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› LILYGO T-SIM7600NA ESP32 4G LTE Cat4 GPS Development Board User Manual

LILYGO T-SIM7600NA

LILYGO T-SIM7600NA ESP32 4G LTE Cat4 GPS Development Board

USER MANUAL

Model: T-SIM7600NA

1. INTRODUCTION

This manual provides essential information for setting up, operating, and maintaining your LILYGO T-SIM7600NA ESP32 4G LTE Cat4 GPS Development Board. This versatile board integrates an ESP32 microcontroller with a SIM7600NA 4G LTE Cat4 module and GPS capabilities, making it ideal for IoT projects requiring cellular connectivity and location tracking. It also features 4MB LPDDR RAM and a USB interface for easy development.

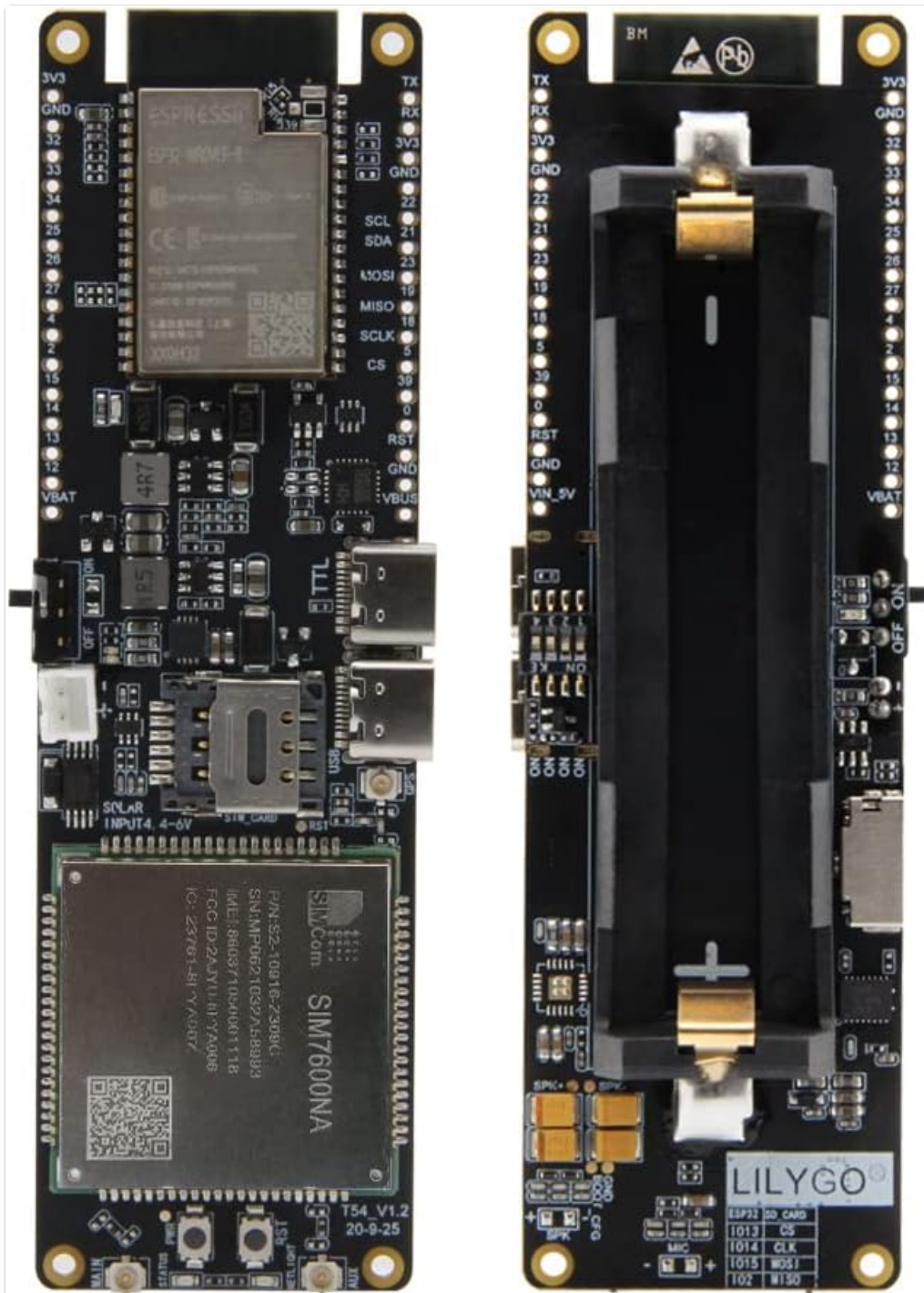


Figure 1: Front and back view of the LILYGO T-SIM7600NA board, showing the ESP32 module, SIM7600NA module, and various connectors.

2. SETUP

2.1 Unboxing and Components

Verify that your package contains the following items:

- LILYGO T-SIM7600NA Development Board
- USB Cable
- Antennas (LTE and GPS, if included in your specific kit)
- Pin Headers (if included)



Figure 2: The LILYGO T-SIM7600NA board along with its typical accessories, including LTE and GPS antennas and pin headers.

2.2 Initial Power-Up via USB

Connect the provided USB cable to the board's USB port and to your computer. The board should power on, and your computer may attempt to install drivers. The USB connection provides power and allows for programming and serial communication.

2.3 SIM Card Installation

Locate the SIM card slot on the board. Gently insert a Nano-SIM card into the slot, ensuring the correct orientation, until it clicks into place. The SIM card is essential for 4G LTE connectivity.

2.4 SD Card Installation

The board includes a MicroSD card slot for additional storage. Insert a MicroSD card into the slot. **Important:** When an SD card is inserted, you cannot upload software using the Arduino IDE because the SD card uses IO2 as its Chip Select (CS) pin. The SD card must be removed when uploading a new sketch to the ESP32.

2.5 Battery Connection

The board supports external battery power. Connect a compatible 18650 Li-ion battery to the integrated battery holder. Observe polarity carefully. The on/off switch on the board is for battery use only; it will not function when the board is plugged into USB power.



Figure 3: Top view of the board highlighting the 18650 battery holder and surrounding components.



Figure 4: Angled view of the board, illustrating the battery holder and the physical on/off switch.

2.6 Solar Panel Connection

The board can be powered or charged via a solar panel. Recommended solar panels are 4.4V to 6V **DO NOT EXCEED 6V**, as exceeding this voltage may damage the board.



Figure 5: Angled view of the board, showing the SIM7600NA module, USB-C port, and other connectivity options.

3. OPERATING INSTRUCTIONS

3.1 Software Development Environment

The LILYGO T-SIM7600NA board is compatible with the Arduino IDE and other ESP32 development environments. Ensure you have the ESP32 board definitions installed in your chosen IDE.

3.2 Uploading Sketches

To upload a new program (sketch) to the ESP32, connect the board via USB. If you have an SD card inserted, you must remove it before uploading, as it shares the IO2 pin used for programming. After uploading, you can reinsert the SD card.

3.3 4G LTE Connectivity

Utilize the SIM7600NA module for cellular data communication. Refer to the official LILYGO GitHub repository for example code and libraries to interface with the SIM7600NA for sending/receiving data, SMS, and making calls.

3.4 GPS Functionality

The integrated GPS module allows for location tracking. Connect the GPS antenna (if not already connected) and use appropriate libraries to acquire GPS data such as latitude, longitude, and altitude.

3.5 Accessing Resources

For detailed technical documentation, example code, and community support, visit the official LILYGO GitHub repository:

github.com/Xinyuan-LilyGO/LilyGO-T-SIM7600X

4. MAINTENANCE

4.1 General Care

Keep the development board in a clean, dry environment. Avoid exposure to moisture, extreme temperatures, and static electricity. Handle the board by its edges to prevent damage to components.

4.2 Cleaning

If necessary, gently clean the board with a soft, dry brush or compressed air to remove dust. Do not use liquid cleaners.

4.3 Firmware Updates

Regularly check the official LILYGO GitHub repository for firmware updates or new libraries that may improve performance or add features.

5. TROUBLESHOOTING

- **On/Off Switch Not Working:** The on/off switch is only active when the board is powered by a battery. It has no effect when the board is connected via USB.
- **Cannot Read Battery Voltage:** When the board is plugged into USB, the onboard BAT ADC (pin 35) cannot accurately read the battery voltage. Disconnect USB to read battery voltage via the ADC.
- **Software Upload Fails:** If you are unable to upload a sketch, ensure that any MicroSD card is removed from its slot. The SD card uses IO2, which is also used during the upload process.
- **Board Damage from Solar Panel:** Ensure that any connected solar panel's output voltage does not exceed 6V. Voltages above this limit can permanently damage the board. Recommended range is 4.4V to 6V.
- **No 4G LTE or GPS Signal:** Verify that the correct antennas are securely connected to their respective U.FL connectors. Ensure your SIM card is properly inserted and activated with a data plan.

6. SPECIFICATIONS

Feature	Detail
Manufacturer	LILYGO
Model Name	T-SIM7600NA
Processor	Espressif ESP32 (1 processor count)
RAM Memory	4 MB LPDDR
Connectivity Technology	USB, 4G LTE Cat4, GPS
Operating System (Compatible)	Linux (for development environments)
Included Components	USB cable
Compatible Devices	Arduino boards, microcontrollers, IoT devices
Solar Panel Input	4.4V to 6V (Do not exceed 6V)

7. WARRANTY AND SUPPORT

7.1 Warranty Information

For specific warranty details, please refer to the purchase documentation or contact your retailer. LILYGO products typically come with a standard manufacturer's warranty covering defects in materials and workmanship.

7.2 Technical Support

For technical assistance, documentation, and community forums, please visit the official LILYGO website or their GitHub repository:

- **LILYGO Store:** [Visit the LILYGO Store on Amazon](#)
- **GitHub Repository:** github.com/Xinyuan-LilyGO/LilyGO-T-SIM7600X

When seeking support, provide your product model (T-SIM7600NA) and a detailed description of the issue.

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