APstorage Sea Family
Lake-6
Installation & User Manual

(For EMEA)



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1.Important Safety Instructions

This manual contains important instructions to be followed during installation and maintenance of the LAKE-6. To reduce the risk of electrical shock and ensure the safe installation and operation of the LAKE-6, the following symbols appear throughout this document to indicate dangerous conditions and important safety instructions.

DANGER:

This indicates a hazardous situation, which if not avoided, will result in death or serious injury.

WARNING:

This indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and follow instructions carefully.

NOTE:

This indicates information that is very important for optimal system operation. Follow instructions closely.

1.1 Safety Instructions

IMPORTANT SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS. This guide contains important instructions that you must follow during installation and maintenance of the LAKE-6. Failing to follow any of these instructions may void the warranty. Follow all of the instructions in this manual. These instructions are key to the installation and maintenance of the LAKE-6. These instructions are not meant to be a complete explanation of how to design and install LAKE-6. All installations must comply with national and local electrical codes and standards.

DANGER:

- Perform all electrical installations in accordance with local codes.
- To reduce risk of burns, do not touch the body of the LAKE-6.

WARNING:

- Do NOT attempt to repair the LAKE-6. If it shows abnormal performance, Contact APsystems Customer Support to obtain adequate support. Damaging or opening the LAKE-6 will void the warranty.

NOTE:

- Before installing or using the LAKE-6, please read all instructions and Cautionary markings in the technical documents and on the LAKE-6.

1.2 Radio Interference Statement

This equipment could radiate radio frequency energy which might cause interference to radio communications if you do not follow the instructions when installing and using the equipment. But there is no guarantee that interference will not occur in a particular installation. If this equipment causes interference to radio or television reception, the following measures might resolve the issues:

A) Relocate the receiving antenna and keep it well away from the equipment.

B) Consult the dealer or an experienced radio / TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

1.3 Communication Disclaimer

The EMA system provides a friendly interface to monitor the working status of the whole energy storage system. At the same time, it can also help to locate problems during system maintenance. If communication has been lost for more than 24 hours, please contact the technical support of APsystems.

1.4 Symbols Replace Words on the Equipment, on a Display, or in Manuals

	Caution, risk of electric shock.
	Caution, hot surface.
	NOTICE, danger! This device directly connected with electricity generators and public grid.
	After the inverter is turned off, wait for at least 5 minutes before opening the LAKE-6 or touching live parts.
	Refer to the operating instructions.
	Products shall not be disposed as household waste.
	CE mark.

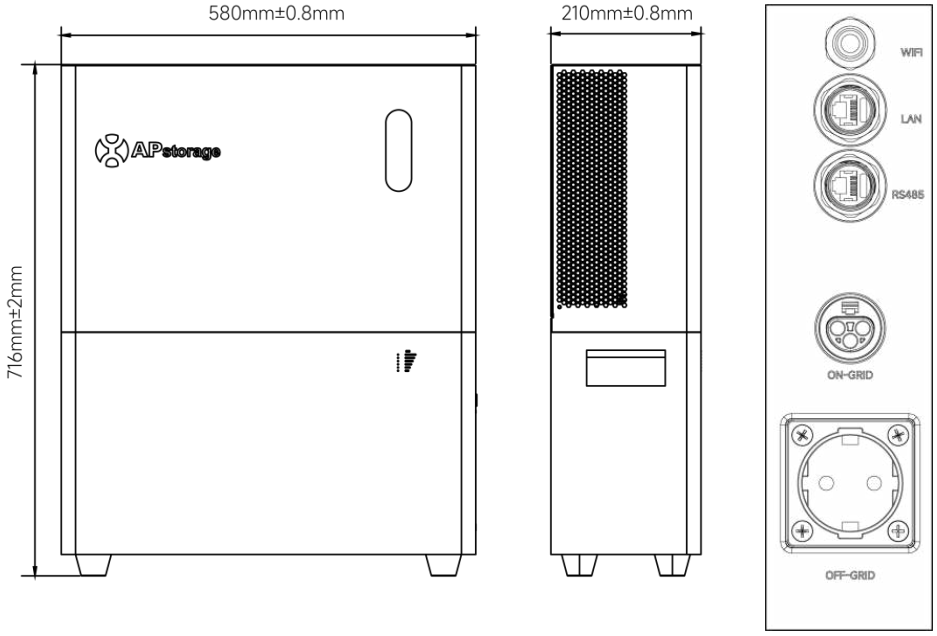
Hereby, [ALTENERGY POWER SYSTEM INC.] declares that the radio equipment type [LAKE-6] is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address:
https://emea.apsystems.com/resources/library/

2. Product Overview

2.1 Introduction

LAKE-6 is an AC-coupled energy storage system featuring four operational modes: AI Mode, Self-Generation and Self-Consumption Mode, Time-Shifting Control Mode, and Standby Power Mode. It can be charged from the grid while providing reliable electricity to both the grid and household loads.

2.2 Dimensions and Interface Introduction



WIFI

LAN: Wired network connection port

RS485:Communication port supporting the RS-485 protocol

ON-GRID:For connecting the system to the household power grid

OFF-GRID:EU-standard AC socket, which supplies power to loads during power outages

2.4 LED Indicator

2.4.1 Product LED Indicator

This indicator, mounted on the product front panel, indicates the operating status of LAKE-6.

LED	Condition		Description
SYSTEM		Steady on	During grid-connected operation
		Blinking	Start self-check
		Steady on	During off-grid operation
		Blinking	Off-grid overload
WiFi		Off	WiFi ununited
		Blinking	WiFi is connected
		Blinking	Connecting to WiFi
ALARM		Blinking	Non-critical alert
		Blinking	Severe Alarm

2.4.2 Battery LED Indicator

This indicator is located on the front of the battery and is used to display the operating status of the battery.

System Status	Operating Status	ALM	RUN
Shutdown	Sleep	Off	Off
Standby	Normal	Off	Blinking
Charging	Normal	Off	Solid On
	Protection	Off	Blinking
Discharging	Normal	Off	Blinking
	Protection	Solid On	Off

	Battery Status	Charging	Discharging
Battery Capacity	Remaining Capacity 0~25%	L1 Blinking L2, L3, L4 Off	L1 Solid On L2, L3, L4 Off
	Remaining Capacity 25~50%	L1 Solid On L2 Blinking L3, L4 Off	L1, L2 Solid On L3, L4 Off
	Remaining Capacity 50~75%	L1, L2 Solid On L3 Blinking L4 Off	L1, L2, L3 Solid On L4 Off
	Remaining Capacity ≥75%	L1, L2, L3 Solid On L4 Blinking	L1, L2, L3, L4 Solid On

2.5 Work Modes

AI Mode: Adopts artificial intelligence algorithms to formulate cost-effective and efficient charging strategies based on the user's power consumption, solar power generation, and real-time electricity prices.

Self- Consumption Mode: The device discharges power in accordance with load consumption and stores excess electricity from the solar system (suitable for households equipped with solar systems).

Time- of- Use Control Mode: Implements user-defined charging and discharging strategies.

Backup Power Mode: When activated, this mode can supply power to household loads in the absence of grid input.

These four modes can be configured via the application. For detailed operating procedures, please refer to Chapter 4-2.

2.6 Advanced Functions

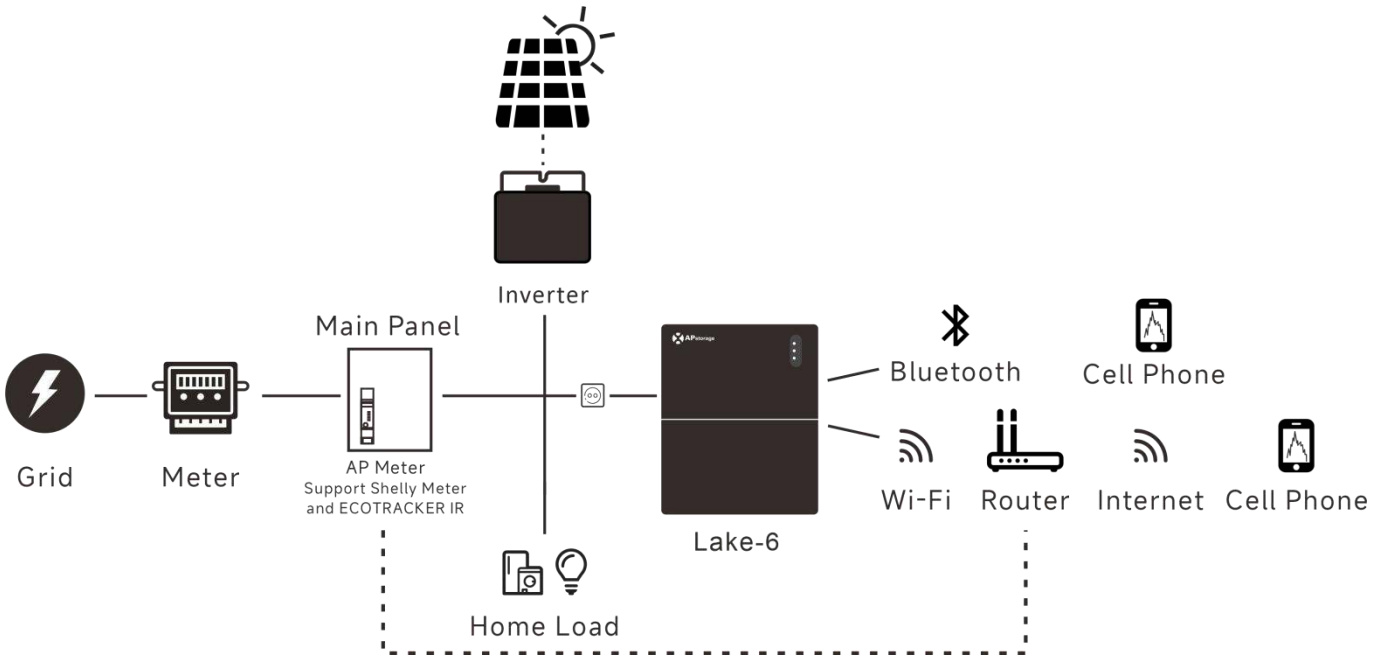
Control: Real-time control to temporarily execute user-defined charging and discharging strategies.
Anti-backflow Function: Requires a current transformer (CT). When the CT detects an active load, the device will supply power immediately. When the CT detects that the solar photovoltaic system feeds power back to the grid, the device will start charging to store energy. Through collaborative operation, the device and the CT form an independent home energy management system to maximize energy efficiency.
Peak Shaving Function: Requires a current transformer (CT). When the CT detects that the load power exceeds the user-set power threshold, the energy storage system will discharge to limit the maximum power drawn from the grid, so as to avoid over-power, over-capacity or tiered electricity price surcharges during peak consumption periods.
The anti-backflow function and peak shaving function are applicable globally. They can be used in combination with each other, as well as with the four operating modes.

Meter Compatibility Description

The LAKE-6 device is fully compatible with APMeter meters. It supports the system's self-consumption and AI optimization modes, ensuring system stability and optimal performance.
In addition, LAKE-6 is also compatible with the following mainstream brand meters, supporting corresponding connection and functions:
(**Note**: Each of the meter models listed below supports connection to only one device per phase.)
Shelly Pro 3EM (Shelly)、Shelly EM Gen3 (Shelly)、Shelly Pro EM-50 (Shelly)
- Shelly is a registered trademark of SHELLY EUROPE LTD.
ECOTRACKER IR (Everhome)
- Everhome is a registered trademark of everHome GmbH.

2.7 System Architecture

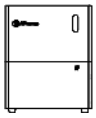
LAKE-6 is compatible with all photovoltaic systems and supports functions including self- consumption and AI mode.
LAKE-6 is equipped with a communication module to ensure monitoring of the entire system during startup and operation.
Users can connect directly to the LAKE-6 unit via Bluetooth using a smartphone to access real- time data from the solar system.
In addition to direct connection, LAKE-6 can also connect to a router via Wi- Fi and upload data to a cloud server for remote monitoring.
Below are household application scenarios integrated with solar energy systems.



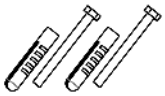
3.Installation Instructions

3.1 Packing List

Upon receiving the product, check whether all items listed below are included and are free of damage.
Users need to properly store the disassembly tools, protective cover, and other accessories.



Lake-6×1



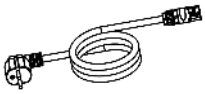
ST6.3 Plastic Expansion Anchors ×2



M4×12mm Screws ×3



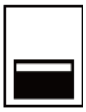
RJ45 Waterproof Components ×2



Power Cable ×1



Wall Mount Brackets ×2



Quick Installation Guide ×1

3.2 Installation Tools

The following tools are recommended for use during installation. Other auxiliary tools may be used on-site as needed.



Tape Measure



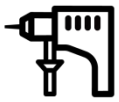
Pencil



Gloves



Mask



Impact Drill



Phillips Screwdriver



Hammer



Spanner

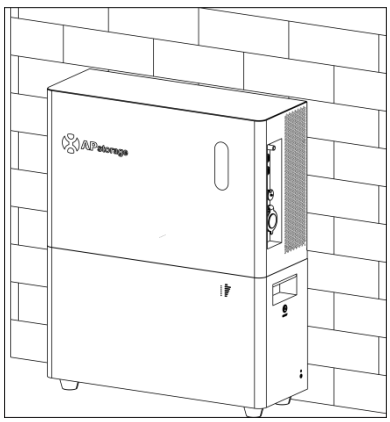
3.3 Installation Steps

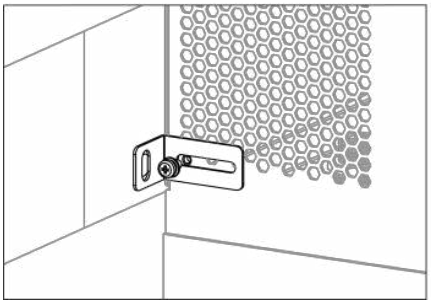
3.3.1 Selecting the Installation Site

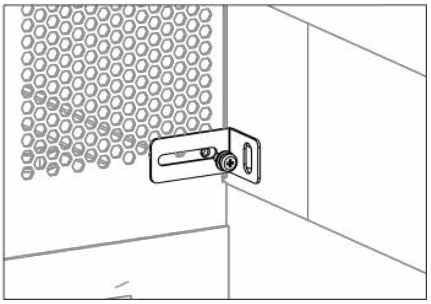
1.The energy storage device must be installed in an upright position and must not be tilted forward, backward, sideways, or placed horizontally or upside down.
2.Preferred installation surfaces include solid brick-concrete structures, concrete walls, or floors.
3.Alternative surfaces: If other materials (e.g., drywall, wood) are used, they must meet the following conditions:Be flame-retardant.Meet the load-bearing requirements of the equipment.
4.A corresponding clearance must be maintained around device to avoid obstruction and ensure no other equipment is placed nearby. This is essential to meet the requirements of heat dissipation and safety isolation.

3.3.2 Wall Mounting and Fixing of the Product

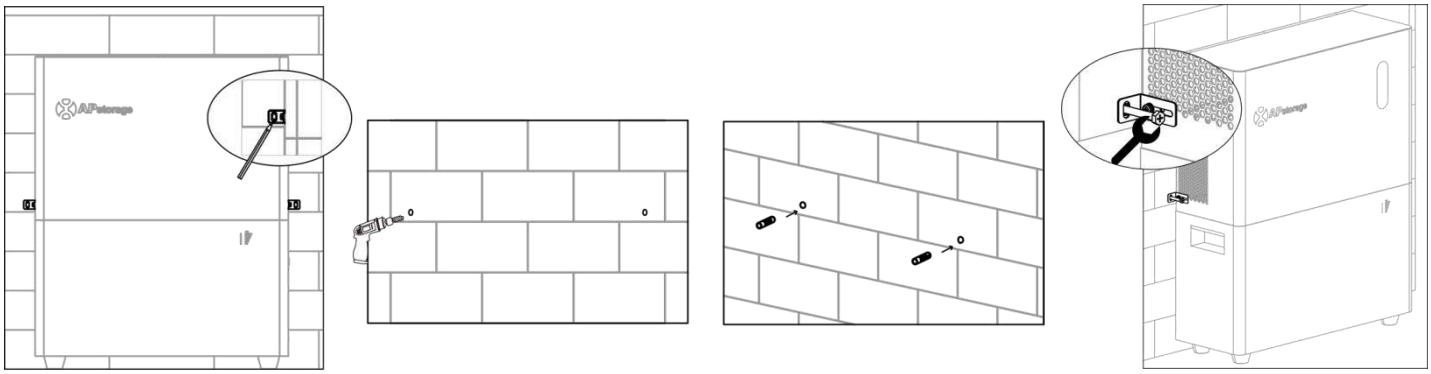
1.Place the all-in-one unit at the planned installation position and press it firmly against the wall.
2.Attach the wall mount brackets on both sides to the wall and fasten the brackets with M4×12 screws.







3.Mark the hole positions on the wall.
4.Drill holes with a diameter of 10 mm and a minimum depth of 60 mm.
5.Insert the plastic expansion anchors fully into the drilled holes.
6.Align the wall mount brackets with the wall holes, then tighten the hex bolts using a wrench or Phillips screwdriver to fully expand the plastic expansion anchors.



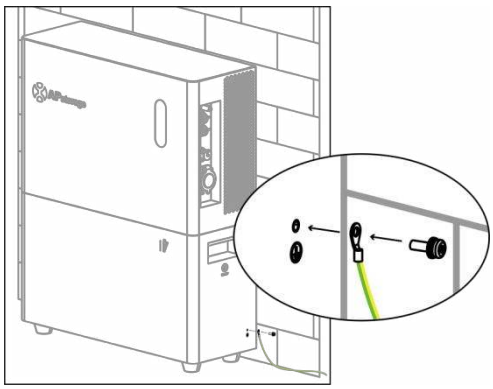
3.3.3 Earth Connection

When installing the Lake-6 unit, connect the protective earth wire to the earth terminal. Reliable earthing must be completed before operation.

Notes:

1.It is strictly forbidden to connect the neutral (N) wire to the cabinet as a protective earth wire; failure to comply may result in electric shock hazards.

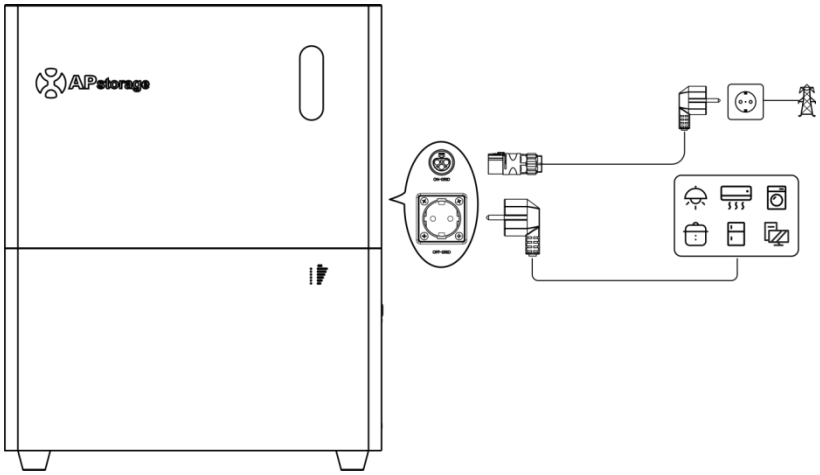
2.After installing the earth wire, it is recommended to apply silicone sealant or paint to the exterior of the earth terminal for corrosion protection.

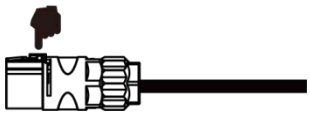


3.3.4 AC Cable Connection

For ON-GRID mode: Connect the cylindrical terminal of the supplied power cable to the Lake-6 unit, and plug the other end into a household mains socket.

For OFF-GRID mode: Plug household load wiring into this socket.





Note: Press the release button to disconnect the power cable.

3. AP EasyPower

Professional and certified Installer can commission, monitor and maintain the APstorage solution and performance via the AP EasyPower APP. Please search for the APP in APP Store or Google Play, or use mobile browser to scan the QR codes to download the APP.

Please scan this QR code to have access to our APPs and Products Information.

4. Transportation and Storage

4.1 Transportation Requirements

Placement Requirements

- Place the products in the original packaging or specially designed transport packaging. The packaging materials should have sufficient strength and cushioning performance to prevent damage caused by collisions and squeezes during transportation.
- Secure the products firmly inside the packaging to avoid displacement during transportation. For large or heavy products, additional fixing devices may be required.
- Maintain stability and avoid sudden starts, stops, or excessive vibration during transportation.

Personnel Requirements

- Observe the safety symbols on the package of the products before transportation.
- Pay attention to the weight of the products. Be cautious to avoid injury when moving. Handle the products according to the personnel quantity required by local regulations.
- Wear protective gloves and use professional handling equipment to prevent injuries.
- Hold the handle to lift the products and keep them horizontal.
- Ensure that only qualified and experienced personnel perform relevant operations.

4.2 Storage Requirements

Placement Requirements

- Keep the products in their original packaging with desiccants retained until they are ready for installation.
- To avoid personal injury or device damage, stack products carefully to prevent them from falling.
- Do not tilt or invert the package.
- Do not place heavy objects on the products, as this may damage the equipment housing or internal components.

Environmental Requirements

- The storage temperature should be between -30 ℃ and 65 ℃, and the relative humidity should be between 5% and 95%, without condensing.
- Store the products in a clean and dry place to protect them from dust and moisture.
- Store the products in a well-ventilated place to ensure proper air circulation and prevent equipment overheating.
- Do not store the products in places exposed to direct sunlight, wet or rain, or with strong electric fields.
- Do not store the products in places with chemically corrosive substances or where there are pests and rodents.

Routine Maintenance

- The battery SOC should be between 45% and 50%. The battery needs to be recharged every 6 months if it is not used, and it is recommended to store it after it is first charged to 100%, then discharged to 50%, and finally powered off.
- The battery needs to be maintained at a maximum interval of 6 months.
- The requirements for the recharge interval after the battery is fully discharged are as follows.
  a) If the environmental temperature is between 45 ℃ and 50 ℃, it should be recharged within 7 days;
  b) If the environmental temperature is between 35 ℃ and 45 ℃, it should be recharged within 15 days;
  c) If the environmental temperature is no more than 35 ℃, it should be recharged within 30 days.
- When the device is unused, the battery SOC should be between 45% and 55%, and the battery output should be disconnected to prevent the battery from draining.
- During the storage period, the products should be checked regularly, and it is recommended to check the products once every three months. Replace the packing materials damaged by insects or rodents in a timely manner.
- If the products have been stored for three months or longer, they must be fully inspected and tested by authorized personnel before being put into use.

5. Troubleshooting

If the device malfunctions, please follow the steps below:
1. Check all electrical connections and battery status.
2. Restart the system in accordance with the correct power cycling procedure.
3. Refer to the user manual or the FAQ section for information on known issues and solutions.

If the problem persists, please contact our customer support department and provide the following information:
1. Complete device specifications.
2. A detailed description of the fault condition.
3. Any observed error codes or indications.

If necessary, the support team will provide guidance on returning the device for repair and corresponding solutions within **XX business days**.The warranty includes free repair or replacement; otherwise, a quotation for the repair service will be provided.

The table below details the possible causes of the warnings and their corresponding solutions.

	Fault cause	Suggested treatments
Battery Temperature Protection	1. Excessively high ambient temperature around the battery	Optimize the installation environment: When installing the battery, please select a cool and shaded location, and ensure sufficient space around the battery to maintain good air circulation.
	2. Excessive number of consecutive high-power charge/discharge cycles	Reduce the system load and avoid prolonged high-current charging and discharging of the battery, as this may cause severe battery overheating.

Battery Low Temperature	1. Excessively low ambient temperature around the battery	**Optimize the installation environment**: - Select a suitable location: Install the battery in a sheltered area such as indoors or under an eave, avoiding direct exposure to low-temperature environments. - Prevent snow accumulation: Ensure no snow accumulates around the battery (especially on the top and bottom) to avoid shell icing or interface blockage caused by snow. - Maintain a dry environment: Prevent moisture from entering the battery to avoid short-circuit risks due to condensation.
Battery Communication Error	1. Incorrect connection of battery cables	Check whether the battery communication cables are properly connected.
	2. Battery not powered on	Please start the battery correctly according to the battery operation manual.
Battery High Voltage	1. Incorrect battery model selection	When selecting the battery model, ensure that the maximum voltage for normal battery use does not exceed 60VDC.
	2. Abnormal battery charging	You can try modifying the upper limit of the battery charging SOC to <100% via the APP.
Battery Low Voltage	1. Incorrect battery model selection	When selecting the battery model, ensure that the minimum voltage for normal battery use is not lower than 40VDC.
	2. Battery not powered on	Please start the battery correctly according to the battery operation manual.
	3. Incorrect connection of battery power cables	Check whether the battery power cables are properly connected.
Battery High Current	1. Excessive battery output power	When there is no grid, the off-grid load power is too high, or the SOC is low, the battery output capacity will be insufficient. In this case, reduce the power of the off-grid load appliances.
	2. Battery output short circuit	Check whether the battery or host port is short-circuited.

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6. Technical Data

Model	LAKE-6
Region	EMEA
Battery Info	
Battery Type	LiFePO4
Nominal battery voltage	19.2V
Operating voltage Range	16.8-21.6V
Battery Energy	6.02Kwh
Total Capacity	314Ah
Maximum continuous charge/discharge current	150A
Cycle Life	≥8000(25℃)
Depth of Discharge	90%
AC Input and Output (On-Grid)	
Grid type	Single-phase
Nominal AC voltage(1)	230V
Nominal AC frequency(1)	50Hz
Default output apparent power	800VA
Maximum continuous input/output power	2500VA
Maximum continuous input/output current	10.9A
Power factor range	>0.99(+/- 0.8adj.)
EPS Switch Time	5ms
AC Input and Output (Back up)	
Grid type	Single-phase
Nominal AC voltage	230V
Nominal AC frequency	50Hz
Maximum continuous input/output power	2500VA
Peak output apparent power	3600VA, 10s
Maximum continuous input/output current	10.9A
General Data	
Operating Temperature Range (℃)	-20℃ to +60℃
Ingress Protection(IP) Rating	IP 65
Dimensions(L*W*H)	580mm*210mm*716mm
Weight	68kg
Supported Communication Interface	Wi-Fi / RS-485 / Bluetooth / LAN
Display	LED

(1) The nominal voltage/frequency range may vary based on local requirements.

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