14 CHANNEL COMPUTER SYSTEM

14SG

INSTRUCTION MANUAL

Technical updates and additional programming examples available at: **http://www.futaba-rc.com/faq**

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INTRODUCTION

Thank you for purchasing a Futaba® FASSTest-2.4GHz* 14SG series digital proportional R/C system. This system is extremely versatile and may be used by beginners and pros alike. In order for you to make the best use of your system and to fly safely, please read this manual carefully. If you have any difficulties while using your system, please consult the manual, our online Frequently Asked Questions (on the web pages referenced below), your hobby dealer, or the Futaba Service Center.

*FASSTest: Futaba Advanced Spread Spectrum Technology extend system telemetry

Due to unforeseen changes in production procedures, the information contained in this manual is subject to change without notice.

Support and Service: It is recommended to have your Futaba equipment serviced annually during your hobby's "off season" to ensure safe operation.

IN NORTH AMERICA

Please feel free to contact the Futaba Service Center for assistance in operation, use and programming. Please be sure to regularly visit the 14SG Frequently Asked Questions web site at www.futaba-rc.com/faq/. This page includes extensive programming, use, set up and safety information on the 14SG radio system and is updated regularly. Any technical updates and US manual corrections will be available on this web page. If you do not find the answers to your questions there, please see the end of our F.A.Q. area for information on contacting us via email for the most rapid and convenient response.

Don't have Internet access? Internet access is available at no charge at most public libraries, schools, and other public resources. We find internet support to be a fabulous reference for many modelers as items can be printed and saved for future reference, and can be accessed at any hour of the day, night, weekend or holiday. If you do not wish to access the internet for information, however, don't worry. Our support teams are available Monday through Friday 8-5 Central time to assist you.

FOR SERVICE ONLY:
Futaba Service Center
3002 N. Apollo Drive, Suite 1
Champaign, IL 61822
Phone: 217-398-0007
www.futaba-rc.com/service.html
Email: service@futaba-rc.com

FOR SUPPORT :
(PROGRAMMING AND USER QUESTIONS)
Please start here for answers to most questions:
www.futaba-rc.com/faq/
Fax: 217-398-7721
Phone: 217-398-8970 option 2

OUTSIDE NORTH AMERICA

Please contact your Futaba importer in your region of the world to assist you with any questions, problems or service needs.
Please recognize that all information in this manual, and all support availability, is based upon the systems sold in North America only. Products purchased elsewhere may vary. Always contact your region's support center for assistance.

Application, Export, and Modification

1. This product may be used for model airplane or surface (boat, car, robot) use. It is not intended for use in any application other than the control of models for hobby and recreational purposes. The product is subject to regulations of the Ministry of Radio/Telecommunications and is restricted under Japanese law to such purposes.

2. Exportation precautions:
(a) When this product is exported from the country of manufacture, its use is to be approved by the laws governing the country of destination which govern devices that emit radio frequencies. If this product is then re-exported to other countries, it may be subject to restrictions on such export. Prior approval of the appropriate government authorities may be required. If you have purchased this product from an exporter outside your country, and not the authorized Futaba distributor in your country, please contact the seller immediately to determine if such export regulations have been met.

(b) Use of this product with other than models may be restricted by Export and Trade Control Regulations, and an application for export approval must be submitted. This equipment must not be utilized to operate equipment other than radio controlled models.

3. Modification, adjustment, and replacement of parts: Futaba is not responsible for unauthorized modification, adjustment, and replacement of parts on this product. Any such changes may void the warranty.

Compliance Information Statement (for U.S.A.)
This device, trade name Futaba Corporation of America, model number R7008SB, 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.

The responsible party of this device compliance is:
Futaba Service Center
3002 N Apollo Drive Suite 1, Champaign, IL 61822 U.S.A.
TEL (217)398-8970 or E-mail: support@futaba-rc.com (Support)
TEL (217)398-0007 or E-mail: service@futaba-rc.com (Service)

The RBRC. SEAL on the nickel-cadmium battery contained in Futaba products indicates that Futaba Corporation of America is voluntarily participating in an industry-wide program to collect and recycle these batteries at the end of their useful lives, when taken out of service within the United States. The RBRC. program provides a convenient alternative to placing used nickel-cadmium batteries into the trash or municipal waste system, which is illegal in some areas.
(for USA)
You may contact your local recycling center for information on where to return the spent battery. Please call 1-800-8BATTERY for information on NiCd battery recycling in your area. Futaba Corporation of America's involvement in this program is part of its commitment to protecting our environment and conserving natural resources.

*RBRC is a trademark of the Rechargeable Battery Recycling Corporation.

Federal Communications Commission Interference Statement (for U.S.A.)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

--Reorient or relocate the receiving antenna.
--Increase the separation between the equipment and receiver.
--Consult the dealer or your Futaba Serivce center for help.

CAUTION:
To assure continued FCC compliance:
Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Exposure to Radio Frequency Radiation
To comply with FCC RF exposure compliance requirements, a separation distance of at least 20cm must be maintained between the antenna of this device and all persons.
This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Meaning of Special Markings
Pay special attention to safety where indicated by the following marks:

⚠ **DANGER** - Procedures which may lead to dangerous conditions and cause death/serious injury if not carried out properly.

⚠ **WARNING** - Procedures which may lead to a dangerous condition or cause death or serious injury to the user if not carried out properly, or procedures where the probability of superficial injury or physical damage is high.

⚠ **CAUTION** - Procedures where the possibility of serious injury to the user is small, but there is a danger of injury, or physical damage, if not carried out properly.

⃠ = Prohibited ❗ = Mandatory

Warning: Always keep electrical components away from small children.

FLYING SAFETY

⚠ **WARNING**
To ensure the safety of yourself and others, please observe the following precautions:

❗ **Have regular maintenance performed.** Although your 14SG protects the model memories with non-volatile EEPROM memory (which does not require periodic replacement) and not a battery, the transmitter still should have regular checkups for wear and tear. We recommend sending your system to the Futaba Service Center annually during your non-flying-season for a complete checkup and service.

NiMH/NiCd Battery

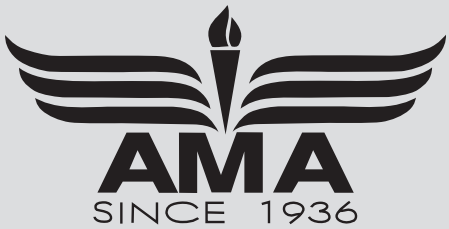
- **Charge the batteries!** (See Charging the NiCd batteries, for details.) Always recharge the transmitter and receiver batteries before each flying session. A low battery will soon die potentially, causing loss of control and a crash. When you begin your flying session, reset your T14SG's built-in timer, and during the session pay attention to the duration of usage.

- **Stop flying long before your batteries become low on charge. Do not rely on your radio's low battery warning systems, intended only as a precaution, to tell you when to recharge. Always check your transmitter and receiver batteries prior to each flight.**

Where to Fly

We recommend that you fly at a recognized model airplane flying field. You can find model clubs and fields by asking your nearest hobby dealer, or in the US by contacting the Academy of Model Aeronautics.

You can also contact the national Academy of Model Aeronautics (AMA), which has more than 2,500 chartered clubs across the country. Through any one of them, instructor training programs and insured newcomer training are available. Contact the AMA at the address or toll-free phone number below.



Academy of Model Aeronautics
5161 East Memorial Drive
Muncie, IN 47302
Tele. (800) 435-9262
Fax (765) 289-4248
or via the Internet at http:\\www.modelaircraft.org

- **Always pay particular attention to the flying field's rules,** as well as the presence and location of spectators, the wind direction, and any obstacles on the field. Be very careful flying in areas near power lines, tall buildings, or communication facilities as there may be radio interference in their vicinity.

NiMH/NiCd Battery Safety and Handling instructions

IMPORTANT!
Use only the **Futaba special charger** included with this set or other chargers approved by Futaba to charge the NiMH batteries in the T14SG transmitter included with this set.

It is important to understand the operating characteristics of NiMH/NiCd batteries.Always read the specifications printed on the label of your NiMH/NiCd battery and charger prior to use. Failure to follow the proceeding precautions can quickly result in severe, permanent damage to the batteries and its surroundings and possibly result in a **FIRE!**

IMPORTANT PRECAUTIONS

- ⊘ Do not attempt to disassemble NiMH/NiCd packs or cells.
- ⊘ Do not allow NiMH/NiCd cells to come in contact with moisture or water at any time.
- ❗ Always provide adequate ventilation around NiMH/NiCd batteries during charge, discharge, while in use, and during storage.
- ⊘ Do not leave a NiMH/NiCd battery unattended at any time while being charged or discharged.
- ⊘ Do not attempt to charge NiMH/NiCd batteries with a charger that is NOT designed for NiMH/NiCd batteries, as permanent damage to the battery and charger could result.
- ❗ Always charge NiMH/NiCd batteries in a fireproof location. Do not charge or discharge NiMH/NiCd batteries on carpet, a cluttered workbench, near paper, plastic, vinyl, leather or wood, or inside an R/C model or full-sized automobile! Monitor the charge area with a smoke or fire alarm.
- ⊘ Do not charge NiMH/NiCd batteries at currents greater than the “1C” rating of the battery (“C” equals the rated capacity of the battery).
- ⊘ Do not allow NiMH/NiCd cells to overheat at any time! Cells which reach greater than 140 degrees Fahrenheit (60°C) should be placed in a fireproof location.
- ❗ NiMH/NiCd cells will not charge fully when too cold or show full charge.
- ❗ It is normal for the batteries to become warm during charging, but if the charger or battery becomes excessively hot disconnect the battery from the charger immediately!! Always inspect a battery which has previously overheated for potential damage, and do not re-use if you suspect it has been damaged in any way.
- ⊘ Do not use a NiMH/NiCd battery if you suspect physical damage has occurred to the pack. Carefully inspect the battery for even the smallest of dents, cracks, splits, punctures or damage to the wiring and connectors. DO NOT allow the battery’s internal electrolyte to get into eyes or on skin—wash affected areas immediately if they come in contact with the electrolyte. If in doubt, place the battery in a fire-proof location for at least 30 minutes.
- ⊘ Do not store batteries near an open flame or heater.
- ⊘ Do not discharge NiMH/NiCd batteries at currents which exceed the discharge current rating of the battery.
- ❗ Always store NiMH/NiCd cells/packs in a secure location away from children.

Secure Digital (SD) Memory Card Handling Instructions
(SD card is not included with this set)

- ⊘ Never remove the SD card or turn off power while entering data.
- ⊘ Never store the SD card where it may be subject to strong static electricity or magnetic fields.
- ⊘ Do not expose the SD card to direct sunlight, excessive humidity or corrosive environments.
- ⊘ Do not expose the SD card to dirt, moisture, water or fluids of any kind.
- ❗ Always hold the SD card by the edges during installation and removal.
- ❗ Be certain to insert the SD card in the correct direction.

At the flying field

To prevent possible damage to your radio gear, turn the power switches on and off in the proper sequence:

1. Pull throttle stick to idle position, or otherwise disarm your motor/engine.
2. Turn on the transmitter power and allow your transmitter to reach its home screen.
3. Confirm the proper model memory has been selected.
4. Turn on your receiver power.
5. Test all controls. If a servo operates abnormally, don't attempt to fly until you determine the cause of the problem.

   Test to ensure that the FailSafe settings are correct after adjusting them. Turn the transmitter off and confirm the proper surface/throttle movements. Turn the transmitter back on.
6. Start your engine.
7. Complete a full range check.
8. After flying, bring your throttle stick to idle position, engage any kill switches or otherwise disarm your motor/engine.
9. Turn off receiver power.
10. Turn off transmitter power.

If you do not turn on your system in this order, you may damage your servos or control surfaces, flood your engine, or in the case of electric-powered or gasoline-powered models, the engine may unexpectedly turn on and cause a severe injury.

- **While you are getting ready to fly, if you place your transmitter on the ground, be sure that the wind won't tip it over. If it is knocked over,** the throttle stick may be accidentally moved, causing the engine to speed up. Also, damage to your transmitter may occur.
- In order to maintain complete control of your aircraft it is important that **it remains visible at all times**. Flying behind large objects such as buildings, grain bins, etc. is not suggested. Doing so may result in the reduction of the quality of the radio frequency link to the model.
- **Do not grasp the transmitter's antenna during flight.** Doing so may degrade the quality of the radio frequency transmission.
- As with all radio frequency transmissions, the strongest area of signal transmission is from the sides of the transmitter's antenna. As such, the antenna should not be pointed directly at the model. If your flying style creates this situation, easily move the antenna to correct this situation.
- **Don't fly in the rain!** Water or moisture may enter the transmitter through the antenna or stick openings and cause erratic operation or loss of control. If you must fly in wet weather during a contest, be sure to cover your transmitter with a plastic bag or waterproof barrier. Never fly if lightning is expected.

BEFORE USE

Features

FASSTest system

The T14SG transmitter has adopted the newly developed bidirectional communication system "FASSTest".Data from the receiver can be checked in your transmitter. FASSTest is a maximum 14 channels (linear 12 channels + switch 2 channels) 2.4GHz dedicated system.

S.BUS2 system

By using the S.BUS2 system multiple servos, gyros and telemetry sensors are easily installed with a minimum amount of cables.

Model types

Six swash types are available for helicopters. Six types of main wings and three types of tail wings are available for airplanes and gliders. Functions and mixing functions necessary for each model type are set in advance at the factory.

Data input

Large graphic LCD and new type Touch Sensor substantially improve ease of setup.

Stick

Improved feel, adjustable length and tension.

Ni-MH battery

T14SG is operated by a 6.0 V/1,800 mAh Nickel-Metal Hydride battery.

SD card (Secure Digital memory card) (Not included)

Model data can be saved to an SD card (SD:32MB-2GB SDHC:4GB-32GB). When T14SG transmitter software files are released, the software can be updated by using an SD card update.

Edit button

Two edit buttons are provided, and the operating screen can be immediately “Returned” to the HOME screen during operation. Setting operation can be performed easily by combining this button with a touch sensor.

Vibration function

Selects a function that alerts the operator to various alarms and timers by vibrating the transmitter in addition to sounding a buzzer.

Contents and Technical Specifications

(Specifications and ratings are subject to change without notice.)

Your 14SG includes the following components:

- T14SG transmitter for airplanes or helicopters
- R7008SB Receiver
- HT5F1800B NiMH battery & Charger
- Li-Fe spacer for optional FT2F2100B/FT2F1700B LiFe battery pack.
- Switch harness
- Neck strap

*The set contents depend on the type of set.

Transmitter T14SG

(2-stick, 14-channel, FASSTest-2.4G system)

Transmitting frequency: 2.4GHz band

System: FASSTest14CH, FASSTest12CH, FASST MULT, FASST 7CH, S-FHSS, switchable

Power supply: 6.0V HT5F1800B NiMH battery

Receiver R7008SB

(FASSTest-2.4G system, dual antenna diversity, S.BUS system)

Power requirement: 3.7V~7.4V battery or regulated output from ESC, etc. (*1)

Size: 0.98 x 1.86 x 0.56 in. (24.9 x 47.3 x 14.3 mm)

Weight: 0.38 oz. (10.9g)

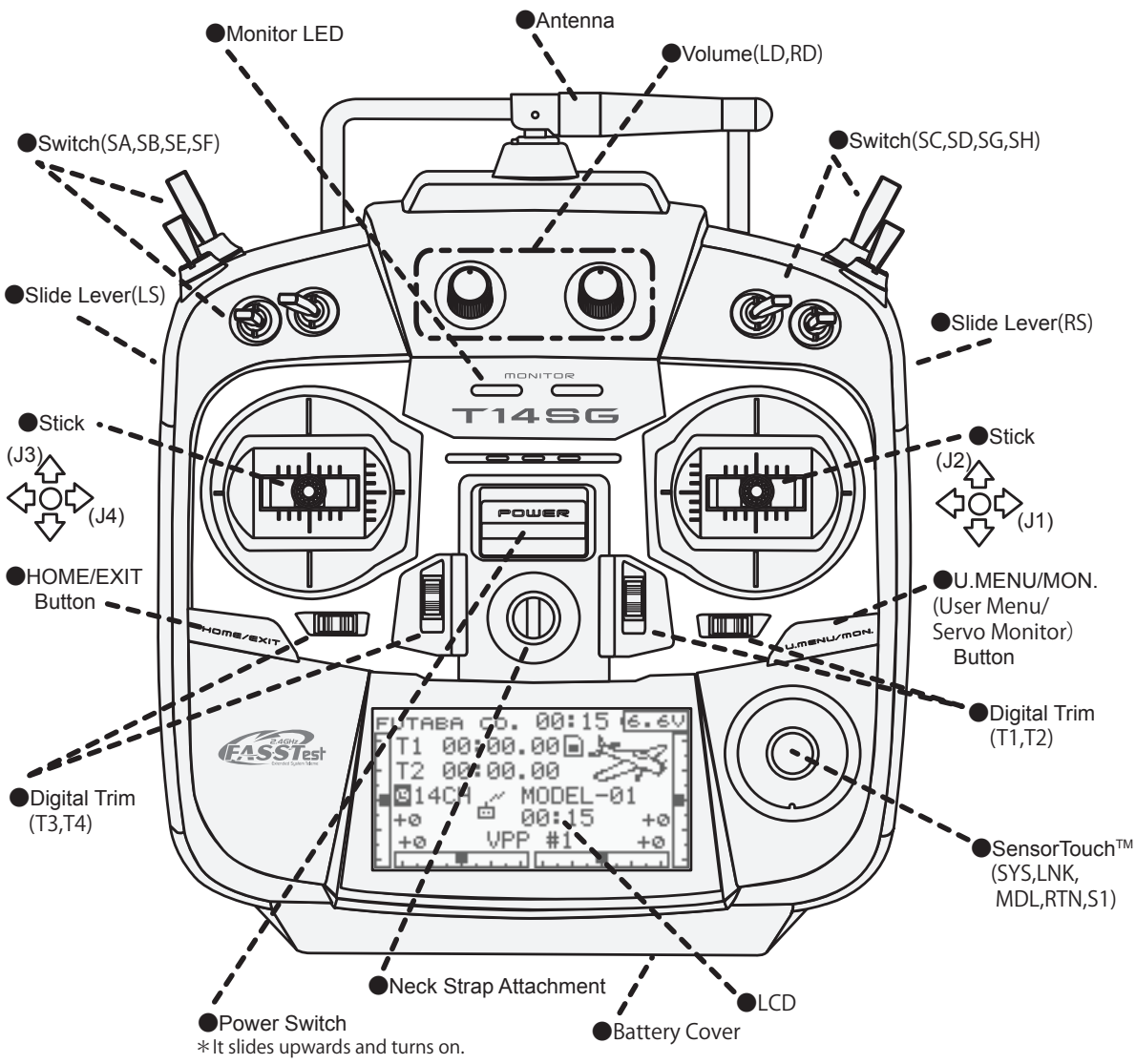
(*1) When using ESC's make sure that the regulated output capacity meets your usage application.

Note: The battery in the T14SG transmitter is not connected to the battery connector at initial. Please connect the battery connector before use.

The following additional accessories are available from your dealer. Refer to a Futaba catalog for more information:

- HT5F1800B Transmitter battery pack - the (1800mAh) transmitter NiMH battery pack may be easily exchanged with a fresh one to provide enough capacity for extended flying sessions.
- FT2F2100B/FT2F1700B Transmitter LiFe battery pack can also be used by using an exclusive spacer. However, charge with the charger only for LiFe.
- Trainer cord - the optional training cord may be used to help a beginning pilot learn to fly easily by placing the instructor on a separate transmitter. Note that the T14SG transmitter may be connected to another T14SG system, as well as to any other models of Futaba transmitters. The T14SG transmitter uses one of the three cord plug types according to the transmitter connected. (Refer to the description at the TRAINER function instructions). The part number of this cord is: FUTM4405.
- Servos - there are various kinds of servos. Please choose from the servos of Futaba what suited the model and the purpose of using you. If you utilize a S.BUS system, you should choose a S.BUS servo. An analog servo cannot be used if "FASSTest12CH mode" is used.
- Telemetry sensor - please purchase an optional sensor, in order to utilize bidirectional communication system and to acquire the information from a model high up in the sky.
  [Temperature sensor : SBS-01T] [Altitude sensor : SBS-01A] [RPM sensor magnet type : SBS-01RM][RPM sensor optical type : SBS-01RO] [GPS sensor : SBS-01G] [Voltage sensor : SBS-01V]
- Neckstrap - a neckstrap may be connected to your T14SG system to make it easier to handle and improve your flying precision since your hands won't need to support the transmitter's weight.
- Y-harnesses, servo extensions, hub,etc - Genuine Futaba extensions and Y-harnesses, including a heavy-duty version with heavier wire, are available to aid in your larger model and other installations.
- Gyros - a variety of genuine Futaba gyros is available for your aircraft or helicopter needs.
- Governor - for helicopter use. Automatically adjusts throttle servo position to maintain a constant head speed regardless of blade pitch, load, weather, etc.
- Receivers - various models of Futaba receivers may be purchased for use in other models. (Receivers for FASSTest and FASST,S-FHSS types are available.)
- Optional Charger - Futaba CR-2000 NiMH/NiCd Transmitter/Receiver Battery Charger.

Transmitter controls

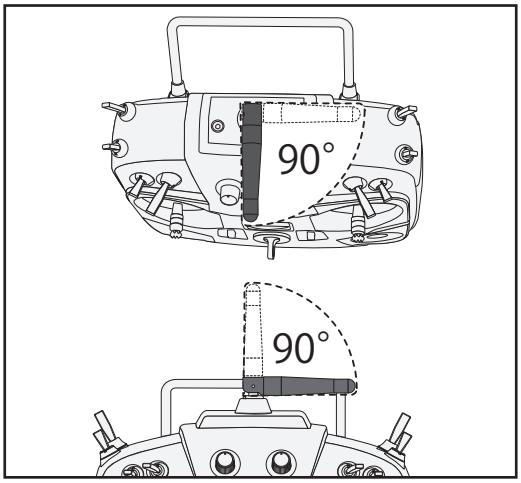


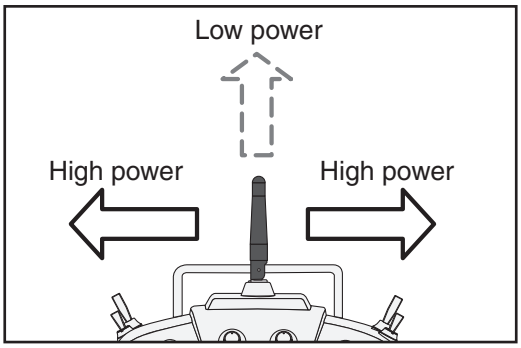
Transmitter's Antenna:

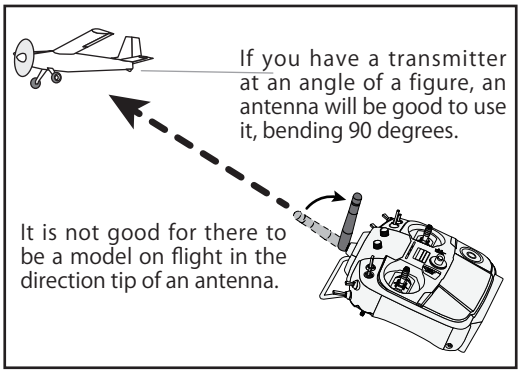
As with all radio frequency transmissions, the strongest area of signal transmission is from the sides of the transmitter's antenna. As such, the antenna should not be pointed directly at the model. If your flying style creates this situation, easily move the antenna to correct this situation.

•Rotating antenna

The antenna can be rotated 90 degrees and angled 90 degrees. Forcing the antenna further than this can damage it. The antenna is not removable.







⚠ Caution

❗ Please do not grasp the transmitter's antenna during flight.

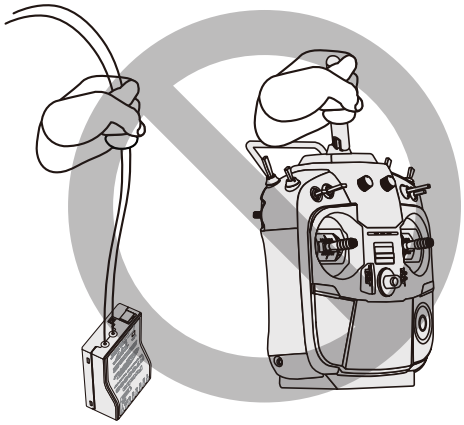
Doing so may degrade the quality of the RF transmission to the model

⃠ Do not carry the transmitter by the antenna.

There is the danger that the antenna wire will break and operation will become impossible.

⃠ Do not pull the antenna forcefully.

There is the danger that the antenna wire will break and operation will become impossible.



Monitor LED display

The status of the transmitter is displayed by LED at the bottom left and right sides of the "T14SG" logo.

LED (Left)

Displays the "non-default condition" warning.

• Blinking

Power switch is turned on when any condition switch is activated (in the ON state).

LED (Right)

Displays the state of radio frequency transmission.

• Off

Radio waves are in the OFF state.

• On

Radio waves are being transmitted.

• Blinking

Range check mode.

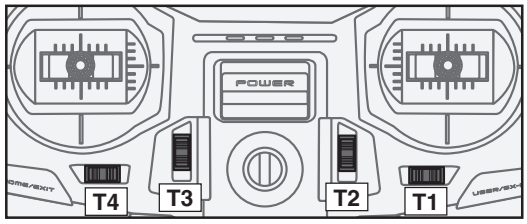
Switch (SA-SH)

(Switch Type)

- SA : 3 positions; Alternate; Short lever
- SB : 3 positions; Alternate; Long lever
- SC : 3 positions; Alternate; Long lever
- SD : 3 positions; Alternate; Short lever
- SE : 3 positions; Alternate; Short lever
- SF : 2 positions; Alternate; Long lever
- SG : 3 positions; Alternate; Short lever
- SH : 2 positions; Momentary; Long lever

*You can choose switch and set the ON/OFF-direction in the setting screen of the mixing functions.

Digital Trim



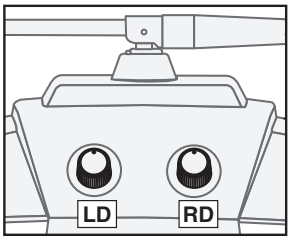
Digital Trim T1, T2, T3 and T4:

This transmitter is equipped with four (4) digital trims. Each time you press a trim button, the trim position moves one step. If you continue pressing it, the trim position starts to move faster. In addition, when the trim position returns to the center, the tone will change. You can always monitor trim positions by referencing the LCD screen.

*You can select the trim step amount and the display unit on the home screen on the T1-T4 setting screen within the linkage menu.

Note: The trim positions you have set will be stored in the non-volatile memory and will remain there.

Volume



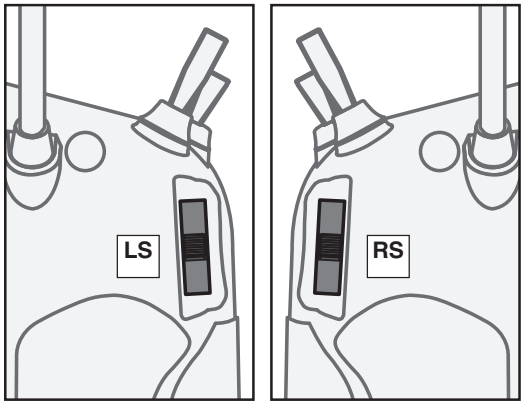
Volume LD and RD:

The volume LD and RD knobs allow for analog input.

*The T14SG transmitter beeps when the volume knob reaches the center position.

*You can use each setting screen of the mixing functions to select volumes and define the direction of a movement.

Slide Lever



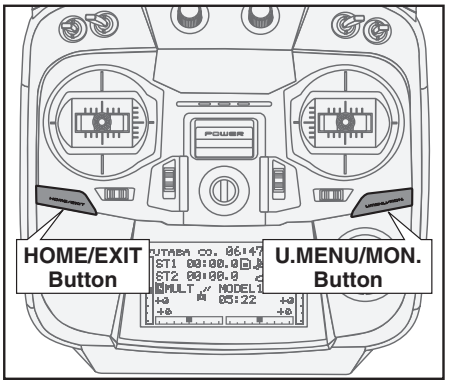
LS (Left), RS (right):

The slide lever LS and RS offer analog input.

*The T14SG transmitter beeps when the lever comes to the center.

*You can select a slide lever and set the movement direction on the setting screen of mixing functions.

HOME/EXIT and U.MENU/MON. Button



HOME/EXIT:

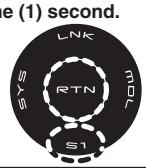
Press	Return to the previous screen
Press and hold	Return to the Home screen
It pushes from HOME screen.	To TELEMETRY display
Push and hold for one (1) second from HOME screen.	Key lock On or Off

U.MENU/MON.:

Press	To SERVO MONITOR display
Press and hold	To User Menu display

Touch sensor operation

Data input operation is performed using the touch sensor.

SensorTouch™ operation		Condition	Working
• Short 'tap' 	S1	If the screen has more than one page. (Ex. P-MIX screen)	The cursor moves to the top of next page.
		If the screen have only one (1) page.	The cursor moves to the top of page.
		If inputting data while the cursor is blinking.	The input data is canceled.
	RTN	At the moving cursor mode.	Change to the input data mode.
		While in the data input mode.	Changes to the moving cursor mode.
		While inputting data while cursor is blinking.	The data is entered.
• Two short 'taps' 	SYS	At all screens	Jump to **System Menu** screen directly.
	LNK	At all screens	Jump to **Linkage Menu** screen directly.
	MDL	At all screens	Jump to **Model Menu** screen directly.
• Touch and hold for one (1) second. 	S1	At the HOME screen	Key lock On or Off
	RTN	While inputting data with no blinking cursor.	Reset to the initialized value.
• Scrolling 	Outline of "RTN"	Lightly circling the outside edge of the RTN button.	The cursor moves accordingly.
		During the data input mode.	Increases or decreases values accordingly.

Movement of cursor, value input or mode selection:

Movement of the cursor on the menu screen and movement of the cursor among items on a setup screen can be controlled by scrolling your finger to the left and right in the direction of the arrow in the scrolling diagram above. You can also go to the next page, if there is a next page.

This scrolling technique is also used for data input, value input, mode selection, and similar operations. Examples include: Value, ON, OFF, INH, ACT, etc.

RTN button:

Touch the RTN button when you want to open a setup screen or to switch between cursor move mode (reverse display) and data input mode (box display).

This button can also be used as the enter button when a confirmation message is displayed on the screen, etc.

S1 button:

When there is a next page on a menu screen or setup screen, you can go to that page by touching the S1 button. In this case, the cursor moves to the screen title item of the page.

Exiting setup screen:

To end the operation on a setup screen and return to the menu screen, move the cursor to the screen title item and touch the RTN button.

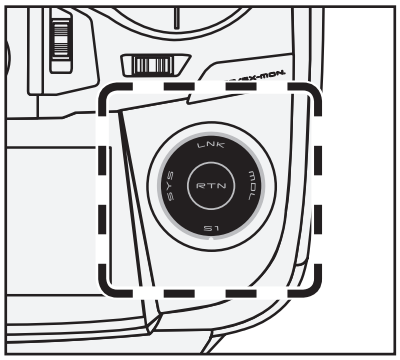
To return to home screen directly, touch the S1 button for 1 second.

Alternatively, move the cursor to the screen title item and touch the RTN button to return to the home screen from a menu screen.

Note:

*Scroll operation: Circle your finger on the outside edge of the RTN button. The sensors may mis-read your touch as a reverse rotation if the circle is smaller, or performed on the inside edge of the RTN button.

* The SensorTouch™ may not operate smoothly if your hand is touching the surrounding case parts. Please make sure that the tip of your finger is actually operating the SensorTouch™.



*If the SensorTouch™ does not register your input, please try again after lightly tapping your finger on the sensor once again.

*Do not operate the SensorTouch™ while wearing gloves. The SensorTouch™ may not work correctly.

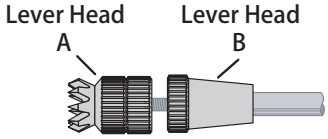
⚠ Caution

The touch sensor may not operate correctly if spark noise is generated from a gasoline engine, etc. Please remove the transmitter to a location away from the noise source.

Stick Adjustment

Adjustment of the stick lever length

You can adjust the length of stick levers, as you like. It is recommended to adjust the length of the sticks in line with your hand size.

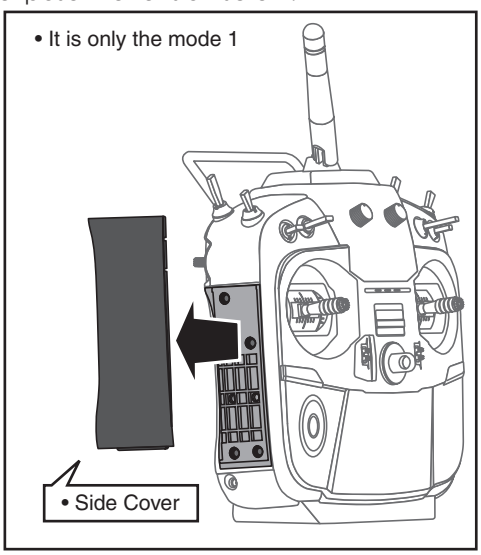


1. Hold the lever head "B" and turn the lever head "A" counter-clockwise. The lock will be released.
2. Turn the lever-head "A" clockwise as you hold the lever-head "B" after placing it as you like.

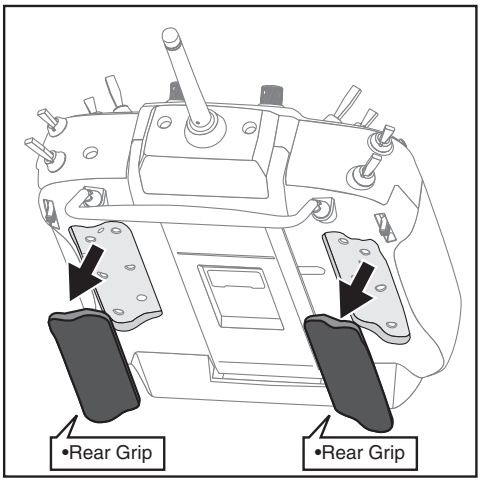
Adjustment of stick lever tension

The tension of the self-return type stick lever can be adjusted.

1. First, Remove the battery cover on the bottom of the transmitter. Next, unplug the battery wire and remove the battery from the transmitter.
2. Next, using a hand, remove the transmitter's side cover (rubber). When using Mode 1, you will need to remove the side cover to expose the tension screw.



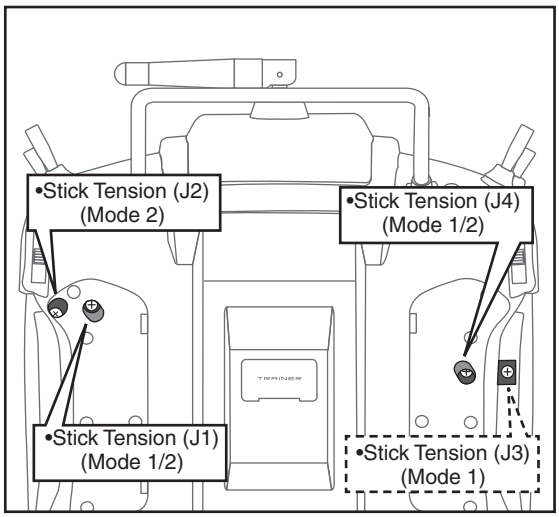
3. Using your hand remove the transmitters rear rubber grips.



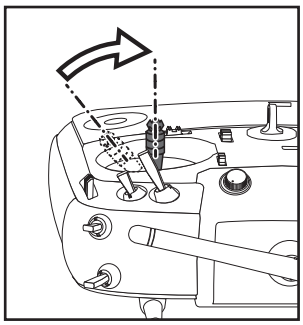
4. Use a small Phillips screwdriver to adjust the spring strength as you prefer by turning the adjusting screw of the stick you want to adjust.

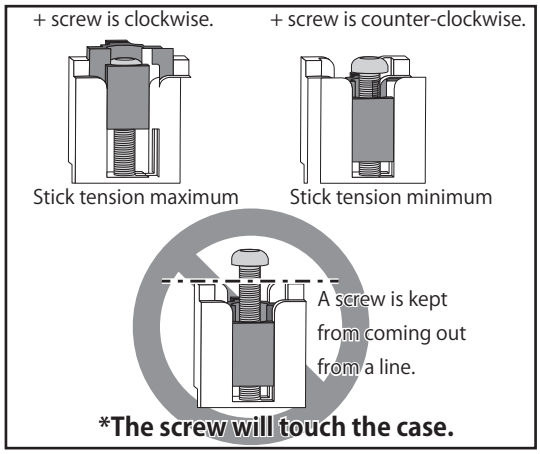
*Turning the screw clockwise increases the tension.

CAUTION: If you loosen the screw too much, it can interfere with the operation of the sticks internally.



The stick can be adjusted to how quickly it returns to neutral.

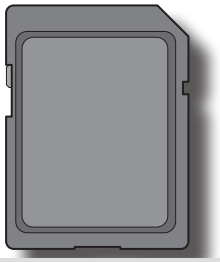




5. At the end of adjustment, re-install the side cover and rear grips.

SD Card (Secure Digital memory card) (Not included)

The T14SG transmitter model data can be stored by using any commonly found SD card. When T14SG transmitter update software is released, the software is updated using an SD card. The T14SG is capable of using SD cards with a memory size SD : 32MB-2GB SDHC : 4GB-32GB.



⚠ Caution

Be sure to turn off the power to the transmitter before inserting or removing the SD card.

As the SD card is a precision device, do not use excessive force when inserting.

Restrictions when using an SD card

The following restrictions apply when using an SD card:

*The SD card must first be initialized using the T14SG dedicated format. The SD card cannot be used as is without formatting to the T14SG.

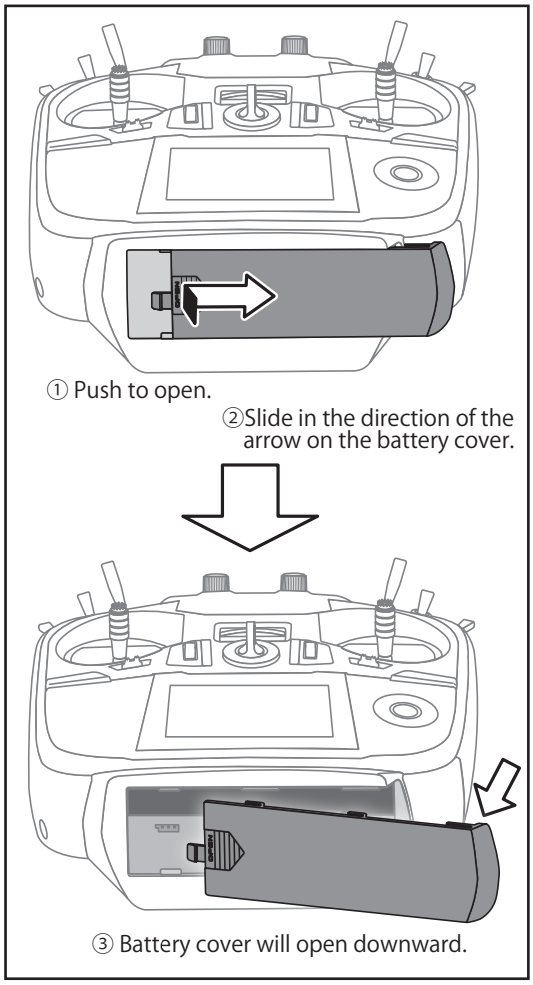
*Initializing destroys all the data previously saved on the card.

*An SD card formatted to the T14SG cannot be written directly from a PC by Windows Explorer, etc. The files must be converted and written by the Futaba File System software. Files are identified by number instead of name. This special conversion software can be downloaded from Futaba's web site at:

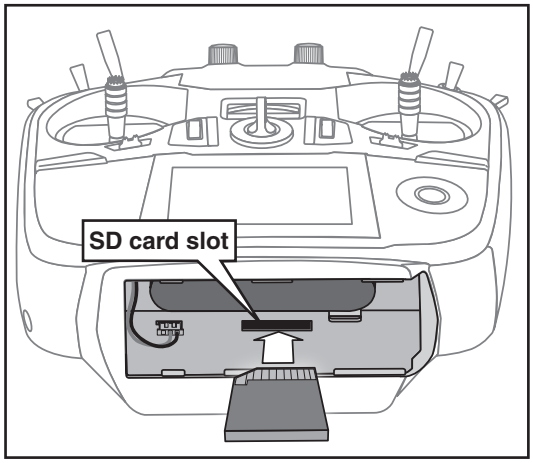
http://www.futaba-rc.com/software-updates.html

Inserting/removing the SD card

1. Turn off the transmitter power and then open the battery cover at the bottom of the transmitter.



2. The SD card slot is show here in the figure below.



[Inserting the card]

Turn the SD card so that the front of the card faces the rear of the transmitter and slide the card into the card slot.

*Push in the card until it is firmly seated in the card slot.

[Removing the card]

When the SD card is pressed in once again, the card will be released from the card slot. and can be removed.

3. Close the battery cover.

SD card initialization

To use an SD card with the T14SG, the card must first be formatted. Once formatted, the card does not have to be reformatted. Formatting is performed by the T14SG.

[IMPORTANT] When an SD card is formatted for the T14SG, all pre-existing data is destroyed. **Do not format a card containing important data.**

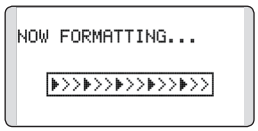
[Formatting procedure]

1. Insert the SD card into the SD card slot of the T14SG.
2. Turn on the T14SG power. When an unformatted card is inserted into the T14SG, the screen shown below appears.

3. If the T14SG is ready to format, move the cursor to [FORMAT] and touch the RTN button. (To cancel formatting, move the cursor to [CANCEL] and touch the RTN button.)

4. Move the cursor to [YES] and touch the RTN button.

*Formatting starts. During formatting, the [NOW FORMATTING...] message is displayed.



*When formatting is completed, The [FORMAT COMPLETED] message is displayed. Depending on the card capacity and speed, formatting may take as long as several minutes.

[IMPORTANT] Do not turn off the power until the [FORMAT COMPLETED] message is displayed.

5. End formatting by touching the RTN button.

SD card reader/writer

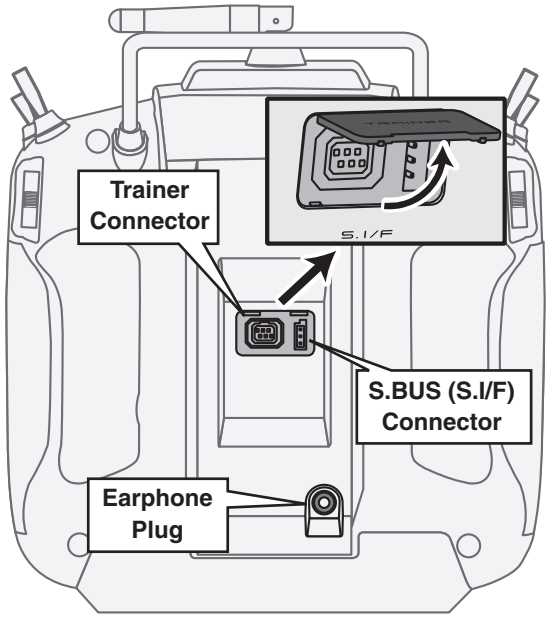
Saving model data and update files (released from Futaba) to the SD card from your own PC, you can transfer those file to your T14SG transmitter. Equipment for reading and writing SD cards is available at most electronics stores.

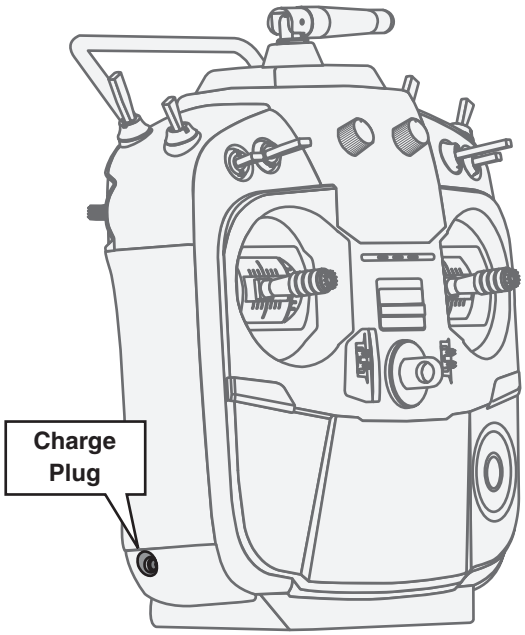
Stored data

If you have a problem saving or reading data after a long period of use, we suggest obtaining a new SD card to avoid further difficulties.

*Futaba is not responsible for compensating any failure or damage to the data stored in the memory card. As such, we suggest that you maintain a backup of your important data contained on your SD card.

Connector/Plug





Connector for trainer function

When you use the trainer function, connect the optional trainer cable between the transmitters for teacher and student.

*You can set the trainer function on the Trainer Function screen in the System menu.

S.BUS connector (S.I/F)

When setting an S.BUS servo and telemetry sensor, connect them both here.

(Supply power by 3-way hub or Y-harnesses.)

Earphone plug

It is not used now. (The function after upgrade)

Connector for battery charger

This is the connector for charging the NiMH battery HT5F1800B that is installed in the transmitter. Do not use any other chargers except the attached special charger corresponding to NiMH battery.

⚠ Warning

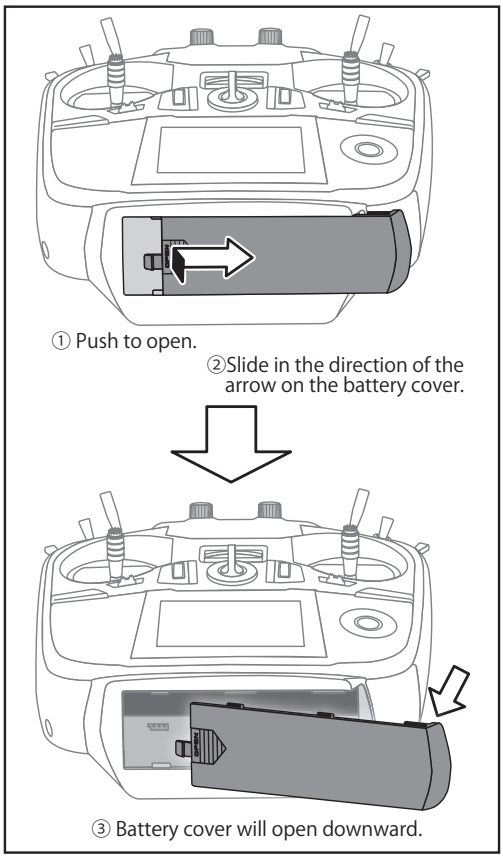
⃠ Do not connect any other chargers except the special charger to this charging connector.

*If you take out the NiMH battery HT5F1800B from the transmitter, you can use the optional quick charger CR-2000 corresponding to NiMH battery.

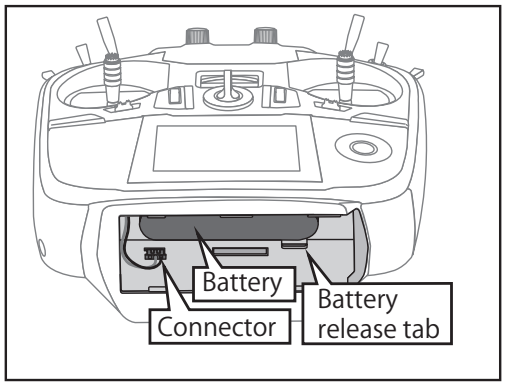
Installation and Removal of the HT5F1800B Transmitter Battery

Attachment of the battery

1. Slide the battery cover on the bottom of the transmitter toward the right side and open it.



2. Install the battery in the holder.
3. Connect the battery connector.



4. Close the battery cover completely.

Battery Removal

Note: If you remove the battery while the power is on, the data you have set will not be saved.

1. Open the battery cover.
2. Disconnect the battery connector.
3. Press on the battery release tab and pull the battery downwards to remove.
4. Close the battery cover completely.

⚠ Warning

Be careful not to drop the battery.

Never disconnect the battery connector from the T14SG transmitter after turning off the power until the screen is completely blank and the transmitter has shut down completely.

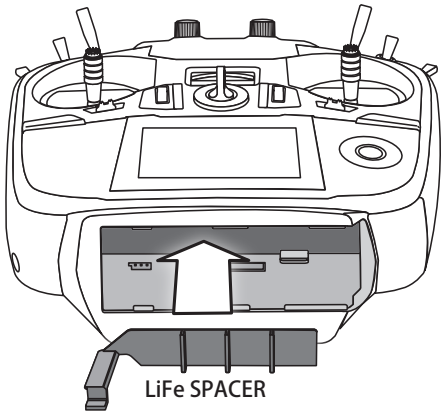
* Internal devices such as memories may be damaged.

* If there is any problem, the message "Backup Error" will be shown the next time when you turn on the power of the transmitter. Do not use the transmitter as it is. Send it to the Futaba Service Center.

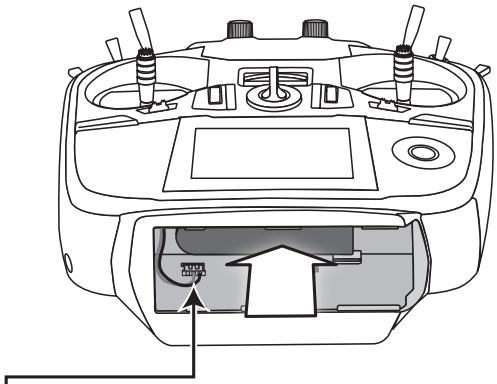
When exchanging for the LiFe battery (FT2F2100B/FT2F1700B) of an option.

Attachment of the battery

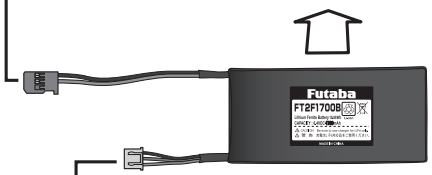
1. T14SG to HT5F1800B is removed.
2. A LiFe spacer (14SG attachment) is inserted as shown in a figure.



3. A LiFe battery (option) is inserted as shown in a figure.



4. 2P connector of a LiFe battery is connected.



The balance charge connector is not connected in the state where the battery is set to a transmitter.

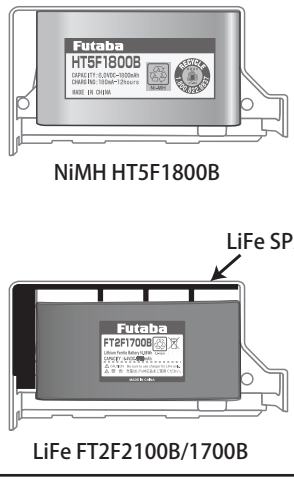
5. Close the battery cover completely.

6. T14SG is turned on and [LINKAGE MENU]=>[WARNING]=>[LOW BATTERY] is called.

7. It changes into 6.0V from 5.6V.

*About low battery voltage, all the models included in one transmitter are changed in common. It cannot set to different voltage for every model. Moreover, data reset is not carried out.

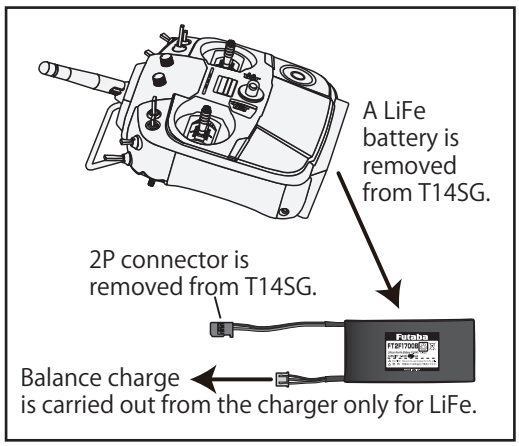
The battery state inside T14SG



Charge of a LiFe battery

Note: LiFe battery cannot be charged with the charger of 14SG attachment.

Be sure to remove a battery from T14SG and to charge from the charger only for LiFe.



⚠ Warning

Follow the manual of a LiFe battery.

Don't charge the LiFe battery with the NiMH charger of 14SG attachment.

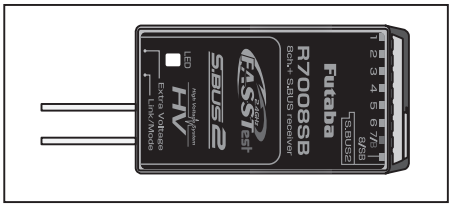
* Be sure to remove from T14SG and to charge with the charger only for LiFe.

Be sure to change the voltage of LOW BATTERY WARNING into 6.0V from 5.6V

Receiver nomenclature

Before using the receiver, be sure to read the precautions listed in the following pages.

Receiver R7008SB



Connector

"1 through 6": outputs for the channels 1 through 6

"7/B": outputs of 7 channels and power.

"8/SB": outputs of 8 channels or S.BUS port.

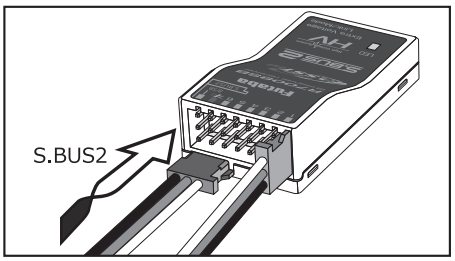
[S.BUS Servo S.BUS Gyro]

*When using 8/SB as S.BUS, you have to set CH MODE of the following page to mode B or mode D.

"S.BUS2": outputs of S.BUS2 port.

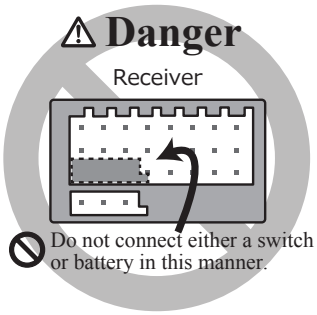
[S.BUS2 Servo S.BUS2 Gyro Telemetry Sensor]

*When using 9 or more channels, use an S.BUS function or use a second R7008SB and link both to your transmitter.



Connector insertion

Firmly insert the connector in the direction shown in the figure. Insert the S.BUS2 by turning it 90 degrees.



⚠ Danger

Don't connect a connector, as shown in a before figure.

*It will short-circuit, if it connected in this way. A short circuit across the battery terminals may cause abnormal heating, fire and burns.

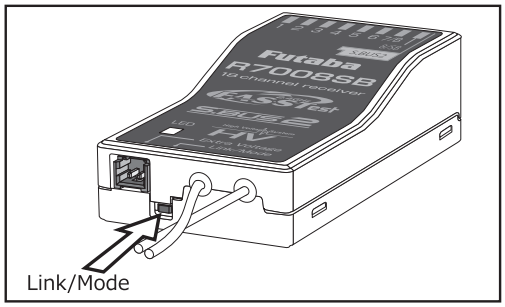
⚠ Warning

S.BUS2 connectors

Don't connect an S.BUS servo / gyro to S.BUS2 connector.

LED Monitor

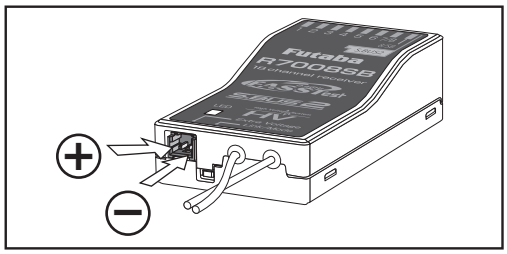
This monitor is used to check the CH mode of the receiver.



Link/Mode Switch

Use the small plastic screw driver that was included with your receiver.

The Link/Mode Switch is also used for the CH mode selection.



Extra Voltage Connector

Use this connector when using a voltage telemetry device to send the battery voltage (DC0 ~ 70V) from the receiver to the transmitter.

You will need to purchase the optional External Voltage input cable (CA-RVIN-700) FUTM5551.

You can then make a cable with an extra connector to the External voltage connector.

⚠ Danger

⃠ Don't touch wiring.

* There is a danger of receiving an electric shock.

⃠ Do not short-circuit the battery terminals.

* A short circuit across the battery terminals may cause abnormal heating, fire and burns.

⃠ Please double check your polarity (＋ and －) when hooking up your connectors.

* If ＋ and － of wiring are mistaken, it will damage, ignite and explode.

⃠ Don't connection to Extra Voltage before turning on a receiver power supply.

R7008SB CH Mode

The R7008SB receiver is a very versatile unit. It has 8 PWM outputs, S.BUS and S.BUS2 outputs. Additionally the PWM outputs can be changed from channels 1-8 to channels 9-14. If you only desire to use it as an 8 channel receiver (without S.BUS), it can be used without any setting changes.

The T14SG has the ability to link to two R7008SB receivers. One of them outputting channels 1-8 and the other outputting channels 9-14 giving you 14 PWM channels. Instructions for this configuration and S.BUS operation follow.

[How to change the R7008SB Channel mode.]

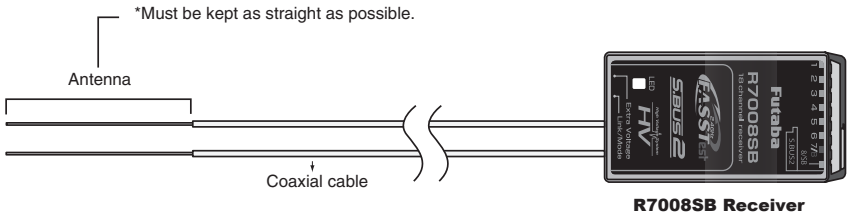
1. Press and hold down the Link/Mode button on the R7008SB receiver.
2. Turn the receiver on while holding down the Link/Mode button. when the LED begins to blink green/red the button may be released.
3. The LED should now be blinking red in one of the patterns described by the chart below.
4. Each press of the Mode/Link button advances the receiver to the next mode.
5. When you reach the mode that you wish to operate in, press and hold the Mode/ Link button for more than 2 seconds.
6. Once locked into the correct mode the LED will change to a solid color.
7. Please cycle the receiver(s) power off and back on again after changing the Channel Mode.

R7008SB CH MODE TABLE

Receiver connector	Setting channel			
	Mode A 1 ～ 8CH	**Mode B** 1 ～ 7CH	**Mode C** 9 ～ 14CH	**Mode D** 9 ～ 14CH
1	1	1	9	9
2	2	2	10	10
3	3	3	11	11
4	4	4	12	12
5	5	5	13	13
6	6	6	14	14
7/B	7	7	-	-
8/SB	8	S.BUS	-	S.BUS
Red LED blink	1time	2time	3time	4time

Receiver's Antenna Installation

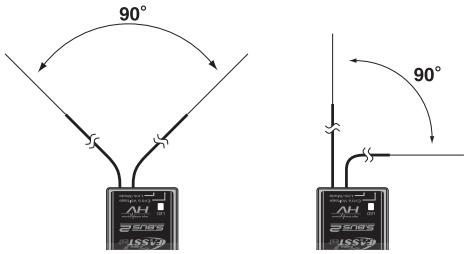
The R7008SB has two antennas. In order to maximize signal reception and promote safe modeling Futaba has adopted a diversity antenna system. This allows the receiver to obtain RF signals on both antennas and fly problem-free.



R7008SB Receiver

To obtain the best results of the diversity function, please refer to the following instructions:

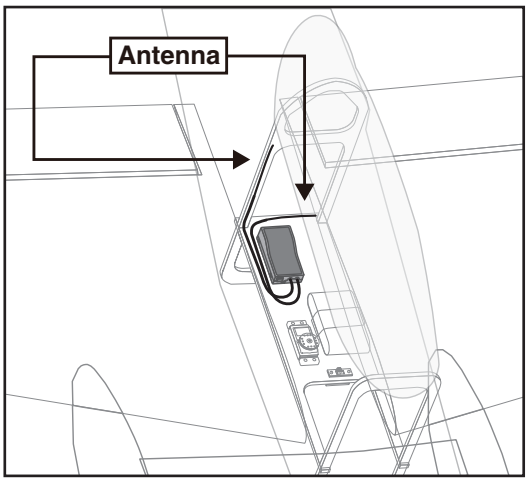
1. The two antennas must be kept as straight as possible. Otherwise it will reduce the effective range.
2. The two antennas should be placed at 90 degrees to each other.

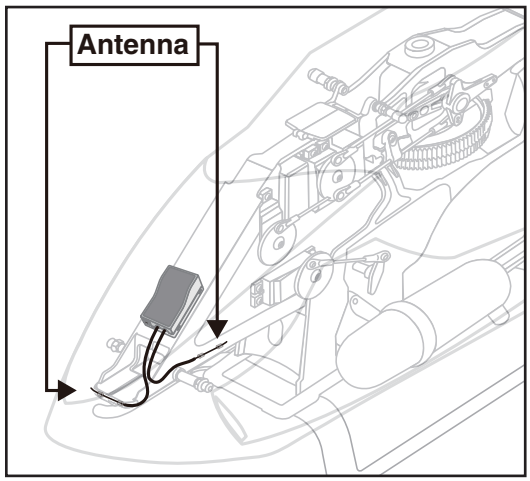


This is not a critical figure, but the most important thing is to keep the antennas away from each other as much as possible.

Larger models can have large metal objects that can attenuate the RF signal. In this case the antennas should be placed at both sides of the model. Then the best RF signal condition is obtained at any flying attitude.

3. The antennas must be kept away from conductive materials, such as metal, carbon and fuel tank by at least a half inch. The coaxial part of the antennas does not need to follow these guidelines, but do not bend it in a tight radius.
4. Keep the antennas away from the motor, ESC, and other noise sources as much as possible.



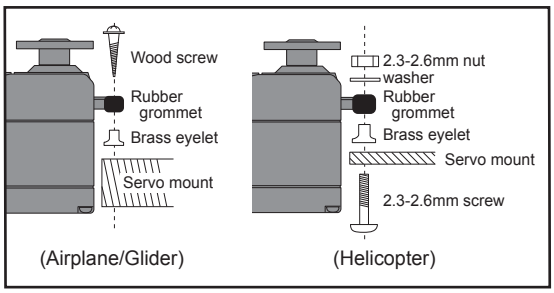


*The two antennas should be placed at 90 degrees to each other.

*The Illustration demonstrates how the antenna should be placed.

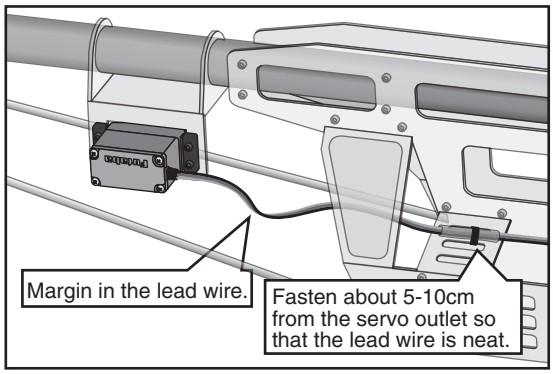
*Receiver Vibration and Waterproofing: The receiver contains precision electronic parts. Be sure to avoid vibration, shock, and temperature extremes. For protection, wrap the receiver in foam rubber or other vibration-absorbing materials. It is also a good idea to waterproof the receiver by placing it in a plastic bag and securing the open end of the bag with a rubber band before wrapping it with foam rubber. If you accidentally get moisture or fuel inside the receiver, you may experience intermittent operation or a crash. If in doubt, return the receiver to our service center for service.

Mounting the Servo



Servo lead wires

To prevent the servo lead cable from being broken by vibration during flight, provide a little slack in the cable and fasten it at suitable points. Periodically check the cable during daily maintenance.



Mounting the power switch

When mounting a power switch to an airframe, make a rectangular hole that is a little larger than the total stroke of the switch so that you can turn the switch ON/OFF without binding.

Avoid mounting the switch where it can be covered by engine oil and dust. In general, it is recommended to mount the power switch on the side of the fuselage that is opposite the muffler.

Safety precautions when you install receiver and servos

⚠Warning

Connecting connectors

❗ Be sure to insert the connector until it stops at the deepest point.

How to protect the receiver from vibration and water

❗ Wrap the receiver with something soft such as foam rubber to avoid vibration. If there is a chance of getting wet, put the receiver in a waterproof bag or balloon to avoid water.

Receiver's antenna

⃠ Never cut the receiver's antenna. Do not bind the receiver's antenna with the cables for servos.

❗ Locate the receiver's antenna as far as possible from metals or carbon fiber components such as frames, cables, etc.

*Cutting or binding the receiver's antenna will reduce the radio reception sensitivity and range, and may cause a crash.

Servo throw

❗ Adjust your system so that pushrods will not bind or sag when operating the servos to the full extent.

*If excessive force is continuously applied to a servo, the servo could be damaged due to force on the gear train and/or power consumption causing rapid battery drain.

Mounting servos

❗ Use a vibration-proof rubber (such as rubber grommet) under a servo when mounting the servo on a servo mount. And be sure that the servo cases do not touch directly to the metal parts such as servo mount.

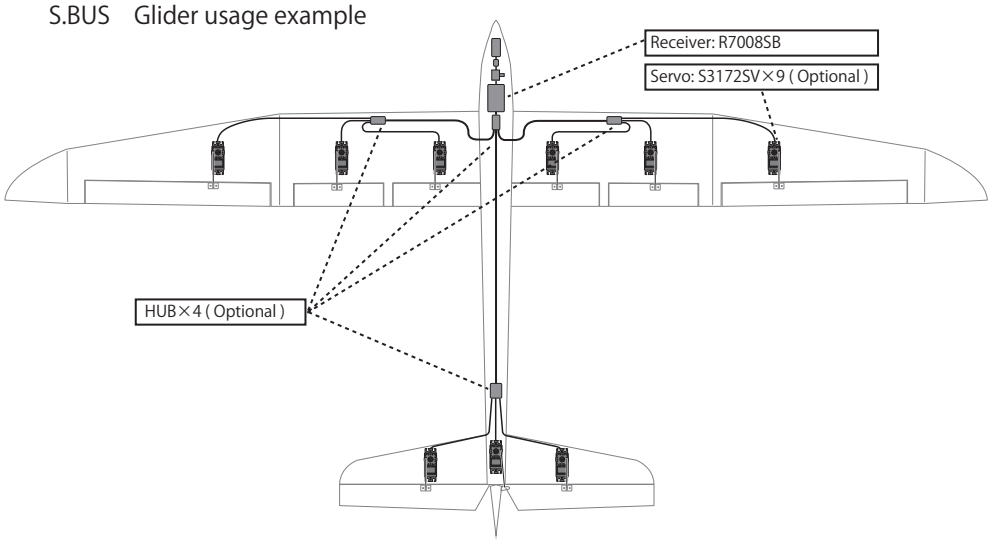
*If the servo case contacts the airframe directly, vibration will travel to and possibly damage the servo.

S.BUS/S.BUS2 Installation

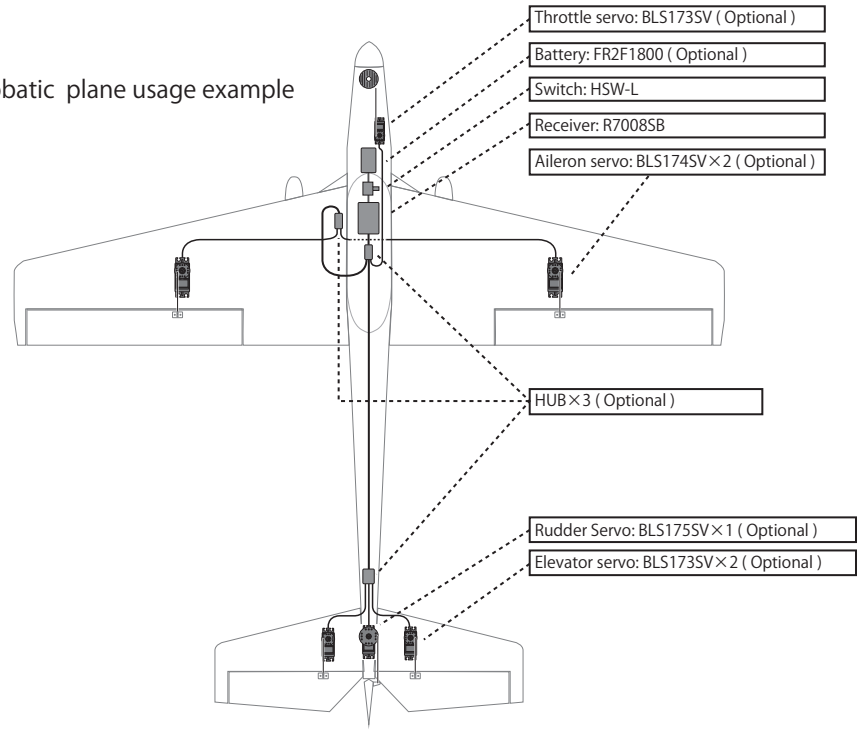
This set uses the S.BUS/S.BUS2 system. The wiring is as simplified and clean mounting as possible, even with models that use a large number of servos. In addition, the wings can be quickly installed to the fuselage without any erroneous wiring by the use of only one simple wire, even when there are a large number of servos used.

- When using S.BUS/S.BUS2, special settings and mixes in your transmitter may be unnecessary.
- The S.BUS/S.BUS2 servos memorize the number of channels themselves. (Settable with the T14SG)
- The S.BUS/S.BUS2 system and conventional system (receiver conventional CH used) can be mixed.

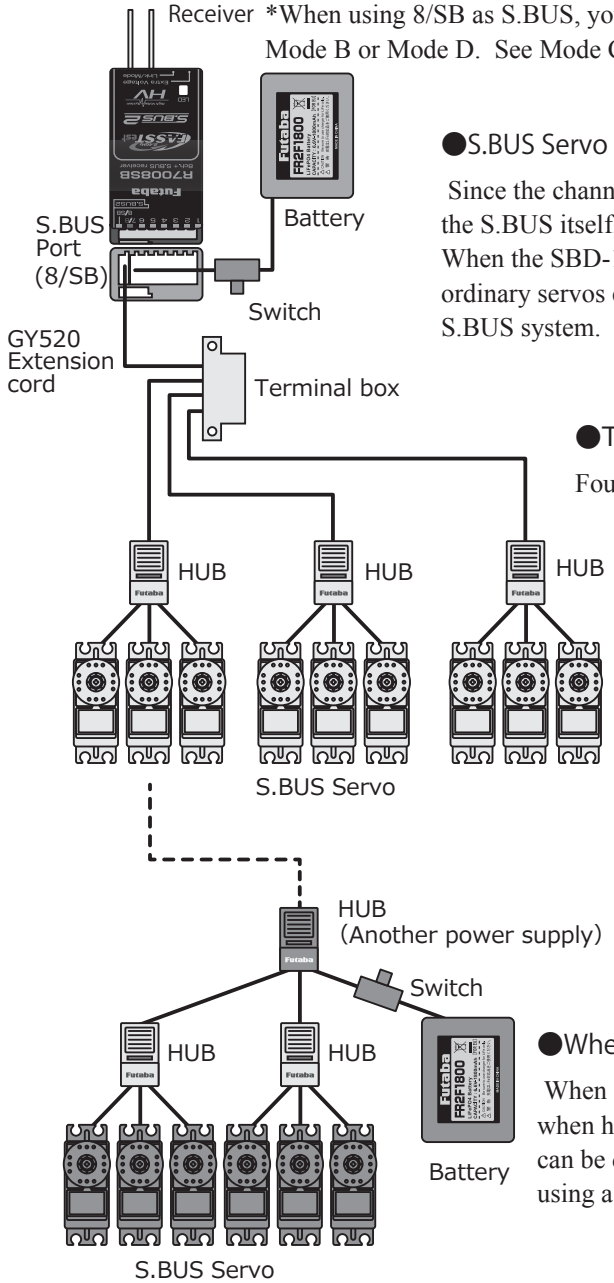
S.BUS Glider usage example



S.BUS Aerobatic plane usage example



S.BUS Wiring example



●S.BUS Servo

Since the channel number is memorized by the S.BUS itself, any connector can be used. When the SBD-1 (sold separately) is used, ordinary servos can be used with the S.BUS system.

●Terminal box

Four connectors can be inserted

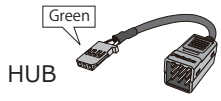
⚠Warning

Power supply

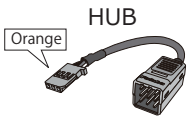
Please make sure that you use a battery that can deliver enough capacity for the number and kind of servos used. Alkaline batteries cannot be used.

●When separate power supply used

When a large number of servos are used or when high current servos are used, the servos can be driven by a separate power supply by using a separate Power Supply 3-way Hub.



Used when using a separate power supply battery.



Three connectors can be inserted.

S.BUS2 System

When using the S.BUS2 port, an impressive array of telemetry sensors may be utilized.

S.BUS2 TABLE

Receiver port	S.BUS Servo S.BUS Gyro	**S.BUS2** Servo **S.BUS2** Gyro	Telemetry sensor
S.BUS	○	○	×
S.BUS2	× (※)	○	○

(※) Don't connect S.BUS Servo,
S.BUS Gyro to S.BUS2 connector.

S.BUS servos and gyros and S.BUS2 servos and gyros must be used in the correct receiver ports. Please refer to the instruction manual to make sure you connect to the correct one.