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› [LILYGO TTGO T-OI Plus ESP32-C3 Development Board User Manual](#)

## LILYGO T-OI Plus

# LILYGO TTGO T-OI Plus ESP32-C3 Development Board User Manual

Model: T-OI Plus (With Battery Holder)

## 1. INTRODUCTION

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The LILYGO TTGO T-OI Plus is a compact and powerful development board designed for Internet of Things (IoT) and embedded projects. It integrates the ESP32-C3 main control chip, which is a secure, low-power, and cost-effective RISC-V microcontroller. This version includes a battery holder for portable applications. The board supports Wi-Fi and Bluetooth 5 (BLE) for versatile wireless connectivity.

## 2. PRODUCT OVERVIEW AND FEATURES

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The T-OI Plus is engineered for projects requiring robust performance and advanced features. Its key components and capabilities include:

- **ESP32-C3 Main Control Chip:** A RISC-V based MCU offering security, low power consumption, and cost-effectiveness.
- **Wireless Connectivity:** Integrated Wi-Fi and Bluetooth 5 (BLE) for seamless communication.
- **Battery Holder:** Designed to accommodate a 16340 battery, enabling standalone operation.
- **Grove Series Interface Compatibility:** Features a connector compatible with Grove series interface modules for easy expansion.
- **USB-C Port:** For power supply and data communication.
- **GPIO Pins:** Exposed pins for connecting various sensors, actuators, and other peripherals.

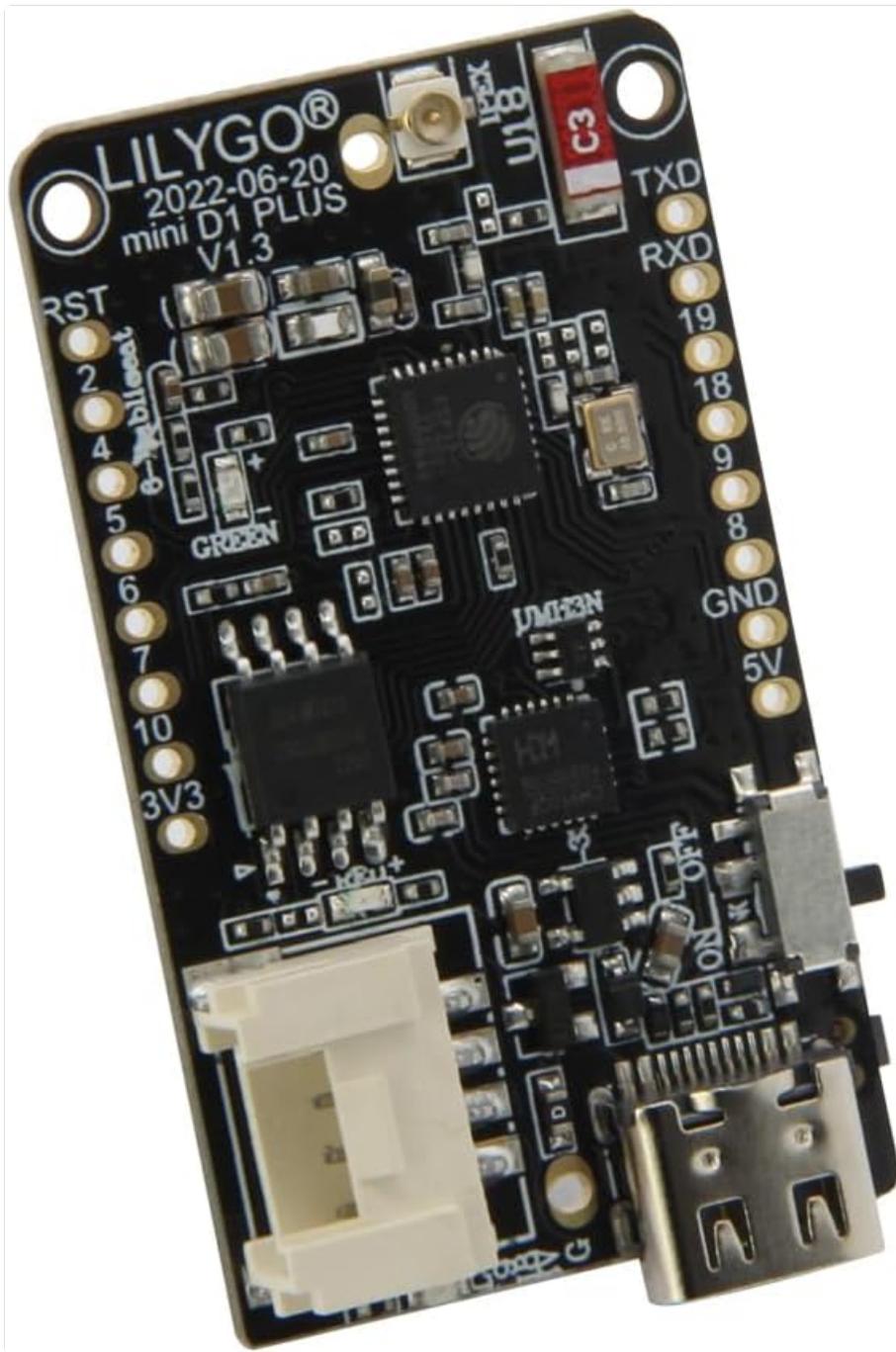
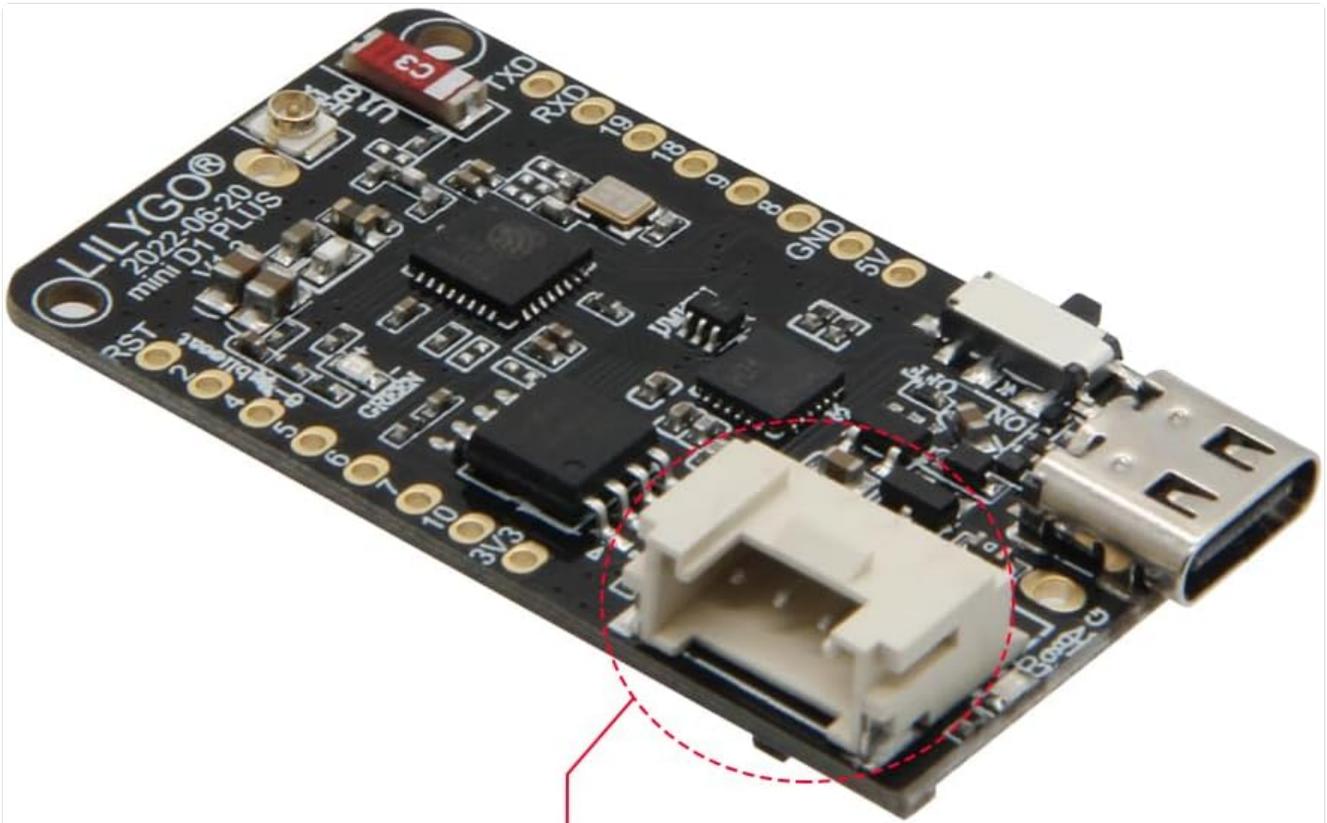


Figure 1: Top view of the LILYGO TTGO T-OI Plus ESP32-C3 development board, showing the ESP32-C3 chip, USB-C port, and GPIO pins.



Compatible with Grove series interface modules

Figure 2: The LILYGO TTGO T-OI Plus board, highlighting the Grove series interface connector for module compatibility.

### 3. PACKAGE CONTENTS

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Verify that all items are present in your package:

- 1 x LILYGO TTGO T-OI Plus ESP32-C3 Development Board with Battery Holder
- 2 x 2.54mm Female PIN Headers (1\*8P)

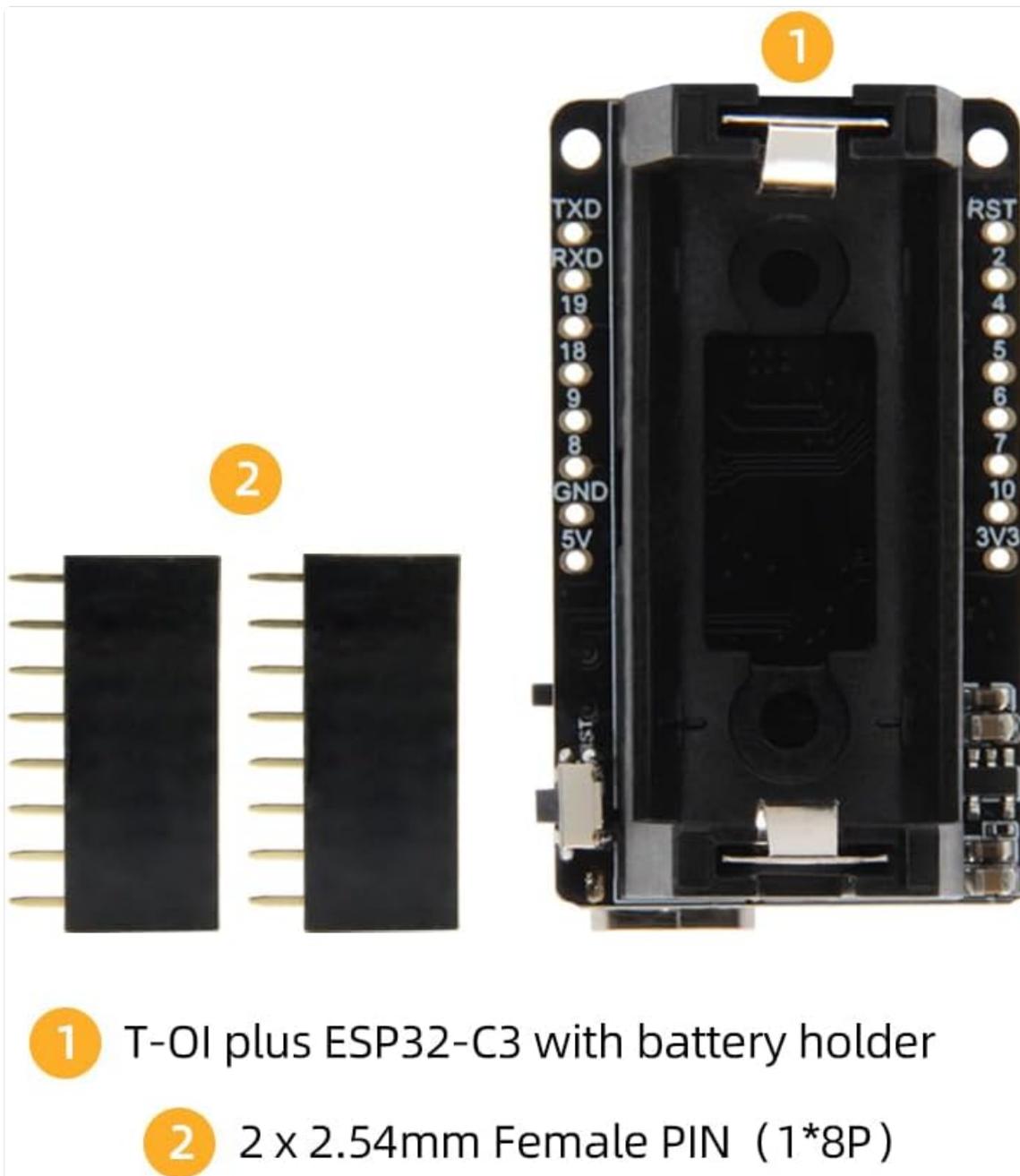


Figure 3: Contents of the package, including the T-OI Plus board with battery holder and two 8-pin female headers.

## 4. SETUP

### 4.1. Battery Installation (Optional)

The T-OI Plus board is designed to work with a 16340 battery for portable power. Ensure correct polarity when inserting the battery.

1. Locate the battery holder on the underside of the development board.
2. Insert a 16340 battery into the holder, aligning the positive (+) and negative (-) terminals as indicated on the holder.

## Adapt to 16340 battery



Figure 4: Correct orientation for inserting a 16340 battery into the battery holder.

### 4.2. Connecting to a Computer

To program and power the board, connect it to your computer using a USB-C cable.

1. Connect one end of a USB-C cable to the USB-C port on the T-OI Plus board.
2. Connect the other end of the USB-C cable to an available USB port on your computer.
3. The board should power on, and your computer may attempt to install necessary drivers. Refer to the official LILYGO GitHub repository for driver installation instructions if needed.

For detailed setup guides and programming examples, visit the official GitHub repository: [github.com/Xinyuan-LilyGO/LilyGo-T-OI-PLUS](https://github.com/Xinyuan-LilyGO/LilyGo-T-OI-PLUS)

## 5. OPERATING INSTRUCTIONS

The LILYGO TTGO T-OI Plus is a development board, meaning its operation is primarily defined by the firmware you upload to it. It is compatible with various development environments such as the Arduino IDE or ESP-IDF.

- **Programming:** Use the USB-C connection to upload your code to the ESP32-C3 chip.
- **Wireless Communication:** Utilize the integrated Wi-Fi and Bluetooth 5 (BLE) capabilities to connect to networks, other devices, or cloud services as programmed.
- **GPIO Usage:** Connect external components to the GPIO pins according to your project's requirements. Refer to the ESP32-C3 datasheet and board schematics (available on GitHub) for pinout details.
- **Power Management:** The board can be powered via USB-C or the installed 16340 battery. The battery holder allows for portable and standalone applications.

## 6. MAINTENANCE

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To ensure the longevity and proper functioning of your LILYGO TTGO T-OI Plus development board, follow these maintenance guidelines:

- **Storage:** Store the board in a dry, anti-static environment when not in use. Avoid extreme temperatures.
- **Cleaning:** Use a soft, dry brush or compressed air to remove dust. Do not use liquid cleaners.
- **Handling:** Handle the board by its edges to avoid touching sensitive components, especially when powered.
- **Power Supply:** Always use a stable and appropriate power supply (5V via USB-C). Ensure the battery used is a compatible 16340 type.

## 7. TROUBLESHOOTING

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If you encounter issues with your T-OI Plus board, consider the following troubleshooting steps:

- **Board Not Powering On:**
  - Check the USB-C cable connection and ensure it's securely plugged into both the board and your computer/power source.
  - If using battery power, verify the 16340 battery is correctly inserted with the right polarity and is charged.
  - Try a different USB-C cable or USB port on your computer.
- **Computer Not Recognizing Board:**
  - Ensure necessary USB drivers for the ESP32-C3 are installed on your operating system. Refer to the GitHub repository for driver information.
  - Restart your computer and try reconnecting the board.
- **Code Upload Failure:**
  - Verify that the correct board and COM port are selected in your development environment (e.g., Arduino IDE).
  - Check for any error messages in the console of your development environment.
  - Ensure the board is in programming mode if required by your specific setup (usually automatic with ESP32 boards).

## 8. SPECIFICATIONS

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Feature	Detail
Main Control Chip	ESP32-C3 (RISC-V MCU)
Wireless Connectivity	Wi-Fi, Bluetooth 5 (BLE)

Feature	Detail
RAM	SRAM
Memory Storage Capacity	4 MB
Processor Speed	6E+1 MHz
Operating System (Supported)	Linux (and other compatible embedded OS)
Power Input	USB-C (5V), 16340 Battery
Dimensions (Board)	L: 47mm, W: 25.5mm (approximate, refer to Figure 5)
Dimensions (Battery Holder)	L: 44mm, W: 25.5mm, H: 20mm (approximate, refer to Figure 5)

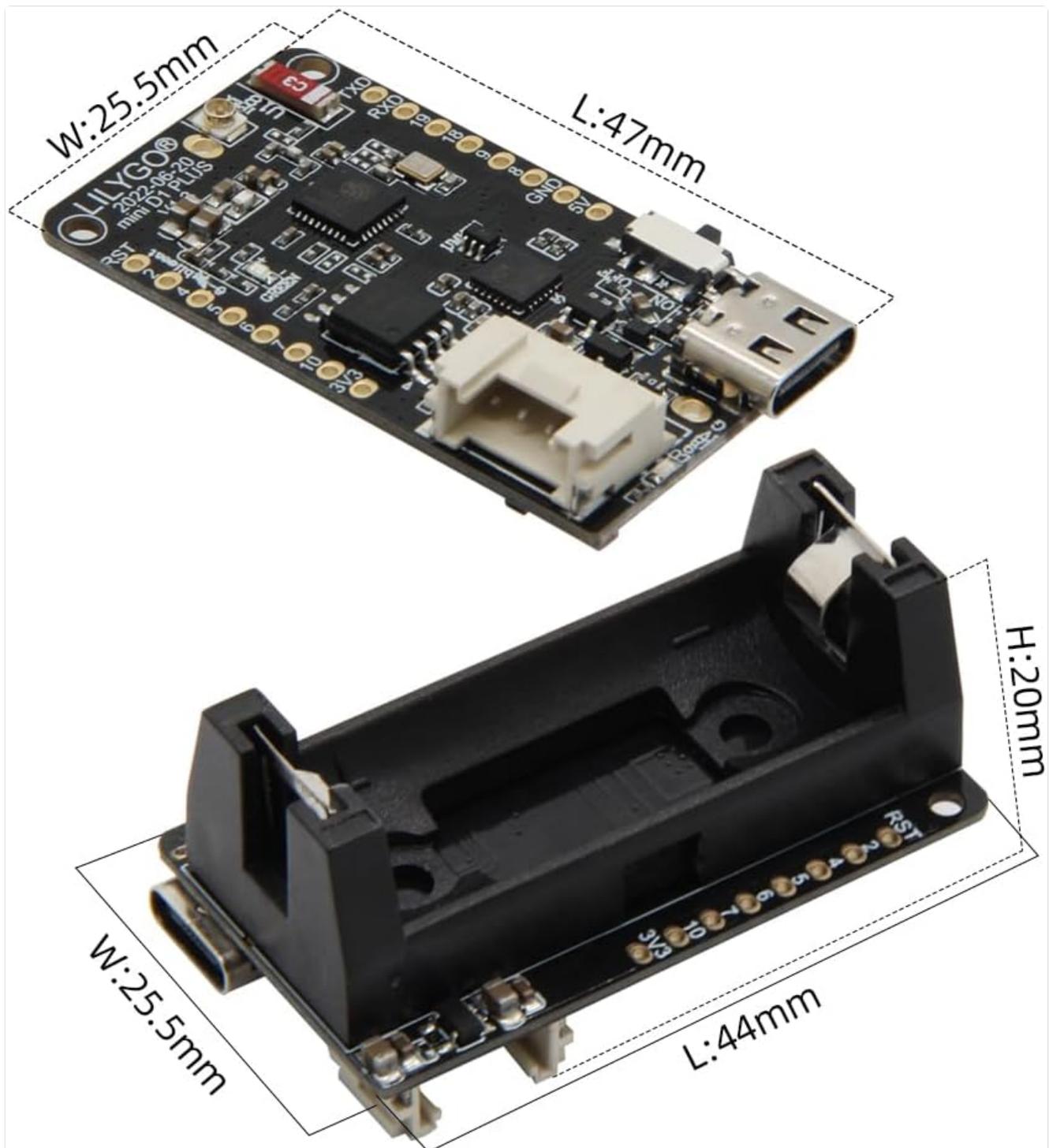


Figure 5: Approximate dimensions of the T-OI Plus board and its integrated battery holder.

## 9. WARRANTY AND SUPPORT

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LILYGO products are designed for reliability and performance. For any questions or suggestions regarding the LILYGO TTGO T-OI Plus, please feel free to contact LILYGO customer service. We are committed to providing prompt assistance.

Official GitHub Repository for technical documentation and community support: [github.com/Xinyuan-LilyGO/LilyGo-T-OI-PLUS](https://github.com/Xinyuan-LilyGO/LilyGo-T-OI-PLUS)