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GLEDOPTO GL-C-202P

GLEDOPTO ZigBee 3.0 Pro+ 3-in-1 Smart LED Controller User Manual

Model: GL-C-202P

Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your GLEDOPTO ZigBee 3.0 Pro+ 3-in-1 Smart LED Controller (Model GL-C-202P). This controller is designed to manage various LED strip types, including RGBCCT, RGBW, and RGB, offering versatile lighting control through ZigBee 3.0 connectivity.

Please read this manual thoroughly before installation and use to ensure proper functionality and safety.

Product Overview

The GLEDOPTO ZigBee 3.0 Pro+ 3-in-1 LED Controller is a versatile device for smart lighting systems. It supports three primary LED strip configurations: RGBCCT, RGBW, and RGB. This controller integrates seamlessly with popular smart home ecosystems like Amazon Alexa, Tuya Smart Life, SmartThings, and Home Assistant (via Zigbee2MQTT), providing extensive control options.

Key features include:

- **3-in-1 Compatibility:** Supports RGBCCT, RGBW, and RGB LED strips.
- **Wide Color Spectrum:** Offers 16 million color options for personalized ambiance.
- **Adjustable Color Temperature:** Fine-tune white light from warm to cool.
- **Brightness Control:** Dimmable from 1% to 100%.
- **High Output Capacity:** Maximum total output current of 20A, with 15A per channel, supporting longer LED strip installations.
- **ZigBee 3.0 Protocol:** Ensures broad compatibility and reliable communication with ZigBee gateways.
- **Multiple Control Methods:** Control via smartphone apps (Tuya/Smart Life), RF remote, and voice assistants (e.g., Amazon Alexa).
- **Adjustable PWM Frequency:** One-touch frequency switching (600Hz to 8000Hz) to reduce noise and match various power supplies.



Figure 1: The GLEDOPTO ZigBee 3.0 Pro+ 3-in-1 LED Controller, illustrating its compatibility with RGBCCT, RGBW, and RGB LED strip configurations.

Specifications

Parameter	Value
Product Name	ZigBee Pro+ 3-in-1 Smart LED Controller
Model Number	GL-C-202P
Input Voltage	DC 12V-24V
Total Output Current (Max)	20A
Current per Channel (Max)	15A
Dimensions	108 x 45 x 18 mm

Operating Temperature	-20°C to 45°C
Connectivity Protocol	ZigBee 3.0
Water Resistance Level	Water-resistant (IP20, for indoor use)
Material	Polycarbonate

Package Contents:

- 1 x GLEDOPTO ZigBee LED Controller (GL-C-202P)
- 1 x User Manual
- 1 x 3cm Adhesive Sticker

Note: Gateway devices and LED strips are not included and must be purchased separately.

Setup

1. Wiring the LED Controller

Ensure all power is disconnected before proceeding with wiring. The controller uses quick-connect terminals for easy and secure wire connections.

1. **Prepare Wires:** Strip approximately 10mm of insulation from the ends of your LED strip wires and power supply wires.
2. **Open Connector:** Gently push up the orange tab on the quick-connect terminal to open the connector.
3. **Insert Wires:** Insert the prepared wires into the corresponding terminals. Ensure correct polarity (+ and -) for the power input and match the output channels (R, G, B, CCT, W, V+) to your LED strip type.
4. **Secure Wires:** Press down the orange tab to secure the wires firmly in place. Verify that wires are securely held and cannot be easily pulled out.

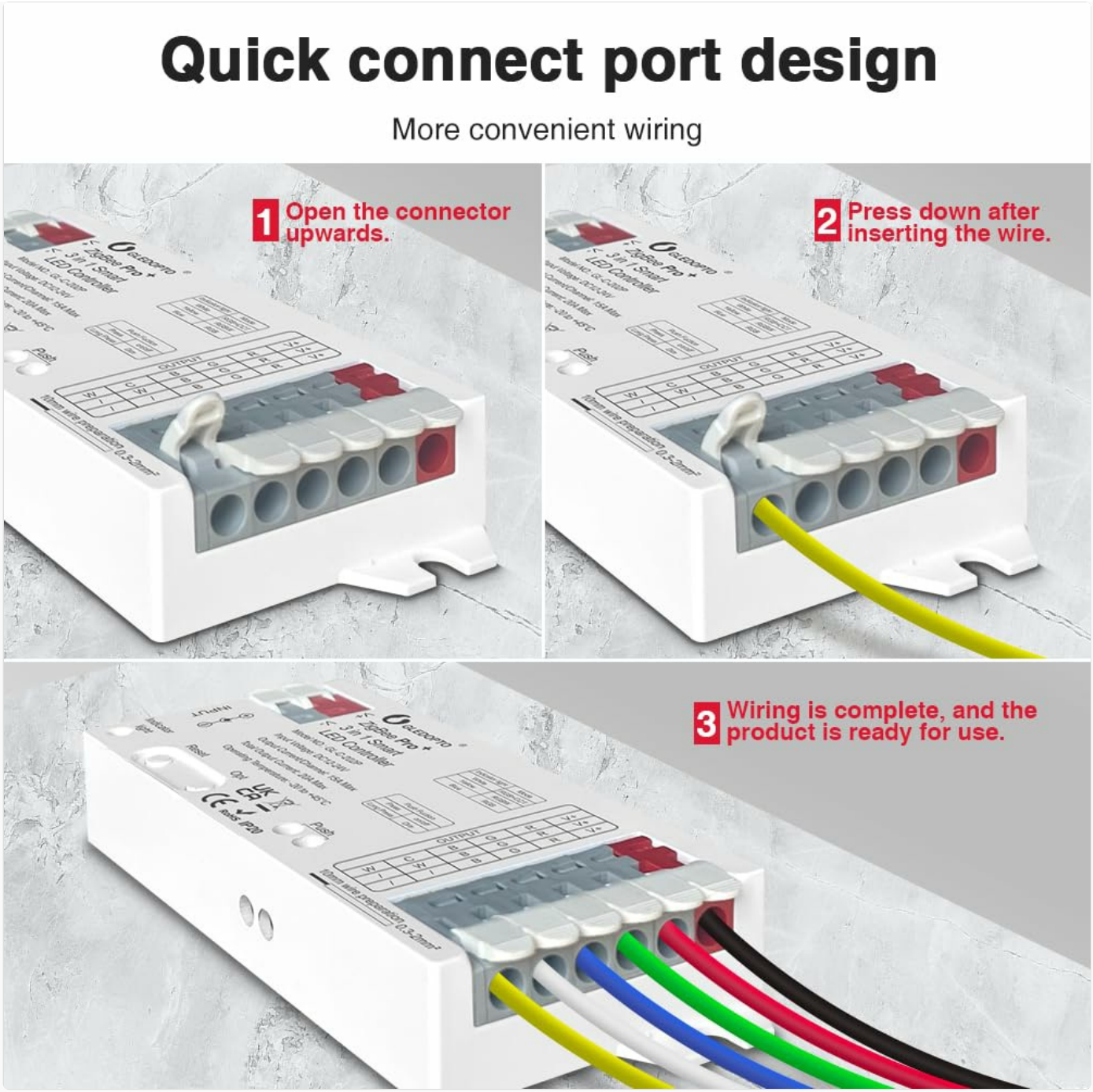


Figure 2: Step-by-step guide for connecting wires to the quick-connect terminals of the GLEDOPTO LED Controller.

2. Connection Diagrams

The controller supports different LED strip types. Refer to the appropriate diagram for your specific LED strip.

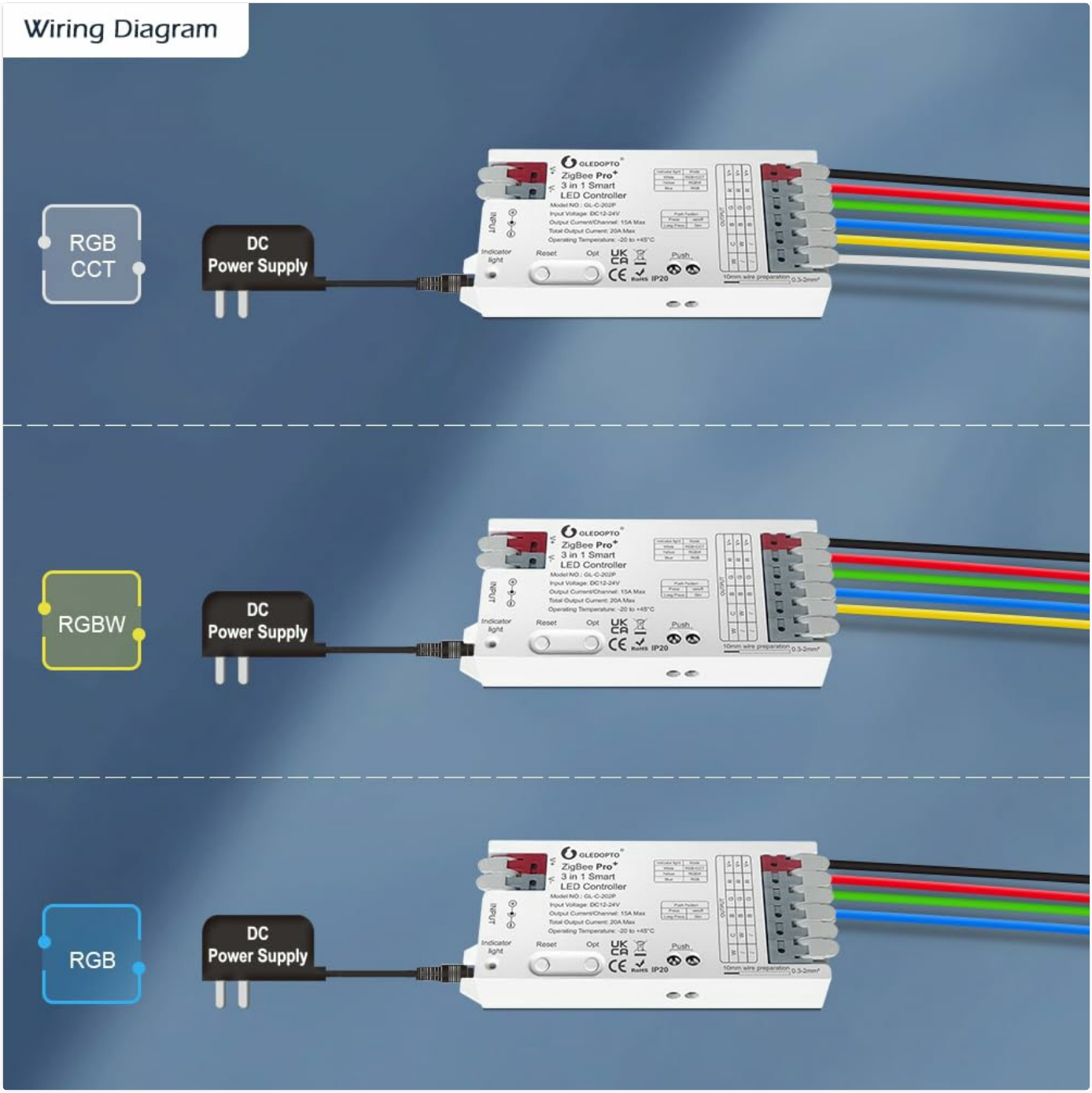


Figure 3: Wiring configurations for RGBCCT, RGBW, and RGB LED strips connected to the GLEDOPTO controller and a DC power supply.

- **RGBCCT Strip:** Connect R, G, B, CW, WW, and V+ terminals.
- **RGBW Strip:** Connect R, G, B, W, and V+ terminals.
- **RGB Strip:** Connect R, G, B, and V+ terminals.

Important: Ensure your DC power supply matches the voltage requirements of your LED strip (12V or 24V) and has sufficient wattage for the total length of your strip. The controller does not change voltage.

3. Pairing with a ZigBee Gateway

After wiring, connect the DC power supply. The indicator light on the controller will flash, indicating it is in pairing mode. If it does not flash, press the "Reset" button on the controller.

1. **Open Gateway App:** Open your ZigBee gateway's application (e.g., Tuya Smart Life, Amazon Alexa, SmartThings, Home Assistant with Zigbee2MQTT).
2. **Start Device Search:** Initiate the device search or pairing process within the app.

3. **Confirm Pairing:** The controller should appear in your app's device list. Follow the app's instructions to complete the pairing. The indicator light on the controller will stop flashing once successfully paired.

For specific instructions on pairing with your chosen gateway, refer to your gateway's user manual or support documentation.

Operating the Controller

1. App Control (Tuya Smart Life / Similar)

Once paired, you can control your LED strips using the associated smartphone application. The app provides comprehensive control over various lighting parameters.

- **Color Selection:** Access a color wheel or palette to choose from 16 million colors.



Figure 4: Smartphone app interface demonstrating the 16 million color selection feature for LED strips.

- **Color Temperature Adjustment:** For CCT or RGBCCT strips, adjust the white light from warm (e.g., 2700K) to cool (e.g., 6500K).



Figure 5: Smartphone app interface showing the color temperature adjustment slider for white light.

- **Brightness Control:** Use a slider to adjust the brightness level from 1% to 100%.

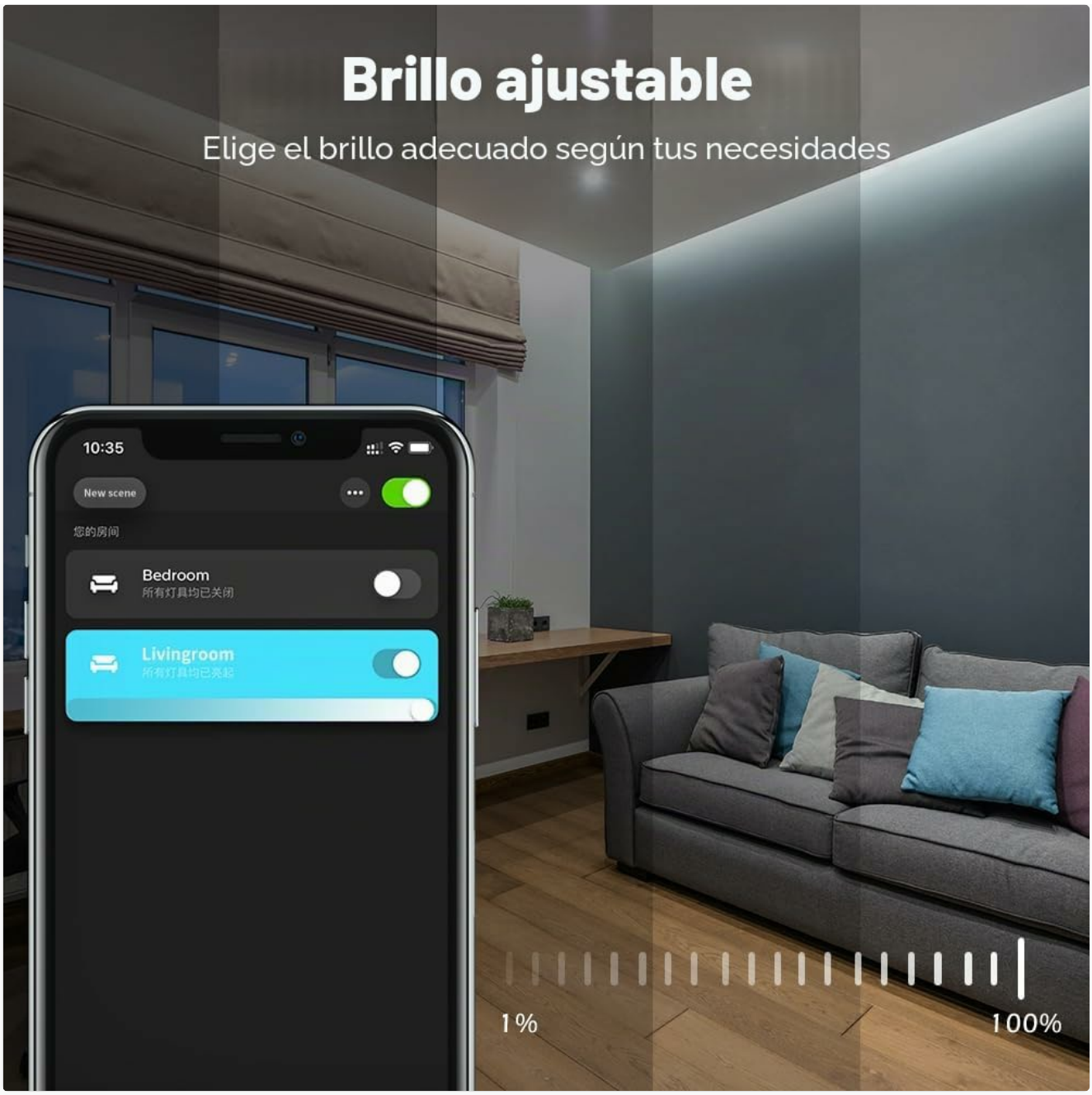


Figure 6: Smartphone app interface illustrating the brightness adjustment feature for LED lighting.

- **Scenes and Automations:** Create custom lighting scenes and set up schedules or automations based on time, presence, or other smart home triggers.

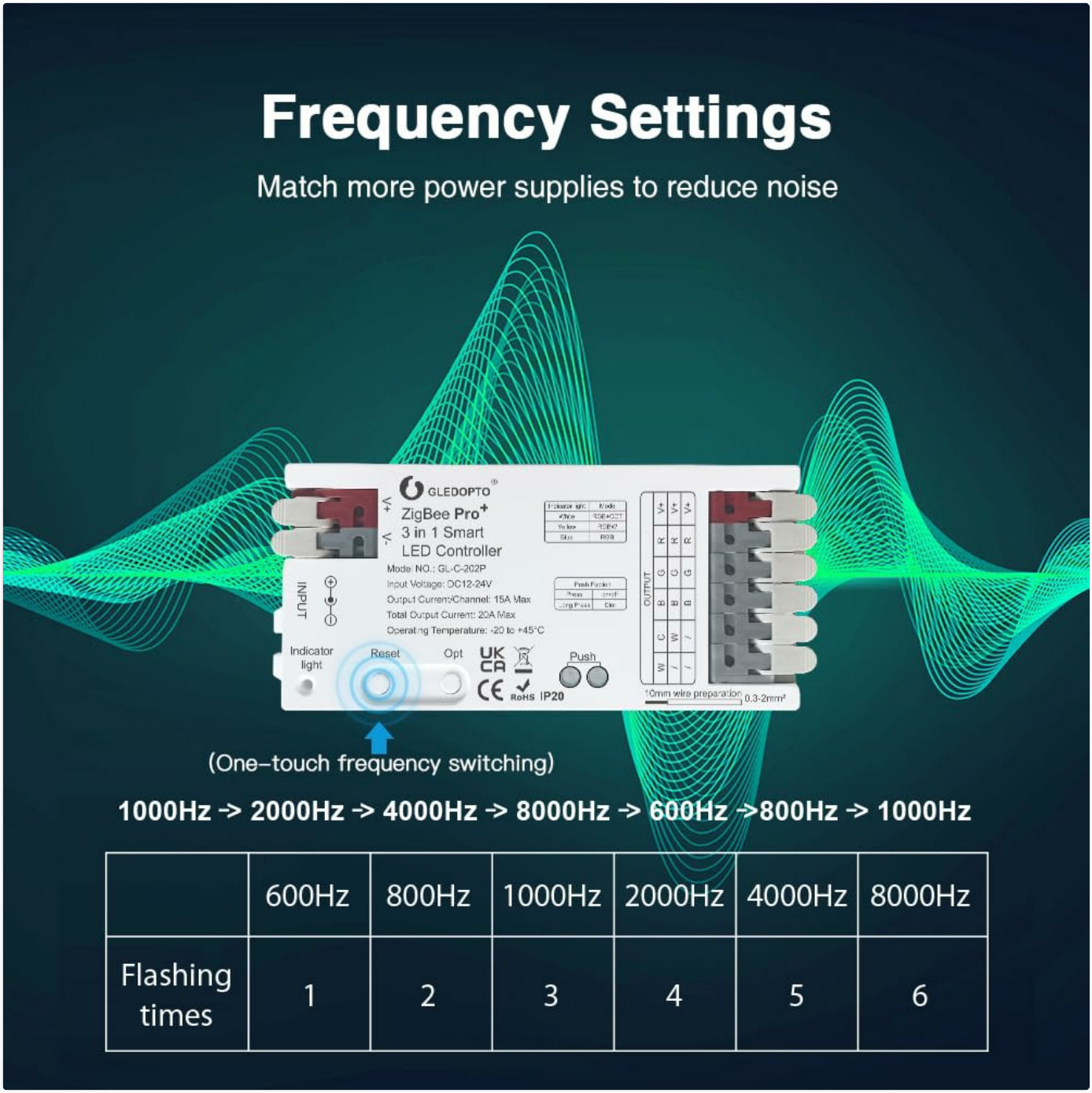
2. Voice Control (Amazon Alexa, Google Home, etc.)

If your ZigBee gateway is integrated with voice assistants, you can control your LED strips using voice commands. Ensure your controller is properly linked through your gateway's integration with the voice assistant.

- "Alexa, turn on [Light Name]."
- "Alexa, set [Light Name] to blue."
- "Alexa, dim [Light Name] to 50%."
- "Alexa, set [Light Name] to warm white."

3. Adjusting PWM Frequency

The controller allows for one-touch adjustment of the PWM frequency to optimize compatibility with various power supplies and reduce potential noise or flicker. To change the frequency, briefly press the "Opt" button on the controller.



	600Hz	800Hz	1000Hz	2000Hz	4000Hz	8000Hz
Flashing times	1	2	3	4	5	6

Figure 7: Diagram illustrating the one-touch frequency switching options (600Hz to 8000Hz) on the GLEDOPTO LED Controller.

Each press cycles through the available frequencies (600Hz, 800Hz, 1000Hz, 2000Hz, 4000Hz, 8000Hz). Select the frequency that provides the best performance and minimizes any audible hum or visual flicker from your LED strips.

Maintenance

The GLEDOPTO LED Controller is designed for low maintenance. Follow these guidelines to ensure its longevity:

- **Cleaning:** Use a soft, dry cloth to clean the controller. Do not use liquid cleaners or solvents.
- **Environment:** Ensure the controller is installed in a dry environment, away from direct sunlight, high temperatures, and excessive humidity. It is rated IP20, meaning it is not waterproof.
- **Connections:** Periodically check all wire connections to ensure they remain secure. Loose connections can lead to intermittent operation or damage.
- **Firmware Updates:** If available through your ZigBee gateway or app, consider applying firmware updates to improve performance and add new features. Always follow the update instructions provided by the gateway

manufacturer.

Troubleshooting

Problem	Possible Cause	Solution
LED strip does not light up.	No power, incorrect wiring, faulty LED strip, controller not paired.	Check power supply connection. Verify wiring polarity and connections. Test LED strip with a different power source if possible. Ensure controller is paired with gateway.
Lights flicker or hum.	Incompatible power supply, incorrect PWM frequency, loose connections.	Adjust PWM frequency using the "Opt" button on the controller. Ensure power supply is stable and compatible. Check all wiring connections.
Cannot pair controller with gateway.	Controller not in pairing mode, gateway too far, interference, gateway issues.	Press the "Reset" button on the controller to enter pairing mode (indicator light flashes). Move controller closer to the gateway. Check for other ZigBee devices causing interference. Restart gateway if necessary.
Colors are incorrect or unresponsive.	Incorrect LED strip type selected in app, faulty LED strip, wiring issue.	Verify the LED strip type (RGBCCT, RGBW, RGB) matches the configuration in your app. Check wiring for correct channel connections.
Voice control not working.	Gateway not linked to voice assistant, incorrect device name, old Alexa generation.	Ensure your ZigBee gateway is properly linked to your voice assistant (e.g., Alexa skill enabled). Use the exact device name configured in your app. Note that some older voice assistant devices may have limited compatibility.
Brightness is uneven on long strips.	Voltage drop over long LED strip.	This is a physical phenomenon. For strips longer than 15-20 meters, consider injecting power at multiple points along the strip or using a higher voltage (24V) LED strip if compatible.

Warranty and Support

GLEDOPTO products are designed for reliability and performance. For specific warranty details, please refer to the warranty information provided at the time of purchase or contact your retailer.

For technical support, troubleshooting assistance beyond this manual, or inquiries about product functionality, please visit the official GLEDOPTO website or contact their customer service department. Keep your purchase receipt and product model number (GL-C-202P) handy when seeking support.

Online Resources:

- GLEDOPTO Official Website: www.gledopto.com (*Note: This is a placeholder URL, please verify the actual official website.*)
- Tuya Smart Life App Support: Refer to the app's help section.

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