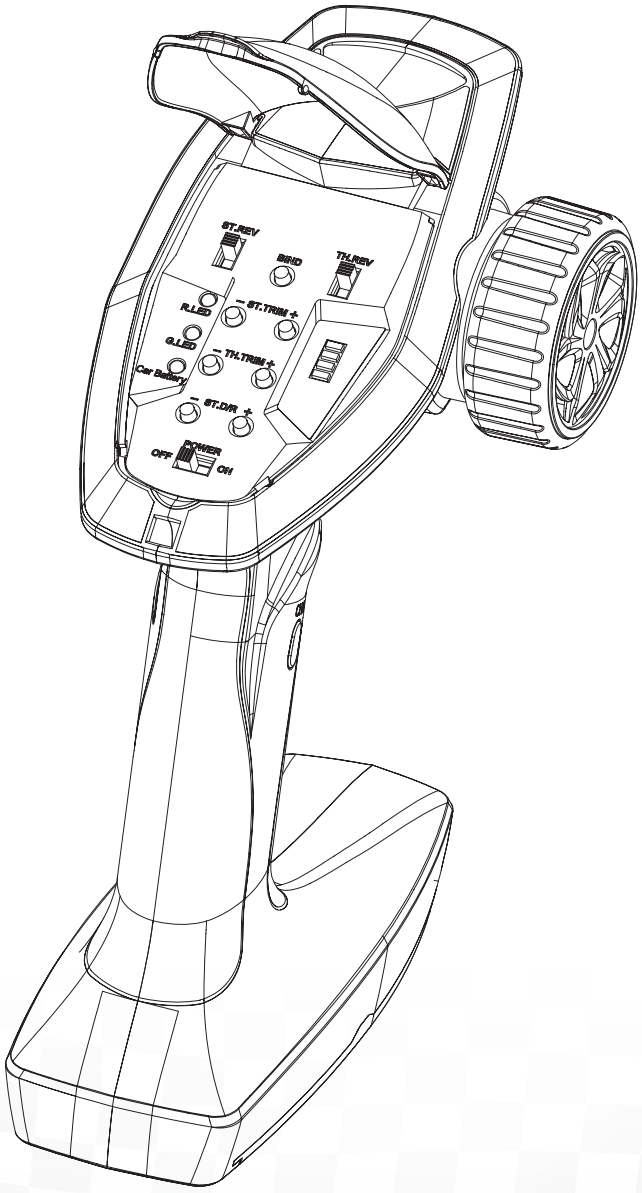
FS-HW-G4P&HW-709

USER MANUAL

Digital Proportional Radio Control System



15+

WARNING:

This product is only for 15 years old or above

Thank you for purchasing our product, an ideal radio system for beginners or experienced users.

In order to ensure your safety, and the safety of others, read this manual carefully before using this product. If you encounter any problem during use, refer to this manual first. If the problem persists, contact your local dealer or visit our service and support website :

www.flysky-cn.com

Contents

1.Safety

1.1 Safety Symbols

Pay close attention to the following symbols and their meanings. Failure to follow these warnings could cause damage, injury or death.

⚠ **Danger**	• **Not following these instructions may lead to serious injuries or death.**
⚠ **Warning**	• **Not following these instructions may lead to major injuries.**
⚠ **Attention**	• **Not following these instructions may lead to minor injuries.**

1.2 Safety Guide

Prohibited **Mandatory**

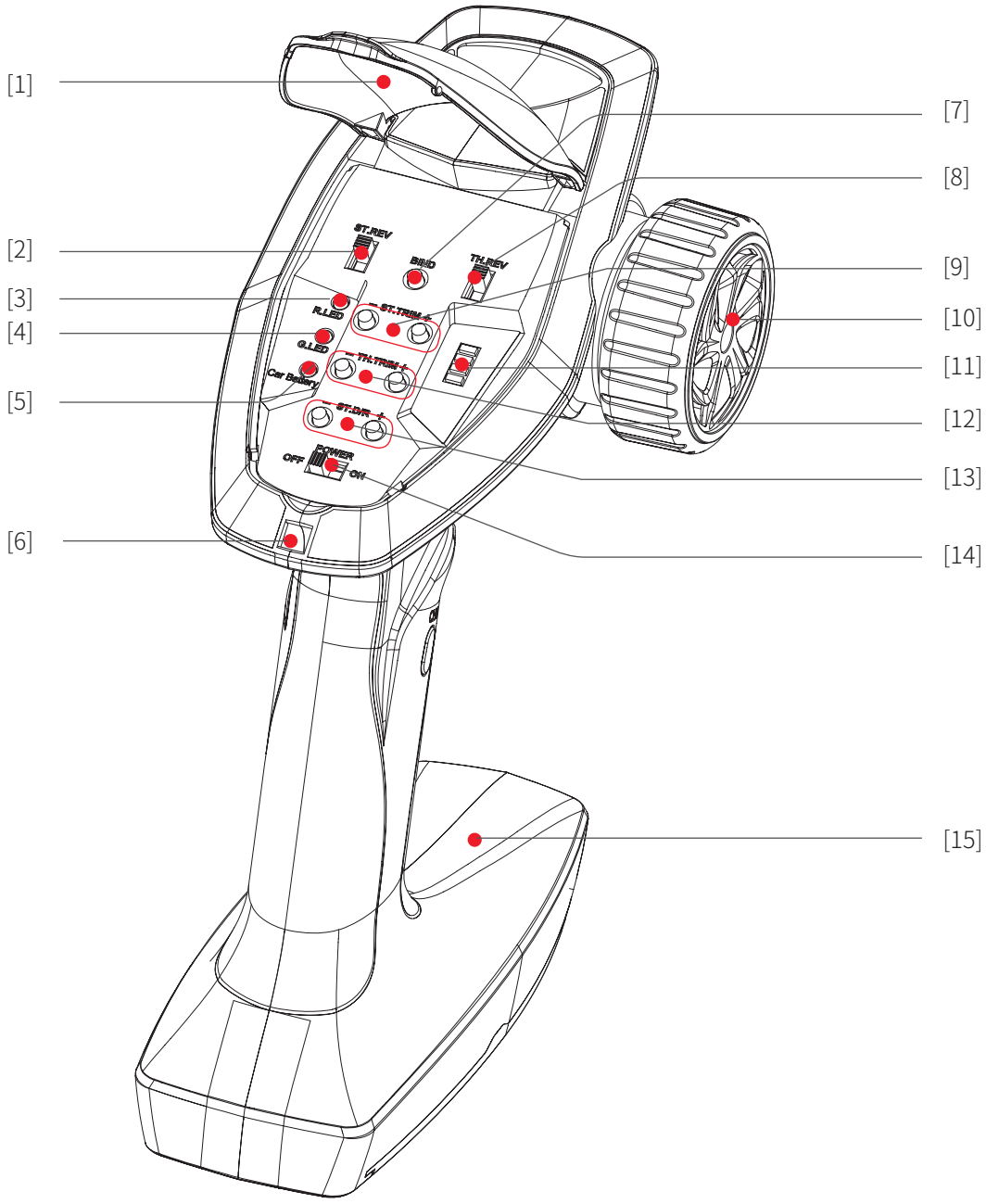
- **Do not use the product at night or in bad weather like rain or thunderstorm. It can cause erratic operation or loss of control.**
- **Do not use the product when visibility is limited.**
- **Do not use the product on rain or snow days. Any exposure to moisture (water or snow) may cause erratic operation or loss of control.**
- **Interference may cause loss of control. To ensure the safety of you and others, do not operate in the following places:**
  - Near any site where other radio control activity may occur
  - Near power lines or communication broadcasting antennas
  - Near people or roads
  - On any body of water when passenger boats are present
- **Do not use this product when you are tired, uncomfortable, or under the influence of alcohol or drugs. Doing so may cause serious injury to yourself or others.**
- **The 2.4GHz radio band is limited to line of sight. Always keep your model in sight as a large object can block the RF signal and lead to loss of control.**
- **Do not touch any part of the model that may generate heat during operation, or immediately after use. The engine, motor or speed control, may be very hot and can cause serious burns.**

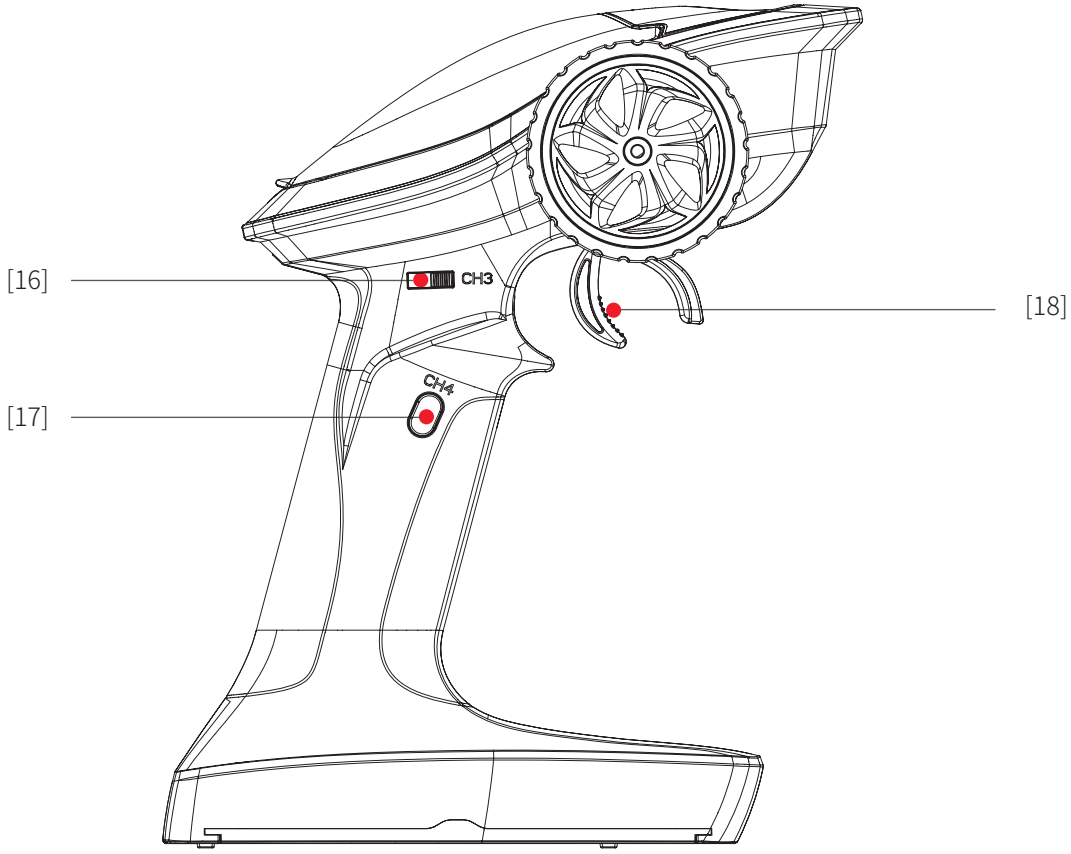
- **Misuse of this product may lead to serious injury or death. To ensure the safety of you and your equipment, read this manual and follow the instructions.**
- **Make sure the product is properly installed in your model. Failure to do so may result in serious injury.**
- **Make sure to disconnect the receiver battery before turning off the transmitter. Failure to do so may lead to unintended operation and cause an accident.**
- **Ensure that all motors operate in the correct direction. If not, adjust the direction first.**
- **Make sure the model stays within the systems maximum range to prevent loss of control.**

2.Introduction

The FS-HW-G4P is a simplifed 4-channel transmitter that adopts the 2.4GHz ANT Automatic Frequency Hopping Digital System which is independently developed by the FLYSKY. Its appearance shows speed, passion and power with the elements of sports car. Jointly developed with Haoying, it can set electric parameters through the transmitter. This transmitter also has a Beginner Mode for entry players to use.

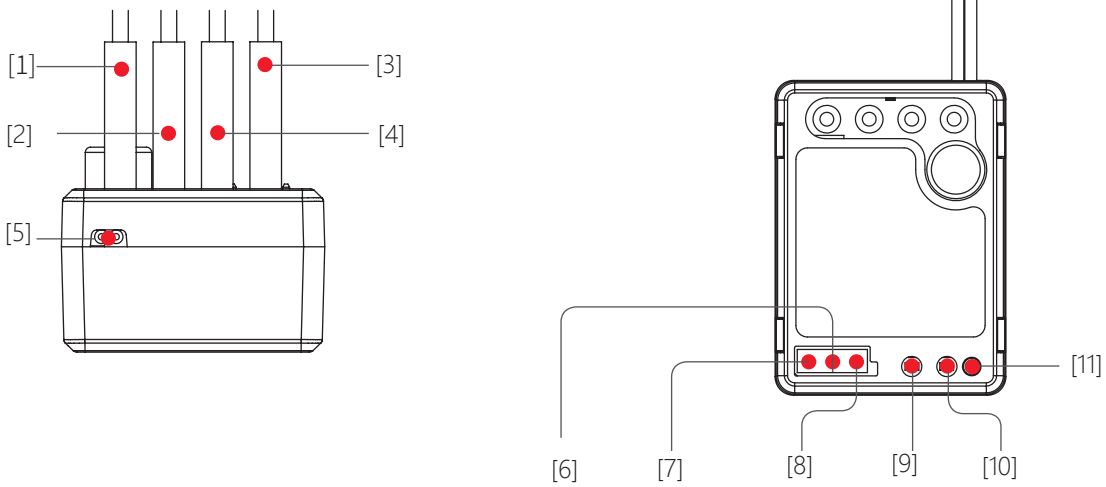
2.1 Transmitter Overview





[1]	Panel Flip Cover	[10]	Wheel Angle, the maximum rotation of the steering wheel is 35 degrees from center to left or right (CH1)
[2]	Steering Reverse Switch (ST.REV)	[11]	Dial Switch (Switching the working mode of the electric dispatching)
[3]	Power indicator LED (R. LED)	[12]	Throttle Trim (TH.TRIM)
[4]	Status indicator green LED (G.LED)	[13]	Steering D/R (ST.D / R)
[5]	Two color LED battery volume (Car battery)	[14]	Power Switch
[6]	Lanyard Eye	[15]	ase, 4 * AA battery compartment
[7]	Bind Button (BIND)	[16]	Three-position switch (CH3)
[8]	Throttle Reverse (TH.REV)	[17]	Key Switch SW2 (CH4) [Please operate this function by flipping]
[9]	Steering Trim (ST.TRIM)	[18]	Throttle trigger, has a total throw of 12 degrees, 12.5 degrees forward, and 12.5 degrees backward (CH2)

2.2 Receiver Overview



[1]	power "+"terminal	[7]	power "-"terminal
[2]	power "-"terminal	[8]	CH1
[3]	Power Motor "+"	[9]	Electric LED
[4]	Power Motor "-"	[10]	Receiver LED
[5]	power	[11]	Antenna
[6]	power "+"termina		

⚠ Note	• **To ensure the best signal quality make sure that the antenna is mounted perpendicular to the model body in an upright position.**

Receiver Features

1. The integrated design of the ESC and the motor greatly reduces the overall volume and weight, and makes the layout and wiring of car frame simpler and more convenient.
2. Excellent waterproof and dustproof performance make it easily deal with silty, watery and icy track.
3. The remote control can set parameters of ESC in real time, no need to connect parameter adjusting equipment, making the setting easier.
4. Two running modes and four drag brake forces can be adjusted. Only one can meet the application of most models.
5. Multiple protection functions: low voltage protection of battery, overheat protection, throttle lost protection.

3.Getting Started

Before operation, install the battery and connect the system as instructed below.

3.1 Transmitter Battery Installation

⚠ Danger	• Only use specified battery (X4 AA batteries).
⚠ Danger	• Do not open, disassemble, or attempt to repair the battery.
⚠ Danger	• Do not crush/puncture the battery, or short the external contacts.
⚠ Danger	• Do not expose to excessive heat or liquids.
⚠ Danger	• Do not drop the battery or expose to strong shocks or vibrations.
⚠ Danger	• Always store the battery in a cool, dry place.
⚠ Danger	• Do not use the battery if damaged.

Battery Type: AA

1. Open the battery compartment cover.
2. Insert 4 AA batteries with the correct polarity. Make sure it is connected with the correct polarity to avoid damage.
3. Replace battery compartment cover.

Low battery alarm: When the battery is lower than 4.2v, the G.LED on the panel will flash slowly

4.Instructions

After setting up, follow the instructions below to operate the system.

4.1 Power On

Follow the steps below to turn on the transmitter:

1. Check to make sure that that battery is fully charged and installed correctly.
2. Toggle the switch to the [ON] position. When active the R.LED will be lit.
3. Connect the receiver to power.

- For safety always power on the transmitter before the receiver.

⚠ Note	• **Operate with caution in order to avoid damage or injury.**

⚠ Note	• **Make sure that the throttle is at its lowest position and the switches are set to their up position.**

4.2 LED Indicator

1. R.LED： The red power indicator;
2. G.LED： The green status indicator;
3. Car battery: Two colors light for battery volume display (hereinafter referred to as D3)

- When the power is high, the D3 green keeps on
- When the power is medium, the D3 yellow keeps on
- When the power is low, the D3 red keeps on
- When the power is off, the D3 red slow flash
- When the receiver drops the code, the two-colors light is off

4.3 Binding

The transmitter and receiver have already been bound at the factory.

However if the receiver needs to be replaced or additional receivers bound follow these steps:

1. Turn on the transmitter while holding the bind button to enter bind mode. G.LED will start flashing quickly.

- Once in bind mode release the bind button.

2. The receiver will power on and wait for 1 second ,if without connection, it will enter the matching code automatically;
3. Once binding is successful the receiver's LED will keep on.

Note: When binding, put the transmitter into bind mode first, then the receiver.

- **applicable to the FS-HW-G4P transmitter and the HW-709 receiver. Different receivers have different bind procedures. For more information visit the FLYSKY website for manuals and other related information.**

- **Product information is updated regularly, please visit our website for more information.**

4.4 Stick Calibration

This function is used to set the neutral position for throttle and wheel.

Every transmitter is calibrated before leaving the factory, however if recalibration is required, please follow these steps:

1. Turn and hold the wheel as far clockwise as it will turn, hold the throttle all the way forward, then turn on the transmitter in calibration mode.
- The R.LED and G.LED will flash twice.
- Car Battery the D3 yellow keeps on
2. Calibrate wheel: Turn the wheel completely clockwise, then completely counterclockwise.
- When calibration is completed the R.LED will be off.
- Car Battery the D3 red keeps on
3. Trigger calibration: Pull the trigger back then forward as far as it will go.
- When calibration is completed the G.LED will be off.
- Car Battery the D3 Green keeps on

4.Both Wheel and rigger are Calibration passed

- the two-colors light is off

5. Once calibration is complete press the bind key to save and exit.

4.5 Power Off

Follow the steps below to turn off the system:

1. Disconnect the receiver power.
2. Toggle the transmitter's power switch to the off position.

⚠ **Danger**	• **Make sure to disconnect the receiver power before turning off the transmitter. Failure to do so may lead to damage or serious injury.**

5.System Functions

This section focuses on the functions and how to use them.

5.1 Channel Description

The transmitter outputs a total of 4 channels, which are allocated as follows:

- CH1：Steering Wheel
- CH2：Throttle Trigger
- CH3：Three-position Switch
- CH4：Key Switch

Note: By default the output of CH4 is 1000us, after which pressing the button will toggle between 1000 and 2000us.

5.2 Channel Reverse

This function is used to adjust each channels direction of movement in relation to it's input. The ST.REV / TH.REV switches are the reverse buttons for CH1 and CH2. If the switch is up it indicates reverse, and the down indicates normal.

5.3 Trims

The ST.TRIM is the trims for CH1 (steering),and can be multiplexed as Trims of CH3 and CH4. For multiplexing switching mode, see [5.5 Mode Switching].

TH.TRIMis the trims for CH2(throttle).

Adjustment range: -120us- + 120us, each step is 4us;

ST.TRIM + / TH.TRIM +: increase adjustment step;

ST.TRIM- / TH.TRIM-: Decrease adjustment step.

LED Indicator:

- When using the trim keys the G.LED will flash slowly on short presses and quickly on long presses.
- When the fine adjustment value is at the midpoint, the G.LED will flash twice slowly.
- When the fine adjustment value is at both ends (+ 120us / -120us), the trim adjustment is at its maximum and as such G.LED will not flash(if the fine adjustment value has been adjusted to + 120us, then press ST.TRIM + / TH.TRIM + key is invalid and G.LED has Instructions)

5.4 D/R

ST.D / R is for servo travel adjustment, which can be multiplexed as CH2 (throttle), CH3, CH4 servo travel adjustment, see [5.5 Mode Switch] for multiplex switching mode;

Adjustment range: 0-120%(the default is 100%), the step is 5%.

ST.D / R +: increase servo travel.

ST.D / R -: decrease servo travel.

LED Indicator:

- When using the trim keys the G.LED will flash slowly on short presses and quickly on long presses.
- When the ratio value is at both ends (0/120%), the ST.D / R button is at its maximum and as such G.LED will not flash(if the ratio value has been adjusted to 120%, then press ST.D/R+ key is invalid and G.LED has Instructions)

5.5 Mode Switching

This function is for reusing the ST.TRIM and ST.D / R buttons for different channels (see [5.3 Trims], [5.4 D/R).

Function setting:

Under normal power-on, quickly press the Bind button twice (within 1 Sec) to cycle through modes 1, 2, 3, and 4. The default setting when powering on is mode 1.

Mode 1: G.LED flashes slowly once, ST.TRIM is CH1 fine adjustment, ST.D / R is servo travel adjustment.

Mode 2: G.LED flashes twice slowly, ST.TRIM is CH1 fine adjustment, ST.D / R is CH2 servo travel adjustment.

Mode 3: G.LED flashes three times slowly, ST.TRIM is CH3 fine adjustment, ST.D / R is CH3 servo travel adjustment.

Mode 4: G.LED flashes slowly four times, ST.TRIM is CH4 fine adjustment, ST.D / R is CH4 servo travel adjustment.

5.6 Failsafe

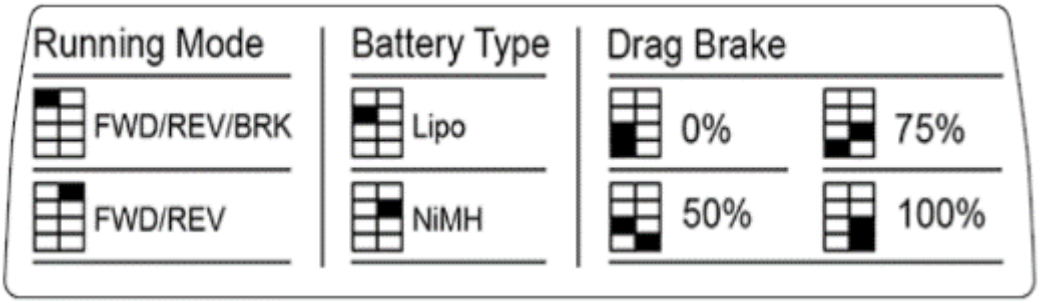
This function protects the user by preventing the model from behaving unexpectedly if signal is lost.

The transmitter is default set as no signal output when facing malfunction as the Failsafe Protection.

5.7 Beginner Mode

Beginner mode is designed for people new to the hobby.
In this mode the throttle will be limited to 50 percent, The channel range defaults to 1250~1500~1750us.
Setup:
To switch between beginner and normal modes press and hold the channel 4 button as the transmitter is turned on.
Note: By default, the system is set to normal mode. The GLED will flash slowly for 3 seconds during power on if the system is set to beginner mode.

5.8 ESC Parameter Setting



Dial Switch sign

The Dial Switch on the transmitter is used to set ESC parameters, that is, the Dial Switch is located at different positions and the corresponding parameter values are different.

Setting Method:
There are three parameters can be set for the ESC, which are "Running mode", "Battery type", "Drag brake", There are slide switches numbered 1 2 3 4 on the radio panel . The above parameters can be set by dialing left and right. The specific operation is as follows:

When No. 1 slide switch is on the left, it indicates that the operation mode is set to FWD / REV / BRK.
When No. 1 slide switch is on the right, it indicates that the operation mode is set to FWD/REV.

When No. 2 slide switch is on the left, it indicates that the battery type is set to Lipo.
When No. 2 slide switch is on the right, it indicates that the battery type is set to NiMH.

When No. 3 and No.4 slide switch are on the left, it indicates that the drag brake force is set to 0%.
When No. 3 slide switch is on the left and No.4 slide switch is on the right, it indicates that the drag brake force is set to 50%.
When No. 3 slide switch is on the right and No.4 slide switch is on the left, it indicates that the drag brake force is set to 75%.
When No. 3 and No.4 slide switch are on the right, it indicates that the drag brake force is set to 100%.

Parameter Explanation:

1. Running Mode

FWD/REV/BRK: This mode adopts "double click" reverse mode, that is, when the throttle trigger is pushed from netural range to the reverse area for the first time, the motor is only braking and will not reverse; when the throttle trigger is moved back to the netural range and pushed to the reverse area for the second time, it will reverse. This mode is applicable to general models.

FWD/REV: This mode adopts "one click" reverse mode, that is, when the throttle trigger is pushed from netural range to the reverse area, the motor immediately generates reverse action, which is generally applied to rock crawler.

Parameter setting method:

When No. 1 slide switch is on the left, it indicates that the operation mode is set to FWD / REV / BRK.

When No. 1 slide switch is on the right, it indicates that the operation mode is set to FWD/REV.

2. Battery Type

There are LiPo and NiMH cells. The low-pressure protection value is different under different types. It can be set according to the actual use.

Parameter setting method:

When No. 2 slide switch is on the left, it indicates that the battery type is set to Lipo.

When No. 2 slide switch is on the right, it indicates that the battery type is set to NiMH.

3. Drag Brake Force

The drag brake means that when the throttle trigger moves from the forward or reverse area to netural range, it will produce certain braking force to the motor, the larger the value is, the greater the drag brake force is. Select proper braking force according to the actual situation.

Parameter setting method:

When No. 3 and No.4 slide switch are on the left, it indicates that the drag brake force is set to 0%.

When No. 3 slide switch is on the left and No.4 slide switch is on the right, it indicates that the drag brake force is set to 50%.

When No. 3 slide switch is on the right and No.4 slide switch is on the left, it indicates that the drag brake force is set to 75%.

When No. 3 and No.4 slide switch are on the right, it indicates that the drag brake force is set to 100%.

6. HW709 ESC Function Instructions

This chapter mainly introduces the precautions for using the HW709 2-in-1 receiver and the related settings of the ESC function.

6.1 Attentions

1.Please make sure that all parts are well connected. You may not be able to control the vehicle normally, or even damage the equipment if not connected well.

2. Please carefully check each power device and car frame instructions to ensure the power matching is reasonable before use. Avoid damaging power system due to incorrect matching.

3. Do not let the external temperature of the system exceed 90℃/194 ℉ , because high temperature will damage the power system.

4. After use, remember to disconnect the battery and the ESC. If the battery isn't disconnected, the ESC will consume electric energy all the time even if it is off. It will discharge completely if connect the battery for a long time, thus resulting in the failure of the battery or the ESC. We are not responsible for any damage caused by this!

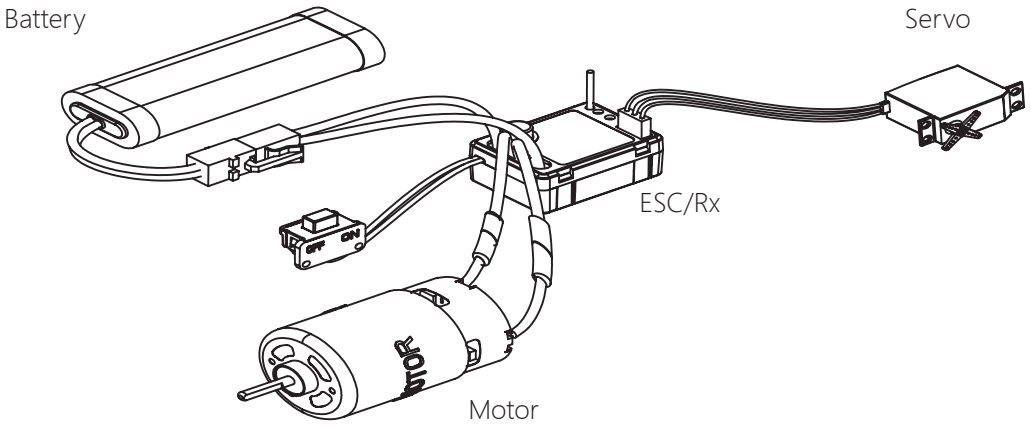
6.2 Use Guidance

Step 1: Connect related equipment.

Make sure the ESC is off before connection. Connect the motor with M+ and M- of ESC. Connect the steering servo to the 3Pin interface marked with "ST" of ESC (- + S connected correspondingly). Connectthe battery with the positive and negative poles of ESC correspondingly.

Tips:

If the rotation direction is not correct during running, exchange the two wires connecting motor and ESC.



2.Normal boot, identification throttle midpoint

After connecting related equipment as step 1, turn on the radio first, move the throttle trigger to the neutral position . Turn on the switch of ESC at last. When the battery of ESC is LiPo, the motor will emit "beep-beep" twice if use 2s LiPo; when the battery of ESC is NiMH cells, the motor will emit "beep" only once. After about 1 second, the motor will long emit "beep" sound, indicating self-inspection is completed, then can run it.

Note:

a.The ESC can be run after completing self-inspection (about 3 seconds) if power on, otherwise it cannot be operated normally.

b.If there is no power output and the red light of ESC flashes quickly after power on, it means that the actual throttle of radio is not at the neutral position, move the throttle to the neutral position until the red light does not flash.

c.If the rotation direction is not correct during running, exchange the two wires connecting motor and ESC.

d.To make sure everything is ok, please turn on the radio first and finally turn on the ESC, turn off the ESC first and finally turn off the radio.

Description of LED status during driving:

1. The red LED of ESC extinguishes when the throttle trigger is at the neutral position.
2. The red LED quickly flashes when move forward; the red LED is constantly on when the throttle is at the end position of forward(100% throttle).
3. The red LED quickly flashes when reversing.

6.3 Programming Instructions

See [5.8 ESC parameter setting]

6.4 Protection Function Description

1. Low voltage protection

When the battery type is LiPo mode: the low-voltage protection value is 3.2V/cell. That is, when 2S lipo is used, the low-voltage protection value is 6.4V.

When the battery type is NiMH mode: the low-voltage protection value is 4.5V(total battery voltage).

When the ESC detects that the battery voltage reaches the low-voltage protection value for 2 seconds, the output power of ESC will be halved, that is, the ESC will operate at 50% of the output power. The ESC will cut off the output completely after a few seconds, and the red light of ESC will blink in cycle. After triggering the low-voltage protection, please replace the battery or fully charge the battery before use.

Note:

If it is easy to trigger the low voltage protection during use, please check whether select wrong battery type, for example, LiPo mode is set when using the NiMH cell. If the battery type is selected correctly, it is probably caused by the insufficient discharge capacity of the battery. Please replace the battery with a higher discharge rate to test.

2.Overheat protection

When the internal temperature of ESC reaches the preset value (110℃/230 ℉) of the manufacturer and lasts for 2 seconds, the ESC will directly cut off the output, and the red light of ESC will continue to flash slowly.

Note:

if ESC is easy to trigger the overheat protection, it is usually because the configuration is unreasonable, that is, the ESC cannot meet the vehicle configuration requirements, please reduce the vehicle load or replace the ESC with higher power.

3. Signal loss protection

When the ESC detects that throttle signal is lost for 0.1s, it will automatically cut off the output and the red light will flash quickly.

6.5 Troubleshooting

Trouble(s)	Possible Causes	Solution(s)
The motor cannot start and the indicator light is not on after power on.	1.The ESC has no working voltage. 2.The switch of ESC or ESC itself is damaged	1. Check whether there is any connection problem between the battery and ESC and whether there is faulty welding of the relevant plug. 2. Return to factory for inspection and treatment.
The motor cannot start and the red LED flashes quickly after power on.	The midpoint of throttle channel of radio is shift or changed	Adjust the throttle channel of the radio to match the existing neutral point (until the red light does not flash).
When forward the car by radio, it reverse.	1.The connection sequence between output line of ESC and motor line. 2.The throttle direction of radio is wrongly set	1.Exchange the position of two lines of motor. 2. Set throttle direction of radio to the opposite direction
The motor suddenly stops rotating during rotation.	1.The throttle signal is lost. 2.The ESC enters low voltage protection or overheat protection of battery	1.Check radio and receiver. 2. The red light of the ESC will flash in a single cycle. Please check the battery voltage and the temperature of ESC.
When the motor starts, it accelerates rapidly, and the motor is stuck or stops.	1. Battery discharge capacity is insufficient 2.The rotation speed of motor is too fast, the gear ratio is not reasonable.	1. Replace battery with strong discharge capacity. 2.Replace low speed motor,or increase the reduction ratio.

7. Product Specifications

This section contains FS-HW-G4P transmitter and HW709 receiver specifications.

7.1 Transmitter Specification(FS-HW-G4P)

Product Model	FS-HW-G4P
Channels	4
Model Type	Car, Boat
RF	2.4GHz
RF Power	<20dBm
2.4GHz Protocol	ANT
Distance	>300m (ground)
Channel Resolution	1024
Battery	6V DC 1.5AA*4
Charging Interface	NO
Life time	According to battery type
Low Voltage Warning	<4.2V
Antenna Type	Built-in single antenna
Data Interface	No
Temperature Range	-10°C —+60°C
Humidity Range	20—95%
Online Update	No
Color	Black
size	160*193*97mm
weight	220g
Certification	CE, FCC ID：N4ZG4P00

7.2 Receiver Specification (HW709)

Product Model	HW709
Applicable motor	280/370 brushed motor ≥12T or RPM < 30000 @7.4V
Main applications	1/16、1/18 On- road, Buggy, SCT, Truck and Rock Crawler
LiPo/NiMH Cells	2 LiPos or 5-7 NiMH cells
Continuous / peak current	25A / 120A
Parameter setting	Radio
PWM Channels	2
RF	2.4GHz
2.4GHz Protocol	ANT
RF Power	<20dBm
Distance	>300m (ground)
Antenna Type	Built-in single antenna
RSSI	No
Data Interface	PWM
Temperature Range	-10°C —+60°C
Humidity Range	20—95%
Online Update	No
weight	23.9g (with 3.5mm bullet female connector) 22.1g (with small TAMIYA male connector)
size	34*25*15.5mm
Certification	CE, FCC ID :N4ZHW-709

8. Package Contents

Transmitter*1(FS-HW-G4P)

Receiver*1(HW709)

9. Certification

9.1 DoC Declaration

Hereby, [Flysky Technology co., ltd] declares that the Radio Equipment [FS-HW-G4P] is in compliance with RED 2014/53/EU.

The full text of the EU DoC is available at the following internet address: www.flysky-cn.com.

9.2 CE Warning

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

9.3 Appendix 1 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.

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.

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

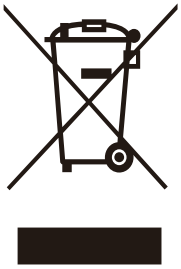
Caution!

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.

1. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-lacated or operating in conjunction with any other transmitter.End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.
2. Move all your channels to the desired position.
3. Select [All channels] and then [Yes] in the confirmation box.

10. Environmentally friendly disposal

Old electrical appliances must not be disposed of together with the residual waste, but have to be disposed of separately. The disposal at the communal collecting point via private persons is for free. The owner of old appliances is responsible to bring the appliances to these collecting points or to similar collection points. With this little personal effort, you contribute to recycle valuable raw materials and the treatment of toxic substances.



CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

www.flysky-cn.com

Release date: 2020-08-18

FCC ID：N4ZG4P00
FCC ID:N4ZHW-709