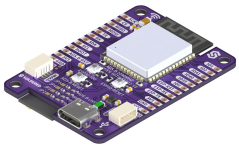
PRODUCT DATASHEET



# 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** |
| BARCODE | **732388637607** |

## 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

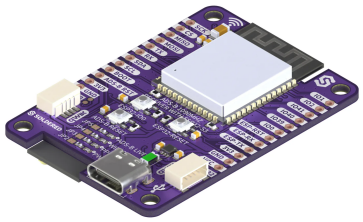
Main IC Datasheet · EN

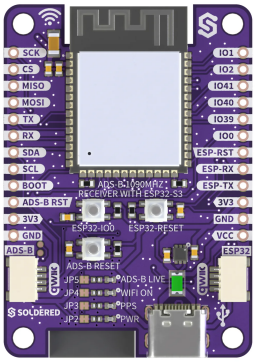
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| Main IC Datasheet · EN | https://cms.soldered.com/products/333388/documents/ic-datasheet/333388_ic-datasheet_a2a312.pdf |

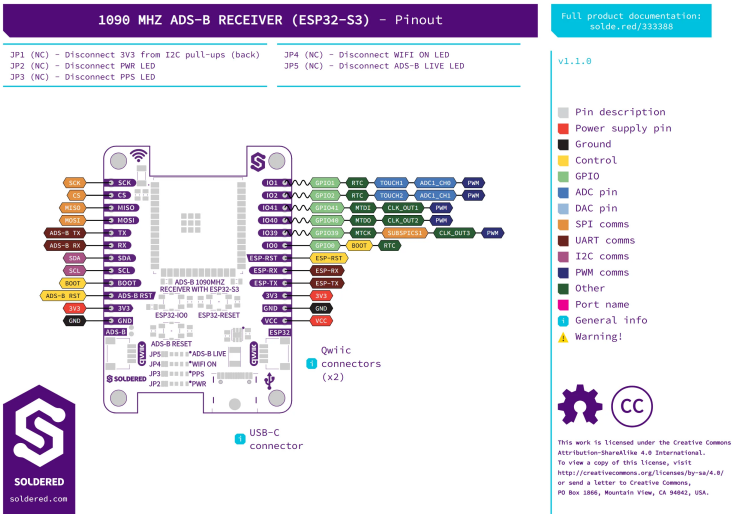
## LINKS

| | |
|---|---|
| Full Documentation | https://docs2.soldered.com/soldered-ads-b-1090mhz-receiver-esp32-s3/ |
| Arduino Library | https://github.com/SolderedElectronics/Soldered-ADSB-Receiver-Arduino-Library |
| MicroPython Module | https://github.com/SolderedElectronics/Soldered-ADSBReceiver-MicroPython-Library |
| Pinout | https://cms.soldered.com/products/333388/media/333388_pinout-png_cdf9fe.png |

## GALLERY




SCK
CS
MISO
MOSI
TX
RX
SDA
SCL
BOOT
ADS-B RST
3V3
GND
ADS-B
IO1
IO2
IO41
IO40
IO39
IO0
ESP-RST
ESP-RX
ESP-TX
3V3
GND
VCC
ESP32
ADS-B 1090MHZ RECEIVER WITH ESP32-S3
ESP32-IO0
ESP32-RESET
ADS-B RESET
JP5 ADS-B LIVE
JP4 WIFI ON
JP3 PPS
JP2 PWR
QWIIC
SOLDERED


1090 MHZ ADS-B RECEIVER (ESP32-S3) - Pinout
JP1 (NC) - Disconnect 3V3 from I2C pull-ups (back)
JP2 (NC) - Disconnect PWR LED
JP3 (NC) - Disconnect PPS LED
JP4 (NC) - Disconnect WIFI ON LED
JP5 (NC) - Disconnect ADS-B LIVE LED
Full product documentation:
solde.red/333388
v1.1.0
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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