

# Manual Instruction

2.4G RF High Frequency Series LED Controller  
Model No.:CH21RF/CH31RF

## 1. Features

The controller features advanced PWM control technology with a memory function, retaining light settings after power off.

It utilizes the widely adopted 2.4GHz wireless technology, featuring automatic signal transmission and synchronization functions.

With a maximum PWM dimming frequency of 20KHz, it effectively reduces noise and flickering during operation.

- 16 Millions of colors to choose
- Color temperature 2700K~6500K
- Dim brightness/saturation
- Support music rhythm (need to work with 2.4G gateway)
- Group control
- Link/Unlink/Reset Button on the controller
- Timing setting/ countdown turn on /off LED light (need to work with 2.4G gateway)

- Smartphone APP control (need to work with 2.4G gateway)
- 2.4G wireless transmission technology
- Support remote control (control distance 30m)
- Device sharing (need to work with 2.4G gateway)
- High Frequency
- Auto-transmitting & Synchronization
- Support third party voice control (need to work with 2.4G gateway)

## 2. Parameters

Model No.: CH21RF

Input Voltage: DC12-24V(5.5\*2.1mm) 

Output: 7.5A/Channel(Total output Max:12A/20kHz 15A/2kHz)

Working Temperature:-25~40°C

Communication Mode: WiFi-IEEE 802.11b/g/n 2.4GHz

RF:2.4GHz Weight: 65g

Model No.: CH31RF

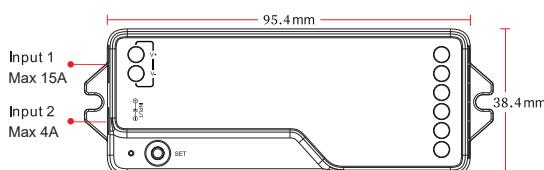
Input Voltage: DC12-24V(5.5\*2.1mm) 

Output: 5A/Channel(Total output Max:12A/20kHz 15A/2kHz)

Working Temperature:-25~40°C

Communication Mode: WiFi-IEEE 802.11b/g/n 2.4GHz

RF:2.4GHz Weight: 65g



Switching Output Mode: Short press "SET" button to switch the outputmode; The Pilot lamp flickering means switching successfully;Different colors flickering correspond to different output mode; Details see below sheet.

CH21RF		CH31RF		
White Light Flickering	Yellow Light Flickering	Red Light Flickering	Green Light Flickering	Blue Light Flickering
Single Color Mode	Dual White/CCT Mode (Default Mode)	RGB Mode	RGBW Mode	RGB+CCT Mode (Default Mode)

After the controller is connected to the LED strip and power supply, and powered on, you need to switch the controller's output mode to ensure it matches the type of LED strip connected.

## 2.1. Switch PWM Frequency

### Switch to Low Frequency:

Press and hold the SET button for more than 15 seconds, the blue indicator light will flicker slowly, indicating a switch to a low frequency of 2KHz.

### Switch to High Frequency:

Press and hold the SET button for more than 15 seconds, the green indicator light will flicker slowly, indicating a switch to a high frequency of 20KHz.

### Note:

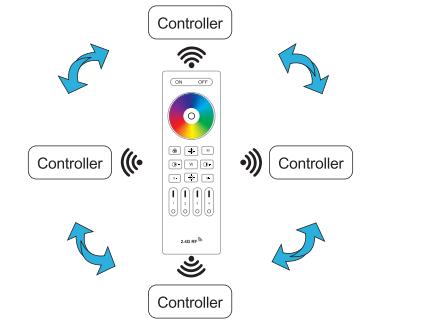
1. Application for switching the PWM frequency to avoid noise caused by different power supplies.
2. The default frequency is high frequency.

## 3. Remote dynamic mode

Dynamic mode controlled by remote control		
Dynamic mode No.	mode	Applicable Models
1	Seven color jumps: red, orange, yellow, green, cyan, blue, purple	CH31
2	Seven color gradients: Red, Orange, Yellow, Green, Cyan, Blue, Purple.	
3	Six color breathing changes: Red, Yellow, Green, Cyan, Blue, Purple.	
4	Colorful 360-degree cyclic gradient.	
5	Colorful random jump change	
6	Red to yellow gradient	
7	Cyan to Blue gradient.	
8	red to purple gradient	
9	green to cyan gradient	
10	/	CH21 (Does not support dynamic functionality)

## 4. Auto-synchronization function

Different controllers can work synchronously when they are started at different times, controlled by the same remote, under the same dynamic mode and with the same speed.

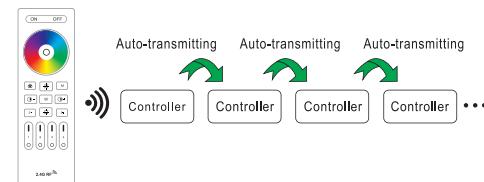


### Remark:

1.  Indicating Auto-transmitting.
2. Controller will be auto-synchronizing in the same dynamic modes and within 30m controlling distance.

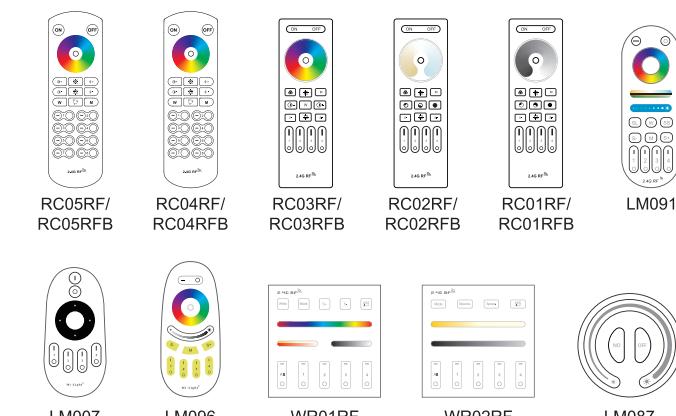
## 5. Auto-transmitting Diagram

One strip controller can transmit the signals from the remote control to another controller within 30m, as long as there is a strip controller within 30m, the remote control distance can be limitless.



## 6. Remote Controller

Compatible with these remote controls (Purchased separately). For more details, please read the remote instruction.



## 7. Linking/Unlinking with Remote

### Lining with remote control

**First way:**  
Press and hold the "SET" button for more than 3 seconds. When the purple indicator blinks slowly, quickly press the any zone "ON" button on the remote control 3 times. If the light flickers 3 times, this confirms that the linking process was successful.

### Second way:

When the light is on, turn it off and wait 10 seconds, then turn it back on, quickly press the linked zone "ON" button on the remote 5 times within 5 seconds. If the light flickers slowly 10 times, then unlinking is successful.

### Unlinking with remote control

**First way:**  
Press and hold the "SET" button for over 3 seconds. When the purple indicator blinks slowly, quickly press the linked zone "ON" button on the remote 5 times within 5 seconds, If the light flickers slowly 10 times, then unlinking is successful.

### Second way:

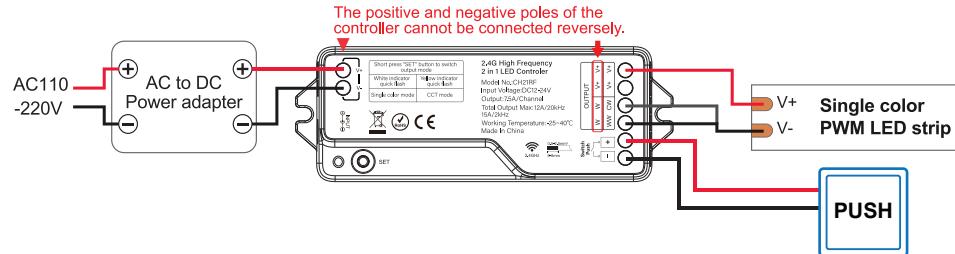
When the light is on, turn it off and wait 10 seconds, then turn it back on, quickly press the linked zone "ON" button on the remote 5 times within 5 seconds. If the light flickers slowly 10 times, then unlinking is successful.

## 8. Connect to PWM LED strip

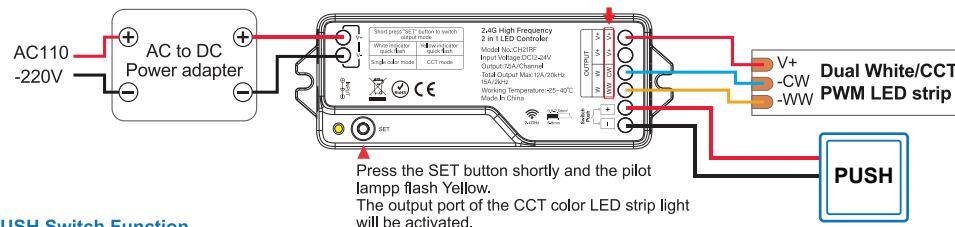
**!** The positive and negative poles of the controller cannot be connected reversely. Otherwise, the controller will be burned out.  
(It is recommended that the wire length between the controller and the power supply not exceed 1 meter.)

**!** Controller input voltage must be in accordance with the required voltage of LED Strips  
**DC12V LED must use DC12V power supply. DC24V LED must use DC24V power supply.**

### Connect to single color PWM LED strip diagram (CH21RF)



### Connect to Dual White/CCT PWM LED strip diagram (CH21RF)



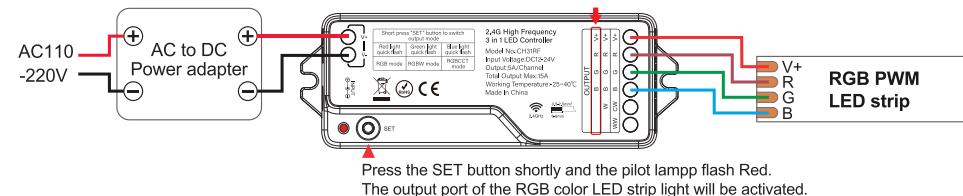
### PUSH Switch Function

#### 1.1 Dimming Function:

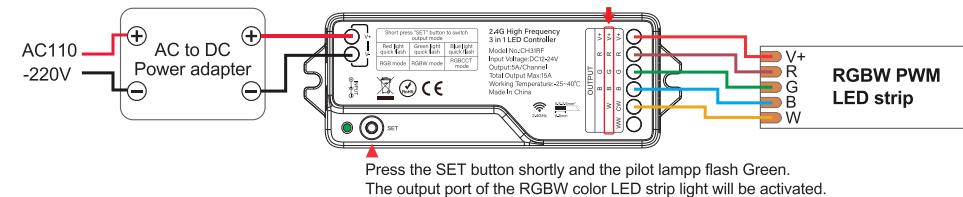
(1)Short press PUSH Switch: Turn ON or Turn OFF the light.  
(2)Long press PUSH Switch: Dimming the brightness smoothly.

Long press Push Dimmer, then loosen the Push Dimmer, then long press again, switch increase brightness or decrease brightness.  
**1.2 Dimming Function:**  
Short press Push Switch over 4 times within 5 second, make the device into Link/Unlink Mode. The Link/Unlink will last for 5 seconds.

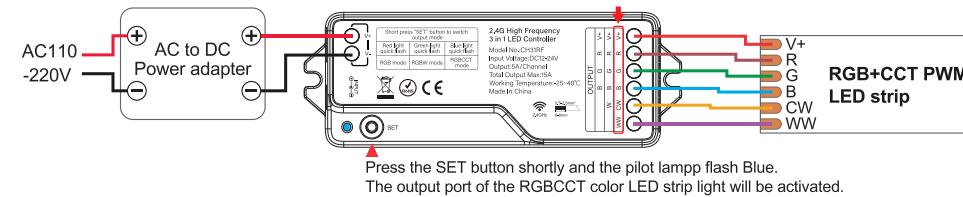
### Connect to RGB PWM LED strip diagram (CH31RF)



### Connect to RGBW PWM LED strip diagram (CH31RF)



### Connect to RGB+CCT PWM LED strip diagram (CH31RF)



## 9. Attention

1. Please check whether the input voltage of the constant voltage power supply is in accordance with the controller, and please check the connection of both the cathode and anode.
2. The working Voltage is DC12~24V, the controller will be broken if the voltage is higher than 24V.
3. Non-professional user cannot dismantle the controller directly, otherwise, it may cause fire and electric shock.
4. The working temperature is -25~40°C; Do not use the device to direct sunlight, moist and other high temperature area.
5. Please do not use controller around the mental area and highmagnetic field, otherwise, it will badly affect the control distance.
6. When the device load to 15A, wire diameter must be over 2mm<sup>2</sup>

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