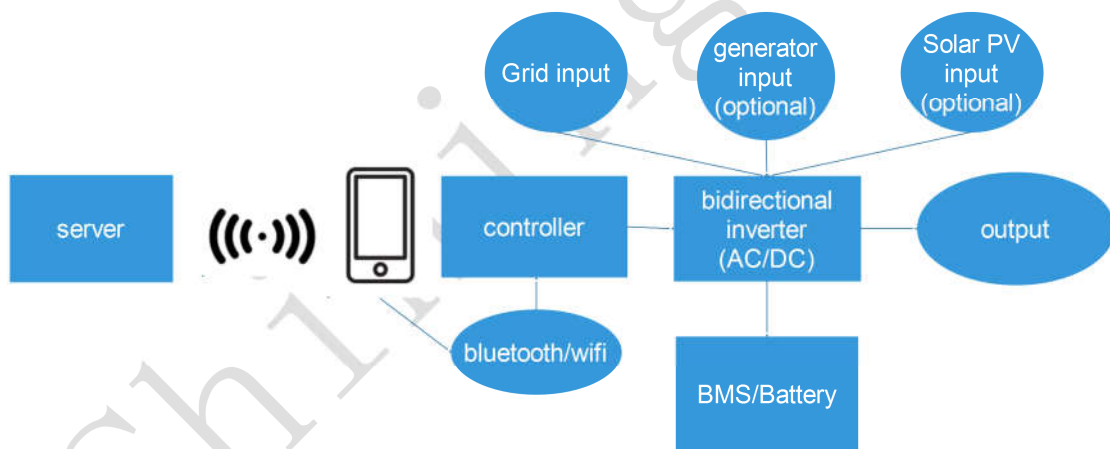


Shiningintl Portable Power Station Solution Guide

Shiningintl is a professional new energy power components and solution supplier, we provide the whole power solutions of portable power station, home energy storage system solution and solar PV off-grid/on-grid energy system. This page will describe the Shiningintl portable power station solution from components and system integration, we can help our clients to reduce the cost and time to develop a customized competitive portable power station products within a short period based on our advanced solution.



Features of Shiningintl portable power station solution:

1. whole solution supplier from bottom to top: we have all the capability of design, manufacturing and integration

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2. Scalable system: all the components and modules are flexible, then the clients can choose different modules to build products matched the market requirement.
3. Wide arrange rated power: we provide rated power system from 300W to 18kw, it can meet all kind of application scenario.

Shiningintl Portable Power Station System structure:

a. Control panel:

The control panel is the interface for users to operate the portable power station, there are many keys to control the system, also have the LCD or LED display to show the system information. The control panel module also supports wifi or Bluetooth connection that can leverage the remote control from our server. There are two type of control panel:

1. **Simple control panel:** it only shows critical information about battery power percentage , inverting on or off status.
2. **complex control panel:** this module responds for complicated operation, such as controlling to enable or disable specific port output, support wifi or Bluetooth wireless connection to remote control with smartphone or controller. Monitor every parameter of

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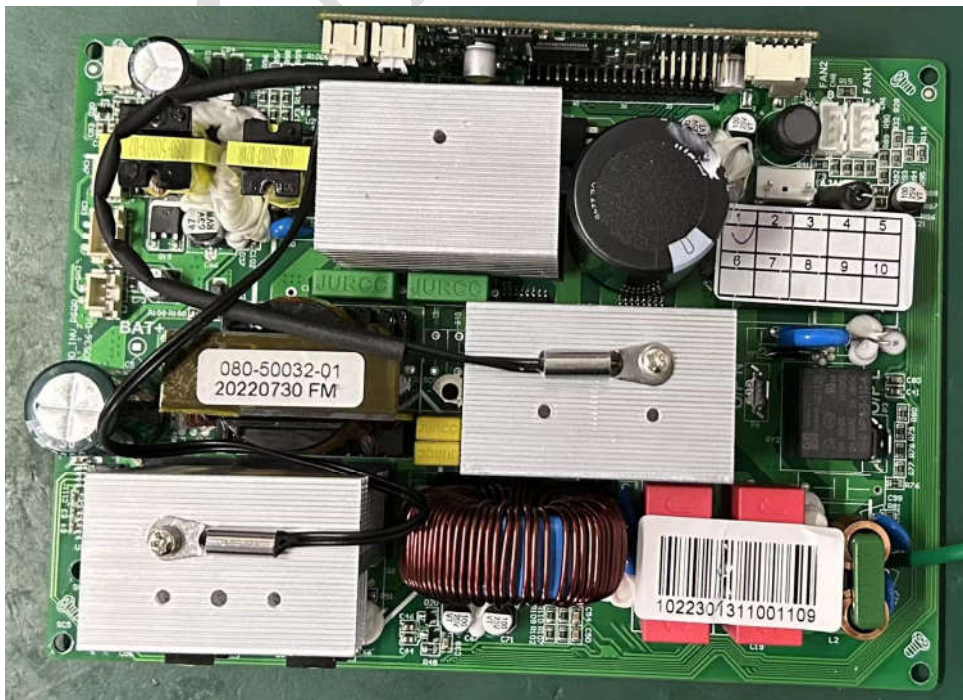
the power station to make sure the system working in security
circumstance.



b. Battery Pack

- **Function:** Stores energy (measured in watt-hours, Wh).
- **Types:**
 - **LiFePO4 (Lithium Iron Phosphate):** Long lifespan (3,000–5,000 cycles), safer, heavier.
 - **Li-ion (Lithium-ion):** Lighter, cheaper, shorter lifespan (500–1,000 cycles).
 - **lead acid**
- **Voltage:** Common configurations: 12V, 24V, 36V or 48V (matches inverter requirements).
- **Capacity:** Determines runtime (e.g., 500Wh, 1,000Wh).

b. Inverter board



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- **Function:** inverter board is the core module of the portable power station, it converts DC battery power to AC power for household devices., Shiningintl inverter boards also supports protocols to communicate with the inverter, then the control panel can send commands to the inverter board by UART or CAN or other interface.
- **Types:**
 - **Pure Sine Wave:** Essential for sensitive electronics (laptops, medical devices).
- **Power Rating:** Match to peak/continuous wattage needs (e.g., 300W, 1,000W)., Shiningintl inverters power ratings cover from 300W to 18KW with single board, the clients can choose the right model inverter board.
- The inverter board can display input and output voltage, frequency, load percentage, operating mode, machine status(refer to the simple control panel)
- More details please refer to Shiningintl inverter board specification

d. Charging Controller (MPPT/Grid/generator)

the Shiningintl portable power station is a bidirectional power transmission system, it transmits the grid AC power to DC power and stores in batteries when charging, and transfers the DC power from batteries into AC output for loads. It also supports other charging

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methods such as solar PV power(MPPT), diesel generator. We have many models of inverter board:

- **Function:** Regulates solar panel input to safely charge the battery.
 - **MPPT (Maximum Power Point Tracking)(optional):** More efficient (15–30% gain) for variable sunlight., this MPPT function can be integrated into the inverter board or stand alone..
 - **Diesel generator(optional):** AC interface to get charging from diesel generator..



Stand alone MPPT

e. Output Ports

- **AC Outlets:** For standard plugs (e.g., 120V/230V).
- **USB Ports:** USB-A, USB-C/PD (Power Delivery) for phones, laptops.

- **DC Ports:** 12V carports, 5.5mm barrel plugs for small appliances.

f. Battery Management System (BMS)

To integrate multiple batteries cells , it needs the BMS board to manage the battery cells, it is important to have stable power supply, but

Shiningintl also provide a simple solution without BMS to manage only 1 battery cell system(contact Shiningintl for more details)

- **Function:** Protects the battery from overcharge, over-discharge, short circuits, and overheating.
- **Key Features:** Voltage balancing, temperature sensors, surge protection.

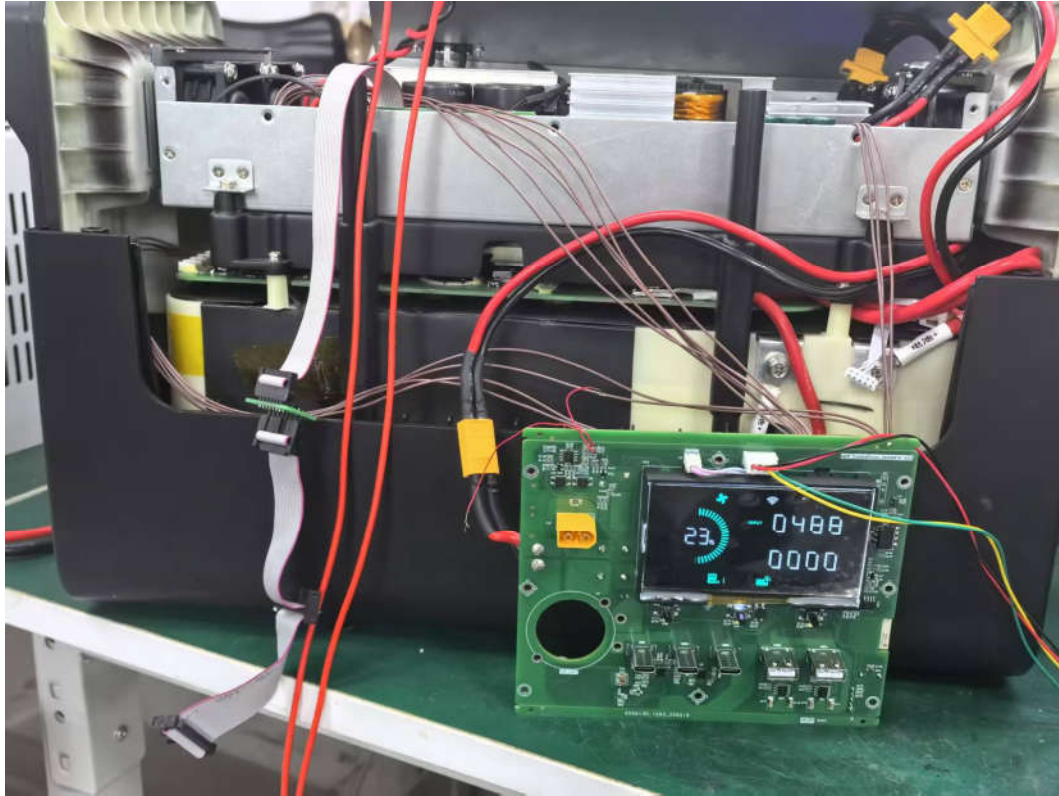
h. Chassis/Casing

Shiningintl will choose the right case material based on client's product position, and help to design the right ID design and MD design,

- **Material:** Durable ABS plastic or aluminum for heat dissipation.
- **Design:** Handles, cooling vents, waterproofing (IP rating for outdoor use).

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The system view



Finished power station

Optional modules

a. Solar Panels

- **Foldable/Portable Panels:** 100W–5000W (e.g., monocrystalline for efficiency).
- **Connectors:** MC4, XT60, or proprietary plugs (match to charge controller).

b. Expansion Batteries

- **Parallel Kits:** Add extra batteries to increase capacity (e.g., Bluetti B230, EcoFlow Extra Battery).

c. Cooling System

Shiningintl provides the right cooling system according to the application scenario, fans are chosen in normal application. It provides IP20 level product, if want to have a IP65 product, we will choose aluminum heat sink instead of fans.

- **Fans/Heat Sinks:** Prevent overheating during high-load use.,12V output for fan control

how to apply Shiningintl portable power station

As Shiningintl provide a flexible and scalable solution for portable power station, here is the client needed to consider to make a product.

1. **Match Components:** Ensure battery voltage (e.g., 12V) aligns with inverter/charge controller specs. Inquire Shiningintl about the detail inverter boards specification now.
2. **BMS choosing:** we already have a few BMS options in our patch for you to choose, but if you want to apply a different BMS, we can help to customize the BMS.
3. **Modularity:** Design for easy part replacement (e.g., swappable batteries). Or whether it needs to connect together with multiple power stations.

Inverter	Capacity (Wh)	Output (Watts)	Battery Type	Solar Input	Estimated Weight
PK300	518Wh	500W (1,000W surge)	LiFePO4	300W max	13.3 lbs
PK1000	1,024Wh	1,000W (2000W surge)	LiFePO4	1000W max	27 lbs
PK6000	2,000Wh	6,000W (12000W surge)	LiFePO4	6000W max	60.6 lbs

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[Contact Shiningintl to start your portable power station projects now!](#)

Notes:

1. [Shiningintl bidirectional inverter boards](#)
2. [shiningintl inverter communication protocols](#)

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