

Stemedu ESP32-2432S028R

Stemedu ESP32-2432S028R Smart Display 2.8-inch Development Board
User Manual

Model: ESP32-2432S028R

Overview Setup Operation Specifications Troubleshooting Warranty & Support

1. PRODUCT OVERVIEW

The Stemedu ESP32-2432S028R is a powerful 2.8-inch smart display development board designed for Internet of Things (IoT) applications. It integrates a 240x320 TFT resistive touchscreen with a WiFi and Bluetooth-enabled ESP32 dual-core processor, making it suitable for a wide range of projects including remote control, environmental data collection, and parameter settings.

Key Features:

- **Powerful IoT Development Tool:** Features a controllable display ideal for remote control, environmental data collection, and parameter settings in IoT projects.
- **High-Performance Processor:** Equipped with a low-power dual-core 32-bit CPU, operating at up to 240MHz with computing power up to 600 DMIPS. Includes 520KB built-in SRAM and supports multiple interfaces (UART/SPI/I2C/PWM/ADC/DAC).
- **Multimedia Support:** Compatible with OV2640 and OV7670 cameras, features 32MB built-in flash memory, and supports WiFi image uploads and TF card storage for easy data management.
- **Flexible Network Configuration:** Supports STA/AP/STA+AP working modes and offers Smart Config/AirKiss one-click network configuration for simplified and quick deployment.
- **Low Power Design:** Multiple sleep modes enable low power consumption, achieving just 6mA in deep sleep, making it suitable for long-term IoT applications. Supports WPA/WPA2 security protocols for data safety.

What's in the Box:

- ESP32 Development Board (2 Pack)

2. SETUP GUIDE

This section outlines the steps to set up your Stemedu ESP32-2432S028R Smart Display development board.

2.1 Initial Inspection

Upon receiving your development board, carefully inspect the package contents. Ensure all components are present and undamaged.



Figure 2.1: Front view of the ESP32-2432S028R Smart Display. This image shows the display module from the front, highlighting its compact design.

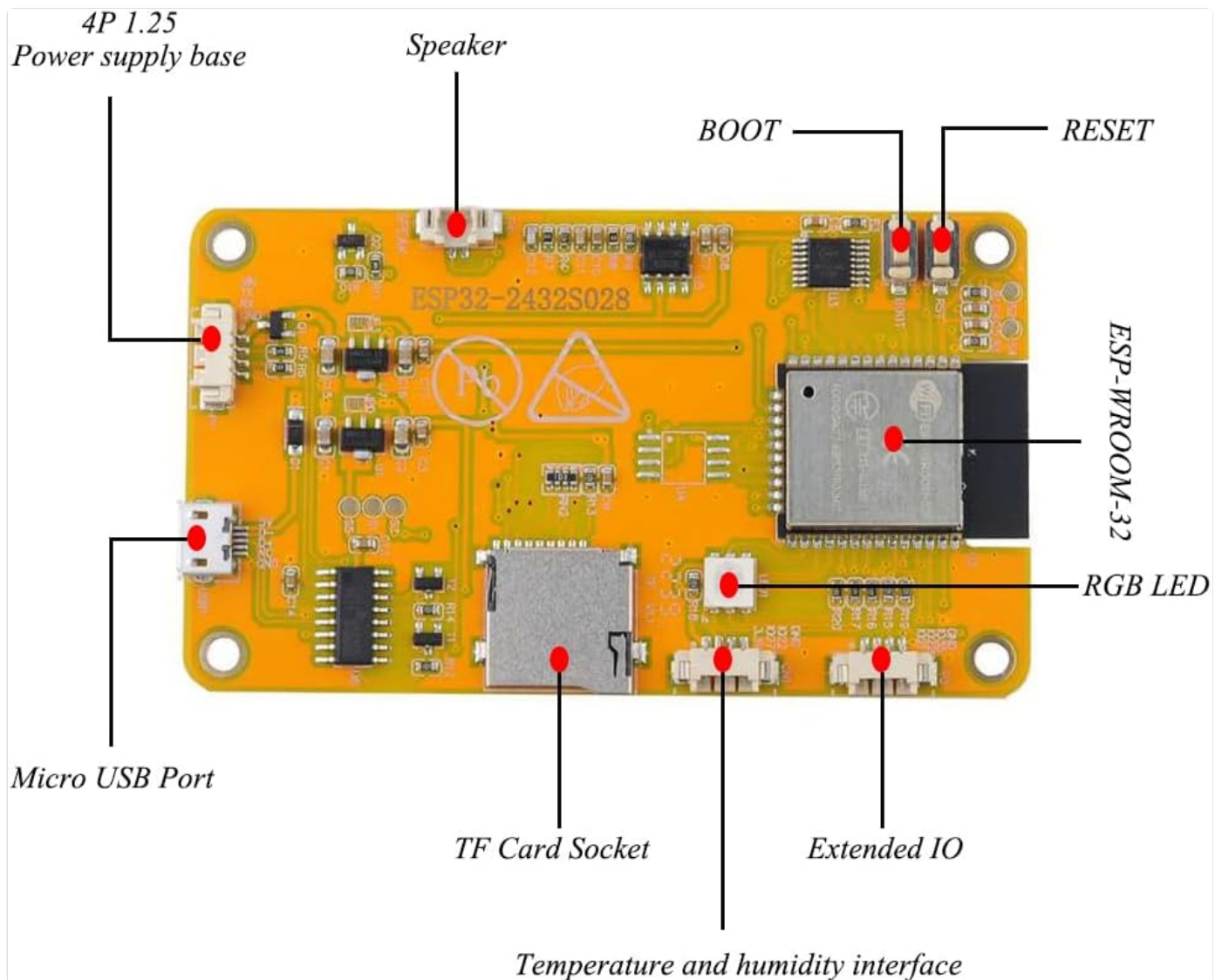


Figure 2.2: Back view of the ESP32-2432S028R development board with labeled components. This image provides a detailed look at the various ports and chips on the reverse side of the board, including the Micro USB Port, TF Card Socket, Speaker, BOOT, RESET, RGB LED, and Extended IO.

2.2 Powering the Device

The ESP32-2432S028R board can be powered via its Micro USB port. Connect a standard Micro USB cable to the board and to a 5V power source (e.g., a computer USB port or a USB wall adapter).

Your browser does not support the video tag.

Video 2.1: Powering the ESP32-2432S028R 2.8-inch TFT Touch Screen Display. This video demonstrates connecting the Micro USB cable to the development board to power it on, showing the initial display boot-up sequence.

2.3 Software Environment Setup

To program the ESP32-2432S028R, you will need to set up a development environment. This typically involves installing the Arduino IDE or ESP-IDF, along with the necessary board support packages and libraries. Refer to the official ESP32 documentation for detailed instructions on setting up your preferred development environment.

3. OPERATION

This section covers the basic operation of the ESP32-2432S028R Smart Display, including touchscreen interaction and interface navigation.

3.1 Touchscreen Interaction

The 2.8-inch TFT display features a resistive touchscreen. Use the provided touch pen or a stylus for precise interaction

with the on-screen elements. Light pressure is sufficient for input.

*The color of the touch pen is random
Blue, Pink, White, Black...*



Figure 3.1: Resistive touch pen for the display. This image shows the stylus used for interacting with the resistive touchscreen, which may come in various colors.

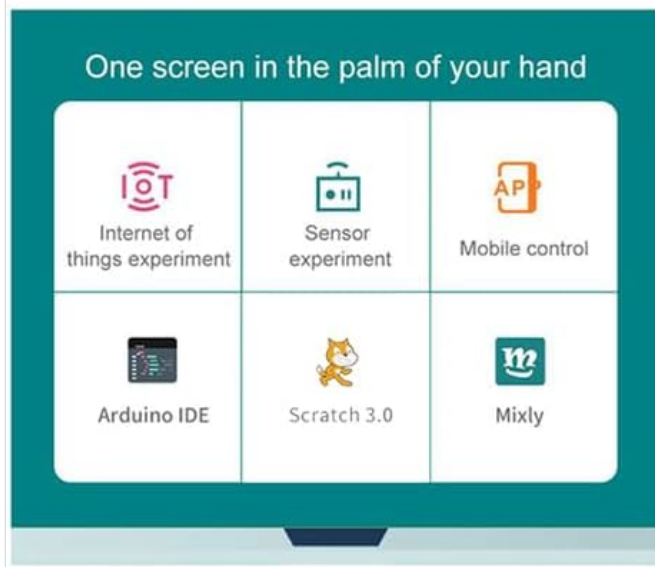


Figure 3.2: Close-up of the ESP32-2432S028R Smart Display showing an icon-based interface. This image illustrates a typical application interface with various icons for functions like buttons, keyboard, slider, pointer, brightness, settings, dialog box, and text.

3.2 Network Configuration

The board supports various Wi-Fi modes (STA, AP, STA+AP) and simplified network configuration methods like Smart Config and AirKiss. Implement these features in your code to connect the device to your local network or create an access point.

4. TECHNICAL SPECIFICATIONS

Feature	Detail
Brand	Stemedu
Model	ESP32-2432S028R
Display Size	2.8 inch
Resolution	240x320 TFT

Feature	Detail
Touchscreen Type	Resistive
Processor	Low-power dual-core 32-bit CPU (up to 240MHz, 600 DMIPS)
RAM Memory	520 KB SRAM
Flash Memory	32 MB
Connectivity	Wi-Fi 802.11b/g/n/e/i, Bluetooth 4.2BR/EDR and BLE
Interfaces	UART, SPI, I2C, PWM, ADC, DAC
Operating System	FreeRTOS
USB Ports	1 (Micro USB)
Dimensions (L x W x H)	3.55" x 2.36" x 0.79"
TF Card Support	Yes
Camera Support	OV2640, OV7670

5. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your ESP32-2432S028R Smart Display.

5.1 Display Not Powering On

- **Check Power Connection:** Ensure the Micro USB cable is securely connected to both the board and a reliable 5V power source.
- **Verify Power Source:** Try a different USB port or power adapter to rule out a faulty power source.
- **Inspect Cable:** Use a different Micro USB cable to ensure the cable itself is not damaged.

5.2 Touchscreen Unresponsive

- **Use Stylus:** Ensure you are using the provided resistive touch pen or a suitable stylus for interaction. Finger touch might not be as reliable or accurate on resistive screens.
- **Calibration:** If the touch input is inaccurate, the touchscreen may require calibration. Refer to your specific firmware or development environment documentation for calibration procedures.
- **Power Cycle:** Disconnect and reconnect power to the board to perform a soft reset.

5.3 Wi-Fi/Bluetooth Connectivity Issues

- **Check Code:** Verify your Wi-Fi or Bluetooth code for correct SSID, password, and connection logic.
- **Antenna:** Ensure any external antenna (if applicable and used) is properly connected.
- **Signal Strength:** Move the board closer to your Wi-Fi router or Bluetooth device to improve signal strength.
- **Firewall/Router Settings:** Check your network's firewall or router settings, as they might be blocking connections.

6. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official Stemedu website or contact their customer service directly. Keep your purchase receipt for warranty claims.

Manufacturer: Stemedu

Contact: Please visit the [Stemedu Store on Amazon](#) for further assistance and resources.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question