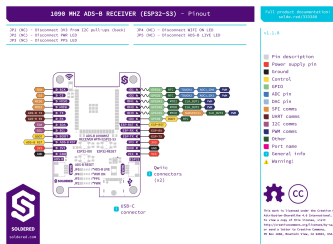


PRODUCT DATASHEET



Soldered ADS-B 1090MHz Receiver ESP32-S3

333388

Track aircraft around you with this ESP32-S3 development board and its onboard 1090 MHz ADS-B receiver, sharing the data over Wi-Fi.

Full product documentation, files and tutorials: solde.red/333388

CORE ATTRIBUTES

SKU **333388**DIMENSIONS **38.0 × 54.0 × 4.8 mm**ORIGIN **HR**

DESCRIPTION

Pick up ADS-B broadcasts from the aircraft near you and put them to work: plot them on a map, keep a log, or forward them to a flight-tracking service. The board pairs an **Aerobits TT-SC1** 1090 MHz ADS-B receiver with an **ESP32-S3-WROOM-1-N8R8** module, so both decoding and networking run on a single board.

The TT-SC1 monitors 1090 MHz, decoding position, altitude and identification messages from as many as 100 aircraft at once and passing the results to the ESP32-S3 over UART. With 8 MB of flash, 8 MB of PSRAM, Wi-Fi and Bluetooth LE, the ESP32-S3 can serve a live map straight from the board or push the data onto your network.

Power and programming both come through the USB-C port. An onboard CH340K converter with an automatic reset circuit means firmware uploads need no button presses. The receiver's antenna plugs into the module's IPEX connector. Two Qwiic connectors bring the ESP32-S3's I2C bus out to a cable, so a display or sensors can be added without soldering. The two 12-pin headers break out the receiver's UART, SPI, reset and boot lines next to the free ESP32-S3 pins, and separate reset buttons for the ESP32-S3 and the receiver simplify testing.

Four status LEDs report power, the receiver's PPS signal, Wi-Fi state and incoming ADS-B traffic. Each has a jumper that can be cut if you need to save power.

TECHNICAL DETAILS

RECEIVER

- Module: Aerobits TT-SC1 (version b) with IPEX antenna connector
- Operating frequency: 1090 MHz
- Receiver sensitivity: -85 dBm
- Aircraft tracked at once: up to 100

- Range: more than 150 km (manufacturer figure; open space with a 1 dBi antenna)
- Current draw: 70 mA typical at 3.3 V

MICROCONTROLLER

- Module: ESP32-S3-WROOM-1-N8R8
- CPU: dual-core Xtensa LX7 running at up to 240 MHz
- Memory: 512 KB SRAM, 8 MB flash and 8 MB PSRAM
- Wireless: Wi-Fi 802.11 b/g/n at 2.4 GHz and Bluetooth LE 5
- USB-to-UART bridge: CH340K with automatic reset and boot

POWER

- Input: 5 V from USB-C or the VCC header pin
- Regulator: TPS7A2633 (3.3 V, 500 mA)
- I/O logic level: 3.3 V

MECHANICAL

- Board dimensions: 38 × 54 mm
- Mounting: four 3.2 mm holes

SPECIFICATIONS

MCU PART NUMBER	ESP32-S3
MCU CLOCK (MHZ)	240 MHz
SRAM (KB)	512 KB
FLASH (MB)	8 MB
WIFI	Wifi4
BLUETOOTH	Ble 5
WIRELESS MODULE	ESP32-S3-WROOM-1-N8R8
GPIO COUNT	5
QWIIC COMPATIBLE	Yes
BREADBOARD COMPATIBLE	No
BATTERY CONNECTOR	None
ONBOARD BATTERY CHARGER	No
SUPPLY VOLTAGE	3V3 5V
LOGIC LEVEL	3V3
SLEEP CURRENT UA	80000
DEV ENVIRONMENTS	Arduino IDE, MicroPython, ESP-IDF

DOCUMENTS

Main IC Datasheet · EN

https://cms.soldered.com/products/333388/documents/ic-datasheet/333388_ic-datasheet_96e631.pdf

Main IC Datasheet · EN

https://cms.soldered.com/products/333388/documents/ic-datasheet/333388_ic-datasheet_a2a312.pdf

LINKS

Arduino Library

<https://github.com/SolderedElectronics/Soldered-ADSB-Receiver-Arduino-Library>

MicroPython Module

<https://github.com/SolderedElectronics/Soldered-ADSBReceiver-MicroPython-Library>

GALLERY

1090 MHZ ADS-B RECEIVER (ESP32-S3) - Pinout

JP1 (NC) - Disconnect 3V3 from I2C pull-ups (back)
JP2 (NC) - Disconnect PMR LED
JP3 (NC) - Disconnect PPS LED

JP4 (NC) - Disconnect WIFI ON LED
JP5 (NC) - Disconnect ADS-B LIVE LED

Full product documentation:
solder.red/333388

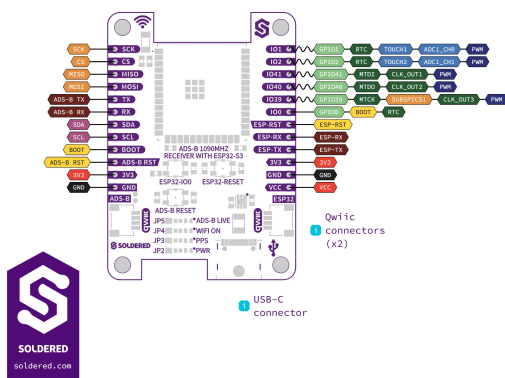
v1.1.0

Pin description

- Pin description
- Power supply pin
- Ground
- Control
- GPIO
- ADC pin
- DAC pin
- SPI comms
- UART comms
- I2C comms
- PWM comms
- Other
- Port name
- General info
- Warning!

Qwiic connectors (x2)

USB-C connector



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