

TTX403

MICRO 4-CHANNEL 2.4GHZ

2.4GHz 4-Channel Micro Spread Spectrum Radio Instruction Manual

The Tactic™ TTX403 Micro 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 brand 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



- 2.4GHz frequency hopping spread spectrum technology
- Tx can link to Tactic SLT 2.4GHz receivers
- Digital trims with power status LED
- Built-in charger for 1S micro LiPo batteries
- V-Tail Mixing
- Elevon Mixing
- Channel Remapping

TTX403 TRANSMITTER (Tx)

The TTX403 4-Channel Micro airplane transmitter can be configured to operate as a 3-channel or 4-channel Tx. When configured for **4-channel operation** the controls function like a normal Mode-2 transmitter with aileron + elevator on the right stick, and throttle + rudder on the left stick.

Configuring the Tx for **3-channel operation** can help beginners concentrate on throttle control with one hand and full airplane directional control with the other hand. Here, the right stick operates elevator + rudder while the left stick will control the throttle. The aileron function will still be active, and now be on the left stick, but aileron control is often not needed for 3ch aircraft.

To change the TTX403 transmitter between 3ch and 4ch configurations:

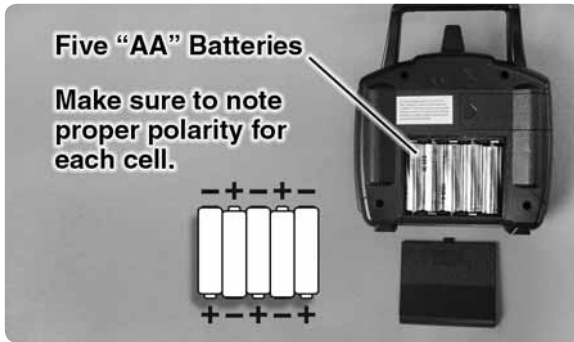
1. Turn off the Tx power switch.
2. Move the right stick to the top-right corner, and the left stick to the top-left corner, and hold in these positions.
3. Move the Tx power switch to the on position. The power LED will flash, accompanied by three short tones from the Tx which indicates the Tx configuration has been changed.



NOTE: Each time the Tx power switch is turned on you will hear either one short tone if the Tx is in the 3ch configuration, or two short tones if the Tx is in the 4ch configuration.

Input Power

Five “AA” batteries are required to power the Tx (not included with individual radio systems). 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, old and new cells, etc. See the **SERVOS AND ACCESSORIES** section on page 12 for optional products available at local hobby retailers.



Slide the battery door down, and insert the cells as shown. Make sure to note proper polarity for each cell. Close the battery door.

Power 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 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 recharge NiCd or NiMH batteries before attempting a flight!

If during a flight audible tones sound and the Tx LED starts to flash the Tx batteries have become weak and the aircraft should be landed as soon as possible!

Aileron (Ch 1)

Controls the moveable surfaces at the trailing edge of the 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 direction of movement for the aileron channel may need to be reversed 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 will bank to the right. Moving the aileron stick to the left will cause the airplane's left wing to drop and the airplane will bank to the left. This is one important method for turning the aircraft. When the Tx is set to the 3ch configuration the aileron channel will not be used.

Elevator (Ch 2)

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). The direction of movement for the elevator channel may need to be reversed so that pulling the elevator stick back (towards you) will cause the elevator 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.

Throttle (Ch 3)

Controls the speed (R.P.M.) at which the motor operates. Pulling the throttle stick back will cause the motor's speed to decrease. Pushing the throttle stick forward will cause the motor's speed to increase.

Rudder (Ch 4)

Controls the side-to-side 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). The direction of movement for the rudder channel may need to be reversed 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 the Tx is set to the 3ch configuration the rudder will be controlled by the right stick. Otherwise, rudder is controlled with the left stick.

Trims

All trims are digital in function. Two trim buttons are included for each of the main controls, located adjacent to the respective stick. One trim button adjusts the servo's direction in one direction, and the other button to the opposite direction. Briefly pressing any trim button will adjust the center position of the respective servo output in the appropriate direction and will be accompanied by an audible tone. Pressing and holding any trim button will cause the servo output to move repeatedly. A unique tone will sound when the servo reaches either end of the trim limit, and at the channel's center point.

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, press the respective trim button until the aircraft maintains a straight attitude on its own.

Reversing Channel Direction

The direction of movement for any of the four channels can be reversed electronically.

To change the direction of movement for any channel:

1. Switch off the Tx power switch.
2. Press and hold either trim button for the channel to be reversed.
3. Switch the Tx power switch on. The LED should flash to indicate the movement for that channel has been reversed.
4. Repeat steps 1-3 to reverse the direction of any other channel as needed.
5. Switch the Tx power switch off.

Elevon & V-Tail Mixing Functions

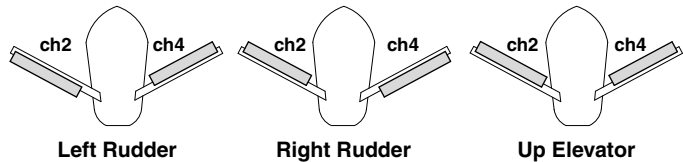
The TTX403 includes elevon and V-tail mixing functions, which can be turned on or off. “Elevon” control consists of a mixture between the elevator and aileron channels, and is useful for certain types of aircraft (such as a flying wing). “V-tail” control consists of a mixture between the elevator and 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 transmitter will emit three rapid tones to confirm the programming has been changed. The LED will then flash once simultaneously with one tone (3ch

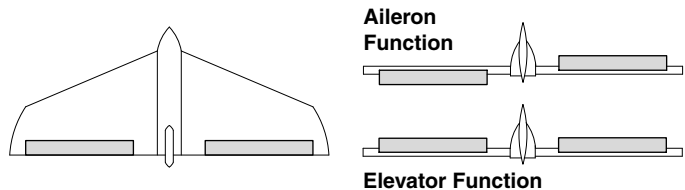
config) or two tones (4ch config) during powerup. This single flash indicates that the transmitter is in V-Tail mixing and the LED will remain solid afterwards.

V-Tail Mixing



4. To cancel V-tail mixing and activate elevon mixing, turn off the transmitter and repeat the above procedure. When the LED flashes twice during powerup the **elevon** mix is enabled and the LED will remain solid afterwards.

Elevon Mixing



5. To cancel all mixes, repeat this procedure again. When the LED remains solid, 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 on page 4 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.

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.

Built-In 1S LiPo Charger

A 1S LiPo charger is built into the TTX403 transmitter itself. This charger is designed specifically for charging a micro 1S 3.7V LiPo cell which has a micro connector. Charge current is rated at 250mAh, with a maximum charge voltage of 4.20V. Charging will begin automatically when the battery is connected, and automatically stop when full charge is detected.

1. Make sure the Tx power switch is in the off position.
2. Looking at the rear of the Tx, slide open the charger door by moving it to the right.
3. Connect the 1S LiPo battery to the socket inside the battery door. When a proper connection has been made and the battery is being charged, the green "CHARGE" LED will illuminate.
4. When charge is complete the green CHARGE LED will turn off.
5. Remove the battery from the charger.



IMPORTANT WARNINGS REGARDING LIPO BATTERY USE



NEVER ATTEMPT TO CARE FOR LITHIUM-POLYMER (LiPo) CELLS IN THE SAME WAY AS OTHER BATTERY TYPES! LiPo cells are much more sensitive and volatile than NiCd or NiMH batteries. Misuse and overcharge can quickly result in LiPo cells getting hot and/or swelling, which could lead to **VIOLENT EXPLOSION AND/OR FIRE** and serious personal injury and property damage.

- **NEVER** attempt to recharge other battery types except 1S LiPo cells with this built-in charger.
- **NEVER** continue to charge or use LiPo cells if they start to swell, and become overly warm to the touch. Failure to follow this guideline could cause the battery to become hot and explode or ignite!!
- **ALWAYS** disconnect the battery from the charger immediately if the battery becomes hot! Allow the battery to cool before use.
- **NEVER** allow water, moisture or foreign objects into the Tx/charger.
- **NEVER** leave the room where a battery is being charged.
- **NEVER** place the Tx/charger or battery on a flammable surface or near a flammable object during the charge process. Keep away from carpets, cluttered workbenches, etc.
- **ALWAYS** have a “class D” fire extinguisher available when handling LiPo batteries.
- If a LiPo cell leaks fluid, do not get fluid on the skin, in the eyes or mouth, etc. If you make contact with fluid from a LiPo battery, rinse the affected area well with water and seek immediate medical care.

LINK THE RECEIVER TO THE TRANSMITTER

This link ensures sole communication between this Tx and the receiver, and prevents other transmitters from controlling the model. If it's necessary to re-link the receiver to the transmitter:

1. Switch on the Tx.
2. Connect the battery to the Rx. See **SERVOS AND ACCESSORIES** on page 12 for recommendations.
3. The Rx LED on the Rx will turn on, indicating the Rx is bound to the Tx. On some receivers, you will have to push and hold the link button for 3 seconds.
4. Test for proper Tx / Rx functionality in the next section. If the system did not become properly linked, repeat steps 1-3 above.

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 secure to prevent them from easily becoming dislodged during flight. For safety 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 reversing for that particular channel.
5. With both sticks at center position, move the trims 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 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 motor R.P.M. in the model.
7. Perform a "range check". The "range" is the safe operating distance from the Tx to the Rx, and should be 150 meters. 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 are 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 to minimum position to 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 careful to stay clear from moving propellers!!

2. Make sure the airplane's power batteries are fully charged.
3. Move the Tx throttle stick to minimum position, then switch on the Tx power switch. Turn on the power switch in the model.
4. During the first flight, it might be necessary to re-trim the aileron, elevator, and rudder channels to allow the airplane to sustain level hands-off flight. If further adjustments are required on the ground, beware that the on-board brushed ESC will still be active (if used).
5. When the flight is completed, remove power from the system as described before. Shut down power to the Rx Control Board first, then 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>

ACCESSORIES

Servos and Accessories

TACL0324	Tactic TR324 3-Channel Receiver
TACL0625	Tactic TR625 6-Channel Receiver
TACL0424	Tactic TR424 4-Channel Receiver
TACL1424	Tactic TR1424 4-Channel Receiver with 2 Servos
TACM0021	Tactic TSX21 Linear Servo Actuator
FUTM4503	FPC10M Micro Servo/Battery Connector
FUTM4504	AEC-29 Micro Y-Harness 75mm, 3 in.
TACM0019	TSX019 Ultra Pico 1.9g Servo

Batteries and Chargers

FUGP4308	Fuji® AA Alkaline Batteries (8)
GPMP0760	ElectriFly LiPo 1S 3.7V 140mAh 20C
GPMP0770	ElectriFly LiPo 1S 3.7V 250mAh 20C

Electronic Speed Controls*

FPWM0206	FLIGHTPOWER 6A LIPO BL ESC BEC
FPWM0210	FLIGHTPOWR 10A LIPO BL ESC BEC
GPMM1795	SS6 BRUSHLESS 6 AMP ESC
GPMM1800	SS8 BRUSHLESS 8 AMP ESC
GPMM1810	SS12 BRUSHLESS 12 AMP ESC

* Input connectors on each ESC may need to be replaced with the appropriate micro connector

TTX403 4-CHANNEL MICRO SPECIFICATIONS

TTX403 4-Channel Transmitter	
Channels	4
Frequencies	2.403 – 2.480GHz
Modulation	FHSS spread spectrum
Input power	Five “AA” alkaline, NiCd, or NiMH cells (4.0 - 8.0V, not included)
Rated output power	< 100 mW
Power indicators	Red LED, with 4.5V low battery indicator
Audible tones	Low voltage alarm, Trim lever adjustments, Stick mode setting
Servo reversing	All channels
Stick modes	3-channel and 4-channel configurations
Trims	Digital for all channels
Built-in LiPo Charger	
Battery type and size	For external 1S LiPo battery
Charge jack	Micro LiPo connector
Output voltage	3.7V nominal, 4.20V maximum
Charge current	250mA
Backup safety timer	45 minutes

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 motor.
- 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 antenna installation. Rx may need to be located to a different position in the model for better reception. Low Tx or Rx battery – replace the batteries or recharge if applicable. 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. Power is not applied to the Rx – re-apply adequate power to the Rx. Rx is not linked to the Tx properly – perform linking process again.

Interference or Servos Glitching

Out of range – operate the model more closely to the Tx. Outside radio interference from pagers, strong industrial or other commercial transmitters in the area - check your local R/C club regarding local operation.

Control Surface Moves in the Wrong Direction

Reverse the direction of movement of the affected channel in the setup of the Tx.

Internal Charger Does Not Recognize Battery

Make sure battery is connected properly. Check for faulty connection or wiring. Replace battery.

Charge Does Not Stop After 45 Minutes

Internal problem might exist. Disconnect battery IMMEDIATELY and contact Hobby Services.

Battery Voltage Low After Charge Is Completed

Battery might be defective and requires replacement. Backup safety timer might have expired before full charge was reached – disconnect, then reconnect the battery to complete the charge process.

Brushed Motor Runs Backwards

Wiring to the motor is connected backwards. Reverse the wiring to the motor.

Brushless Motor Runs Backwards

Change one of the three wires to change 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. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

FCC ID: IYFTTX403

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 TTX403 2.4GHz 4-Channel Micro Tx

Item number: TACJ2403

Equipment class: 1



Tactic TTX403 transmitter:

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+A11:2009 *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,

General EMC requirements for radio equipment

301 489-17 V2.1.1

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	FR
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
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™

PURE RELIABLE 2.4