channels as needed. This mix can be active at all times by not selecting a switch on the CTRL line. Or, for on/off control of this mix, select a control switch at the bottom of the screen.

AILERON DIFFERENTIAL

Only available when 2AI and 2AI1FL wing types are selected, to help offset unwanted yaw which can occur when ailerons are moved. One servo must be connected to each aileron for this mix. Instead of equal linear movement between both ailerons, a differential percentage can be assigned so that the deflection of one aileron is at a lower or higher rate than the opposite aileron. Certain applications may require a reduction in the aileron differential rate when an airbrake is applied. This feature is useful for glider and/or sailplane applications which use other settings to achieve “butterfly” or “crow” functionality.

Enter the DIFFERENTIAL function. There are two ways to control the mix. One is to make the mix be active at all times. Another is to control the mix with an otherwise unused switch.

Normal: To make AILE DIFFERENTIAL active at all times do NOT assign a switch at the CTRL line. Press **ENTER** to highlight the differential rate percent and press ↑+ or ↓– to find the desired value. Press **ENTER** when finished.

Switch Control: To control the mix with a switch, move the cursor to the CTRL line and press **ENTER**. Deflect the switch that will control the mix. The screen will show the functional assignments for each position of the switch as described previously. Press **ESC** to confirm the switch selection. The display will now show the different switch positions (SP.0, SP.1, SP.2). A different rate can be set for each switch position.

Deflect the switch to one position, and note the cursor on-screen will move automatically to the rate for that position. Adjust that rate as desired. Deflect the switch to the remaining positions and repeat. To remove a switch which might have been assigned previously, highlight the switch selection in the CTRL line and press **CLEAR**.

Press **ESC** once all mixing values are set to return to the FUNCTION menu screen.

FLAP MIXER

This function allows flaps to be set, adjusted, and mixed to the ailerons and/or elevator channels. Mixes such as flaperons, air brake, and spoilers can be achieved in the FLAP MIXER. These settings or mixes can be assigned and activated by a two or three position switch. Not available for 1AI or 2AI wing types. Different setup options are available depending on the selected wing type, where the flaps can be mixed to the aileron or elevator.

1AI1FL: Highlight the FLAP -> ELEV mix percent and adjust as desired. Press **ENTER** when finished. Assigning a switch can allow on/off control of the mix. Set a mix percentage for each position of the switch (SP.0, SP.1, SP.2).

2AI1FL: If this wing type was set, the flap channel can be mixed with the aileron, elevator, or back to the flap. Set the mix percent for each channel to be mixed, for all switch positions that control the mix. Do NOT assign a switch at the CTRL line to make the mix active at all times. Press **ENTER** when done.

AIR BRAKE SET

This function will allow you to define the air brake position and activate it with a switch. It's available only when 1AI1FL or 2AI1FL wing types are chosen.

When the 1AI1FL wing type is selected the brake can be mixed to elevator and/or flaps. Adjust each mix percentage as needed. Select a switch to turn the mix on/off.

When the 2AI1FL wing type is selected the brake can be mixed with the elevator, aileron, or flaps. Adjust each mix as needed. Select a switch to turn the mix on/off.

PROGRAMMABLE MIXER

Up to six programmable mixes can be set, with one channel being mixed to any one or more channels. Control characteristics from the input channel will be passed to the output channel(s), such as travel limits, exponential, etc. The output channel will still be able to function independently as if it were not mixed with another channel, but once an adjustment is made to the input channel a resulting change will be seen on the output channel as well. The mix level can be adjusted by percent. A switch can be assigned to turn this mix on/off.

Enter the mixer screen. Move the cursor to select which mix to set and press **ENTER**.

The top line will show the mix number, with the cursor over the input channel, and the output channel to the right. Press **ENTER** and ↑+ or ↓− to highlight and set the input channel.

The rate of the input channel to mix with the output channel can be adjusted for each the right and left side of the input channel's center position. With the cursor next to RATE L, set the desired mix percentage. Repeat for RATE R. Note the curve on the display's graph will adjust according to the percentages entered.

The amount of the input channel to be mixed can be offset by setting a percentage next to "OFFSET".

Assign a switch to control the mix in the CTRL line as explained earlier. Repeat the above procedures for each of the four mixes that are to be configured.

RF OUTPUT

The Rf output signal can be turned on or off. If changing any programming parameters in the radio, it's recommended to turn the Rf off so not to unnecessarily clutter the flying space with radio signals. Leave the Rf output signal ON anytime the model is being controlled.

Enter this screen to perform a range check on the radio system, as fully explained on page 24.

TIMERS

Two timers are shown on the home screen, which can be configured in this screen. The timer at the top of the homescreen is T1, and the bottom is T2. The timers can be set to count up or down, and can be controlled by a user assigned switch. The timers can also be controlled by the throttle stick if desired.

ENTER this screen and press ↑+ or ↓− to move the cursor to the timer feature to adjust for each timer as desired. Once in the proper place, press **ENTER** to highlight the value. Press ↑+ or ↓− to adjust the time as needed.

To count UP as a stopwatch, leave the timer set to 00:00. To configure the timer to count DOWN, set a time other than 00:00 with a maximum possible start time of 99:59. When used as a countdown timer, a set of tones will sound at 00:10 and every second thereafter to warn that the timer is nearing the end. After reaching 00:00, the timer will automatically begin counting up to help track how much longer the model was operational after the timer ended.

A switch can be selected on the right side of the screen to turn each timer on / off. Place the box on-screen over this setting and deflect the switch that will control the timer. In operation, the timer will be stopped when the switch is in one position. Moving the switch to the opposite position will cause the timer to count. To reset the timer, move the switch to the stop position and press the **CLEAR** button.

The timer can also be started and stopped by the throttle stick. Move the throttle stick to the minimum throttle position. Place the box on-screen over this setting and press **ENTER**. When "Choose the control switch" displays, move the throttle stick up from minimum throttle.

The "START/STOP" screen should show. Moving the stick up or down will show changes to the "THROTTLE" position value. The "START/STOP" value shows the trip point where starting and stopping the timer will occur. Move the stick to the position of the timer's trip point and press **ENTER**. The position value for START/STOP should now match that for THROTTLE.

Press **ESC** to return the timer setting screen. The throttle stick's START/STOP position for the timer should show below the timer settings.

For example, if a throttle stick START/STOP value of +45% is selected, anytime the throttle stick is below this value the timer will be stopped. Anytime the throttle stick is above this value the timer will count. To reset the counter, move the throttle stick below this value and press the **CLEAR** button.

The "Tx Battery" timer at the bottom of the TIMER setting screen accumulates the total amount of time the radio has been operational. This time can only be reset by moving the cursor over "Tx Battery" and pressing the **CLEAR** button.

To reset either timer, while in the homescreen, press and hold **CLEAR**, then press ⬆+ to reset T1 or press ⬇− to reset T2.

CAMERA GIMBAL

The TTX850 includes the ability to control a camera which might be attached to a model, housed in an optional camera gimbal which can provide pan and/or tilt movements.

For PAN CH, highlight and select the auxiliary channel to control sideways (pan) movements of the camera gimbal. Directly underneath for CTRL, select which switch to control this function. Then set the RATE or maximum travel distance this function can move when the switch is activated. Repeat these procedures for up/down TILT movement of the camera gimbal.

For the "SMOOTH" function, "OFF" causes the servos to move at a linear rate compared to the movement of the control lever for quick pan/tilt the camera. "ON" causes the servos to move at an automatic and slowed rate which is non-linear to the movement of the control lever, for very gradual camera movements.

DIGITAL SWITCH ASSIGNMENTS

Functions in this screen can support the use of miscellaneous accessories in the model, and can range from video, still camera, LEDs, etc. More than one accessory could be controlled simultaneously, and manipulated by the pilot through just one channel on the TTX850. This function requires special SLT receivers (see those instruction manuals for details).

MODEL SETUP MENU – HELICOPTERS

This menu is for setting control functions for use with helicopters. See the MODEL SETUP MENU – AIRPLANES section for functional descriptions of most menus. A swashplate type selection function is included for helicopters. With the model type set to helicopters, press **ENTER** for 2 seconds to access this menu from the home screen.

All channels for helicopters are assigned as shown in the chart on page 6.

SWASHPLATE TYPE

Enter this screen to select the type of swash plate in the helicopter. Setting this properly allows for proper mixing of all controls for the main rotor. Three options are available, with some offering cyclic and collective pitch mixes (CCPM) for optimum simplicity and performance. It may be necessary to reverse the direction of a control when using a CCPM mix to achieve the proper functionality.

1 Servo (90°): Tilting of the swash plate is accomplished with one servo for control of the elevator axis and one servo for the aileron axis. Another servo directly controls collective pitch. Selecting this swash type means that no swash plate mixers are required or used. This is typically used for flybarless systems.

3 Servos (120°): For CCPM with three servos connected to the symmetrical swash plate at 120° angles from each other. One pitch servo, one elevation servo, and one aileron servo are connected to the swash plate. See the chart to the right for proper connection of all servos to the receiver.

3 Servos (140°): For CCPM with three servos connected to the swash plate. The connections are similar to the 3 Servos (140°) setting but with slightly different geometry (two servos are connected at 135° angles forward from the rear of the swash plate). See the chart above for servo connections.

3 servos 120° & 140°	
CH 1	Aileron
CH 2	Elevator
CH 3	Pitch
CH 4	Rudder
CH 5	Gyro
CH 6	Throttle
CH 7	Aux 1
CH 8	Aux 2

SETTINGS MENU – HELICOPTERS

Functions for helicopters are available to support models with various fixed mixes, programmable mix options, swash types. Press **ENTER** briefly to access this menu.

Setting of many functions is the same as described for airplanes in the previous sections. However, if using a helicopter which has CCPM mixing, read the SWASHPLATE TYPE section above before adjusting the reversing and travel limits settings.

THROTTLE CURVE

The throttle's output is normally linear in relation to movement of the throttle stick. A non-linear relation between the movement of the throttle stick and the throttle in the model can allow for optimum control of power to the model (which is also linked to the control of the pitch of the main rotor blades). These non-linear control curves can be customized for the particular model.

The idle-up function is used to optimize the throttle position for all flight envelopes including aerobatic flight. By default the TTX850 assigns switch E as the idle-up control switch. This switch incorporates one "normal" and two "up" functions within the three positions of the switch.

Position 1 = normal: Used for startup, take-off, landing, and typical flight profiles.
Position 2 = idle-up 1: Used for aerobatic flight
Position 3 = idle-up 2: Typically used as a secondary setup for aerobatic flight.

Make sure all mechanical linkages are connected exactly as specified in the helicopter's instruction manual. Make sure the model's full throttle position can be achieved when the throttle stick is at maximum deflection. The throttle trim must be able to minimize throttle control completely when the throttle limiter is at idle position. Follow all other instructions for THROTTLE CURVE as explained on page 14.

THROTTLE HOLD

Throttle hold allows full use of collective pitch while setting the throttle at a user pre-determined position. This function is often used for autorotation. The pilot can then release the hold and regain full control of the throttle as needed.

With the cursor over "Position", set a percent of full throttle that the throttle channel will deflect to automatically when the control switch is moved to the ON position.

The CTRL line is for setting the ability to turn this function ON/OFF with a switch. Selecting "INH" inhibits this function from operating. With the cursor next to CTRL, deflect the switch that will control throttle hold. In one position the control will be ON. Moving the switch to the opposition will turn the control OFF.

To enable the PITCH CURVE HOLD function described below, select "ACT" on the "PITCH CRV" line. Otherwise leave at "INH".

PITCH CURVE

The method for setting the blade collective pitch curve is the same as for the throttle curve as explained above, by moving the throttle stick and using the same controls within the pitch curve screen. This works in conjunction with the throttle curve for optimum vertical movement of the helicopter. Separate curves can be set for normal, idle-up 1, and idle-up 2.

PITCH CURVE HOLD

The setting method is the same as for throttle and pitch curve.

SWASHPLATE RING

Depending on how certain mixes are set and mechanical linkages are connected to the swash plate, it's possible that the mechanical connections can accidentally be damaged or dislodged if they are forced to try and move past their own limitations. By adjusting the maximum amount of travel the aileron and elevator channels can move the controls away from center, this SWASHPLATE RING function can help prevent damage from occuring to controls inside the model. At the default 150% setting the controls are not limited, and effectively turns this function off.

Once inside this screen, press **ENTER** to highlight the "Rate" value. Press ↑+ or ↓− to find the desired maximum rate. The circle graphic represents the maximum movement rate. Moving the aileron and/or elevator stick to their limits will cause the actual position of the these controls to show at the bottom of the screen.

THROTTLE MIXER

This mix is used for non-heading hold gyros or when a heading hold gyro is in normal mode. The helicopter's throttle channel can be mixed to the tail (rudder) channel. This mix can remain active at all times, or be controlled by selecting a switch on the CTRL line. Move the cursor to select the rate to adjust, press **ENTER** and then ↑+ or ↓− to adjust the value. To reset any mix value or clear a switch selection, move the cursor to the value, press **ENTER**, and then press **CLEAR**.

SWASHPLATE MIXER

This mix is not available when using the “1 Servo” swash setting. This function adjusts the mixture rate of the pitch, aileron, and elevator channels for the swash plate. Move the cursor to the value to adjust, and change as necessary.

CYCLIC MIXER

This function can automatically deflect the roll/pitch servos to negate unwanted loss of lift when throttle level is adjusted. The aileron and/or elevator channels can be mixed to the throttle channel.

RUDDER MIXER

The aileron and/or elevator channels can be mixed to the rudder channel. Setting of the rudder mix uses the same method as the throttle mix as explained above.

MODEL SETUP – MULTI-ROTORS

Setup screens are available specifically for multi-rotor models, being a combination of some menus normally used for airplanes and others for helicopters. Once the model type setting as explained on page 8 has been set to multi-rotor, and back on the MODEL SETUP page for multi-rotors, refer to descriptions in the airplane or helicopter sections of this manual for how to set the different screens.

SETTINGS MENU – MULTI-ROTORS

Settings for controlling quads are also a combination of some functions normally used for airplanes and others for helicopters. Once in the SETTINGS menu for multi-rotors, refer to the descriptions in the airplane or helicopter sections of this manual for how to set the different settings.

LINK THE RECEIVER TO THE TRANSMITTER

Linking the TTX850 to the Tactic receiver ensures sole communication between the two, and prevents other transmitters from being able to control the receiver.

1. Turn on the Tx. (Make sure RF Output is set to ON.)
2. Apply power to the Rx.
3. If the Rx LED flashes once and then stays on, the Rx is already linked to the Tx and you can skip to the next section. Otherwise, insert a small diameter screwdriver through the hole marked “LINK” on the Rx and press the pushbutton until the Rx LED glows red and then turns off after about one second.
4. Release the “LINK” button.
5. If the linking is successful, the Rx LED will flash once and then remain ON.
6. Test for proper Tx/Rx functionality before use. If the radio doesn’t appear to have become properly linked, repeat steps 1– 5 above and move the Tx at least three feet away from the Rx.

FAILSAFE FUNCTION

The failsafe function is not controlled by the TTX850 transmitter itself, but rather by the Tactic receiver. Tactic’s stand-alone 2.4GHz receivers have a failsafe feature which engages in the event that the signal from the Tx somehow becomes interrupted. In such case, depending on the model of receiver being used,

all channels can be set to move to a specific position – or only throttle channel 3 can be custom set (with all other channels holding). If using the Tactic TR825 receiver, beware that ALL channels can be set to specific positions. Be alert to the position of all channels.

The factory default failsafe position for channel 3 is to move to 0% throttle. Refer to the instructions with the receiver or see **www.tacticrc.com/receivers** for details.

1. IMPORTANT: make sure the servo reverse settings for all servos are in the correct position for the application.
2. Apply power to the Tx and Rx.

3a. If using an ESC: do NOT arm the ESC, or attempt to adjust the throttle's failsafe position if the ESC is armed. NOTE: If you're using an ESC which has a signal loss feature, its pre-set failsafe position will be irrelevant as the receiver's failsafe function will cease the throttle operation if the signal is lost.

3b. If using a combustion engine: do NOT attempt to adjust the throttle's failsafe position while the engine is operating.

4. Move the Tx sticks to the desired failsafe position.
5. Press and hold the receiver's "Link" button. The Rx's LED should blink twice. Release the Link button, and the LED should stay on continuously. The Tx and Rx should now be linked, with the throttle failsafe in the new position as set above.

WIRELESS TRAINER

Two Tactic brand transmitters with trainer capabilities can communicate with each other by wireless means for teaching a student how to fly. The TTX850 can be configured for wireless trainer function with any other Tactic brand transmitter, but is not compatible with wireless trainer systems in other brand transmitters. Once linked for training, make sure both transmitters are kept within 15 feet of each other at all times.

IMPORTANT! Before flying the model in training situations it's very important to make sure all channel reverse settings and trim adjustments on the teacher and student transmitters match! Otherwise, the model could suddenly veer in an unwanted manner when the teacher's trainer switch is activated. Proper matching of the student and teacher's Tx settings should ensure that no unexpected movements occur when the trainer switch is pressed. This is especially true of the throttle control!

Teacher's radio TTX850 – Student's radio Tactic TTX404, 410, 600 or 610

1. Link the teacher's TTX850 to the Rx inside the model, and then remove power from the Rx.
2. In the TTX850 TRAINER screen described on page 12, select which channels to NOT be transferred to the student while training, and select a switch to control the trainer function. Switch F is the recommended switch for training purposes.
3. Turn the teacher's Tx off.
4. Pull the TTX850 trainer switch and *hold it in this position* while turning the power switch on. The "searching" message should show on-screen.
5. Move the student's transmitter to within 3 feet of the teacher's transmitter and turn on the student's power switch.

6. The TTX850's "searching" screen should disappear. The teacher can release the trainer switch. If the TTX850 doesn't identify the signal from the student's radio a "NO SIGNAL" message will show.
7. Once linked, move the throttle stick on both transmitters to minimum. Turn the Rx power on and make sure only those channels selected for transfer to the student are transferred when the TTX850 trainer switch is deflected. Ensure the teacher can regain control of all channels when the trainer switch is released.
8. Perform a complete range check before flight.
9. When the training session has ended, with the model safely landed and power removed from the model, simply turn the power switch for both transmitters to the OFF position. This will terminate the wireless link between both transmitters.

Teacher's radio Tactic TTX404, 410, 600, 610 – Student's radio Tactic TTX850

1. Link the teacher's Tx to the Rx. Remove power from the model, and then turn the teacher's Tx off.
2. Pull the teacher's trainer switch and *hold it in this position* and turn the power switch on.
3. Move the student's transmitter to within 3 feet of the teacher's transmitter, turn the power switch on and set the RF OUTPUT to ON.
4. The teacher's LED should flash three times and then stay on to indicate the link was complete. Release the trainer switch.
5. Once linked, move the throttle stick on both transmitters to minimum. Turn the Rx power on and make sure only those channels selected for transfer to the student are transferred when the TTX850 trainer switch is deflected. Ensure the teacher can regain control of all channels when the trainer switch is released.
6. Perform a complete range check before flight.
7. When the training session has ended, with the model safely landed and power removed from the model simply turn the power switch for both transmitters to the OFF position. This will terminate the wireless link between both transmitters.

Teacher and student's radio TTX850 or TTX650:

1. Link the teacher's radio to the Rx.
2. In the teacher's TRAINER screen described on page 10, select which channels to NOT be transferred to the student while training, and select a switch to control the training function. Then turn the teacher's Tx off.
3. Move the student's transmitter to within 3 feet of the teacher's transmitter.
4. Pull the teacher's trainer switch and turn the power switch on. The "searching" message should show on screen.
5. Turn the student's radio on, and set the RF OUTPUT to ON.
6. The teacher's "searching" screen should disappear. The teacher can release the trainer switch. If the teacher's Tx doesn't identify the signal from the student's radio a "NO SIGNAL" message will show.
7. Once linked, move the throttle stick on both transmitters to minimum. Turn the Rx power on and make sure only those channels selected for transfer to the student are transferred when the teacher's trainer switch is deflected. Ensure the teacher can regain control of all channels when the trainer switch is released.
8. Perform a complete range check before flight.
9. When the training session has ended, with the model safely landed and power removed from the model, simply turn the power switch for both transmitters to the OFF position. This will terminate the wireless link between both transmitters.

WIRED TRAINER

The TTX850 can be connected by cable to most R/C transmitters which also have a trainer / DSC jack for training purposes. See the ACCESSORIES section for details about optional trainer cords. Select the proper cord for Tactic and the other radio to be used for training purposes.

1. Link the teacher's radio to the Rx and move the throttle stick to minimum position.
2. In the teacher's TRAINER screen described on page 10 select which channels to NOT be transferred to the student while training, and select a switch to control the training function. Then turn the teacher's Tx off.
3. Connect the trainer cord to both transmitters, move the student's throttle stick to minimum and turn the student's power switch on.
4. Make sure only those channels selected for transfer to the student are transferred when the teacher's trainer switch is deflected. Ensure the teacher can regain control of all channels when the trainer switch is released.
5. Perform a complete range check before flight.
6. When the training session has ended, with the model safely landed and power removed from the model, disconnect the trainer cable from both transmitters.

RANGE TEST

RANGE TEST: Before each flight make sure to check the operating range of the Tx / Rx set. The TTX850 includes a function that automatically reduces its output power to prevent having to walk a long distance to check the range.

1. Make sure the Tx throttle stick is at minimum position.
2. Enter the "RF OUTPUT" screen in the SETTING menu, as described on page 17. Leave the "RF ON/OFF" selection ON.
3. Move the cursor to the "RANGE TEST" line. This time determines how long before the radio's output power automatically returns to full power.
4. Place the Rx/model on the ground and apply power to the Rx/model.
5. Hold the Tx as it will be held during flight and press **ENTER**. The range test timer on-screen will start to count down. Tones will sound to identify that this function is active.
6. Move the Tx 100 feet away from the model and confirm all controls are transferred smoothly at all times.

The counter will reset once the timer has expired, and reset to 99 seconds. The radio will return to full output power at this time. Pressing **ENTER** any time during countdown will stop the timer.

FIRMWARE UPDATES

A mini USB socket inside the battery compartment can connect the TTX850 to a personal computer for updating the radio's operating firmware. The software and suitable driver required for the download are free and found at www.tacticrc.com, following the TTX850 link.

IMPORTANT: Make sure the Tx battery shows good voltage prior to attempting a download. Fully recharge NiMH or NiCd batteries, or use new alkalines prior to starting the download. Once the software is loaded on the computer, the new firmware can be uploaded to the Tx.

WARNING INDICATIONS

The following indications will sound and/or show if any of the following occur:

LOW BATTERY: Battery voltage is at or below the BATT. ALARM setting. Cannot change memories at this time. Replace or re-charge batteries.

RF ON / OFF?: Turn the radio's Rf signal on or off.

THRO POS.: The throttle stick is >25% full deflection at start-up. Move the throttle stick to minimum.

THRO CUT: The throttle cut function has been set and the switch is on. Turn the switch off.

NO SIGNAL: While in wireless training mode, if the signal between the teacher and student transmitters becomes un-linked.

AUTO SHUTDOWN: If no transmitter stick or control is moved after 10 minutes have elapsed, this warning screen will show and the Tx will proceed to shut itself down to prevent unwanted drainage of the batteries. If the transmitter's Rf section is turned ON, the Tx will automatically shut down 120 seconds after this message shows. If the Rf section is turned OFF, the Tx will shut down 60 seconds after this message shows.

SYSTEM CHECK AND OPERATION

WARNING! Always make sure that power is applied to the transmitter BEFORE applying power to the receiver and servos, and the Tx throttle stick is at minimum (idle) position. Failure to do so could result in the model becoming uncontrollable and cause a safety hazard. During all pre-flight preparations, do not stand the Tx upright on the ground. Carefully lay the Tx on its back on the ground to prevent it from falling over and possibly dislodging the throttle stick which would create a safety hazard. Make sure all devices are properly mounted inside the model, and all wiring connections are solid to prevent them from easily becoming dislodged during normal flight. It's best to check the system with the propeller removed from the aircraft.

1. Once all connections are made, check the general operation of the radio and all other components before attempting a flight.
2. Move the Tx throttle stick to the minimum (idle) position.
3. Turn on the Tx, and then the Rx.
4. Make sure all controls are operating in the proper direction. If any servo is turning in the wrong direction, change the reverse setting for that channel.
5. With both sticks at center position, move the trim levers for the aileron, elevator, and rudder channels so each respective control surface is perfectly aligned with the main surface. For example: when the aileron trim lever is at center, it's best that the trailing edge of the aileron is aligned with the trailing edge of the wing itself (not above or below the wing's trailing edge).
6. Make sure that movements of the throttle stick result in an equal adjustment of the throttle in the model. Depending on whether the model is electric or glow powered:
   a. Electric: confirm that when the throttle stick is at maximum position the electronic speed control gives the appropriate indications (LED and/or audible indicators) for full forward flight. And, when the throttle stick is at minimum position the electronic speed control gives the appropriate indications for "off" or no motor rotation.
   b. Glow: confirm that when the throttle stick is at maximum position the mechanical linkage to the engine allows the engine to be at full throttle. And, when the throttle stick is at minimum position and the throttle trim lever is moved to minimum position, the engine stops completely.

7. Perform a range check as explained on page 24.

8. Anytime power is to be removed from the radio system, it's important to shut down power in the aircraft first. Otherwise, the aircraft could become out of control and cause a safety hazard! Move the throttle stick and throttle trim to minimum position to stop the glow engine or shut down the ESC. Once the propeller has stopped rotating, shut off the ON/OFF power switch in the model, and disconnect the power battery from the ESC in electric airplanes. Then turn off the power switch in the Tx.

FLYING THE AIRCRAFT

1. Once all setup procedures have been confirmed, and power has been removed from the model and transmitter, prepare the model for flight.

IMPORTANT: Be very careful to stay clear from moving propellers and blades!!

2. Make sure the glow engine fuel tank has an adequate amount of fuel, or power batteries for electric models are fully charged.
3. Move the Tx throttle stick to the minimum position, and then turn on the Tx power switch. Turn on the power switch in the model or connect the flight battery.
4. During the first flight, it might be necessary to re-trim the main channels to allow the model to sustain smooth, even flight. If further adjustments are required on the ground, make sure to turn off the engine or ESC/motor beforehand.
5. When the flight is completed, remove power from the system as described before. Shut down power to the electronic speed control or glow engine first, then the receiver, and finally the transmitter.

IMPORTANT WARNINGS AND PRECAUTIONS

- NEVER allow water or moisture to make contact with the electronic components inside the transmitter, receiver, servos, switch harness, etc.! This could lead to failure or improper functionality of components and poor control of aircraft which could pose a safety hazard.
- NEVER operate R/C model aircraft near power lines, radio or cell phone towers, roads or automobiles, buildings, or pedestrians. Be very careful in locations where many R/C aircraft are being used simultaneously.
- NEVER operate R/C equipment if you are physically impaired as it could pose a safety hazard to yourself or others in the area.
- NEVER allow small children to operate/control model R/C equipment without the supervision of an adult.
- NEVER allow the transmitter's throttle stick to accidentally be moved away from the "off" or minimum position while the model's engine/motor is moving.
- ALWAYS range check the radio system before use.
- ALWAYS make sure that all transmitter stick movements operate all servos properly in the model. Check the proper operation of control surfaces before and after starting the engine/motor.
- ALWAYS make sure the transmitter antenna is unfolded entirely so that it's pointing upright to ensure max. range and control of the aircraft.
- Do not store your radio equipment in extremely hot or cold locations, in direct sunlight, or in locations with high humidity. Store R/C equipment in cool and dry locations.

- Do not allow chemicals to come in contact with any parts of the radio system. Substances such as glow fuel, gasoline, CA glue, etc. could permanently damage plastic parts of the radio system.
- If rechargeable batteries were installed in the transmitter, remove the batteries before placing the radio in long-term storage.

TTX850 SPECIFICATIONS

Model Types:	airplanes, gliders, helicopters, multi-rotors
Channels:	77
Frequencies:	2403-2479MHz
Protocol:	Tactic SLT
Modulation:	FHSS spread spectrum
Input Power:	3.40 - 7.00V DC
Current Consumption:	approx. 100-120mA
Low Voltage Alarm:	3.20 – 6.00V adjustable
Memories:	30, with copy function
Stick Modes:	four
Trims:	digital for channels 1-4
Switch Assignments:	user selectable
Display:	256 x 160 graphing LCD, with adjustable contrast and backlight
Channel Controls:	reversing, end points, sub-trims, dual-rates, exponential
Failsafe:	all channels, user-selectable
Timers:	count-up stopwatch, count-down, flight timer
Charge Jack:	Futaba® compatible
Trainer System:	wireless - Tactic SLT compatible, and wired

TROUBLESHOOTING

RANGE IS SHORT: Interference – check Rx installation and servo connections. Low Tx or Rx battery – replace the batteries or recharge if applicable. Rx may need to be located to a different position in the model for better reception. Crash damage – send the radio to Hobby Services for repair.

RUN TIME IS SHORT: Weak Tx or Rx batteries – replace or recharge the batteries. Obstructed servo linkages causing excess battery drain – free the linkages / pushrods.

Tx POWER SWITCH ON BUT SERVOS DO NOT FUNCTION: Tx or Rx batteries are low – replace or recharge the batteries. Tx RF output is set to “OFF” – change to “ON”. Rx switch is in the off position – turn on the ESC or switch harness. Switch harness or ESC is connected incorrectly – check all connections and the ESC instruction manual. Rx is not linked to the Tx properly – perform binding process again. Check Tx or Rx battery polarity.

INTERFERENCE OR SERVOS GLITCHING: Out of range – operate the model more closely to the transmitter. Outside radio interference from other electronic devices in the area - check your local R/C club regarding local operation. Rx/antennas located too closely to engine, motor, or servos or other moving mechanical parts which might be creating unwanted electrical noise – relocate the Rx inside the model or relocate the ESC. Align both Rx antennas at 90 degree angles from each other if possible/applicable.

CONTROL SURFACE MOVES IN THE WRONG DIRECTION: Reverse the control direction of the channel in the radio’s programming.

ONLY ONE SERVO GLITCHES: Servo is bad – replace the servo or send to Hobby Services for repair.

FAILSAFE NOT WORKING CORRECTLY: Receiver is not properly linked to the transmitter – link the Rx to the Tx and re-try. Check the channels which are programmed for transferring from Tx to Rx in the transmitter's programming. Contact Hobby Services for further details.

WIRELESS TRAINING FUNCTION NOT LINKING: Check to see that another Tactic 2.4GHz system is not on in your area. The problem might also be that the teacher's and student's transmitters were not powered in the proper sequence or are positioned too far from each other. Carefully follow the instructions on page 19 for proper linking and operation for training.

RECHARGEABLE BATTERIES WON'T ACCEPT CHARGE THROUGH THE TRANSMITTER: Check the charger for proper setup and operation. Make sure the charge plug is inserted fully into the charge jack. Make sure the transmitter's power switch is in the OFF position. Make sure the cells are inserted inside the battery compartment in the proper direction.

Contact Hobby Services for other problems.

SAFETY GUIDE

The Academy of Model Aeronautics (AMA) has established a Membership Manual which includes a description of the AMA's function and mission, insurance benefits, the Model Aircraft Safety Code, membership renewal information, and more. Model flying MUST be done in accordance within AMA guidelines in order for AMA liability protection to apply. See the website listed below, or contact the AMA for further details:

http://www.modelaircraft.org/files/Memanual.PDF

Academy of Model Aeronautics (765) 287-1256 – Business
5161 East Memorial Drive (765) 289-4248 – Fax
Muncie, Indiana 47302 (800) 435-9262 – Membership Services

http://www.modelaircraft.org

Practice good safety precautions at all times when flying model aircraft. The AMA can assist in locating authorized local flying clubs and fields.

The Tactic TTX850 transmitter is intended for use with radio control model hobby airplanes and helicopters. Use with non-hobby related products for non-hobby related activities is not recommended or encouraged. Any alterations or modifications to any parts of this product are not recommended. Tactic is not responsible for unauthorized repairs or modifications. All unauthorized repairs will void the warranty.

ACCESSORIES

TACL0625 Tactic TR625 6 Channel Receiver
TACL0825 Tactic TR825 8 Channel Receiver
TACM0225 TSX25 Mini Digital High Speed 2BB Servo
TACM0235 TSX35 Standard Sport Servo
TACM0245 TSX45 Std High Torque Metal Gear 2BB Servo
TACM2001 Switch Harness w/Charge Plug Futaba J
TACM2020 4 Cell AA Battery Holder
TACM2090 Servo Extension 6" Futaba J
TACM2093 Servo Extension 12" Futaba J
TACM2500 Y-Harness 20" Futaba J

DTXP4704	Onyx “AA” Alkaline Battery (4)
DTXP4708	Onyx “AA” Alkaline Battery (8)
TACM1000	Tactic to Tactic Trainer Cord
TACM1005	Tactic to Spektrum® JR®
TACM1010	Tactic to Futaba® Round
TACM1011	Tactic to Futaba Square
TACM1100	4.8V 1000mAh NiMH TTX850
TACP0100	TC100 AC Global Charger
TACP0101	Tx Rx Charge Leads Tactic

See www.tacticrc.com for a full list of radio parts and accessories.

FCC STATEMENT

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions.

FCC ID:
IYFTACJ2850

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 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 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 radio/TV technician for help.

FCC Rf Radiated Exposure Statement: This device has been evaluated to meet general Rf exposure requirements The device can be used in portable exposure conditions without Rf restrictions.

INDUSTRY CANADA NOTICE

This device complies with Industry Canada licence-exempt RSS standard(s). 1. 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." 2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. The device can be used in portable exposure conditions without Rf restrictions.

Avis d'Industrie Canada

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. Cet appareil numérique ne dépasse pas les Rèlements sur l'interférence radio par un appareil numérique de classe B stipulées dans les Règlement sur l'interférence redio d'industrie Canada.

2.Les changements ou modifications de cette unité non expressément approuvés par la partie responsable de la conformité pourraient annuler l'autorité de l'utilisateur à utiliser l'équipement.

IC RF Déclaration sur la radioexposition:

Cet appareil est conforme avec l'exposition aux radiations IC Définies pour un environnement non contrôlé. L'appareil peut être utilisé dans des conditions d'exposition portatifs sans restrictions Rf.

CE COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

Instructions for Disposal of Waste Equipment by Private Users in the European Union: This symbol on the product or its packaging indicates this product must not be disposed of with other household waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or location where you purchased the product.

CE

Declaration of Conformity:

Product: Tactic TTX850 2.4GHz 8-Channel Tx and TR825 Rx
Item number: TACJ2850

The objects of the declaration described here are in conformity with the requirements of the specifications listed below following the provisions of the European 2006/95/EC Low Voltage Directive:

EN 60950-1:2006 + Am11:2009 + Am1:2010 + Am12:2011 + Am2:2013

The objects of the declaration described here are in conformity with the requirements of the specifications listed below, following the provosions of the European R&TTE directive 1995/5/EC:

ETSI EN 300 328 V1.8.1:2012
ETSI EN 301 489-1 V1.9.2:2011
ETSI EN 301 489-17 V2.2.1:2012
ETSI EN 62479:2010

Tactic
c/o Hobbico, Inc.
2904 Research Road
Champaign, IL USA 61826

1-YEAR LIMITED WARRANTY

Tactic warrants this product to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase. During that period, Tactic will, at its option, repair or replace without service charge any product deemed defective due to those causes. You will be required to provide proof of purchase (invoice or receipt). This warranty does not cover damage caused by abuse, misuse, alteration or accident. If there is damage stemming from these causes within the stated warranty period, Tactic will, at its option, repair or replace it for a service charge not greater than 50% of its then current retail list price. Be sure to include your daytime telephone number in case we need to contact you about your repair. This warranty gives you specific rights. You may have other rights, which vary from state to state.

For service on your Tactic product in North America, send it postpaid and insured to:

HOBBY SERVICES
3002 N. Apollo Dr., Suite 1
Champaign, IL 61822

Tel: (217) 398-0007 (9:00am - 5:00pm CST, M-F)
E-mail: hobbyservices@hobbico.com

In the European Union, send it postpaid and insured to:

Service Abteilung Revell GmbH
Henschelstrasse 20-30
32257 Bünde Germany

Tel: 01805-110111 (nur für Deutschland)
E-mail: Hobbico-Service@Revell.de

Tacticrc.com Tx-Ready.com

Distributed in the EU by Revell GmbH, Bünde Germany

- This product is suitable only for people of 14 years and older. This is not a toy!
- **WARNING: CHOKING HAZARD** - May contain small parts. Keep away from children under 3 years. Please retain packaging for future reference.
- No part of this manual may be reproduced in any form without prior permission.
- The contents of this manual are subject to change without prior notice.
- Tactic is not res onsible for the use of this roduct. p p

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Made in China

TACJ2850 v1.1