Radiolink Electronic Ltd
www.radiolink.com

T8S

(FHSS)

8-Channel Remote Controller

Android App Parameter Setting via Bluetooth Connection



User Manual

Compatible with Fixed-wings/Gliders/Multirotors/Cars/Boats

CE FCC RoHS

* Please be kindly noted that this manual will be updated regularly and please visit RadioLink official website to download the latest version.

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Thank you for purchasing RadioLink 8-channel remote controller T8S.

To fully enjoy the benefits of this product and ensure safety, please read the manual carefully and set up the device as instructed steps.

If any problems found during the operation process, either way listed below can be used as online tech support.

1. Send mails to after_service@radiolink.com.cn or after_service1@radiolink.com.cn and we will answer your question at the earliest.
2. PM us on our Facebook page or leave comments on our Youtube page
3. If the product is purchased from the local distributor, you can also ask them for support and repair as prefer.

All manuals and firmwares are available on RadioLink official website www.radiolink.com and more tutorials are uploaded. Or follow our Facebook and Youtube homepage to stay tuned with our latest news.

SAFETY PRECAUTIONS

- Never operate models during adverse weather conditions. Poor visibility can cause disorientation and loss of control of pilots'model.
- Never use this product in a crowd or illegal areas.
- Always check all servos and their connections prior to each run.
- Always be sure about turning off the receiver before the transmitter.
- To ensure the best radio communication, please enjoy the flight/driving at the space without interference such as high voltage cable, communication base station or launching tower.

WARNING

This product is not a toy and is **NOT** suitable for children under the age of 18. Adults should keep the product out of the reach of children and exercise caution when operating this product in the presence of children. Water or moisture may enter the transmitter inside through gaps in the antenna or joystick and cause model instability, even out of control. If running in the wet weather(such as game) is inevitable, always use plastic bags or waterproof cloth to cover the transmitter.

FCC Statement

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

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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.

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

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

Packing List

No.	Items	Qty	Unit
1	TX T8S	1	Piece
2	RX R8EF	1	Piece
3	USB Cable (Charging)	1	Piece
4	Throttle-Stick Spring Retainer	1	Piece

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Chapter 1 Introduction

As image of T8S (Mode 2) shown below, there are two 3-way switches, one toggle-switch, one push-button, eight trimmer buttons and two joysticks. The Mode can be personalized to 1(throttle on right hand) or 2 (throttle on left hand) or both sticks return to center points with the small accessory packed in the bag.

Factory setting by default: CH5/3-way switch on the right, CH6/ Push-button, CH7/3-way switch on the left, CH8/toggle-switch.



Mode 2

1.1 Installation of Remote Control

1.1.1 Installation of Receiver Antenna

1. Keep antennas as straight as possible, or the effective control range will reduce.
2. Big models may contain metal parts that influence signal emission. In this case. antennas should be positioned at both sides of the model to ensure the best signal status in all circumstances.
3. Antennas should be kept away from metal conductor and carbon fiber at least half inch away and no over bending.
4. Keep antennas away from motor, ESC or other possible interference sources.
5. Sponge or foam material is advised to use to prevent vibration when installing receiver.
6. Receiver contains some electronic components of high-precision. Be careful to avoid strong vibration and high temperature.
7. Special vibration-proof material for R/C like foam or rubber cloth is used to pack to protect receiver. Keeping

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the receiver in a well sealed plastic bag can avoid humidity and dust, which would possibly make the receiver out of control.

1.1.2 Transmitter Battery Charging

The built-in battery of T8S is 1S lithium. When the voltage becomes low, the green indicator will flash with a DD warning tone. Make sure to charge the battery in time to avoid the possible damage by over discharge.
T8S charging is as simple as only an android USB data cable needed, connecting to the computer or portable charger.

1.2 Basic Setup

1.2.1 Compatible Receivers

The standard receiver packed with T8S is R8EF, 2.4G 8-channel receiver with SBUS,PPM and PWM signal output supported. R8FM is another compatible receiver with extreme light weight of 2.5g and double signal output of SBUS and PPM. The control distance of both receiver is up to 2000 meters.

R8EF Specifications



1) Channel Qty: 8
2) Operating Voltage：4.8-10V
3) Operating Current：30mA (Input Voltage 5V)
4) Dimension : 48.5*21*11mm
5) Weight：7g
6) 2048 section precision, 0.5us per section, servo anti-shake rudder.
7) Distance: 2000m in the air (depending on the actual flight circumstances)

Signal Working Mode

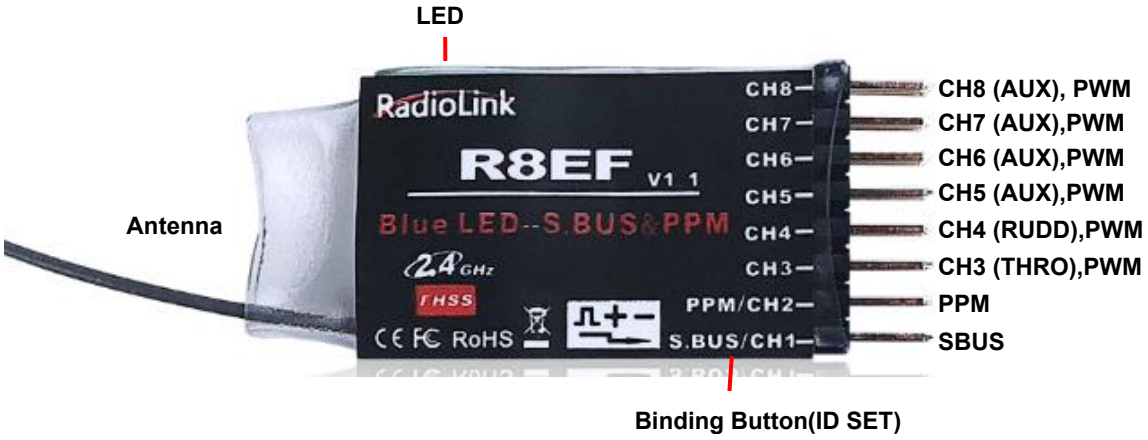
(1) PWM Working Mode: Receiver indicator is RED with all 8 channels output PWM signal.



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(2) SBUS/PPM Working Mode

Receiver indicator is Blue(Purple) with 8 channels output in total. Channel 1 is SBUS signal, channel 2 PPM signal and channel 3 to 8 PWM signal.



1.2.2 Binding

Every transmitter owns a unique ID code. Before using, binding transmitter to receiver on aircraft is a must. When done binding, ID code will be stored in the receiver, no need to rebind, unless the receiver is going to work with another transmitter. If a new R8EF or R8FM receiver is purchased, binding needs to be done before using.

Binding steps of all transmitters and receivers from RadioLink are the same as follow:

（1） Put the transmitter and the receiver close to each other within 50 centimeters

（2） Power on the transmitter and the receiver. The receiver will bind to the closest transmitter.

（3） Press the ID SET on the side of the receiver for more than 1s, the flashing LED means binding starts. When LED is always on (stops flashing), binding is complete.

（4）Check if servos move as the transmitter commands to verify the binding success.

1.2.3 Signal Switch between SBUS&PPM and PWM

Short press the ID SET on the receiver twice within 1s to switch the SBUS/PPM signal to PWM signal. When the RED LED is on, signal output is PWM. When both RED and BLUE LEDs are on. Signal output is SBUS&PPM.

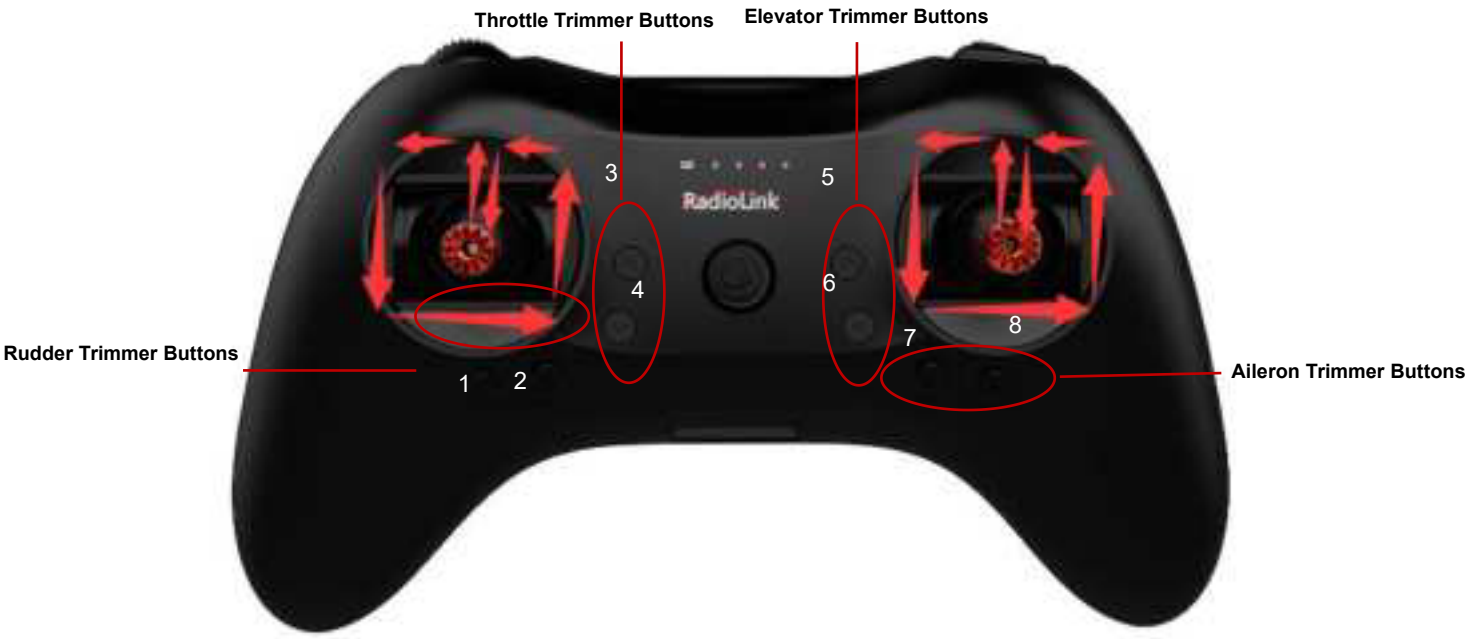
1.2.4 T8S Gimbals Calibration

When the transmitter is power-off, toggle both sticks at the central point. Then press the rudder trimmer button (with an arrow to left and marked as No.1 in below pic) and the power button simultaneously, the four green indicators will start flashing and the T8S is ready to be calibrated..

Range Calibration: Toggle both sticks (Ch1-4) to the highest point/maximum and the lowest point/minimum. Then back to the central point. (Refer to image below)

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Central Point Calibration: When the joysticks are back to the central point, press the rudder trimmer button (with an arrow to right and marked as No.2 in below pic) once. Two short DD sounds will be heard while the first green indicator is always on, meaning the stick calibration is complete.



Chapter 2 Firmware Upgrade

T8S can be upgraded with latest functions added, keeping advanced as always.

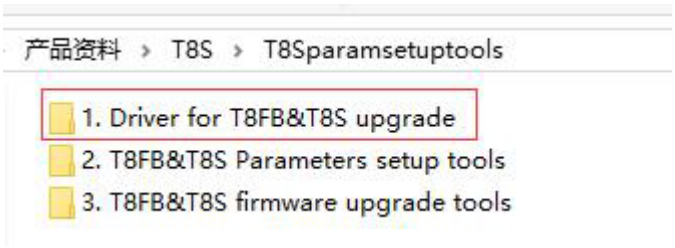
The function of data backup makes massive copy possible, even the same model can directly copy data. Set parameters once, copy at ease!

The whole file with all necessary tools can be downloaded via http://radiolink.com.cn/doce/t8s-paramsetup.html

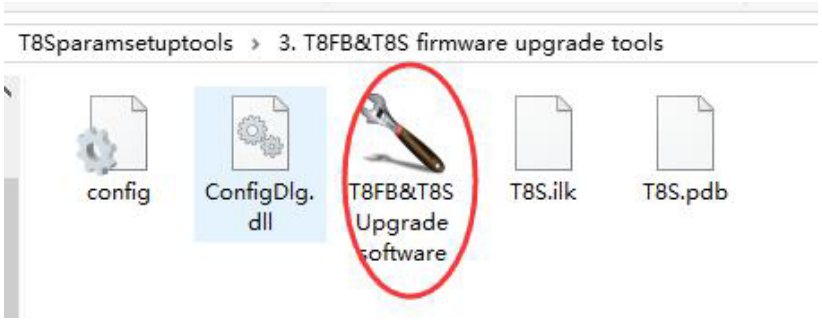
Note The latest firmware for T8S is under development and will be available very soon. The current available one is *T8S_FHSS_V803_69da_20190725_33bit.hex.hex as factory default.* Below upgrade steps are explained with the default firmware and this T8S manual and the file will upgrade as soon as the latest T8S firmware comes out.

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1. Driver Installation: Select the correct driver depending on the computer system.



2. Connect T8S with computer via an android USB data cable
3. Open the software to upgrade T8S firmware and choose the correct COM port

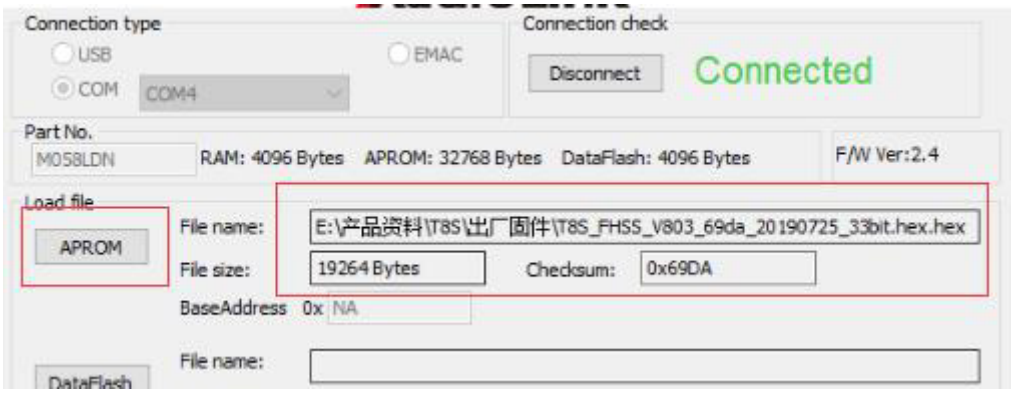


4. Click CONNECT and press the power button once quickly within 1s. When “DISCONNECT” in red turns to “CONNECT” in green, it means it’s connected with success.



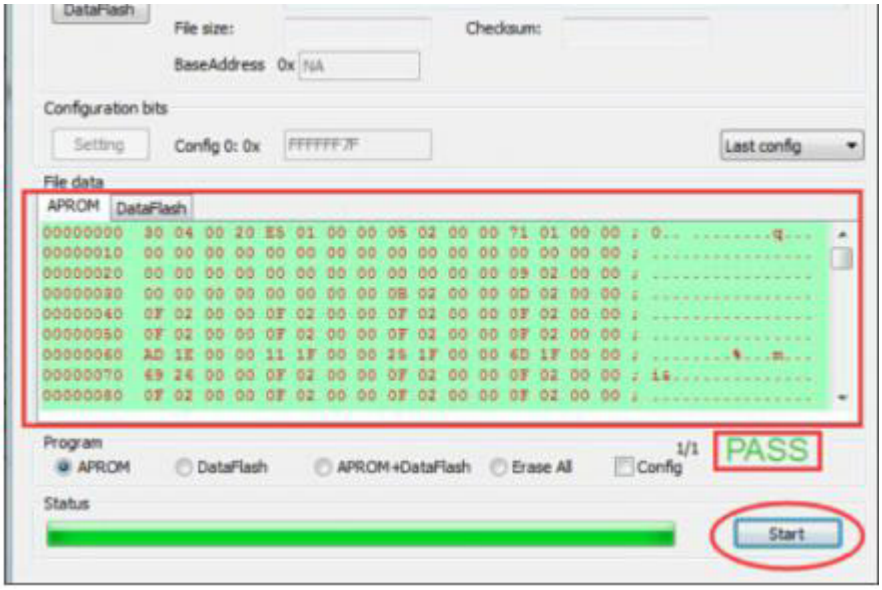


5. Click“APROM” and choose the latest firmware, which is constantly upgrading, please visit RadioLink website to download the latest version)



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6. Click “START” and the process bar becomes green. When the green bar goes to the end and shows PASS, the firmware is upgraded with success.



7. When upgrade with success, close the software and T8S will make three DEE sounds.

Chapter 3 Parameters Setup via Mobile

3.1 Android APP Installation

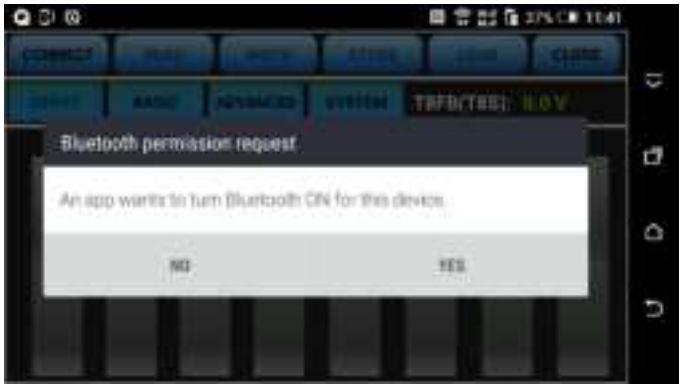
Scan the QR code on the right or click http://www.radiolink.com.cn/firmware/transmitter/RadiolinkT8S_BLE_502_20191106.apk to download the android app to setup T8S parameters by Bluetooth connection.

Note T8S parameters setup APP is only available on Android mobiles and Android tablets..

3.2 Connection

1. When the installation of parameter setup app is complete, short press the power button to turn on T8S

2. Click  to enter the APP, a message will pop out to ask for permission to turn on the Bluetooth function



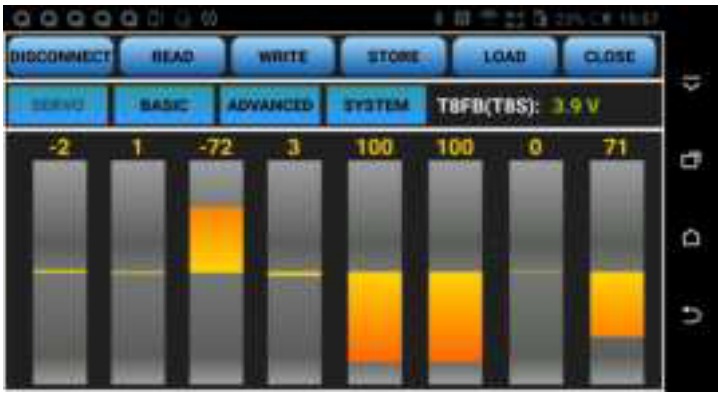
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3. Click CONNECT on the top left of the param. setup interface, a list of devices will pop out for selection.



4. Select RADIOLINK device, the two led indicators on the right (above the RadioLink logo on T8S) will flash with DEE DEE sounds

5. Press any of the four trimmer buttons to stop the DEE sounds and the servo range will be displayed on the APP as picture shown on right, meaning connection between the APP and T8S succeed.



* If fail, please repeat the above steps to try again.

3.3 Parameters Setup Menu

There are six function keys on the top of the parameter setup interface.

(DIS)CONNECT: When APP is opened on the mobile and T8S is powered on, click CONNECT and a message of turning on Bluetooth function will pop out and follow the above steps to make connection. If not successfully, click DISCONNECT then CONNECT again.
READ: Click READ, two short DEE sounds will be heard and the APP starts reading the data in T8S. Every time reopen the APP, the data displayed are default. If any parameter is changed, it can't be displayed until clicking READ.
WRITE: Click to update the changed data into the T8S and two D sounds mean the modified data have been written in T8S. If no D sound means update failure, please reconnect T8S to the App and rewrite. Click WRITE each time parameter is modified.
STORE: Click to save the APP data in the /model/model01.text in the mobile and APP will automatically create a model01. txt file.
LOAD: Click LOAD and the APP will take the data from /model/model01.txt.automatically. APP will notify */model/model01.txt File does not exist* if this file can't be found.
CLOSE: Click CLOSE to exit.
Note There is T8S(T8FB) voltage displaying on each menu.

Parameters Setting Steps

- When parameters need to be modified, click READ first to input the original data into the software, then modify as wish and click WRITE to output the modified data to T8S.
- When parameters STORE as TXT file need to be input, click LOAD first to input the saved data into the

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software then click WRITE to copy them to T8S.

There are four parameter setup menus: SERVO/BASIC/ADVANCED/SYSTEM

3.3.1 SERVO Menu

The 8 rectangles shows the CH1-CH8 servos range(4 basic channels and 4 auxiliary channel) from left to right. Ch1 - Aileron, Ch2 - Elevator, Ch3 - Throttle, Ch4 - Rudder, Ch5 to Ch8 - Auxiliary channels



3.3.2 BASIC Menu

There are six parameters to setup including ”REV”“SUB”“EPA-L”“EPA-R”“F/S”“DELAY”



REV: Defines the relationship between the transmitter controls and the receiver output for channels with options of NORM and REV. Make sure to check all servos move to the correct direction as wish under control. Make sure to check all servos move to the correct direction under control.

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Note

If programmable mix control function is used to control several servos for fixed wing/gliders, eg. V-TAIL mix control, make sure to set the phase to avoid possible confusion.

SUB: Makes small changes or corrections to the neutral position of each servo. The default is 0 setting by factory setting. That is, no SUB-TRIM. The range is from -120 to +120 and can be modified with actual need. It's advised to center the digital trims before making SUB-TRIM changes, and keep all of the SUB-TRIM values as small as possible. In order to restrict the servo travel range, the recommended procedure is as follows:

- Measure and record the desired surface position;
- Zero out the SUB-TRIM ;
- Mount servo arms and linkages so that the control surface's neutral is as correct as possible;
- Modify with SUB-TRIM small range value to make fine corrections.

EPA-L &EPA-R : Sets the range of each channel in percentage. The most flexible version of travel adjustment is available. It independently adjusts each end of each individual servo's travel, rather than one setting for the servo affecting both directions. The default value is 96 with the range from 0 to 120.

F/S: Sets responsive action of model in case of signal loss or low Rx voltage(in percentage).
Each channel can be set independently.

- The NOR (normal) setting holds the servo in its last commanded position.
- The F/S (Fail Safe) function moves each servo to a predetermined position.

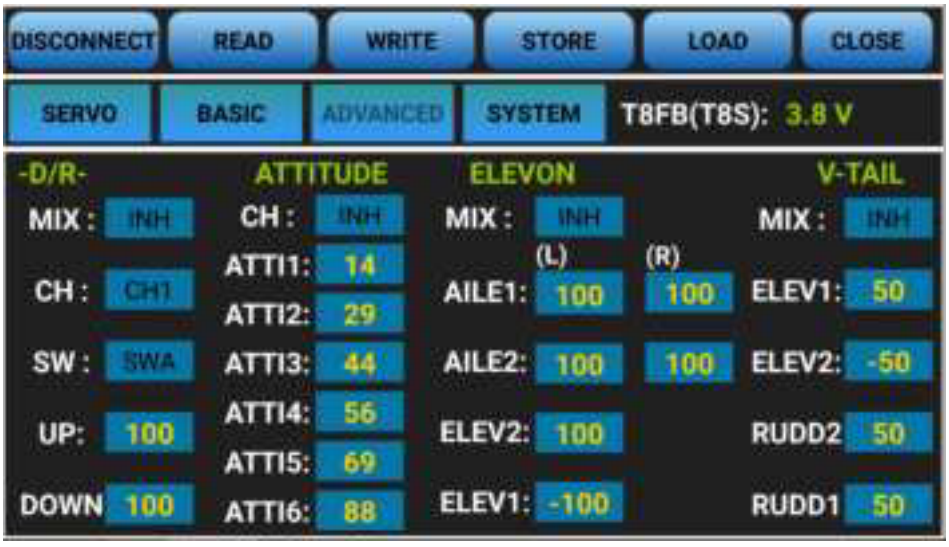
Note

The setting of the throttle F/S also applies to the low battery voltage. F/S value 0 means throttle stick at the lowest point while 50 means at the central point.
The F/S function is used in certain competitions to ensure safety landing of the model prior to flying away and dropping. Conversely, it can also be used make all servos neutral to maximize the flight time.

DELAY: Adjusts the synchronous ratio between the servos position and the actual operation. The default value is 100 by factory setting meaning no delay.

3.3.3 ADVANCED Menu

There are four parameters to setup: "D/R" "ATTITUDE" "ELEVON" "V-TAIL"



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D/R: Sets the auxiliary switch to control the max and min values of corresponding channel range. Turn on "MIX" (mix control) first and choose an auxiliary switch to flip and set the max/min range value to its corresponding channel by toggling. In the example picture shown above: When flip SWA upward and toggle CH1 stick , it means the max/min range of CH1 can be +100 and -100. If the UP value modified to 50, it means the max range can only be +50/-50 when toggle CH1 up and down. 'DOWN" means when flip SWA downward, the max/min value of CH1 is +100/-100.

ATTITUDE: Turn on "CH" first and select the preferred channel from CH5 through CH8. CH5 is always the default switch to change attitude when connect to flight controller PIXHAWK/MINI PIX/APM/TURBO PIX while CH7 is default when connect to DJI flight controller. For the default channel to switch attitudes, please refer to the flight controller user manual.
The values behind each channel means different control percentage output different control signals. The default values of T8S of each attitude is corresponding to the values of flight controller PIXHAWK/MINI PIX/APM/TURBO PIX. That is, when the above flight controllers are used with T8S, attitude can be selected on the Mission Planner and no need to setup specific parameter.

ELEVON: Turn on "MIX" (mix control) first, adjust the aileron distance and allow aileron differential.
ADJUSTABILITY:

- CH1 and CH2 are required.
- Independently adjustable aileron travel allows aileron differential.
- Independently adjustable elevator travel allows for differences in up vs. down travel.
- The separate ELEVON settings for each condition can be set. (GLIDER only)

V-TAIL: This function is used on the V-tail aircraft.

V-TAIL mixing is used with v-tail aircraft so that both elevator and rudder functions are combined for the two tail surfaces. Both elevator and rudder travel can be adjusted independently on each surface.
ADJUSTABILITY:

- CH2 and CH4 are required.
- Independently adjustable travel allows for differences in servo travels.
- Rudder differential is not available. To create rudder differential, set RUD1 and 2 as 0, then use two programmable mixes in SYSTEM Menu, RUD-ELE and RUD-RUD, setting different percentages for up and down. These are new rudder travels. Turn the trim and link off, switch assignment null so rudder won't be accidentally turned off.

Note
V-TAIL function and ELEVON/AILEVATOR mix functions can't be activated at the same time.
Make sure to move the elevator and rudder sticks regularly while checking the servo motions. If a large travel value is set, when the sticks are moved at the same time, the controls may mutually disturb or run out of travel. Decrease the travel until no disturbance occurs.

3.3.4 SYSTEM Menu

There are three parameters to set: "AUX-CH" "PROG.MIX1" "PROG.MIX2"

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AUX-CH

CH5/6/7/8 can be personalized to different switches. If any of the auxiliary channels is not for use, NULL should be set.

TX Alarm

The default low voltage value is 3.0V, which can be personalized as well. When the transmitter voltage is lower than the value set, T8S will make D sound to warn.

STK-MODE by default

1 is throttle at right while 2 is throttle at left. 3 is throttle at right for toys while 4 is throttle at left for toys.

VERSION

The numbers mean different firmware versions which can be upgraded. The detailed steps of firmware upgrade please refer to Chapter 2.

PROG. MIX1/PROG. MIX2

Programmable mix controls is to

1. Diversify attitude changes of aircraft (eg. Rolling to realize when rudder are commanded);
2. Control a certain axis with two or more servos(eg. 2 rudder servos);
3. Correct special movement automatically (eg. Lower FLAP and ELEVATOR servos at the same time);
4. Control the second channel to respond to the movement of the first channel(eg. Increase smoke oil to respond to high speed, but only when the smoke switch is activated).;
5. Turn off the main control under certain circumstances (eg. For dual-engine aircraft, turn off a motor or speed up/down one motor to assist rudder to turn)

PROG. MIX1: the mix control of AILERON and ELEVATOR servos is to assist turning.

PROG. MIX2: the mix control of ELEVATOR and FLAP servos is to loop in small diameter.

Adjustability: Channel 1 to 8 can be personalized to mix.

MAS: Master channel. Other channels need to cooperate with movements of the master channels.

SLA: Slave channel. Many mix controls are controlled by one master channel.

Eg. Rudder-Aileron mix control with Master as rudder while Slave as aileron and OFFS as 0 and UP as 25% to correct rolling. No switch is needed.

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THROTTLE CUT Setup

This function is achievable with T8S programmable mix controls setting.

In SYSTEM Menu, turn on the Mix Control, set Master as CH1 while Slave as CH8 with the OFFS value as -100. Then in ADVANCED Menu, turn on the D/R MIX function, set CH as CH3 and the DOWN value as 0. Then toggle the CH8 Toggle-Switch to the right most and the setting is complete.

RESET

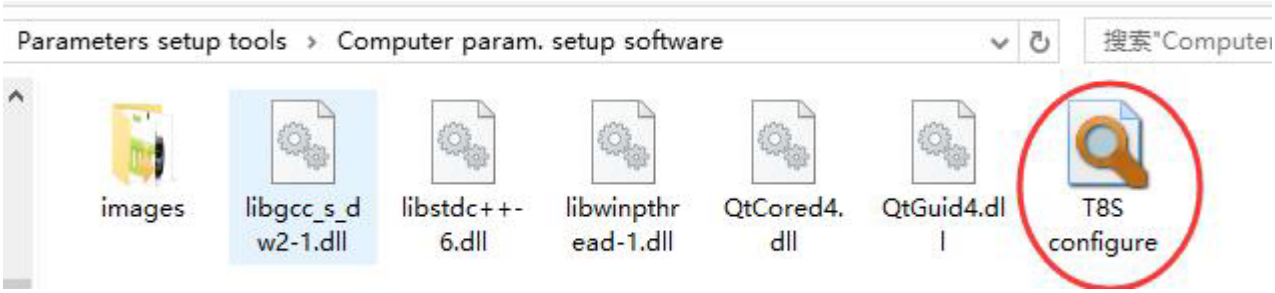
This function is to restore the factory setting when necessary.

Chapter 4 T8S Parameters Setup via Computer

4.1 Software Installation and Connect

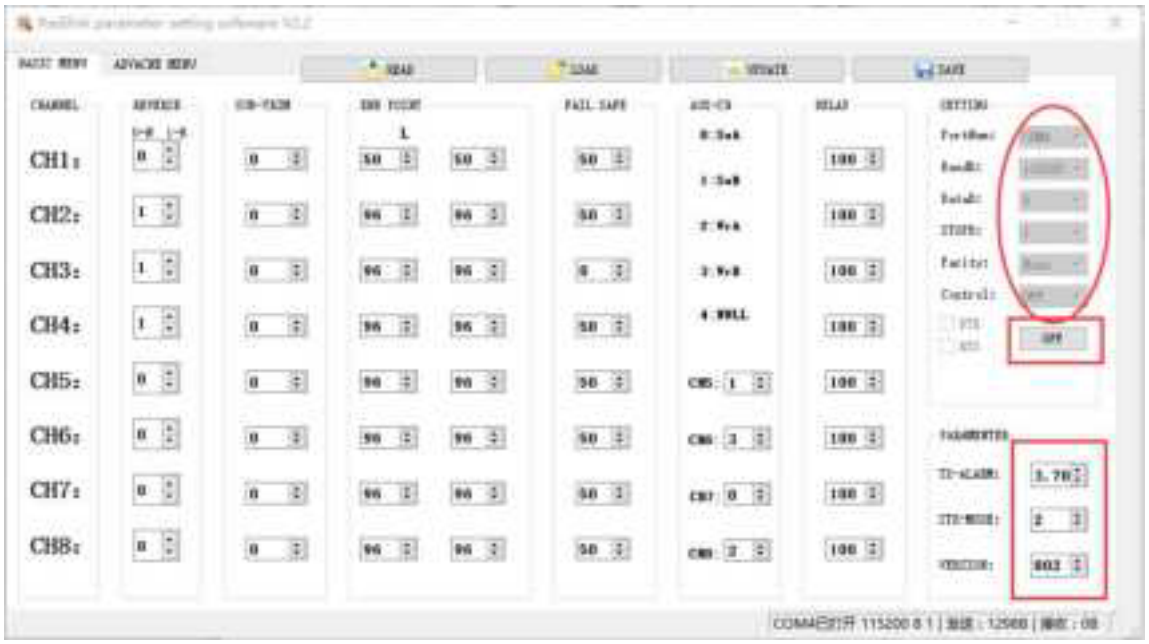
Connect the computer and the T8S with an android USB data cable

Open the parameter setup software in the downloaded file，then power on T8S



Choose Port Number(COM port will be automatic identified when connected), setting baud rate: **115200**, **8-1-None**(8 data bits, 1 stop bit, no parity check), click OPEN to connect.

Note When click OPEN to connect, the SETTING parts mentioned above will turn grey and can't be changed and PARAMETERS at bottom right will be displayed



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4.2 Parameters Setup Menu



READ: T8S data will be read and displayed on computer when click “READ”and two D sounds will be heard.
LOAD: The data file in TXT format saved will be loaded in the software.
UPDATE: Modify the data as wish or load the data which is saved as file then click “UPDATE”to change the parameter in T8S. (two green LEDs on the right will flash once with one D sound).
SAVE The data read or set will be saved as TXT file in the computer. This is very helpful if there are several sets of radio data need to be saved or if one set of parameters need to be copied in different radios.

Parameters Setting Steps

- When parameters need to be modified, click READ first to input the original data into the software, then modify as wish and click UPDATE to output the modified data to T8S.
- When parameters SAVE as TXT file need to be input, click LOAD first to input the saved data into the software then click UPDATE to copy them to T8S.

4.2.1 BASIC Menu

There are 6 parameters to setup: “REVERSE””SUB-TRIM””END POINT””FAIL SAFE””AUX-CH””DELAY”



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REVERSE: Defines the relationship between the transmitter controls and the receiver output for channels with option of NORM and REV. Refer to 3.3.2-**REV** (P8) for more details .

SUB-TRIM: Makes small changes or corrections to the neutral position of each servo. Refer to 3.3.2-**SUB** (P9) for more details .

END POINT: Sets the range of each channel(in percentage);
The most flexible version of travel adjustment is available. It independently adjusts each end of each individual servo's travel, rather than one setting for the servo affecting both directions. Refer to 3.3.2-**EPA-L &EPA-R** (P9) for more details .

FAIL SAFE: Sets responsive action of model in case of signal loss or low Rx voltage(in percentage).
Refer to 3.3.2-**F/S** (P9) for more details .

AUX-CH: Defines the relationship between the transmitter controls and the receiver output for channels 5-8. Refer to 3.3.4(P11) for more details .

DELAY: Adjust the ratio between the position of servos and the actual operation. Refer to 3.3.2-**DELAY** (P9) for more details .

TX-ALARM: In the computer parameter setup software, the low voltage alarm value of T8S is 3.7V by default and can be personalized. When the transmitter voltage is lower than the value set, T8S will make D sound to warn.

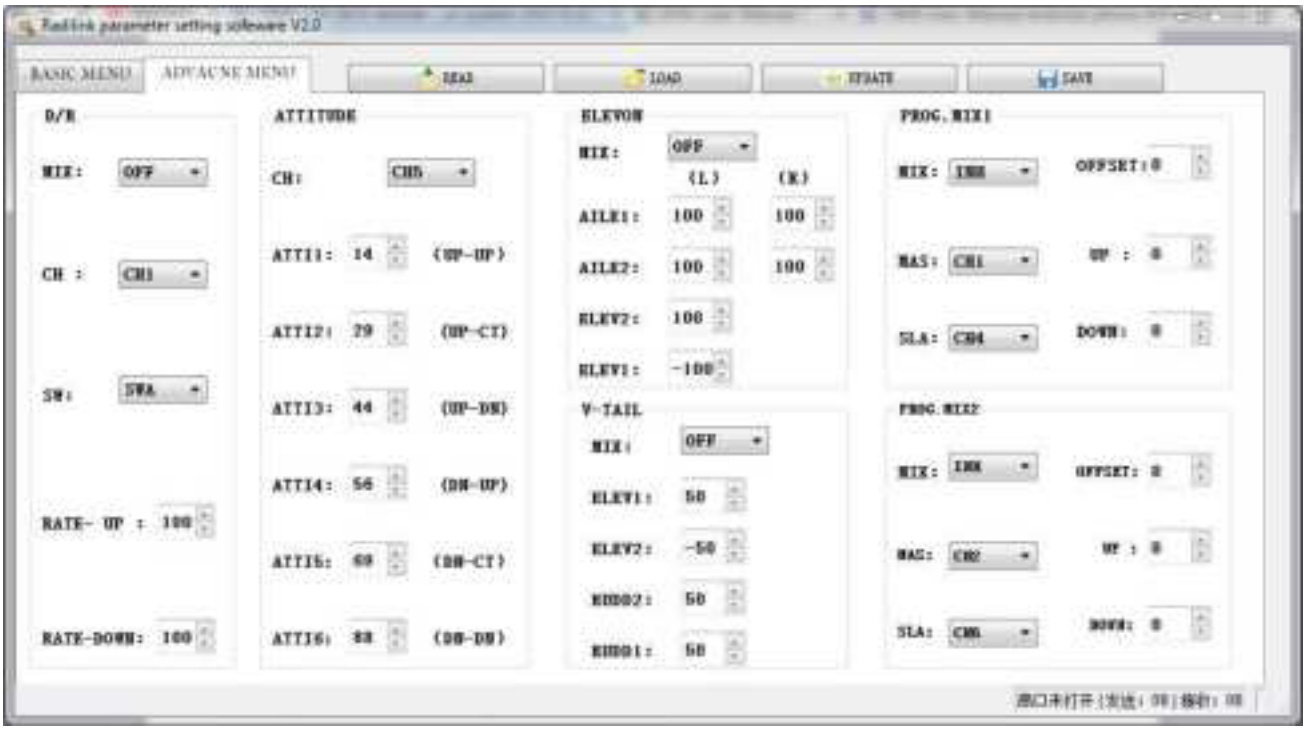
STK-MODE by default
1 is throttle at right while 2 is throttle at left. 3 is throttle at right for toys while 4 is throttle at left for toys.

VERSION
The numbers mean different firmware versions which can be upgraded. The detailed steps of firmware upgrade please refer to Chapter 2.

4.2.2 ADVANCED Menu

There are six parameters setup "D/R" "ATTITUDE" "ELEVON" "V-TAIL"PROG.MIX1/PROG.MIX2 as below shown， please refer to 3.3.3 (P9-10) and 3.3.4(P10-11) for more details..

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Thank you again for choosing RadioLink product.

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