

# TTX600

## 2.4GHz 6-Channel Spread Spectrum Radio

### INSTRUCTION MANUAL

The Tactic TTX600 airplane radio system uses an advanced 2.4GHz spread spectrum technology to prevent unwanted outside interference from interrupting control of the model, ensuring error-free flying and eliminating the need to pull frequency pins before every flight. Tactic 2.4GHz transmitters and receivers are not compatible with other brands of 2.4GHz equipment.



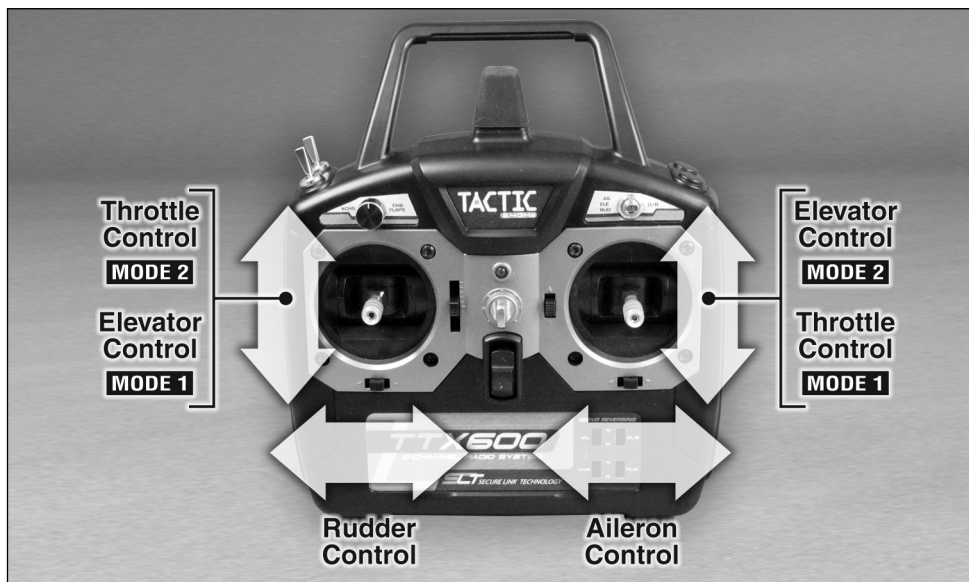
**For safe operation and best results, it's strongly recommended to read this manual in its entirety before use! Also read and understand the instructions included with the model. Damage resulting from misuse or modification will void your warranty.**

#### FEATURES



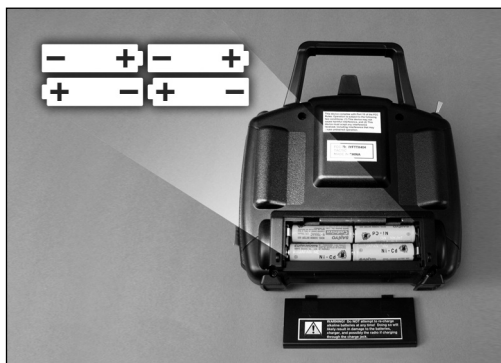
- Ball-bearing gimbals
- Dual rates for aileron, elevator and rudder
- Transmitter binds to multiple Tactic 2.4GHz receivers
- Built-in failsafe & wireless trainer function
- Analog & digital trims with servo reversing
- Power status LED & built-in charge jack

## TTX600 TRANSMITTER (Tx)



The TTX600 airplane transmitter is available in either a “Mode 2” configuration with throttle on the left and elevator on the right, or “Mode 1” configuration with throttle on the right and elevator on the left. Mode 2 radios are most commonly used in the U.S., whereas Mode 1 radios are popular in other countries. Be sure the radio purchased is of the correct mode.

Four “AA” batteries are required to power the Tx (not included). Non-rechargeable 1.5V alkaline, or 1.2V rechargeable nickel-cadmium (NiCd) or nickel-metal hydride (NiMH) cells, can be used. Do not mix cell types, or old and new cells, etc. See the **SERVOES AND ACCESSORIES** section on page 17 for optional batteries available at local hobby retailers.



To install the batteries, slide the battery door down. Insert the cells as shown in the diagram, making sure to note proper polarity for each cell. Close the battery door.

### **POWER SWITCH, LED, and LOW BATTERY ALARM**

The red power LED should light when the power switch is moved upwards to the “ON” position. The

Tx should have adequate power for flight when the LED is on constantly. Anytime the LED begins to flash, accompanied by the sounding of an audible tone, the Tx battery voltage has dropped too low **and operation of the model should NOT be attempted!**



**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!**

If during a flight the Tx LED starts to flash, accompanied by the sounding of audible tones, it's a warning that the Tx batteries have become weak and the aircraft should be landed as soon as possible!

### ***AILERON (CH1)***

Controls the moveable surfaces at the end of both main wings to rotate the airplane about the "roll" axis (an imaginary line which extends from the airplane's nose to the tail). Since every airplane is different, the aileron reversing switch must be set so that moving the aileron stick to the right will cause the airplane's right aileron to deflect up, thus causing the right wing to drop and the airplane to bank right. Moving the aileron stick to the left will cause the airplane's left wing to drop and the airplane to bank left. This is one important method for turning the aircraft.

### ***ELEVATOR (CH2)***

Controls the moveable horizontal surfaces on the airplane's tail to rotate the airplane about the "pitch" axis (an imaginary line extending through the center of both main wings, from one wing tip to the other wing tip). Position the elevator reversing switch so that pulling the elevator stick back (towards you) will cause the elevators to deflect up, thus causing the nose of the airplane to rise. Pushing the elevator stick forwards (away from you) will cause the nose of the airplane to drop. When using the ailerons to bank the airplane's wings, pulling the elevator stick back will help the aircraft maintain altitude and turn the aircraft more quickly.

### ***THROTTLE (CH3)***

Controls the speed (R.P.M.) at which the engine or electric motor operates. With the throttle reversing switch in the NOR position, pulling the throttle stick back will cause the engine's speed to decrease. Pushing the throttle stick forward will cause the engine's speed to increase.

### ***RUDDER (CH4)***

Controls the sideways movement of the airplane's tail and will rotate the airplane about the "yaw axis" (an imaginary line from the top of the airplane's fuselage to the bottom of the fuselage, located near the center-point of the fuselage). Position the rudder reversing switch so that moving the rudder stick to the right causes the rudder to deflect to the right, thus causing the nose of the airplane to point to the right. Moving the rudder stick to the left will cause the nose of the airplane to turn left. When using the rudder in conjunction with the ailerons, the airplane's nose can point into a turn (instead of pointing up and "skidding" through the turn), allowing the airplane to perform tighter, more coordinated turns.

## ***RETRACTABLE LANDING GEAR (CH5)***

Channel 5 offers non-proportional control of a servo, and is typically used to control retractable landing gear. Servo movement is limited to rotating the servo's output arm to the end of clockwise movement, and the end of counter-clockwise movement. The switch for channel 5 is located on the top-left of the transmitter.

To **REVERSE** the direction of rotation for the servo connected to channel 5, first turn off the Tx power switch. Then move the ch4 (rudder) trim lever to the LEFT and hold in that position. Next, turn the Tx power switch back to the ON position which should be followed by three audible tones and flashes of the Tx power LED. The rotational direction of the ch5 servo should now be reversed. Repeat this process to again reverse the rotational direction of ch5.

## ***FLAPS (CH6)***

Channel 6 offers proportional control of a servo anywhere throughout the rotational range of the servo's output arm. This control is normally used to adjust the position of an airplane's flaps. The dial for channel 6 is located above the left stick.

To **REVERSE** the direction of rotation for the servo connected to channel 6, first turn off the Tx power switch. Then move the ch4 (rudder) trim lever to the RIGHT and hold in that position. Next, turn the Tx power switch back to the ON position which should be followed by three audible tones and flashes of the Tx power LED. The rotational direction of the ch6 servo should now be reversed. Repeat this process to again reverse the rotational direction of ch6.

## ***TRIMS***

A "trim" lever is included for each of the main controls, located adjacent to the respective stick.

The aileron, elevator, and rudder trim levers are digital in function, and always rest at center position. Briefly deflecting the lever to either direction away from center will cause the respective servo output to finely rotate to one direction, and will be accompanied by an audible tone. Pressing and holding the trim lever will cause the servo output to move repeatedly. During a flight, when the main sticks are released and spring back to center position, the aircraft should ideally not veer in any direction. If the aircraft does veer in a particular direction, click the respective trim lever until the aircraft maintains a straight attitude on its own.

The throttle trim lever is analog in function, and can move mechanically up or down and rest at any point in the range. Moving the throttle trim lever slightly up or down will finely adjust the engine or motor at low speeds. For safety reasons, it's a good idea to use throttle trim when controlling the engine/motor at very low speed while on the ground. For aircraft with glow engines, the precise position of the trim lever is helpful when determining the engine's preferred idle point. The throttle trim lever is not active when the main throttle stick is above the center point.

## ***REVERSING SWITCHES***

Four reversing switches are built into the Tx, one for each main channel. Each switch can reverse the rotational direction of the servo that is connected to the respective channel.

This is often a much easier method for changing the direction of a servo's movement as opposed to altering the mechanical connections between the model's surface and the servo. Refer to the model's instructions for specific details.

## **DUAL RATE SWITCH**

The travel distance of the servos for the aileron, elevator, and rudder channels can be changed at anytime by using the switch marked AIL ELE RUD D/R, located above the right stick. This switch will change the travel distance of all three channels at the same time (not separately). With the switch in one position, each channel's servo will be capable of rotating through its full travel range (100%). Moving the switch to the opposite position will limit the rotational range of each channel's servo to 60% of its maximum rotational range. Placing the dual-rate switch in one position can allow for better control of the model while on the ground, at low altitudes, or while performing certain maneuvers. Moving the switch to the opposite position can allow for optimum control of the aircraft in mid-flight.

## **ADJUSTABLE STICKS**



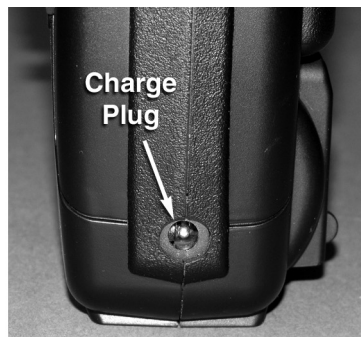
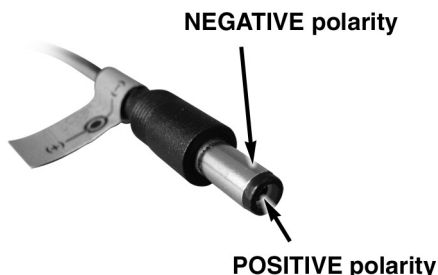
The length of both gimbal sticks can be adjusted as desired. Loosen the set screw inside the center of the stick with a 2mm hex wrench. Rotate the stick end counter-clockwise to lengthen the stick, or clockwise to shorten the stick. Once the desired stick length is found, tighten the set screw with the hex wrench.

## **CHARGE JACK**



**WARNING!!** Do NOT attempt to recharge alkaline batteries! The charge jack should ONLY be used if rechargeable cells are used in the transmitter.

The TTX600 includes a built-in charge jack for convenient recharging of NiCd or NiMH batteries, and is compatible with charge leads designed for Futaba® brand transmitters (HCAP0101). This jack is NOT compatible with charge leads for Hitec®, Airtronics®, JR® or Spektrum® radios.



To use the charge jack with optional rechargeable batteries, first remove the sticker that covers the charge jack on the side of the Tx – making sure not to allow any object to be inserted inside the jack itself. Next, insert the cells inside the Tx's battery compartment noting proper polarity. Make sure the transmitter's power switch is in the OFF position. Connect a compatible charge lead to the jack and follow the instructions included with the charger for charging of NiCd or NiMH batteries that are rated at 4.8V.

Tactic's optional TACP1000 rechargeable battery and wall charger kit includes eight "AA" size rechargeable NiMH cells and 110V AC wall charger, which is compatible with this Tx and can be found at local retailers. Make sure to follow the instructions included with the charge kit.



**WARNING!!** It's not recommended to charge batteries at greater than 1 amp through this charge jack. Fast charging of NiCd and NiMH batteries should **ONLY** be done with chargers that are specifically designed to include the peak-detection function which can automatically stop charge when full charge is detected. Misuse, improper charging, or over-charging of rechargeable cells can result in damage to the cells that could include cell rupture, explosion, or fire!!

## **TRAINER FUNCTION**

The TTX600 Tx includes a built-in **wireless** trainer function – no trainer cable required! This trainer system connects a teacher's Tactic Tx to a student's Tactic Tx by wireless connection. Tactic's wireless trainer function is not compatible with trainer systems in any other brand radios.



**IMPORTANT!** Before attempting to fly the airplane, it's very important to make sure all reversing switches and trim lever adjustments on the student's Tx match the settings on the teacher's Tx! Otherwise, the airplane could suddenly veer off in an unwanted manner when the teacher's trainer switch is pressed. 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!

1. The Tx that was used to set up the controls on the aircraft must be used by the TEACHER.
2. The student must use a separate Tactic Tx with wireless trainer function.
3. Place the teacher and student's transmitters within 1 meter of each other, and make sure the throttle stick for each Tx is set to idle.
4. Turn ON the power switch for the Tx being held by the student.
5. Pull and hold the trainer switch on the teacher's Tx, and then turn ON the teacher's Tx power switch.

6. The LED on the teacher's Tx will flash 3 times to indicate it has become bound with the student's Tx.
7. The teacher can then release his trainer switch.
8. Once both transmitters are bound together, power can be applied to the receiver to prepare for flight.

When the training session has ended, with the model on the ground and all power removed from the model, place both transmitters within 1 meter of each other and simply turn the power switch for both transmitters to the OFF position. This will terminate the wireless link between both transmitters. If additional training will be performed again, return to step 1 above to re-establish the wireless link between the teacher and student's transmitters.

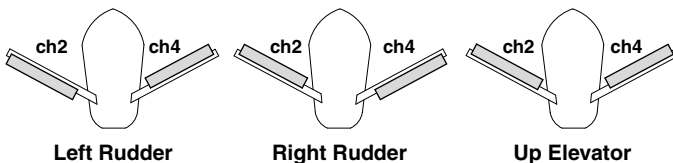
## ELEVON & V-TAIL MIXING FUNCTIONS

The TTX600 includes elevon and V-tail mixing functions, which can be turned on or off. "Elevon" control consists of a mixture between the elevator and aileron channels, and is useful for certain types of aircraft (such as a flying wing). "V-tail" control consists of a mixture between the elevator and rudder channels and is useful for aircraft which have a V-tail. The default setting for all mixing will be "off". To change the mix setting:



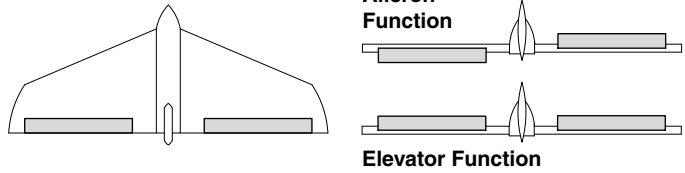
1. With the Tx power switch off, move the right stick to the bottom-right corner, and the left stick to the bottom-left corner.
2. While holding the sticks in these positions, turn the Tx power switch ON.
3. The LED should flash, and if accompanied by **two** audible tones the V-tail mixing function will now be turned ON. If you do not wish to again change this setting, proceed to the next section.

### V-Tail Mixing



4. To cancel V-tail mixing and activate elevon mixing, turn off the transmitter and repeat the above procedure. When the flashing LED is accompanied by **three** audible tones the elevon mixing will be active.

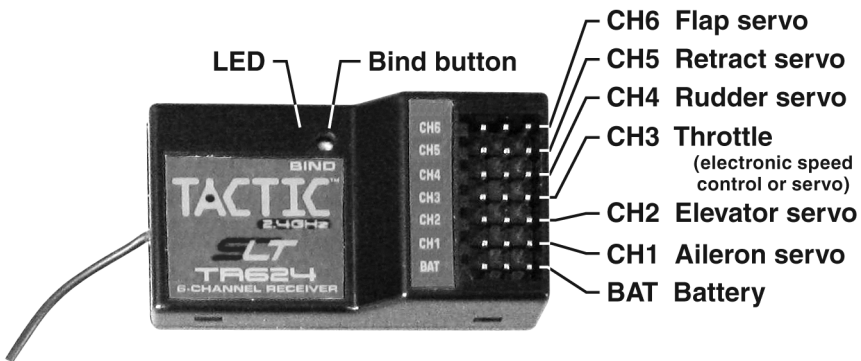
### Elevon Mixing



5. To cancel all mixes, repeat this procedure again. When the flashing LED is accompanied by a **single** audible tone, all mixes will be off.

Each time the mix setting is changed, be sure to check that all controls move in the proper direction for the model. It may be necessary to change the setting of the aileron, elevator, or rudder reversing switch to achieve the proper throw directions for the model. If the elevator and aileron functions or the rudder and elevator functions appear reversed at the control surfaces, it may be necessary to swap the channel 1 and 2 servo plug positions for the elevon mix or the channel 2 and 4 servo plug positions for the V-tail mix.

## TR624 RECEIVER & FLIGHT EQUIPMENT INSTALLATION (if applicable)



### RECEIVER (Rx)

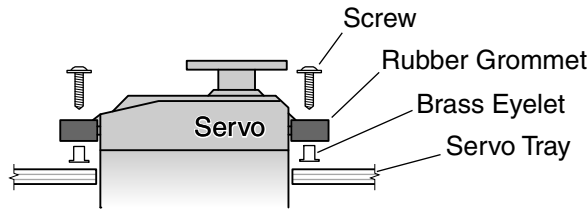
Mount the receiver as specified in the model's instructions. It's important to keep the Rx as far away from the engine/motor, servos, and ESC and other electronic items as possible. To prevent the Rx from becoming damaged, it might be acceptable to mount it inside certain models using Velcro®. In certain cases, wrapping the Rx with foam rubber can help to prevent damage from occurring due to vibration, but foam rubber can prevent adequate airflow from passing over the receiver in warm



environments which might not be recommended. Additional Tactic TR624 receivers can be purchased from your local retailer (part number TACL0624) to work with this TTX600 transmitter.

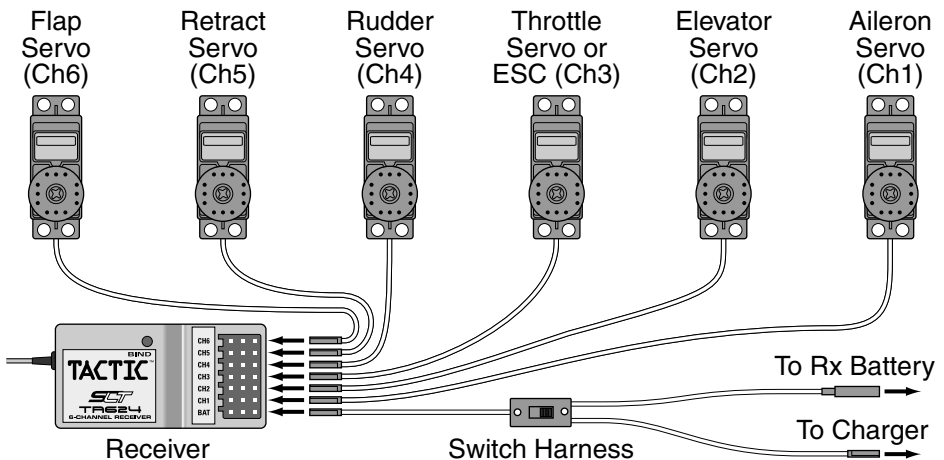
## SERVOS

Center the trims on the Tx. Mount the servos inside the model, and connect the linkages to the servo using an appropriate length servo arm.



All servos should be mounted as shown in the model's instructions. Use rubber grommets, screws and brass eyelets supplied (where applicable) when mounting your servos (see above). Do NOT over-tighten the

mounting screws, as the servos should be able to move slightly to compensate for engine vibration. Use a servo horn long enough to accommodate the entire range of movement for that particular control. When mounting the servos, make sure the pushrods are not too loose or bind in any way. Pushrods should be capable of operating the full range of the servo. This can be tested by moving the Tx sticks to maximum positions several times while observing the movement of the control services. If a servo is binding or sticks in flight, it should be re-adjusted so as not to drain excessive current from the battery and thus shorten flight time.



Connect the servos to the Rx as shown. Route the wires so they do not interfere with any moving parts. Move the Tx trims to finely adjust the servo's center point as needed to match the installation. See the **SERVOS AND ACCESSORIES** section on page 17 for a full list of optional servos.

## ***ELECTRONIC SPEED CONTROL (ESC)***

If the model is electric powered, an optional ESC will be necessary to control speed of the electric motor and to divert power to the receiver and servos. Connect the receiver plug on the ESC to the slot marked CH3 (throttle) on the receiver. Center the transmitter's throttle trim and follow the ESC instructions for proper operation and connection of the power battery.

## ***GLOW ENGINES***

If the model is powered by a glow engine, a switch harness and 4-cell battery (4.8V) will be necessary to power the receiver and servos. See the **SERVOS AND ACCESSORIES** section for suggested options.

## ***ON/OFF SWITCH HARNESS AND BATTERIES***

Many ESCs include a built-in ON/OFF power switch. Glow powered airplanes require a separate battery to power the receiver and servos, and using a separate switch harness is convenient for turning on and off power to the receiver.

A switch harness and 4-cell battery holder are included with the TTX600 radio system. Refer to the model's instructions for the optimum location to mount the battery, Rx, and switch harness for optimum weight distribution in the model. Locate the switch well away from the propeller and the exhausts from a glow engine. Cut a hole in the side of the fuselage large enough to allow the switch's lever to move freely and fully from end-to-end. If the switch harness includes mounting screws, be sure not to cut the hole so long that it would prevent the mounting screws from being installed firmly.

One switch harness lead connects to the receiver's "BAT" socket, another connects to the battery, and the third lead is for convenient recharging of the battery through the switch harness. Charging of the rechargeable battery through the switch harness can only be accomplished when the switch is in the OFF position.

Use of "AA" NiCd or NiMH rechargeable cells is recommended. Do not use alkaline cells for powering the receiver and servos. See the **SERVOS AND ACCESSORIES** section on page 16 for a full list of optional batteries and chargers.



**IMPORTANT!** Always make sure that power is applied to the transmitter **BEFORE** applying power to the receiver and servos, and that the throttle stick is at minimum (idle) position. Failure to do so could result in the model becoming uncontrollable and cause a safety hazard.

## ***BIND THE RECEIVER TO THE TRANSMITTER***

For proper operation it's necessary to "bind" the Tx and Rx together electronically. This ensures sole communication between the two, and prevents other transmitters from being able to control the receiver.

1. Turn on the Tx.
2. Apply power to the Rx.
3. If the Rx LED flashes once and then stays on, the Rx is already bound to the Tx and you can skip to the next section. Otherwise, insert a small diameter screwdriver through the hole marked “BIND” and press the pushbutton until the Rx LED glows red and then turns off after about one second.
4. Release the “BIND” button.
5. If the binding 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 bound, repeat steps 1–6 above.

## ***FAILSAFE FUNCTION***

The included TR624 receiver has a failsafe feature which engages in the event that the radio signal from the transmitter somehow becomes interrupted. If radio contact is broken, this safety feature causes the servos to automatically move either to a certain position, or hold their last position so to prevent the model from moving in an erratic manner. Channels 1, 2, 4, 5, and 6 will enter a “hold” mode, whereby the servos will lock in their last recognized position.

The servo connected to channel 3, normally being the throttle control, will move to a pre-set position. The factory default failsafe position for channel 3 is to move to **0% throttle**. Motor/prop movement should stop if the receiver loses signal from the transmitter. The throttle servo's failsafe position can be manually re-set to any other position if desired, as follows:

**IMPORTANT NOTE:** Before manually resetting the failsafe, make sure the servo reversing switches are in the correct position for the application.

1. Apply power to the Tx and Rx.
- 2a. If using an ESC, do NOT arm the ESC. Do NOT attempt to adjust the throttle's failsafe position if the ESC is armed.
- 2b. If using a gas or glow powered engine, do NOT attempt to adjust the throttle's failsafe position while the engine is operating.
3. Move the Tx throttle stick to the desired position for the throttle control to move if the Rx goes to failsafe.
4. Press and hold the “Bind” button on the receiver, and the Rx's LED should blink twice. Release the Bind button, and the receiver's LED should turn on (stop flashing). The Tx and Rx should now be bound, with the throttle failsafe in the new position as set above.

**NOTE:** If you're using an ESC which has a signal loss feature, the pre-set failsafe position is irrelevant as the signal loss feature will cease the throttle operation if the signal is lost.

## SYSTEM CHECK AND OPERATION



**WARNING!** During all pre-flight preparations with the aircraft on the ground, make sure the throttle stick remains at the minimum position and 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 from the low position 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 position of the reversing switch for that particular 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 in the center position, 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 airplane 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." The "range" is the safe operating distance from the Tx to the Rx, and should be as far as you can clearly see the model. With the assistance of another person, place the aircraft on the ground and walk 100 feet (30m) away from the model. With the Tx pointed directly at the model, operate the transmitter's controls, and ensure the movement of all surfaces is according to the movement of the transmitter.

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 lever 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, re-attach the propeller to the model.



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

2. Make sure the glow engine fuel tank has an adequate amount of fuel, or power batteries for electric airplanes are fully charged.
3. Move the Tx throttle stick to the minimum position, 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 aileron, elevator, and rudder channels to allow the airplane to sustain smooth, even flight. If further adjustments are required on the ground, make sure to turn off the engine or ESC/motor before making such adjustments.
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.

## **SAFETY GUIDE**

The Academy of Model Aeronautics (AMA) has established an Official Safety Code. Model flying **MUST** be in accordance with this Code in order for AMA Liability Protection to apply. All questions relating to the AMA Safety Code, liability insurance program, and other official AMA information can be attained from the AMA:

### **Academy of Model Aeronautics**

5161 East Memorial Drive  
Muncie, Indiana 47302

(765) 287-1256 – Business

(765) 289-4248 – Fax

(800) 435-9262 – Membership Services



<http://www.modelaircraft.org>

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

The AMA's Official 2009 Safety Code includes the following regarding the use of model aircraft:

***2009 OFFICIAL ACADEMY OF MODEL AERONAUTICS NATIONAL MODEL AIRCRAFT SAFETY CODE***

Effective January 1, 2006

***GENERAL***

1. A model aircraft shall be defined as a non-human-carrying device capable of sustained flight in the atmosphere. It shall not exceed limitations established in this code and is intended to be used exclusively for recreational or competition activity.
2. The maximum takeoff weight of a model aircraft, including fuel, is 55 pounds, except for those flown under the AMA Experimental Aircraft Rules.
3. I will abide by this Safety Code and all rules established for the flying site I use. I will not willfully fly my model aircraft in a reckless and/or dangerous manner.
4. I will not fly my model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.
5. I will not fly my model aircraft higher than approximately 400 feet above ground level, when within three (3) miles of an airport without notifying the airport operator. I will yield the right-of-way and avoid flying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.
6. I will not fly my model aircraft unless it is identified with my name and address, or AMA number, inside or affixed to the outside of the model aircraft. This does not apply to model aircraft flown indoors.
7. I will not operate model aircraft with metal-blade propellers or with gaseous boosts (other than air), nor will I operate model aircraft with fuels containing tetranitromethane or hydrazine.
8. I will not operate model aircraft carrying pyrotechnic devices which explode or burn, or any device which propels a projectile of any kind. Exceptions include Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight. Rocket motors up to a G-series size may be used, provided they remain firmly attached to the model aircraft during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code; however, they may not be launched from model aircraft. Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Air Show Advisory Committee Document.
9. I will not operate my model aircraft while under the influence of alcohol or within eight (8) hours of having consumed alcohol.

10. I will not operate my model aircraft while using any drug which could adversely affect my ability to safely control my model aircraft.
11. Children under six (6) years old are only allowed on a flight line or in a flight area as a pilot or while under flight instruction.
12. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

## ***RADIO CONTROL***

1. All model flying shall be conducted in a manner to avoid overflight of unprotected people.
2. I will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.
3. I will not fly my model aircraft in the presence of spectators until I become a proficient flier, unless I am assisted by an experienced pilot.
4. At all flying sites a safety line or lines must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the safety line. In the case of air shows or demonstrations a straight safety line must be established. An area away from the safety line must be maintained for spectators. Intentional flying behind the safety line is prohibited.
5. I will operate my model aircraft using only radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
6. I will not knowingly operate my model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency-management agreement may be an allocation of frequencies for each site, a day-use agreement between sites, or testing which determines that no interference exists. A frequency-management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.
7. With the exception of events flown under official AMA rules, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flight line.

8. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.
9. Radio-controlled night flying is limited to low-performance model aircraft (less than 100 mph). The model aircraft must be equipped with a lighting system which clearly defines the aircraft's attitude and direction at all times.
10. The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be flown to a selected location which is beyond the visual range of the pilot.

### ***FREE FLIGHT***

1. I will not launch my model aircraft unless I am at least 100 feet downwind of spectators and automobile parking.
2. I will not fly my model aircraft unless the launch area is clear of all individuals except my mechanic, officials, and other fliers.
3. I will use an effective device to extinguish any fuse on the model aircraft after the fuse has completed its function.



## **SERVO AND ACCESSORIES**

### **SERVO AND RADIO ACCESSORIES**

GPMM1200	ElectriFly® ES40 Pico Servo
GPMM1210	ElectriFly ES50 Nano Servo
GPMM1220	ElectriFly ES80 Micro Servo
GPMM1230	ElectriFly ES100 Standard Servo
HCAM0165	CS-64 High Torque Standard Size 2BB Servo
HCAM0191	CS-70MG Super Torque Standard Size 2BB Servo
HCAM0300	CS126 Std Size Digital 2BB Servo
HCAM0304	CS140 Std Size Digital High Speed 2BB MG Servo
HCAM0308	CS150 Std Size Digital High Torque 2BB MG Servo
HCAM0312	CS160 Std Size Digital High Torque/Speed MG Servo
HCAM0316	CS170 Std Size Digital Ultra Torque 2BB Titanium Gear Servo
HCAM2500	Y-Harness Futaba J
TACL0624	Tactic TR624 6-Channel 2.4GHz Receiver
TACM2001	Tactic Switch Harness with Charge Plug, Futaba J Plugs
TACM2020	Tactic 4-Cell AA Battery Holder, Futaba J
TACM2100	Tactic Adjustable Neck Strap
TACM4420	Tactic TTX404 and 600 Battery Door

### **BATTERIES AND CHARGERS**

FUGP7300	Fuji® AA Alkaline Batteries (4)
GPMM3155	Triton™ EQ AC/DC Charger, Balancer
HCAM6375	LiFeSource™ AC/DC Balancing Charger
HCAM6415	LiFeSource 6.6V 1100 10C Rx Battery
HCAM6435	LiFeSource 6.6V 2100 10C Rx Battery
HCAM6445	LiFeSource 6.6V 3200 10C Rx Battery
HCAP0290	Quick Field Charger MkII
TACP1000	Tactic NiMH Conv. Kit – 8 “AA” NiMHs, 110V Charger

### **ELECTRONIC SPEED CONTROLS**

GPMM1800	ElectriFly Silver Series SS8 Brushless 8 Amp ESC
GPMM1810	ElectriFly Silver Series SS12 Brushless 12 Amp ESC
GPMM1820	ElectriFly Silver Series SS25 Brushless 25 Amp ESC
GPMM1830	ElectriFly Silver Series SS35 Brushless 35 Amp ESC
SUPM1020	SuperTigre® 20A Brushless ESC
SUPM1030	SuperTigre 30A Brushless ESC

## SPECIFICATIONS

TTX600 6-Channel Transmitter	
<b>Channels</b>	6
<b>Frequencies</b>	2.403 – 2.480GHz
<b>Modulation</b>	FHSS spread spectrum
<b>Input power</b>	Four “AA” alkaline, NiCd, or NiMH cells (3.8 – 8.0V, not included)
<b>Output power</b>	< 0.1W
<b>Power indicators</b>	LED, with low voltage alarm
<b>Reversing switches</b>	Slide switches, four channels
<b>Trims</b>	Analog for throttle, digital for aileron, elevator, rudder
<b>Antenna</b>	Built-in non-removable
<b>Charge jack</b>	Built-in (Futaba® compatible, for use with optional NiCd or NiMH cells)
<b>Trainer function</b>	Wireless (compatible with Tactic brand transmitters only)
<b>Optional mixes</b>	Elevon, V-Tail
<b>Dual rates</b>	100/60 % for aileron/elevator/rudder
<b>Channel 5</b>	Non-proportional on/off
<b>Channel 6</b>	Proportional

Tactic TR624 Receiver	
<b>Channels</b>	6
<b>Frequencies</b>	2.403 – 2.480GHz
<b>Modulation</b>	FHSS spread spectrum
<b>Input power</b>	Four “AA” alkaline, NiCd or NiMH cells (4.0 – 6.0V, not included)
<b>Failsafe</b>	Programmable throttle, all other channels hold
<b>Dimensions</b>	1.77 × 0.98 × 0.5" (45 × 25 × 13mm)
<b>Weight</b>	0.28 oz (8g)

### OTHER ITEMS INCLUDED

- On/off switch harness with built-in charge lead
- 4 cell “AA” battery holder for receiver
- Neck strap

## 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 NiCd batteries were installed in the transmitter, remove the batteries before placing the radio in long-term storage.

## **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***

Low 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. 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 binded 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 pagers, strong industrial or other commercial transmitters in the area - check your local R/C club regarding local operation. Rx 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.

### ***CONTROL SURFACE MOVES IN THE WRONG DIRECTION***

Reverse the position of the reversing switch for the appropriate channel.

### ***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 binded to the transmitter – bind the Rx to the Tx and re-try. Contact Hobby Services for further details.

### ***WIRELESS TRAINING FUNCTION NOT BINDING***

Check to see that another Tactic 2.4GHz system is not on in your area. The teacher's and student's transmitters were not powered in the proper sequence. Carefully follow the instructions on page 3 for proper binding 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.

## ***FCC STATEMENT***

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

**FCC Rf Radiated Exposure Statement:** The equipment complies with FCC Rf radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

**Note:** The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**FCC ID: IYFTTX600**

## **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.

### **Declaration of Conformity:**

**Product:** Tactic TTX600 2.4GHz 6-Channel Tx Rx

**Item number:** TACJ2600

**Equipment class:** 1



### **Tactic TTX600 transmitter and Tactic TR624 receiver:**

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*

*Safety*

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

*ETSI EN 300 328 V1.7.1*

*Technical requirements for radio equipment*

*ETSI EN 301 489-1 V1.8.1,  
301 489-17 V1.3.2*

*General EMC requirements for radio equipment*

### **Tactic**

c/o Hobbico, Inc.

2904 Research Road

Champaign, IL USA 61826

## CE COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

The associated regulatory agencies of the following countries recognize the noted certifications for this product as authorized for sale and use.

UK	DE	DK	BG	SE	FI	
EE	LV	LT	PL	CZ	SK	HU
RO	SI	AT	IT	ES	PT	IE
NL	LU	MT	CY	GR		

### **1-YEAR LIMITED WARRANTY \* U.S.A. & Canada**

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, send it post paid and insured to:

#### **HOBBY SERVICES**

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

Ph: (217) 398-0007

(9:00am–5:00pm CST, M–F)

E-mail: [hobbyservices@hobbico.com](mailto:hobbyservices@hobbico.com)  
[tacticrc.com](http://tacticrc.com)

- 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 responsible for the use of this product.

# TACTIC™

2.4GHz