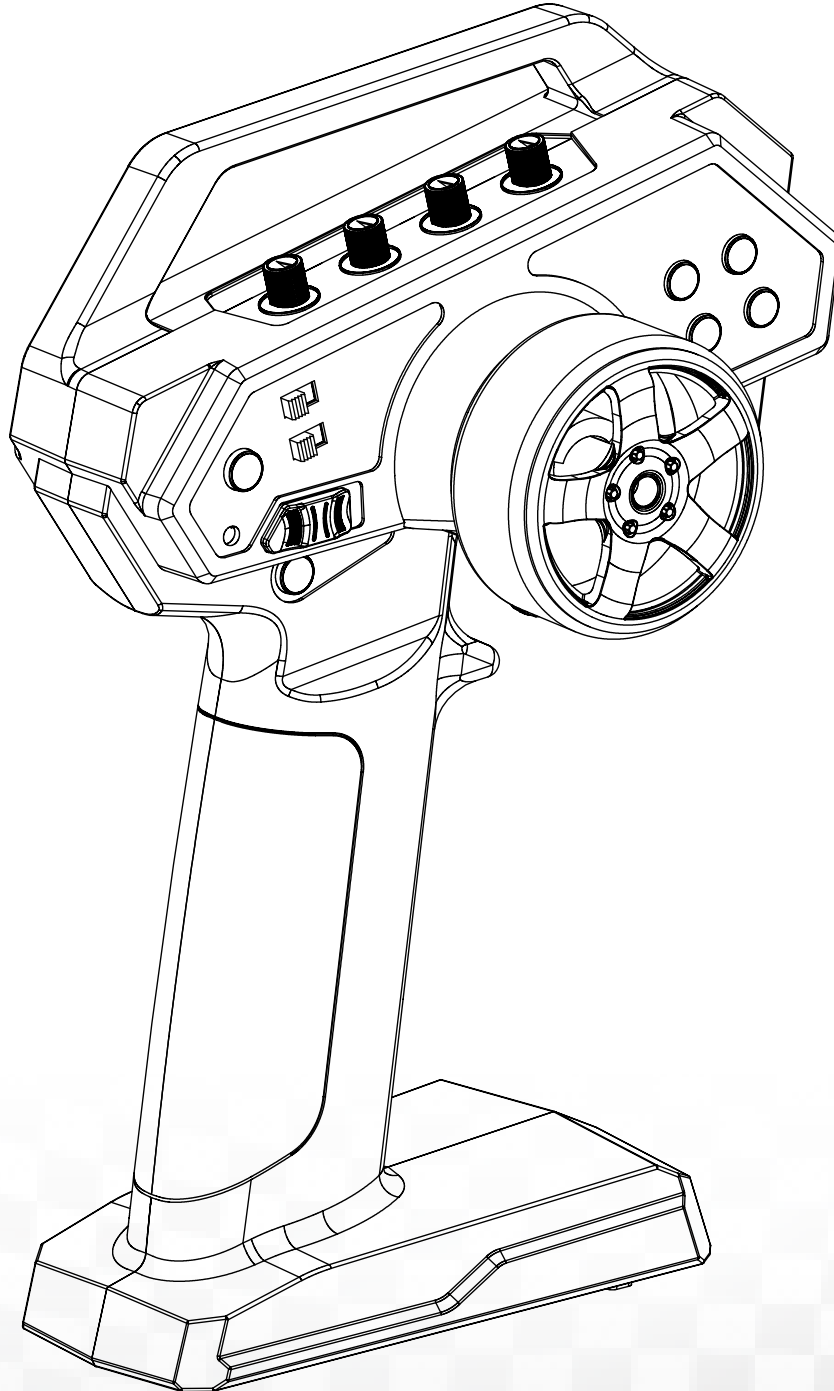


# HRZ00020&HRZ00017

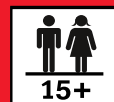
*USER MANUAL*

# FLYSKY

**Digital Proportional Radio Control System**



Copyright ©2022 Flysky Technology co., ltd



**! WARNING:**  
This product is only for 15 years  
old or above



Thank you for purchasing our product.

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](http://www.flysky-cn.com)**




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## 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.

 <b>Danger</b>	• Not following these instructions may lead to serious injuries or death.
 <b>Warning</b>	• Not following these instructions may lead to major injuries.
 <b>Attention</b>	• Not following these instructions may lead to minor injuries.

### 1.2 Safety Guide



**Prohibited**



**Mandatory**



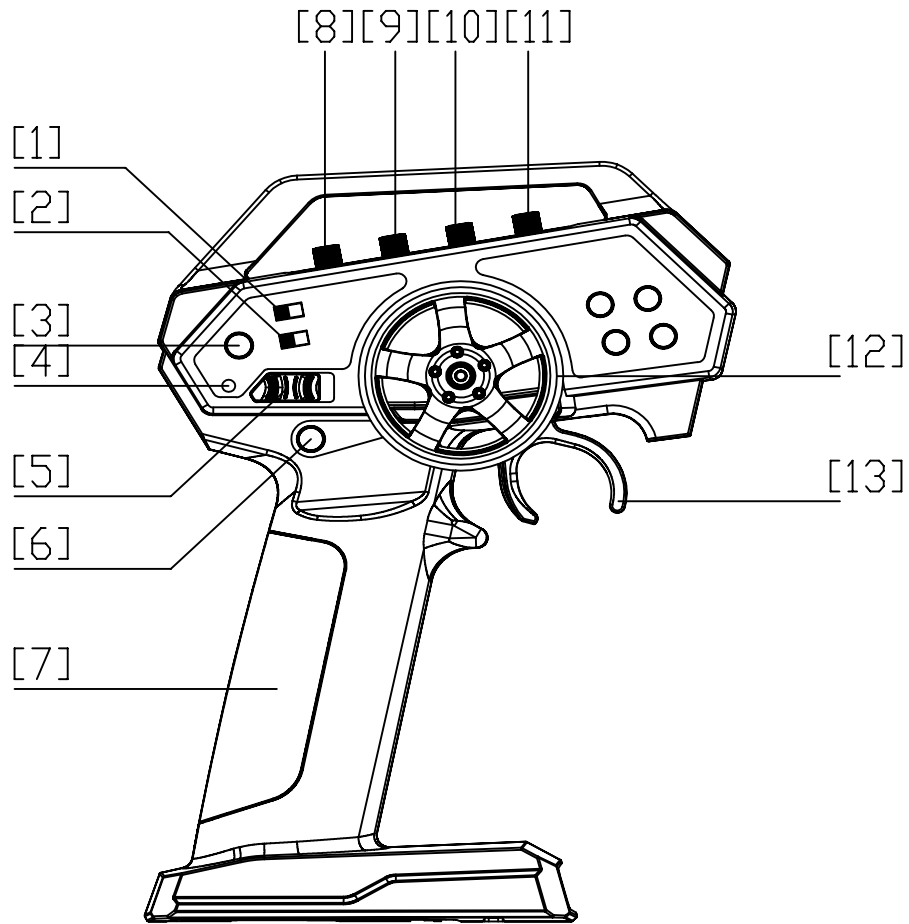
- Do not use the product at night or in bad weather like rain or thunderstorm. It can cause erratic operation or loss of control.
- Do not use the product when visibility is limited.
- Do not use the product on rain or snow days. Any exposure to moisture (water or snow) may cause erratic operation or 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.

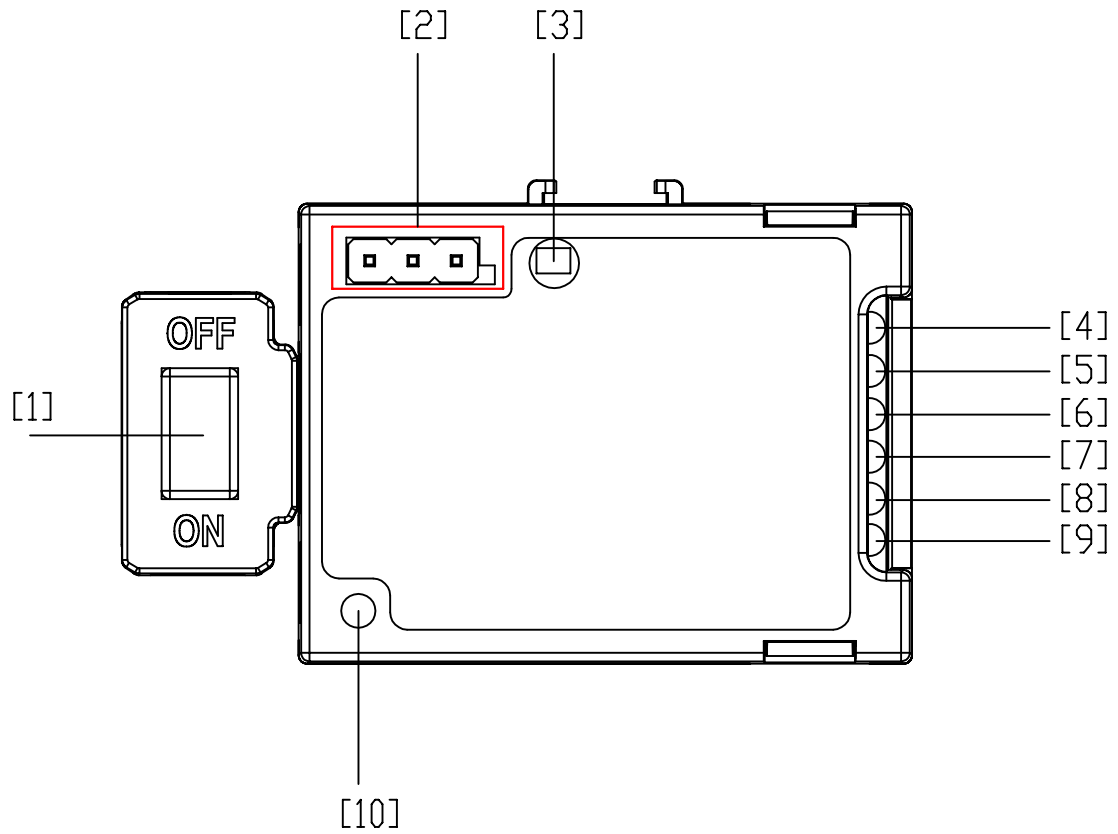
## 2.Introduction

### 2.1 Transmitter Overview



[1]	Steering reverse switch (ST.REV)	[8]	Steering D/R (ST.D/R)
[2]	Throttle reverse (TH.REV)	[9]	Steering trim (ST.TRIM)
[3]	Key Switch AUX3 (CH3)	[10]	Throttle D/R (TH.D/R)
[4]	Status indicator red LED	[11]	Throttle trim (TH.TRIM)
[5]	Power switch	[12]	Steering wheel (CH1)
[6]	Key Switch SW2 (CH4)	[13]	Throttle trigger (CH2)
[7]	Handle, 4 * AA battery compartment		

## 2.2 Receiver Overview










[1]	Power switch	[6]	Battery cable interface -
[2]	CH1	[7]	Battery cable interface +
[3]	LED	[8]	Power anode
[4]	Motor interface "M-"	[9]	Power cathode
[5]	Motor interface "M+"	[10]	Antenna

## 3. Getting Started

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

### 3.1 Transmitter Battery Installation

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

1. When the battery voltage of the transmitter is lower than 4.2 V, the transmitter enters the low voltage alarm state.
2. When the battery voltage of the transmitter is lower than 3.5 V, the RF function of the transmitter is switched off.
3. In the low voltage alarm, the indicator prompts in slow flashing.
4. In the low voltage alarm, the buzzer prompts with a short sound cycle, with a cycle period of 1 s.

## 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 LED will be lit.
  3. Power on the receiver.
- For safety always power on the transmitter before the receiver.

 <b>Note</b>	• <b>Operate with caution in order to avoid damage or injury.</b>
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 <b>Note</b>	• <b>Make sure that the throttle is at its lowest position and the switches are set to their up position.</b>
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### 4.2 Buzzer

1. The function operation and transmitter status prompt are performed through buzzer sound. For details, see the description of each state;
2. Buzzer response priority from high to low: stick calibration, function operation, and low voltage alarm.

### 4.3 LED Indicator

1. Single-color LED indicates the different states of the transmitter. For details, see the description of each state;
2. Slow flashing: flashing frequency is 1 Hz 500 ms on and 500 ms off per cycle;
3. Fast flashing: flashing frequency is 5 Hz 100 ms on and 100 ms off per cycle;
4. Indicator response priority from high to low: Binding and low voltage alarm;
5. The trigger response details of the indicator and buzzer are listed in the following table.

State	Indicator	Buzzer
Normal	Always on	/
AUX3	/	Press once for one beep in a short term
SW2	/	Press once for one beep in a short term
Bind	Fast flashing	/
Low electricity level	Slow flashing	Cyclic slow beep
Calibration	/	Cyclic slow beep twice

### 4.4 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 AUX3 button to enter binding mode. LED will start flashing quickly.
  - Once in binding mode release the AUX3 button.
2. The receiver will power on and wait for 1 second, if without connection, it will enter into the binding state automatically;
3. After the bind is completed, the receiver indicator light flashes slowly, restart the transmitter power, the transmitter and receiver indicator light is always on.

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

• **Applicable to the HRZ00020 transmitter and the HRZ00017 receiver. Different receivers have different binding 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.**

## 4.5 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 the steering wheel clockwise to the maximum and the trigger to the maximum externally. Power it on and enter the stick calibration mode;
2. In the calibration mode, the buzzer prompts with cyclic fast beep twice, and the cycle period is 1 s;
3. When the steering wheel and the trigger are calibrated successfully, the buzzer stops prompting;
4. When the steering wheel and the trigger are calibrated successfully, operate the AUX3 key to exit the calibration mode and save the calibration data. When the calibration fails, the operation of the AUX3 key is invalid and data is not saved.

## 4.6 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 assigned as follows:

- CH1: Steeringwheel. By default, clockwise rotation will make the channel data value increase. It supports the settings of REV reverse, servo volume, and trim;
- CH2: Throttle trigger. By default, inward rotation of the trigger will make the channel data value increase. It supports the settings of REV reverse, servo volume, and trim;
- CH3: Reset button AUX3. Channel value is switched when pressed. It is switched once per press. The default output value at power-on is 1000 us;
- CH4: Reset button SW2. Channel value is switched when pressed. It is switched once per press. The default output value at power-on is 1000 us;

Note: For the channel value range, when the default servo volume is 100%, it is 1000-2000 us; when the servo volume is 120%, it is 900-2100 us.

When the AUX3 key is pressed, CH2 value is repeatedly switched between 900 us and 2100 us. Thus, the receiver can be cooperatively used for realizing the boat turning function.

### 5.2 Channel Reverse

ST.REV, CH1 direction inversion switch: left side: normal state; right side: reverse state.

TH.REV, CH2 throttle inversion switch: left side: normal state; right side: reverse state.

### 5.3 Trims

ST.TRIM, direction trim knob: by default, clockwise rotation indicates the value increase;

TH.TRIM, throttle trim knob: by default, clockwise rotation indicates the value increase;

Trim range: -250 us – 250 us. The trim adjustment is not controlled by servo volume D/R (i.e., memory trim);

By default, clockwise rotation indicates the trim positive adjustment (data increase). The adjustment direction follows REV reverse synchronous change.

### 5.4 D/R

ST.D/R, direction servo volume adjustment knob: clockwise rotation indicates the servo volume increase;

TH.TRIM, throttle servo volume adjustment knob: clockwise rotation indicates the servo volume increase;

Adjustment range: 1-120%.

### 5.5 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.

## 6. HRZ00017 Receiver Function Instructions

### 6.1 Attentions

- Make sure the product is installed and calibrated correctly, failure to do so may result in serious injury.
- 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.
- Do not let the external temperature of the system exceed 90°C /194 °F , because high temperature will damage the power system.
- Make sure the receiver's battery is disconnected before turning off the transmitter, failure to do so may lead to unintended operation or loss of control.
- 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!
- Make sure the receiver is mounted away from motors or any device that emits excessive electrical noise.
- Keep the antenna of the receiver at least 1cm away from conductive materials such as carbon or metal.
- Do not power on the receiver during the setup process to prevent loss of control.

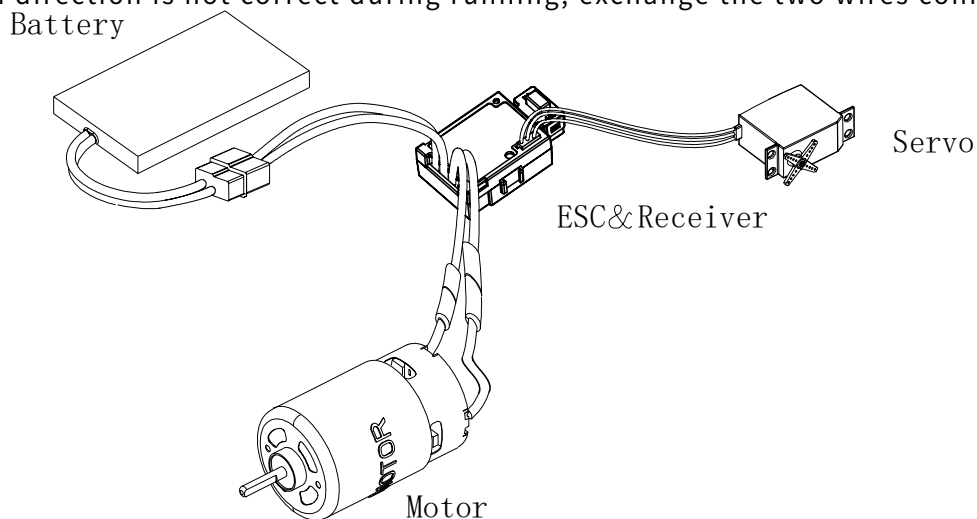
### 6.2 Use Guidance

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). Connect the 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



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. The receiver will automatically recognize the battery type when it is powered on again. Then it can run it.

Notes: 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, please check whether the throttle trim of the transmitter is set to the "0" position, the receiver will automatically recognize the midpoint of the trim throttle after restarting;

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 transmitter first and finally turn on the ESC, turn off the ESC first and finally turn off the transmitter.

## 6.3 Instruction on the binding of the receiver

If you need to bind the receiver again, please refer to [4.4 Binding]

Notes: (1) Set the transmitter to its binding state first, and then set the receiver to its binding state. If the binding is not completed within 10s, the indicator light of the receiver will enter its slow flashing state.

(2) If re-binding is successful, all the settings of the car lights will be restored to their default values.

## 6.4 Protection Function Description

### 1. Low voltage protection

The receiver can detect the battery voltage, and can realize the battery voltage too low protection function. When the battery voltage is lower than 5.6 V, the throttle is output in a half. Please replace the battery or fully charge the battery before use after the low voltage protection is triggered.

Note: If it is easy to trigger the low voltage protection during use, 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

Receiver ESC has the overheat protection function. When the internal temperature of ESC is detected to exceed 110°C /230 °F with lasting for 2 seconds, CH2 turns off the output. The outputs of other channels are normal. It resumes the normal output when the temperature is lower than 70°C .

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.

## 6.5 Failsafe

This function is used to protect the safety of the model and the operator when the receiver cannot normally receive the signal from the transmitter and is out of control.

The receiver is default set as no signal output when facing malfunction as the Failsafe

## 7. Product Specifications

This section contains HRZ00020 transmitter and HRZ00017 receiver specifications.

### 7.1 Transmitter Specifications( HRZ00020)

Product Model	HRZ00020
Channels	4
Model Type	Model boat
RF	2.4GHz ISM
Maximum Power	<20dBm(e.i.r.p.) (EU)
2.4GHz Protocol	AFHDS2A-BS (2nd generation auto frequency hopping digital system)
Channel Resolution	1024
Battery	DC 6V/1.5AA*4
Display mode	LED display
charging Interface	NO
Antenna Type	Built-in single antenna
Low Voltage Warning	<4.2V
Data Interface	NO
temperature Range	-10°C—+60°C
Humidity Range	20—95%
Online Update	NO
Distance in open and interference-free ground (transmitting is 1 m apart from the ground, and receiving is close to the ground)	> 150m (no servo jamming)
Data of each channel	Servo volume at 100%:1000-2000us Maximum servo volume at 120%:900-2100us
Color	Black
Size	135.7*188.2*84.6mm
Weight	205g
Certification	CE, FCC ID:2A2UNHYMG400

## 7.2 Receiver Specifications (HRZ00017)

Product Model	HRZ00017
Applicable motor	370 brushed motor
Main applications	Model boat
PWM Channels	2
LiPo/NiMH Cells	2 LiPos
Continuous / peak current	20A / 80A
BEC Output	5V/1A
RF	2.4G ISM
Maximum Power	<20dBm(e.i.r.p.) (EU)
Receiver Sensitivity	< -95dBm
2.4G Protocol	AFHDS2A-BS (2nd generation auto frequency hopping digital system)
Channel Resolution	1024
Low Voltage Warning	Yes (Alarm at transmitter)
Data Interface	PWM
Antenna Type	External single antenna (Coaxial antenna)
Display mode	LED display
Online Update	NO
Distance in open and interference-free ground (transmitting is 1 m apart from the ground, and receiving is close to the ground)	≥ 150m (no servo jamming)
Temperature Range	-10°C ~+60°C
Data of each channel	Default travel at 100%:1000-2000us Maximum travel at 120%:900-2100us
Waterproof characteristics	PPX7
Color	Black
Certification	CE, FCC

## 9. Package Contents

Transmitter\*1(HRZ00020)

Receiver\*1(HRZ00017)

## 10. Certification

### 10.1 DoC Declaration

Hereby, [Flysky Technology co., Ltd] declares that the Radio Equipment [HRZ00020] and [HRZ00017] are 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](http://www.flysky-cn.com).

### 10.2 CE Warning

The antenna(s) used for this transmitter 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.

### 10.3 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 television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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 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.
2. Move all your channels to the desired position.
3. Select [All channels] and then [Yes] in the confirmation box.



## 11. 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

## 12. IC STATEMENT

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

# FLYSKY

[www.flysky-cn.com](http://www.flysky-cn.com)



FCC ID: 2A2UNHYMG400  
IC:25584-HYMG400

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