**Stemedu ESP32-3248S035C**

# Stemedu 3.5 inch ESP32 Capacitive Touch Screen User Manual

Model: ESP32-3248S035C

## 1. Introduction

This user manual provides detailed instructions for the setup, operation, maintenance, and troubleshooting of the Stemedu 3.5 inch ESP32 Capacitive Touch Screen. This development board integrates an ESP32 chip with BLE and WiFi dual-core processor, a 3.5-inch capacitive touch display, and 32MB flash memory. It features an ST7796 driver chip and a 480x320 TFT LCD touchscreen display, making it suitable for various applications including 3D printers, smart home devices, and IoT projects.

## 2. Product Overview

The Stemedu ESP32-3248S035C is a versatile development board designed for embedded systems and IoT applications. Its key components include:

- **ESP32 Chip:** Integrated with BLE + WiFi dual-core processor.
- **Display:** 3.5-inch capacitive touch TFT LCD with ST7796 driver, 480x320 resolution.
- **Memory:** 32MB flash memory.
- **Connectivity:** USB for powering and programming, UART, SPI, I2C, PWM interfaces.
- **Storage:** Support for TF card (maximum 4G).

### 2.1. Package Contents

Verify that all items are present in your package:

- 1 x 3.5 inch Capacitive Touch Screen Development Board
- 1 x USB Cable
- 1 x Set of Jumper Wires

Figure 2.1: Product and included accessories.

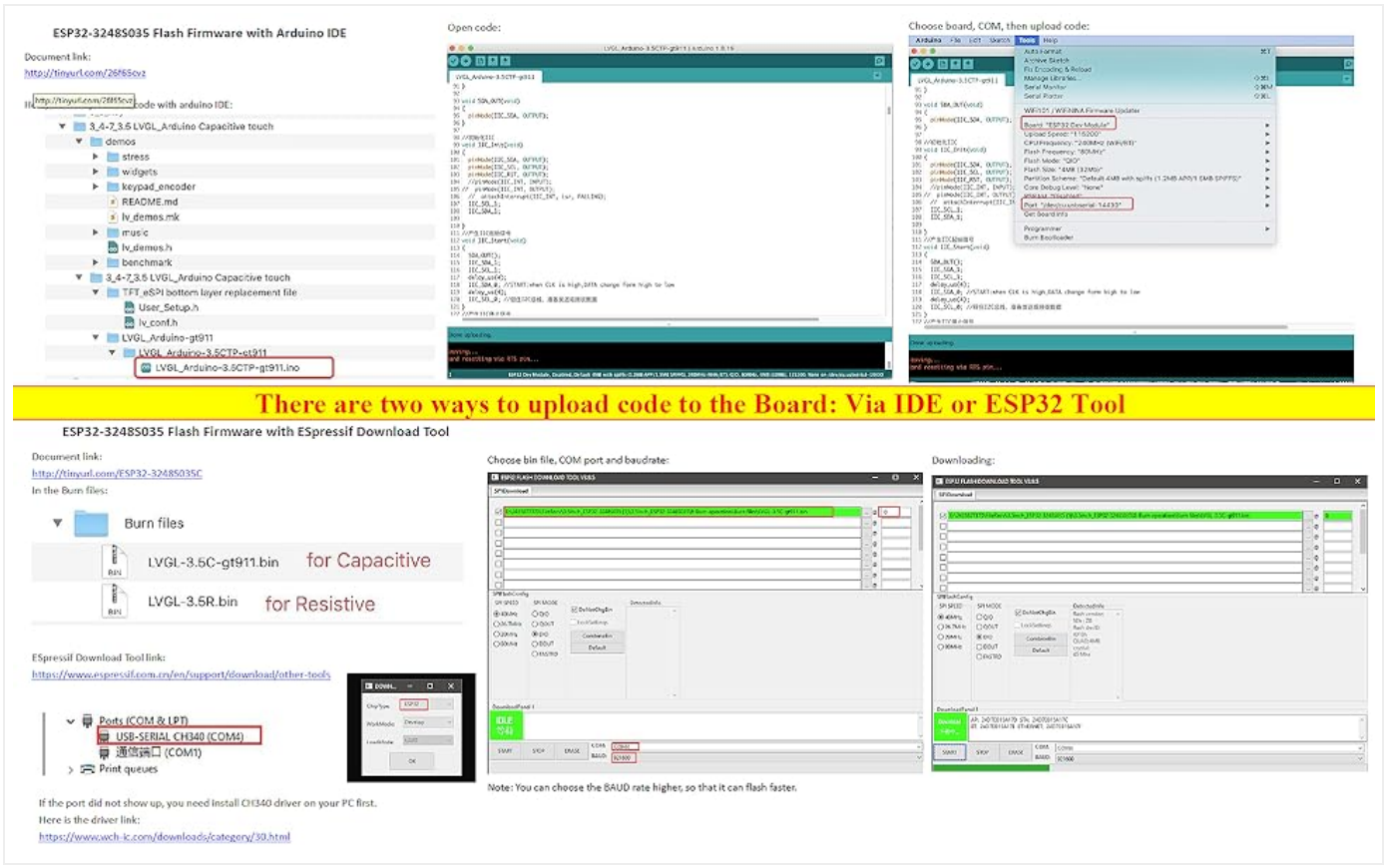


Figure 2.2: Detailed view of the development board components.

# 3. Setup

## 3.1. Initial Power-Up

Upon initial power-up via the USB port, the board performs a self-test and displays a demo application. This confirms basic functionality and showcases the display's graphical capabilities.

## 3.2. Connecting to a Computer

Connect the development board to your computer using the provided USB cable. This connection provides power and enables communication for programming.

## 3.3. Driver Installation (if necessary)

If your computer does not automatically recognize the device, you may need to install a USB-SERIAL CH340 (COM) driver. This driver is commonly required for ESP32 boards. A common source for this driver can be found via a web search for "CH340 driver".

# 4. Operating the Development Board

## 4.1. Programming Environment Setup

The ESP32-3248S035C board can be programmed using various Integrated Development Environments (IDEs) such as Arduino IDE, ESP IDE, or MicroPython. Ensure you select the correct board and port in your IDE settings.

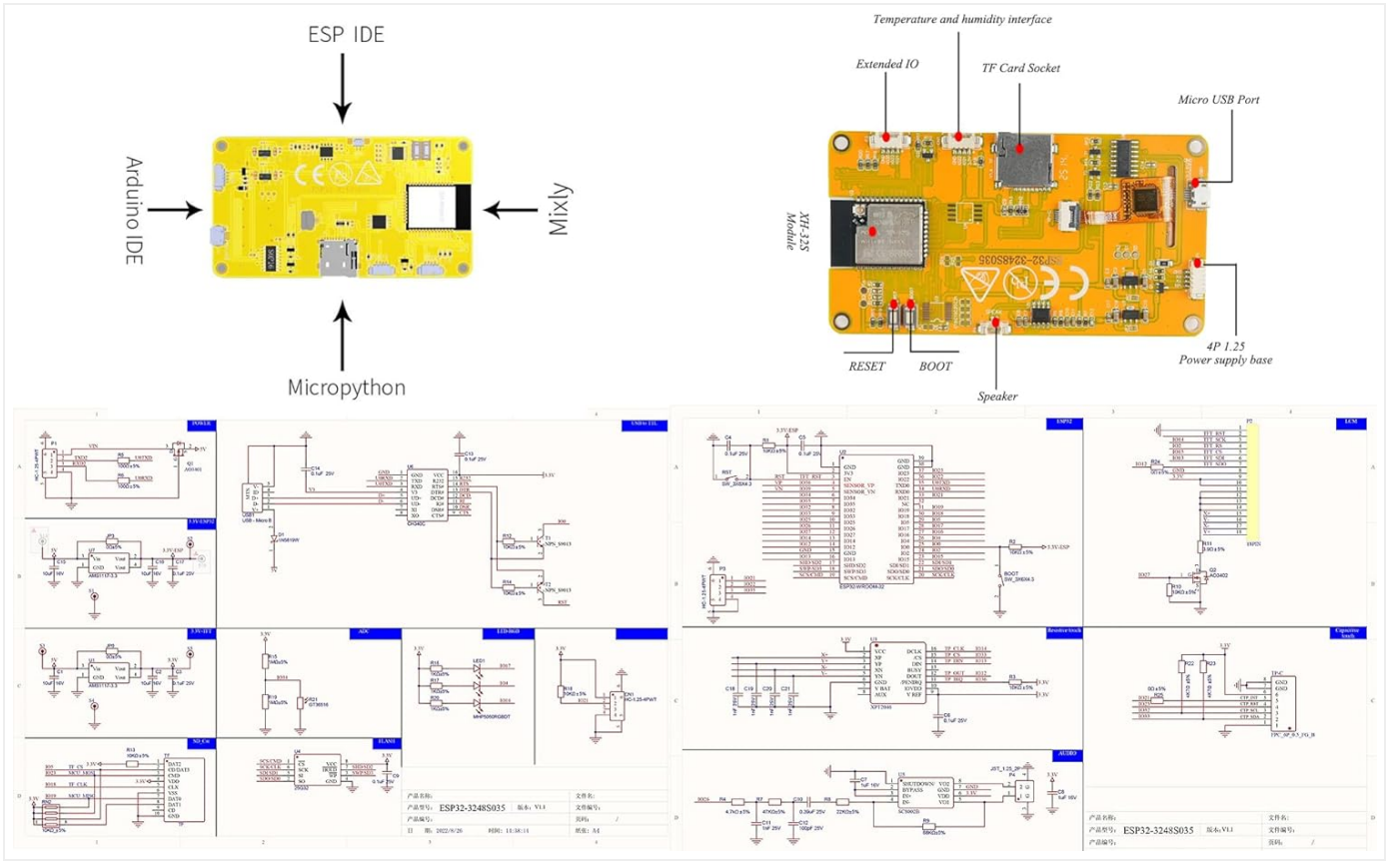


Figure 4.1: Programming environment options for the development board.

## 4.2. Library Selection

When developing applications, it is crucial to use the correct display and touch libraries. For this 3.5-inch capacitive touch display, ensure your chosen library supports capacitive touch and the ST7796 driver with 480x320 resolution. Some users have found success with the ESP32-3248S035 GitHub repository and the OpenHASP documentation for Sunton ESP32-3248S035 boards.

## 4.3. Uploading Code

Code can be uploaded to the board via your chosen IDE (e.g., Arduino IDE) or using the Espressif Download Tool. Ensure the

correct COM port is selected and the baud rate is set appropriately for faster flashing.

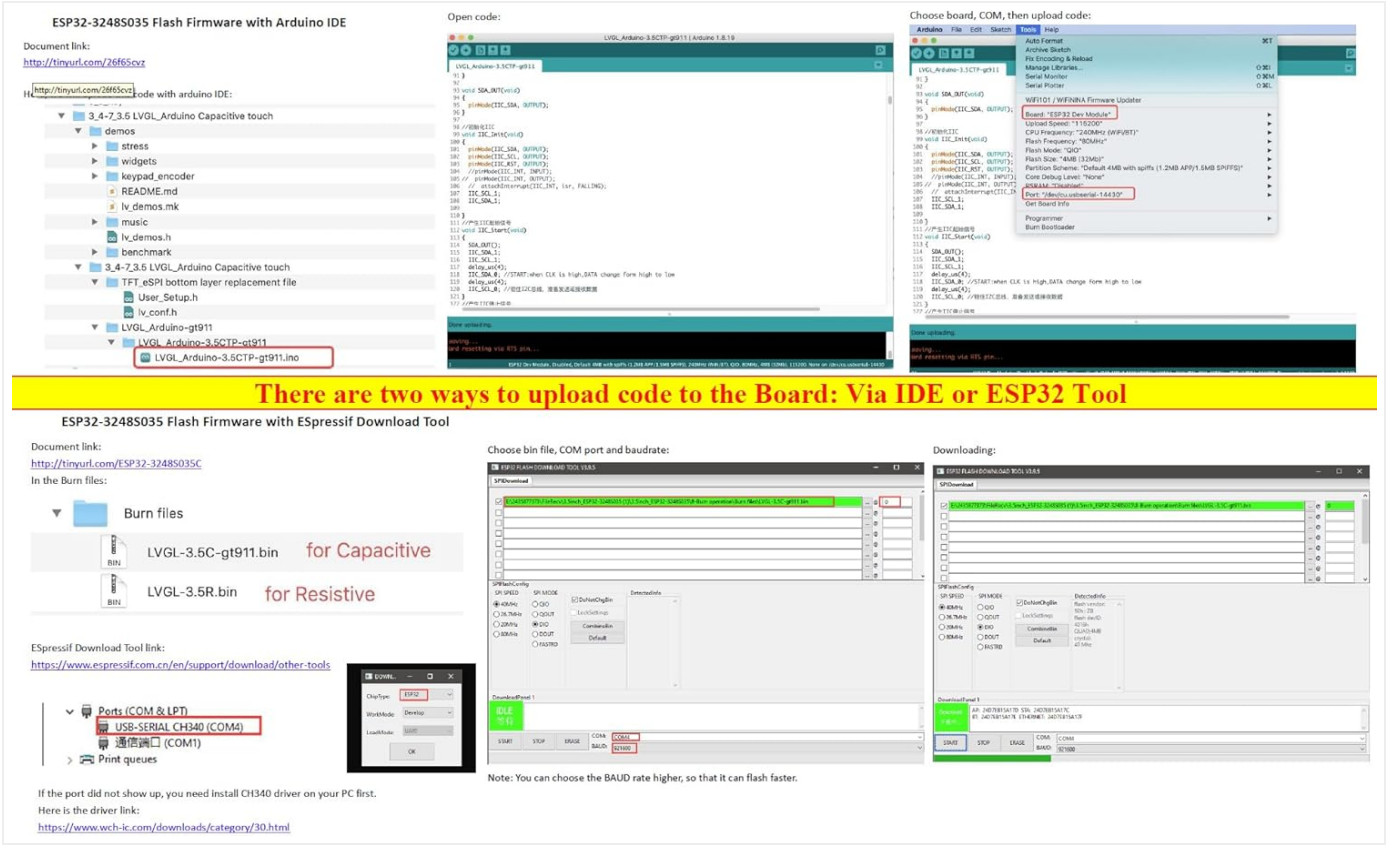


Figure 4.3: Code upload methods.

## 5. Maintenance

To ensure the longevity and optimal performance of your Stemedu ESP32 Capacitive Touch Screen, follow these maintenance guidelines:

- **Cleaning:** Use a soft, dry, anti-static cloth to clean the display and board. Avoid abrasive cleaners or solvents.
- **Storage:** Store the board in a cool, dry environment, away from direct sunlight and extreme temperatures.
- **Handling:** Handle the board by its edges to avoid touching sensitive components or the display surface.
- **Power Supply:** Always use a stable and appropriate power supply (via USB or VIN/GND pins as specified).

## 6. Troubleshooting

| Problem | Possible Cause | Solution |
|---|---|---|
| Display not turning on. | No power, faulty USB cable, or incorrect power source. | Check USB connection, try a different cable or USB port. Ensure power supply meets specifications. |
| Computer not recognizing the board. | Missing or incorrect USB driver. | Install the USB-SERIAL CH340 (COM) driver. |
| Display shows garbled or incorrect graphics. | Incorrect display library or configuration in code. | Verify that the correct capacitive touch and ST7796 driver libraries are used. Ensure display resolution (480x320) is correctly set in your code. |

| Problem | Possible Cause | Solution |
|---|---|---|
| Touchscreen unresponsive. | Incorrect touch library or calibration issues. | Confirm the capacitive touch library is correctly implemented. Check for any specific touch calibration routines required by your chosen library. |
| Code upload fails. | Incorrect COM port, baud rate, or board selection in IDE. | Ensure the correct COM port is selected. Try different baud rates. Verify the board type is correctly selected in your IDE. |

## 7. Specifications

| Feature | Detail |
|---|---|
| **Model** | ESP32-3248S035C |
| **Display Size** | 3.5 inches |
| **Display Type** | Capacitive Touch TFT LCD |
| **Resolution** | 480x320 pixels |
| **Driver Chip** | ST7796 |
| **Processor** | ESP32 (BLE + WiFi dual-core) |
| **Flash Memory** | 32MB |
| **Interfaces** | UART, SPI, I2C, PWM, USB |
| **TF Card Support** | Yes, up to 4GB |
| **Power Supply** | USB (5V) or VIN/GND (4.7-5.2VDC) |
| **Dimensions (LxWxH)** | 3.94 x 2.17 x 0.2 inches |
| **Item Weight** | 4.2 ounces |

## 8. Warranty and Support

For warranty information and technical support, please refer to the official Stemedu website or contact their customer service directly. Additional resources and community support can often be found on forums and repositories related to ESP32 development, such as the OpenHASP community and various GitHub projects.