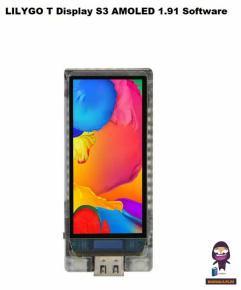

LILYGO T Display S3 AMOLED 1.91 Software User Guide

Contents

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LILYGO T Display S3 AMOLED 1.91 Software

Product Information

- **Specifications:**
  - **Product Name:** T-Display-S3 AMOLED 1.91
  - **Display Type:** AMOLED
  - **Display Size:** 1.91 inches
  - **Microcontroller:** ESP32-S3
  - **Software Development Environment:** Arduino
  - **Release Date:** November 2023
  - **Version:** V1.0

Product Usage Instructions

- **Introduction**

    - The T-Display-S3 AMOLED 1.91 is a hardware platform for developing apps using Arduino. This guide helps users set up the software development environment.
- **Get Started**
    - Begin by setting up the basic software development environment for T-Display-S3 AMOLED 1.91.
- **Configure**
    - Follow the menu-based configuration wizard to configure the Arduino for development.
- **Connect**
    - Connect the T-Display-S3 AMOLED 1.91 hardware to your development environment.
- **Test Demo**
    - Run a test demo to ensure the hardware and software setup is working correctly.
- **Upload Sketch**
    - Compile the Arduino sketch and upload it to the ESP32-S3 module.
- **Build and Flash**
    - Build the sketch and flash it onto the ESP32-S3 module.
- **Monitor**
    - Monitor the execution of the uploaded sketch for debugging and testing purposes.
- **SSC Command Reference**
    - Reference guide for various SSC commands used with T-Display-S3 AMOLED 1.91.
- **op**
    - Description of the ‘op’ command.

FAQs

- **Q: What is the purpose of the T-Display-S3 AMOLED 1.91?**
    - **A:** The T-Display-S3 AMOLED 1.91 is a hardware platform for developing apps using Arduino and ESP32-S3 microcontrollers.
- **Q: How do I update the firmware on the ESP32-S3 module?**
    - **A:** Follow the instructions in the user manual to compile the firmware on Arduino and download it to the ESP32-S3 module.

About This Guide

- This document is intended to help users set up the basic software development environment for developing an app using hardware based on the T-Display-S3 AMOLED 1.91.
- 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
2023.11	V1.0	First release.

Introduction

T-Display-S3 AMOLED 1.91

- T-Display-S3 AMOLED 1.91 is a development board. It can work independently.
- It consists of ESP32-S3 MCU supporting Wi-Fi + BLE communication protocol and motherboard PCB. The screen is 1.91 inch AMOLED.
- At the core of this module is the ESP32-S3-R8 chip.
- 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. Powered by 40 nm technology, ESP32-S3 provides a robust, highly integrated platform to meet the continuous demands for efficient power usage, compact design, security, high performance, and reliability.
- Xinyuan provides the basic hardware and software resources that empower 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 T-Display-S3 AMOLED 1.91 manufacturer is Xin Yuan Electronic Technology Co., Ltd.

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.

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 essentially contains API for ESP32-S3 and scripts to operate the Toolchain
  - The ESP32-S3 board itself and a USB cable to connect it to the PC

Get Started

Download the Arduino Software

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

Quick Start Guide

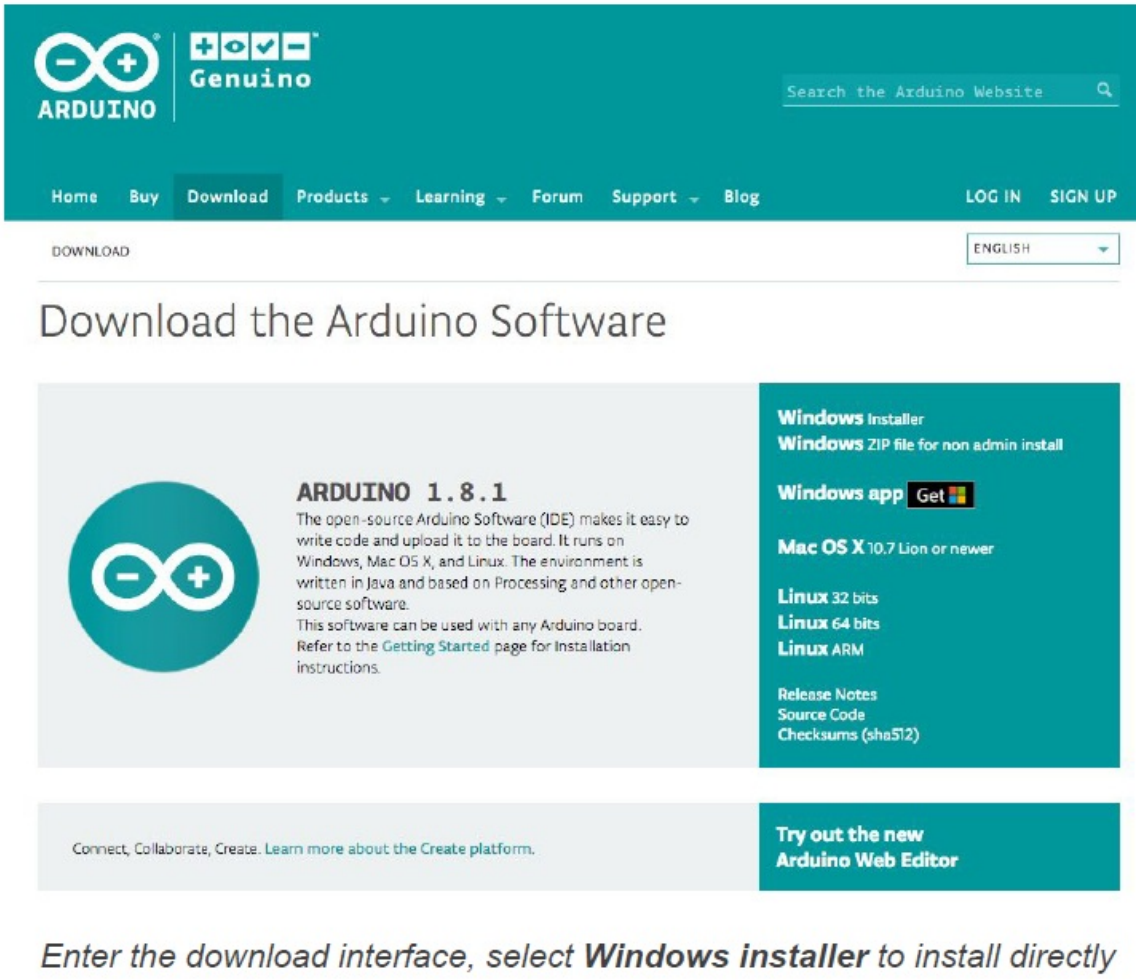
The website provides a quick-start tutorial

- **Windows:**
  - **https://www.arduino.cc/en/Guide/Windows**.
- **Linux:**

- https://www.arduino.cc/en/Guide/Linux.

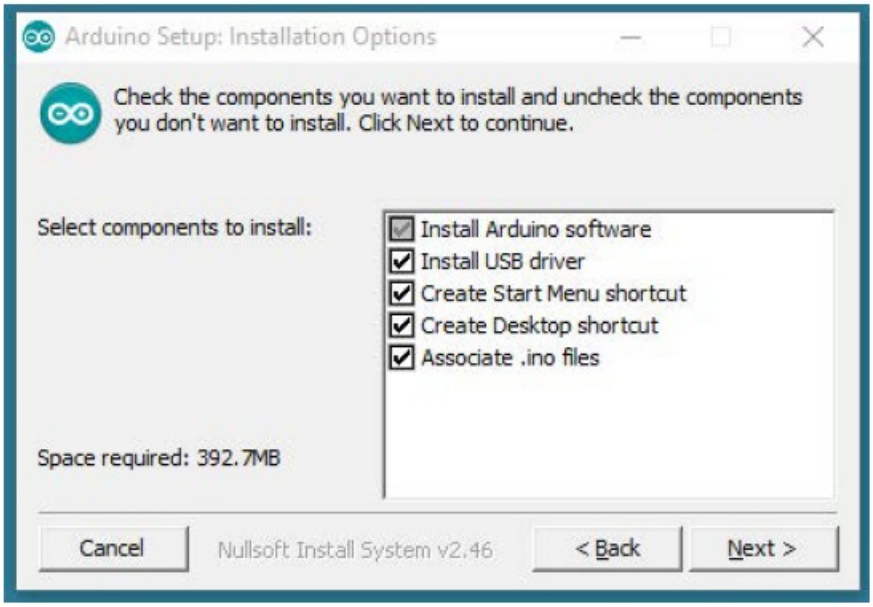
- **Mac OS X:**
  - https://www.arduino.cc/en/Guide/MacOSX.

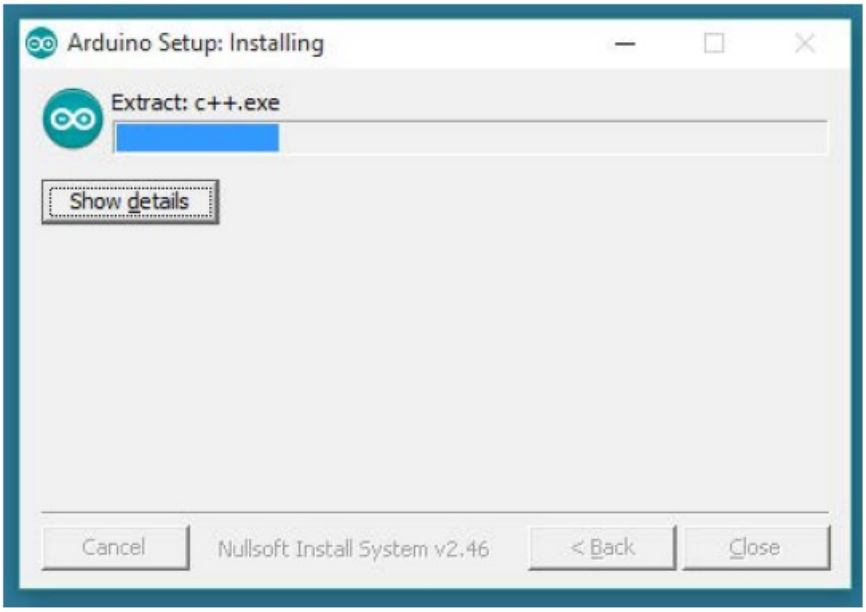
Installation steps for Windows platform Arduino



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

Install the Arduino Software



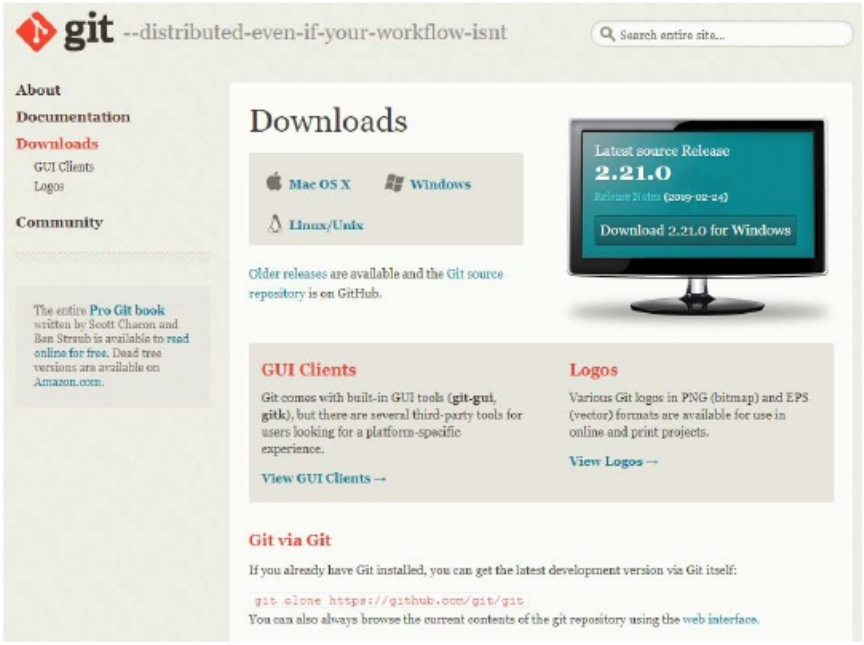


Wait for installation

Configure

Download Git

Download the installation package Git.exe



Pre-build configuration

- Click the Arduino icon, then right-click and select “Open folder where “
- Select hardware ->
- Mouse ** Right click ** ->
- Click Git Bash Here

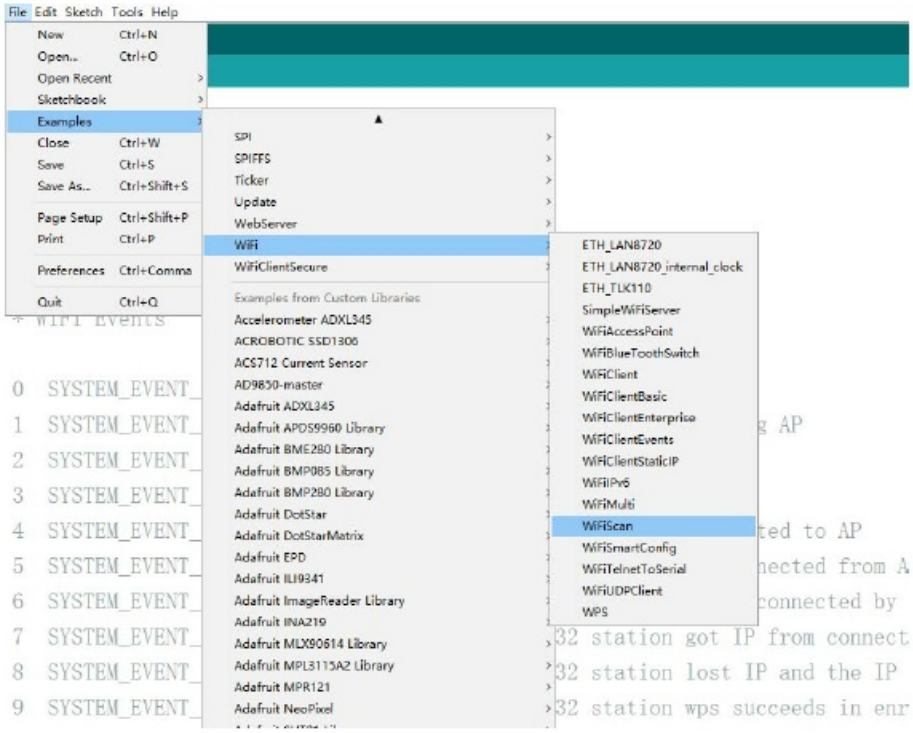
Cloning a remote repository

- mkdir espressif
- cd espressif
- git clone –recursive **https://github.com/espressif/arduino-esp32.git** esp32

Connect

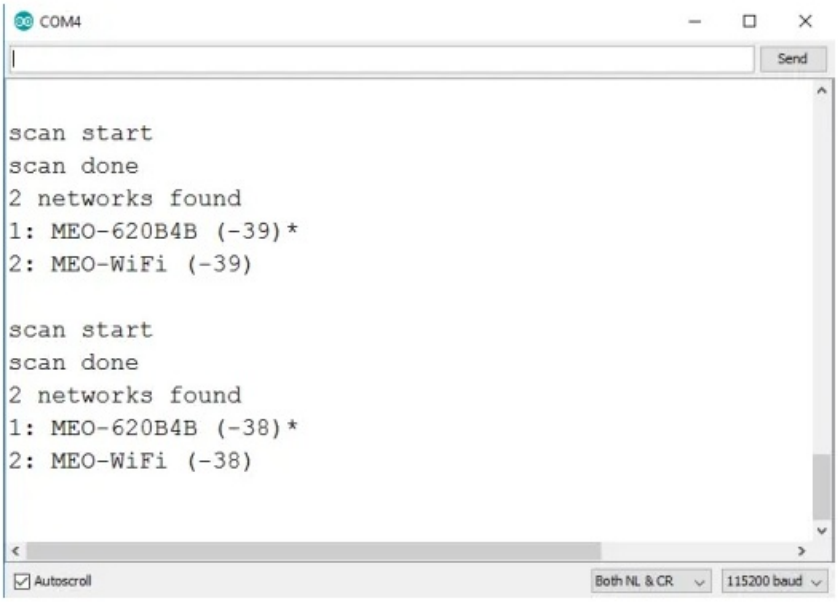
You are almost there. To be able to proceed further, connect the ESP32-S3 board to PC, check under what serial port the board is visible and verify if serial communication works.

Test Demo Select File>>Example>>WiFi>>WiFiScan



Upload Sketch

- **Select Board**
  - Tools -> Board -> ESP32S3 Dev Module
- **Upload**
  - Sketch -> Upload
- **Serial Monitor**
  - Tools ->Serial Monitor



SSC Command Reference

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

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.
mode	There are 3 Wi-Fi modes: • mode = 1: STA mode • mode = 2: AP mode • mode = 3: STA+AP mode

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 sid	Scan or connect Access Points with the SSID.

-b bssid	Scan the Access Points with the bid.
-n channel	Scan the channel.

-Q	Show STA connect stutus.
-D	Disconnected with current Access Points.

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 the MAC Address and IP Address of the connected statio n.

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.

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.

IP

- **Description**
  - ip commands 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.

reboot

- **Description**
  - reboot command is used to reboot the board.
- **Example**

```
reboot
```

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

```
ram
```

FCC

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IMPORTANT NOTE:
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, under part

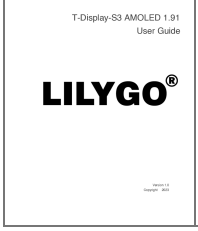
15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used following the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance 20 cm between the radiator& your body. T-Display-S3 AMOLED 1.91

- **Version** 1.0 Copyright © 2023

Documents / Resources

	LILYGO T Display S3 AMOLED 1.91 Software [pdf] User Guide T Display S3 AMOLED 1.91 Software, S3 AMOLED 1.91 Software, AMOLED 1.91 Software, Software

References

- GitHub - espressif/arduino-esp32: Arduino core for the ESP32
- arduino.cc/en/Guide/Linux
- arduino.cc/en/Guide/MacOSX
- User Manual