

Senzooe ESP32-S3 N8R8

Senzooe ESP32-S3 Core Board N8R8 User Manual

Model: ESP32-S3 N8R8

1. INTRODUCTION

This manual provides detailed instructions for the Senzooe ESP32-S3 Core Board N8R8. The ESP32-S3 is a low-power, highly integrated microcontroller with Wi-Fi and Bluetooth LE connectivity, designed for a wide range of applications, from low-power sensor networks to more demanding tasks like voice encoding, music streaming, and MP3 decoding. This core board facilitates easy development and prototyping with the ESP32-S3 chip.

2. SAFETY INFORMATION

- **Power Supply:** Ensure the power supply voltage is within the specified range (typically 3.3V or 5V via USB). Exceeding this can damage the board.
- **Electrostatic Discharge (ESD):** Handle the board with care to prevent ESD damage. Use an anti-static wrist strap or mat when possible.
- **Short Circuits:** Avoid short-circuiting pins or components on the board.
- **Operating Environment:** Do not expose the board to extreme temperatures, humidity, or corrosive environments.
- **Modifications:** Unauthorized modifications to the board may void any potential warranty and could lead to malfunction or damage.

3. PACKAGE CONTENTS

Please check the package for the following items:

- Senzooe ESP32-S3 Core Board N8R8

Note: USB cables, breadboards, and other accessories are typically sold separately.

4. PRODUCT OVERVIEW

The Senzooe ESP32-S3 Core Board N8R8 integrates the ESP32-S3-WROOM-1 module, providing a compact and versatile platform for embedded development. It features multiple GPIO pins, two USB-C ports, reset and boot buttons, and an RGB LED.

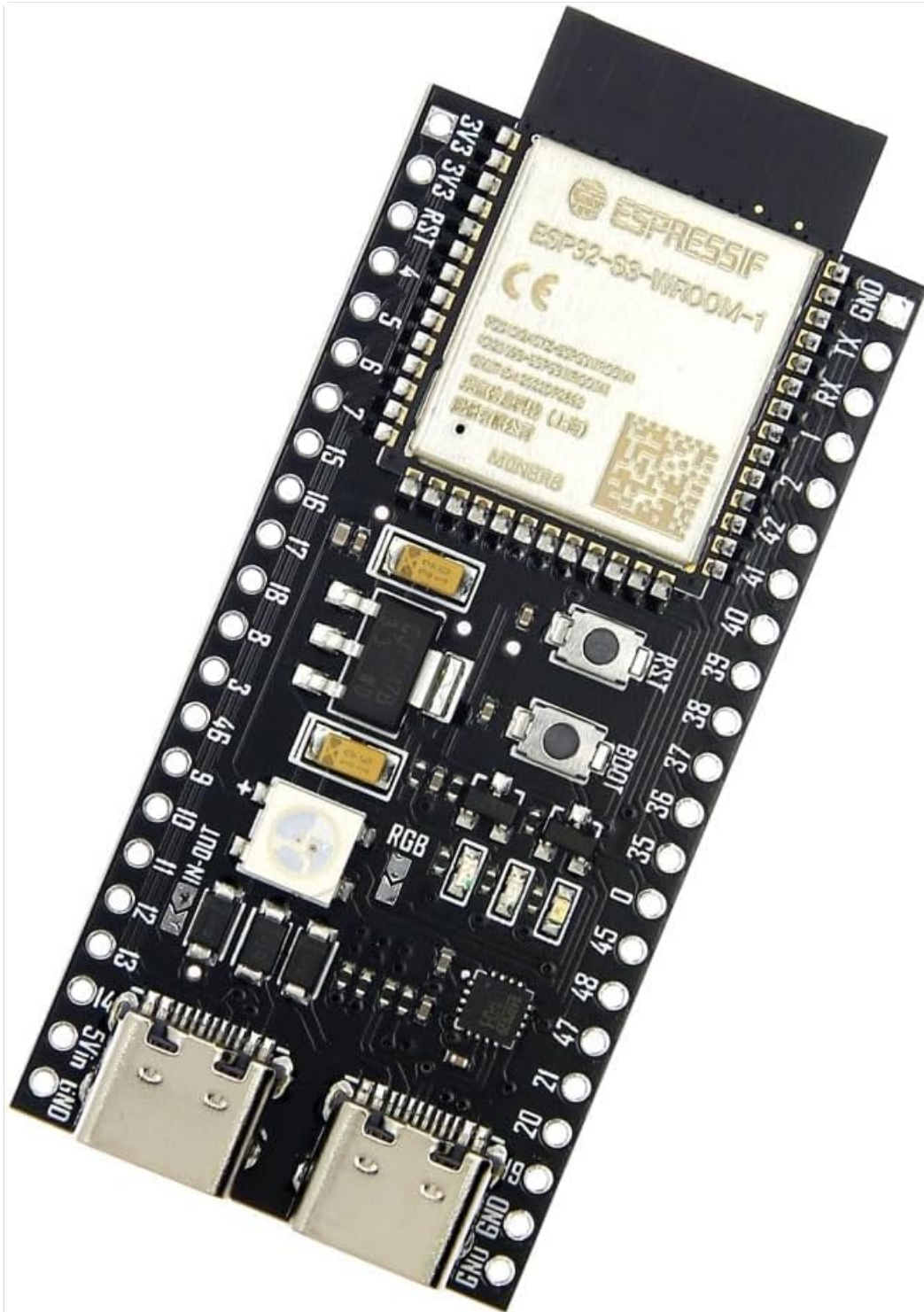


Figure 4.1: Front View of the ESP32-S3 Core Board N8R8

This image displays the front side of the ESP32-S3 core board. Key components visible include the ESP32-S3-WROOM-1 module, two USB-C ports (one for power/data, one for USB-OTG), RST (Reset) and BOOT buttons, an RGB LED, and clearly labeled pin headers along both sides for easy access to GPIOs, power, and ground connections.

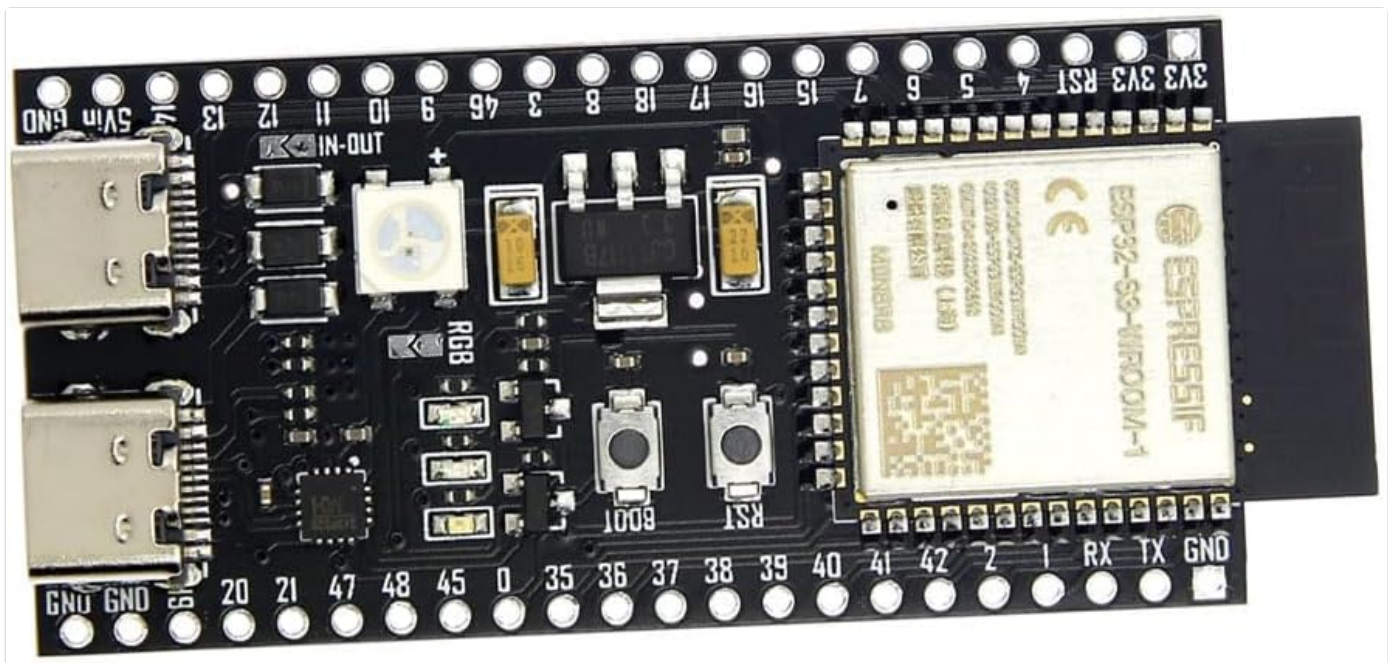


Figure 4.2: Angled Front View of the ESP32-S3 Core Board N8R8

This image provides an angled perspective of the board's front, highlighting the layout of the components and the pin headers. The ESP32-S3-WROOM-1 module is prominently featured, along with the USB-C connectors and control buttons.



Figure 4.3: Back View of the ESP32-S3 Core Board N8R8

This image shows the reverse side of the ESP32-S3 core board. Visible markings include 'YD-ESP32-S3 2022-V1.2' and 'VCC-GND®', indicating the board's model and manufacturer/designer. The clean layout of the solder points for the pin headers is also apparent.

4.1 Key Features

- Integrated ESP32-S3-WROOM-1 module.
- Dual USB-C ports for power, data, and USB-OTG functionality.
- On-board RST (Reset) and BOOT buttons.
- RGB LED for status indication.
- Breadboard-friendly pinout with clearly labeled GPIOs.
- Wi-Fi and Bluetooth LE connectivity.

5. SETUP

5.1 Driver Installation

Before connecting the board, ensure you have the necessary USB-to-UART bridge drivers installed on your computer. Most ESP32-S3 boards use a CH340 or CP210x chip for USB communication. Drivers can typically be found on the chip manufacturer's website (e.g., WCH for CH340, Silicon Labs for CP210x) or the official Espressif documentation.

1. Download the appropriate driver for your operating system.
2. Install the driver following the on-screen instructions.
3. Restart your computer if prompted.

5.2 Connecting the Board

1. Connect one end of a USB-C cable to the USB-to-UART port on the ESP32-S3 board (usually the one closer to the ESP32 module).
2. Connect the other end of the USB-C cable to an available USB port on your computer.
3. The board should power on, and an LED (if present) may illuminate. Your computer should recognize the board as a serial port.

5.3 Development Environment Setup

The ESP32-S3 can be programmed using various development environments. Two common options are the Arduino IDE and ESP-IDF.

5.3.1 Arduino IDE Setup

1. Download and install the Arduino IDE from the official Arduino website.
2. Open the Arduino IDE. Go to **File > Preferences**.
3. In the 'Additional Boards Manager URLs' field, add: `https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json`
4. Go to **Tools > Board > Boards Manager...** Search for 'esp32' and install the 'esp32 by Espressif Systems' package.
5. After installation, go to **Tools > Board > ESP32 Arduino** and select the appropriate ESP32-S3 board (e.g., 'ESP32S3 Dev Module').
6. Select the correct COM port under **Tools > Port**.

5.3.2 ESP-IDF Setup

For more advanced development, the Espressif IoT Development Framework (ESP-IDF) is recommended. Refer to the official Espressif documentation for detailed installation instructions for your operating system.

6. OPERATING THE BOARD

6.1 Uploading Your First Program (Arduino IDE)

1. Open the Arduino IDE.
2. Go to **File > Examples > 01.Basics > Blink** to open the classic LED blink example.
3. Modify the LED pin number in the sketch to match an available GPIO pin on your ESP32-S3 board, or use the on-board RGB LED if applicable (refer to board schematics for specific pin assignments).
4. Ensure the correct board and port are selected under **Tools**.
5. Click the 'Upload' button (right arrow icon). The IDE will compile and upload the sketch to your board.
6. During upload, you may need to press and hold the **BOOT** button, then press and release the **RST** button, and

finally release the **BOOT** button to put the ESP32-S3 into download mode.

7. Once uploaded, the LED should blink according to the program.

6.2 Using Wi-Fi and Bluetooth LE

The ESP32-S3 supports both 2.4 GHz Wi-Fi and Bluetooth LE. You can find numerous examples in the Arduino IDE **File** > **Examples** > **ESP32**) or ESP-IDF documentation to get started with network connectivity, including connecting to Wi-Fi networks, setting up a soft AP, or communicating via Bluetooth LE.

7. MAINTENANCE

- **Cleaning:** If necessary, gently clean the board with a soft, dry brush or compressed air to remove dust. Avoid using liquids or harsh chemicals.
- **Storage:** Store the board in an anti-static bag in a dry, cool environment when not in use.
- **Firmware Updates:** Regularly check for updates to the ESP32-S3 core in your chosen development environment (Arduino IDE, ESP-IDF) to benefit from bug fixes and new features.

8. TROUBLESHOOTING

8.1 Board Not Detected

- **Check USB Cable:** Ensure the USB-C cable is functional and properly connected. Try a different cable.
- **Driver Installation:** Verify that the correct USB-to-UART drivers are installed (see Section 5.1).
- **Port Selection:** In your IDE, ensure the correct serial port is selected.
- **Computer Restart:** Sometimes a computer restart can resolve port detection issues.

8.2 Upload Errors

- **Incorrect Board/Port:** Double-check that the correct ESP32-S3 board and serial port are selected in your IDE.
- **Boot Mode:** Ensure the board is in download mode during upload. This often involves pressing and holding the BOOT button, then pressing and releasing RST, and finally releasing BOOT.
- **Power Supply:** Insufficient power can cause upload failures. Ensure the board is powered adequately via USB.
- **Corrupted Sketch:** Try uploading a simple example sketch (e.g., Blink) to rule out issues with your code.

8.3 Wi-Fi/Bluetooth Connectivity Issues

- **Antenna:** Ensure the integrated antenna on the ESP32-S3-WROOM-1 module is not obstructed.
- **Code Logic:** Verify your code correctly initializes and uses the Wi-Fi or Bluetooth LE modules.
- **Power:** Wireless communication can be power-intensive. Ensure a stable power supply.
- **Interference:** Minimize potential interference from other 2.4 GHz devices.

9. SPECIFICATIONS

Feature	Detail
Model Name	ESP32-S3
Processor	Espressif ESP32-S3 (Dual-core Xtensa LX7)

Feature	Detail
Wireless Connectivity	Wi-Fi (802.11 b/g/n), Bluetooth LE 5.0
Memory Storage Capacity	32 GB (as per product listing, typically refers to external flash)
RAM Memory Technology	DDR (likely refers to internal SRAM/PSRAM capabilities)
USB Ports	2 (USB-C, one for USB-to-UART, one for USB-OTG)
Compatible Devices	Personal Computer
Manufacturer	Senzooe
ASIN	B0CB8M2VSN
UPC	755752649846

10. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the seller or manufacturer's official channels. Keep your purchase receipt as proof of purchase. General support for ESP32-S3 development can be found through the extensive Espressif documentation, community forums, and online resources.