

Connectors

Ref	Func	Pins	AWG	PN
J1	DC IN	2	18	https://www.digikey.com/en/products/detail/amphenol-anytek/TJ0231530000G/2261289
J2	RS485	3	24	https://www.digikey.com/en/products/detail/amphenol-anytek/TJ0311530000G/4243173
J3	BATT	5	18+24	https://www.digikey.com/en/products/detail/adam-tech/EBKA-05-A/9830611

Power input (Würth 691361300002)

(alternate)

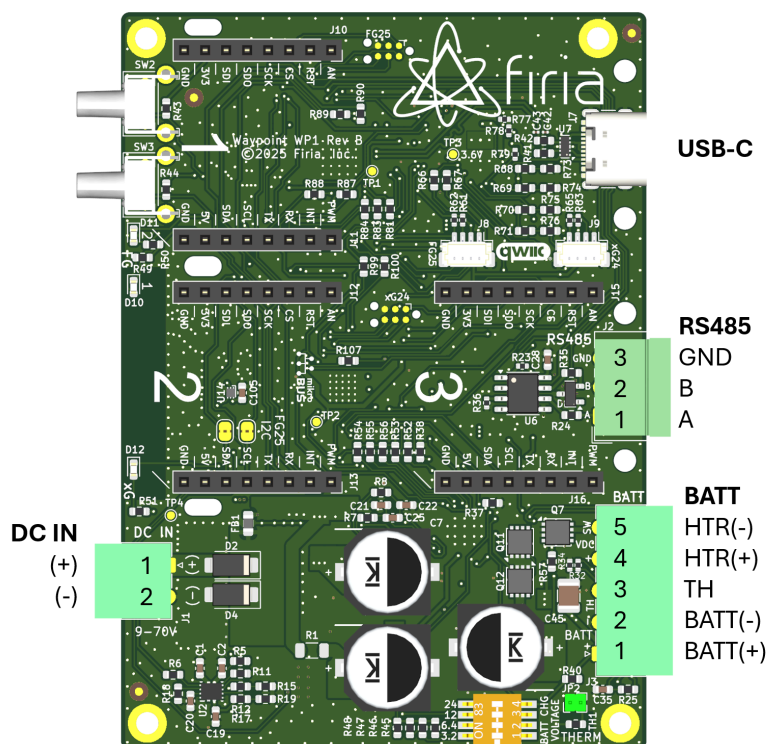
<https://www.digikey.com/en/products/detail/amphenol-anytek/TJ0231530000G/2261289>

Battery (Würth 691361100005)

(alternate) <https://www.digikey.com/en/products/detail/adam-tech/EBKA-05-A/9830611>

RS485 (Würth 691361100003)

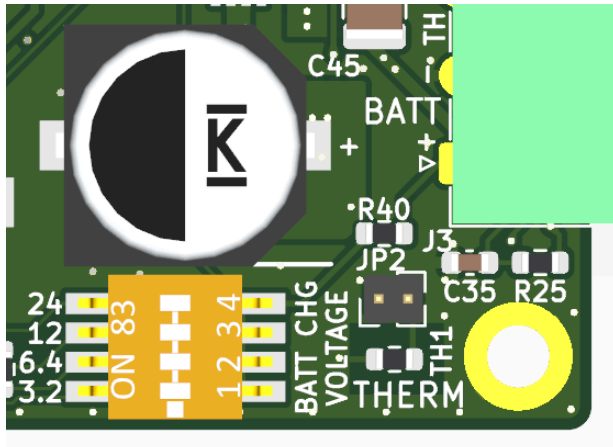
Pinouts -



DIP Switches and Jumpers

SW1 - BATT CHG VOLTAGE

The DIP switch near the battery connector allows selection of the charging output voltage. Slide only **one** switch toggle to the ON position to match the connected LiFePO4 battery, as shown below.



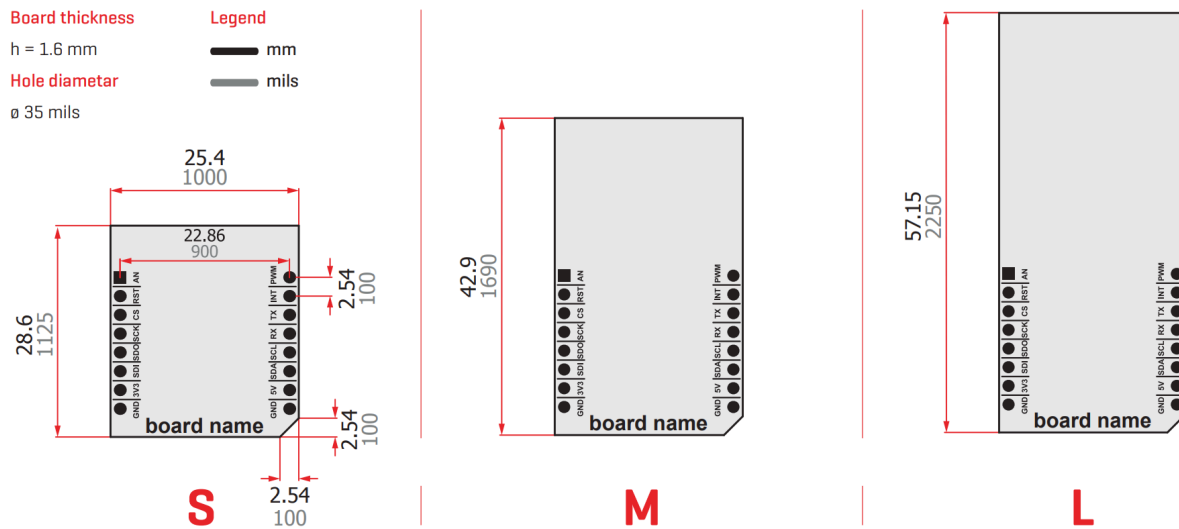
JP2 - THERM

Install a 1.27mm jumper in this position to use the onboard thermistor (TH1) if you are NOT using an external battery sense thermistor (BATT connector pin 3).

MikroBUS Sockets

MikroBUS is a popular add-on board definition, published as an open standard by MikroElektronika. Find the MikroBUS specification here: <https://www.mikroe.com/>

The WP1 can support two (2) large size MikroBUS boards, or up to three (3) small size boards.



Antenna Selection & Connection

The WP1 contains two independent radios and two RF connector points on the PCB:

- **J17 — SUB-GHz (EFR32FG25)**
- **J20 — 2.4 GHz (EFR32MG24)**

To maintain compliance with the FCC authorization for this product, install antennas **only as described below**.

1) Approved antenna types and maximum gain limits

This device was evaluated for FCC compliance using the antennas (and adapter cable) below. **You may substitute antennas only if they are the same general type and have equal or lower gain** than the reference antennas listed here.

SUB-GHz (J17)

Reference antennas tested for compliance:

A. External whip/dipole via RP-SMA (through adapter cable)

- **Molex 216196** (external whip; 868/915 LoRa class)

2.4 GHz (J20)

- Reference antenna used for compliance: **Molex 214415-0011** (2.4 GHz dipole/whip, RP-SMA) ([Molex](#))

Important: Using an antenna with **higher gain** (or a different antenna type/radiation characteristic than certified) can cause non-compliance with FCC limits and may require additional regulatory evaluation.

2) Adapter cable used during compliance testing (for RP-SMA antennas)

The Waypoint's RF ports (J17/J20) are **u.FL-style** board connectors. If you are using an RP-SMA antenna, use the same adapter style/cable class that was evaluated:

- **Pulse W9003** — u.FL (UMCC) to **RP-SMA female**

3) Physical installation steps

Step 1 — Power down before connecting RF hardware

1. Remove DC power from Waypoint.
2. Wait for status LEDs to turn off.

Step 2 — Identify the correct RF connector on the PCB

- Connect **SUB-GHz antennas to J17** (*labeled "SUB GHZ"*)
- Connect **2.4 GHz antennas to J20** (*labeled "2.4GHZ"*)

Do **not** swap antennas between ports; SUB-GHz and 2.4 GHz antennas are not interchangeable.

Step 3 — Connect u.FL plugs correctly (prevent connector damage)

u.FL connectors are small and can be damaged by side-loading.

1. Align the u.FL plug **directly over** the board jack (J17 or J20).
2. Press **straight down** until you feel a soft "snap."
3. **Do not twist** the plug to seat it.
4. Provide **strain relief** so the cable cannot tug sideways on the connector.

To disconnect: lift the plug **straight up** (use a u.FL removal tool if available). Avoid prying at an angle.

Step 4 — If using an RP-SMA antenna, attach the adapter then the antenna

1. Snap the adapter's u.FL end onto J17 or J20 (Step 3).
2. Route the coax to avoid sharp bends and pinching.
3. Thread the **RP-SMA antenna** onto the adapter's RP-SMA female end and hand-tighten (do not over-torque).

4) Guidance on antenna selection

You are not required to purchase the exact antennas above **as long as** your substitute antenna meets all requirements below:

- **Frequency band matches the radio port**
 - J17: 868/915 MHz class
 - J20: 2.4–2.5 GHz
- **Antenna type is equivalent** (e.g., omni whip/dipole comparable to the reference antenna)
- **Peak gain is equal or lower** than the reference antenna specification
- **Impedance is 50 Ω**
- **Connector chain is equivalent** (u.FL at the PCB; RP-SMA only through an adapter cable)

FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF exposure statement

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

PRODUCT MODEL: WP1
FCC ID: 2BUSG-WP1