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LONELY BINARY ESP32-S3 IPEX (16MB + Antenna)

LONELY BINARY ESP32-S3 Development Board Gold Edition User Manual

Model: ESP32-S3 IPEX (16MB + Antenna)

1. PRODUCT OVERVIEW

The LONELY BINARY ESP32-S3 Development Board Gold Edition is a high-performance microcontroller board designed for advanced IoT, AI, and machine learning projects. It features a dual-core processor, 16MB Flash memory, and 8MB PSRAM, providing robust capabilities for complex applications. The board includes dual USB Type-C ports for power and data, and an external IPEX antenna for enhanced Wi-Fi and Bluetooth connectivity.

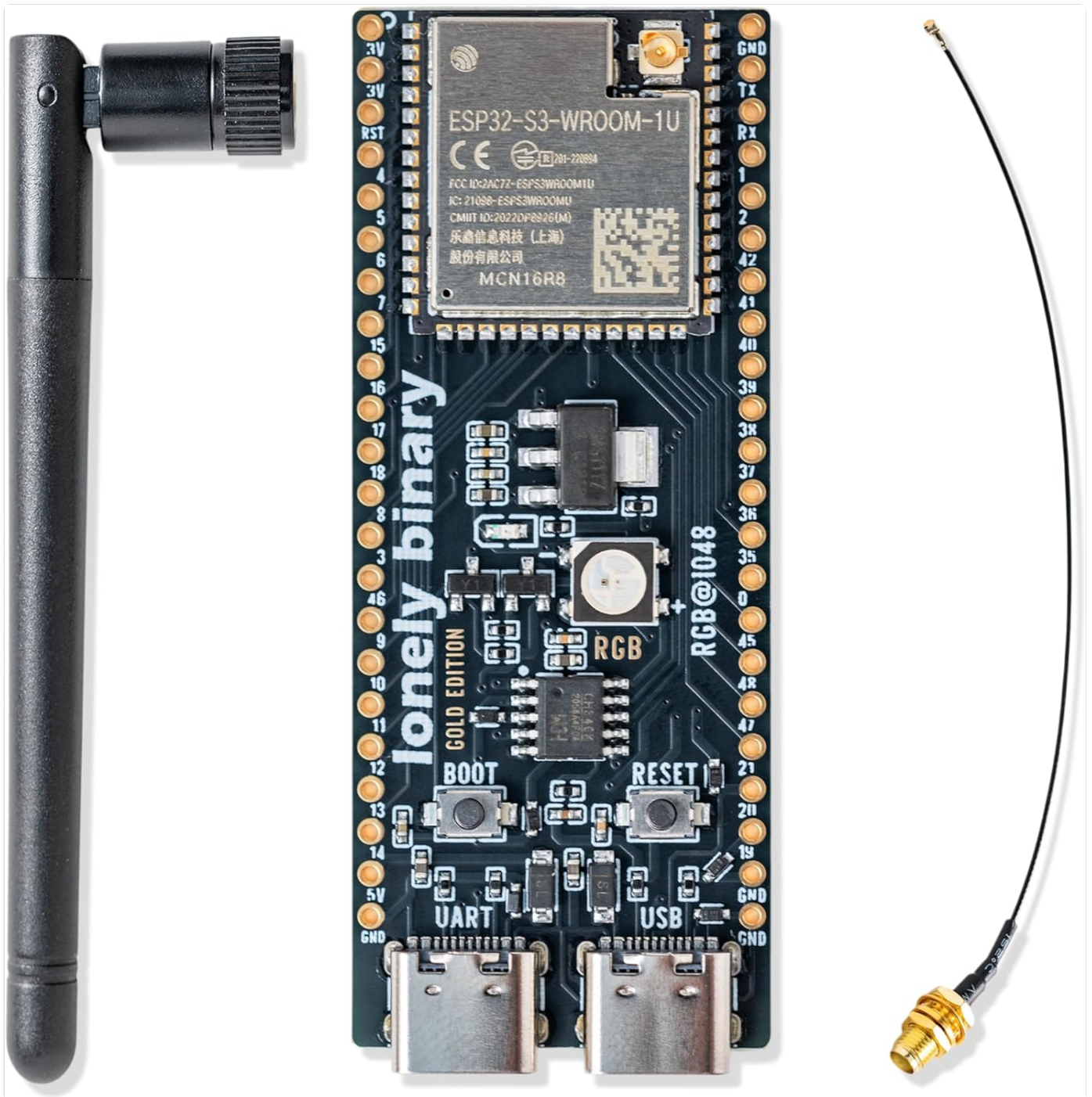


Image 1.1: The Lonely Binary ESP32-S3 Development Board Gold Edition with external antenna.

2. KEY FEATURES

- **Premium ESP32-S3 Performance:** Dual-core processor with 16MB Flash and 8MB PSRAM for advanced IoT, AI, and machine learning projects.
- **Superior WiFi and Bluetooth Range:** External IPEX antenna provides extended signal strength and reliability, outperforming built-in antennas for remote applications.
- **Premium Build Quality:** Features a Black Gold PCB with Lead-Free Finish and crisp silkscreen for enhanced durability and aesthetics.
- **Dual USB Type-C Ports:** Separate ports for power and data, ensuring compatibility with macOS, Windows, and Linux operating systems.
- **Flexible Prototyping Pins:** Includes 2x40-pin headers, compatible with breadboards and various sensors.
- **AI Acceleration Support:** Optimized for machine learning and real-time applications.

- **Open Platform Compatibility:** Works with MicroPython, ESP-IDF, and Arduino IDE, ideal for sensors, displays, and secure boot projects.

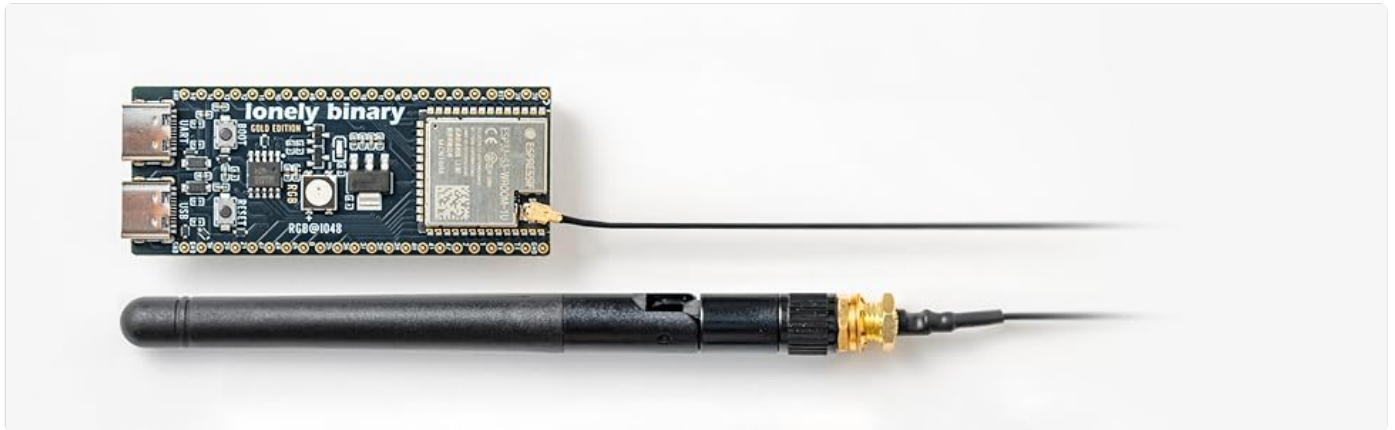


Image 2.1: Overview of the ESP32-S3 IPEX N16R8 Gold Edition's key features.

3. SETUP AND INSTALLATION

3.1. Unboxing and Initial Inspection

Carefully remove the ESP32-S3 development board and its components from the packaging. Inspect all items for any visible damage. Ensure all listed components are present.

Your browser does not support the video tag.

Video 3.1: An unboxing video of the Lonely Binary ESP32-S3 IPEX, demonstrating the contents and initial handling.

3.2. Attaching the External Antenna

The external IPEX antenna significantly improves Wi-Fi and Bluetooth range. Connect the antenna cable to the IPEX connector on the ESP32-S3 board. Gently screw the antenna onto the connector until secure, but do not overtighten.

External Antenna

Enhanced Wi-Fi & Bluetooth Signal

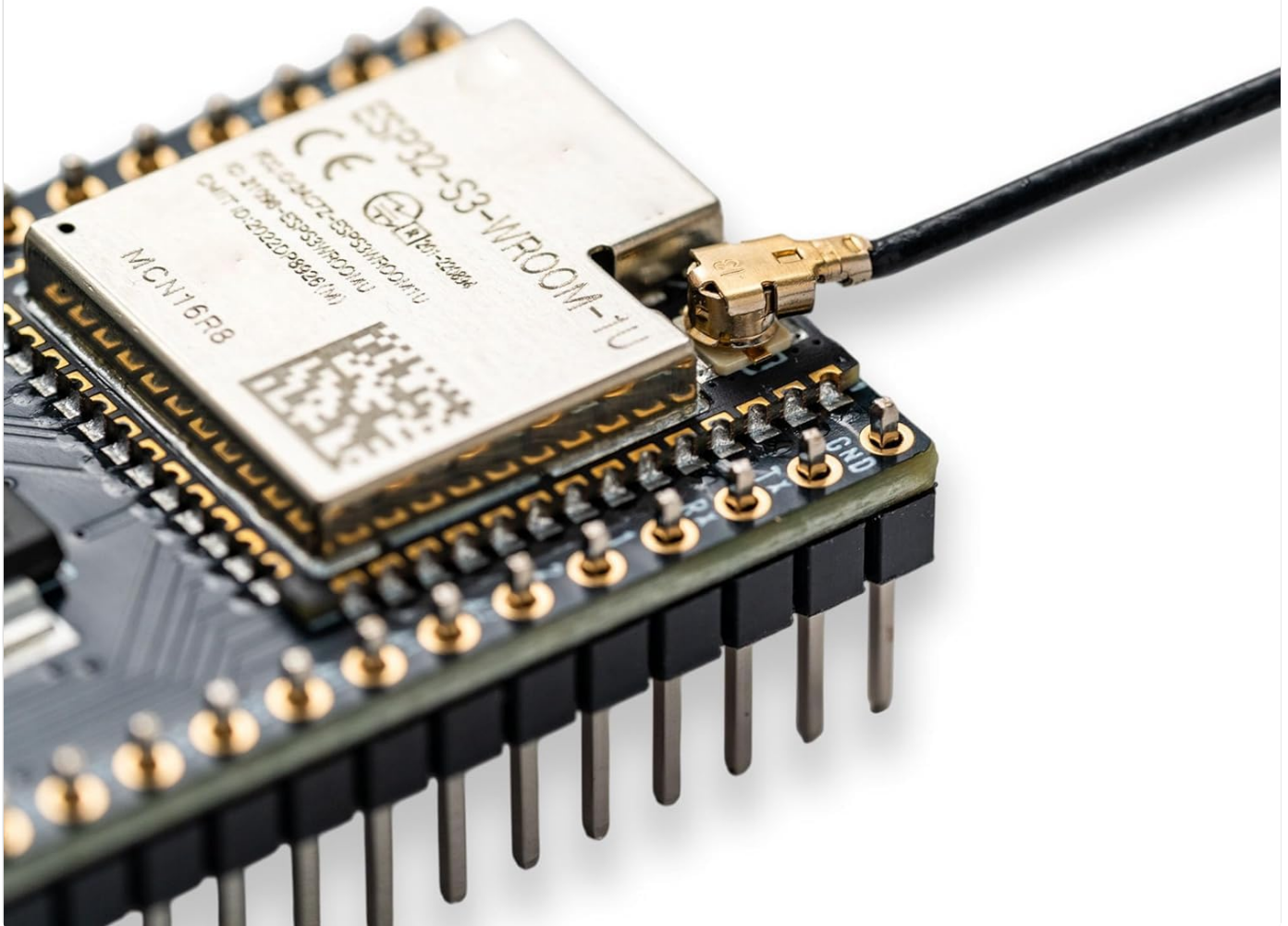
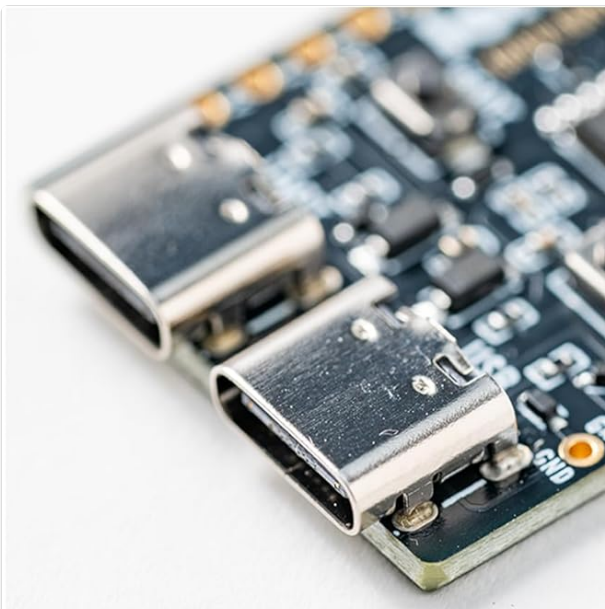


Image 3.2: Close-up view of the IPEX external antenna being connected to the ESP32-S3 development board.

3.3. Connecting to a Computer

Use a USB Type-C cable to connect the development board to your computer. The board features dual USB-C ports; either can be used for power and data. Ensure the necessary drivers are installed for your operating system (macOS, Windows, Linux). Refer to the official Espressif documentation or Lonely Binary's online tutorials for specific driver installation instructions.



ONLINE TUTORIAL

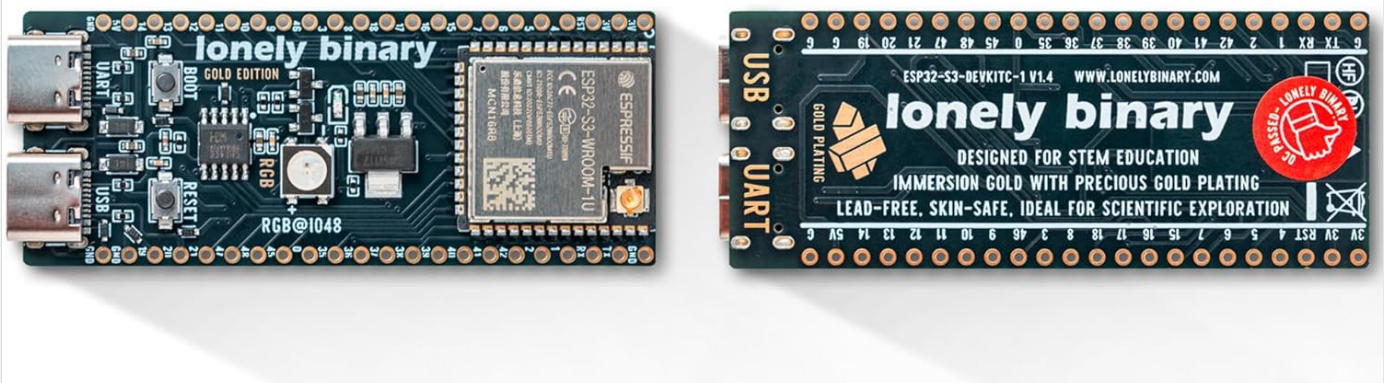


Image 3.3: The dual USB Type-C ports on the ESP32-S3 development board, used for power and data communication.

4. OPERATING INSTRUCTIONS

4.1. Development Environments

The ESP32-S3 board is compatible with several popular development environments:

- **Arduino IDE:** A user-friendly environment for beginners and experienced users. Install the ESP32 board package through the Boards Manager.
- **MicroPython:** A Python 3 implementation optimized for microcontrollers. Flash the MicroPython firmware to the board and use a serial terminal for interaction.
- **ESP-IDF (Espressif IoT Development Framework):** The official development framework from Espressif, offering comprehensive tools and libraries for advanced applications.

Detailed setup guides for each environment can be found on the [Lonely Binary website](#) or Espressif's official documentation.

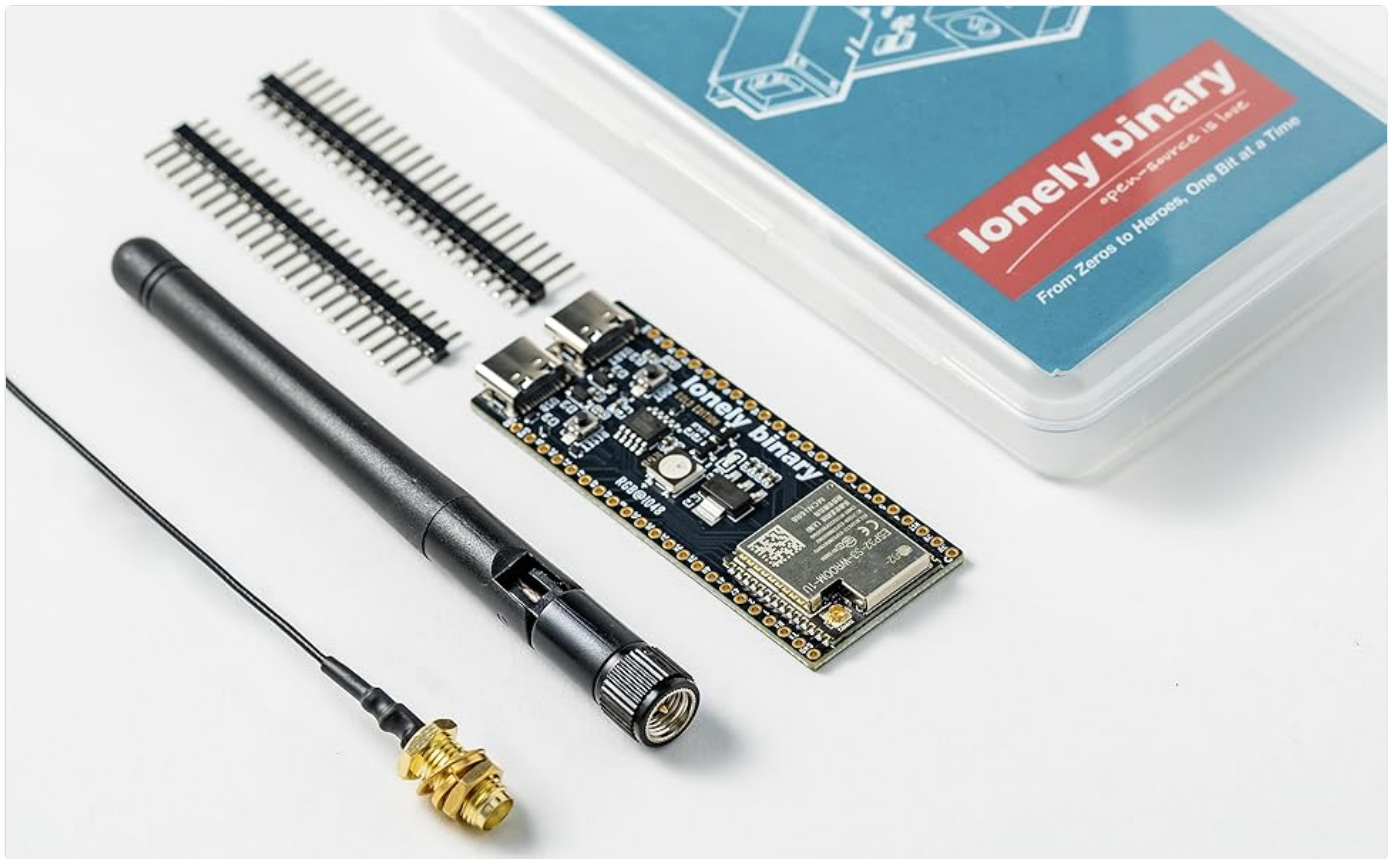


Image 4.1: Screenshot indicating the availability of online tutorials and resources for the ESP32-S3.

4.2. Pinout Diagram

Understanding the pinout is crucial for connecting sensors, actuators, and other peripherals. The board provides 2x40-pin headers for flexible prototyping.

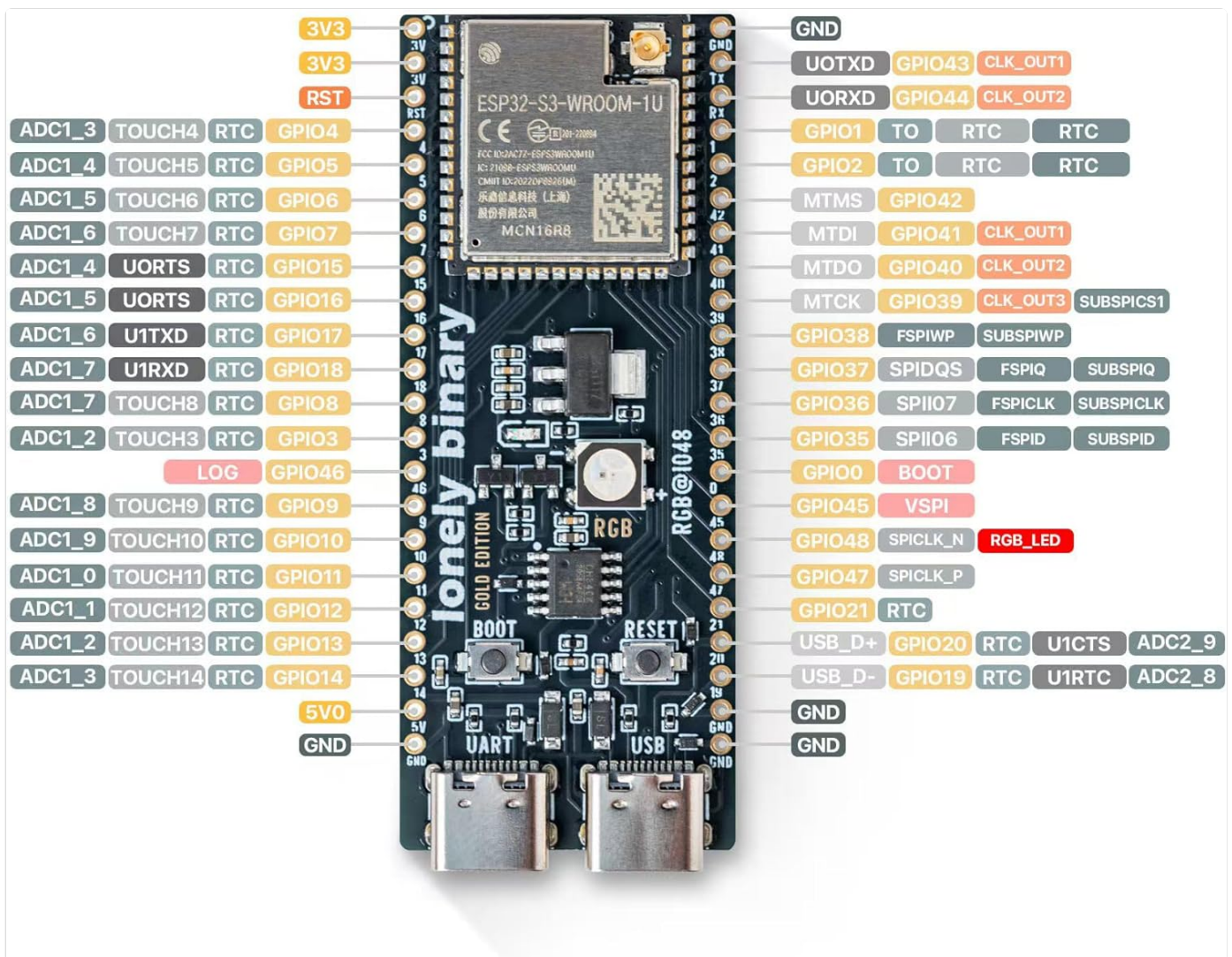


Image 4.2: Detailed pinout diagram of the Lonely Binary ESP32-S3 Development Board, showing GPIO assignments and power pins.

5. MAINTENANCE AND CARE

- Keep the board in a dry, static-free environment.
- Avoid exposing the board to extreme temperatures or humidity.
- Handle the board by its edges to prevent damage to components or static discharge.
- Ensure proper power supply (5V via USB-C) to prevent damage.
- The board features a lead-free finish, making it safer for handling and educational purposes.



Image 5.1: Illustration highlighting the lead-free PCB finish of the development board.

6. TROUBLESHOOTING

- **Board not recognized by computer:** Ensure USB-C cable is functional and drivers are correctly installed. Try a

different USB port or cable.

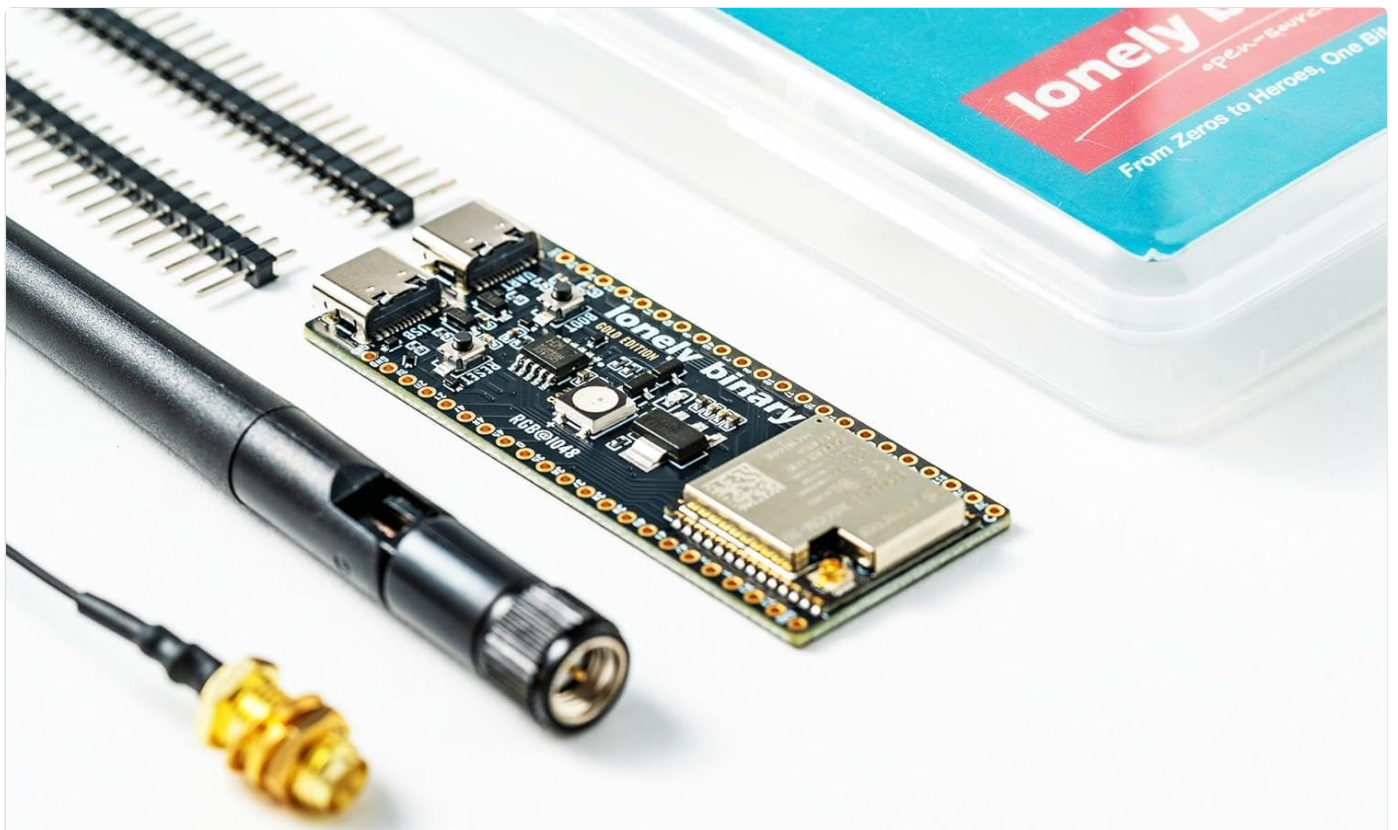
- **Wi-Fi/Bluetooth connectivity issues:** Verify the external IPEX antenna is securely connected. Check your code for correct Wi-Fi/Bluetooth configuration. Ensure the antenna is not obstructed.
- **RGB LED pin discrepancy:** Some documentation might incorrectly state the RGB LED is on GPIO38. The correct pin for the RGB LED is GPIO48. Adjust your code accordingly if experiencing issues with the onboard RGB LED.
- **Firmware upload failure:** Ensure the board is in bootloader mode (usually by holding the BOOT button while pressing and releasing RESET, then releasing BOOT). Check serial port selection in your IDE.

7. SPECIFICATIONS

Feature	Detail
Brand	LONELY BINARY
Model Name	ESP32-S3 IPEX (16MB +Antenna)- GOLD EDITION
Processor	ESP32-S3 Dual-Core E-300
Processor Speed	240 MHz
Flash Memory	16 MB
PSRAM	8 MB
Connectivity	Wi-Fi 802.11 b/g/n (2.4GHz), Bluetooth Classic & BLE, Dual USB Type-C
Antenna	1x IPEX External Antenna
Operating System Compatibility	Arduino IDE, MicroPython, Espressif IDF
Dimensions (L x W x H)	2.04"L x 1.3"W x 5.1"H
Weight	0.04 Kilograms
Mfr Part Number	LB-ESP32S3-GOLD-N16R8

8. WHAT'S IN THE BOX

- 1x Lonely Binary ESP32-S3 Development Board (16MB Flash, 8MB PSRAM)
- 1x IPEX External Antenna
- 2x40 Pin Headers
- 1x IPEX Lead (15cm)
- 1x Storage Container



Package Includes

- > Lonely Binary ESP32-S3 N16R8
- > 2.54mm Male Pins
- > External Antenna
- > IPEX Lead 15cm
- > Storage Container

Image 8.1: The complete package contents, including the ESP32-S3 board, external antenna, pin headers, IPEX lead, and storage container.

9. WARRANTY AND SUPPORT

9.1. Warranty Information

This product comes with a **1 Year Warranty** from the manufacturer, Lonely Binary. Please retain your proof of purchase for warranty claims.

9.2. Technical Support

For technical assistance, additional resources, or to report issues, please visit the official [Lonely Binary website](#). Online tutorials and community forums may also provide valuable support.

