

The Solar Uninterruptible Power Supply (SUPS) is a kit intended to show the process of generating and storing solar power. It consists of 3 primary modules.

Assembly

***Be sure to connect all connectors with the proper orientation ie. if the connector isn't connecting, flip it around.**

1. Module 1 is the interface between the solar panel and the battery. It is a boost converter that steps up the solar panel's 12V to 14.4V. 14.4V is selected as it is the voltage at which the battery is fully charged, therefore, it is a solar battery charger.
 - a. Connect the solar panel's connector to the connector labeled **PANEL**.
 - b. Connect one end of an unused smaller double sided connector to **EN_1**.
 - c. Connect one end of an unused bigger double sided connector to **MOD2**.
2. Module 2 is the battery monitor and controller of the other modules. It consists of an ATtiny1624 microcontroller that monitors the battery's voltage and enables/disables the other 2 modules. The enable/disable function for module 1 is used to control the output power of the module in order to protect the battery. The enable/disable function for module 3 simply disables the buck converter, thus, removing power from the USB C port.
 - a. Connect the battery's connector to the connector labeled **BAT**.
 - b. Connect one end of an unused smaller double sided connector to **EN_3**.
 - c. Connect the other end of module 1's **EN_1** connector to the **EN_1** connector on module 2.
 - d. Connect the other end of module 1's **MOD2** connector to the **MOD1** connector on module 2.
 - e. Connect one end of an unused bigger double sided connector to **MOD3**.
 - f. Connect one end of an unused smaller double sided connector to **EN_3**.
3. Module 3 is the output stage. This is where we can use the energy we collected from the solar panel and stored in the battery. This module is a boost converter, and steps down the voltage from the battery to 5V. This 5V appears on the USB C connector and can be used to deliver power to USB C compatible devices.
 - a. Connect the other end of module 2's **EN_3** connector to the **EN_3** connector on module 3.
 - b. Connect the other end of module 2's **MOD3** connector to the **MOD2** connector on module 3.

Disassembly

***Do not pull connectors hard. Using your fingernail, move the plastic hook slightly outward and remove the connector.**

1. Disconnect any USB C device.
2. Disconnect the battery from module 2.
3. Disconnect the solar panel from module 1.
4. Disconnect everything else in any order.