

SKANBATT

**User Manual
SB-PW48100**

SKANBATT PowerWall LiFePO4 51,2V 100Ah



About This Product

SKANBATT 5.12kWh Battery utilizes environmentally friendly LiFePO₄ cells, offering high safety, long cycle life, and stable performance. The chemistry significantly reduces the risk of thermal runaway and fire compared to many other lithium battery technologies.

The built-in smart Battery Management System (BMS) integrates multiple safety functions, including overcharge protection, over-discharge protection, temperature monitoring, overload protection, and cell balancing.

The SKANBATT 5.12kWh Battery is manufactured in accordance with UL1973 and UL9540A related design principles. Flame-retardant materials are used throughout the construction, and the BMS is designed with redundant protection features for enhanced operational safety.

The battery supports WiFi platform monitoring and allows parallel connection of up to 14 units, enabling the creation of a wall-mounted energy storage system with up to 71.68kWh total capacity.

This installation manual contains important information regarding the installation, operation, transportation, storage, and maintenance of SKANBATT lithium batteries. Please read this manual carefully before installing or operating the product.



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1. SAFETY INFORMATION

1.1 General Safety Precautions

- Any failure or damage to the product may result in leakage of electrolyte, release of hazardous gases, or risk of fire.
- Before installation, maintenance, or servicing, disconnect the battery system from utility grid power, solar PV input, inverter/charger systems, and all external power sources.
- Installation and electrical wiring must only be carried out by qualified and authorized personnel in accordance with applicable local regulations and standards.
- The battery pack contains high voltage and high current circuits. The unit is not user serviceable. Do not open, disassemble, or modify the battery enclosure.
- Internal electronic components may be sensitive to electrostatic discharge (ESD). Appropriate ESD protection measures should always be used during handling and installation.
- Risk of Explosion
- Do not expose the battery pack to strong impacts or mechanical shock.
 - Do not crush, puncture, deform, or dismantle the battery pack.
 - Do not dispose of the battery pack in fire or expose it to open flames.
- Risk of Fire
- Do not expose the battery pack to temperatures exceeding 50°C (122°F).
 - Do not install the battery near heat sources, open flames, sparks, or other ignition sources.
 - Avoid prolonged exposure to direct sunlight or excessive heat.
 - Do not allow battery terminals or connectors to come into contact with conductive materials or objects.
- Risk of Electric Shock
- Do not disassemble or open the battery pack.
 - Do not touch exposed terminals or electrical connections with wet hands.
 - Do not expose the battery pack to water, moisture, or other liquids.
 - Keep the battery pack away from children and unauthorized persons.
- Risk of Damage to the Battery Pack
- Do not allow the battery pack to come into contact with liquids or corrosive substances.
 - Do not subject the battery pack to excessive mechanical loads or pressure.
 - Do not place heavy objects on top of the battery pack.
- General Requirements
- Do not install, operate, or service the equipment during severe weather conditions such as lightning, heavy rain, snow, or strong wind.
- Before installation, operation, or maintenance, remove conductive personal items such as watches, rings, bracelets, necklaces, and other metal objects to reduce the risk of electric shock or short circuit.
- Always use appropriate personal protective equipment (PPE), including insulated gloves, safety glasses, protective footwear, and other required protective clothing during installation and maintenance procedures.
- Ensure adequate ventilation around the battery system at all times.
- The battery system must only be installed on suitable non-combustible surfaces with sufficient structural strength to support the product weight safely.



CAUTION

- SKANBATT Lithium Batteries must always be installed together with a compatible inverter/charger or charge controller configured according to the battery specifications and applicable system requirements. The Battery Management System (BMS) alone is not intended to provide full protection against all abnormal charging conditions, incorrect system configuration, or external electrical faults. Failure to follow the installation and operating instructions may result in damage to the battery and may void the warranty.
- Always verify correct polarity before energizing the system. Reverse polarity connection may cause permanent damage to the battery, inverter, charger, or connected equipment. Never short-circuit the battery terminals.
- Do not connect or combine this battery with batteries of different chemistry, voltage, capacity, manufacturer, age, or state of charge unless explicitly approved by SKANBATT.
- Do not disassemble, modify, or tamper with the battery pack or internal electronics. If the battery enclosure is damaged, cracked, swollen, or otherwise compromised, disconnect the battery immediately and avoid contact with exposed internal components.

2. TRANSPORTATION, HANDLING AND STORAGE

2.1 Transportation and Handling

- Do not drop, puncture, crush, strike, or subject the battery to strong mechanical impacts.
- Do not expose the battery to fire, open flames, excessive heat, or direct sunlight for prolonged periods.
- Do not open, dismantle, or modify the battery enclosure.
- Never lift or carry the battery by the terminal cables or communication cables.
- Avoid excessive vibration, shock, or mechanical stress during transportation and handling.
- Do not expose the battery to water, moisture, or other liquids.
- Keep the battery away from flammable, explosive, or combustible materials during transportation, storage, and installation.
- Always transport and store the battery in an upright position.
- Ensure adequate ventilation during handling, charging, storage, and operation.
- Transportation, handling, and disposal of lithium batteries must comply with applicable local regulations and transport requirements.

2.2 Storage

- Store the battery in a cool, dry, clean, and well-ventilated environment.
- Recommended storage temperature:
5°C to 35°C (41°F to 95°F).
- Recommended relative humidity:
5% to 75% RH, non-condensing.
- Avoid direct sunlight, excessive heat, corrosive environments, and areas with high humidity or condensation.
- Do not store the battery near flammable materials, chemicals, fertilizers, fuels, gases, or organic materials such as hay, straw, or animal feed.
- Store the battery on a stable, flat, and non-combustible surface.
- Keep the battery out of reach of children and unauthorized persons.
- The storage area should be free from excessive dust, dirt, vibration, and conductive contaminants.
- For long-term storage, the battery should be stored at approximately 40–60% State of Charge (SOC).
- Check battery SOC and voltage regularly during storage. Recharge the battery if SOC falls below 20% to prevent deep discharge damage.
- If the battery is stored for extended periods, it is recommended to inspect and recharge the battery at least every 3–6 months depending on storage conditions.

2.3 Response to Emergency Situations

2.3.1 Leaking Batteries

If the battery leaks electrolyte, gas, or emits unusual odor, smoke, or heat, immediately isolate the area and avoid direct contact with the leaked substance.

If exposure occurs, follow the instructions below:

- Inhalation:

Move the affected person to fresh air immediately and seek medical attention.

- Eye contact:

Flush eyes carefully with clean running water for at least 15 minutes and seek medical attention immediately.

- Skin contact:

Wash the affected area thoroughly with soap and water. Remove contaminated clothing and seek medical attention if irritation persists.

• Ingestion:

Rinse mouth thoroughly. Do not induce vomiting unless instructed by medical personnel. Seek immediate medical attention.

2.3.2 Fire

- In case of fire, evacuate the area and contact emergency services immediately.
- If safe to do so, disconnect external power sources to the battery system.
- Only trained personnel should attempt to extinguish a lithium battery fire.
- Suitable extinguishing media may include water, dry chemical powder, foam, or carbon dioxide (CO₂), depending on the surrounding fire conditions and local fire safety procedures.
- An ABC fire extinguisher may be used for surrounding materials or secondary fires not directly involving the battery pack.
- Damaged or overheated batteries may reignite after extinguishing. Monitor the area carefully after a fire incident.

3. PRODUCT INTRODUCTION

3.1 Technical data

Parameter	Specification
Model	SB-PW48100
Battery Chemistry	LiFePO ₄ (Lithium Iron Phosphate)
Nominal Voltage	51.2V
Nominal Capacity	100Ah
Total Energy	5.12kWh
Usable Energy	5.0kWh
Recommended Charge Current	50A
Max. Continuous Charge Current	80A
Max. Continuous Discharge Current	100A
Peak Discharge Current (3 sec)	500A
Recommended Charge Voltage	56.0V
Float Charge Voltage	54.0V
End of Discharge Voltage	43.2V
Charging Temperature	0°C to 45°C
Discharging Temperature	-20°C to 55°C
Recommended Operating Temperature	15°C to 35°C
Storage Temperature	5°C to 35°C
Relative Humidity	5% – 95% RH (non-condensing)
Enclosure Protection Rating	IP55
Dimensions (W × D × H)	454 × 170 × 670 mm
Weight	Approx. 60 kg
Scalability	Up to 14 units in parallel
Integrated DC Breaker	125A
Communication Interfaces	CAN / RS485
Installation Method	Wall-mounted

4. INSTALLATION

Safe and reliable installation requires qualified and authorized personnel with appropriate electrical competence and knowledge of local regulations and standards.

This manual provides general installation guidelines and basic information for SKANBATT battery systems. Due to variations in electrical systems, inverter models, installation environments, and local requirements, this manual cannot cover all possible installation scenarios.

The installer is responsible for ensuring that the complete system design, installation, protection devices, cable sizing, grounding, ventilation, and commissioning comply with all applicable local regulations, standards, and manufacturer requirements.

If there are any uncertainties regarding installation, configuration, compatibility, or operation of the battery system, contact SKANBATT or an authorized installer before proceeding.

Correct installation and commissioning are essential to ensure safe operation, optimal performance, and long service life of the battery system.

CAUTION

SKANBATT Lithium Batteries covered by this manual are designed for 51.2V parallel operation only.

Series connection of these battery units is not permitted unless explicitly approved in writing by SKANBATT for the specific battery model and application.

Unauthorized series connection may result in equipment damage, malfunction, safety hazards, or permanent damage to the battery system and connected equipment. Such use may void the product warranty.

4.1 Environment Requirement

Application scenarios	Residential energy storage systems
Operating Environment	Indoors or under a dark eave and place away from strong electromagnetic radiation
Operating Temperature	-10°C~40°C (14°F~104°F)
IP grade	IP55
Storage Temperature	Short time(≤1month): -10°C~30°C (-14°F~86°F) Long time (≥1month): 5°C~35°C (41°F~95°F)
Operating Humidity	5%~95%
Max charge current Vs. Altitude	80A@≤2,000m 72A@2,000m~4,000m
Max discharge current Vs. Altitude	100A@≤2,000m 90A@2,000m~4,000m
Case Ground requirement	Use at least 6mm ² copper wire with the resistor≤1Ω.



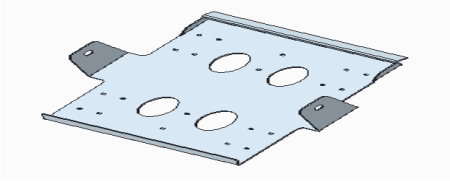
4.2 Tools & Materials

- The following insulated tools and installation materials are recommended or required for installation of the battery system:
 - Positive and negative battery power cables of suitable size and rating for the application. Copper conductors are recommended. Cable sizing must be selected according to system voltage, current, installation method, ambient temperature, and applicable local regulations.
 - Recommended terminal lug size:
M10 terminal lugs suitable for the selected cable cross-section and installation environment.
 - Insulated screwdrivers and appropriate hand tools.
 - RJ45 communication cable for inverter/BMS communication where applicable.
 - Wall mounting brackets and suitable mounting hardware for the installation surface.
 - Appropriate personal protective equipment (PPE), including insulated gloves, eye protection, and protective footwear.

		
Insulated gloves	Safety Glasses	Safety Shoes

4.3 Inspection before Installation

- Check the battery package, type, quantity, appearance and other components.

Parts	QTY	Photo
Battery parallel communication cable_RJ45	1pcs	
Expanding screw M8*60, fix rack on the wall	8pcs	
rack, fix battery on the wall	1 pcs	

- Inspect the battery enclosure for any visible signs of damage such as cracks, dents, deformation, or other physical damage.
- Check all battery terminals and electrical connections to ensure they are clean, dry, secure, and free from dirt, corrosion, moisture, or contamination.
- Verify that all battery cables and cable connections are properly tightened, undamaged, and free from cuts, wear, exposed conductors, or other signs of deterioration.
- Check and verify correct tightening torque on all terminal connections according to the specified installation requirements.
- Replace any damaged batteries, cables, connectors, or mounting components before commissioning the system.

IMPORTANT

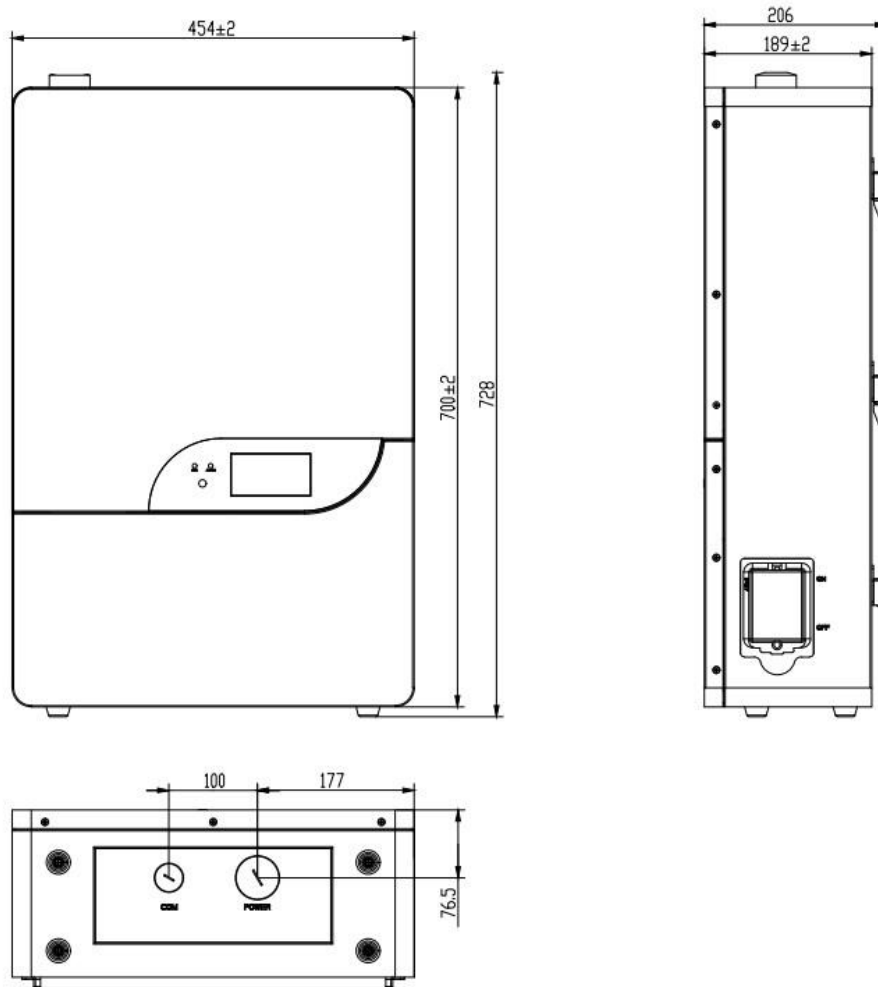
Inspect the shipment immediately upon receipt. Any transport damage, missing parts, or visible defects should be reported to SKANBATT or the distributor without unnecessary delay after delivery.

4.4 Installation Location

The battery system is intended for indoor installation or installation in protected areas not directly exposed to weather, rain, or direct sunlight.

Ensure that the installation location meets the following requirements:

- The area must be free from flammable, explosive, or corrosive materials.
- Recommended ambient operating temperature is approximately 15°C to 35°C (59°F to 95°F) for optimal performance and battery lifetime.
- The installation environment should maintain stable temperature and humidity conditions where possible.
- The installation area should be clean, dry, and free from excessive dust, dirt, conductive particles, or moisture.
- Ensure adequate ventilation and sufficient clearance around the battery system for cooling, service access, and safe operation.
- The battery must be installed on a stable, non-combustible surface capable of supporting the total system weight.



IMPORTANT

If the ambient temperature exceeds the specified operating range, the battery system may automatically reduce performance or shut down temporarily to protect internal components.

Frequent operation or storage outside the recommended temperature range may reduce battery performance, available capacity, and expected service life.

4.5 Installation Steps

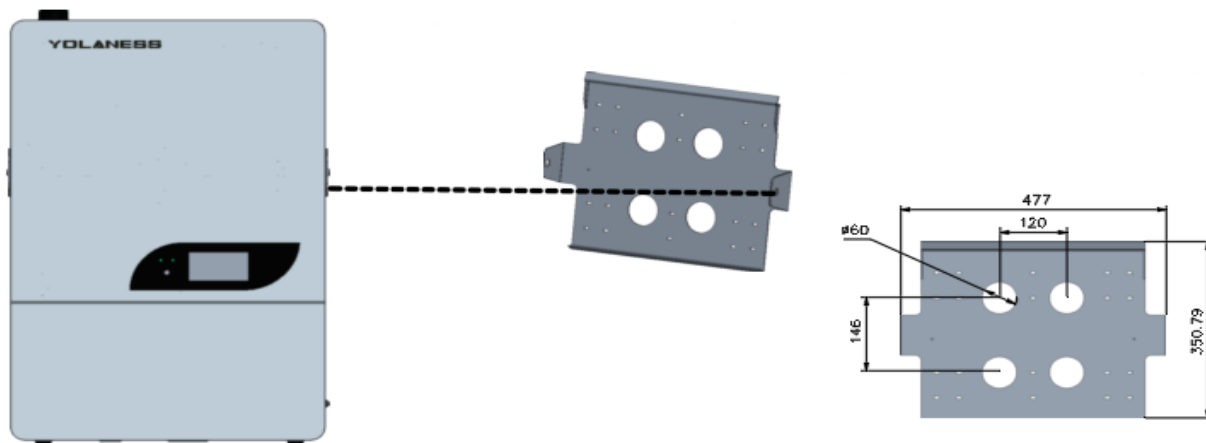
4.5.1 Mounting and Securing the Battery

The SKANBATT RS-W51100A 5.12kWh battery is designed for wall-mounted installation.

The wall mounting bracket must be securely fastened to a suitable wall structure using appropriate mounting hardware suitable for the wall type and total system weight.

Before installation, verify that the wall construction and mounting surface are capable of safely supporting the battery weight and mechanical loads during operation.

Refer to the applicable SKANBATT product datasheet for product dimensions, mounting clearances, and weight specifications.



4.5.2 Connecting the Battery to the Inverter and/or Charge Controller

The battery power terminals are located at the bottom of the battery enclosure behind the front cover.

Before connecting any cables, ensure that the battery breaker is in the OFF position and that all connected equipment is de-energized.

Connect the positive (+) cable first, followed by the negative (-) cable. Ensure correct polarity at all times.

Do not allow battery terminals, cables, or tools to come into contact with conductive surfaces, mounting hardware, or other metal parts during installation.

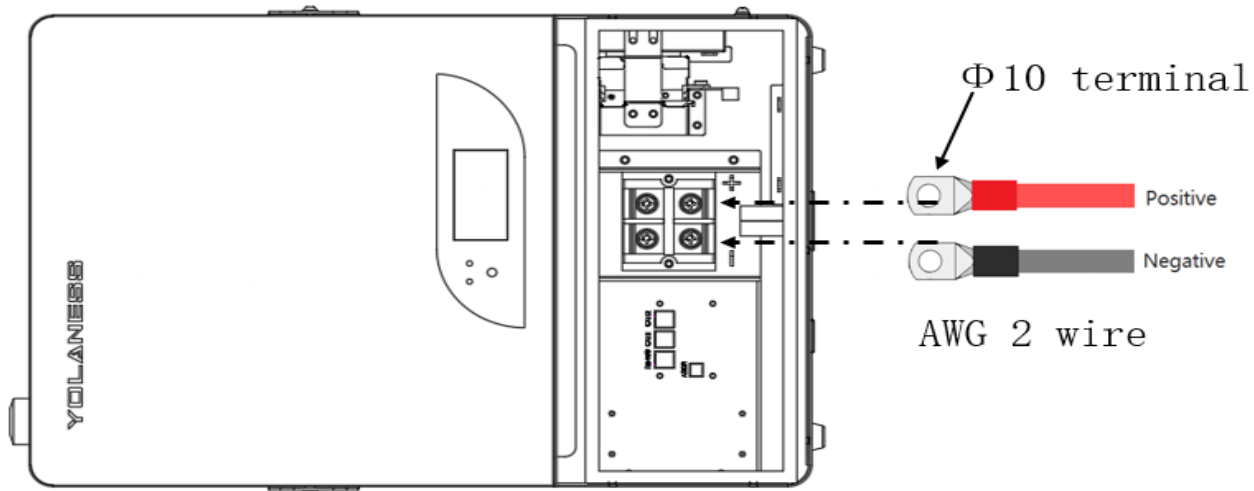
Recommended terminal tightening torque:
10.0 – 19.1 N·m (7.4 – 14.1 ft·lb)

The SKANBATT Lithium Battery is equipped with M10 threaded battery terminals. Use suitable cable lugs and correctly dimensioned cables appropriate for the installation current, cable length, and applicable local regulations.

Use properly crimped ring terminals with secure mechanical and electrical connections. Loose or improperly installed connections may result in overheating, arcing, or equipment damage.

Connect the positive cable to the “+” terminal and the negative cable to the “-” terminal.

Always verify correct polarity before energizing the system. Reverse polarity may cause severe damage to the battery system, inverter, charger, or connected equipment and may void the warranty.



Top View

4.5.3 Communication Ports

The SKANBATT RS-W51100A 5.12kWh battery is equipped with an integrated Battery Management System (BMS) with support for inverter communication and parallel battery communication.

The communication interface supports RS485 and CAN communication protocols depending on inverter compatibility and system configuration.

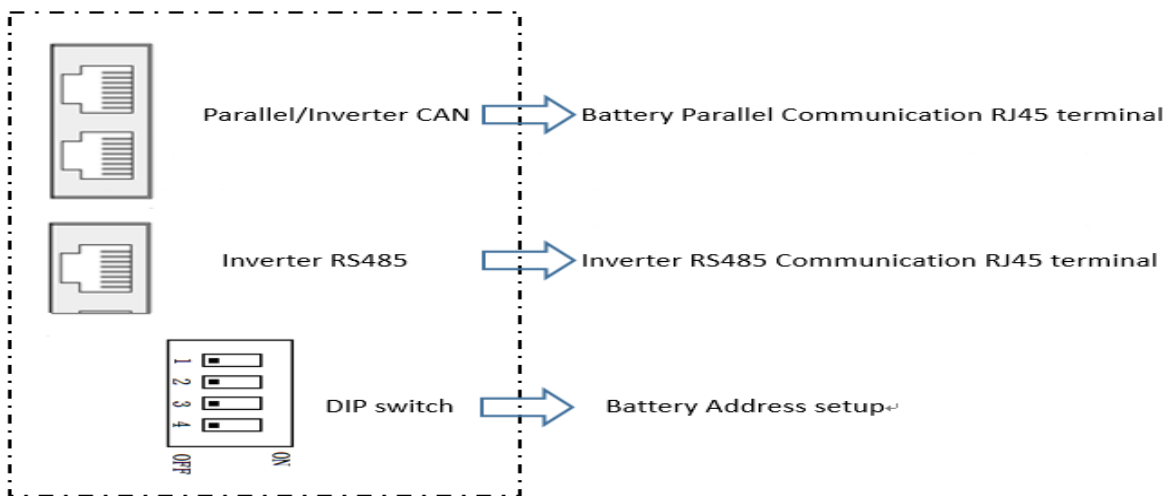
Communication ports are used for:

- Communication between the battery and inverter/charger
- Parallel communication between multiple battery units
- Battery monitoring and system control functions

When multiple batteries are connected in parallel, each battery must be assigned a unique battery address using the DIP switch settings described in section 4.5.6.

For parallel CAN communication, the final battery in the communication chain must be terminated with the supplied terminal resistor where required by the system configuration.

Only use approved communication cables and compatible inverter communication protocols specified by SKANBATT or the inverter manufacturer.



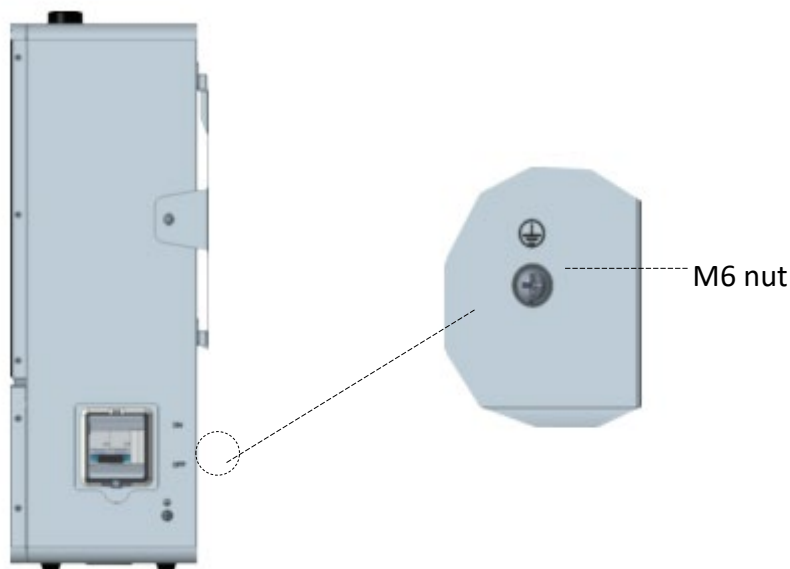
4.5.4 Grounding

The battery enclosure is equipped with a designated grounding connection point located at the bottom of the battery enclosure.

Grounding and protective earth (PE) connection must be performed in accordance with applicable local electrical regulations, standards, and system requirements.

Where required, connect the battery enclosure to the system protective earth using a suitably dimensioned grounding conductor and approved connection hardware.

Ensure that all grounding connections are securely fastened and protected against corrosion, vibration, and mechanical stress.



4.5.5 System Commissioning

After installation has been completed, verify that all electrical connections, communication cables, grounding connections, and protection devices are correctly installed before energizing the system.

For a single battery installation, follow the procedure below:

- a) Verify correct polarity and secure connection of all DC cables.
- b) Switch the battery DC breaker to the ON position.
- c) Switch the inverter and/or connected system breakers to the ON position according to the inverter manufacturer's startup procedure.
- d) Press and hold the battery power button for approximately 3 seconds to start the battery system and activate the display.
- e) Verify normal startup status and confirm communication between the battery and inverter where applicable.

For systems with multiple batteries and/or multiple inverters, commissioning must be performed according to the applicable system design, inverter manufacturer instructions, and communication configuration requirements.

Power up and commission the system in a controlled sequence to ensure correct synchronization and communication between all connected devices.

4.5.6 Parallel Connection

SKANBATT Lithium Batteries of the same model, voltage, capacity, firmware generation, and state of charge may be connected in parallel with support for up to 14 battery units in one system configuration.

Parallel installation must only be performed by qualified personnel familiar with lithium battery systems and applicable electrical installation standards.

CAUTION

These battery units are designed for parallel connection only.

Series connection is not permitted unless explicitly approved in writing by SKANBATT for the specific battery model and application. Unauthorized series connection may result in equipment damage, malfunction, or safety hazards and may void the warranty.

For parallel installations, all battery cables connected between each battery and the common DC busbar should be of identical cable type, conductor size, and cable length to ensure balanced current distribution between battery units.

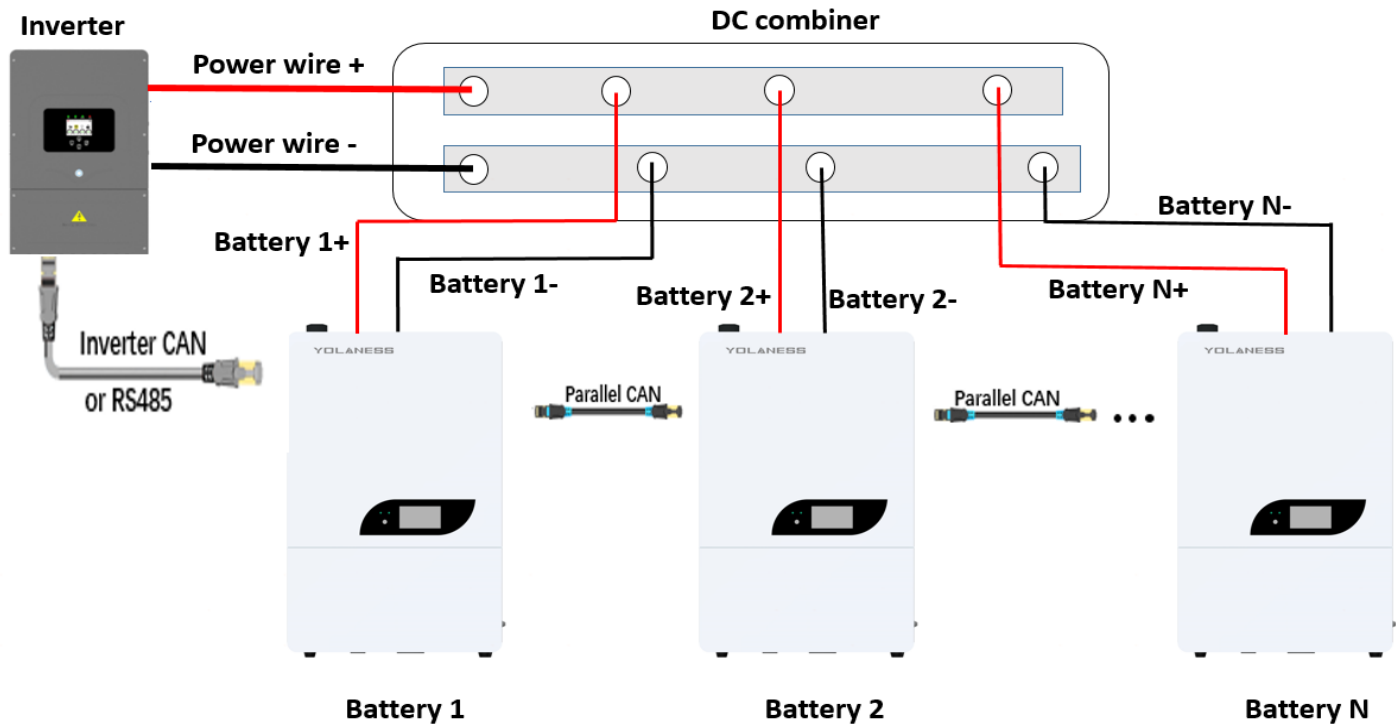
For larger battery banks, the use of properly dimensioned DC busbars, battery combiners, or distribution systems is strongly recommended.

When installing more than four battery units in parallel, careful consideration should be given to cable routing, overcurrent protection, system balancing, and service accessibility.

When batteries are connected in parallel, the total available battery capacity (Ah/kWh) and maximum available current increase proportionally with the number of connected battery units.

The nominal system voltage remains unchanged during parallel connection.

The illustration below shows a typical parallel battery connection arrangement.



System wire block diagram

NOTE

Battery addresses are configured using the DIP switch settings on each battery unit. Please follow the procedure below when connecting multiple RS-W51100A battery units in parallel:

1. Prepare Communication Cables

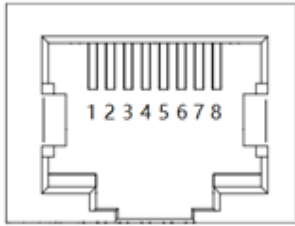
Each battery unit is supplied with an RJ45 communication cable intended for battery-to-battery parallel communication.

Communication cables between the battery system and inverter/charger are normally supplied separately or by the installer unless otherwise specified.

If replacement communication cables are required, use cables compatible with the specified communication standard and inverter requirements.

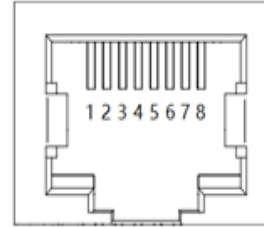
RS485 and CAN communication protocols are supported depending on inverter compatibility and system configuration. Only one communication method (RS485 or CAN) should be used between the battery system and inverter at a time unless otherwise specified by the inverter manufacturer or SKANBATT documentation.

Communication cable Pin definition:



Parallel & INVERTER
CAN Port

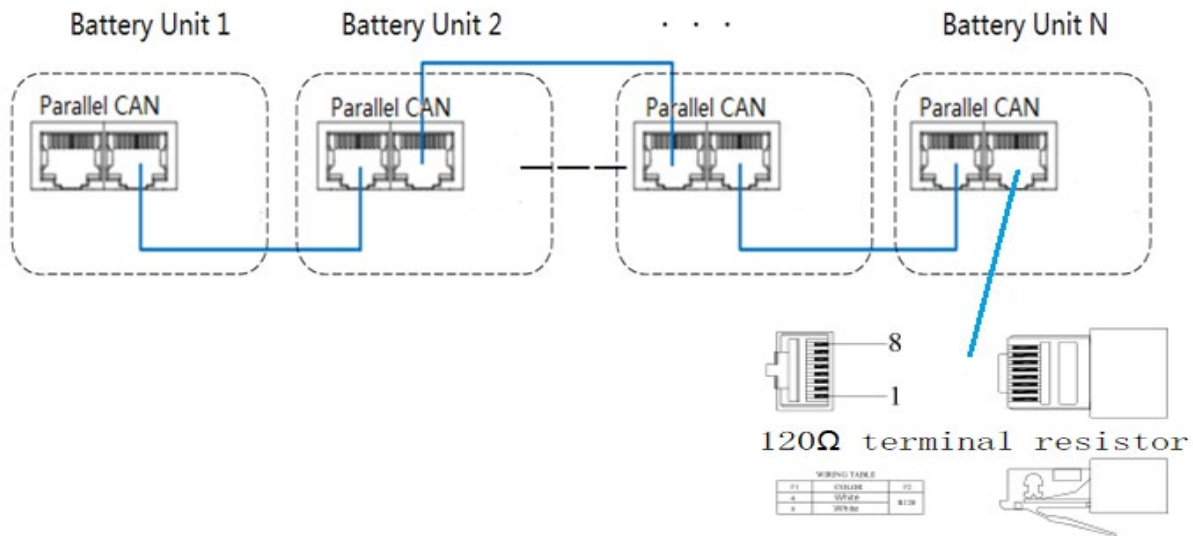
Pin No.	Definition
1	NC
2	NC
3	CANL
4	CANL
5	CANH
6	CANH
7	NC
8	NC



BATTERY & INVERTER RS485
Port

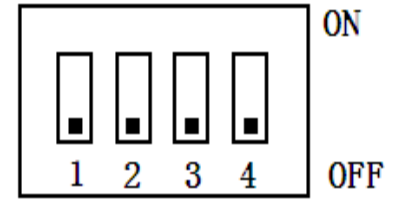
Pin No.	Definition
1	INVERTER_RS485B
2	INVERTER_RS485A
3	NC
4	NC
5	NC
6	NC
7	BMS debug_RS485A
8	BMS debug_RS485B

2. Confirm the Battery DC breaker is in the “OFF” position.
3. Wire each battery’s Power bus to Inverter. And wire inverter’s cable to PV, Grid and Load.
4. Use the RJ45 cables to connect the batteries’ Parallel CAN port, as illustrated in the chart below. Ensure that the communication port of the last terminal (N) is connected to 120Ω terminal resistor.



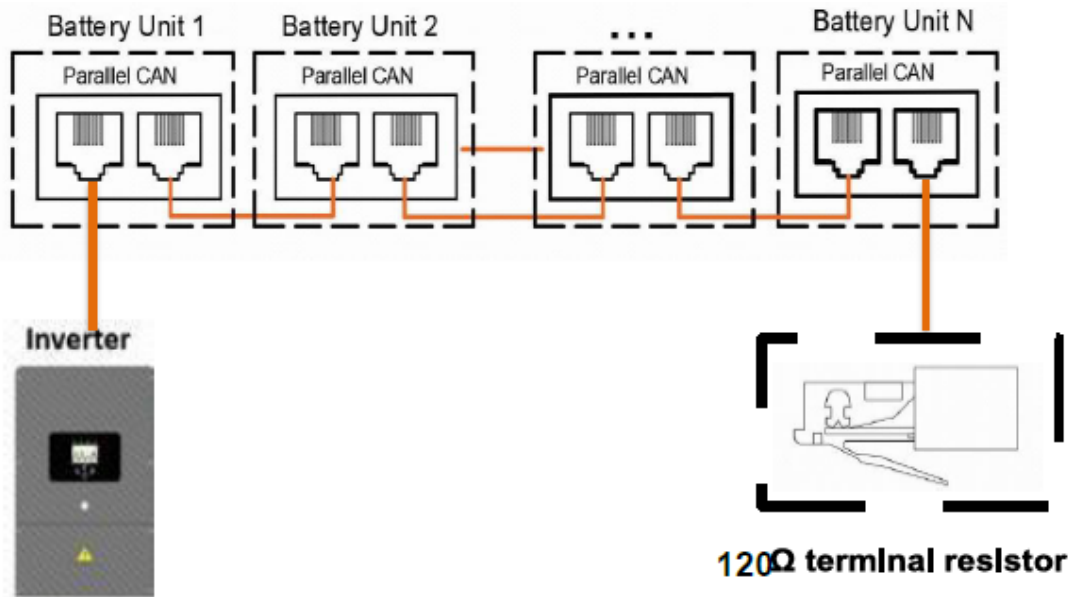
5. Press the button on the front of each battery for 3+seconds one by one, until all batteries wake up.
6. Through the DIP switch to set Battery “Address setup” from 1 to N (Parallel number) as the picture below.

Module number		Switch			
		#1	#2	#3	#4
0	Single module	OFF	OFF	OFF	OFF
1 st	Master module	ON	OFF	OFF	OFF
2 nd	Slave module	OFF	ON	OFF	OFF
3 rd	Slave module	ON	ON	OFF	OFF
4 th	Slave module	OFF	OFF	ON	OFF
5 th	Slave module	ON	OFF	ON	OFF
6 th	Slave module	OFF	ON	ON	OFF
7 th	Slave module	ON	ON	ON	OFF
8 th	Slave module	OFF	OFF	OFF	ON
9 th	Slave module	ON	OFF	OFF	ON
10 th	Slave module	OFF	ON	OFF	ON
11 th	Slave module	ON	ON	OFF	ON
12 th	Slave module	OFF	OFF	ON	ON
13 th	Slave module	ON	OFF	ON	ON
14 th	Slave module	OFF	ON	ON	ON



NOTE

- For single battery operation without parallel connection, set the battery address (DIP switch setting) to “0”.
- For parallel battery installations, assign the master battery address to “1”. Additional battery units must be assigned unique addresses sequentially from “2” to “14”.
- Each battery in a parallel system must have a unique address setting to ensure correct communication and system operation.



7. Touch the Upper computer to set Inverter “Inverter Setup” as the following form:

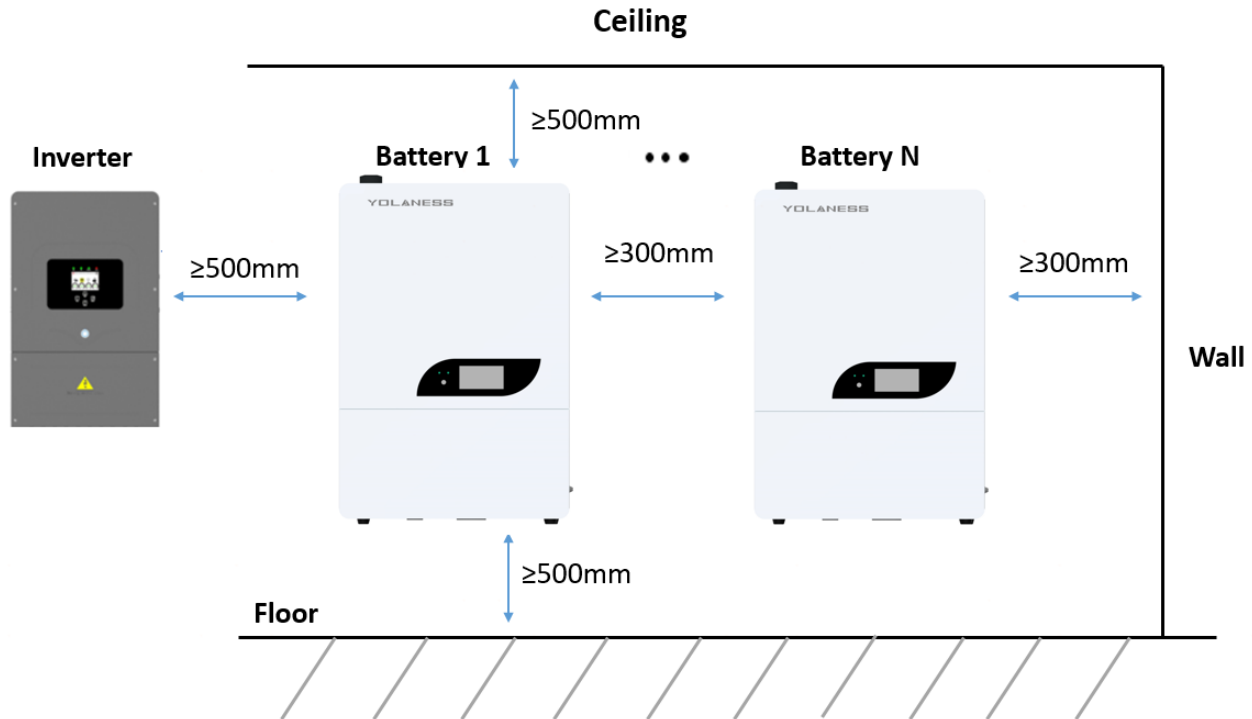
Inverter Setup	Support Inverter Protocol
1	Schneider Modbus, 19200bps
2	Solark(Deye) Modbus , 9600bps
3	Victron CANBus , 250kbps
4	UZ-CANBus, 500kbps
5	Reserved
6	Growwat Modbus, 9600bps
7	Reserved
8	Voltronic Modbus 9600bps
9	(Deye)00-CANBus, 500kbps
10	Solark CANBus, 500kbps
11	SMA CANBus, 500kbps

8. Use RJ45 cable to connect the inverter CAN or RS485 port of master battery (which Battery ID set as 1) to inverter communication port.
9. Turn ON inverter’s breaker, then turn ON all batteries’ DC breaker, and then press the button of master battery (Battery ID 1) for 6+ seconds to turn off, at last press master battery’s button for 3+ seconds to start automatically PARALLEL PROCESS as below:
 - a) Master battery requests the lowest voltage battery of the whole bank to pre-charge and turn on relay, and request charge current from inverter.
 - b) As the battery voltage increase by inverter, other battery join in to parallel one by one.

- c) After all normal batteries complete parallel, the PARALLEL PROCESS end up, and recover normal request from inverter.

4.6 Wire the battery cables

1. Connect the positive and negative common bus to the inverter.
2. Please put battery breaker into "ON" Position.
3. Please put inverter breaker into "ON" Position.



CAUTION

- For parallel battery installations, use identical cable lengths, conductor sizes, and cable types between each battery and the common DC busbar to ensure balanced current sharing.
- When installing multiple battery units, maintain sufficient spacing for cooling, ventilation, cable routing, and service access. Recommended minimum clearance is approximately:
 - 300 mm (12 in) between adjacent battery units
 - 500 mm (20 in) clearance from inverters, ceilings, floors, or other heat-generating equipment where possible
- Parallel-connected batteries should always communicate through the designated communication cables and configured BMS communication system.
- Before connecting batteries in parallel, verify that the voltage difference between battery units is within an acceptable range. Large voltage differences may result in excessive equalization currents that can damage batteries, cables, connectors, or protection devices.
- Always verify correct polarity using an appropriate measuring instrument before energizing the system. Reverse polarity may cause severe equipment damage or safety hazards. Never short-circuit battery terminals.

Important System Information

- Each SKANBATT Lithium Battery contains an integrated Battery Management System (BMS) designed to protect the battery cells against conditions such as overvoltage, undervoltage, overcurrent, overtemperature, and short circuit.
- If protection limits are exceeded, the battery system may enter a protective shutdown state to protect internal components. Recovery behavior may vary depending on inverter configuration, communication settings, and system design.
- In some situations, inverter chargers or connected equipment may require manual restart or reinitialization after a battery protection event. Refer to the inverter manufacturer documentation for additional information.

- After extended storage or deep discharge conditions, batteries may require charging before normal operation can resume.
- The battery system must always be installed with compatible charging equipment and correct inverter/charger settings according to SKANBATT specifications and applicable system requirements. The BMS alone is not intended to protect against all external electrical faults or abnormal charging conditions.

Grid-Tied Systems

For grid-connected systems, commissioning and operation must be performed according to applicable local regulations, utility requirements, and inverter manufacturer instructions.

Off-Grid Systems

For off-grid systems, ensure that the complete system is correctly configured, protected, and ready for operation before connecting the battery bank to the inverter system.

4.7 Final Connection of the Installation

Final installation, protection settings, commissioning procedures, and operational configuration must be carried out by qualified personnel in accordance with applicable local electrical regulations, standards, and manufacturer requirements.

The installer is responsible for verifying correct system configuration, grounding, cable sizing, protection devices, ventilation, and safe operation of the complete energy storage system.

Always follow appropriate electrical safety procedures when working on energized equipment or battery systems.

4.8 Turning Off the Unit

To switch off the battery unit, press and hold the power button for approximately 6 seconds until the system shuts down.

If maintenance or service work is required, disconnect all external power sources and place the battery breaker in the OFF position before working on the system.

5. OPERATING

5.1 Operating Environment

Refer to the technical specifications in section 3.1 for operating temperature ranges, environmental requirements, and system limitations.

5.2 Charging

CAUTION

- Always verify that the charger, inverter, or charging source is compatible with the battery specifications before charging the battery system.
- Charging equipment must be configured according to the applicable SKANBATT battery specifications and recommended charging parameters. Incorrect charging settings may result in reduced performance, shortened battery life, or damage to the battery system.
- Only use charging equipment intended for lithium battery systems and compatible with LiFePO₄ battery chemistry.
- Recommended charging current: 50A
- Maximum continuous charging current: 80A

Refer to the applicable SKANBATT datasheet for detailed charging specifications and system limitations.

Charging Procedure

- a) Connect the charger or inverter DC cables to the battery terminals with correct polarity.
- b) Verify that all cable connections are secure and correctly tightened.
- c) Switch the battery breaker to the ON position.
- d) Press and hold the battery power button for approximately 3 seconds to activate the battery system.
- e) Start the charger or inverter charging process according to the equipment manufacturer instructions.

5.3 Discharging

- Do not discharge the battery below the specified minimum operating voltage.
 - Do not exceed the maximum continuous discharge current specified for the battery system.
 - Do not operate the battery system outside the specified operating temperature range.
 - High discharge currents, high ambient temperatures, and repeated deep discharge cycles may reduce battery lifetime and performance.
-

5.4 Charger and Inverter Parameter Settings

Before commissioning the energy storage system, verify that all inverter, charger, and communication settings are correctly configured according to the applicable SKANBATT battery specifications and inverter manufacturer recommendations.

Incorrect configuration may result in communication errors, reduced performance, unexpected shutdown, or battery protection events.

Refer to the inverter or charger manufacturer documentation for configuration details and supported communication protocols.

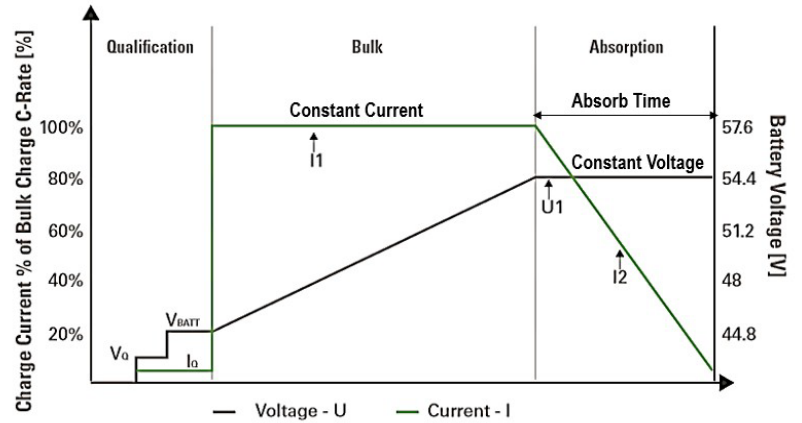
The battery system may support communication and integration with selected inverter brands and communication protocols including RS485 and CAN-based systems where applicable.

Although SKANBATT Lithium Batteries are designed for high cycle life and stable operation across a wide operating range, system lifetime and performance can be significantly affected by operating conditions, charge/discharge patterns, temperature, and system configuration.

For optimal service life and system performance, follow the recommended operating parameters and installation guidelines provided in this manual and the applicable product datasheets.

Understanding Charging Stages

- **Bulk Charging (CC – Constant Current):**
The battery is charged with a constant current until the configured absorption voltage is reached.
- **Absorption Charging (CV – Constant Voltage):**
The charger maintains a constant voltage while the charging current gradually decreases as the battery approaches full charge.
- **Charge Termination:**
Charging may be terminated or reduced when the charging current falls below the configured threshold according to the inverter or charger settings.
- **Float Charging:**
Unlike traditional lead-acid batteries, LiFePO_4 batteries generally do not require continuous float charging for normal operation. Refer to the recommended charging parameters for the applicable battery model and inverter configuration.



Recommended Charger and Inverter Configuration

Correct charger and inverter configuration is essential for safe operation, optimal performance, and maximum battery service life.

Battery cycle life and long-term performance are influenced by factors such as:

- Operating temperature
- Depth of discharge (DoD)
- Charge and discharge current
- Charge voltage settings
- System balancing and ventilation
- Frequency of full charge/discharge cycles

For optimal battery lifetime, operation within moderate temperature ranges is recommended wherever possible.
Recommended Operating Temperature Range

- Recommended operating temperature for best overall performance and battery lifetime:
 10°C to 30°C (50°F to 86°F)
- The battery system may operate outside this range within the specified technical limits, but prolonged operation at elevated temperatures may reduce expected service life and performance.

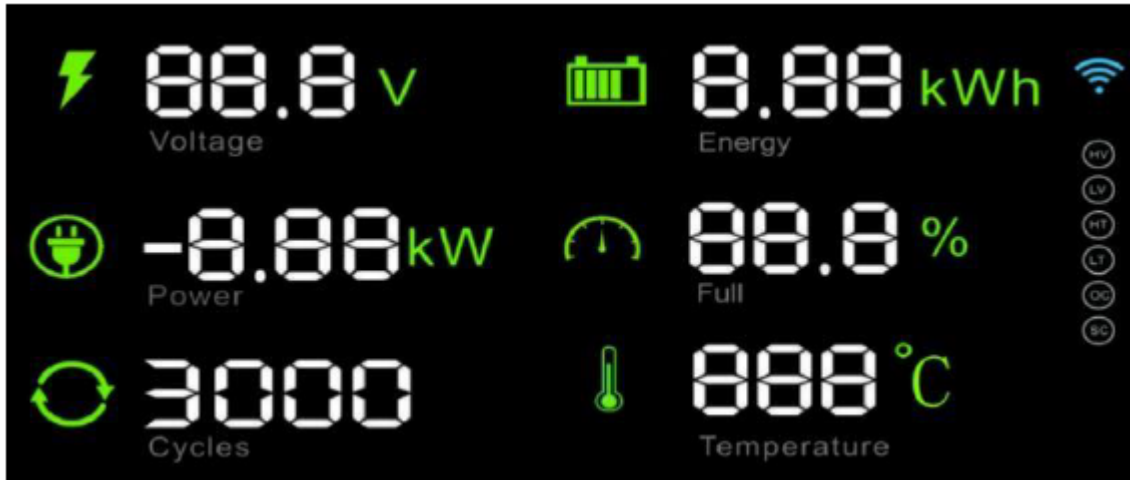
CAUTION

Frequent operation, charging, or storage at elevated temperatures may accelerate battery aging and reduce available capacity and cycle life over time.







Ensure adequate ventilation and avoid exposing the battery system to excessive ambient temperatures or direct heat sources during operation.

5.5 Battery Information Display

Touch the power button and will automatically activate the LCD screen.



Supplementary instructions:

Display	Indicator	Note
	Battery voltage	
	Residual energy	
	Current power	Negative value indicates discharging. Positive value indicates charging.
	SOC	State of charge
	Cycle Numbers	
	Battery temperature	

6. DIAGNOSTIC GUIDE

The integrated Battery Management System (BMS) in the SKANBATT RS-W51100A battery continuously monitors battery status and system conditions to help protect the battery cells and connected equipment during operation.

The BMS includes multiple protection and monitoring functions, including:

- Overvoltage protection
- Undervoltage protection
- Charge and discharge overcurrent protection
- Overtemperature and undertemperature protection
- Short circuit protection
- Cell balancing and monitoring
- System startup and shutdown control

In the event of abnormal operating conditions or protection events, the BMS may temporarily disconnect the battery internally to protect the battery cells and connected equipment.

The battery system contains internal relays/contactors. System design and installation should therefore consider possible transient voltages, inrush currents, inductive loads, and switching behavior during connection and disconnection events.

Proper system design, grounding, cable routing, protection devices, and inverter configuration are important to ensure stable and reliable operation.

Over Voltage Fault	58.4±0.4V
Over Voltage Recovery	55.2±0.4V
Low Voltage Fault	43.2±0.4V
Low Voltage Recovery	50.4±0.4V

- When a fault condition, alarm indicator, or abnormal system behavior occurs, follow the procedure below as an initial troubleshooting step:
 - Isolate the Battery System
 - Switch the battery DC breaker to the OFF position.
 - Disconnect or isolate all external charging sources, inverters, loads, and other connected power sources where applicable.
 - _____
 - Verify Battery Voltage
 - Switch the battery DC breaker to the ON position if voltage measurement is required.
 - Use a properly rated multimeter to measure the battery voltage directly at the battery terminals.
 - Compare the measured voltage with the voltage displayed on the battery display or monitoring system.
 - If abnormal voltage values, communication faults, or alarm conditions remain present, continue troubleshooting according to the applicable troubleshooting guide and system documentation.

7. TROUBLESHOOTING GUIDE

Status	RUN	ALM	●Display	Solution
Normal	●	-	-	-
Wait For Parallel	Flash (1Hz)	-		No processing required. This battery are waiting for parallel, It will join in parallel within 1 cycle automatically.
Remote Discharge Switch	Flash (1Hz)			Battery is remotely switched OFF by WIFI APP, user can resume the discharge ON through APP.
External COM Error	●	-		Check communication cable between battery & inverter; Check inverter selecting on battery's BMS; Check the inverter's BMS protocol settings;
Internal COM Error	-	Flash (2Hz)		Check the communication cable between battery; Check the CAN communication resistor following 4.5.6 Parallel Connection, section 4);
Battery Address Repeat	-	Flash (2Hz)		Battery address setting cannot repeat with other battery, please reset address on DIP switch following 4.5.6 Parallel Connection, section 6); then restart it.
BMS hardware failure	-	●		Need replace the BMS.
High Voltage protection	-	●	HV	Stop charge
Charge Over Current protection	-	●	OC	Lower the charge current
Charge High Temperature protection	-	●	HT	Stop charge
Charge Low Temperature protection	-	●	LT	Stop charge
Charge Low Voltage protection	-	●	LV	Stop discharge, charge the battery as soon as possible.
Discharge Over current protection	-	●	OC	Lower the discharge current
Discharge High Temperature protection		●	-	-
Discharge Low Temperature protection		●	-	-
short circuit protection		●	SC	Disconnect the load. Troubleshoot related faults

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