



ESP32-S3-Touch-LCD-7B



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SKU	Product
31726	ESP32-S3-Touch-LCD-7B
31727	ESP32-S3-LCD-7B

Product Introduction

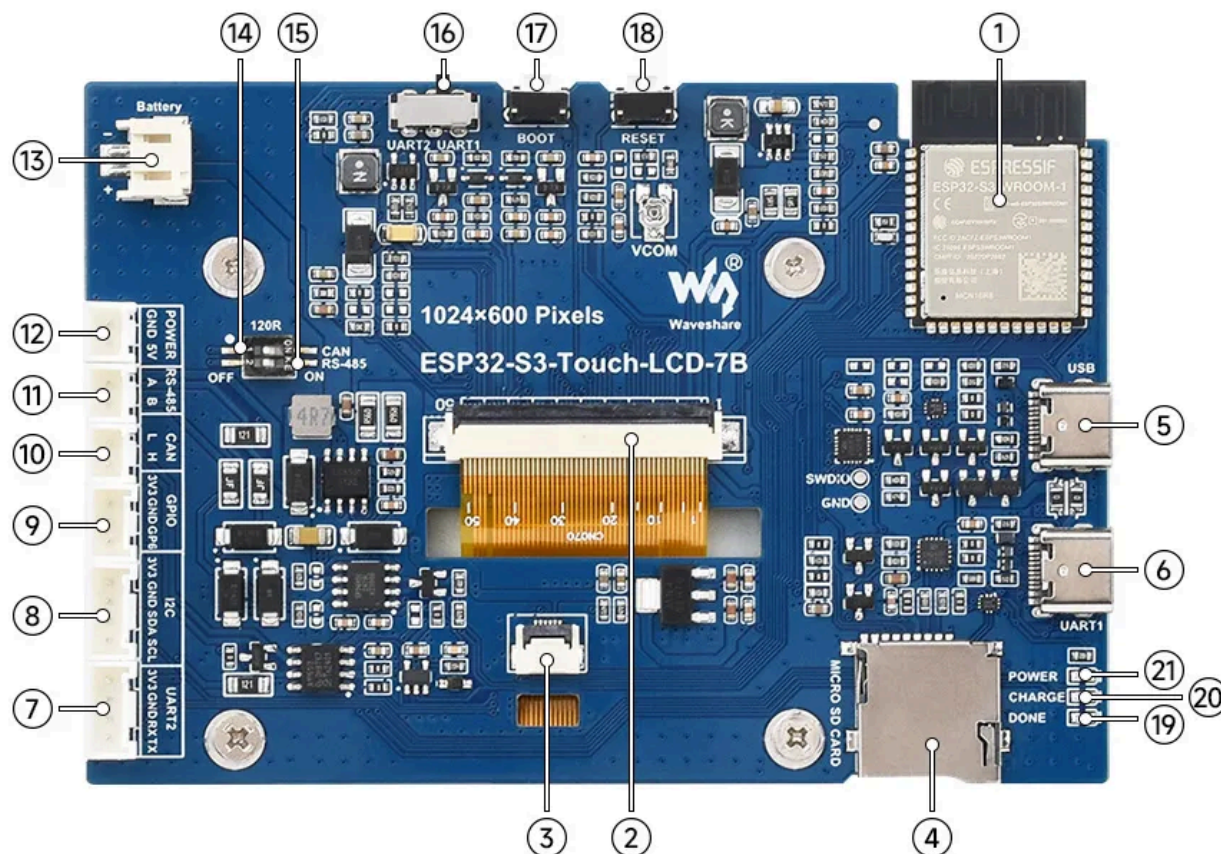
Product Overview

This is a low-cost, high-performance MCU development board designed by Waveshare. It supports 2.4GHz Wi-Fi and BLE 5, integrates large-capacity Flash and PSRAM, and features an onboard 7inch capacitive touch LCD screen, enabling smooth operation of GUI programs like LVGL. Combined with various peripheral interfaces (such as CAN, I2C, and RS485), it facilitates rapid development of HMI and other applications for the ESP32-S3. With a wide range of functions and interfaces, it can meet power consumption requirements in Internet of Things (IoT), mobile devices, smart home and other applications.

Features

- Powered by a high-performance Xtensa 32-bit LX7 dual-core processor, with a main frequency of up to 240MHz
- Supports 2.4 GHz Wi-Fi (802.11 b/g/n) and Bluetooth 5 (LE) with an onboard antenna
- Built-in 512KB SRAM and 384KB ROM, stacked with 16MB Flash and 8MB PSRAM
- Onboard 7inch LCD screen with 1024 × 600 resolution, 65K colors
- Supports I2C interface for capacitive touch control (optional), 5-point touch, with interrupt support
- Onboard CAN, RS485, I2C interfaces, TF card slot, and integrated full-speed USB
- Onboard LED indicators for indicating the power and battery charging status
- Supports adjusting the backlight brightness and reading the current battery voltage
- Supports precise control features like flexible clocking and independent module power supply settings, enabling low-power modes for multiple scenarios

Onboard Resources



1. ESP32-S3-WROOM-1-N16R8 Module

WiFi/Bluetooth SoC module, 240MHz operating frequency, stacked with 8MB PSRAM and 16MB Flash

2. Display Panel Connector

3. Touch Panel Connector

4. TF Card Slot

5. USB Type-C Port

6. USB TO UART Type-C Port

7. **UART Header:** 6 and 7 share the same UART, selectable via the UART selection switch; recommended cable: HY2.0 4P to Dupont male 4P

8. **I2C Header:** Recommended to use the included HY2.0 4P to Dupont male 4P cable

9. **Sensor Header:** Recommended to use the included HY2.0 3P to Dupont male 3P cable

10. **CAN Header:** Recommended to use the included HY2.0 2P to Dupont male 2P cable

11. **RS485 Header:** Recommended to use the included HY2.0 2P to Dupont male 2P cable

12. **5 V output:** Recommended to use the included HY2.0 2P to Dupont male 2P cable

13. 3.7V Single-cell Lithium Battery PH2.0 Header

14. CAN Terminal Resistor Selection Interface

15. **RS485 Terminal Resistor Selection Interface**

16. **UART Selection Switch**

Selects between UART1 and UART2

17. **BOOT Button**

Press and hold while powering on for program flashing

18. **RESET Button**

Press to reset the controller

19. **DONE**

Lithium battery charge complete indicator

20. **CHARGE**

Lithium battery charging indicator

21. **POWER**

Power indicator

Interface Description

When using the ESP32-S3-Touch-LCD-7B, it's important to understand the hardware connections for different peripherals.

▶ **LCD Interface: Connector for the LCD cable (click to expand)**

▶ **Touch Interface: Connects to the touch cable (click to expand)**

▶ **USB Interface: Used for power supply and flashing (click to expand)**

▶ **TF Card Interface: Connects to the TF card (click to expand)**

▶ **RS485 Interface: Onboard RS485 interface for direct device communication; transmission/reception mode is switched automatically (click to expand)**

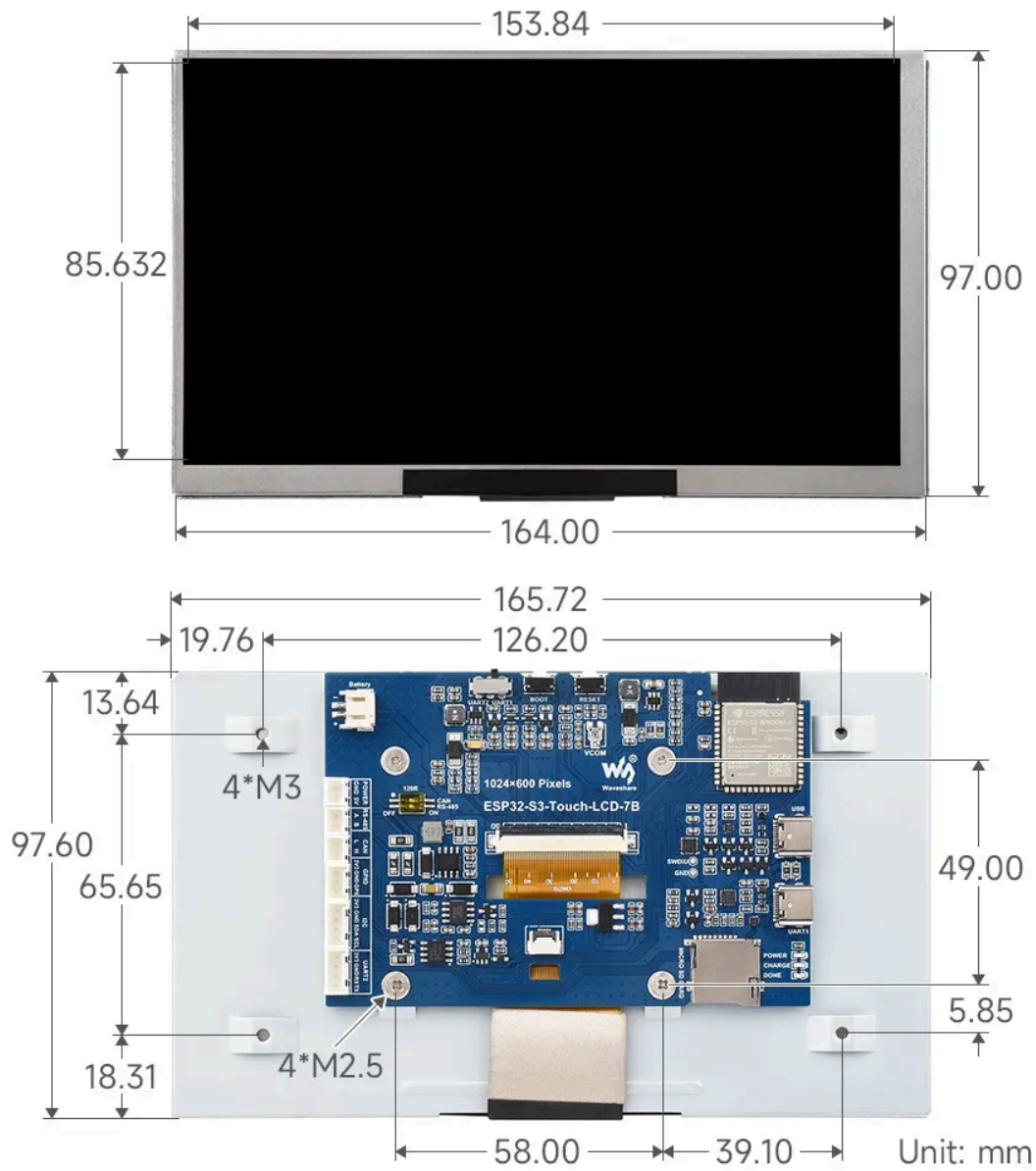
▶ **CAN Interface: Enables transmission/reception control, data analysis, acquisition, and monitoring for CAN bus networks (click to expand)**

▶ **I2C Interface: Connects to the I/O expander chip, touch interface, and external interfaces (click to expand)**

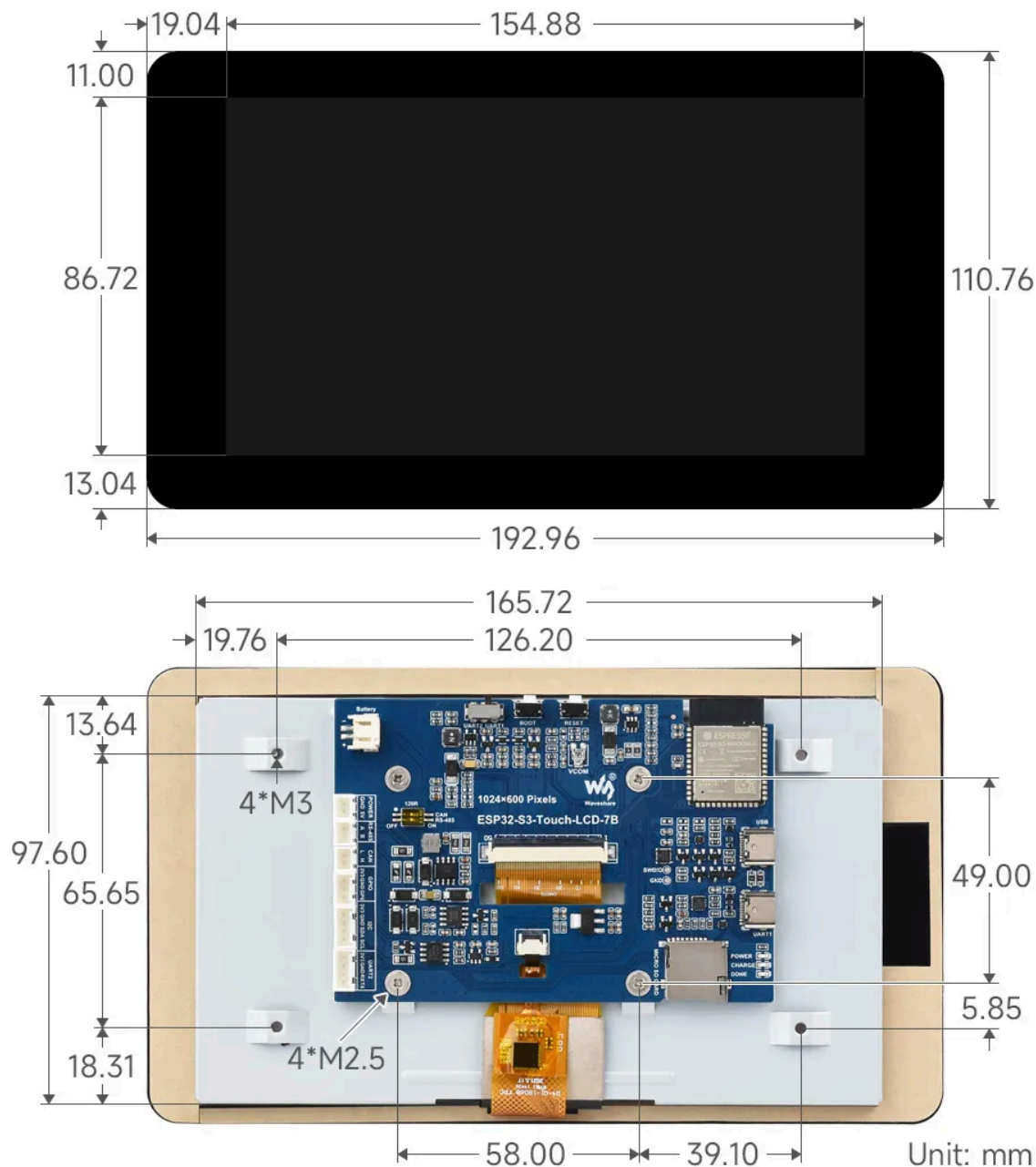
- PH2.0 Battery Interface: The development board uses the CS8501 high-efficiency charge/discharge management IC to boost the voltage from a single-cell lithium battery to 5V. The default charging current is 580mA. Users can change resistor R45 to modify the charging current. For details, please refer to the [ESP32-S3-Touch-LCD-7B Schematic](#)

Dimensions

Without Touch Version



With Touch Version



Specifications

Basic Parameters

Item	Specification
Processor	High-performance Xtensa 32-bit LX7 dual-core processor, up to 240 MHz
Wi-Fi/Bluetooth	Supports 2.4 GHz Wi-Fi (802.11 b/g/n) and Bluetooth 5 (LE), onboard antenna

Item	Specification
Flash	16MB Flash
PSRAM	8MB PSRAM
Power Supply	Type-C 5V

Screen Parameters

Item	Specification
Resolution	1024 × 600
Display Color	65K colors
Display Interface	RGB
Display Panel	IPS
Viewing Angle	170°
Screen Brightness	235 cd/m ²
Touch Type	Capacitive
Touch Panel	Tempered Glass

Peripheral Interfaces and Others

Item	Specification
Communication Interfaces	CAN, RS485, I2C, USB
Power Consumption	5V 350mA

Item	Specification
Operating Temperature	0°C ~ 65°C
Product Dimensions (L×W)	Without Touch Version: 164×97 (mm); With Touch Version: 192.96×110.76 (mm)

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