Manuals+
Q & A | Deep Search | Upload

LILYGO SX1280 2.4G Without PA

LILYGO T3S3 ESP32-S3 LoRa Development Board User Manual

Model: SX1280 2.4G Without PA

1. Introduction

This manual provides essential information for the LILYGO T3S3 ESP32-S3 LoRa Development Board. This board integrates an ESP32-S3 microcontroller, a LoRa wireless module (SX1280 2.4G), and a 0.96 inch OLED display, making it suitable for various wireless communication and IoT projects, including Meshtastic applications. It supports Wi-Fi and Bluetooth 5.0 connectivity.

Figure 1: Front view of the LILYGO T3S3 ESP32-S3 LoRa Development Board, showing the integrated 0.96 inch OLED display.

Figure 2: Back view of the LILYGO T3S3 ESP32-S3 LoRa Development Board, highlighting the LoRa module and other components.

2. Product Components

The LILYGO T3S3 ESP32-S3 LoRa Development Board package typically includes the following items:

- 1 x LILYGO T3S3 ESP32-S3 LoRa Development Board
- 1 x Antenna (for LoRa communication)
- 1 x Power Cable
- 2 x Pin Headers

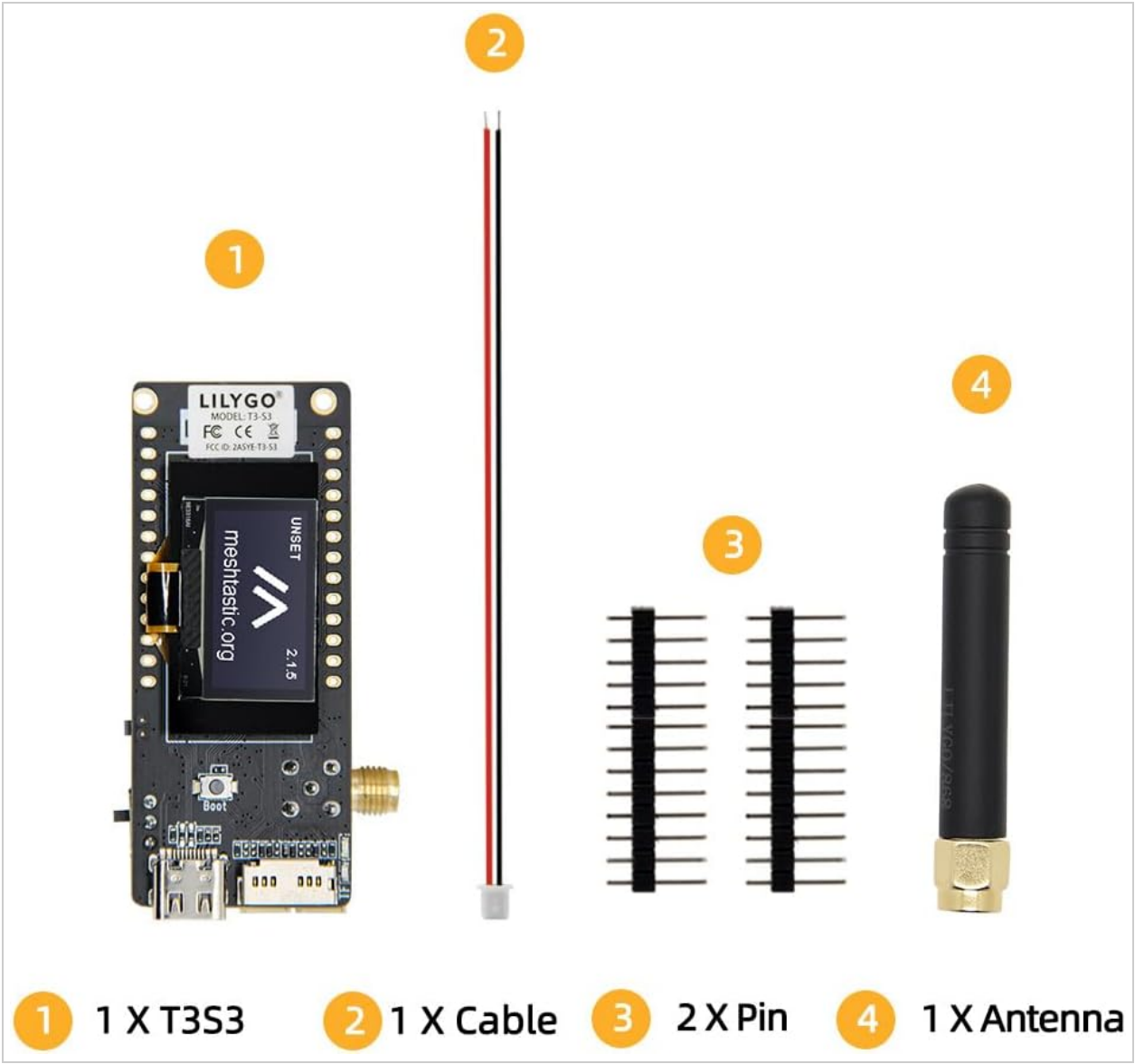

Figure 3: Contents of the LILYGO T3S3 ESP32-S3 LoRa Development Board package, showing the board, antenna, power cable, and pin headers.

3. Setup Instructions

Follow these steps to set up your LILYGO T3S3 development board:

1. **Attach the Antenna:** Carefully screw the provided LoRa antenna onto the SMA connector on the board. Ensure it is finger-tight to avoid damage.
2. **Power Connection:** Connect the board to a power source using the USB Type-C port. Alternatively, use the provided power cable for a 3.7V LiPo battery connection. The board supports USB/3.7V LiPo battery power supply.
3. **Initial Firmware:** The board may come with pre-installed firmware (e.g., Meshtastic). To install or update firmware, refer to the official LILYGO Wiki or GitHub repository for detailed instructions and tools. A common method involves using the ESP-IDF or Arduino IDE.
4. **TF Card Insertion (Optional):** If your application requires external storage, insert a compatible TF card into the designated slot on the board.
5. **Pin Headers (Optional):** Attach the included pin headers if you plan to integrate the board into a breadboard or custom circuit. Refer to the pinout diagram for correct connections.

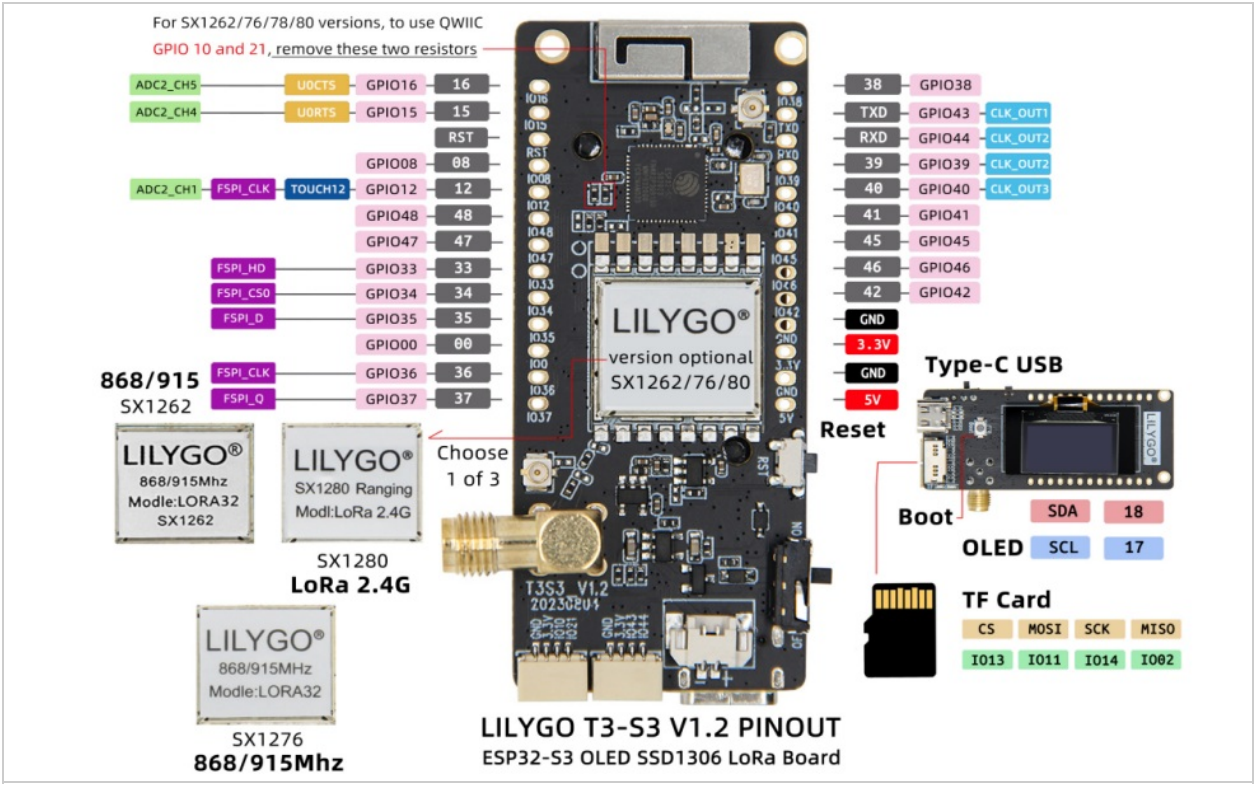

Figure 4: Detailed pinout diagram for the LILYGO T3S3 ESP32-S3 LoRa Development Board, showing GPIO assignments and component locations.

4. Operating Instructions

Once the board is set up and firmware is loaded, you can begin operation:

- **Power On:** Connect the board to a power source. The OLED display should illuminate, showing information based on the loaded firmware (e.g., network status, messages for Meshtastic).
- **OLED Display:** The 0.96 inch SSD1306 OLED display provides visual feedback. Its resolution is 128x64, and it uses an I2C interface (SDA-IO18, SCL-IO17).
- **Wireless Communication:** Utilize the integrated Wi-Fi and Bluetooth 5.0 for local network connectivity or device pairing. The LoRa module (SX1280 2.4G) enables long-range, low-power communication.
- **Reset and Boot Buttons:** The board features a Reset button to restart the microcontroller and a Boot button, typically used for entering bootloader mode during firmware flashing.
- **Software Interaction:** Interact with the board through its serial interface (via USB) or wirelessly, depending on the firmware's capabilities. For Meshtastic, a mobile application or web interface is commonly used.

5. Maintenance

Proper maintenance ensures the longevity and reliable operation of your development board:

- **Keep Dry:** Protect the board from moisture and humidity.
- **Clean Gently:** Use a soft, dry brush or compressed air to remove dust. Avoid liquid cleaners.
- **Firmware Updates:** Regularly check the official LILYGO GitHub repository (github.com/Xinyuan-LilyGO/LilyGo-LoRa-Series) for firmware updates and security patches.
- **Antenna Care:** Ensure the antenna is securely connected but do not overtighten. Avoid bending or

damaging the antenna.

6. Troubleshooting

If you encounter issues with your LILYGO T3S3 board, consider the following:

- **Board Not Powering On:**
  - Verify the USB cable is properly connected to a working power source.
  - If using a LiPo battery, ensure it is charged and correctly connected to the battery switch.
- **OLED Display Blank:**
  - Check power supply.
  - Ensure firmware is correctly loaded and configured to initialize the OLED.
- **No Wireless Connectivity (Wi-Fi/Bluetooth/LoRa):**
  - Confirm the antenna is attached correctly for LoRa.
  - Verify that the firmware includes the necessary drivers and configurations for the wireless modules.
  - Check for local interference.
- **Firmware Upload Issues:**
  - Ensure correct drivers for the USB-to-serial chip are installed on your computer.
  - Press and hold the **Boot** button while pressing and releasing the **Reset** button, then release **Boot** to enter flashing mode.
  - Consult the LILYGO Wiki (wiki.lilygo.cc) or GitHub for specific flashing instructions for your operating system and development environment.

7. Specifications

Detailed technical specifications for the LILYGO T3S3 ESP32-S3 LoRa Development Board (SX1280 2.4G Without PA):

Feature	Specification
Processor	ESP32-S3FH4R2 (Dual-core Xtensa LX7)
Flash Memory	4MB
PSRAM	2MB
Wireless Protocols	Wi-Fi (802.11 b/g/n), Bluetooth 5.0 (LE)
LoRa Transceiver	SX1280 (2.4 GHz)
LoRa TX Power	+13dBm
OLED Display	0.96 inch SSD1306, 128x64 pixels, I2C (SDA-IO18, SCL-IO17)
Onboard Functions	Reset Button, Boot Button, TF Card Support

Feature	Specification
Power Supply	USB Type-C, 3.7V LiPo battery (with battery switch)
Operating System	FreeRTOS (typical)
Dimensions (LxWxH)	3.45 x 2.6 x 1.06 inches (approx. 87.6 x 66 x 26.9 mm)

Figure 5: Comprehensive technical specifications for the LILYGO T3S3 series, highlighting the SX1280 2.4G module details.

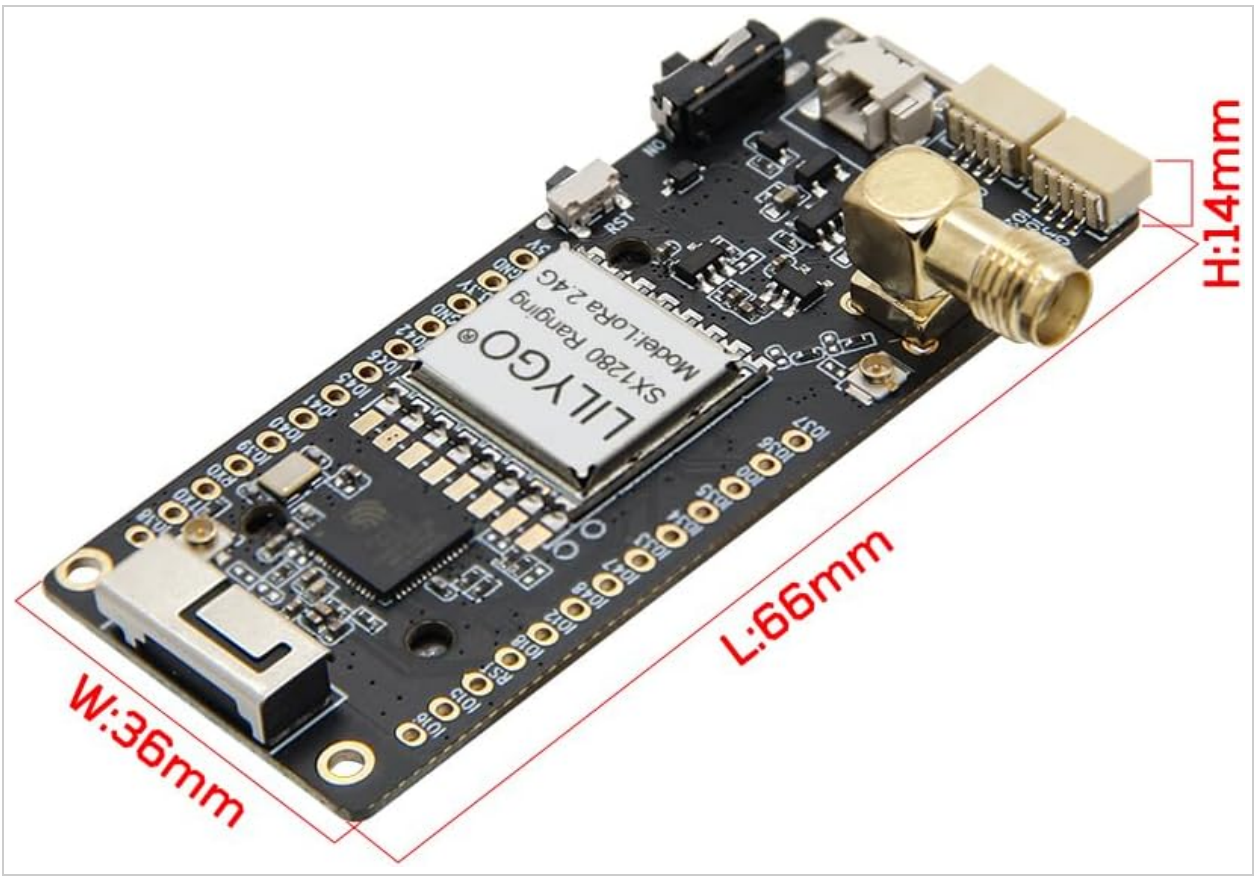

Figure 6: Physical dimensions of the LILYGO T3S3 ESP32-S3 LoRa Development Board.

8. Support and Warranty

For any questions or suggestions regarding the LILYGO T3S3 ESP32-S3 LoRa Development Board, please contact LILYGO customer service. Detailed technical support and community resources can be found on the official LILYGO Wiki and GitHub pages:

- **Official Wiki:** wiki.lilygo.cc
- **GitHub Repository:** github.com/Xinyuan-LilyGO/LilyGo-LoRa-Series

Specific warranty information is not provided in the product details. Please refer to your point of purchase or contact LILYGO directly for warranty terms and conditions.

© 2023 LILYGO. All rights reserved.