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Rayrun P21 2-Wire CCT LED Controller User Manual

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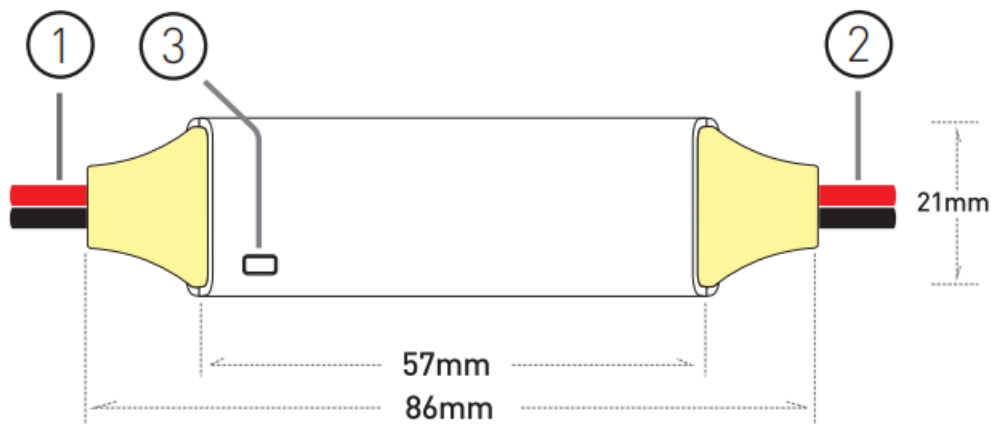
Compact Size

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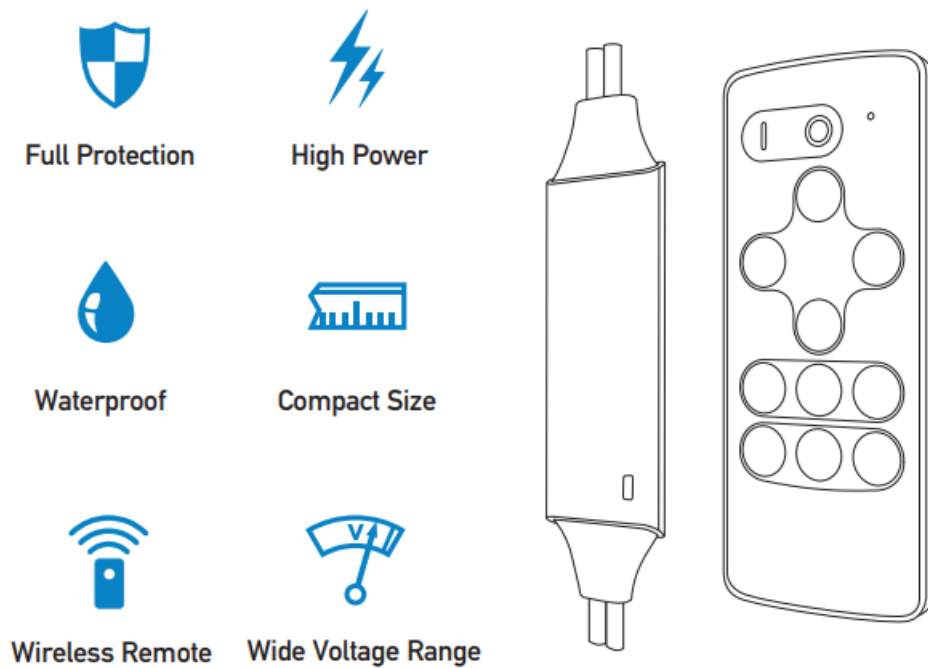
Wide Voltage Range

Introduction

P21 LED controller is designed to drive 2-wire tunable white (CCT) constant voltage LED products in the voltage range of DC5-24V. With the RF remote controller, the user can set up LED brightness and color temperature with the + – and shortcut keys.

Function & Size

Power supply input

The controller supply voltage range is from DC 5V to 24V. Please refer to the print on the controller for cable polarity.   The output voltage is at the same level as the power voltage, please make sure the power supply voltage is correct and the power wattage is capable for the load wattage.
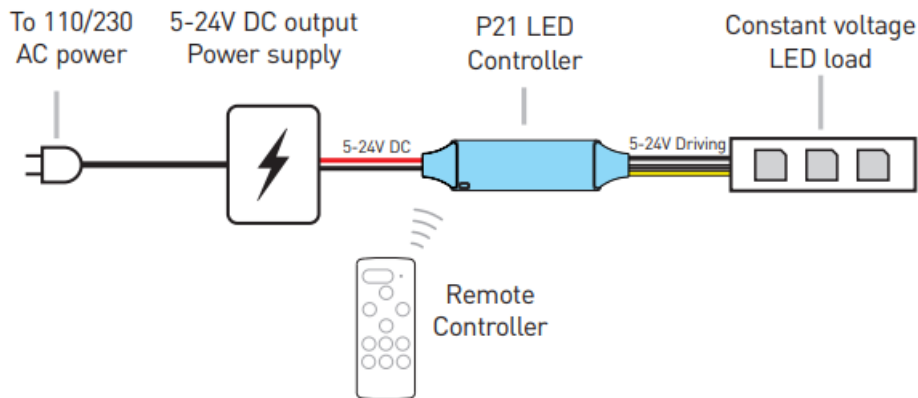
LED output

Connect LED loads to this terminal. Install LED positive cable into the terminal marked with '+' and negative LED cable into the terminal marked with '-'. Please make sure the LED rated voltage is same as the power supply and each channel's maximum load current is in range of the controller's rated current.
If the light color temperature is reversed from the remote controller operation, Please reverse the + and – cable to correct.

Work status indicator

This indicator shows the working status of the controller. It displays different events as follows:

- **Steady blue:** Normal working.
- **Single white blink:** Command received.
- **Long single yellow blink: Brightness or CCT limit. Red flash:** Overload protection.
- **Yellow flash:** Overheat protection.
- **White flash 3 times:** New remote controller paired.

Wiring

Please connect the controller output to LED loads and the power supply to the controller power input. The power supply voltage must be the same as the LED load's rated voltage. Check all cables are well connected and insulated before powering on.

Functions

Turn ON / OFF

Press 'I' key to turn on unit or press 'O' key to turn off. Main unit will memorize the on/off status and will restore to the previous status on next power on.
Please use remote controller to turn on the unit if it was switched to off status before power cut.
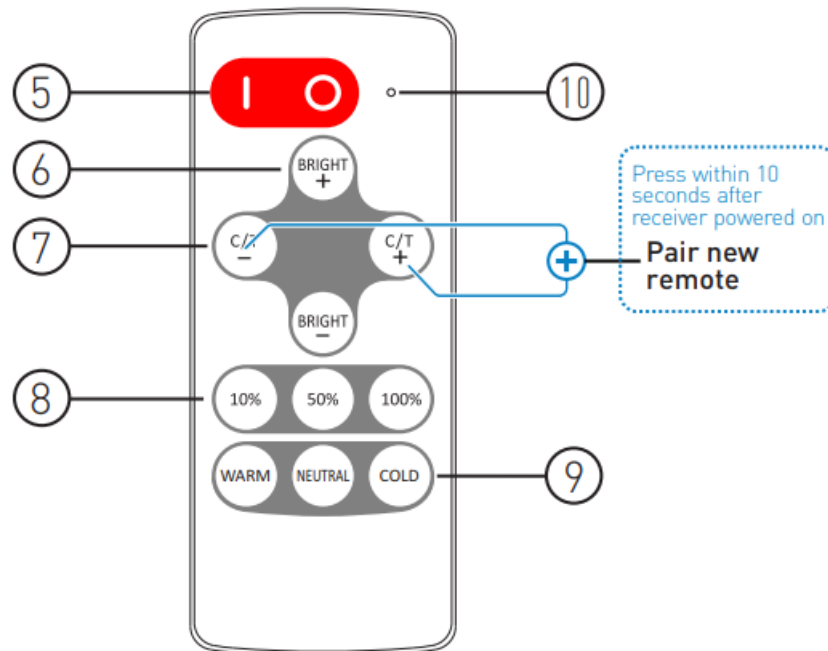
Brightness control

Adjust overall brightness. Press to increase brightness and press to decrease. The color temperature will keep unchanged when adjusting brightness.
The controller applies brightness gamma correction on dimming control, making the brightness tuning more smooth to the human sense.

Color temperature control

Adjust LED color temperature. Press to increase the color temperature and press to decrease. The overall brightness will keep unchanged when adjusting the color temperature.

Brightness shortcut keys

Jump to the relative brightness level when pressing the corresponding keys.

Color temperature shortcut keys

Set the color temperature to full cool white, full warm white, or neutral white which is 50% warm and 50% cool white.

Remote indicator

This indicator blinks when remote controller is working. If the indicator flash slowly when pressing keys, it means the remote battery is nearly empty and please change the battery in this case. The battery model is CR2032.

Advanced features

Waterproof (-S version)

The IP-68 waterproof feature with glue injection finish is available on -S version controllers. For overall waterproof performance, the cables must be waterproof treated separately.
Wireless signal degrade: The wireless communication ability could degrade when using at wet environment, please be aware that the wireless control distance will be shortened in such cases.

Protection function

The controller has full protection function against wrong wiring, load short circuit, overload and overheat. The controller will stop working and the indicator will flash with red / yellow color to indicate the malfunction. The controller will try to recover from protection status in a short time when the working condition is good.
For protection issues, please check the situation with different indicator information:
Red flash: Check the output cables and load, make sure no short circuits and the load current is in rated range. Also the load must be constant voltage type.
Yellow flash: Check the installation environment, make sure in a rated temperature range and with good ventilation or heat dissipation condition.

Operation

Using the remote controller

Please pull out the battery-insulating tape before using it. The RF wireless remote signal can pass through some nonmetal barrier. For proper receiving the remote signal, please do not install the controller in closed metal parts.

Pair a new remote controller

The remote controller and main unit are 1 to 1 paired as factory default. It's possible to pair maximum 5 remote controllers to one main unit and each remote controller could be paired to any main unit. The user could pair a new remote controller to main unit by following two steps:

1. Plug off the power of main unit and plug in again after more than 5 seconds.

2. Press $\overset{C/T}{\oplus}$ and $\overset{C/T}{\ominus}$ key simultaneously for about

3. seconds, within time of 10 seconds after the main unit powered on.

Keep the current remote only

In some cases, one main unit might be paired with several remote controllers but extra remote controllers are no longer needed. User could simply pair the current using remote to the main unit again, then the main unit will dis-pair all other remote controllers and recognize current one only.

Specification

Model	P21	P21-S
Brightness grade	11 levels	
Brightness shortcut	3 levels	
Color temperature grade	7 levels	
Color temperature shortcut	3 levels	
PWM grade	4000 steps	
Overload protection	Yes	
Overheat protection	Yes	
Working voltage	DC 5-24V	
Remote frequency	433.92MHz	
Remote control distance	>15m at open area	
Rated output current	7A	
Waterproof	Ip63	Ip68

Documents / Resources
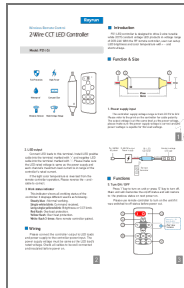
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