RC8X
Quick Start Guide

(FHSS, 8-Channel Digital Proportional RC System)
Adaptable to RC Cars/Boats/Robots



CE FCC RoHS

Note: For more detailed information on function setting of RC8X, please refer to RC8X user manual on www.radiolink.com/rc8x_manual
For detailed information on how to update the firmware of RC8X, please refer to www.radiolink.com/rc8x_firmware

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SAFETY PRECAUTIONS

- Never operate your model during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your model.
- Never use this product in a crowded and illegal area.
- This product is not a toy and is NOT suitable for children under the age of 14. Adults should keep the product out of the reach of children and exercise caution when operating this product in the presence of children.
- The operating voltage of RC8X is from 7.0V to 17V. Make sure the battery voltage meets the requirement. 8 pieces AAA batteries , a 2S-4S LiPo battery or a 6S Ni-MH battery is permitted.
- Never charge the RC8X with the USB port. The Type-C port on the left of RC8X is used to update firmware, copy data, supply power to the 5.8G image transmission module, and temporarily supply power to RC8X. It cannot be used to charge the battery of RC8X.
- Always be sure to turn off the receiver before the transmitter.
- Make sure the throttle trigger and trim are set to the neutral position, and then turn on the transmitter. Check the throttle travel value of the transmitter to ensure it is in the neutral position, and then power on the receiver.
- Before running, check if the function moves the servos to the preset position. Push the throttle trigger and turn the steering wheel to check if the motor and servo move to the preset position. If you notice any unusual behavior of the model, do not operate the model. Also check to make sure the model you used matches the model in the transmitter. Problems with the transmitter and improper installation of the model can lead to loss of control.
- Never unplug and plug the Micro SD card when the transmitter turns on, especially the transmitter is reading the data, or it will damage the SD card or loss of data.

The above safety warnings must be strictly implemented, and RadioLink will not be responsible for any loss caused by not following these safety warnings.

PACKING LIST



RC8X Transmitter×1



R8FG Receiver×1



R4FGM Receiver×1



32G SD Card×1
(Installed in RC8X)



Lanyard×1



EXT Connect Cable×1



Type-C Cable×1



Hex Wrench×2



Spare Trigger×1

Screen Protector×1



Quick Start Guide×1



Packing Box for Accessories×1



Carrying Bag×1

SPECIFICATIONS

RC8X Transmitter	
Dimension	L*W*H: 121*163*209mm (4.76"*6.42"*8.23")
Weight	438.5g (15.47oz)
Antenna Length	Built-in Antenna
Dimension of Battery Case	L*W*H =92*52*14.5mm (3.62"*2.05"*0.57")
Applicable Model Types	Car (Including Crawlers/Tanks/Caterpillars etc.)/Boat/Robot
Channels	8 channels
Screen	4.3 inches, 800*480 full-color, backlight IPS touch screen
Ground Control Distance	600 meters(1968.5ft) (Maximum range tested in unobstructed areas free of interference)
Operating Current	250mA±10mA@8.4V(the IPS screen light on); 190mA±10mA@8.4V(the IPS screen light off)
Operating Voltage	7～17V DC (8 pieces of AAA batteries or a 2S-4S LiPo battery or a 6S Ni-MH battery);
Type-C Port Voltage & Current	Output Voltage：5 V(RC8X can be powered by computer or mobile power bank via Type-C cable) Output Current：Maximum 500mA Input Voltage：4.6V-5.0V Input Current：Maximum 1A
DSC Port Voltage & Current	Input Voltage: 0-5V; Output Voltage: 0-3.3V
Frequencies Band	2.4GHz ISM band (2400MHz-2483.5MHz)
Modulation Mode	GFSK
Transmission Power	<20dbm
Spread Spectrum Mode	FHSS, 67 channels pseudo random frequency hopping

Channel Resolution	4096 with regular jitter of 0.5us
Response Latency	3ms, 4ms, 14ms can be selected
Alarm	Low transmitter voltage, low receiver voltage, low model battery voltage, or low RSSI alarm can be customized
Model Memory	200 groups of model storage
ID Seed	16 groups
Compatible Receiver	R8FG(Standard)/R8F/R8EF/R7FG/R6FG/R6F/R4FGM/R4F
Voice Broadcast	Support
CRSF Protocol	Support
FPV Head Track	Support

R8FG Receiver	
Dimension	L*W*H =35*24*13.5mm (1.38"*0.94"*0.53")
Weight	10.5g (0.37oz)
Channel	8 channels
Antenna Length	205mm (8.07")
Control Distance	Ground 600 meters (1968.5ft) (Maximum range tested in unobstructed areas free of interference)
Operating Current	35mA (5V)
Operating Voltage	3-12V
Signal Output	SBUS&PWM
Telemetry	Real-time built-in telemetry of model battery voltage, RSSI, and receiver voltage
Gyro	Receiver with gyro integrated, customizable gyro sensitivity
Water Splash Proof	The waterproof grade is IPX4
Response Latency	3ms, 4ms, 14ms can be selected (If you want to select 3ms or 4ms digital servo speed, make sure it is R8FG V2.1, or R8FG receiver with a factory date of 2023/4/26 and later)
Compatible Transmitter	RC8X/RC6GS V3/RC4GS V3/RC6GS V2/RC4GS V2/RC6GS (3-position switch version)/RC4GS (version with P.D AFTER 180101) /T8FB(BT)/T8FB(OTG)/T8S(BT)/T8S(OTG)

R4FGM Receiver	
Dimension	25*13mm (0.98*0.51")
Weight	3g (0.11oz)
Channel	4 channels
Antenna Length	90mm (3.54")
Control Distance	400 meters on the ground
Operating Current	30mA@5V
Operating Voltage	3-6V
Signal Output	PWM
Gyro	Receiver with gyro integrated, customizable gyro sensitivity
Response Latency	3ms, 4ms, 14ms can be selected (If you want to select 3ms or 4ms digital servo speed, make sure it is R4FGM V2.1, or R4FGM receiver with a factory date of 2023/4/26 and later)
Compatible Transmitter	RC8X/RC6GS V3/RC4GS V3/RC6GS V2/RC4GSV2/RC6GS/ RC4GS/T8FB(BT)/T8S(BT)/T8FB(OTG)/T8S(OTG)

RC8X OVERVIEW





The USB Type-C port of RC8X can be used to update firmware, copy data, supply power to image transmission module, and temporarily supply power to RC8X. You can connect the power supply such as a computer to the Type-C port to supply 5V power to RC8X.

Note: 1. When the USB Type-C port is used to supply power to RC8X, please remove the battery to avoid over-discharging. 2. The maximum input voltage of the RC8X Type-C port is 5V.

BUTTON INTRODUCTION

Switch/Knob	Full name	Function
DT1	Digital Trim 1	default steering trim
DT2	Digital Trim 2	default throttle trim
DT3	Digital Trim 3	Default ratio switch
DT4	Digital Trim 4	Default brake rate (brake1)
DL1/PS3	Digital Dial 1	Code switch, Gyro gain
	Push Switch 3	Default to turn on/off backlight (can be customized)
PS1	Push Switch 1	Default control CH4, can be programmed
PS2	Push Switch 2	Default control CH5, can be programmed
PS4	Push Switch 4	Default control CH6, can be programmed
PS5	Push Switch 5	Default control CH7, can be programmed
VR	Knob switch	Dial, default control CH3, can be programmed
HOME		Power switch /Switch for quick back to homepage
SS	Steering switch	Default control CH1 to turn left and right
TS	Trigger switch	Default control CH2 go forward or backward

Three Position Switch

The four DT buttons can be used as four 3 position switches by setting. The setting method is as follows:

1 . Select any DT button for the channel to be set in the "Channel Setting" menu.

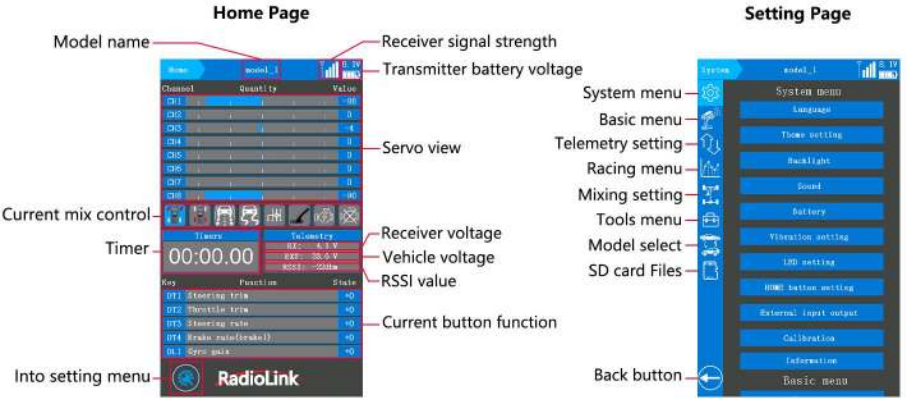
2 . Enter "Trim/Dial select" menu, and set the step of the corresponding DT button to 100, so that every time the DT button is toggled, the travel amount will go directly to 100. You can also set different values according to your needs (Note: Trim step defaults to 2).

3 . After setting, the DT button can be used as a 3-position switch. Return to the home page and toggle the corresponding DT button to check the servo display.

MENU INTRODUCTION

Power on RC8X

Long press the HOME button for about 1.5 seconds to power on RC8X. Click the icon in the lower left corner of the home page to enter the setting page.

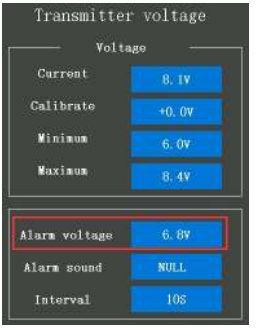


Icon introduction

	Into setting menu			Model select menu
	System menu			SD Card Folder
	Basic menu			Back to previous menu
	Telemetry setting		+	Increase the value
	Racing menu		—	Decrease the value
	Mixing setting		Reset	Reset the value
	Tools menu			

RC8X Basic Functions			
System menu	Language	Racing menu	Steering delay
	Theme setting		Throttle delay
	Backlight		Cruise control
	Sound		Idle up
	Battery		Trigger setting (Trigger)
	Vibration setting		Traction control
	LED setting		A.B.S
	HOME button setting		Motor Start
	External input output		Engine cut
	Calibration	Mixing setting	Steering mixing
	Information		Brake mixing
Basic menu	Channel reverse		Gyro mixing
	End point (EPA)		4WS mixing
	Sub trim		Dual ESC mixing
	Channel setting		CPS mixing
	Channel limiter		Tank mixing
	Trim/Dial select		Programmable mixing
	Switch select		Tilt mixing
	Double ratio	Tools menu	Screenshot setting
	Fail-safe		Timer
	Receiver setting		Roll out chart
Telemetry setting	Receiver signal		Gear ratio chart
	Transmitter voltage	Model select menu	Model select
	Receiver voltage		Copy model
	Engine battery voltage		Paste model
	Telemetry broadcast		Rename
Racing menu	Steering curve		Reset
	Throttle curve		Delete model
	Brake curve	SD Card Folder	SD Card Folder
	Acceleration		

Transmitter Low Voltage Alarm



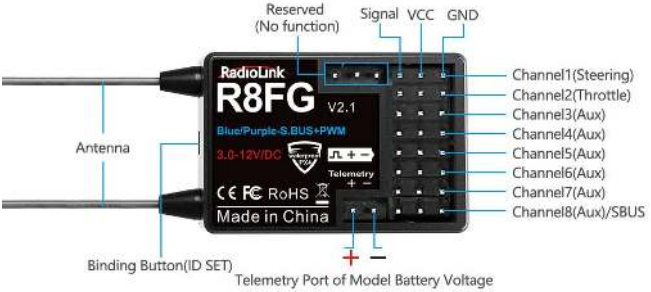
Transmitter low voltage alarm is 6.8V by default. If the voltage of transmitter battery is lower than 6.8V, the transmitter will alarm with sound "transmitter voltage low", please change the battery when you heard the alarm, the transmitter low voltage alarm can be set in the battery menu according to your battery that powered for your RC8X.

Normally we set the alarm value with the single cell voltage as 3.7V If you use a 2S LiPo battery to power for your RC8X, you can set the alarm to 7.4V for 2S LiPo battery (3.7V*2=7.4V), 11.1V for 3S LiPo battery , and 14.8V for 4S LiPo battery.

Setting steps: turn on your RC8X, enter into System menu - Battery, and then adjust the alarm voltage.

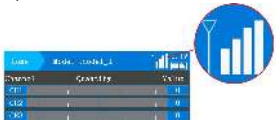
R8FG INTRODUCTION

RC8X is packed with an 8-channel receiver R8FG, splash-proof, gyro integrated, and high voltage servo supported. The gyro function of R8FG is turned off (Green LED) by default. Check the follow gyro function introduction for methods on how to turn on the gyro.



Binding

RC8X and R8FG have finished binding by default. Turn on the RC8X and the R8FG, the signal tower will show on the top of the screen as in the picture below, it means the transmitter and receiver have finished binding.



Please make sure there is successful binding between the transmitter and receiver. Each receiver has an individual ID code. When the binding is done, the ID code will be stored in the transmitter and there's no need to rebind.

Binding steps:

① Put the transmitter and the receiver close to each other (about 60 centimeters).

② Turn on both the transmitter and the receiver, and then the LED of R8FG will start flashing slowly.

③ There is a black binding button (ID SET) on the side of the receiver. Press the button for more than 1 second and release, the LED will flash quickly, indicating the binding process is ongoing.

④ When the LED stops flashing and is always on, binding is complete and there will be a signal tower shown on top of the IPS screen of the transmitter(As shown above). If not successful, the

LED will keep flashing slowly to notify, repeat the above steps.

Note: The close distance between the transmitter and receiver may cause a signal block, which leads to unsuccessful binding or signal loss. After the binding is successful, if RC8X and R8FG receiver are too close (for example, within 60 centimeters), the signal may also be lost because of signal block. Bring RC8X transmitter and R8FG receiver farther apart, the signal loss will disappear automatically.

Receiver Setting

Receiver Selection (Protocol Selection):



If the receiver you are using is not the standard R8FG, but other versions R8FG or other receivers such as R7FG, R6FG, etc., please select "FHSS V1" or "FHSS V2" in the "Basic Menu" - "Receiver setting" of RC8X (as shown on the right), and then bind them. FHSS V1 receivers have a PWM output resolution of 2048, and FHSS V2 receivers have a PWM output resolution of 4096. The higher the resolution, the more delicate the angle of servo motion.

Please click "Receivers List" (as shown above) to check whether the receiver you are currently using belongs to this list. If yes, please click the box on the right to confirm the current receiver type. If not, please do not select this list. If the receiver list selected here does not include the receiver model you are actually using, the binding may not be successful. For example: If you want to use R7FG with RC8X, you need to select FHSS V1 and then bind them. If FHSS V2 is selected, binding will not be successful.

Servo Speed Setting:

1. Transmitter: It is necessary to update the RC8X firmware to V1.1.5 or above, and then select FHSS V2 protocol to display this option. Servo speed can be selected from 14ms, 4ms, and 3ms. The default servo speed is 14ms (analog servo speed), 4ms and 3ms (digital servo speed).

2. Receiver: If you are using a digital servo, you need to choose a servo speed of 4ms or 3ms. Please confirm whether the receiver you are using supports digital servo. Currently, RadioLink receivers that support digital servo include R8FG V2.1, R4FGM V2.1, and R8FG and R4FGM receivers with a factory date of 2023/4/26 and later. Other versions of RadioLink receivers do not support digital servo. Even if 4ms or 3ms is selected when using them, the default servo speed is 14ms. RadioLink will continue to add other models of receivers that support digital servos in the future. Please pay attention to RadioLink official website.

3. Status indication: When switching the servo speed, the green LED light of the receiver will flash twice, which means that the switching of the servo speed is successful; if the green LED of the receiver does not flash when switching the servo speed of the servo, it means that the switching of the servo speed of the servo is unsuccessful or the current receiver does not support digital servos.

Attention:

1. RC8X comes with R8FG receiver. R8FG V1.0 (production date before Feb. 6, 2023) only supports FHSS V1 protocol, not FHSS V2 protocol; R8FG V2.0 and later versions (production date on or after Feb. 6, 2023) support FHSS V2 protocol. Mini receiver R4FGM V1.0 supports FHSS V1 protocol, and R4FGM V2.0 and later versions support FHSS V2 protocol. Before

operating the model, please make sure protocol of the receiver is selected correctly, otherwise some functions will not work properly.

2. The receivers that compatible with the RC8X is keep updating, please pay attention to RadioLink official website www.radiolink.com to get the latest firmware to check the newly launched receiver. This page is only to display the receiver models which are compatible with the RC8X.

Receiver Connection



Picture 1

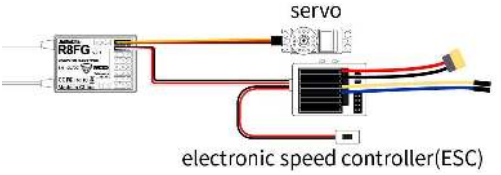


Picture 2

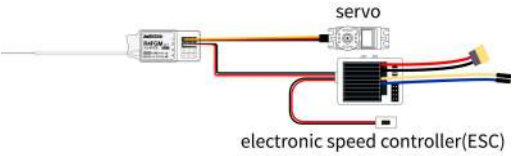
The connection wire for the receiver is shown in the picture above. The common ones are white/red/black wire (Picture 1) or yellow/red/brown wire (Picture 2). The two types of servo cables both are light-colored wire as the signal wire, and dark-colored wire as the ground wire, and the middle is 5V power supply, and the three wires correspond to " 凵+− ".

Note: RadioLink receivers are all designed with anti-polarity connect protection. When the receiver is powered by a separate battery, the receiver will not be damaged if the battery polarity is reversed, but if the servo is connected at this time, it will damage the servo.

The Connection of servo, ESC and receiver.



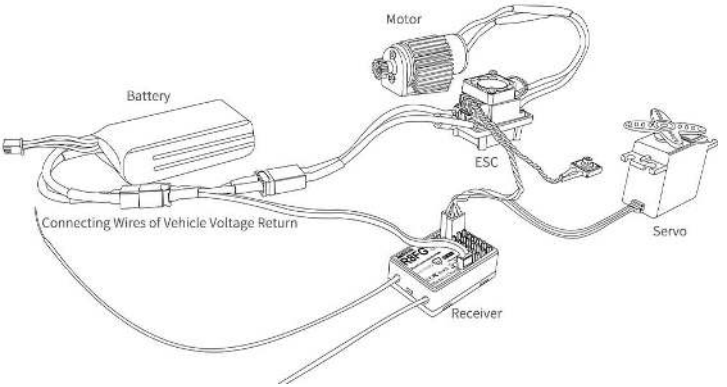
R8FG Receiver Connection (As above)



R4FGM Receiver Connection (As above)

Telemetry of Model and Receiver Battery Voltage

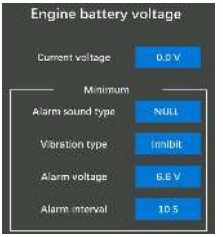
R8FG supports telemetry of model battery voltage, receiver voltage, and RSSI. The model voltage will display by connecting the wire to the ESC (Electronic Speed Control), battery, and Telemetry port of receiver R8FG. Telemetry of maximum 8S (33.6V) battery supported. Model battery voltage telemetry can be easily achieved by connecting the male end of the telemetry wire to ESC while the female end to the battery and the wire with a JST head connects Telemetry (+-) of R8FG as below picture shows. No extra module is needed. Once connect with success, the returned model voltage will be displayed on the home page of the transmitter. The connection is shown below.



Attention:

1. Reverse polarity protection circuit design for all 8 channels of R8FG ensures vital components are protected from a reverse polarity connection. But, the JST connector which is packed with R8FG for connecting to the battery cannot reverse polarity connect, or it will lead to the wrong voltage value telemetry.
2. Telemetry port is only used to model voltage telemetry. It can not be used to power the receiver.

Low Model Voltage Alarm Setting



The low model battery voltage alarm is default 6.6V, if the voltage of the model battery is lower than 6.6V, the transmitter will alarm with the sound "low engine battery voltage", please replace the battery when you heard the alarm, the value of low engine battery voltage alarm can be set in the Telemetry setting - Battery. Normally we set the warning value with the single cell voltage as 3.7V. For example, if it is a 3S lithium battery used in the model car, the warning value can be set as 11.1V (3.7V*3S).

Working Modes of R8FG

R8FG has a built-in gyroscope, which can output not only PWM signals but also SBUS signals. There are four working modes, including ordinary PWM mode, SBUS mode, Gyro mode, and Gyro + SBUS mode. The channel signal corresponding to each mode is as follows:

R8FG Working Modes						
Working Mode		PWM Mode	SBUS Mode	Gyro mode	Gyro+SBUS Mode	Note
Channel	Telemetry	Telemetry Port of Model Battery Voltage (+ -) TELEMETRY port is only for 2S-8S battery voltage telemetry. The port cannot be used to power the receiver.				
	1	PWM	PWM	PWM	PWM	Steering
	2	PWM	PWM	PWM	PWM	Throttle
	3	PWM	PWM	PWM	PWM	Aux

	4	PWM	PWM	PWM	PWM	Aux
	5	PWM	PWM	PWM	PWM	Aux
	6	PWM	PWM	PWM	PWM	Aux
	7	PWM	PWM	PWM	PWM	Aux
	8/S.BUS	PWM	S.BUS	PWM	S.BUS	Aux

Working mode setting

1．Turn on/off the gyro: Short press the binding button 3 times within 2 seconds to switch the gyro on and off, and the color of the LED indicator will switch accordingly.

2．Gyro phase switch: Short press the binding button twice within 2 seconds to switch the gyro phase.

3．Turning on/off the SBUS: short press the binding button once to turn on/off the SBUS, and the color of the LED indicator will switch accordingly. After SBUS signal is enabled, channel 1-7 output PWM, and channel 8 outputs the SBUS signal.

LED Indicator Color in Different Working Modes

Working Mode	PWM Mode	Gyro mode	SBUS Mode	Gyro + SBUS Mode
Indicator Color	Green	Red	Blue	Red+Blue

Note: When the receiver is connected to the power supply, if there is no successful binding between the receiver and the transmitter or the receiver loses the signal, the indicator of the receiver will flash slowly.

Gyro Function of R8FG

R8FG has a built-in gyroscope. The integrated high-performance gyro adopts the software filter and PID algorithm, timely and precisely corrects the sensitivity and improves the stability. Its good flexibility to different models easily achieves professional performance even with drift cars.

Enable Gyro

The gyro function of R8FG is turned off by default. Since the integrated gyro in R8FG will self-check, it is important to keep R8FG still when powering it on. Short press the binding button 3 times within 2 seconds to switch the gyro on and off, and the color of the LED indicator will switch accordingly. Red LED indicates that gyro is enabled.

Attention: It's normal that the servo keeps shaking when connected to the receiver. Because the gyro is helping to correct the steering gear angle of the servo automatically if the gyro function has turned on, you can turn off the gyro function if you do not need this function.
If the receiver has not to be moved, but the servo keep shaking, there are two reasons below:
① The servo has connected to the S.BUS channel of the receiver. Please reconnect the servo to the CH1/2/3/4/5/6/7, because the standard servo only supports PWM signal input.
② The gyro is too much sensitive. Please turn DL1 switch to reduce the gyro sensitivity.

Gyro Reverse

Set the gyro forward, and turn the car right or left to see whether the gyro functions. The wheel will turn left when the car is turned right and the wheel turns right when the car is turned left. If the gyro acts counter, press the binding button twice, the red LED flashes twice, the gyro reverse is corrected.

Gyro Sensitivity Setup



Gyro sensitivity is defaulted to adjust by channel eight that default controlled by DL1/PS3 knob switch, turning the DL1/PS3 knob switch clockwise to increase sensitivity and anti-clockwise to reduce it. When turning the DL1/PS3 knob switch, a tooltip with yellow background color will pop out at the top of the screen, and the value of the channel will be changing at the same time, the value is closer to +100, the higher sensitivity. If the value is 0, it means the gyro function has been turned off.

You can also assign other switches to control the gyro function or adjust the sensitivity on this page.

For more after-sales service:

Please send mail to: after_service@radiolink.com.cn

The detailed Electronic Instructions could be downloaded from RadioLink:

www.radiolink.com/rc8x_manual

Thank you again for choosing our product.