FS-iT4

Digital propotional radio control system

INSTRUCTION MANUAL

2.4 Hz 01010101 AFHDS 2 AUTOMATIC FREQUENCY HOPPING DIGITAL SYSTEM

http://www.flysky-cn.com
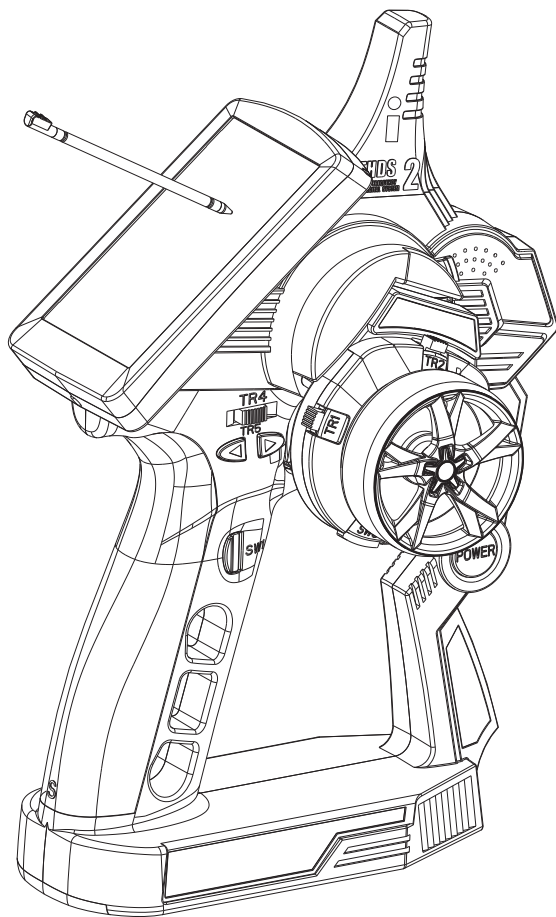
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WARNING:
This product is suitable for 15 years old and above.

15+

CE FC

Table of contents

1. Introduction

Thank you for choosing the Fly Sky FS-iT4 4 channels 2.4GHz AFHDS 2 computerized digital proportional R/C car and boat system. If it's your first use of a computerized radio system, this user manual will bring you easily to a new world of fun and sophistication. In all cases, please read carefully and completely this user manual as it contains all information to keep you safe.

2. Services

If you encounter any problem during use, please refer to this manual. If the problem still persists, please contact your local dealer or connect to our service and support website:

http://www.flysky-cn.com

3. Special symbols

Please pay attention to the following symbols when they appear in the manual and read carefully.

⚠ **Danger**: Not following these instructions may expose the user to serious injuries or death.

⚠ **Warning**: Not following these instructions may expose the user to serious injuries.

⚠ **Attention**: Not following these instructions may expose the user to minor injuries and even to serious injuries.

🚫 **Prohibited**   ❗ **Mandatory**

4. Safety guide

🚫 Do not use it in the night or a lighting storm as the bad weather will make the remote control out of control.

❗ Make sure moving direction of all motors be same with the operating direction. If not, please adjust direction first.

❗ The shutdown sequence must be to first disconnect the receiver battery then to switch off the transmitter. If the transmitter is switched off while the receiver is still powered, it may lead to uncontrolled movement or engine start and may cause an accident.

🚫 In particular, the 2.4G R/C system will affect the plane or the car nearby after you turn on the transmitter.

Be sure to set the Fail Safe function.

Do not operate outdoors on rainy days, run through puddles of water or use when visibility is limited. Should any type of moisture (water or snow) enter any component of the system, erratic operation and loss of control may occur.

Do not operate in the following places.
-Near other sites where other radio control activity may occur.
-Near people or roads.
-On any pond when passenger boats are present.
-Near high tension power lines or communication broadcasting antennas.
 Interference could cause loss of control. Improper installation of your Radio Control System in your
 model could result in serious injury.

Do not operate this R/C system when you are tired, not feeling well or under the influence of alcohol or drugs.
Your judgment is impaired and could result in a dangerous situation that may cause serious injury to yourself as well as others.

Do not touch the engine, motor, speed control or any part of the model that will generate heat while the model is operating or immediately after its use.These parts may be very hot and can cause serious burns.

Always perform a operating range check prior to using.
Problems with the radio control system as well as improper installation in a model could cause loss of control.(Simple range test method) Have a friend hold the model, or clamp it down or place it where the wheels or prop cannot come in contact with any object. Walk away and check to see if the servos follow the movement of the controls on the transmitter. Should you notice any abnormal operation, and do not operate the model. Also check to be sure the model memory matches the model in use.

Turn on the power:
Turning on the power switches,Always check the throttle trigger on the transmitter to be sure it is at the neutral position.
When making adjustments to the model, do so with the engine not running or the motor disconnected.
You may unexpectedly lose control and create a dangerous situation.

Fail safe function
Before running (cruising), check the fail safe function.
Check Method; Before starting the engine, check the fail safe function as follows:
(1) Turn on the transmitter and receiver power switches.
(2) Wait at least 30 seconds, then turn off the transmitter. (The transmitter automatically transfers the fail safe data to the receiver every 5 seconds.)
(3) Check if the fail safe function moves the servos to the preset position when reception fails.
The fail safe function is a safety feature that minimizes set damage by moving the servos to a preset position when reception fails. However, if set to a dangerous position, it has the opposite effect. When the reverse function was used to change the operating direction of a servo, the fail safe function must be reset.

Battery :
(1) Do not make the battery short circuit.
(2) Do not drop the battery or expose it to strong shocks or vibrations.The battery may short circuit and overheat; electrolyte may leak out and cause burns or chemical damage.

Storage:
1 Do not leave the radio system or models within the reach of small children.
A small child may accidentally operate the system. This could cause a dangerous situation and injuries.
2 Do not store your R/C system in the following places.
- Where it is extremely hot or cold.
- Where the system will be exposed to direct sunlight.
- Where the humidity is high.
-Where vibration is prevalent.
-Where dust is prevalent.
-Where the system would be exposed to steam and condensation.
Storing your R/C system under adverse conditions could cause deformation and numerous problems with operation.
Notice:
do not expose plastic parts to fuel, motor spray, waste oil or exhaust.The fuel, motor spray, waste oil and exhaust will penetrate and damage the plastic.

AFHDS2 (automatic frequency hopping digital system 2)， is developed by FLYSKY for all the Radio Control model lovers and is patented by FLYSKY at home. The system is specially developed for all the Radio control models, that offers super active and passive anti-jamming capabilities,very low power consumption and higher receiver sensitivity. With extreme rigorous testing by engineers and professional players for years, FLYSKY AFHDS2 is now considered to be one of the best systems available in the market.

RF specifications:
RF range: 2.4000-2.4835GHz
Channel bandwidth: 500KHz
Number of channels: 160
RF power: less than 20dBm (100mW)
RF mode: AFHDS 2(Automatic Frequency Hopping
          Digital System2)
Modulation type: GFSK
Antenna length: 26mm
RX sensitivity: -105dBm

⚠ **Danger**:

Misuse of this radio system can lead to serious injuries or death. Please read completely this manual and only operate your radio system according to it.

The 2.4GHz radio band has a completely different behavior than previously used lower frequency bands. Keep always your model in sight as a large object can block the RF signal and lead to loss of control and danger. The 2.4GHz RF signal propagates in straight lines and cannot get around objects on its path. Never grip the transmitter antenna when operating a model as it degrades significantly the RF signal quality and strength and may cause loss of control and danger

⚠ **Danger**:

Always turn on the transmitter first then the receiver. When turning off the system, always turn off the receiver first then the transmitter. This is to avoid having the receiver on itself as it may pick a wrong signal and lead to erratic servo movements. This is particularly important for electric powered models as it may unexpectedly turn on the motor and lead to injuries or death.

System Characteristic
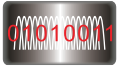
This radio system works in the frequency range of 2.4000 to 2.4835GHz. This band has been divided into 160 independent channels. Each radio system uses 16 different channels and 160 different types of hopping algorithm. By using various switch-on times, hopping scheme and channel frequencies, the system can guarantee a jamming free radio transmission.

This radio system uses a high gain and high quality multidirectional antenna. It covers the whole frequency band. Associated with a high sensitivity receiver, this radio system guarantees a jamming free long range radio transmission.

Each transmitter has a unique ID. When binding with a receiver, the receiver saves that unique ID and can accepts only data from that unique transmitter. This avoids picking another transmitter signal and dramatically increases interference immunity and safety.

This radio system uses low power electronic components and a very sensitive receiver chip. The RF modulation uses intermittent signal transmission thus reducing even more power consumption. Comparatively, this radio system uses only a tenth of the power of a standard FM system.

This system uses the two-way communication, which could control the working state of current model better and make the operation more enjoyable and safer than before.

6. Battery charging notes

If your transmitter or receiver uses any type of rechargeable batteries, please check them before each flight and make sure they are in good shape and fully charged otherwise it may lead to loss of control, injuries and death.

If you are using rechargeable batteries, make sure to use a suitable charger with the right charging current set otherwise it may lead to battery overheating, fire or explosion. Disconnect the battery from the charger as soon as it is fully charged. If you don't plan to use your radio system for a long period of time, remove the batteries from the transmitter and the model as it may damage them.

6.01: Transmitter charger

1. Install the lipo battery to the transmitter or charger with correct direction, then close the battery cover.
2. Connect cable USB with adapter.
3. Connect opposite end of cable USB to the transmitter or the charging interface of the charger.
4. Insert the adapter into socket.

PC

Adapter
(INPUT:100~240V
OUTPUT:6V-1500mA)

PC

Adapter
(INPUT:100~240V
OUTPUT:6V-1500mA)
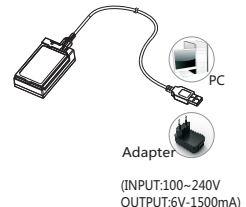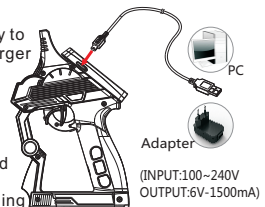
7. Transmitter specifications

Transmitter specifications:
- Channels: 4
- Model type: car/boat
- RF range: 2.4-2.48GHz
- Bandwidth: 500KHz
- Band: 160
- RF power: less than 20 dBm
- 2.4G system: AFHDS 2
- Code type: GFSK
- Sensitivity: 1024
- Low voltage warning: yes(less than 3.7V)
- DSC port: yes(USB HID)
- ST range: 90
- TH range: 45(F: 30;B:15)
- Charger port: yes
- Power: 3.7V(1200mAh)
- Weight: 347g
- ANT length: 26mm
- Size: 157*116*258mm
- Color: silver&orange&grey
- Certificate: CE0678, FCC
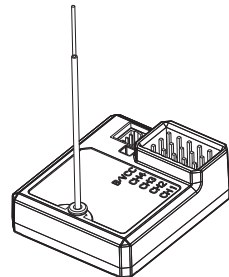
MODEL: FS-iT4
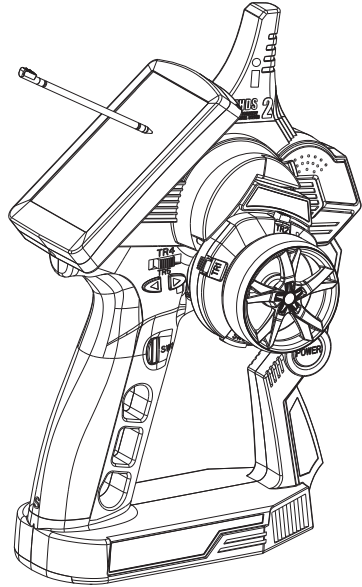
8. Receiver specifications

SPECIFICATIONS :
- Channels: 4
- Model type: car/boat
- RF range: 2.40-2.48GHz
- Band: 160
- RF power: less than 20 dBm
- 2.4G system: AFHDS2
- Code type: GFSK
- Power: 4.0-7.2V DC
- Weight: 15g
- ANT length: 26mm
- Size: 35.4*29.6*13mm
- Color: black
- Certificate: Ce0678, FCC
- RX Sensitivity: -105 dBm
- AS-Bus PORT: yes
- Data Acquisition port: yes

MODEL: FS-iR4

8.01. Speed acquisition module

SPECIFICATIONS :

- Model type: car/boat
- Monitor range of speed16000RPM
- Power: 4.0-6.5V DC
- Weight: 10g
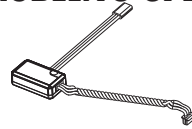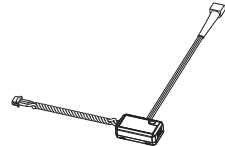- Size: 24.4*14*8mm
- Color: black

MODEL: FS-SPD01

8.02. Speed acquisition module

SPECIFICATIONS :

- Model type: car/boat
- Monitor range of speed16000RPM
- Power: 4.0-6.5V DC
- Weight: 10g
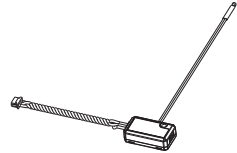- Size: 24.4*14*8mm
- Color: black

MODEL: FS-SPD02

8.03. Temperature acquisition module

SPECIFICATIONS :

- Model type: car/boat
- Monitor range of temperature: -40-100°C
- Power: 4.0-6.5V DC
- Weight: 10g
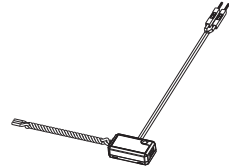- Size: 24.4*14*8mm
- Color: black

MODEL: FS-STM01

8.04. Voltage acquisition module

SPECIFICATIONS :

- Model type: car/boat
- Monitor range of Voltage: 4.0-30V DC
- Power: 4.0-6.5V DC
- Weight: 10g
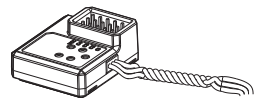- Size: 24.4*14*8mm
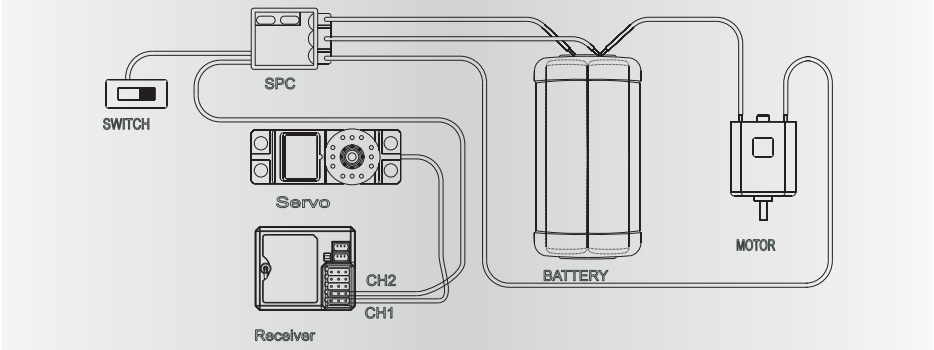- Color: black

MODEL: FS-SVT01

8.05. Serial bus receiver

SPECIFICATIONS :

- Channels: 4
- Model type: car/boat
- Weight: 12g
- Power: 4.0-6.5V DC
- Size: 30*25.6*13mm
- Color: black
- ASbus PORT: yes

MODEL: FS-SEV01

9. Receiver and servo connections

9.01. Installation when a motor controller is used:

SPC
SWITCH
Servo
CH2
CH1
Receiver
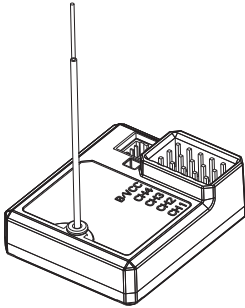BATTERY
MOTOR

Remark: to guarantee a long range, place the antenna of the receiver vertically away from any metal part.

ANT

Receiver
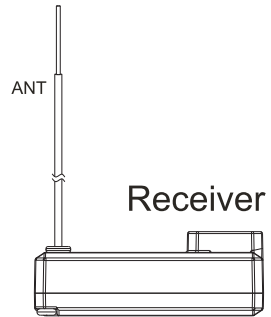
9.02. Installation for gas powered models:

To Battery
Switch
B/C
Receiver
CH4
CH3
CH1
CH2
CH4 servo
CH3 servo
Throttle servo
Steering servo
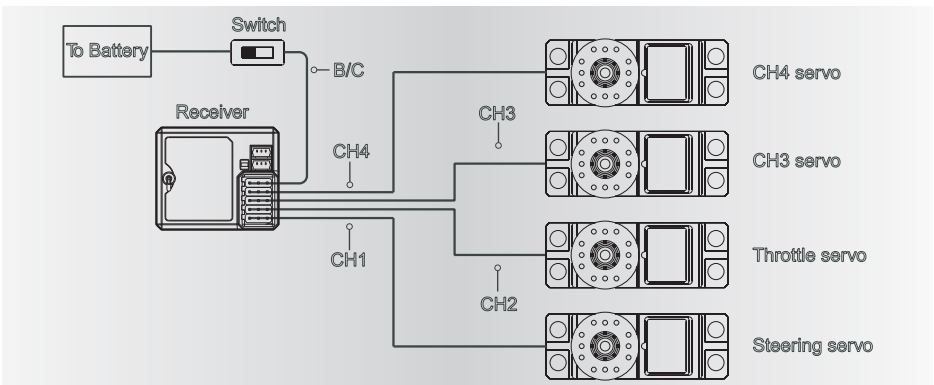
10. FS-iR4 operation instruction

port instruction

CH1-CH4: represent relevant channel of transmitter.
BIND,VCC: represent the channel used for matching and input power respectively.
OUT: represent ASbus port of outputting PPMS data and be used for connecting the serial bus receiver to expand channels.
IN: Represent input ports of all kinds of sensor data, and data acquisition modules can be connected in serial optionally.
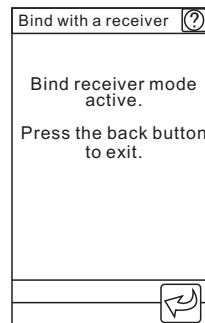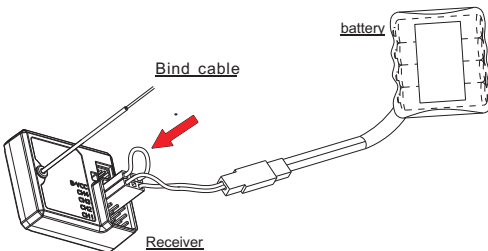
Binding

All receivers are already bound to their respective transmitter at production time. If you want to bind it with another transmitter, please operate as follows:
1. Install the battery in the transmitter, and turn on the power.
2. Open the main menu, and select "RX setup" function in the second page, then touch "Bind with a receiver" to enter bind mode.
3. Insert the standard bind cable into the power supply channel.
4. Connect the 6VDC power connector to any channel from CH1 to CH4 with correct polarity to enter bind mode. The receiver LED will flash at this time.
5. The transmitter will exit the bind mode automatically after having successfully bound with the transmitter.
6. Pull off the bind cable and restart the receiver. Please connect the servos and other telemetry modules to the receiver to check if everything operates normally.
7. If anything is wrong, please repeat the above steps to bind again.
  Notice:
  The binded transmitter and receiver will work abnormally if the transmitter or the receiver enters the binding state by mistake.In other words, the receiver cannot be controlled by the transmitter.
  If so, just need to restart the transmitter and the receiver. If it still doesn't work,
  please bind the transmitter with the receiver again.

battery

Bind cable

Receiver

Bind with a receiver

Bind receiver mode active.

Press the back button to exit.

Serial bus receiver can connect 4 modules with 18 channels in serial at most. Button K1 and K2 correspond to C1 and C2 respectively.

Operation:

1. "IN" port of FS-SEV01 receiver corresponds to "Out" port of receiver.
2. The "OUT" port of FS-SEVO1 receiver is used to connect post level FS-SEV01 receiver。
3. Insert the bus receiver to receiver, and then switch on the matched transmitter and receiver. The LED will be on.
4. Select main menu of receiver setup to enter the interface of servo setup.
5. Select channel which need to be expanded, meanwhile LED of bus receiver is off.
6. Push relevant channel button by plastic needle of matching line. The setup is successful if LED flashes automatically.
7. Insert servo to check.
8. Set up 4 channels of bus receiver as above steps.
9. Just connect a new bus receiver with "OUT" port of first stage bus receiver if more channel needed. Set up the new one as above steps.

Notice:
  when the load of serial bus receiver is excessive and electric current is higher than usual, please supply power directly to the serial bus receiver or it will break cables.


Data telemetry connection

Data telemetry operation instruction
FS-SPD01: revolving speed module.
Operation:

1. Insert one end of standard 3 PIN plug into "OUT" port of speed acquisition module, and insert the other end into "IN" port of receiver or other sensor, as picture above.
2. Forexample：Insidehub of the model, the distance between sensor and magnet is less than2mm. The north Pole or the south pole of themagnet has to be paralleled with sensor.
3. Switch on transmitter and receiver. "Motor speed 2:0RPM" will be shown in receiver window in display screen. Speed value changes as turning wheel, which means installation is successful.

Sensor Car wheel Magnet
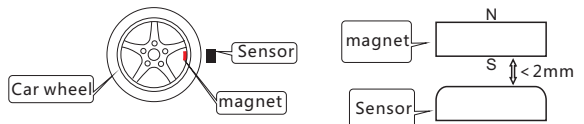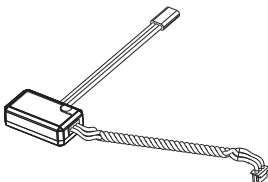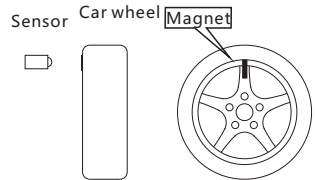
Telemetry module
FS-SPD02: optical rotation speed telemetry module
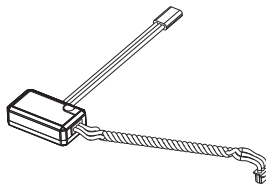Operation:
1. Connect one end of the standard 3 PIN plug to the "out" port of the
   speed telemetry module and the other end to the "in" port of the receiver
   or the previous sensors "in" port as pictured above.
2. As picture 2 shows, affix the sensor and the reflection decals on the flat
   surface of the side of any rotating part (gear, car wheel…). Keep decals flat and
   perpendicular to the sensor. (Remark: high color contrast between decals and rotating part gives better result).
   Maintain sufficient safety distance between the sensor and the decals to avoid any damage.
3. Switch on the transmitter and the receiver. "Motor speed 2: 0RPM" will be displayed in the main screen.
   The speed displayed will follow the speed of the rotating part monitored by the rotation speed sensor, indicating
   a successful installation.
   Remark: You can also fix it to the driven gear of the model car. Use the same method to collect RPM data of gear.

FS-STM01: Temperature telemetry connection
Operation:
1. Insert one end of standard 3 PIN plug into "OUT" port of temperature module, and insert the other end into
   "IN" port of receiver or other sensor, as picture above.
2. Adhere temperature sensor to proper place (such as motor and battery) tightly by sponge double stick.
3. Switch on transmitter and receiver. "Temperature 1:25.0℃" will be shown in receiver window in display screen,
   which means installation is successful, and 25.0℃ is the temperature collected.

FS-SVT01: External voltage telemetry connection
Operation instruction:

1. Insert one end of standard 3 PIN plug into "OUT" port of external voltage module, and insert the other end into "IN" port of receiver or other sensor, as picture above.
2. Switch on transmitter and receiver. "Ext.voltage4:12.40V" will be shown in receiver window in display screen, which means the installation is successful.
3. Insert red and black contact pin into battery port respectively. The red one is positive pole and the black one is negative pole. As shown: "Ext.voltage4:12.4v" is shown in the receive widow in display screen, which means the tested voltage is 12.4v

Attention: the polarity of red and black line can not be reversed, or the receiver will be damaged.
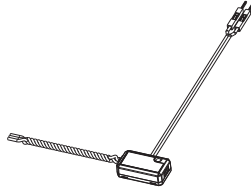
Notice:

Don't make IN port and OUT port oppositely, or it will cause that the transmitter can't distinguish each telemetry module and its following telemetry module(s).
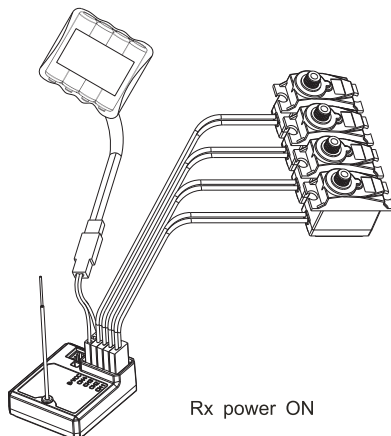
11. Power on

1. Connnect all parts
2. Switch on the transmitter
3. Connect the receiver battery
4. The receiver red LED indicator is solid
   indicating the presence of a correct signal
5. When the error rate of transmitter is less than 5%,
   the signal of receiver is stable.
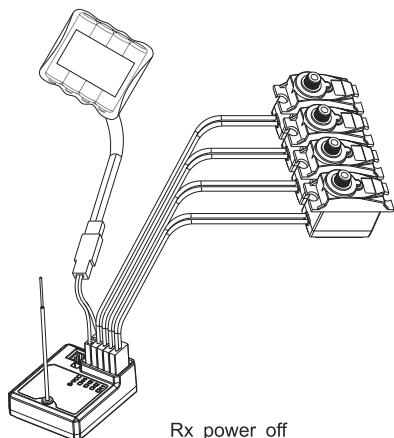6. Use the radio system
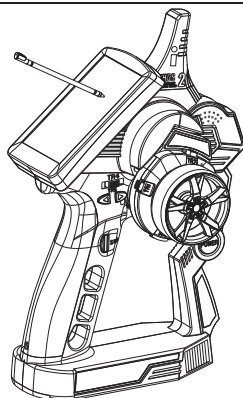
Power on
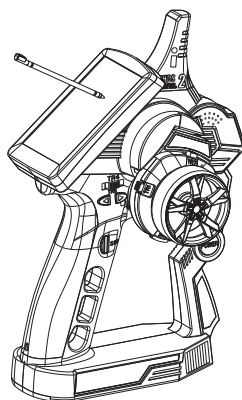
Tx power ON

Rx power ON

12. Shut down

1. Cut off power source of receiver
2. Turn off the transmitter.

Attention: transmitter cannot be turned off if the power
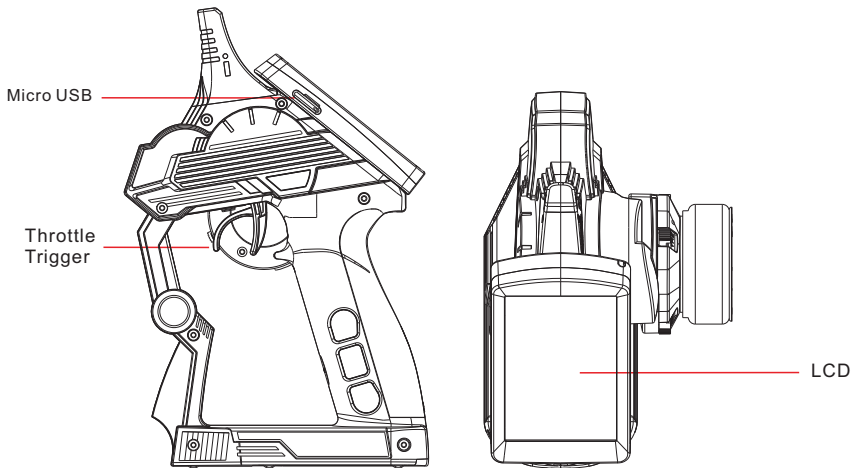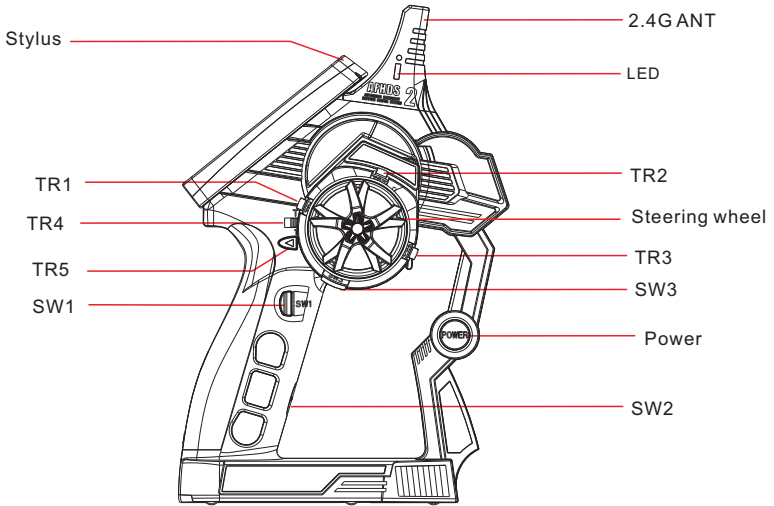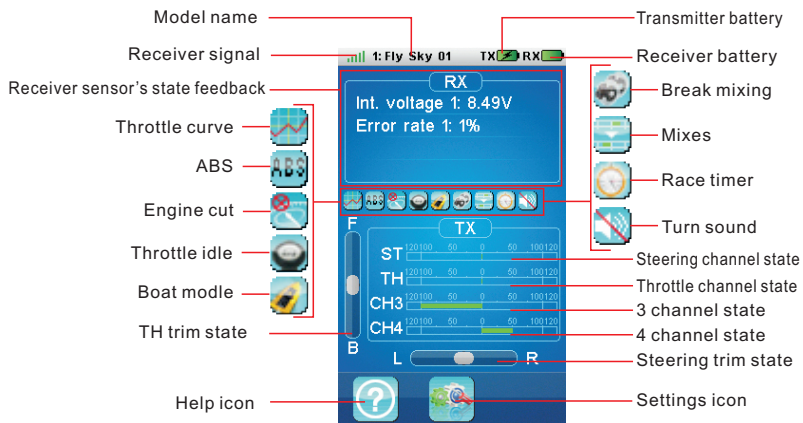source of receiver is not cut off.

Shut down

Rx power off

Tx power off

Stylus

2.4G ANT

LED

TR1

TR2

TR4

Steering wheel

TR5

TR3

SW1

SW3

Power

SW2

Micro USB

Throttle
Trigger

LCD

14. Main screen

The screen display the logo of FLYSKY. Entering the main menu after two seconds . the main menu is as the following picture:

Model name	Transmitter battery
Receiver signal	Receiver battery
Receiver sensor's state feedback	Break mixing
Throttle curve	Mixes
ABS	Race timer
Engine cut	Turn sound
Throttle idle	Steering channel state
Boat modle	Throttle channel state
TH trim state	3 channel state
	4 channel state
	Steering trim state
Help icon	Settings icon
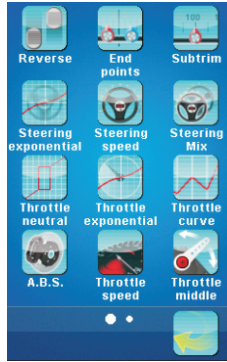
15. Main menu

Main menu page 1

Main menu page 2

The main menu can be accessed by touching the settings icon at the bottom of the main screen.

The main menu is organized in horizontal pages. Each page contains up to 12 icons representing 12 different functions.

The white balls in the bottom tray indicate which menu page is displayed. The big white ball represents the currently displayed page.
To display the next page, touch the current page anywhere on its right part and slide it to the left.
To display the previous page, touch the current page anywhere on its left part and slide it to the right.
To enter a function, simply touch its corresponding icon.

To return to the main screen, touch the back button in the bottom tray.

16. Top tray

The top tray of the screen constantly displays the main status of the whole system.

displays the status of the receiver battery. If the voltage is too low, an audible alarm rings and this symbol blinks. See further how to set up the receiver battery alarm voltage.

displays the status of the remote control battery. If the voltage is too low, an audible alarm rings and this symbol blinks.

displays the number and the name of the currently selected model.

displays the signal strength received by the vehicle. The strongest signal is represented with 5 bars. When the signal strength is lower or equal to two bars, an audible alarm rings.
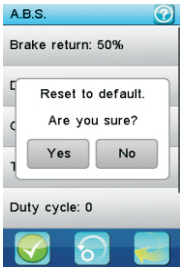
17. Functions interface

All functions use a set of standard user interface objects.
The bottom tray can contain the following buttons:

The back buttons returns to the previous screen

The default button sets back the current page parameters to their default values.

These 2 buttons respectively enable and disable the current function.

Yes: reset to default the current displayed function
No: no operation

Please touch the " 🛈 "in the top right corner to get help information

A title bar displays the name of the current function or menu.

A white exclamation mark on the right of a title bar indicates that contextual help is available. Touch it and it will be displayed.

To scroll down a help page, touch it anywhere on its bottom part and slide it up.
To up down a help page, touch it anywhere on its top part and slide it down.
To return to the calling function, touch the back button in the bottom tray.
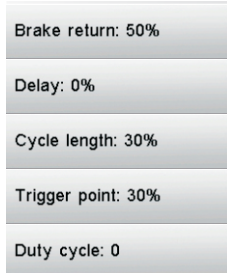
A vertical menu allows to select one option among several.

This example selects the ABS parameter to set. The right gray vertical bar indicates the lengths of the menu and the current position in it.
To scroll down a vertical menu, touch it anywhere on its bottom and slide it up.
To scroll up a vertical menu, touch it anywhere on its top and slide it down.
To select one of the menu items, simply touch it.

Some menus are a set of radio buttons that will modify a multi-value parameter.
The blue ball indicates the currently selected value. To select another value, simply touch it.
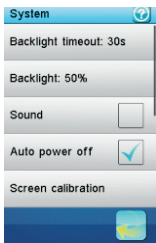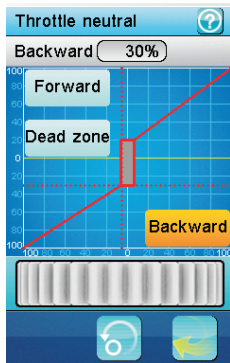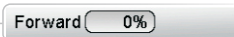

Sound is disabled
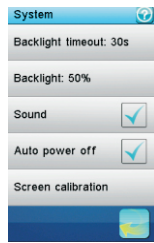
Sound is enabled

Some menu items embed a check box.
To toggle a check box, simply touch it.

Most of functions are set using a dialog bog.
A dialog box contains a set of different objects.
Touching a button will execute or select the function associated to it.

This example contains the following objects:

-The value of the selected parameter is displayed in the value box on the top of the dialog box.
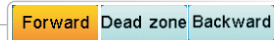
-The 3 buttons "Forward", "Dead zone" and "Backward" select the parameter to modify. To activate a button, simply touch it. The selected option is highlighted in yellow.

-The wheel at the bottom allows to modify the value of the selected parameter. To decrease the parameter value, touch the wheel any where on the right and slide it to the left. To increase the parameter value, touch the wheel anywhere on the left and slide it to the right.

17.01: Reverse

The reverse function individually reverses the direction of operation of the servos on the 4 channels.
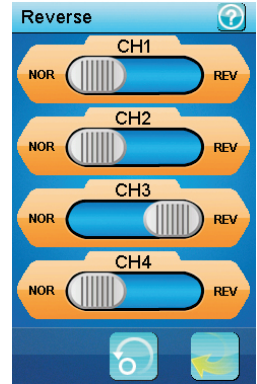This dialog box contains 4 big check boxes, one for each channel.
To toggle the reverse state of a channel, just touch it.
In this example, only the third channel is reversed, the other channels operate normally.

17.02: End points

The end points function individually adjusts the low and high travel limit of each servo on the 4 channels. Set the end points according to your model mechanics.
To choose the side of the channel 1 end point to set (steering), move the steering wheel to the desired low or high side. The selected side will be highlighted in yellow.
To choose the side of the channel 2 end point to set (throttle), move the throttle trigger to the desired low (brake) or high (acceleration) side. The selected side will be highlighted in yellow.
To choose the side of channels 3 or 4 end point to set, use its corresponding trim or switch to control it. A trim switch or push button has to be previously associated with that channel to be able to control it.
In this example, the throttle trigger was moved to it acceleration side thus selecting the high side end point of the channel 2.
To modify the selected end point, simply touch the corresponding channel button. The red needle represents the selected side. Use the wheel to move it and modify the end point value.
The position of the corresponding channel is displayed in real time.
In this example, the acceleration side of the throttle is selected and the throttle trigger is half accelerating.
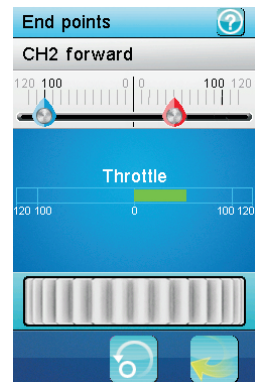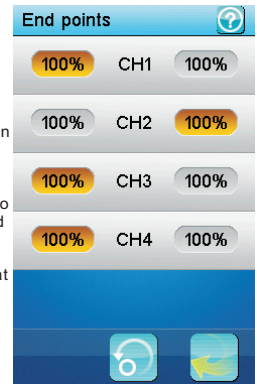
17.03: Sub trims

The sub trims function individually adjusts the center position of each servo of the 4 channels. This is particularly useful when the servo mechanics doesn't allow an adjustment fine enough.
Touch the channel which sub trim must be adjusted

Use the wheel to move the red needle and modify the sub trim value of the selected channel.
The position of the corresponding channel is displayed in real time

In this example, the channel 2 (throttle) has been selected and the throttle trigger is half braking.
The sub trim of each channel can be assigned to a trim switch.
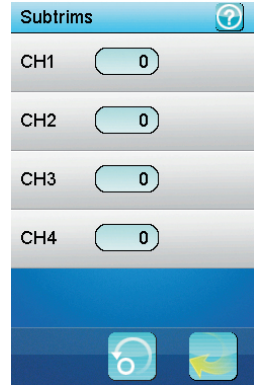
17.04: Steering exponential

The steering exponential function modifies the transfer curve between the steering wheel and the channel 1.
Once activated, 2 buttons select which parameter value to modify:
Rate: adjust the slope of the curve. The smaller is the slope, the shorter is the throw of the corresponding servo.
Exp.: adjust the linearity of the curve. A value of 0 corresponds to a perfectly linear curve. A positive value decreases the sensitivity near the neutral position and increases it on the extreme sides. A negative value increase the sensitivity near the neutral position and decreases it on the extreme sides The vertical dotted line displays in real time the position of the steering wheel. The horizontal dotted line displays in real time the steering position after the exponential function.
In this example, the exponential function is activated, the selected parameter is exponential and is set to its maximum value.
The horizontal dotted line shows a steering wheel 20% under the neutral position but the horizontal dotted line indicates that the resulting servo throw is less than 10% showing the efficiency of the exponential function.
The activation of the steering exponential function can be assigned to a push button. The steering rate can be assigned to a trim switch
The steering exponential can be assigned to a trim switch.
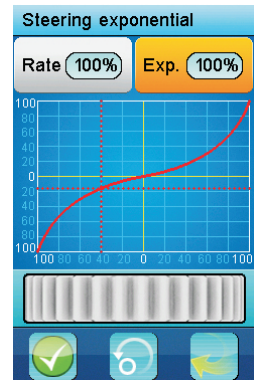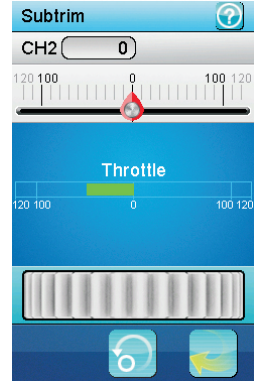
17.05: Steering speed

If the steering servo throws too fast to an extreme position or returns too fast to its neutral position, it may result in a loss of control of the vehicle.
The steering speed function limits the maximum angular speed of the steering servo.
2 buttons select which speed to limit.
Turn speed: limits the angular speed of the servo toward its extreme side.
Return speed: limits the angular speed of the servo toward its neutral position.
The status of the channel 1 (steering) is displayed in real time. The red bar graph shows the position of the steering wheel and the green bar graph the position of the steering servo.
In this example, the turn speed parameter is selected and is set to its slowest speed. The steering wheel is completely turned to the right (in red) but the steering servo (in green) due to its low turn speed is late and just passed a third of its maximum throw.
The steering turn speed can be assigned to a trim switch.
The steering return speed can be assigned to a trim switch.
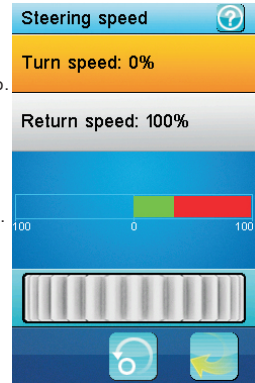
17.06: Steering mix

There are 4 different types of steering control.
Front side: the channel 1 controls the front steering.
Rear side: the channel 1 controls the rear steering and is reversed
Same phase: the channel 1 controls the front steering and the channel 3 the rear steering. The channel 3 is a copy of the channel 1.
**Reverse phase**: the channel 1 controls the front steering and the channel 3 the rear steering. The channel 3 is a reversed copy of the channel 1.
4 buttons select the 4 steering types.
A car picture displays in real time the steering servo and if needed the channel 3 servo.The light gray wheels represent the wheels position when the steering wheel is fully turned to the right.
The dark gray wheels represent the actual wheels position.
In this example, the reverse phase type is selected and the steering wheel is half turned to the left.
The steering mode function can be assigned to a push button. The next mode is selected each time the push button is pressed.
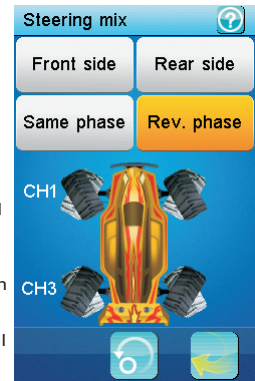
The throttle neutral function defines the behavior of the throttle near its neutral position.
3 buttons select which parameter to adjust.
Dead zone: defines the width of a zone around the neutral position of the throttle trigger where the trigger will have no effect and will be read as neutral. This is to compensate any inaccuracy of the throttle trigger neutral point or to ease the control for beginners.
**Forward**: some engine throttles, especially on gas powered cars, do not have any effect near the neutral position and begin only to accelerate after a given point. The forward parameter adjusts this point and let the servo to jump directly to it at any slight acceleration of the throttle trigger.
Backward: some brakes do not have any effect near the neutral position and begin only to brake after a given point. The backward parameter adjusts this point and let the servo to jump directly to it at any slight brake of the throttle trigger.
The vertical dotted line displays in real time the position of the throttle trigger.
The horizontal dotted line displays in real time the position of the throttle servo after the throttle neutral function has been applied.
In this example, the dead zone is set to 25%, the forward to 20% and the selected parameter, backward, is set to 30%. The throttle trigger is braking slightly.
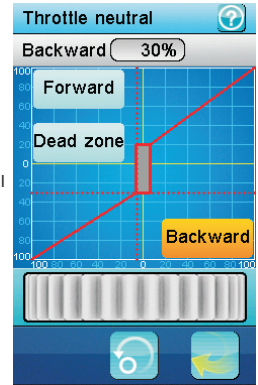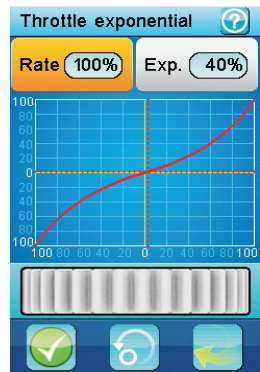
17.08: Throttle exponential

The throttle exponential is identical to the steering exponential but applies to the channel 2.
The activation of the throttle exponential function can be assigned to a push button.
The throttle rate can be assigned to a trim switch.
The throttle exponential can be assigned to a trim switch.

17.09: Throttle curve

The throttle curve defines a 5 points broken-line transfer curve between the throttle trigger and the throttle servo.
5 buttons select one on the 5 points to adjust.
Each point can be independently adjusted from 0% (full brake) to 100% (full throttle).
The vertical dotted line displays in real time the throttle trigger position.
The horizontal dotted line displays in real time the position of the throttle servo after the
throttle curve function has been applied.
In this example, the second point is selected and set to 15% and the curve is defined to compensate a throttle servo that is too fast in the first middle and slower in the second middle. Similarly, this curve compensates a brake that isn't efficient enough in the first middle and too efficient in the second middle.The activation of the throttle curve function can be assigned to a push button.
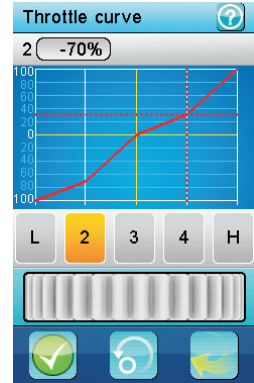
The automatic brake system (A.B.S.) pulses the brakes to avoid blocking the wheels and losing control of the vehicle.

A first menu selects which one of the 6 parameters to modify.

Brake return: determines how much the brakes will be released at each pulse. 100% completely releases the brakes and the servo returns to its neutral position at each pulse. 0% disables the function.

Delay: if not 0%, inserts a delay between the ABS triggering and the activation of the brakes pulses. 100% inserts a delay of around 2 seconds.

Cycle length: determines the length of a brake-release cycle. 20% is the shortest cycle length (around 100ms) and 100% is the longest (around 500ms).

Trigger point: the ABS function is performed only if the brakes are applied over this threshold. 100% activates the ABS only at full brake.

Duty cycle: set the proportion of the time the brakes are applied and the time the brakes are released. The lowest value (-4) releases the brakes only 10% of the time and the highest value (+4) releases the brakes 90% of the time.

Steering mix: a positive value (N) will activate the ABS only if the steering wheel is within the specified range around the neutral position. A negative value (E) will activate the ABS only is the steering wheel is outside of that same range around the neutral position.

Once a parameter is selected, a second dialog box allows to modify it.

The dark gray curve represents the ABS function at full brakes.

The red curve represents the actual ABS function.

The white line represents the trigger point beyond which the ABS function is performed.

The bar graph at the bottom displays the channel 2 (throttle) in real time.

In this example, the duty cycle parameter is selected and is set to +2 mostly releasing the brakes all the time. The brakes are applied at 43%, above the trigger point set to 30%.

The activation of the ABS function can be assigned to a push button.

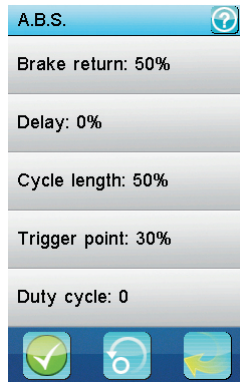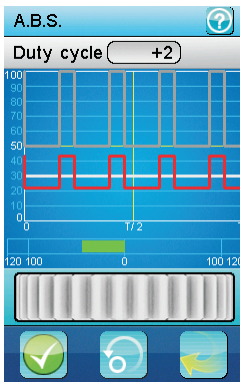The ABS brake return can be assigned to a trim switch.

The ABS delay can be assigned to a trim switch.

The ABS cycle length can be assigned to a trim switch.

The ABS trigger point can be assigned to a trim switch.

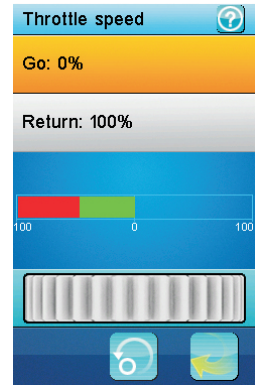The ABS brake return can be assigned to a trim switch.

The ABS duty cycle can be assigned to a trim switch.
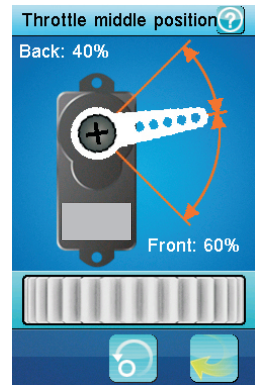
17.11: Throttle speed

The throttle speed is identical to the steering speed but applies to the channel 2.

The throttle go speed can be assigned to a trim switch.
The throttle return speed can be assigned to a trim switch.

| Throttle speed |
|---|
| Go: 0% |
| Return: 100% |

17.12: Throttle middle point

On some models, the travel of the throttle is not equal to the travel of the brakes.
This function set the position of the middle point between the throttle and the brakes.
In this example, the brakes have a travel of 40% and the throttle 60% (half more).

Throttle middle position
Back: 40%
Front: 60%

17.13: Throttle idle up

This function offset the neutral position of the throttle. On a gas powered car, it can be useful to set the throttle idle up to a positive value to increase the engine idle speed when it's not warmed up yet.
In this example, the throttle trigger it at its neutral position but due the throttle idle up that is activated and set to 20%, the throttle servo is at 20%.
The activation of the throttle idle up function can be assigned to a push button.
The throttle idle up value can be assigned to a trim switch.

| Throttle idle up |
|---|
| Value +20% |
| No push button assigned |
| Throttle |
| Throttle idle is up |
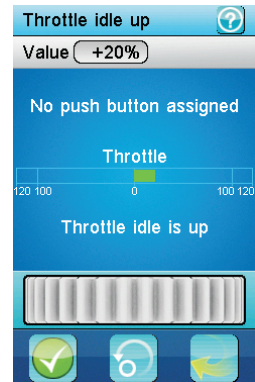
17.14: Engine cut

When activated, the engine cut ignores the throttle trigger position and set the throttle to a predefined position. It can be used to turn of the ignition of a gas powered vehicle.

In this example, the throttle trigger is at full throttle but since the engine cut function is activated and set to -90%, the throttle servo brakes slightly.
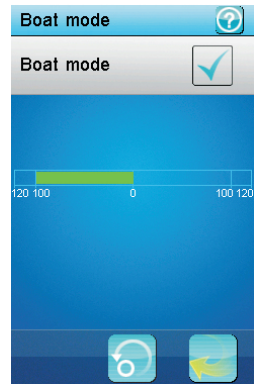
The activation of the engine cut function can be assigned to a push button.
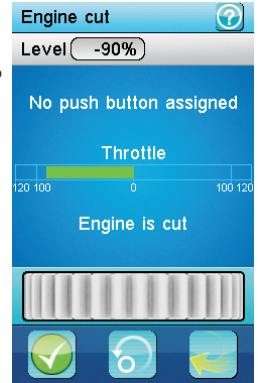
17.15: Boat mode

When the brake side operation is unnecessary with a boat and some other vehicle, it can be disabled.

In this example, the throttle trigger is at its neutral position but since the boat mode is activated, the throttle servo is at its low end point.

17.16: Brake mixing

This function is used when the brakes are controlled by 2 or 3 independent servos. The channels 3 and / or 4 can be activated separately and are used as slave channels of the throttle. Only the brake side has an effect on the slave channels. Touch the CH3 and / or CH4 buttons to enable or disable the required channel to be part of the mix.
Once a channel is activated, 2 other buttons, Exponential and A.B.S. are displayed under the activated channel to set independent exponential and A.B.S. functions. This function allows to control up to 3 channels with 3 independent exponential and 3 independent A.B.S. functions to control the brakes. The use exponential and A.B.S. functions is identical to the original throttle exponential and A.B.S.
In this example, only the channel 4 is part of the brake mix and the channel 3 is not affected.
The activation of the channel 3 exponential function can be assigned to a push button.
The activation of the channel 3 ABS function can be assigned to a push button.
The activation of the channel 4 exponential function can be assigned to a push button.
The activation of the channel 4 ABS function can be assigned to a push button.
All the parameters of the channels 3 and 4 exponential and ABS function can be assigned to a trim switch each.
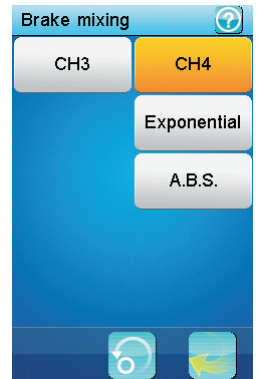
17.17: Mixes

4 independent mixes can be applied between any master and slave channel.
Each mix, when activated, will let the slave channel be influenced by its master channel.
A fraction of the master channel, eventually negative, is added to the slave channel.
Furthermore, the slave channel can be shifted up or down by a given value.
The first menu selects the mix to modify.
The second menu selects the parameter of the previously selected mix to modify.
Master channel: select the channel that will influence the slave channel.
Slave channel: select the channel that will be influenced by the master channel.
Low side mix: set how much influence the master channel will have when on its low side
(left side for the steering channel and brake side for the throttle channel). A negative value
will influence the slave channel on the opposite direction. 50% adds half of the master to the
slave.
0% doesn't influence the slave.
Low side mix: same as the low side mix but on the high side of the master channel (right
side for the steering channel and acceleration side for the throttle channel).
Offset: adds the offset value to the slave channel. A negative value will shift the slave
channel toward its low side.
When modifying the low side mix, the high side mix or the offset, the master channel
(at the top) and the slave channel (at the bottom) are displayed in real time.
In this example, the first mix is activated, the throttle is the master, the channel 4 is the slave
and the low side mix is set to 50% thus having the channel 4 being added half of the value
of the throttle when braking.
The activation of each of the 4 mixes function can be assigned to a push button.
The low side of each mix can be assigned to a trim switch.
The high side of each mix can be assigned to a trim switch.
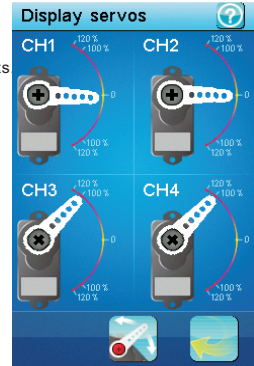The offset of each mix can be assigned to a trim switch.
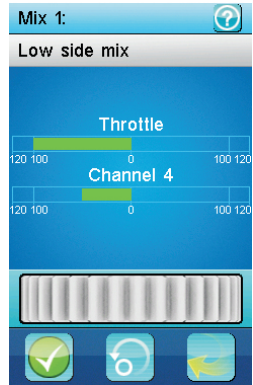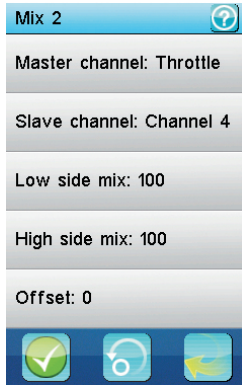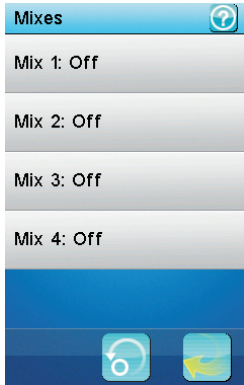
17.18: Display servos

This function displays in real time the position of the 4 servos.
The test button let the 4 servos to move slowly between their respective end points.

This allows to test the consistency of the mechanics of the model.

17.19: Race timer

When the brake side operation is unnecessary with a boat and some other vehicle, it can be disabled.
In this example, the throttle trigger is at its neutral position but since the boat mode is activated, the throttle servo is at its low end point.
The race timer allows to measure time durations in 4 different modes. Touch the mode button to select the race timer mode.
Up timer: this timer starts to count up from 0. It can be only started, stopped or reset to zero.
In this example, the up timer is started.

**Down timer**: when the down timer is stopped, the wheel sets the start time from 1 to 99 minutes.
Once started, the down timer counts down toward zero. Once zero is reached, it counts up like an up timer. Resetting a down timer sets it back to its start time.
In this example, the down timer is set to 5 minutes but is still stopped.

Lap timer: the lap timer is an up timer. Once started, the start button becomes the lap button. Each time the lap button is touched, the time elapsed since the last lap or the timer start is displayed for 3 seconds and recorded in the lap memory. To avoid glitches, the minimum lap time is 3 seconds.
In this example, the lap button was just touched and the last lap time is displayed for 3 seconds.
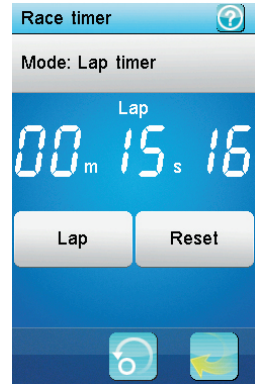
Lap memory: this mode displays the list of the last 100 recorded lap times. If the lap timer is still running and a push button is assigned to the race timer lap function, the lap memory is updated each time that push button is pressed and displayed in real time. Touching the default button erases the lap memory. A confirmation is requested.

In this example, 6 laps of around 15 seconds each have been recorded.

The race timer start/stop/lap function can be assigned to a push button.

The race timer reset function can be assigned to a push button.
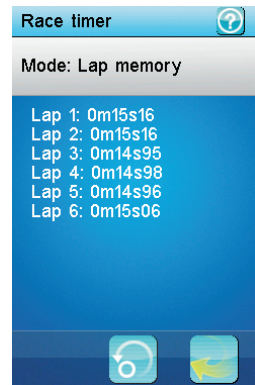
17.20: Keys function

A function can be independently assigned to each trim switch and push button.

To assign a function to a trim switch or push button, touch its corresponding button in the Keys function dialog box. A menu displays all the available functions for the selected trim switch or push button.

Trim TR1

None

Channel 3

Channel 4

Steering trim

Throttle trim
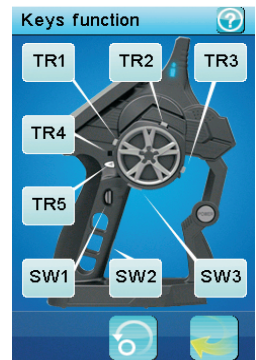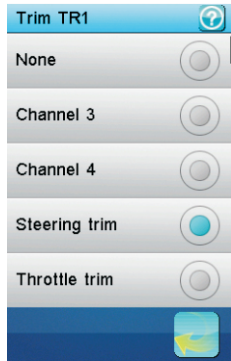
This is the beginning of the trim switch functions list menu.

Key SW1

None

Channel 3

Channel 4
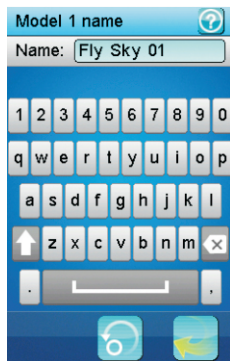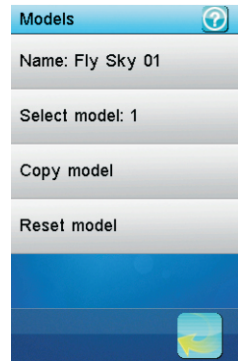
Tog. channel 3

Tog. channel 4

This is the beginning of the push button functions list menu.

17.21: Models

20 model configurations can be independently saved and managed allowing to instantly switch between 20 different vehicles to control.

A menu selects the action to execute on the model configurations

Models

Name: Fly Sky 01

Select model: 1

Copy model

Reset model

Model 1 name

Name: Fly Sky 01

1 2 3 4 5 6 7 8 9 0
q w e r t y u i o p
a s d f g h j k l
z x c v b n m

Name:
modifies the name of the current model.

Select model:
select the model configuration to load and use. In this example, the first model is selected. Simply touch another model menu item to load and use it.
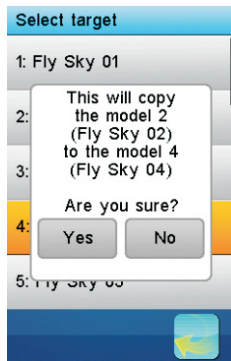
Select model

1: Fly Sky 01

2: Fly Sky 02

3: Fly Sky 03

4: Fly Sky 04

5: Fly Sky 05

Copy model:
copies a model configuration to another. The target configuration is lost and replaced by the source configuration.
The first menu selects the source model configuration to copy from.
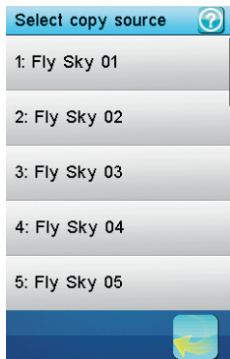
The second menu selects the target model configuration to copy to.

Since the target model configuration is overwritten by the source model configuration, a confirmation is requested.
In this example, after touching the Yes button, the model configuration 4 will be lost and replaced by the model configuration 2.

Reset model:
reset all the current model configuration settings to their default. A confirmation is requested.
In this example, the first model is selected and will be reset to its default configuration after having touched the Yes button.
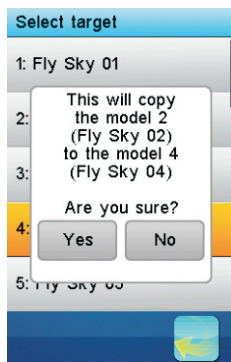
Set up the receiver.
RX setup menu are like the picture 1.
Bind with a receiver: the transmitter enters in bind mode.
Once the receiver correctly bound, press the back button
to return to normal operation.(picture 3)
RX battery monitor:
monitors the receiver battery voltage.(picture 2)
External sensor: do not monitor the receiver power supply
voltage but use an external sensor instead. This is useful when
the receiver is powered by an ESC. Connect the external sensor
directly to the main battery.
Low voltage: set the minimum voltage when the battery is
almost empty.(picture 4)
Alarm voltage: set the voltage under which an audible alarm
rings and the receiver battery icon in the top tray blinks.
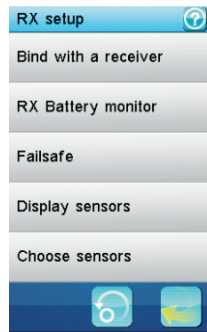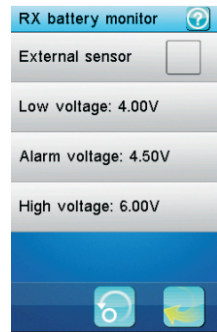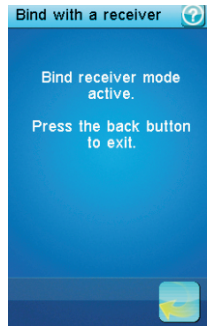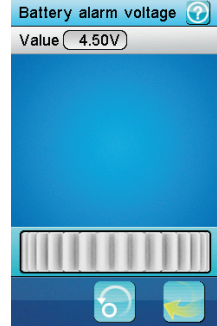**High voltage:** set the maximum voltage when the battery is full.

图1

图2

图3

图4

Failsafe: in case of a loss of signal, the receiver can be
configured to set one or several servos to a predefined
position.
The first menu displays the current setting of the 4 channels.
"Off" means that in case of a loss of signal, the corresponding
servo will keep its last received position.In this example, only
the throttle is set to half brake in case of a loss of signal. The
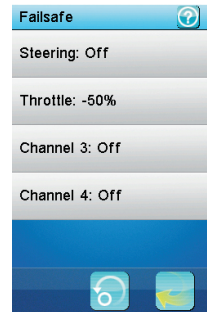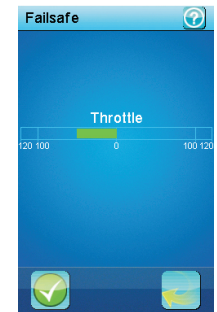other 3 servos will keep their previous position.

图5

图6

Touch a channel to set its failsafe behavior.
If activated, set the channel to the desired position using the
corresponding steering wheel, throttle trigger, trim or push
button then while maintaining that position, touch the back button. The position of the servo is then memorized.
In this example, the failsafe on the channel 2 (throttle) is activated and set to half brake the vehicle.

Display sensors:
display the type, ID and value of all connected sensors. receiver can connect 15 sensors at most.

Display sensors

Type	ID	Value
Int. voltage	1	7.36V
Temperature	3	23.9°C
Motor speed	2	0RPM
Error rate	1	6%

Servos setup:
if servos are connected on the external serial interface, this function attributes a channel to each servo. Choose the channel to attribute.

Servos setup
Steering
Throttle
Channel 3
Channel 4

Choose sensors:
the main screen can display the value of up to 5 sensors. This function selects which sensors to display.
Select the main screen slot to attribute (1 to 5). The currently attributed sensor is displayed.

Choose sensors
1: Int. voltage 1
2: Temperature 3
3: Motor speed 2
4: Error rate 1

Press the interface setup button corresponding to the desired servo or touch Cancel to return.

Servos setup
Steering

Assigning Throttle.
Press the corresponding servo interface button or touch Cancel.
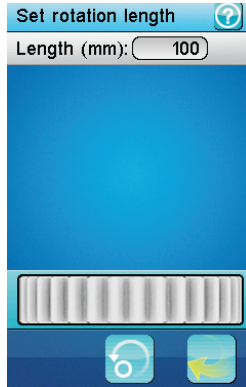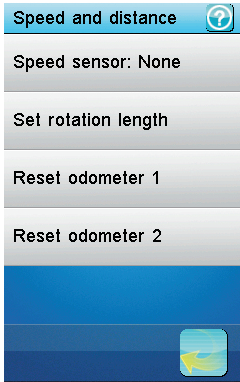Cancel

The next menu lists all available sensors. Touch the desired sensor or press the back button to cancel.

Choose sensor 1
Int. voltage 1
Temperature 3
Motor speed 2
Error rate 1
None

If an interface setup button is pressed, a message box indicates what assignment was made.

Servos setup
Steering

Throttle assigned to interface 2 servo 3
OK

Speed and distance:
As shown in picture 1, if a rotation speed sensor is connected to the receiver, this function set up the virtual speed and odometers sensors.
**Speed sensor:**
Select the rotation speed sensor to use. If none is selected, this function is disabled.
Set rotation length:
Set the vehicle travel distance corresponding to one rotation speed sensor. This distance is used to control the virtual speed and odometers sensors.
Touch "Set rotation length" to set distance traveled by the vehicle in one revolution of wheel or gear. (Unit: mm)
As shown in picture 2, touch back button to go back.
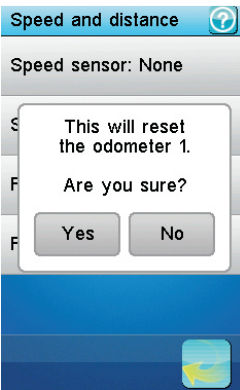
Reset odometer:
Touch "Reset odometer 1" or "Reset odometer 2" to reset the corresponding odometer.
Odometer 1: it is used for recording the distance traveled by the vehicle one time
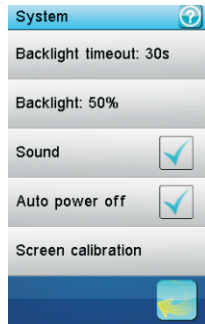**Odometer 2:** it is used for recording total distance traveled by the vehicle.

Servo frequency selection
Touch the required frequency to set a new servos frequency or touch the back button to keep the current servos frequency.

17.23: System

The system menu sets various system wide parameters

Sound:
Turn on or turn off the sound of the transmitter.
Auto power off:
After five minutes of no operation, the transmitter will sound an alarm and flash its LED. After five more minutes of no operation, the transmitter with automatically shut down. Touch "Auto power off" to cancel automatic power off function.
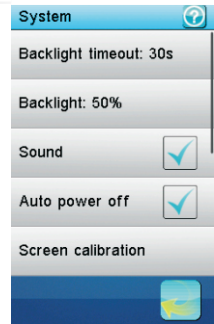
Backlight timeout: set how much time the LCD backlight will stay on if no key is pressed and the screen is not touched. The longer the LCD backlight stays on, the shorter the battery of the transmitter lasts.
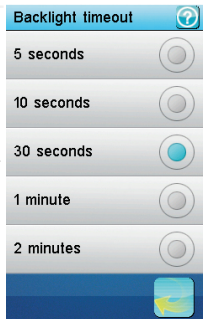
Screen Calibration:
This function can be used to calibrate if touch screen is not accurate enough. Touch the appearing cross center point constantly to calibrate.
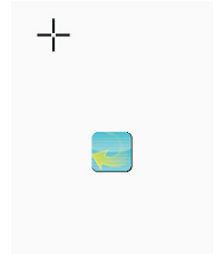
Units: select length and the temperature unit.
Length: Metric uses millimeter, kilometer and kilometer per hour. Imperial uses inch, mile and mile per hour.
Temperature: select between Celsius and Fahrenheit degree.
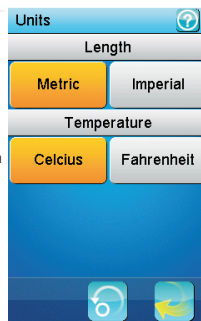
Backlight: adjust the level of the backlight. A high brightness can be useful in a very bright environment like a sunny weather. The brighter the backlight is, the shorter the battery of the transmitter lasts.
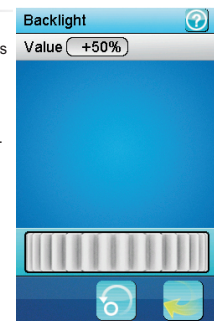
Language:
the user interface can be displayed in several languages.

Factory reset:
reset the whole configuration of the transmitter to its default. All model configurations and other settings are lost and reset to their default.
A confirmation is requested.

Firmware update:
the internal software (firmware) of the transmitter can be updated using the USB interface connected to a PC computer. Once this function is activated, all functions of the transmitter stop. To avoid any loss of control of the vehicle, turn its receiver off before entering this mode. A confirmation is requested.
When the firmware is updating, never disconnect the USB cable or remove the battery or the transmitter will become unusable.
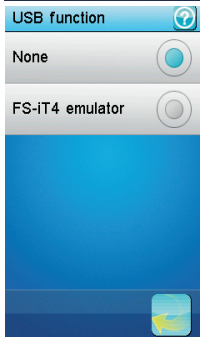
USB function:
Description:
None: the USB interface can be used only to charge the battery of the transmitter.
FS-iT4 emulator: when connectedto a computer, the transmitter acts as a standard HID with 4 axes (one for each channel) and 3 switches (SW1, SW2 and SW3) and can be used as the main controller in any compatible simulation software.
Operation:
1. Connect the transmitter to the computer by the Micro USB cable.
2. Switch on the transmitter, then touch "system"-----"USB function"------"FS-IT4 simulator". After that, the computer will automatic identify the HID.
3. In the computer control panel, double click "game controller"
 --------"FS-iT4 emulator" to test whether the simulating function is ok.

About FS-iT4
Touch 'About FS-iT4'， and the version of the current firmware as shown on the left .
Touch the "OK" button to go back.
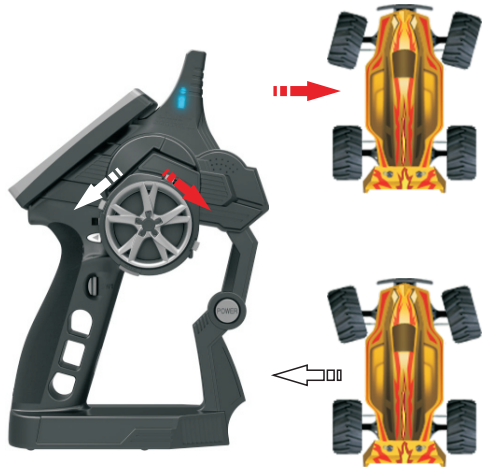
18: Transmitter function notes

18.01 Steering control:

Function explanation:
This function is to control the direction, When the steering turn to right then the front wheel will turn to right（see the picture）, When the steering turn to left then the front wheel will turn to left（see the picture）.
Operation:
Adjust the dual rate of the steering by adjusting the D/R knob.

18.02 Throttle control:

Function explanation:
This function is to control the throttle speed, As shown in the left picture, pulling the throttle trigger back will accelerate the car forward and pushing the throttle trigger forward will brake or accelerate the car backward (the movement dependson different ESC)
Operation:
turn on the transmitter and the receiver, use throttle trigger to control the car

Audible alarm
1. When the transmitter battery is low and the voltage is lower than 3.75 V, the system will make alarm which sounds slowly.
2. If the voltage is lower than setting data due to low battery of receiver, the system will make a sound "Ba,Ba".
3. When the error rate is more than 60%, the system will make a sound "Du,Du".
   4, When the timer goes off, the system will make a sound ''Bi, Bi, Bi, Bi''' thrice.
5. Before the transmitter is turned off automatically , the system will make a sound "Du Du Du".
6. When the transmitter's battery voltage is lower than 3.7 V, the system will make alarm which sounds quickly. When the voltage is lower than 3.65 V, the transmitter will be turned off automatically.

LED indicator alarm：
LED indicator alarm function synchronizes with audible alarm function. It has no effect on LED indicator after turning off the audible alarm. Please check as follows:
1.The LED remains on: all functions are normal
2.The LED flashes slowly: the transmitter battery is low.
3.The LED flashes quickly:
   The battery of the transmitter is very low.
   Error rate is more than 60%
   The battery of receive is low
   the transmitter will turn itself off soon
4.LED indicator is off: power off

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18.03:   Problem solving

Problem solving
1.The transmitter can not be turned on
   The battery is not properly installed.
   Battery is empty
   The screen flashes when the transmitter is powered on, and then the transmitter turn itself off
   immediately. It indicates the electric quantity can't support system for a long time and the
   transmitter will be turned off once it is powered on.
   The battery shrapnel is oxidized and loose contact.
2.Remote control distance is not enough
   The wrong position of transmitter antenna or receive antenna.
   Nearby radio interference
   Battery is empty
   Obstacle screens off part of the signal
3.The transmitter can't control the receiver
   The transmitter or receiver enters into the bound status by accident. The problem can be solved
   by powering on again or binding again if necessary
4.The transmitter may not accept the data sent by the receiver sometimes when many people race
   at the same time.
   The distance between two transmitters is too close. Please keep more than 5 meters as far as possible.
5.The item number of acquisition module does not appear in the transmitter screen.
   The data cable of acquisition module is connected to the wrong places
   The plug of data cable is damaged.
6.The unstable data of speed acquisition
   The position of speed sensor is not proper, which drifts too far.
7.The simulator can not be checked on the computer.
   The USB simulator function of transmitter is not activated.

NO:	Model	Sum	Remarks
1	4 channel 2.4G transmitter (FS-iT4)	1	
2	4 channel 2.4G receiver (FS-iR4)	1	
3	FS-BA1200 Lipo Battery	1	
4	grip L	1	
5	Micro USB cable	1	
6	Stylus	1	
7	User manual	1	CD

NO:	Model	Sum	Remarks
8	FS-SEV01 ASBUS	1	Optional
9	FS-SPD01 magnetic telemetry sensor	1	Optional
10	FS-SPD02 optical telemetry sensor	1	Optional
11	FS-STM01 temperature telemetry sensor	1	Optional
12	FS-SVT01 external voltage telemetry sensor	1	Optional
13	Adapter / MINI USB cable / FS-BC101 charger	1	Optional

22. FCC Statement

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 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 televison 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.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example use only shielded interface cables when connecting to computer or peripheral devices).

This equipment 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.

Caution!

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user authority to operate the equipment.

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Digital propotional radio control system

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