Ebyte EoRa-S3-900TB (EoRa PI) Pin Mapping Guide –Created by Claude

Overview

This document provides a comprehensive pin mapping reference for the Ebyte EoRa-S3-900TB development board, also known as EoRa PI. The board is based on the ESP32-S3 microcontroller and features GPIO pins with various capabilities including RTC_GPIO support and ext0 wake-up functionality.

Pin Mapping Table

Pin	Pin Name	Pin Type	GPIO	RTC_GPIO	ADC	EXT0 Wake-up	Pin Usage	Comments
1	VCC	Power Supply	-	-	-	No	5V power output after normal power supply	-
2	GND	Power Supply	-	-	-	No	Power GND	-
3	VDD	Power Supply	-	-	-	No	3.5V power output after normal power supply	Forbidden to input another external power
4	GND	Power Supply	-	-	-	No	Power GND	-

5	GPIO 42	Input/Output	GPIO42	-	-	No	General purpose I/O	-
6	GPIO 44	Input/Output	GPIO44	-	-	No	General purpose I/O	-
7	GPIO 45	Input/Output	GPIO45	-	-	No	General purpose I/O	**Strapping pin**
8	GPIO 41	Input/Output	GPIO41	-	-	No	General purpose I/O	-
9	GPIO 40	Input/Output	GPIO40	-	-	No	General purpose I/O	-
10	GPIO 39	Input/Output	GPIO39	-	-	No	General purpose I/O	-
11	U0RXD	Input	GPIO44*	-	-	No	UART serial port RXD	Connected to USB-UART bridge
12	U0TXD	Output	GPIO43*	-	-	No	UART serial port TXD	Connected to USB-UART bridge
13	GPIO 38	Input/Output	GPIO38	-	-	No	General purpose I/O	-

14	GPIO 16	Input/Output	GPIO16	RTC_GPIO16	ADC2_CH5	**Yes**	General purpose I/O	RTC GPIO capable
15	GPIO 15	Input/Output	GPIO15	RTC_GPIO15	ADC2_CH4	**Yes**	General purpose I/O	RTC GPIO capable
16	RST	Input/Output	-	-	-	No	Connect to ESP32-S3 reset pin	System reset
17	GPIO 8	Input/Output	GPIO8	RTC_GPIO8	ADC1_CH7	**Yes**	Connect to the reset pin of the LoRa module	RTC GPIO capable
18	GPIO 12	Input/Output	GPIO12	RTC_GPIO12	ADC2_CH1	**Yes**	General purpose I/O	RTC GPIO capable
19	GPIO 48	Input/Output	GPIO48	-	-	No	General purpose I/O	-
20	GPIO 47	Input/Output	GPIO47	-	-	No	General purpose I/O	-
21	GPIO 33	Input/Output	GPIO33	-	-	No	Connect to DIO1 of LoRa module	**SPI0/1 - Not recommended for other uses**

22	GPIO 34	Input/Output	GPIO34	-	-	No	BUSY connected to LoRa module	**SPI0/1 - Not recommended for other uses**
23	GPIO 35	Input/Output	GPIO35	-	-	No	General purpose I/O	**SPI0/1 - Not recommended for other uses**
24	GPIO 0	Input/Output	GPIO0	RTC_GPIO0	-	**Yes**	BOOT button connected to the base panel	**Strapping pin**, RTC GPIO capable
25	GPIO 36	Input/Output	GPIO36	-	-	No	General purpose I/O	**SPI0/1 - Not recommended for other uses**
26	GPIO 37	Input/Output	GPIO37	-	-	No	LED connected to base plate	**SPI0/1 - Not recommended for other uses**

RTC GPIO Pins (EXT0 Wake-up Capable)

The following pins support RTC GPIO functionality and can be used for EXT0 wake-up from deep sleep:

GPIO	RTC_GPIO	ADC Channel	EXT0 Wake-up	Usage Notes
GPIO0	RTC_GPIO0	-	✓	Strapping pin, BOOT button
GPIO8	RTC_GPIO8	ADC1_CH7	✓	LoRa module reset pin

GPIO12	RTC_GPIO12	ADC2_CH1	✓	General purpose
GPIO15	RTC_GPIO15	ADC2_CH4	✓	General purpose
GPIO16	RTC_GPIO16	ADC2_CH5	✓	General purpose

Complete ESP32-S3 RTC GPIO Reference

For reference, here are all ESP32-S3 RTC GPIO pins (not all are available on the EoRa-S3-900TB):

GPIO	RTC_GPIO	ADC	Available on EoRa-S3-900TB
GPIO0	RTC_GPIO0	-	✓
GPIO1	RTC_GPIO1	ADC1_CH0	❌
GPIO2	RTC_GPIO2	ADC1_CH1	❌
GPIO3	RTC_GPIO3	ADC1_CH2	❌
GPIO4	RTC_GPIO4	ADC1_CH3	❌
GPIO5	RTC_GPIO5	ADC1_CH4	❌
GPIO6	RTC_GPIO6	ADC1_CH5	❌
GPIO7	RTC_GPIO7	ADC1_CH6	❌
GPIO8	RTC_GPIO8	ADC1_CH7	✓
GPIO9	RTC_GPIO9	ADC1_CH8	❌

GPIO10	RTC_GPIO10	ADC1_CH9	❌
GPIO11	RTC_GPIO11	ADC2_CH0	❌
GPIO12	RTC_GPIO12	ADC2_CH1	✓
GPIO13	RTC_GPIO13	ADC2_CH2	❌
GPIO14	RTC_GPIO14	ADC2_CH3	❌
GPIO15	RTC_GPIO15	ADC2_CH4	✓
GPIO16	RTC_GPIO16	ADC2_CH5	✓
GPIO17	RTC_GPIO17	ADC2_CH6	❌
GPIO18	RTC_GPIO18	ADC2_CH7	❌
GPIO19	RTC_GPIO19	ADC2_CH8	❌
GPIO20	RTC_GPIO20	ADC2_CH9	❌
GPIO21	RTC_GPIO21	-	❌

EXT0 Wake-up Usage

The EXT0 wake-up source can use any of the RTC GPIO pins to wake the ESP32-S3 from deep sleep. Here's how to use it:

Code Example

```
#include "esp_sleep.h"
#include "driver/rtc_io.h"

// Configure EXT0 wake-up on GPIO0 (BOOT button)
void configure_ext0_wakeup() {
```

```
    // Configure the pin as RTC GPIO
    rtc_gpio_init(GPIO_NUM_0);
    rtc_gpio_set_direction(GPIO_NUM_0, RTC_GPIO_MODE_INPUT_ONLY);
    rtc_gpio_pullup_en(GPIO_NUM_0);

    // Configure EXT0 wake-up (wake on LOW level - button press)
    esp_sleep_enable_ext0_wakeup(GPIO_NUM_0, 0);

    // Enter deep sleep
    esp_deep_sleep_start();
}
```

Available EXT0 Wake-up Pins on EoRa-S3-900TB:

- **GPIO0** (Pin 24) - BOOT button, ideal for wake-up
- **GPIO8** (Pin 17) - LoRa reset pin
- **GPIO12** (Pin 18) - General purpose
- **GPIO15** (Pin 15) - General purpose
- **GPIO16** (Pin 14) - General purpose

Important Notes

Strapping Pins

- **GPIO0** (Pin 24): Strapping pin, used for boot mode selection
- **GPIO45** (Pin 7): Strapping pin, affects boot behavior
- **GPIO3** and **GPIO46**: Also strapping pins on ESP32-S3 but not available on this board

SPI Flash/PSRAM Pins (Avoid for General Use)

- **GPIO33-GPIO37** (Pins 21-25): Connected to SPI flash/PSRAM, not recommended for other uses

USB-JTAG Pins

- **GPIO19** and **GPIO20**: Used for USB-JTAG (not available on this board)

Power Supply Information

- **VCC** (Pin 1): 5V output (can be used as 5V power output after normal power supply)
- **VDD** (Pin 3): 3.5V output (forbidden to input another external power)
- **GND** (Pins 2, 4): Ground connections

ADC Limitations

- ADC2 pins (GPIO11-GPIO20) cannot be used for ADC when Wi-Fi is active
- Use ADC1 pins when possible if ADC + Wi-Fi functionality is needed

LoRa Module Connections

- **GPIO8** (Pin 17): LoRa module reset
- **GPIO33** (Pin 21): LoRa module DIO1
- **GPIO34** (Pin 22): LoRa module BUSY

Hardware Features

- **GPIO0** (Pin 24): Connected to BOOT button on base panel
- **GPIO37** (Pin 26): Connected to LED on base plate

This reference should help you effectively utilize the GPIO pins on your EoRa-S3-900TB development board, especially for deep sleep wake-up applications.