

T3-S3 V1.3

User Guide

LILYGO®

Version 1.0

Copyright © 2025

About This Guide

This document is intended to help users set up the basic software development environment for developing applications using hardware based on the **T3-S3 V1.3**. Through a simple example, this document illustrates how to use **Arduino**, including the menu based configuration wizard, compiling the **Arduino** and firmware download to the **ESP32-S3** module.

Release Notes

Date	Version	Release notes
2025.11	V1.0	First release.

1. Introduction

1.1. T3-S3 V1.3

T3-S3 V1.3 is a development board. It can work independently.

It consists of ESP32-S3 MCU supporting Wi-Fi + BLE communication protocol and motherboard PCB.

And this product has LoRa function. LoRa chip is SX1262. OLED is 0.96 inch SSD1306
For applications ranging from low-power sensor networks to the most demanding tasks.

ESP32-S3 integrates Wi-Fi (2.4 GHz band) and Bluetooth 5.0 solutions on a single chip, along with dual high performance cores and many other versatile peripherals. ESP32-S3 provides a robust, highly integrated platform to meet the continuous demands for efficient power usage, compact design, security.

Xinyuan provides the basic hardware and software resources that empowers application developers to build their ideas around the ESP32-S3 series hardware. The software development framework provided by Xinyuan is intended for rapidly developing Internet-of-Things (IoT) applications, with Wi-Fi, Bluetooth, flexible power management and other advanced system features.

The manufacturer is Shenzhen Xin Yuan Electronic Technology Co., Ltd.

1.2. Arduino

A set of cross-platform applications written in Java. The Arduino Software IDE is derived from the Processing programming language and the integrated development environment of the Wiring program. Users can develop applications in Windows/Linux/MacOS based on **Arduino**. It is recommended to use **Windows 10**. Windows OS has been used as an example in this document for illustration purposes.

1.3. Preparation

To develop applications for ESP32-S3 you need:

- PC loaded with either Windows, Linux or Mac operating system
- Toolchain to build the Application for ESP32-S3
- Arduino that essentially contains API for ESP32-S3 and scripts to operate the Toolchain
- CH9102 serial port driver
- The ESP32-S3 board itself and a USB cable to connect it to the PC

2.

Get Started

2.1. Download the Arduino Software

The quickest how to install the Arduino Software (IDE) on Windows machines

2.1.1. Quick Start Guide

The website provides a quick start tutorial

- Windows:

<https://www.arduino.cc/en/Guide/Windows>

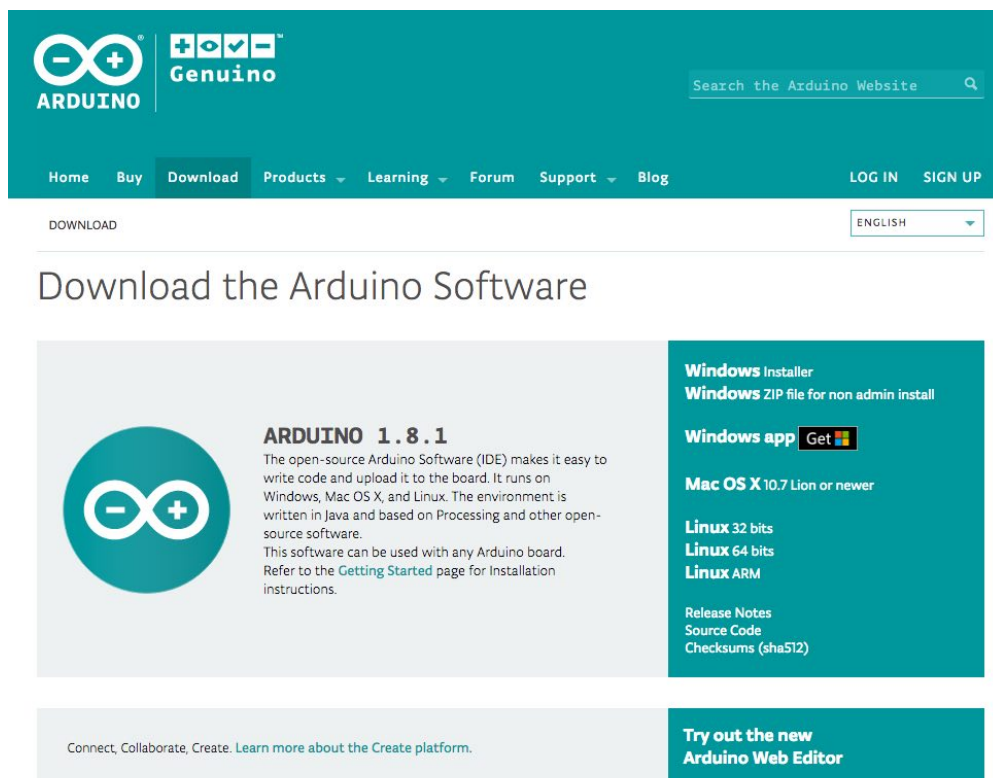
- Linux:

<https://www.arduino.cc/en/Guide/Linux>

- Mac OS X:

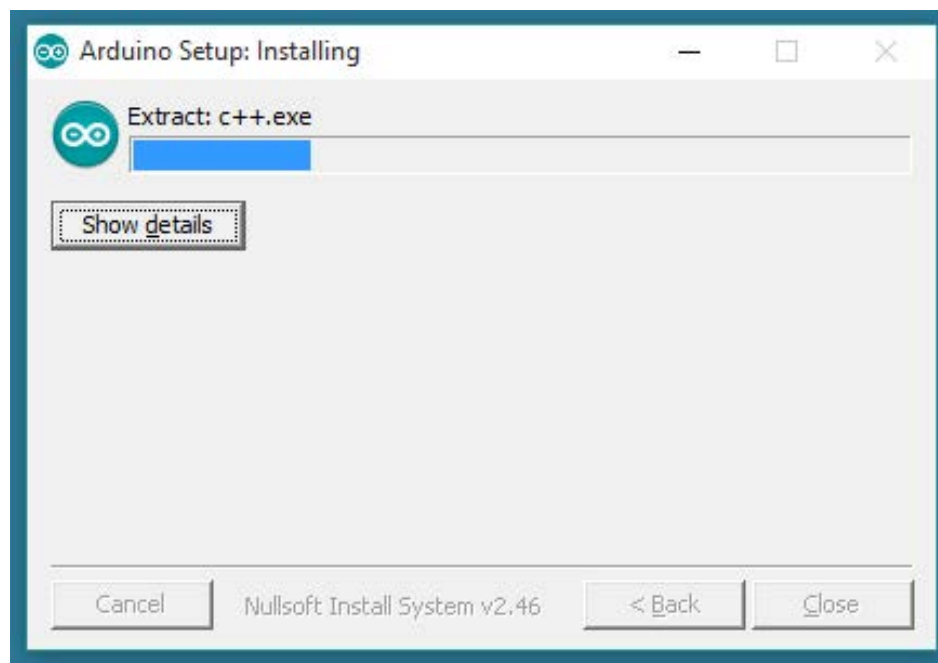
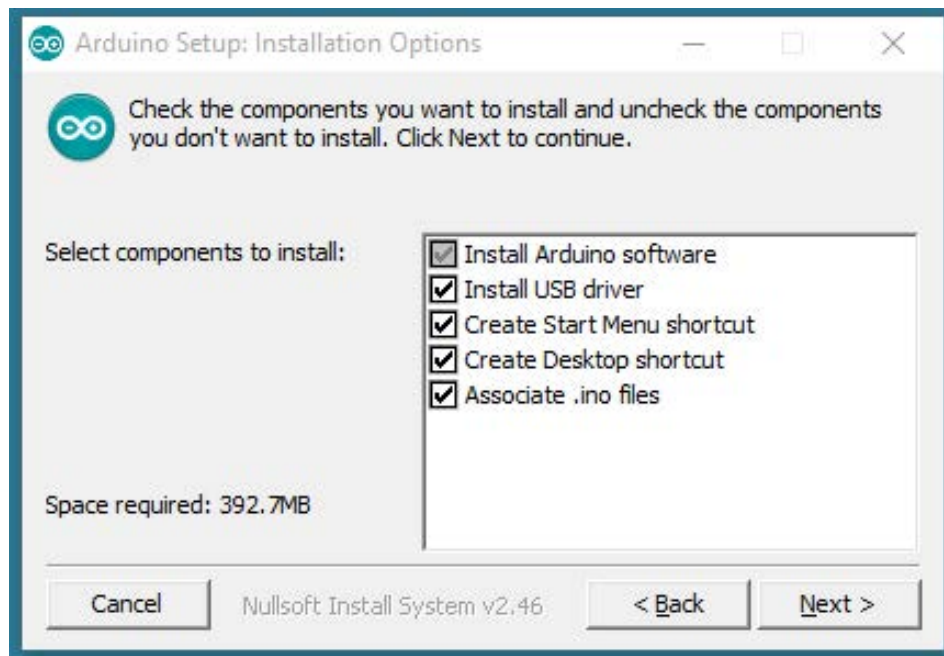
<https://www.arduino.cc/en/Guide/MacOSX>

2.1.2. Installation steps for Windows platform Arduino



Enter the download interface, select **Windows installer** to install directly

2.2. Install the Arduino Software

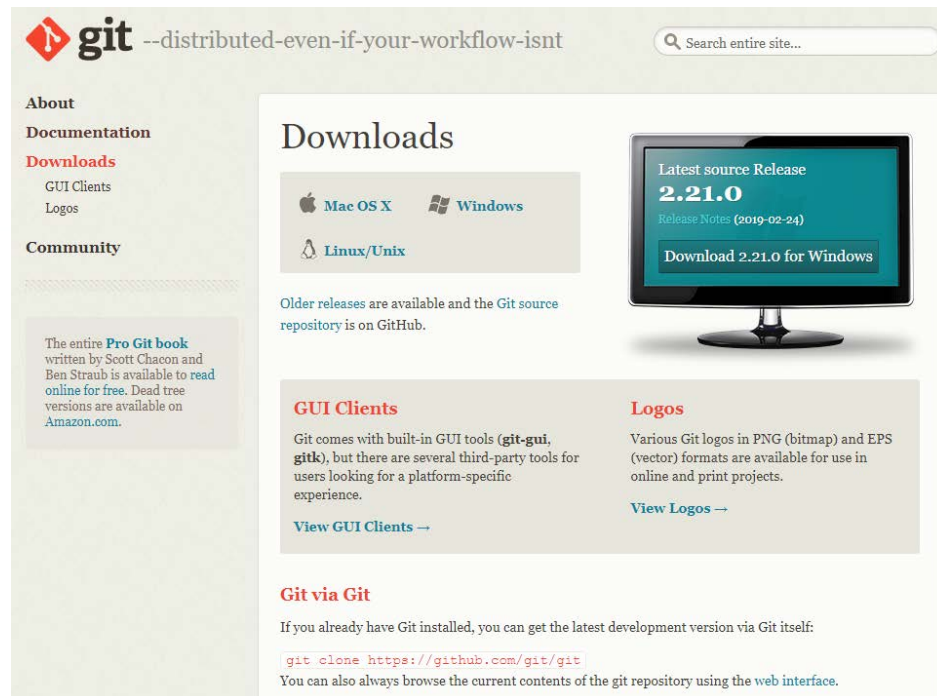


Wait for installation

3. Configure

3.1. Download Git

Download the installation package Git.exe



3.2. Pre-build configuration

Click Arduino icon, then right click and select ``Open folder where ``

Select hardware ->

Mouse ** Right click ** ->

Click Git Bash Here

3.3. Cloning a remote repository

```
✦ mkdir espressif
```

```
✦ cd espressif
```

```
✦ git clone --recursive https://github.com/espressif/arduino-esp32.git esp32
```

4.

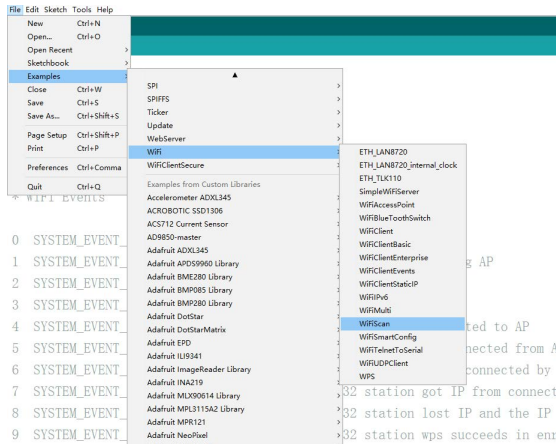
Connect

You are almost there. To be able to proceed further, connect ESP32-S3 board to PC, check under what serial port the board is visible and verify if serial communication works.

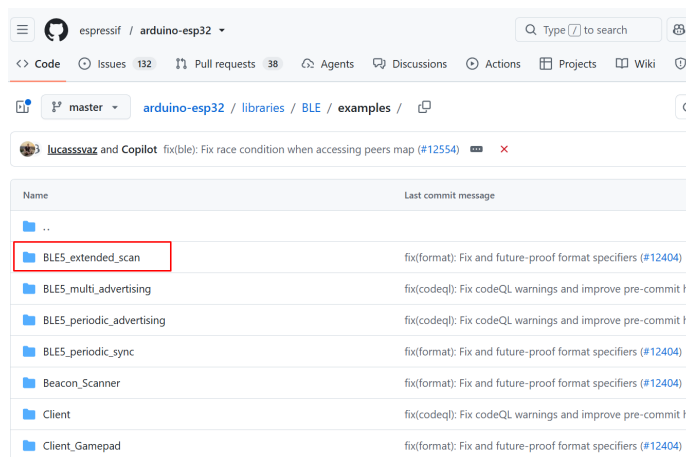
5.

Test Demo

1.Wi-Fi Demo： Select File>>Example>>WiFi>>WiFiScan

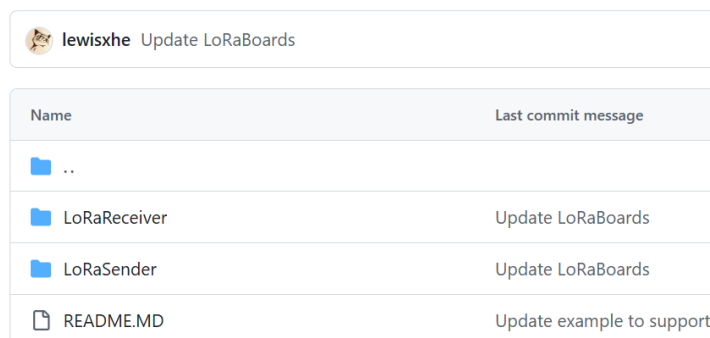


2. BLE Demo： <https://github.com/espressif/arduino-esp32/tree/master/libraries/BLE/examples>



3. LoRa Demo： <https://github.com/Xinyuan-LilyGO/LilyGo-LoRa-Series/tree/master/examples/ArduinoLoRa>

[LilyGo-LoRa-Series](#) / [examples](#) / [ArduinoLoRa](#) /



6.

Upload Sketch

6.1. Select Board

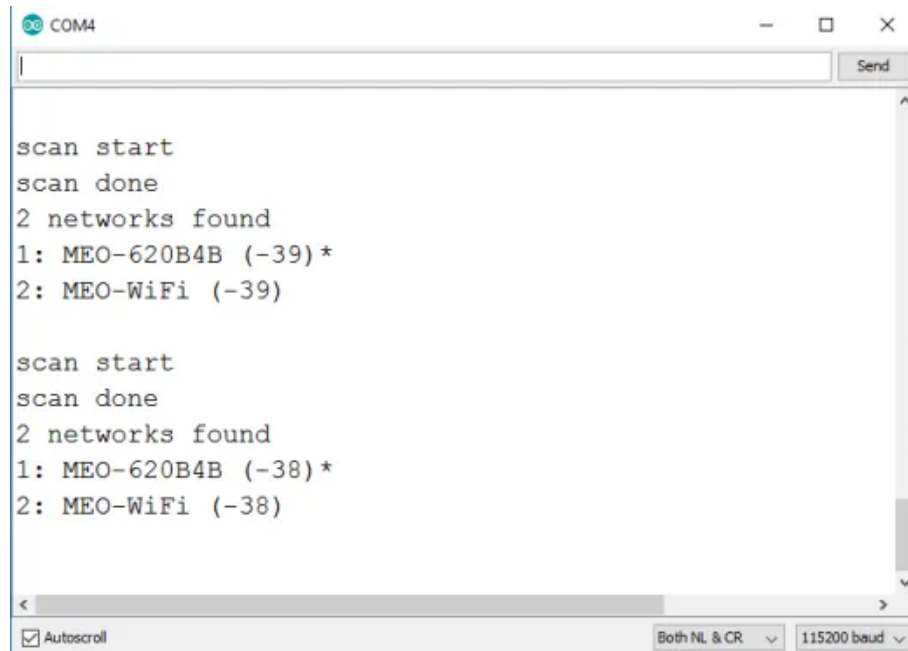
Tools<<Board<<ESP32S3 Dev Module

6.2. Upload

Sketch << Upload

6.3. Serial Monitor

Tools << Serial Monitor



7. SSC Command Reference

Here lists some common Wi-Fi commands for you to test the module.

7.1. op

Description

op commands are used to set and query the Wi-Fi mode of the system.

Example

```
op -Q
op -S -o wmode
```

Parameter

Table 6-1. op Command Parameter

Parameter	Description
-Q	Query Wi-Fi mode.
-S	Set Wi-Fi mode.
wmode	There are 3 Wi-Fi modes: - mode = 1: STA mode - mode = 2: AP mode - mode = 3: STA+AP mode

7.2. sta

Description

sta commands are used to scan the STA network interface, connect or disconnect AP, and query the connecting status of STA network interface.

Example

```
sta -S [-s ssid] [-b bssid] [-n channel] [-h]
sta -Q
sta -C [-s ssid] [-p password]
sta -D
```

Parameter

Table 6-2. sta Command Parameter

Parameter	Description
-S scan	Scan Access Points.

Parameter	Description
-s ssid	Scan or connect Access Points with the ssid.
-b bssid	Scan the Access Points with the bssid.
-n channel	Scan the channel.
-h	Show scan results with hidden ssid Access Points.
-Q	Show STA connect status.
-D	Disconnected with current Access Points.

7.3. ap

Description

ap commands are used to set the parameter of AP network interface.

Example

```
ap -S [-s ssid] [-p password] [-t encrypt] [-n channel] [-h] [-m max_sta]
ap -Q
ap -L
```

Parameter

Table 6-3. ap Command Parameter

Parameter	Description
-S	Set AP mode.
-s ssid	Set AP ssid.
-p password	Set AP password.
-t encrypt	Set AP encrypt mode.
-h	Hide ssid.
-m max_sta	Set AP max connections.
-Q	Show AP parameters.
-L	Show MAC Address and IP Address of the connected station.

7.4. mac

Description

mac commands are used to query the MAC address of the network interface.

Example

```
mac -Q [-o mode]
```

Parameter

Table 6-4. mac Command Parameter

Parameter	Description
-Q	Show MAC address.
-o mode	- mode = 1: MAC address in STA mode. - mode = 2: MAC address in AP mode.

7.5. dhcp

Description

dhcp commands are used to enable or disable dhcp server/client.

Example

```
dchp -S [-o mode]
dhcp -E [-o mode]
dhcp -Q [-o mode]
```

Parameter

Table 6-5. dhcp Command Parameter

Parameter	Description
-S	Start DHCP (Client/Server).
-E	End DHCP (Client/Server).
-Q	show DHCP status.
-o mode	- mode = 1 : DHCP client of STA interface. - mode = 2 : DHCP server of AP interface. - mode = 3 : both.

7.6. ip

Description

ip command are used to set and query the IP address of the network interface.

Example

```
ip -Q [-o mode]
ip -S [-i ip] [-o mode] [-m mask] [-g gateway]
```

Parameter

Table 6-6. ip Command Parameter

Parameter	Description
-Q	Show IP address.
-o mode	- mode = 1 : IP address of interface STA. - mode = 2 : IP address of interface AP. - mode = 3 : both
-S	Set IP address.
-i ip	IP address.
-m mask	Subnet address mask.
-g gateway	Default gateway.

7.7. reboot

Description

reboot command is used to reboot the board.

Example

```
reboot
```

7.8. ram

ram command is used to query the size of the remaining heap in the system.

Example

```
ram
```