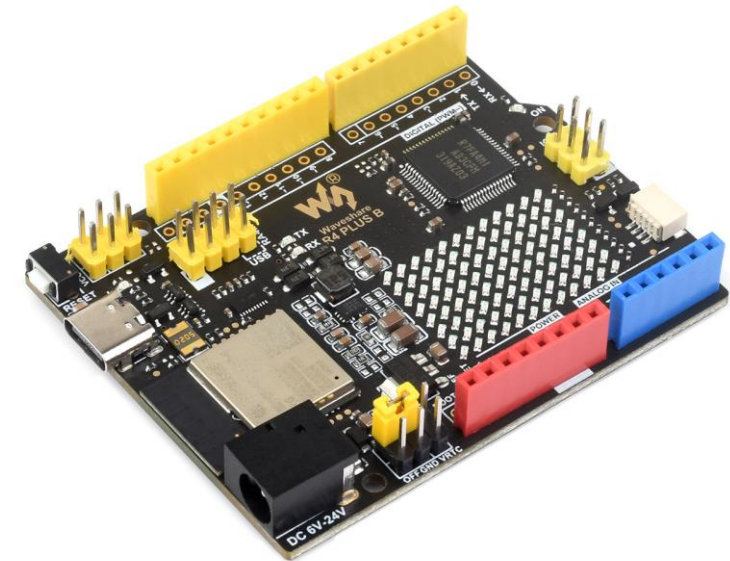


Overview

R7FA4 PIUS B combines the processing power and the new peripherals of Renesas Electronics' RA4M1 microcontroller with wireless connectivity capabilities of Espressif's ESP32-S3. In addition, the board also offers onboard 12x8 LED matrix, Qwiic connectors, VRTC and OFF pins, catering to all potential needs for your next project. With R7FA4 PIUS B, you can easily upgrade your project and add wireless connectivity to extend the coverage of your current setup. If this is your first project, the board has everything you need to spark your creativity.

Order Code

Order Code	Brand	Description
E00003-001	Waveshare	Uno R4 WiFi



Features

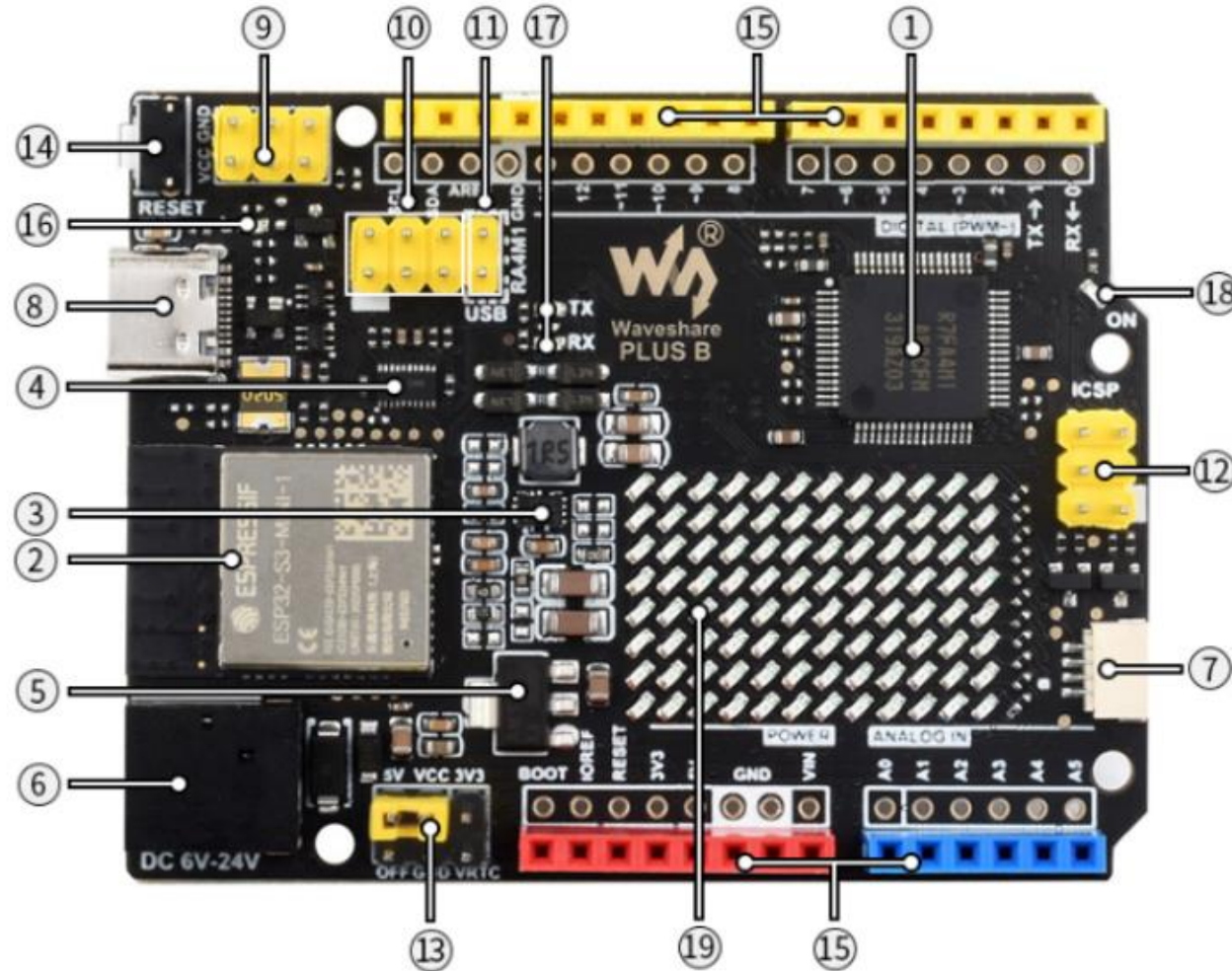
- Based on R7FA4M1AB3CFM, and is compatible with Arduino UNO R4 WiFi.
- Utilizes Renesas Electronics' RA4M1 (Arm® Cortex®-M4) microcontroller, with a main frequency of 48MHz.
- Onboard ESP32-S3 module, integrates 2.4GHz Wi-Fi and Bluetooth LE dual-mode wireless communication, allowing the maker to use it for wireless communication. Combined with Arduino IoT Cloud, you can remotely monitor and control the projects.
- Onboard 12x8 red LED matrix, suitable for creative projects with animation or plotting sensor data, no additional hardware is required.
- Equipped with 256 kB Flash and 32 kB RAM, the expanded memory can easily handle complex projects.
- The R7FA4 Plus development board adds a 12-bit DAC, CAN bus and operational amplifiers, providing expanded functionality and flexibility for designs.
- Onboard 5V/3.3V headers for easy voltage switching, allowing the use of more expansion modules.
- Flexible power options, supporting USB-C power supply or external input power VIN (6V<=VIN<=21V).
- Onboard power indicator (PWR), USER LED, serial port receive indicator (RX), and transmit indicator (TX), making it easy to monitor the working status of the development board.
- Onboard ICSP interface, can be used as an SPI interface.
- Supports user soldering of corresponding interface insertion into the experimental board.

Product parameters

MICROCONTROLLER	R7FA4 (32-bit ARM Cortex-M4), ESP32-S3FN8 (Dual-core 32-bit Xtensa LX7)
CLOCK FREQUENCY	R7FA4: 48MHz, ESP32-S3FN8: 240MHz
STORAGE	R7FA4: 256kB Flash, 32kB RAM, ESP32-S3FN8: 384kB ROM, 512kB RAM, 8MB Flash
WIRELESS COMMUNICATION	2.4GHz WiFi + Bluetooth LE
OPERATING VOLTAGE	Options for 5V/3.3V, support more shields
POWER INPUT	6~24V
RESET BUTTON	Lateral, easier to use when connecting with shield
IO PIN OUTPUT CURRENT	8mA
DIGITAL PINS	14
ANALOG PINS	6
DAC	2
PWM	6
UART	1
I2C	1
SPI	1
CAN	1
DC JACK	Low profile, shields won't be blocked anymore while connecting
POWER OUTPUT HEADER	Provides 5V OR 3.3V power output and common-grounding with other boards
5V POWER OUTPUT	Up to 2000mA Max, features higher driving capability
EXPERIMENTAL BOARD	Support, the solder pad is provided for DIY interfaces to connect with the experimental board

Uno R4 WiFi

Onboard interface

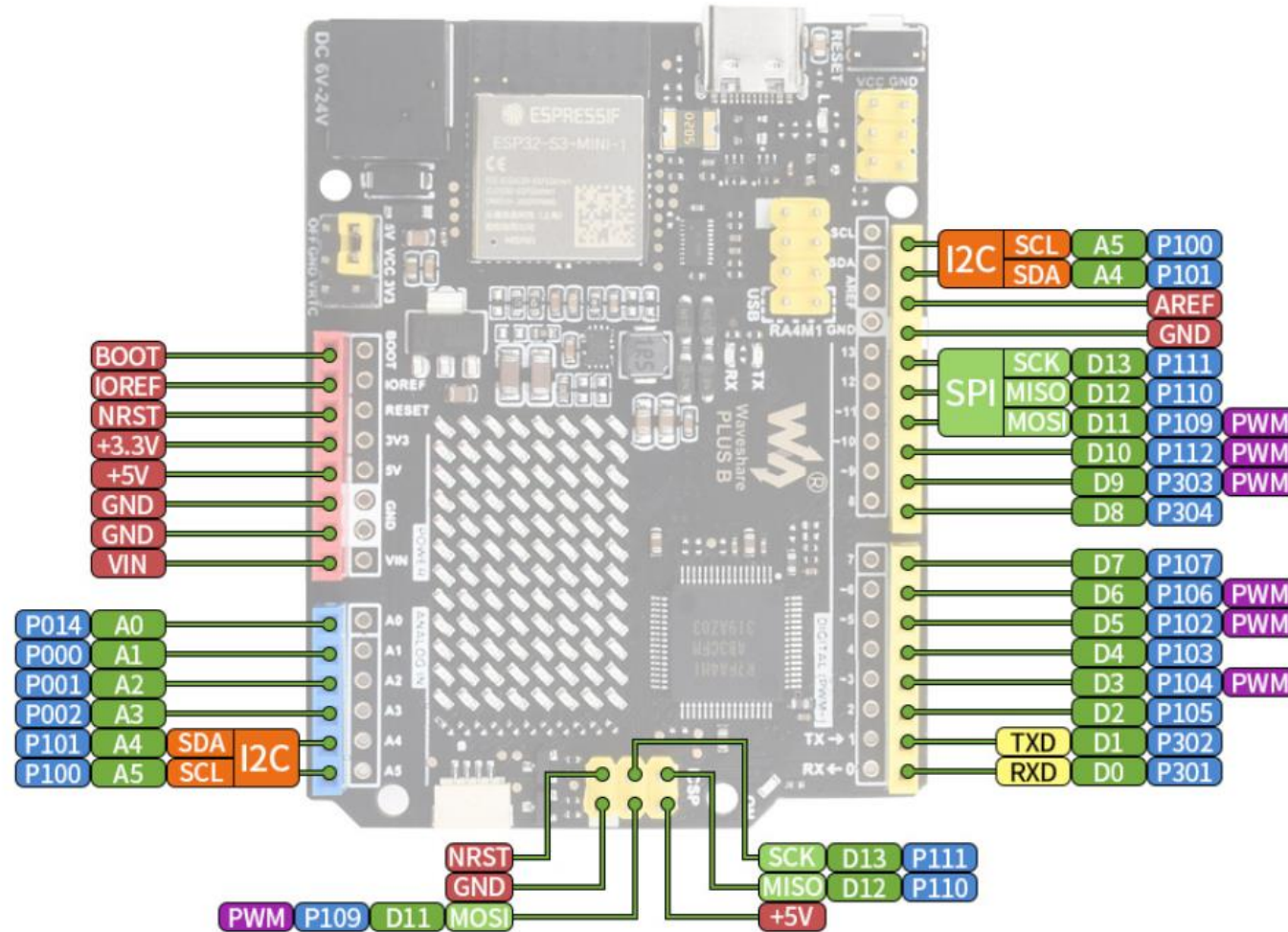


Onboard interface

1. **R7FA4M1AB3CFM**
2. **ESP32-S3-MINI-1 module**
3. **MP8759**
5V voltage regulator
4. **TXB0108DQSR**
voltage translator, for communication between R7FA4 and ESP32-S3
5. **AMS1117-3.3**
3.3V voltage regulator
6. **DC input**
6V ~ 24V
7. **Qwiic connector**
for connecting I2C device of Qwiic Eco
8. **USB Type-C connector**
for uploading program OR serial port debugging
9. **Power output header**
3.3V OR 5V, voltage level configured by the onboard power configuration switch, used as power output and common-grounding with other boards
10. **ESP32-S3 pinheader**
for ESP32-S3-MINI-1 firmware downloading
11. **USB communication selection**
12. **ICSP interface**
13. **Power configuration**
for configuring R7FA4 PLUS B operating voltage
14. **Reset button**
15. **Arduino interface**
compatible with standard Arduino interface, adapting 2.54 pitch solder pad, can be directly connected to experimental board
16. **User LED**
17. **Serial port RX/TX indicators**
18. **Power indicator**
19. **12×8 LED matrix**

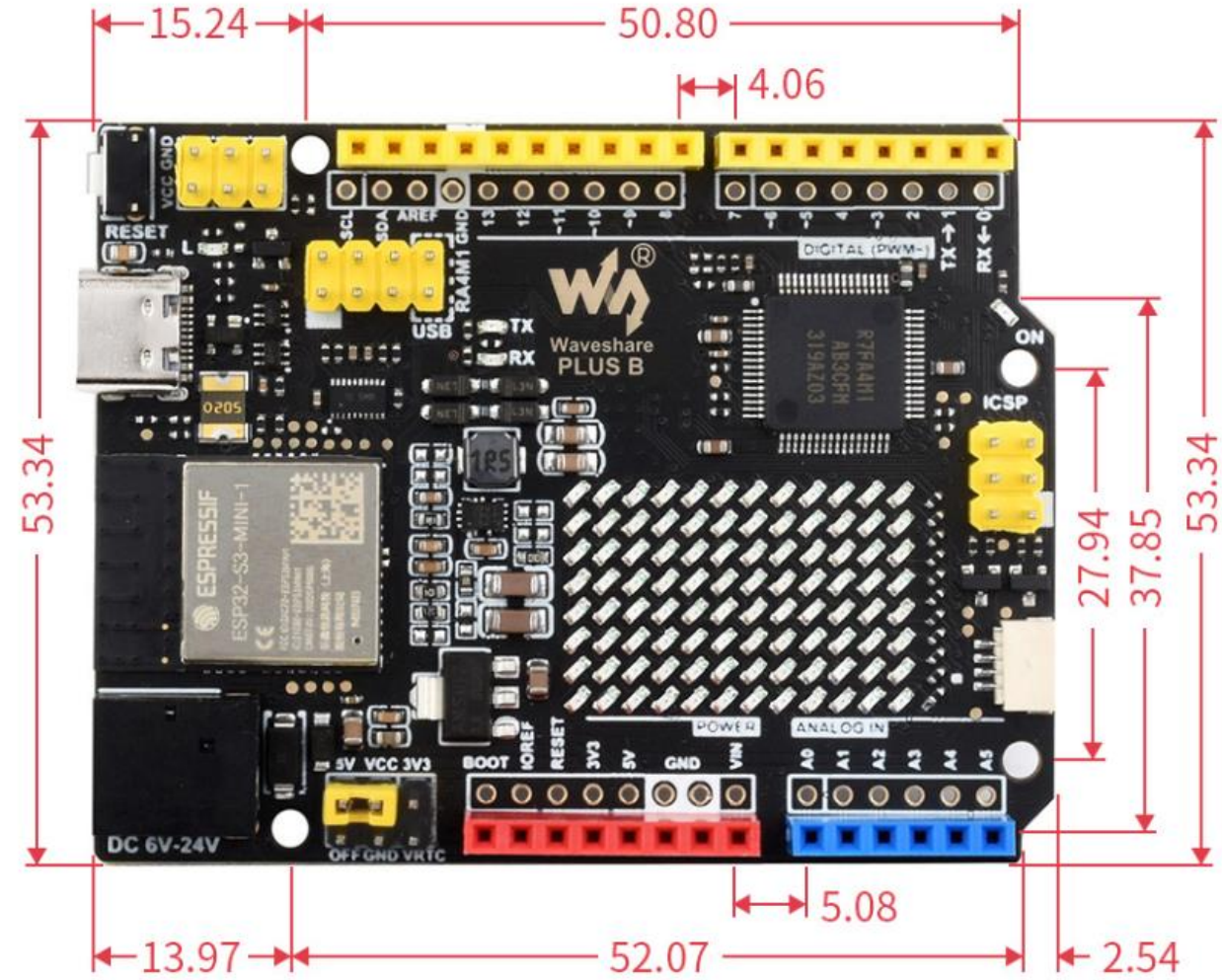
Uno R4 WiFi

Pin Out Definition



Uno R4 WiFi

Dimension



Documents

- [MCU R7FA4M1AB3CFM datasheet](#)
- [ESP32-S3 module datasheet](#)

Revision History

Date	Revision	Change description
30/10/2025	1.0	Initial release