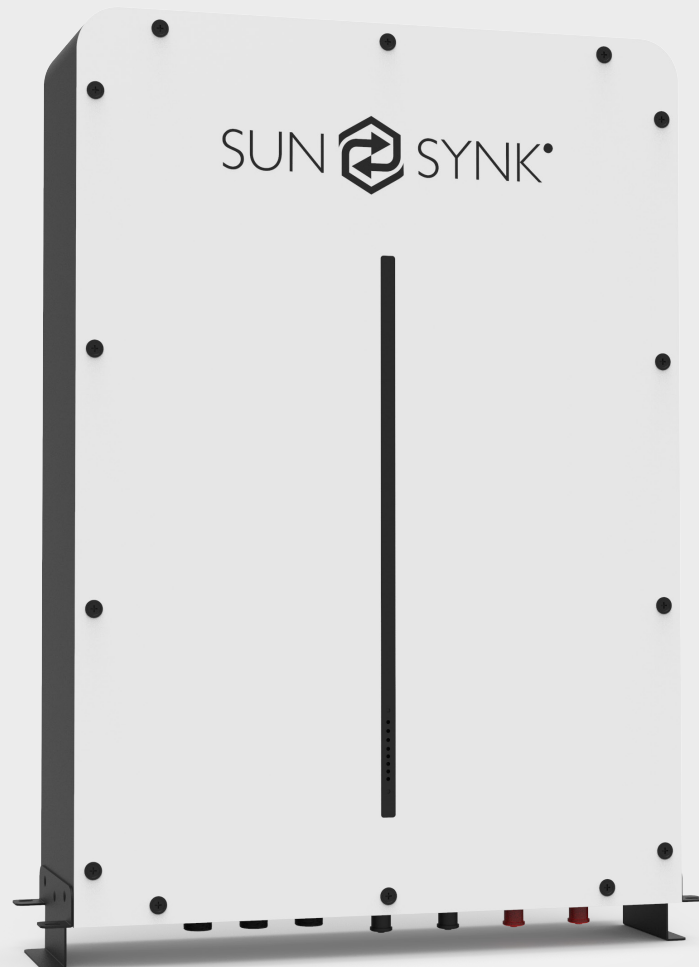




SUNSYNK-L5.3



USER MANUAL

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About this Document

This manual provides instructions for safe installation, operation, and maintenance of the Sunsynk L5.3 Lithium Iron phosphate (LiFePO₄ or LFP) battery. Please read it carefully before installation and follow all steps during the process. If anything is unclear, contact Sunsynk for guidance and clarification. Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.

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Intended Audience

This document is intended for use by:

- Qualified Personnel / Installers
- End-users

Intended Use

The battery is designed for energy storage applications in residential and commercial solar PV systems, backup power systems, and hybrid systems.

Disclaimer

Sunsynk is not responsible for any damage or consequences resulting from:

- Damage occurring during transportation by the customer.
- Storage conditions that do not meet the requirements outlined in this manual.
- Improper storage, installation, or use of the battery.
- Installation or operation by unqualified personnel.
- Failure to follow the operation instructions and safety precautions in this manual.
- Use in extreme environments not covered in this manual.
- Operation beyond the specified voltage, current, temperature, or other limits.
- Unauthorized modifications to the product, software, or removal of components.
- Damage caused by force majeure events (e.g., earthquake, fire, storm).
- Expired warranty or failure to extend warranty coverage.
- Installation or use in environments not compliant with relevant international standard.

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Document Revision Record

All changes made in previous manual versions are carried forward. The latest manual version therefore incorporates every update from earlier versions.

Version 8 (9/10/2025)

- Updated: [Applications](#)
- Updated: [Key Requirements](#)
- Updated: [Safety Symbols and Definitions](#)
- Updated: [Qualified Personnel](#)
- Updated: [General Safety](#)
- Updated: [Electrical Safety](#)
- Updated: [Safety Handling](#)
- Updated: [Prohibited Uses](#)
- Updated: [Product Identification Labels](#)
- Updated: [System Components](#)
- Updated: [Packaging](#)
- Updated: [Wall-Mount Installation Method](#)
- Updated: [Battery DC Connection](#)
- Updated: [Cable Requirements](#)
- Updated: [Battery Communication Connection](#)
- Updated: [Power ON/OFF Sequence](#)
- Updated: [Battery Settings](#)
- Updated: [Monitoring](#)
- Updated: [Environmental Disposal](#)

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INTRODUCTION

Thank you for choosing the SUNSYNK-L5.3 Lithium Iron Phosphate (LiFePO₄ or LFP) battery. This energy storage system is designed for high-power applications, efficient use in limited installation spaces, and offers an exceptionally long cycle life. It provides safe and reliable power for residential, commercial, and industrial energy systems.

Each module delivers a 5.32 kWh capacity and can be connected in parallel with multiple units to expand the total system capacity and output power. This modular design makes the L5.3 highly flexible, allowing system sizes to be scaled according to the energy requirements of the user.

The battery is equipped with a built-in Battery Management System (BMS) that:

- Monitors real-time voltage, current, and temperature.
- Ensures over-charge, over-discharge, over-current, and short-circuit protection.
- Provides cell balancing to maximize performance and extend service life.
- Communicates seamlessly with Sunsynk inverters and other approved compatible systems via CAN/RS485 protocols.

Applications

- Solar PV energy storage.
- Backup power for residential and commercial loads.
- Peak-shaving and load-shifting in commercial and industrial facilities.
- Microgrid and distributed energy storage systems.

Key Advantages

- High safety: Uses LiFePO₄ chemistry with excellent thermal stability.
- Long cycle life: ≥ 6,000 cycles at 90% depth of discharge (DOD).
- Scalable: Parallel connection supports large-capacity energy storage.
- High efficiency: Fast charging and discharging capability with low energy loss.
- Smart monitoring: Integrated BMS with communication interface for inverter and system integration.
- Compact design: Space-saving with flexible installation options.

Compliance and Standards

The Sunsynk L5.3 battery meets international safety and performance standards, ensuring reliable operation and global compatibility. For detailed information, refer to the Technical Specification section of this manual or contact Sunsynk for further assistance.

User Guidance

This manual provides:

- General and electrical safety precautions.
- Installation requirements and wiring instructions.
- Battery operation, communication, and monitoring guidance.
- Maintenance and troubleshooting information.



NOTICE

Please read this manual carefully before installation and operation. Keep it for future reference and ensure that all installers and users are familiar with the safety precautions and instructions provided.

SAFETY INFORMATION

Sunsynk products are engineered with safety as a top priority. However, like all electrical devices, they can pose risks if used incorrectly, including fire or electric shock, which may result in serious injury or death. To ensure your safety, please read and follow all safety precautions carefully before use.

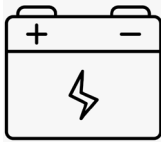
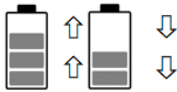
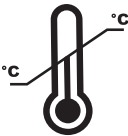
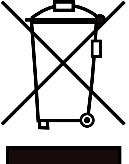
Safety Symbols and Definitions

The following symbols are used in this document and their meanings are provided below.

 DANGER	Indicates an immediate hazard that, if not avoided, will result in serious injury or death. This is the highest level of risk.
 WARNING	Indicates a potential hazard that could result in serious injury or death if not avoided. It is slightly less severe than "DANGER".
 CAUTION	Highlights a potential hazard that could cause minor injuries or property damage if not avoided.
 NOTICE	Provides helpful information that does not indicate any hazard.

The following safety symbols are used in this document and may also appear on product specification labels and packaging. Their meanings are explained below.

Symbol	Description	Symbol	Description
	This symbol indicates information that if ignored, could result in personal injury, physical damage or even death due to incorrect handling.		This product's batteries contain an explosive, self-reactive material that could blow up when heated.
	Electrical Hazard.		Read the manual.
	Danger.		Indicates that this product is recyclable.
	The Battery is heavy and can cause injury if not handled safely.		Do not place near open fire or incinerate. Do not use near heaters or hot temperature sources.
	Do not submerge the battery in water or expose it to moisture or liquid.		Do not disassemble or alter the battery in any way. Do not strike or puncture the battery.
	Do not drop, deform, or impact the battery.		Do not step or put any objects onto the battery.

Symbol	Description	Symbol	Description
	Keep out of reach of children, animals, and insects.		Li-ion Battery.
	Rechargeable.		Charging and Discharging.
	Direct Current.		Product exposure.
			Recommended Charge Instructions
	Follow the indicated temperatures.		BATTERY INPUT Battery Discharge Voltage, Battery Discharge Current, Input Voltage Type, Battery Discharge Power.
	Contact the supplier within 24 hours if there is anything wrong. In case of leakage contact with eyes or skin, immediately clean with water and seek help from a doctor.		Do not dispose the device, accessories, and packaging with regular waste. Follow local ordinances or contact the manufacturer for disposal guidance.
	The UKCA marking is used for products placed on the market in Great Britain (England, Scotland and Wales). The UKCA marking applies to most products for which the CE marking could be used.		CE mark is attached to the solar inverter to verify that the unit follows the provisions of the European Low Voltage and EMC Directives.




CAUTION!
Do not plug or unplug the power cables when the T-BAT System is on, doing so could result in an arc discharge which could cause serious harm!


CAUTION!
Ground connection is mandatory!


WARNING!
Handle with care: No external force allows on BMS slot.




Qualified Personnel

The Sunsynk L5.3 Lithium Iron Phosphate (LiFePO₄ or LFP) battery must only be installed, commissioned, operated, and maintained by qualified personnel.

Qualified personnel are individuals who:

- Have received formal training in electrical systems and photovoltaic (PV) installations.
- Are familiar with local and national electrical codes, regulations, and safety standards.
- Understand the risks involved when working with both low- and high-voltage equipment.
- Possess the skills to correctly use the required tools, personal protective equipment (PPE), and test instruments.

For safe and reliable installation, Sunsynk strongly recommends using a Sunsynk-approved installer. These installers are trained specifically on Sunsynk products and are equipped with the knowledge to ensure correct installation, commissioning, and long-term operation.



NOTICE

- Installation or operation by unqualified personnel may cause personal injury, electric shock, fire hazards, or property damage.
- Any damage or failure resulting from improper installation, unauthorized modifications, or neglect of instructions will void the product warranty.
- Always follow all safety warnings, handling instructions, and manufacturer recommendations when working with the battery.

General Safety

- Use the battery only as instructed in this manual.
- Do not use the battery if it appears broken, damaged, or compromised in any way.
- The battery is non-user-serviceable, do not attempt to open or repair it.
- Handle the battery with care during installation, transportation, or relocation.
- Do not connect the Sunsynk-L5.3 battery with batteries of a different type or model unless otherwise specified the battery may be paired only with a compatible battery.
- Do not operate the battery with faulty or incompatible inverters.
- Always contact the supplier within 24 hours if any abnormal condition occurs.
- After unpacking, carefully check the product and packing list. If any parts are missing or damaged, contact your retailer immediately.
- Recharge within 48 hours after full discharge.
- Charge the battery at least every 6 months; keep State of Charge (SOC) $\geq 50\%$ during long-term storage.
- Warranty does not cover damage caused by misuse or violation of the above precautions.

Electrical Safety

- Before installation, disconnect the grid power supply and ensure the battery is switched off.
- Verify correct wiring: do not reverse positive (+) and negative (-) cables, and ensure no short circuit with external devices.
- Never connect the battery directly to PV solar panel wiring.
- Do not connect the battery directly to AC power.
- Ensure the battery system is properly grounded with a resistance of less than 1Ω .
- Confirm that the electrical parameters of the battery system match the connected equipment.
- Disconnect all terminals before maintenance.
- Always cut off the power supply and fully shut down the battery before moving or performing any repairs.

Environmental Safety

To ensure safe operation and long service life, the Sunsynk L5.3 Lithium Iron Phosphate (LiFePO_4 or LFP) battery must be installed in an environment that meets the following conditions:

LOCATION AND PROTECTION

- Install indoors or in a sheltered enclosure, protected from direct sunlight, rain, dust, and condensation.
- Keep away from flammable materials, corrosive substances, or explosive gases.
- Ensure adequate physical protection against accidental impact or mechanical damage.

VENTILATION AND CLEARANCE

- Provide sufficient airflow around the battery to prevent heat build-up.
- Maintain at least 30 cm clearance around all sides for cooling and maintenance access.
- Do not block air vents or enclose the battery in an airtight cabinet.

PROHIBITED AREAS

- Do not install outdoors without appropriate weatherproof enclosures.
- Do not install in bedrooms, living spaces, or occupied areas where noise or heat may cause discomfort.
- Avoid areas exposed to salt spray, chemicals, or corrosive vapors (e.g., near swimming pools or industrial sites).

Safety Handling

To ensure safe operation and longevity of the Sunsynk L5.3 Lithium Iron Phosphate (LiFePO₄ or LFP) battery, the following precautions must be observed:

- Cables: Keep all cables protected from damage. Do not bend, crush, or expose them to heat or moisture.
- Foreign Objects: Never insert objects into the battery or its connectors.
- Cleaning: Do not use solvents, chemicals, or cleaners on the battery. If cleaning is required, use a dry, soft cloth only.
- Flammable Materials: Do not expose the battery to fire, heat sources, or flammable/harsh chemicals.
- Painting/Modifications: Do not paint, disassemble, modify, or tamper with the battery.
- Servicing: Only Sunsynk staff or authorized service personnel may open, repair, or service the battery. Unauthorized handling or repair will void the warranty and may result in hazards.
- Fire Safety: In case of fire, use a dry powder fire extinguisher only. Do not use water or liquid extinguishers.
- Environment: Keep the battery away from water, excessive dust, vibration, and direct sunlight. Do not expose to freezing temperatures or high humidity.
- Handling: Always lift the battery with proper equipment or sufficient manpower. Avoid dropping or subjecting it to impact.
- Storage/Transport: Store and transport the battery in an upright position, in a clean, dry, and ventilated environment.



WARNING

Improper handling may cause injury, fire, electric shock, or permanent damage to the battery.

Prohibited Uses

To prevent hazards, never:

- Short-circuit the battery terminals or connect them directly with metal objects.
- Immerse the battery in water or allow it to get wet.
- Connect incompatible chargers, inverters, or third-party devices not approved by Sunsynk.
- Operate the battery outside its rated voltage, current, or temperature limits.
- Install the battery in a sealed or poorly ventilated area.
- Place heavy objects on top of the battery.
- Use the battery if it is physically damaged, leaking, or emits unusual odors or sounds.



WARNING

Improper handling or prohibited use may lead to electric shock, fire, property damage, or personal injury, and will void the product warranty.

Emergency Procedures

In case of accidental exposure to battery materials, take immediate action as outlined below. Always seek medical assistance after providing first aid.

- Do not use a damaged battery.
- Return it to Sunsynk or dispose it properly at a certified recycling facility.
- Leaking electrolytes can cause skin irritation, chemical burns, or other serious injuries.
- Avoid all direct contact with leaking material.

Hazard	Action
Eyes	Flush eyes with plenty of clean water for at least 15 minutes, lifting eyelids occasionally. Seek immediate medical attention.
Skin	Remove contaminated clothing. Rinse skin thoroughly with water or shower for at least 15 minutes. Seek medical attention.
Inhalation	Move the affected person to fresh air immediately. If breathing is difficult, provide oxygen if available. Seek medical assistance.
Ingestion	Do not induce vomiting. Do not give anything by mouth if the person is unconscious. If conscious, rinse mouth with water and give small sips of water or milk. Call a physician or poison control center immediately.



WARNING

Failure to follow the safety instructions in this manual may result in serious injury, electric shock, fire, or damage to the battery and will void the warranty.



NOTICE

Always use the battery as instructed in this manual. Safe handling and proper maintenance will ensure reliable performance and extend the service life of your battery.

PRODUCT OVERVIEW

The Product Overview provides key information about the Sunsynk L5.3 battery system, helping users understand its components, specifications, and applications.

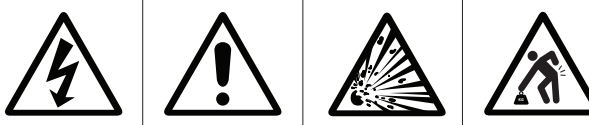
Product Identification Labels

The battery is equipped with identification and rating labels that display critical information, including model number, serial number, voltage, capacity, safety certifications, and manufacturer details. These labels should be referenced during installation, maintenance, and troubleshooting to ensure proper use and maintain warranty coverage. The Rating Label below is affixed to the side of the battery module.

SUNSYNK®423

SUNSYNK-L5.3

IFpP53/149/120/[1P165]M/-20+50/95

	①104 Ah	②5.32kWh	③100 A
	④51.2 V _{DC}	⑤43.2 V _{DC min}	⑥57.6 V _{DC max}
	 0°C _{min} +55°C _{max}	 -20°C _{min} +55°C _{max}	 -20°C _{min} +35°C _{max}
	LiFePO ₄ (LFP)		⑩IP65
			IEC 62619 UN38.3
			
			
SN: XXXXXXXXXXXXXXXXXXXX			
www.sunsynk.com 			

Item	Requirement	SUNSYNK-L5.3
1	Rated Capacity	104 Ah
2	Battery Usable Energy	5.32 kWh
3	Max. Charge & Discharge Current	100 A
4	Rated Voltage	51.2 Vdc
5	Min. Operating Voltage	43.2 Vdc
6	Max. Operating Voltage	57.6 Vdc
7	Min./Max. Charge Temperature	0 °C / 55 °C
8	Min./Max. Discharge Temperature	-20 °C / 55 °C
9	Min./Max. Storage Temperature	-20 °C / 35 °C
10	Ingress Protection Rating	IP65

Technical Specifications

The technical data below summarizes the electrical, mechanical, and operational parameters of the battery, providing installers and system designers with the information needed to integrate the battery safely and efficiently into energy systems.

Model		SUNSYNK-L5.3
Main Parameter		
Battery Chemistry		Lithium Ferro Phosphate (LifePO4 or LFP)
Capacity		104 Ah
Scalability		Max. 32 pcs in parallel (170kWh)
Nominal Voltage		51.2 V
Operating Voltage		43.2~57.6 V
Energy		5.32 kWh
Usable Energy ^[1]		4.79 kWh
Charge/Discharge Current	Recommend ^[2]	50 A
	Max. ^[2]	100 A
	Peak (2mins,25°C)	150 A
Other Parameter		
Recommend Depth of Discharge		90%
Dimension (W/H/D)		440*620*135 mm (don't include Circuit Breaker, terminals and hanging boards)
Weight Approximate		46 kg
Master LED Indicator	5 LED (SOC 20%~100%)	
	3 LED (working, alarming, protecting)	
IP Rating of Enclosure		IP65
Working Temperature		Charge: 0°C~+55°C (optional heating, -20°C~+55°C) Discharge: -20°C~+55°C
Storage Temperature		-20°C ~ +35°C
Humidity		5% ~ 95%
Altitude		≤2000m
Cycle Life ^[3]		≥6000 (25±2°C, 90%DOD, 0.5C/0.5C, 70%EOL)
Installation		Wall Mounted (Support 19-inch standard cabinet)
Communication Port		CAN2.0, RS485
Life Cycle Power During Warranty Period ^[4]		16MWh@70%EOL
Certification		IEC62619, CE, UK, CEC, UN38.3
Warranty		10 Years
Manufacturer Country		China

^[1] DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25° C. System usable energy may vary due to system configuration parameters.

^[2] The current is affected by temperature and SOC.

^[3] The cycle life specification of ≥6000 cycles refers to laboratory test performance under controlled conditions.

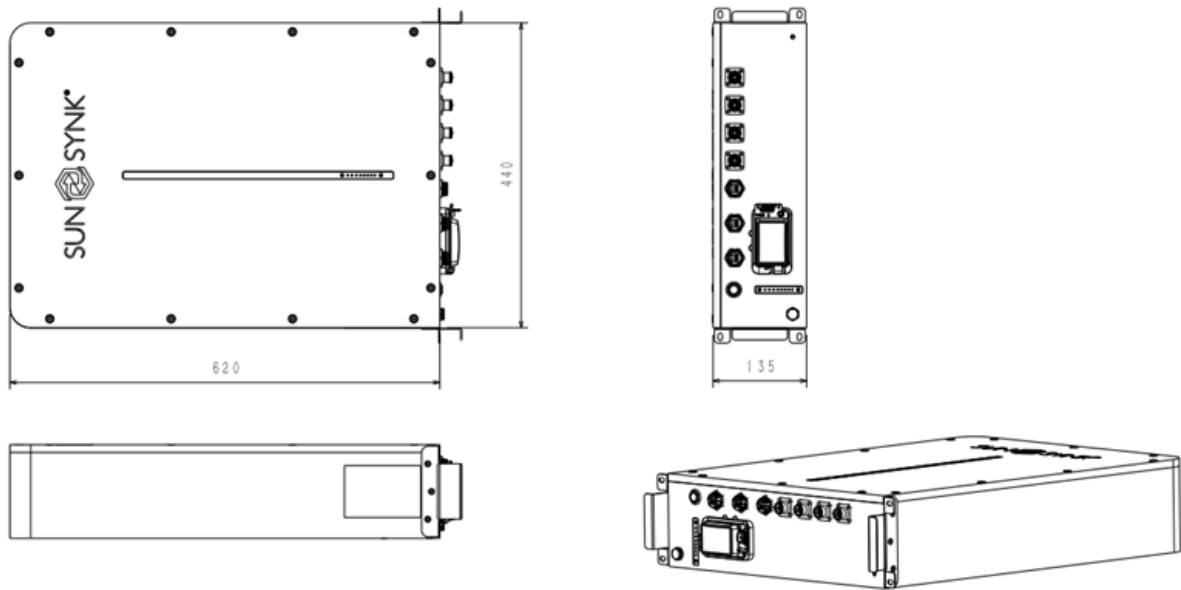
^[4] The warranty is due whichever reached first of warranty period or energy throughout. The stated 16 MWh throughput represents the warranted limit for product performance and warranty enforcement.

Battery Module (Dimensions, Weight & Interface)

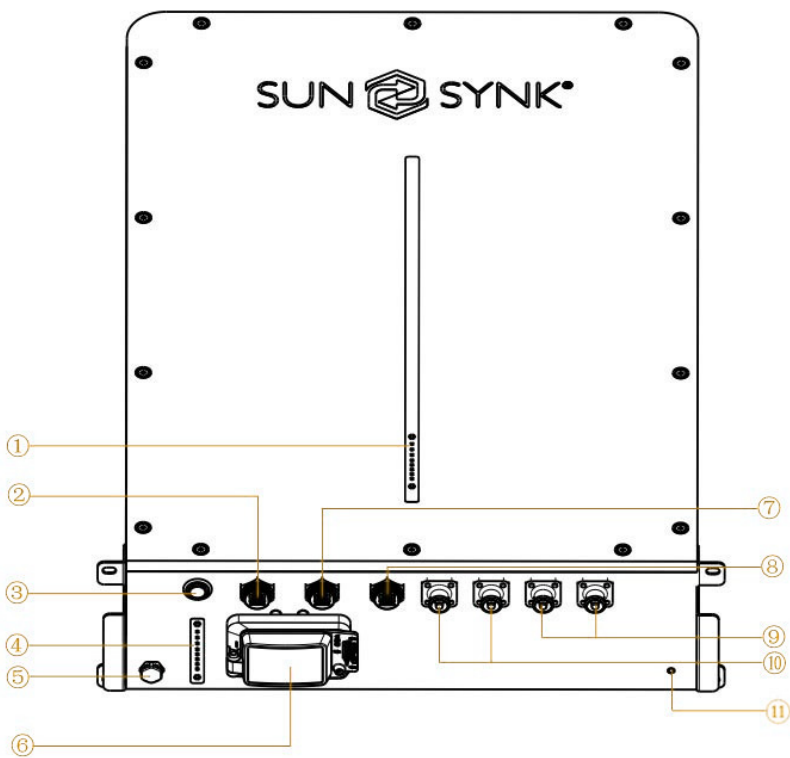
This section details and displays the module's size, weight, mounting options, and design features for safe, space-efficient installation. It also outlines the available connections and ports, including terminals and communication interfaces, for proper integration with other system components.

- The Sunsynk-L5.3 battery module Dimensions and Weight are presented below:

SUNSYNK-L5.3	
Depth	135mm
Width	440mm
Height	620mm
Weight	46kg



- The Sunsynk-L5.3 battery module is equipped with a user-friendly interface that provides all necessary electrical and communication connections for safe integration into energy systems.



Items
1. Battery Indicators
2. PCS
3. Power Switch
4. Battery Indicators
5. Pressure Release Valve
6. DC 125A Circuit Breaker
7. Parallel Communication Port IN
8. Parallel Communication Port OUT
9. Battery Negative -
10. Battery Positive +
11. Grounding Bolt

Interface	Symbol	Description and Instructions
Power Switch		Power Switch to turn ON/OFF the whole battery BMS standby, no power output.
RUN		RUN LED: 1 green LED lighting to show the battery running status, long lighting when charging and flash when discharging
Alarm		Alarm LED: 1 yellow LED lighting to show the battery has an alarm. It flashes in alarm conditions and flashes long lighting if the equipment fails.
Error		Error LED: 1 red LED lighting to show the battery is under protection.
SOC		SOC LED: 5 green LEDs to show the battery's current capacity. Each light represents 20% of the capacity.
PCS		Inverter communication terminal: (RJ45 port) follow the CAN protocol (baud rate: 500K), used to output battery information to the inverter.
IN		Parallel Communication Terminal: (RJ45 port) Connect "out". The terminal of the Previous battery for communication between multiple parallel batteries.
OUT		Parallel Communication Terminal: (RJ45 port) Connect "IN". The terminal of the Next battery for communication between multiple parallel batteries.
DC 125A Circuit Breaker		Over current protection, cut off the power supply.
Grounding Bolt		Used for the battery connecting to the PE.

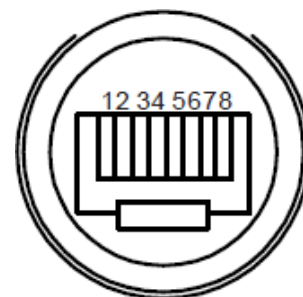
The following table presents the Led indication definition:

Condition	RUN	ALM	Error	SOC1	SOC 2	SOC 3	SOC 4	SOC 5
Power off	Off							
Charge	 Blink	 Blink if Alarm Exists	Off	 Show SOC & highest LED blink				
Discharge or Idle			Off	 Show SOC & long bright				
Alarm		 Blink	Off	 Other LEDs are same as above.				
System error/ Protect								
Upgrade	Blink Fast							
Critical Error	Blink Slow							

The following table presents the definition for PCS, IN, and OUT connection pins. All use the same pin number sequence shown in the next image:

Pin No.	PCS Port Definition	IN Port Definition	OUT Port Definition
1	485-B	CANL	CANL
2	485-A	CANH	CANH
3	--	DI+	DO+
4	CANH	DI-	DO-
5	CANH	DI-	DO-
6	--	DI+	DO+
7	485-A	CANH	CANH
8	485-B	CANL	CANL

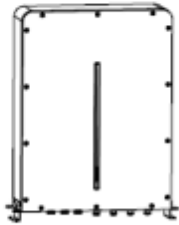
Protection and Alarm	Management and Monitor
Charge/Discharge End	Intelligent Protect Mode
Charge Over Voltage	Intelligent Charge Mode
Discharge Under Voltage	Protect, Charge Current Limit
Charge/Discharge Over Current	Intelligent Protect Mode
High/Low Temperature(cell/BMS)	Intelligent Protect Mode
Short Circuit	Protect



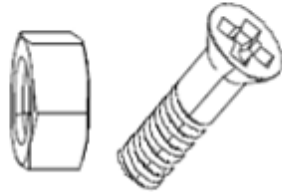
System Components

System components introduces the main hardware elements, including the battery module, BMS, connectors, and interfaces, to give a clear understanding of the system structure.

Check if you received all the items listed below. Ensure that nothing is damaged in the package.



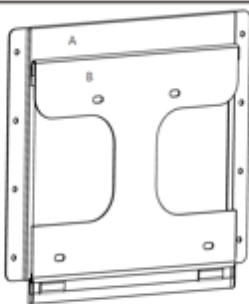
Battery Pack x1



Stainless Steel Mounting
Screws M6*16x4
Flange Nuts M6 x4



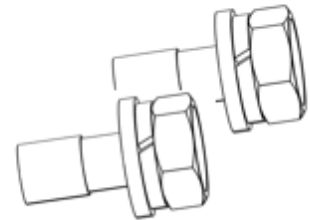
0.6 mm Ground Wires x1



Hanging Board x1



Stainless Steel Anti-Collision
Bolt M6x100
x4



Hanging Board Mounting
Screws M6*10 x8



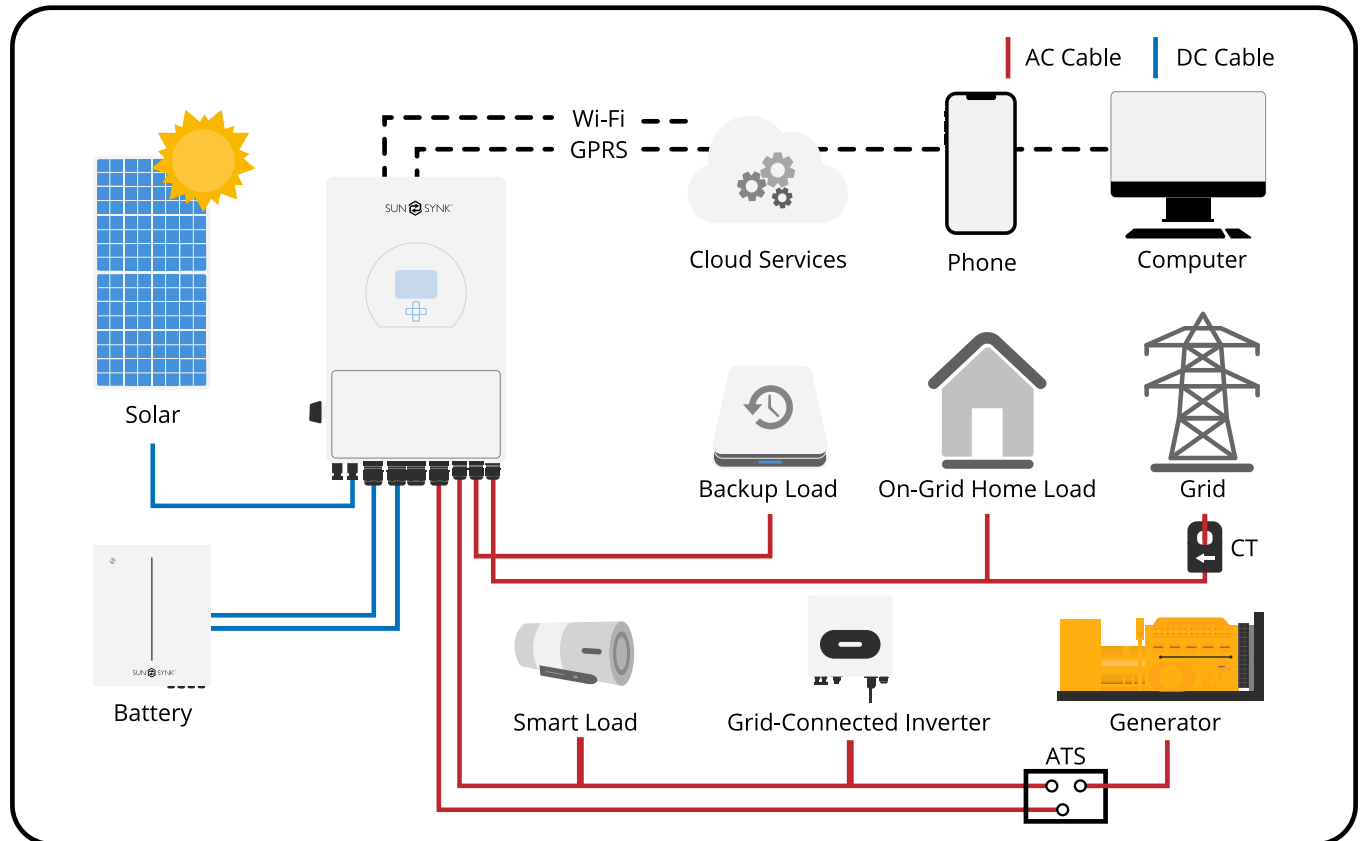
Pamphlet x1



Power Cables x2
BMS Cable x1

Application Scenario

The illustration below shows typical applications of this battery, including residential solar storage, backup power, and hybrid energy systems. These examples highlight the battery's flexibility and scalability. For other system designs, please consult your system integrator to ensure the best solution for your requirements.



INSTALLATION GUIDELINES

Pre-Installation Inspection

Packaging

Before installing the battery, carry out the following checks:

- Inspect the battery and packaging for any signs of shipping damage.
- Verify that all parts and accessories are present.
- Check the battery enclosure for swelling, deformation, or abnormalities.



NOTICE

Do not install or use the battery if any issues are found. Contact your supplier or installer immediately.

Site Requirements

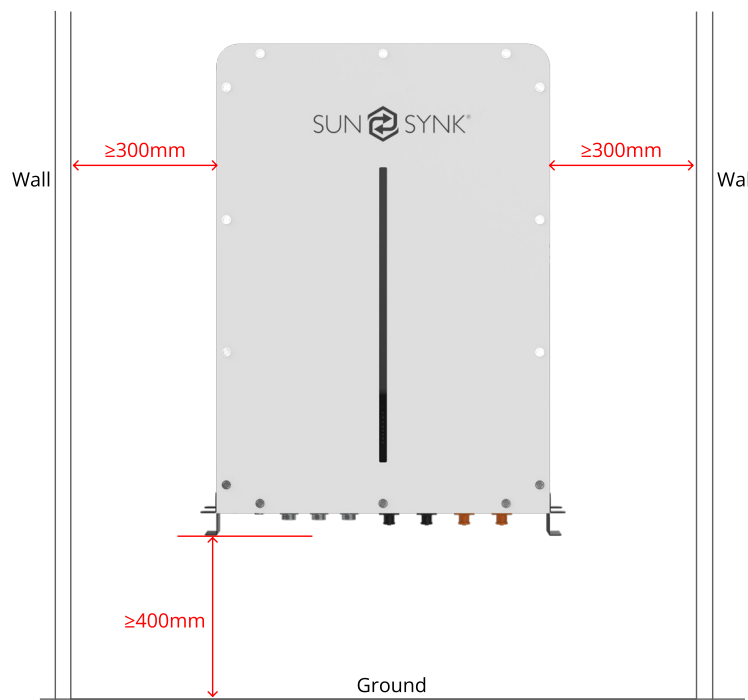
- The Sunsynk-L5.3 Lithium Iron Phosphate battery is rated IP65, this ensures complete protection against dust and solid particles. It is resistant to low-pressure water jets from any direction, with no harmful effects.
- **Note:** IP65 does not make the battery waterproof, therefore it must be installed in locations where it is not continuously exposed to rain or water.
- Select a dry, clean, and well-ventilated location, away from direct sunlight, rain, snow, heat sources, cold air outlets, and flammable materials.
- Maintain at least 30 cm clearance on all sides for airflow and heat dissipation.
- Do not install in environments with excessive oil, smoke, steam, dust, moisture, or at altitudes above 2000 m.
- Near coastal areas, provide salt-air filtration to prevent corrosion.
- Avoid areas with explosive atmospheres or humidity above 95%.
- Ensure the installation surface is stable, level, non-conductive, and free from contaminants.
- Provide adequate ventilation (natural or forced) to prevent gas buildup in enclosed spaces.
- Inspect the battery and site for damage or obstructions before installation.
- Use only the supplied cables and connectors. Secure the battery to prevent movement or vibration.
- Perform regular maintenance checks for overheating, corrosion, or damage. Disconnect immediately if abnormal conditions occur.

Handling and Mounting Instructions

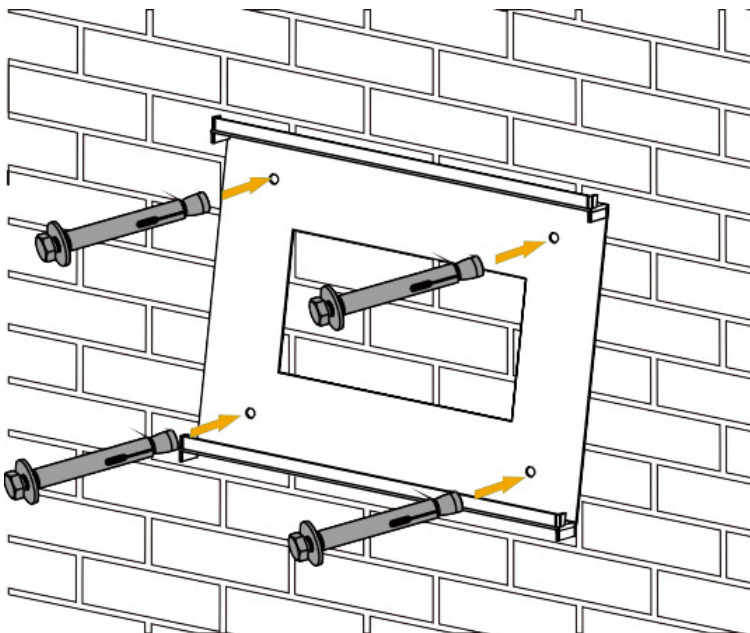
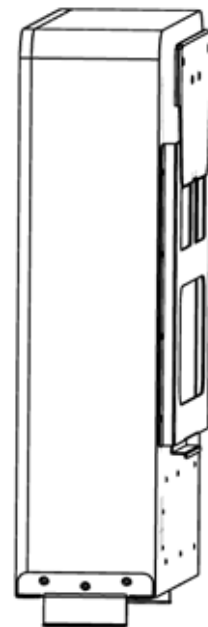
- **Handle with care:** Always use appropriate lifting equipment or two people when moving the battery. Do not drop, drag, or roll the battery.
- Keep the battery upright during transport and installation. Tilting or inverting may cause damage.
- Do not lift or carry the battery by its cables or connectors.
- Avoid impact, vibration, or rough handling.
- Place on a flat, stable, level, and non-conductive surface that can support the full weight of the battery.
- Maintain at least 30 cm clearance on all sides for ventilation and heat dissipation.
- If installed in a cabinet or enclosure, provide adequate ventilation or forced airflow.
- Secure the battery firmly to prevent shifting or vibration during operation.

Wall-Mount Installation Method

1. Ensure the installation clearances are met prior to installation



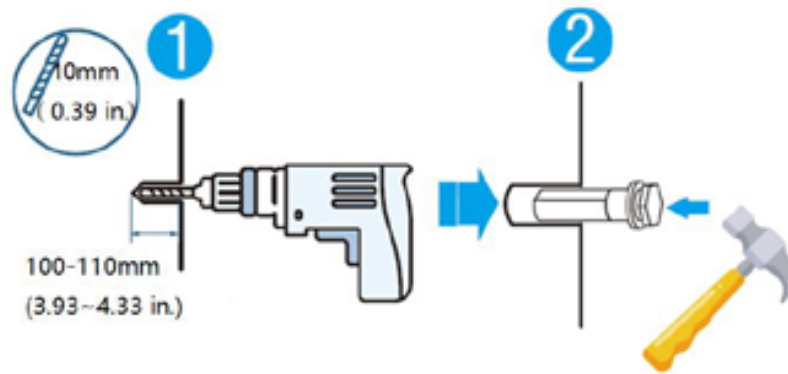
2. Before mounting the battery bracket, use a bubble level or any tool to ensure correct alignment. Drill four holes in the wall to a depth of 100-110 mm using the recommended drill bit. Insert the expansion bolts into the holes and secure the support to the wall with a hammer, as illustrated.



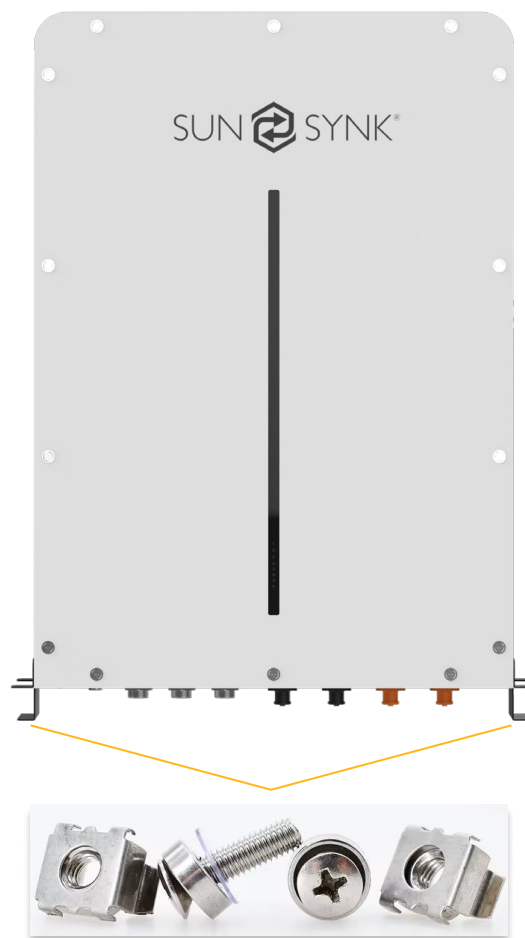
WARNING

Risk of injury (Heavy Object).

Remember that this storage system is heavy (46kg), so users must carefully handle the unit during installation, especially when mounting or removing it from the wall.



3. Fasten the screw head of the expansion bolt to finish the mounting.
4. Carry the battery and hold it. Fix the battery to the support after fixing it to the wall. Ensure that the battery mounting ears are aligned with the left and right holes on the support, as shown below



4 sets of screws and buckle nuts
(left side and right side)



CAUTION

Secure the battery to the wall-mount bracket, ensuring that the mounting ears are firmly fastened. The battery must remain stable, upright, and positioned to allow all electrical connections to be made safely.

Battery DC Connections



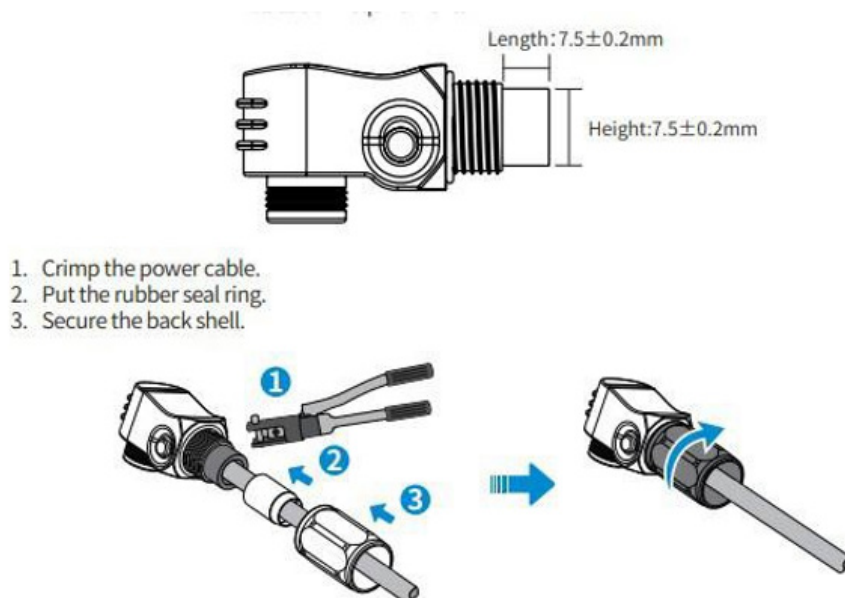
NOTICE

This battery must be used in conjunction with compatible hybrid inverter models. It needs to establish communication with the inverter to activate the lithium battery mode, ensuring optimal performance.

Cable Requirements

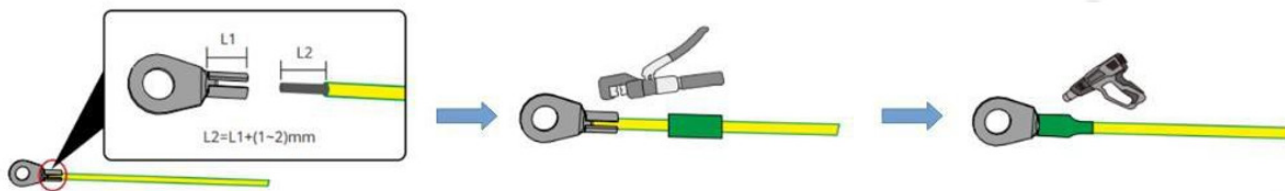
1. Power Cable:

- Connect the orange power cable to the orange harness and the black power cable to the black harness.
- Crimping specifications:
 - Cross-sectional area: 25 mm²
 - Withstand voltage: DC 1500V
 - Operating temperature range: -40°C to 115°C
 - Stripped conductor length: 23 ± 1 mm
- Secure the back shell and ensure there are no gaps or loose connections.
- Use a manual hydraulic tong with a 25 mm² die.
- Ensure a minimum tensile force of ≥ 1200N after crimping.
- If the battery is not connected, cover the port with a protective cover to prevent dust, moisture, or accidental contact.



2. PE Cable:

- Disconnect the power supply before disassembling the equipment.
- Use a PE cable for grounding.
- After crimping, ensure the traction force of the cable is at least 400N.
- At least one of the two grounding cables must be connected to the ground.
- Keep all other grounding cables intact.
- Cable gauge: 10 AWG.
- Must be suitable for outdoor use and meet relevant safety requirements.



WARNING

- Follow all instructions carefully to protect the battery BMS and avoid damage.
- Ensure both the battery and inverter are completely turned off before connecting cables to prevent fire, electric shock or equipment damage.
- Use only the supplied DC cables when connecting the battery.
- Voltage caution: Maximum battery voltage is 60V, higher than the safe touch voltage of 36V. Avoid direct contact with exposed terminals during installation.
- Polarity is critical: Terminals and wires must only connect to the intended points. Positive (+) and Negative (-) polarity are clearly marked on each module. Prevent wires or terminals of opposite polarity from contacting each other.
- Wire and tool safety: Use insulated tools and ensure wires are properly stripped and securely connected. Avoid loose connections.
- Check connections: After connecting, double check polarity, tightness, and cable routing to prevent short circuits or overheating.

Ground Wire Cabling

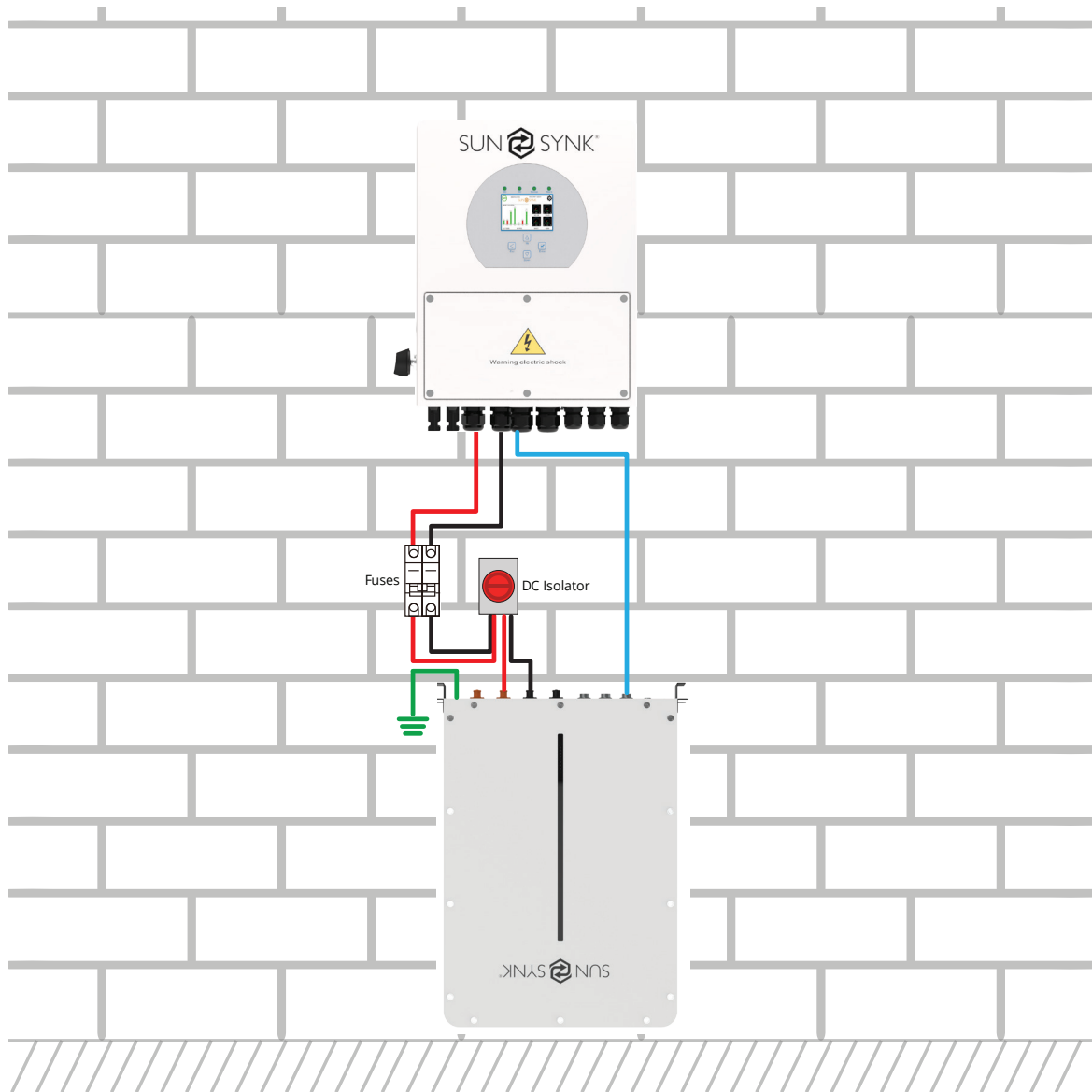
- Purpose: Grounding ensures user safety, protects equipment from faults, and prevents potential overvoltage damage.
- Connection: Use only the supplied grounding cable. Connect the battery's grounding terminal directly to the system or building ground. Ensure all connections are tight.
- Routing: Route the ground cable along a safe, unobstructed path. Avoid running parallel DC or AC cables to reduce electromagnetic interference.
- Verification: Measure resistance between the battery ground and system ground; it should meet the local electrical standards (typically $< 1\Omega$). Inspect periodically for loosened connections or damage.



NOTICE

Never operate the battery without a proper ground connection. Grounding must always comply with local electrical codes and the battery manufacturer's instructions.

Single Battery Connection



NOTICE

DC Breaker Requirement and Sizing

A 2-pole DC breaker must be installed between the battery and inverter, as shown in the wiring diagrams. This ensures both the positive and negative conductors are isolated during maintenance or in the event of a fault.

When selecting the DC breaker, consider the following parameters:

- Battery operating voltage range: 44.8 V – 57.6 V
- Maximum charge/discharge current: 100 A

Inverter DC Input Rating and Protection Requirements

It is recommended to use a 125 A, 2-pole DC breaker rated for at least 80 V DC.

This ensures safe and reliable operation under all charging and discharging conditions, and provides adequate protection against overcurrent events.

Step-by-Step Connection

Step 1 - Grounding:

1. Connect the battery ground cable securely.

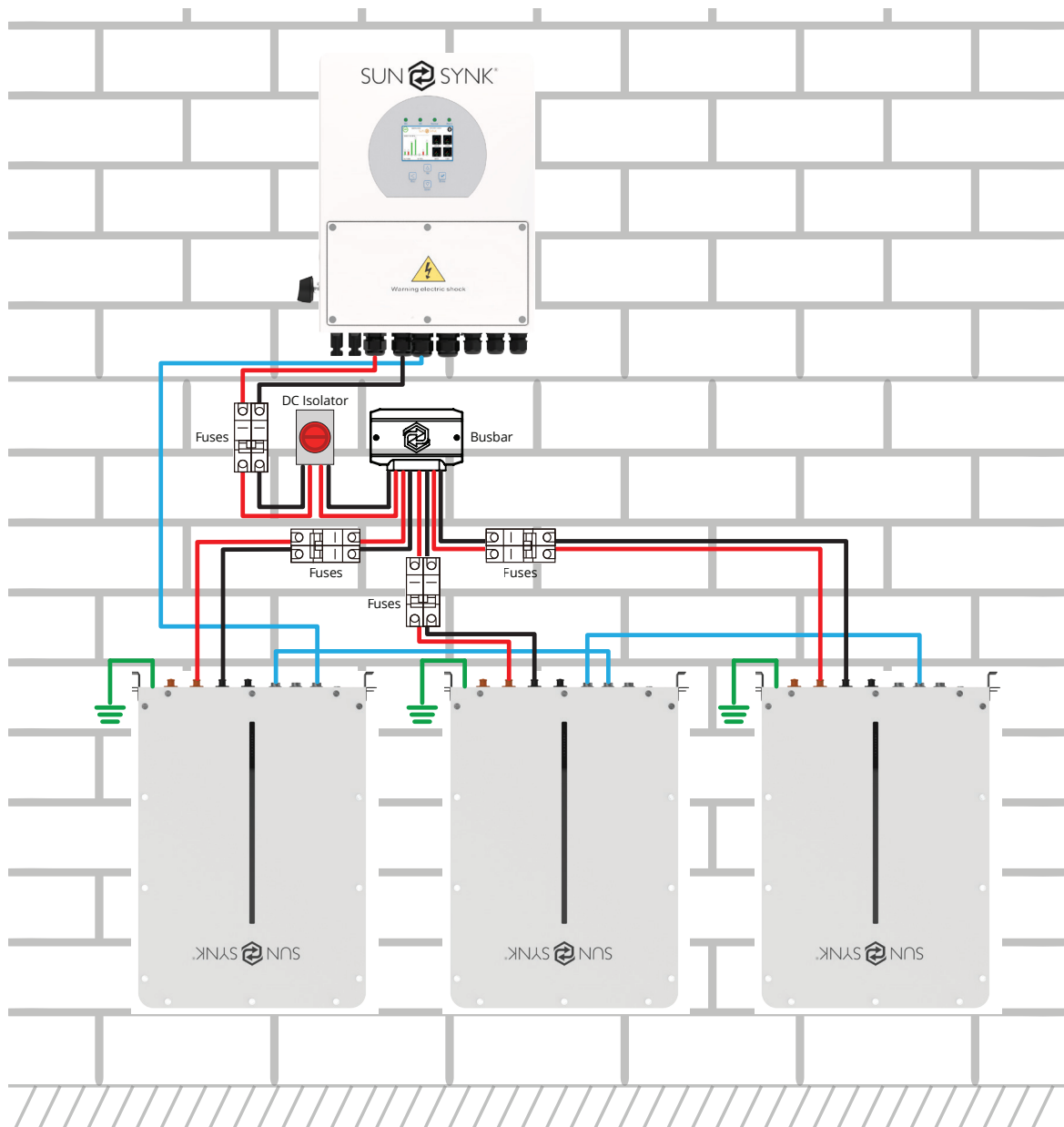
Step 2 - Connect Power Cables and DC Fuse Breaker:

1. Remove protective covers from battery terminals.
2. Connect negative (-) cable
3. Connect positive (+) cable
4. Connect a correctly rated DC Fuse Breaker and Isolator between battery and inverter.

Step 3 - Inverter Connection:

1. Confirm DC Fuse Breaker and Isolator are installed.
2. Remove inverter terminal covers.
3. Connect positive (+) battery cable to inverter positive terminal.
4. Connect negative (-) battery cable to inverter negative terminal.
5. Route cables neatly; secure with cables ties.

Multiple Battery Connection Procedure





NOTICE

DC Breaker Requirement and Sizing

A 2-pole DC breaker must be installed between the battery and inverter, as shown in the wiring diagrams. This ensures both the positive and negative conductors are isolated during maintenance or in the event of a fault.

When selecting the DC breaker, consider the following parameters:

- Battery operating voltage range: 44.8 V – 57.6 V
- Maximum charge/discharge current: 100 A

Inverter DC Input Rating and Protection Requirements

It is recommended to use a 125 A, 2-pole DC breaker rated for at least 80 V DC.

This ensures safe and reliable operation under all charging and discharging conditions, and provides adequate protection against overcurrent events.



WARNING

- Use cables of the same diameter and length for each battery to ensure current balance.
- A Sunsynk Bus-Bar must be used for parallel connections.
- Install DC fuse breakers and Isolator for each battery: between the battery and Bus-Bar, and between the Bus-Bar and the inverter.
- This arrangement ensures battery protection, safe isolation, and reliable operation.

Step-by-Step Connection:

Step 1: Prepare Batteries

- Wear protective gloves.
- Inspect all batteries and cables for damage.

Step 2: Connect Battery Terminals

- Following the single-battery connection procedure, connect negative (–) and positive (+) cables to each battery terminal.

Step 3: Install Individual DC Fuse Breakers and Isolators

- Route each battery's positive and negative cables through its respective DC fuse breaker / Isolator.

Step 4: Connect to Bus-Bar (Follow the Bus-Bar installation instructions provided in its user manual)

- Connect all battery cables from the individual DC Fuse Breakers / Isolators to the Sunsynk BusBar.

Step 5: Install Bus-Bar DC Fuse Breaker / Isolator to Inverter

- Install a DC Fuse breaker / Isolator between the Bus-Bar and the inverter to protect the system.

Step 6: Connect Inverter

- Connect the Bus-Bar positive and negative outputs to the inverter terminals following the standard inverter connection procedure.

Step 7: Cable Management

- Route and secure all cables neatly. Use cable ties and avoid tight bends.

Step 8: Verify Connections

- Double-check polarity, fuse ratings, and grounding.
- Ensure all connections are tight and secure before powering on the system.

Battery Communication Connection

■ Single Battery Communication Setup

- Connect a BMS Cable from the inverter's CAN port directly to the PCS port of the battery.
- This allows proper communication between the inverter and the single battery for control and monitoring.

■ Multiple Battery Communication Setup

- Connect the inverter's CAN port to the PCS IN port of the master battery.
- Daisy-chain from the master battery's PCS OUT port to the PCS IN port of the second battery (Slave 2).
- Continue by connecting from Slave 2's PCS OUT port to the PCS IN port of the third battery (Slave 3).
- Repeat this sequence for additional batteries as required.



NOTICE

This communication connection enables reliable battery-to-inverter communication. In systems with multiple batteries connected in parallel, the communication is routed through the master battery, ensuring synchronized and stable communication across all connected units.

Important: For adding new batteries to an existing system, refer to **Section: Battery Expansion and Use**.

COMMISSIONING

The battery must be installed by qualified personnel, following the relevant national wiring and installation regulations. Prior to powering ON, the qualified personnel must complete the following checks:

- Ensure that the entire system is completely OFF.
- All cables are securely connected (power, ground, and communication).
- Polarity is correct (positive-to-positive, negative-to-negative).
- Communication cable is properly linked between the inverter and battery (CAN → PCS).
- DC fuse breakers and isolators are installed and in the OFF position.
- Cables are neatly routed and secured with no sharp bends or mechanical stress.
- Battery and inverter terminals are tightened, and covers are re-installed.
- Grounding connection is verified.



NOTICE

Ensure that the battery is connected only to a compatible low-voltage inverter. This is a critical requirement for safe and reliable operation.

OPERATION AND SETTINGS

After successful commissioning, proceed to test system operation by switching it ON. Verify that all communication responses are functioning correctly, recheck cable connections if any abnormal behavior is observed, and confirm that the battery settings are properly configured.

Power ON/OFF

Power ON Sequence

- Check installation: Ensure cables, grounding, and inverter are OFF.
- Verify system status: Battery breaker OFF, LEDs inactive.
- Turn ON battery: Switch breaker ON and press Power button.
- Wait for initialization: Allow 1-2 minutes for BMS self-check, verify LEDs indicate normal status.
- Power up inverter: Confirm communication: Inverter should display BMS SOC and BMS Voltage ON Li-BMS battery settings menu.

Normal Operation and LED Indicators

During normal operation, the battery functions under the control of its Battery Management System (BMS) and communicates with the inverter to manage charging and discharging. Check the battery charge and discharge is within the C rating of the battery. Too high will damage the battery.

- Checklist for Normal Operation
 - Green LEDs indicate RUNNING/CHARGING/DISCHARGING.
 - No Red or Orange LED indicators.
 - Communication with inverter is stable.
 - Battery SOC changes gradually as charging/discharging progresses.

Check LED Indicator Status Table for more details.

- **Final Confirmation:** Monitor for at least 15minutes, battery charging/discharging current flows correctly, and no alarms or warnings are displayed.

Power OFF Sequence

- Switch OFF inverter: Button OFF → AC breaker OFF.
- Turn OFF battery: Press Power button OFF, then switch breaker OFF / disconnect isolator.
- Verify system is safe: Ensure all lights OFF, wait 5 minutes before handling cables.



WARNING

Never connect or disconnect battery cables while the system is powered ON.

- Always follow the correct order: Start-Up (Battery → Inverter), Shut-Down (Inverter → Battery).
- Wait at least 5 minutes after shut-down before touching cables or components.
- Refer to section **Model Interface Description and Instructions** for LED indicators and BMS warnings.

Communication Faults and Protection Mode

If battery-inverter communication fails during startup or after installation, the Red (ALM) or Orange LEDs will indicate an error. The RUN LED (Green) may switch off or stop blinking, and the battery will enter protection mode, suspending charge/discharge.

To resolve:

- Check inverter fault codes for error details.
- Verify communication cable is correctly connected (CAN on inverter – PCS on battery) and that the correct cable type is used.
- Inspect and secure all connections.
- Confirm inverter Battery type is set to Lithium.
- For non-Sunsynk inverter, verify compatibility in the with the L5.3 battery and confirm with the inverter manufacturer.
- Restart and reconfigure the system once resolved.



NOTICE

Do not continue operation if Red or Orange LEDs remain active. Contact Sunsynk Technical Support for Assistance.

Battery Settings

After switching ON the battery, check the communications page by clicking on the 'Li BMS' icon to see if the BMS information is visible. Suppose some information is not displayed correctly (it should look like the diagram below to the right), then there will be a communication error, and it can be resolved by reading section 6.1.4 Communication Faults and Protection Mode.

Li BMS		Help ?
Sum Data	Details Data	
Battery Voltage: 53.06V		
Battery Current: -1A		
Battery Temp: 22.0C		
Total SOC: 85%		
Total SOH: 100%		
Battery Chage Voltage: 58.0V		
Charge Current Limit: 50A		
Discharge Current Limit: 50A		

Li BMS		Help ?						
Sum Data					Details Data			
	Volt	Curr	Tem	SOC	Energy	Charge		Fault
1	50.31V	19.70A	29.6C	33.0%	26.0Ah	0.0V	0.0A	0 0 0
2	50.38V	31.70A	37.6C	51.0%	25.5Ah	53.2V	25.0A	0 0 0
3	50.35V	25.10A	29.9C	52.0%	6.0Ah	53.2V	25.0A	0 0 0
4	50.37V	30.70A	32.1C	12.0%	26.0Ah	0.0V	0.0A	0 0 0
5	50.35V	00.00A	30.6C	48.0%	32.0Ah	0.0V	0.0A	0 0 0
6	50.36V	15.40A	30.6C	52.0%	39.1Ah	0.0V	0.0A	0 0 0
7	00.00V	00.00A	0.0C	00.0%	00.0Ah	0.0V	0.0A	0 0 0
8	50.38V	19.30A	31.0C	52.0%	25.5Ah	0.0V	0.0A	0 0 0
9	50.39V	16.30A	30.6C	52.0%	26.0Ah	0.0V	0.0A	0 0 0
10	00.00V	00.00A	0.0C	00.0%	00.0Ah	0.0V	0.0A	0 0 0
11	00.00V	00.00A	0.0C	00.0%	00.0Ah	0.0V	0.0A	0 0 0
12	00.00V	00.00A	0.0C	00.0%	00.0Ah	0.0V	0.0A	0 0 0
13	00.00V	00.00A	0.0C	00.0%	00.0Ah	0.0V	0.0A	0 0 0
14	00.00V	00.00A	0.0C	00.0%	00.0Ah	0.0V	0.0A	0 0 0
15	00.00V	00.00A	0.0C	00.0%	00.0Ah	0.0V	0.0A	0 0 0

When the 'Li BMS' indicator appears, it confirms communication between the inverter and battery.

Setting Up Lithium Battery

- Click the 'BATTERY' icon and go to the 'Batt Type' column.
 - Select 'Lithium', set the battery 'capacity', and configure 'charge/discharge' currents according to the battery's technical specifications.
- Choose CAN for BMS communication and enable Activate. This allows recovery of a fully discharged battery by slowly charging from the solar array until normal charging resumes.
- Proceed by setting 'Batt Charge' and 'Shut Down', entering desired operating parameters.

Battery Setup

Batt type

Batt charge

Shut Down

☒ Lithium
 ☐ AGM V
 ☐ AGM %
 ☐ No batt

☐ Activate

Batt capacity

0Ah

Charge Amps

0A

Discharge Amps

0A

☒ CAN
 ☐ RS485

Protocol

0

☐ BMS_Err_Stop

Cancel

OK

Battery Setup

Batt type

Batt charge

Shut Down

Amps

40A

5A

☐ Gen Charge
 ☒ Grid Charge

☐ Gen Signal
 ☒ Grid Signal

☐ Signal ISLAND MODE

Force OFF

☐ Gen Force

Cancel

OK

Float V

55.2V

Absorption V

57.6V

Equalization V

58.8V

90 days

2.3 hours

Battery Setup

Batt type

Batt charge

Shut Down

Shut Down

20%

☐ Low PowerMode < Low Batt

Low Batt

20%

☐ Low Noise Mode

Restart

40%

☐ Disable Float Charge

Cancel

OK



NOTICE

Additional settings can be applied based on system requirements.

For full details, refer to the Low-Voltage Inverter User Manual → Battery Settings.

TROUBLESHOOTING

To assess the battery system's status, users need to utilize additional battery status monitoring software to check the protection mode. Please refer to the installation manual for instructions on using the monitoring software. Once the user identifies the protection mode, consult the following table for solutions and further information.

Fault Type	Fault Generation Condition	Possible Causes	Troubleshooting
BMS fault	The cell voltage sampling circuit is faulty. The cell temperature sampling circuit is faulty	The welding point for cell voltage sampling is loose or disconnected. The voltage sampling terminal is disconnected. The fuse in the voltage sampling circuit is blown. The cell temperature sensor has failed.	Replace the battery.
Electrochemical cell fault	The voltage of the cell is low or unbalanced.	Due to large self-discharge, the cell over-discharges to below 2.0V after long-term storage. External factors damage the cell, and short circuits, pinpricks, or crushing occurs.	Replace the battery.
Over-voltage protection	The cell voltage is greater than 3.65 V in the charging state. The battery voltage is greater than 58.4 V.	The bus-bar input voltage exceeds the standard value. Cells are not consistent. The capacity of some cells deteriorates too fast, or the internal resistance of some cells is too high.	Contact local engineers to rectify the fault if the battery cannot be recovered due to protection against abnormality.
Under voltage protection	The battery voltage is less than 40V. The minimum cell voltage is less than 2.5V	The mains power failure has lasted for a long time. Cells are not consistent. The capacity of some cells deteriorates too fast, or the internal resistance of some cells is too high.	Contact local engineers to rectify the fault if the battery cannot be recovered due to protection against abnormality.
Charge or discharge high-temperature protection	The maximum cell temperature is greater than 60°C	The battery ambient temperature is too high. There are abnormal heat sources around.	Contact local engineers to rectify the fault if the battery cannot be recovered due to protection against abnormality.
Charge low-temperature protection	The minimum cell temperature is less than 0°C	The battery ambient temperature is too low.	Contact local engineers to rectify the fault if the battery cannot be recovered due to protection against abnormality.
Discharge low-temperature protection	The minimum cell temperature is less than -20°C	The battery ambient temperature is too low.	Contact local engineers to rectify the fault if the battery cannot be recovered due to protection against abnormality.

After reviewing the provided data, please forward it to our customer service team. They will assess your issue and provide you with the most suitable solution.

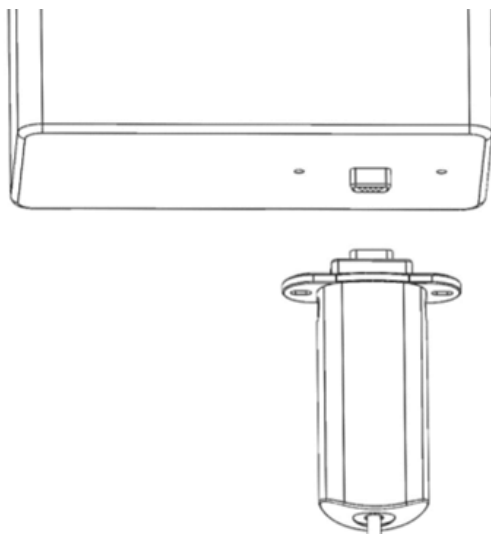
MONITORING

Sunsynk battery monitoring is easily accessible via the Sunsynk Connect and Sunsynk Connect Pro Cloud apps. Sunsynk inverter systems use the CANBUS protocol to maintain continuous communication with connected batteries. To enable monitoring of battery functionality and performance, a data logger must be properly connected to the inverter and to WIFI, and a site plant must be created via the Sunsynk Connect or Sunsynk Pro Cloud apps. For detailed instructions on the Sunsynk Connect or Sunsynk Connect Pro Cloud App and setting up system monitoring, refer to the Sunsynk Connect or Sunsynk Connect Pro User Manual on sunsynk.org

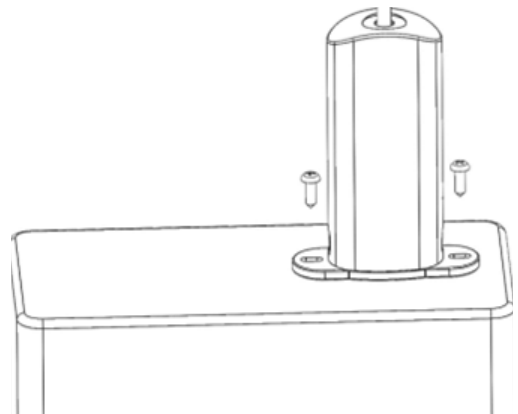
The following illustrations show how to register, create a plant for a site and monitor a battery online with ease.

Data Logger Installation

- 1 Insert the Data Logger into the DB9 interface of the inverter, as shown in the following figure.

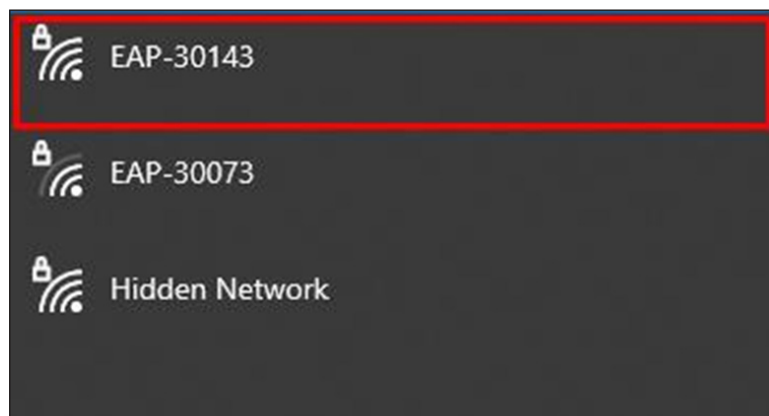


- 2 Insert the two screws that come with the Data Logger through the holes, and then tighten them with a Phillips screwdriver, as shown in the figure below.

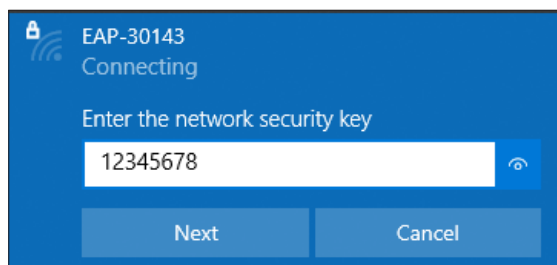


Connecting to Wi-Fi

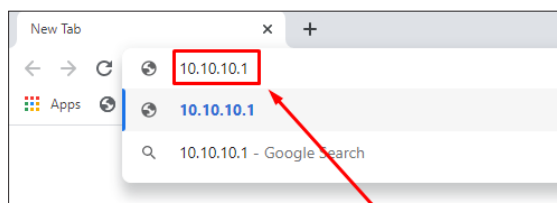
To connect the data logger to the Wi-Fi you need to go to the Wi-Fi setting on your device and search for it. You will see an available connection with the SSID 'EAP-*****' ('*****' are the last 5 digits of the serial number on the data logger).



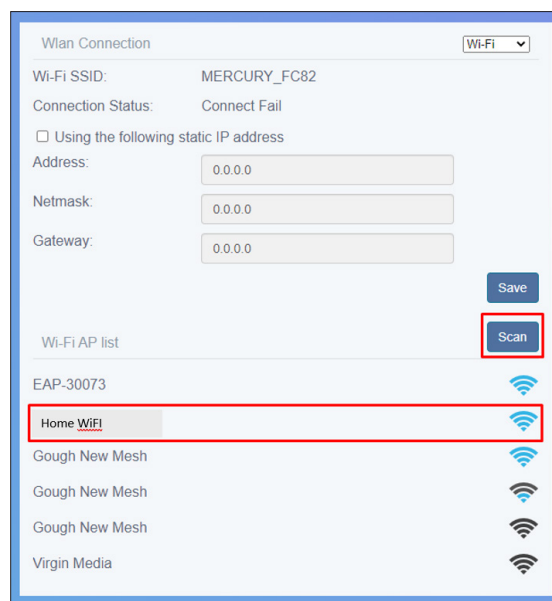
- 1 Select the correct connection and then enter the password 12345678.



- 2 Once you have connected to the EAP connection, you need to connect it to your own Wi-Fi. To do this, open the Internet browser and search the IP address 10.10.10.1.



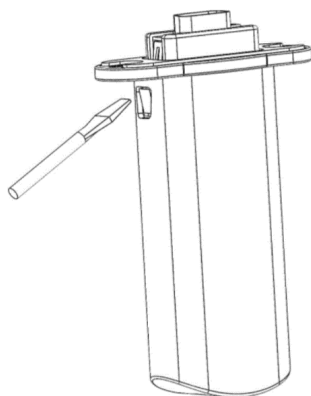
- 3 Once connected, click 'Scan' to search the Wi-Fi List and you should then see your Wi-Fi connection.



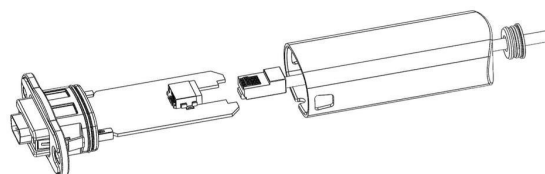
- 4 Select your Internet / Wi-Fi connection, enter your password, and click 'Connect'.
- 5 Once your data logger is connected to your Wi-Fi, you can then disconnect from the data loggers EAP connection and connect back to your usual Wi-Fi connection.

Network Cable

- 1 Use a flat-blade screwdriver to press the buckles on the left and right sides of the shell, as shown in the following figure. Then extract the DB9 interface part manually.

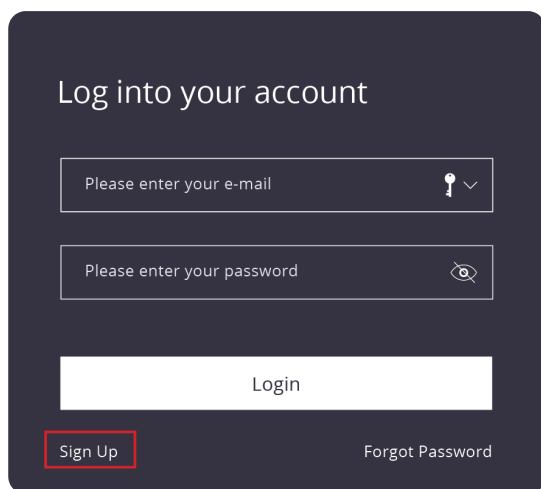


- 2 Pass the network cable through its specific hole at the bottom of the shell. Then, insert the RJ45 plug into the RJ45 socket, and place the sealing plug with the hole on the network cable, as shown in the figure below.



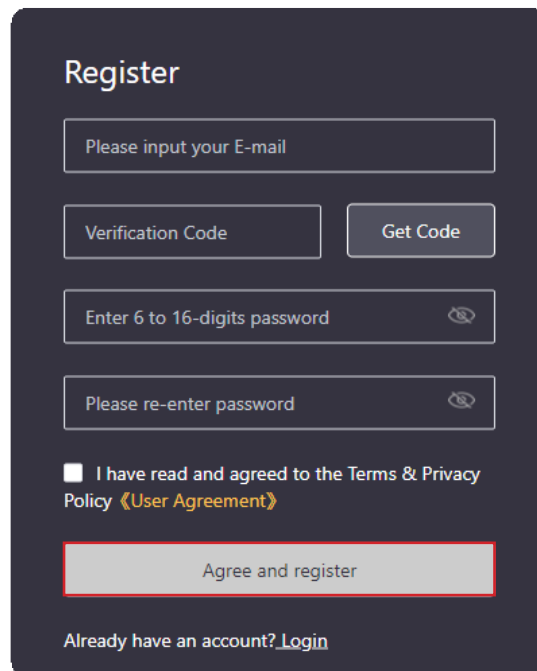
Registration

- 1 Visit <https://sunsynk.net> in your browser to access the web version of the management tool. Click on 'Sign Up' on the Login page to proceed to the Registration page.



The image shows a login page with a dark background. At the top, it says "Log into your account". Below this are two input fields: "Please enter your e-mail" and "Please enter your password". The password field has an eye icon to toggle visibility. Below the input fields is a "Login" button. At the bottom left, there is a "Sign Up" button highlighted with a red border. At the bottom right, there is a "Forgot Password" link.

- 2 Enter a valid email address to receive a verification code. Complete the registration form by setting a password, checking the user agreement box to confirm agreement, and then click 'Agree and Register'.



The image shows a registration page with a dark background. At the top, it says "Register". Below this are several input fields: "Please input your E-mail", "Verification Code" (with a "Get Code" button next to it), "Enter 6 to 16-digits password" (with an eye icon), and "Please re-enter password" (with an eye icon). Below the input fields is a checkbox labeled "I have read and agreed to the Terms & Privacy Policy" with a link to "User Agreement". Below the checkbox is a large "Agree and register" button highlighted with a red border. At the bottom, there is a link "Already have an account? Login".

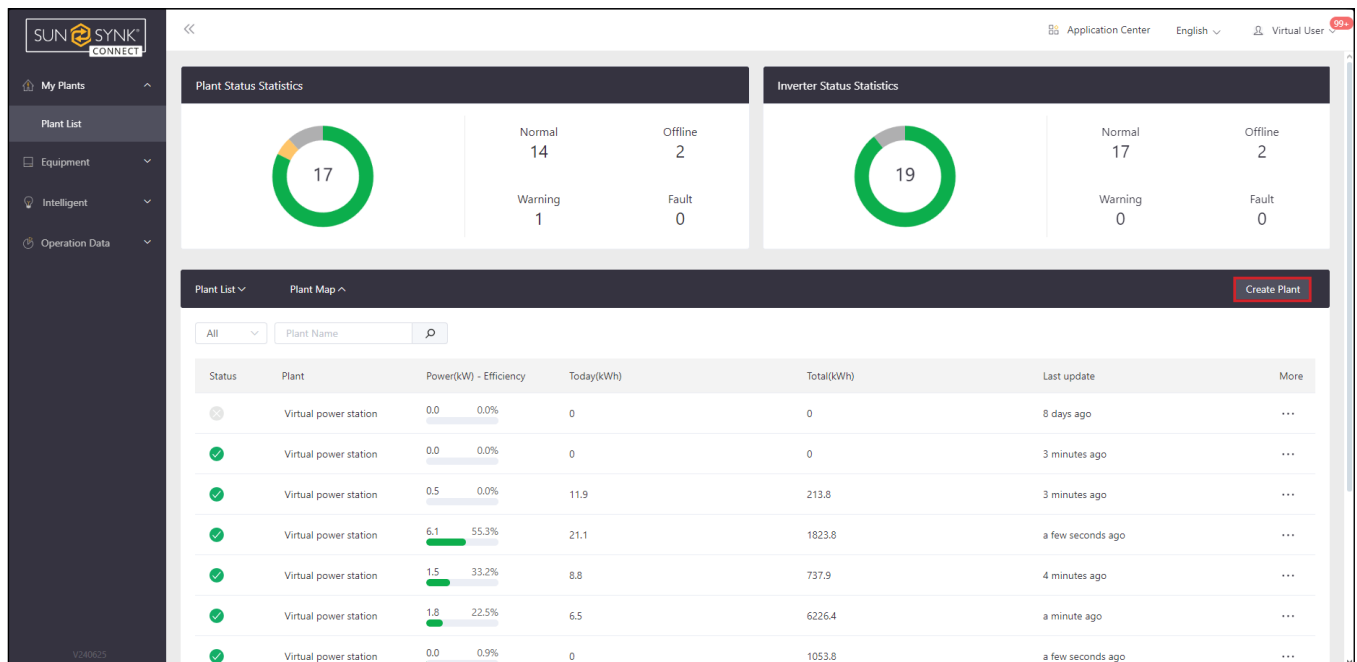
Requesting User Level Access Change

If you are an installer who has registered on the Sunsynk Connect platform, you may initially have a basic user account with limited permissions. To request elevated user access for parameter changes, remote inverter upgrades, and other functions, please visit <https://www.sunsynk.org/remote-monitoring> and complete the form provided.

Creating a Plant

1 Navigate to the menu and click on 'My Plant', then select 'Plant List'.

2 To initiate a new plant setup, click on 'Create a Plant' located in the right of the page.



3 Enter the Serial Number (SN) and KEY from the Data Logger label, then click 'Next'.

The screenshot shows the 'Create Plant' form with a progress bar at the top indicating the current step is 'Add Device'. The form has four main sections: 'Add Device', 'Plant Info.', 'Revenue Info.', and 'Contacts'. The 'Add Device' section contains two input fields for '* SN' and '* Key', both with 'Please input' as placeholder text. To the right of these fields is a QR code and a text box containing the following information: 'Wi-Fi Stick', 'P/N: EG00-0009-MS', 'S/N: E4501***001', 'KEY: QDR8 *** WHNV BYAY', and 'Chengdu E-LINKER Information Technology Co., Ltd.'. Below the input fields are 'Cancel' and 'Next' buttons.

4 Specify the total capacity in the 'Capacity' field and choose the appropriate 'Plant Type'. Note that different types of plants will display different information on the page. To ensure accurate plant statistics, complete all required fields accurately.

5 Enter the installation address of the plant in the address input box on the map to pinpoint the exact location, or use the map to select the correct installation site.

6 Verify and adjust the plant's time zone if necessary. Click 'Next' to proceed.

Plant List / Create Plant

Create Plant

Add Device Plant Info. Revenue Info. Contacts

4

* Plant Name

* Capacity kWp

* Commissioning Date 2024-07-04

Installer

Upload picture The file format must be JPG, PNG, PNG and size can not exceed 10MB

5

6

Longitude and latitude: -2.715839, 53.370591

Address: 60 Rank St. Widnes W46 0AH, UK

* Time Zone (UTC+04:00) Azerbaijan Ulyanovsk ☐ Check whether the selected time zone is correct

Back Next

7 Select your currency, specify the total investment, and choose your preferred Valuation Method.
Note: The Live Price option is currently available only for UK customers.

Plant List / Create Plant

Create Plant

Add Device Plant Info. Revenue Info. Contacts

* Currency \$

Total Investment \$

* Valuation Method ☒ Constant Price ☐ Time of use price ☐ Live Price

\$/kWh

Back Next

8 Provide the name, phone number, and email address of the user responsible for managing the system.

Plant List / Create Plant

Create Plant

Add Device Plant Info. Revenue Info. Contacts

* Manager

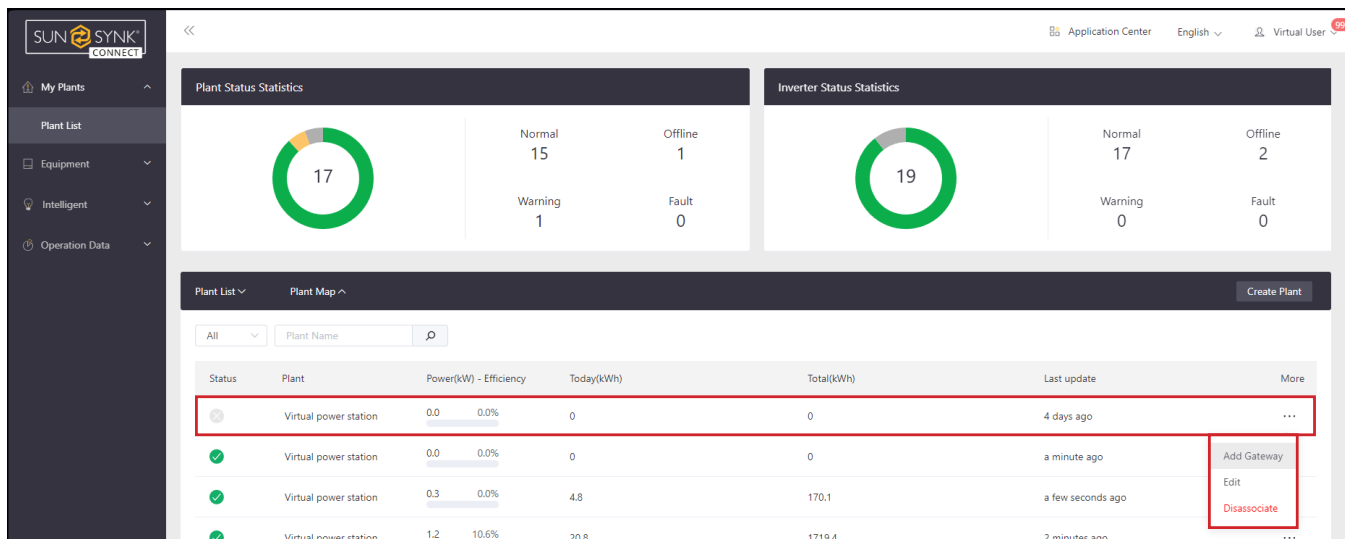
* Phone

E-mail

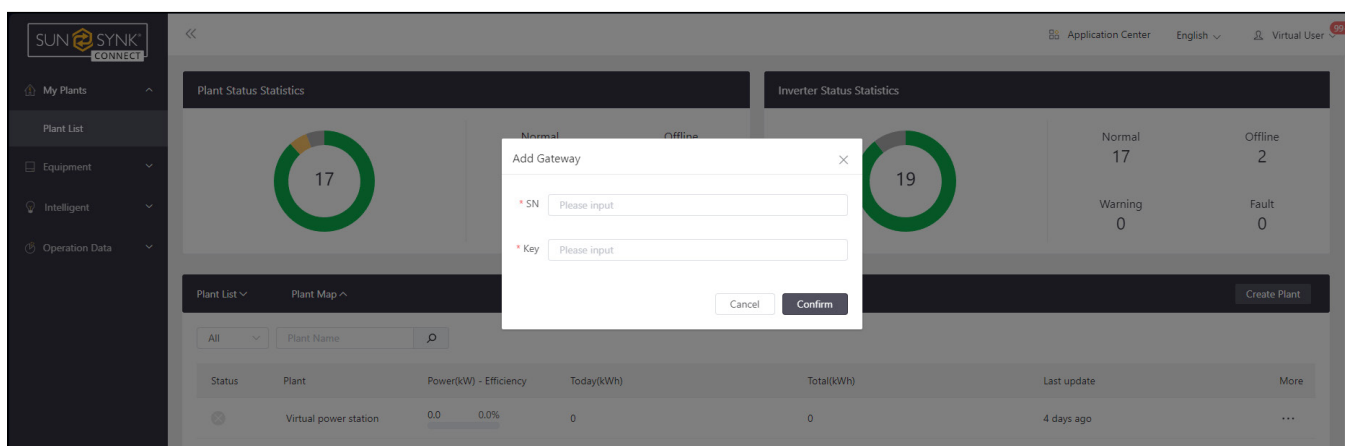
Back Complete

Adding a Device

- 1 In the menu, first click 'My Plant', then 'Plant List'.
- 2 Select the plant that need to add equipment from the 'Plant List'.
- 3 Click the 'More (...)' button and Select 'Add Gateway'.

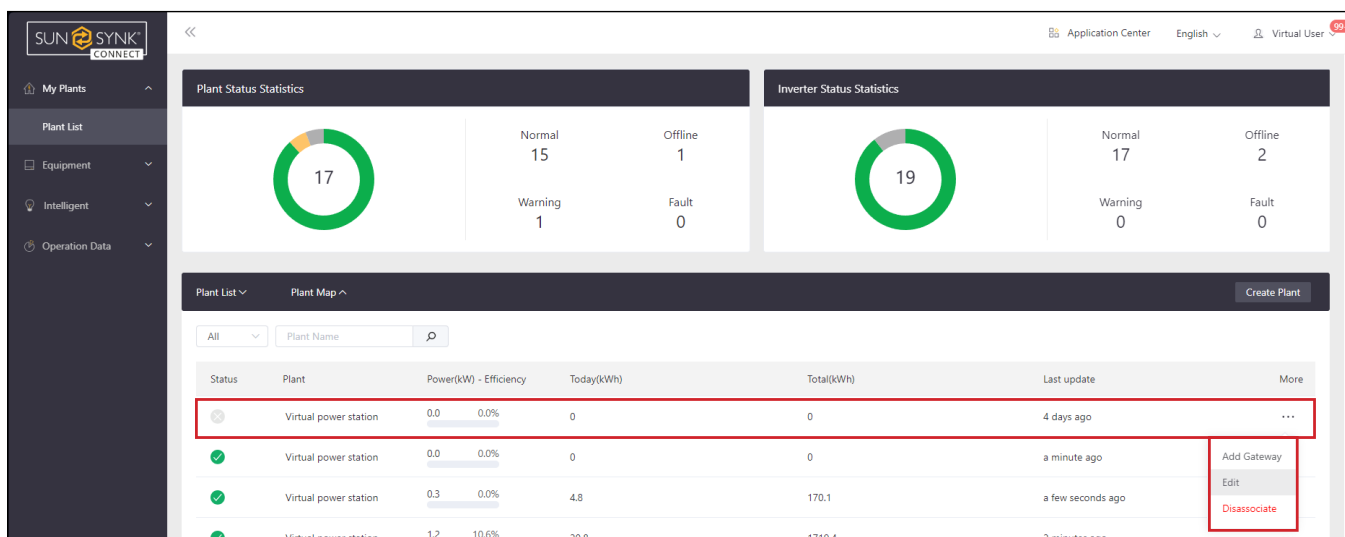


- 4 Input the serial number SN and key of the Data Logger to be connected, then click 'Confirm'.



Editing a Plant

- 1 In the menu, first click 'My Plant', then 'Plant List'.
- 2 Select the plant that need to be edited from the 'Plant List'.
- 3 Click the 'More (...)' button and select 'Edit'.



4 Review and make edits to any previously entered information as needed.

Edit

Plant Info.

* Plant Name: Virtual power station

* Capacity: 6 kWp

* Commissioning Date: 2023-03-07

Installer: sunsynk

Upload picture. The file format must be JPG, JPEG, PNG, and size can not exceed 10MB

Longitude and latitude: 29.4714305,-23.8975637

Address: FH62+27 Matola, Tanzania

Time Zone: (UTC+02:00) Harare,Pretoria

Back Save

Edit

Plant Info.

* Currency: R

Revenue Info.

Total Investment: 150000 R

* Valuation Method: ☒ Constant Price ☐ Time of use price ☐ Live Price

3 R/kWh

Back Save

Edit

Plant Info.

* Manager: [User Icon]

Revenue Info.

* Phone: Please input

E-mail: Please input

Back Save

Plant Overview

1 In the menu, first click 'My Plant', then 'Plant List'.

2 Select plant list 'Plant List' and click the corresponding plant name to enter the plant Overview page.

SUNSYNK CONNECT

Application Center English Virtual User

My Plants

Plant List

Plant Status Statistics

17

Normal 15 Offline 1

Warning 1 Fault 0

Inverter Status Statistics

19

Normal 18 Offline 1

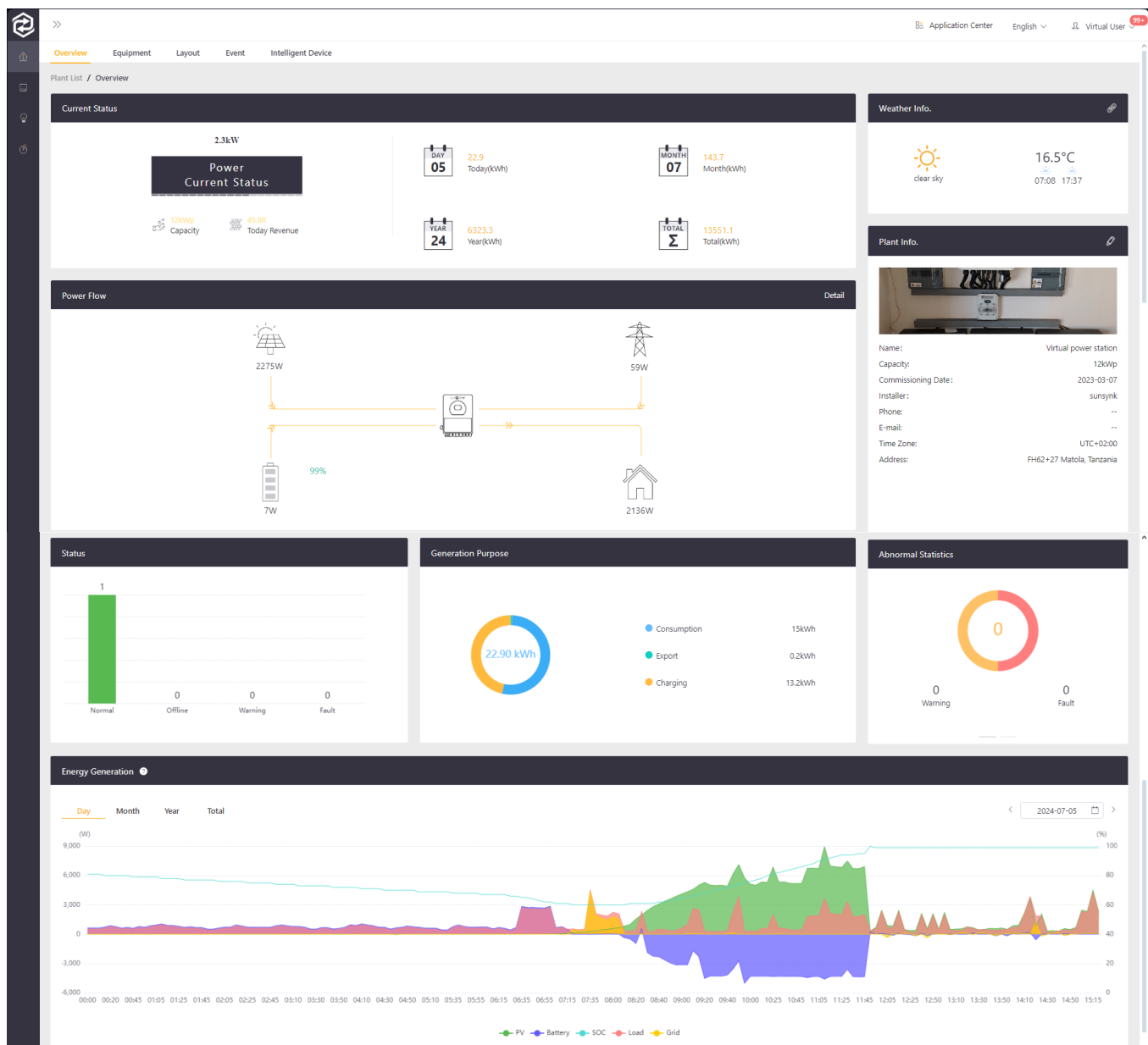
Warning 0 Fault 0

Plant List Plant Map Create Plant

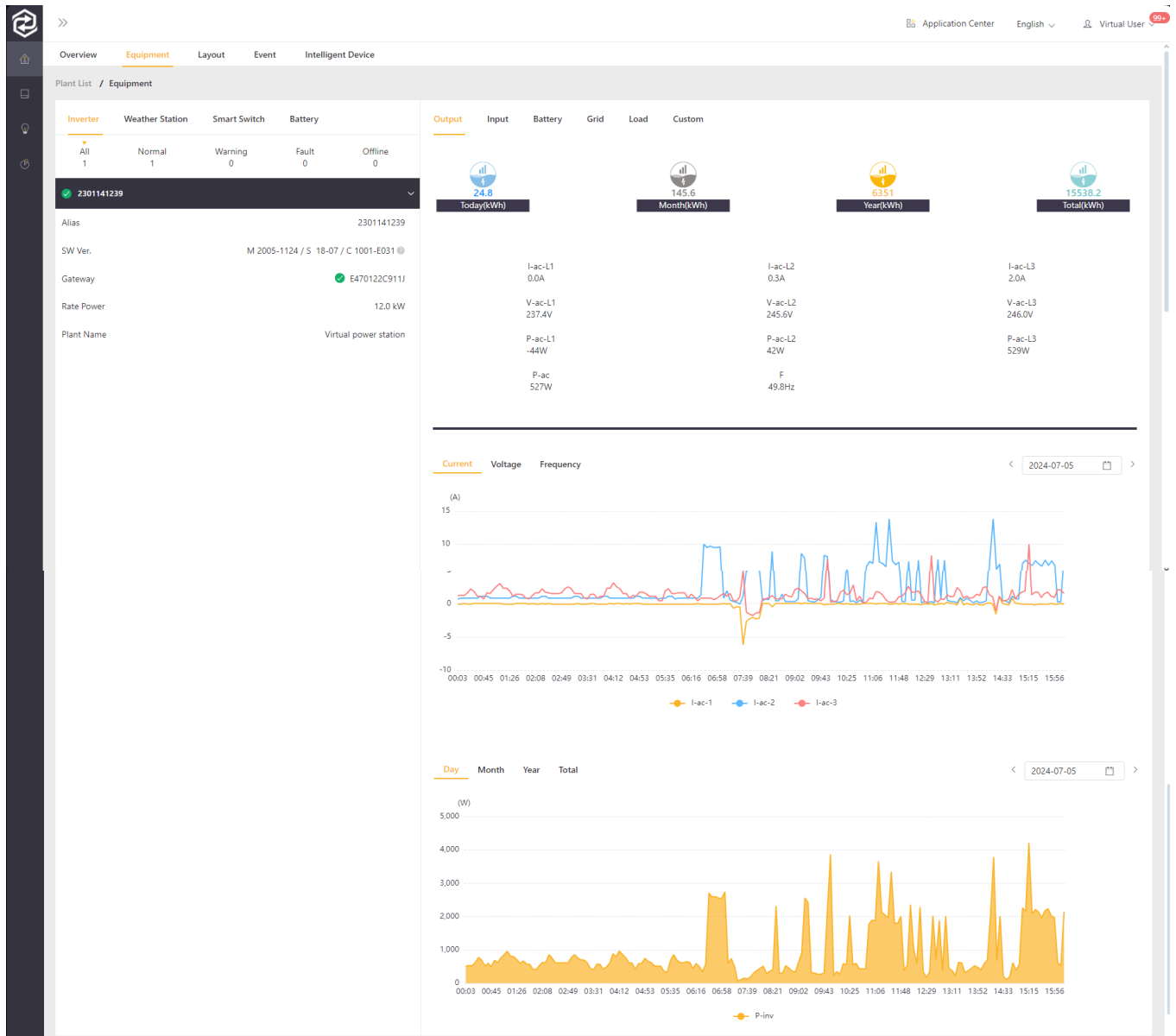
All Plant Name

Status	Plant	Power(kW) - Efficiency	Today(kWh)	Total(kWh)	Last update	More
✓	Virtual power station	0.5 9.5%	3.4	4265.9	5 minutes ago	...
✓	Virtual power station	4.5 37.7%	22.9	13551.1	4 minutes ago	...
✓	Virtual power station	0.4 5.6%	9.8	5679.4	a minute ago	...

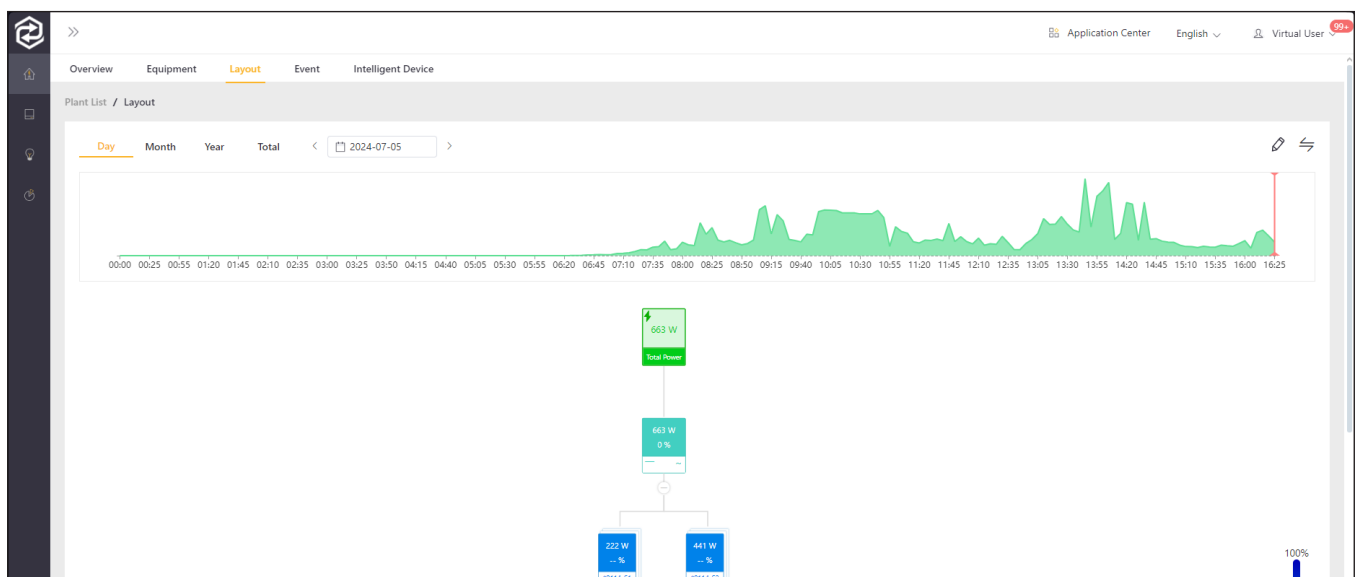
3 On the Plant Overview page, you can monitor the plant's status, weather conditions, energy flow diagram, inverter status, recent abnormalities, power generation charts, and other relevant information (as illustrated on the next page).



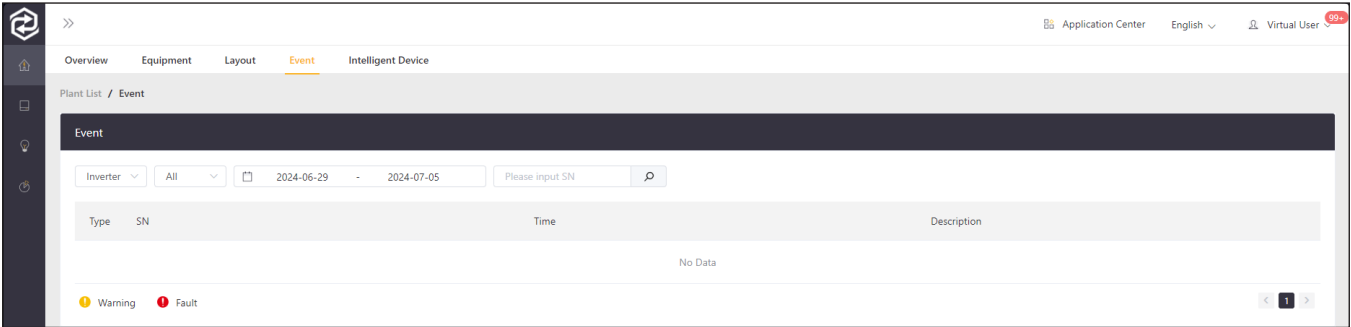
4 Click on 'Equipment' within the Overview page to access detailed information about all equipment installed in the plant. Here, you can view operational data charts, perform remote upgrades, adjust parameter settings, and manage other operations.



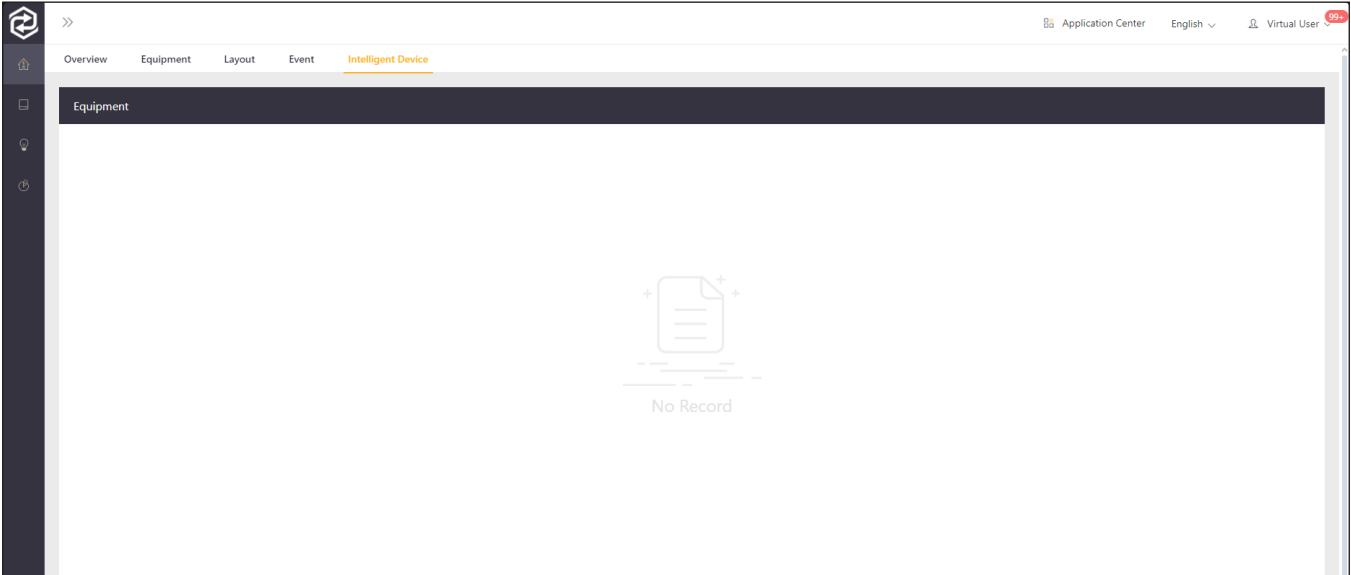
5 On the Plant Layout page, you can monitor the plant's layout.



6 Navigate to the 'Event' menu on the Plant Overview page to switch to the Event page. Here you can view the current plants abnormal information.



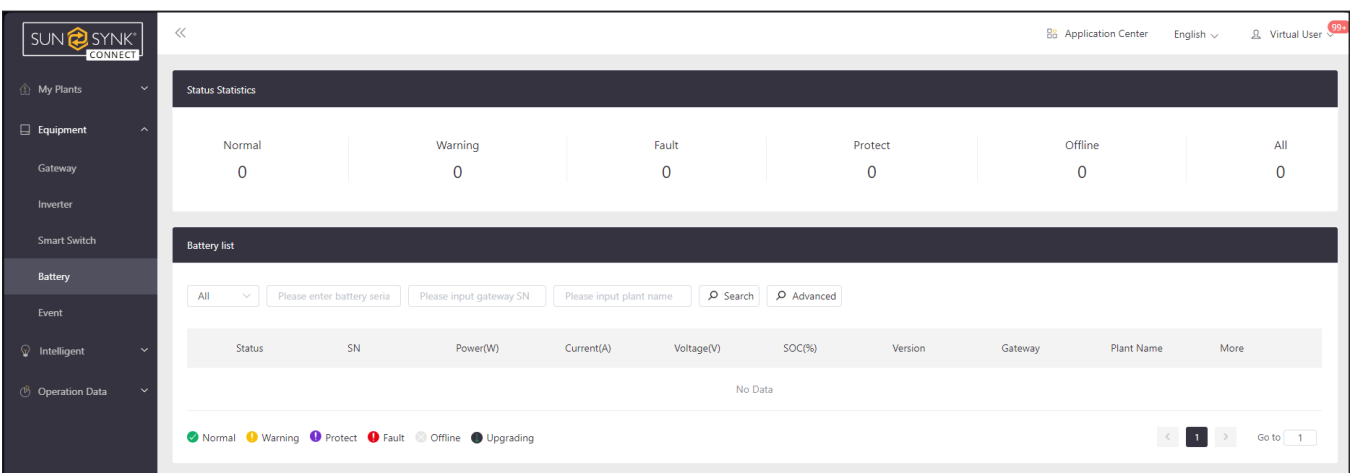
7 On the Plant Intelligent device...



Battery Management

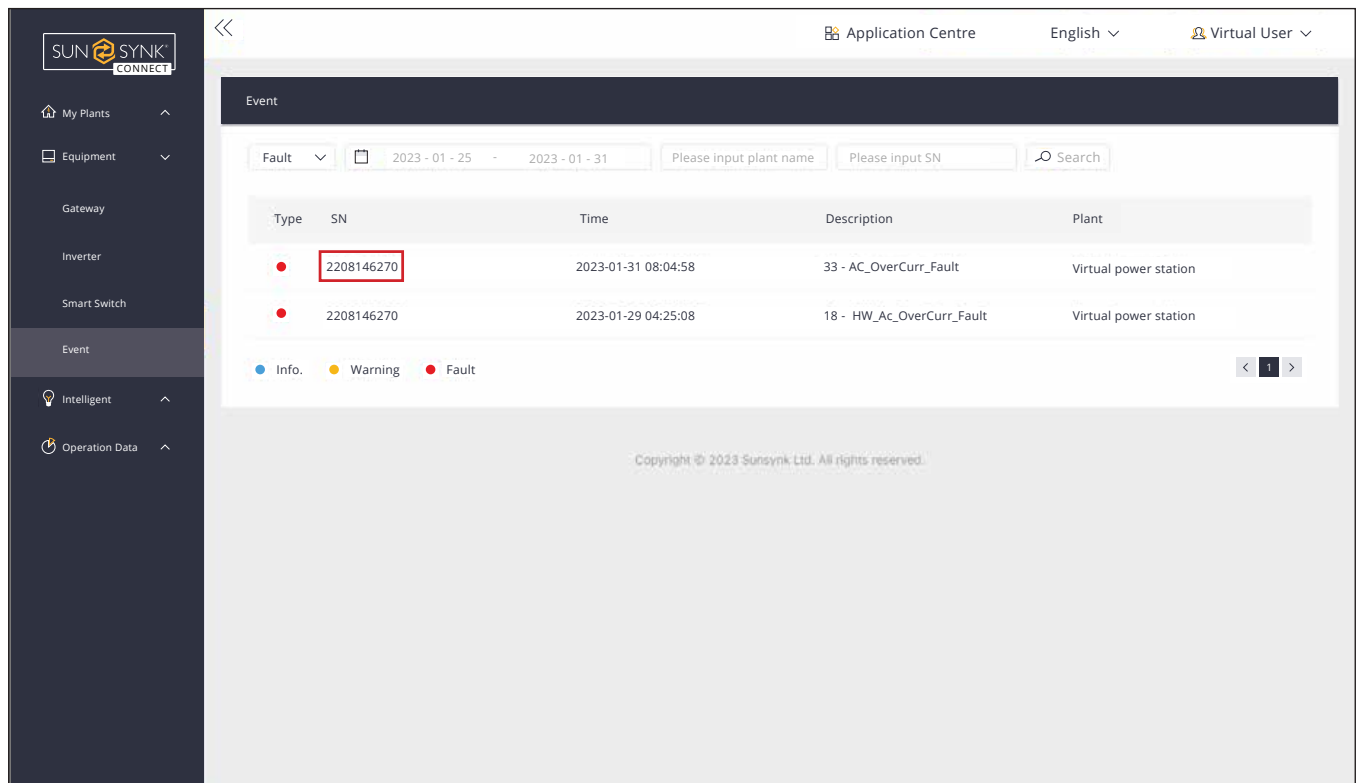
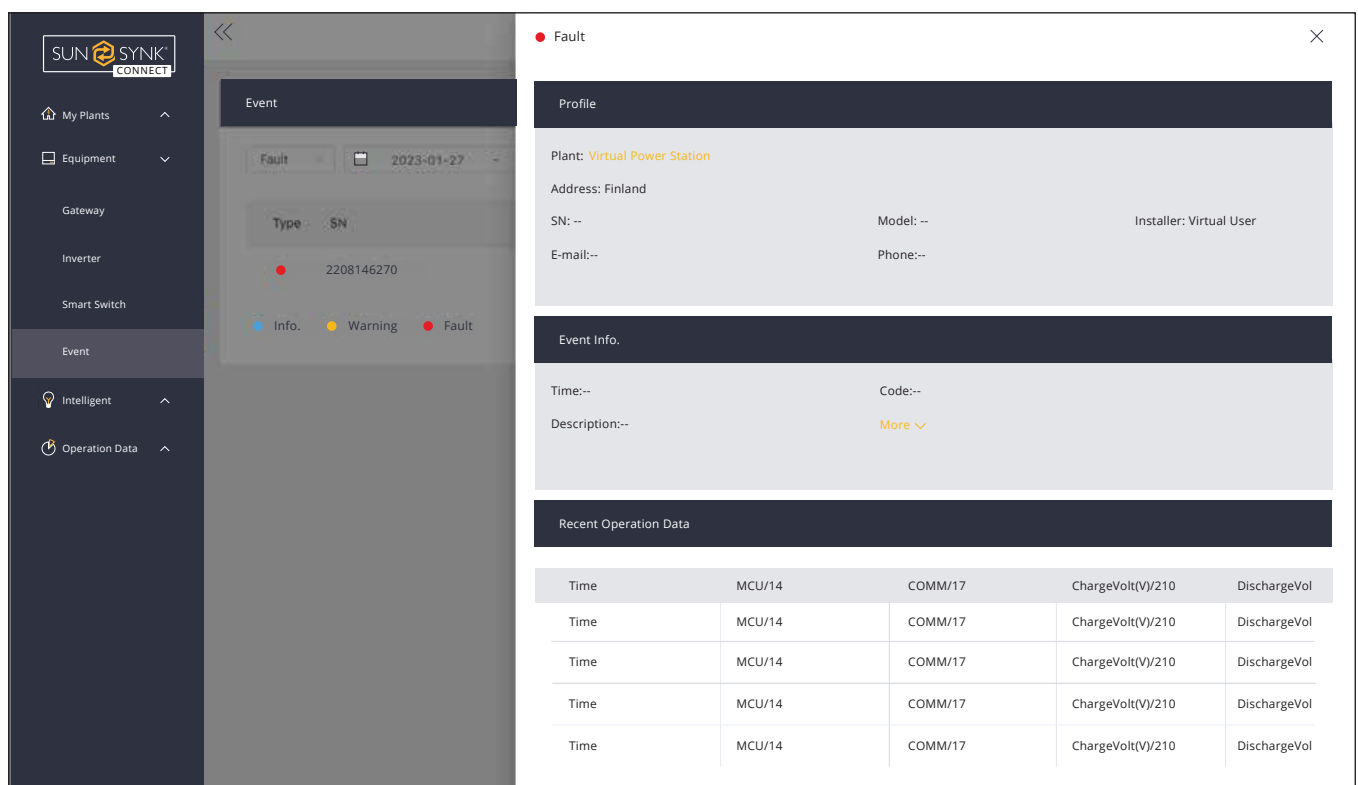
1 In the menu, click 'Equipment', then 'Battery' to enter the Battery List page.

2 On the Battery List page, click on the serial number (SN) of a battery to view its detailed information and operational data.



Event

- 1 In the menu, click 'Equipment', then 'Event' to enter the Event List page.
- 2 In the Event List page, click on the SN of an inverter to view the detailed information of the event and recent operational data.



INSPECTION, CLEANING AND MAINTENANCE

General Information

- The SUNSYNK-L5.3 battery isn't fully charged upon shipment. We suggest installing it within three months of arrival.
- During maintenance, avoid reinstalling batteries in the SUNSYNK-L5.3 to prevent reduced product performance.
- Do not dismantle or dissect any battery in the SUNSYNK-L5.3; it's strictly prohibited.
- After over-discharging the SUNSYNK-L5.3 battery, recharge it within 48 hours. You can also charge the SUNSYNK-L5.3 in parallel. Connect the charger to the output port of any SUNSYNK-L5.3 after connecting batteries in parallel.
- Do not open or dismantle the battery as it doesn't contain serviceable parts internally.
- Before cleaning or performing maintenance tasks, disconnect the SUNSYNK-L5.3 Li-Ion battery from all loads and charging devices. Use the enclosed protective caps on terminals during these activities to avoid terminal contact risks.

Inspection

Inspect the wiring and contacts for looseness or damage, including cracks, deformations, leaks, or any other type of damage. If any damage is found, replace the battery immediately.

- Do not attempt to charge or use damaged batteries under any circumstances.

IMPORTANT: Avoid contact with liquid from a ruptured battery.

Regularly monitor the battery's state of charge. Lithium Iron Phosphate batteries gradually discharge when not in use or during storage. Consider replacing the battery if you notice either of the following conditions:

1. The battery's run time decreases below 70% of the original run time.
2. The battery's charge time significantly increases.

Cleaning

If cleaning is required, use a soft, dry cloth to clean the Li-Ion battery. Avoid using liquids, solvents, or abrasives for cleaning purposes.

Maintenance

The Li-Ion battery is maintenance-free. Charge the battery to approximately over 80% of its capacity at least once every year to maintain its capacity.

STORAGE

The battery product should be stored in a dry and cool environment. Typically, the maximum storage period at room temperature is six months. If storing the battery for over six months, it's recommended to check the battery voltage. If the voltage exceeds 51.2V, you can continue storing the battery. However, it's important to check the voltage at least once a month until it drops below 51.2V. Once the voltage is lower than 51.2V, charge the battery according to the following strategy:

1. Discharge the battery to the cut-off voltage using a 0.2C (20A) current.
2. Charge the battery with a 0.2C (20A) current for approximately 3 hours.
3. Maintain the State of Charge (SOC) of the battery at 40%-60% during storage.

When storing the battery, ensure it's kept away from explosive and flammable areas, and keep ignition sources and high temperatures distant from the battery.

BATTERY RECOVERY

The advanced hydro-metallurgical process is used to recover aluminium, copper, lithium, iron, and other metal materials from discarded LiFePO_4 batteries. This process can achieve a recovery efficiency of up to 80%. Here are the steps involved in the process:

Recovery Process and Steps of Cathode Materials

Aluminium foil, being an amphoteric metal, is dissolved in a NaOH alkali solution to form NaAlO_2 , which enters the solution. After filtration, the filtrate is neutralized with sulphuric acid and precipitated to obtain $\text{Al}(\text{OH})_3$. When the pH is above 9.0, most of the aluminium precipitates, and the obtained $\text{Al}(\text{OH})_3$ achieves chemical purity after analysis.

The filter residue is dissolved with sulphuric acid and hydrogen peroxide. This process allows lithium iron phosphate to enter the solution in the form of $\text{Fe}_2(\text{SO}_4)_3$ and Li_2SO_4 , separating it from carbon black and carbon coating on the lithium iron phosphate surface. After filtration and separation, the pH of the filtrate is adjusted with NaOH and ammonia water. Iron is first precipitated with $\text{Fe}(\text{OH})_3$, and then the remaining solution is precipitated with saturated Na_2CO_3 solution at 90°C .

Since FePO_4 is slightly soluble in nitric acid, the filter residue is dissolved with nitric acid and hydrogen peroxide. This process directly precipitates FePO_4 and separates impurities like carbon black from the acid solution. It also leaches $\text{Fe}(\text{OH})_3$ from the filter residue and precipitates Li_2CO_3 with saturated Na_2CO_3 solution at 90°C .

Recovery of Anode Materials

The recovery process for anode materials is relatively straightforward. Following the separation of the anode plates, the purity of copper can exceed 99%. This high-purity copper can then undergo further refining to produce electrolytic copper.

Recovery of Diaphragm

The diaphragm material is mainly harmless and has no recycling value.

List of Recycling Equipment

Automatic dismantling machine, pulverize, wet gold pool, etc.

ENVIRONMENTAL DISPOSAL

Used batteries can not be disposed of as household waste. You are obliged to handle waste batteries, such as removal of privacy on product, and return them to designated or authorized recovery point according to applicable regulations and standards on waste battery disposal.

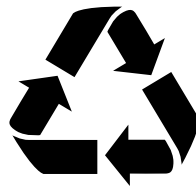


NOTICE

- Do not dispose of batteries and rechargeable batteries as domestic waste! You are legally obliged to return used batteries and rechargeable batteries.
- Waste batteries may contain pollutants that can damage the environment or your health if improperly stored or handled.
- Batteries also contain iron, lithium and other important raw materials, which can be recycled.



Li-ion



For more information, please visit sunsynk.org

Do not dispose of batteries as household waste!

TRANSPORTATION REQUIREMENTS

Transport battery products immediately after packaging using cars, trains, or ships. During transportation, avoid exposing the packaging to severe vibration, impact, or compression, as well as direct sunlight or rain.

Always ensure compliance with local, national, and international regulations before transporting Lithium Iron Phosphate batteries. Note that the transport of end-of-life, damaged, or recalled batteries may be restricted or prohibited in some cases.

The transport of Li-Ion batteries is classified under hazard class UN3480, class 9, falling into packaging group PI965 Section I for transport by water, air, or land.

For transportation of lithium-ion batteries assigned to Class 9, use Class 9 Miscellaneous Dangerous Goods and UN Identification labels. Refer to relevant transportation documents for further guidance.





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