

RUiXU Lithi2-20

Rechargeable Lithium battery

Operation and Maintenance manual

Version: V0.0

Description

This manual describes in detail the requirements and procedures for safe installation and operation of RUiXU lithium battery pack.

This product is designed for residential home energy storage and small commercial & industrial user-side scenarios, including rooftop PV self-consumption optimization, time-of-use tariff arbitrage, critical load backup power, and peak shaving for small shops, offices and light industrial facilities.
It is strongly not recommended to use this product as the sole power source for on-board power propulsion systems, medical life support equipment, off-grid vehicle-mounted mobile energy stations or other unapproved high-risk applications, which are not covered by the product's original safety certification and may lead to unpredictable safety hazards.

Please read this manual carefully, only qualified persons are allowed to install, operate and maintain the system, otherwise it may cause product damage or personal safety risks.

Any actions against safety operation, or do not follow rules of this manual and limited warranty letter, will void warranty and qualification of this product. Meanwhile, the manufacturer will be not responsible for the product damage, property damage, personal injury or even death.

The information contained in this manual is accurate when it’s issued. RUiXU reserve right to change specification (such as optimization, upgrade or other operations) without prior notice, please always view the latest document via QR code on the label.
In addition, please noted that the diagrams/schematics in this document are used to help understand system configuration and installation instructions, which may be different from the actual items at the installation.

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1. Information

1.1 Validity

This document is valid for RUiXU **Lithi2-20** battery system.

1.2 Target Group

This document is intended for qualified persons and operators. Only qualified persons are allowed to perform the activities marked in this document with a warning symbol and the caption "Qualified person". Qualified persons must have the following skills:

- Knowledge of how lithium iron phosphate batteries work and are operated.
- Knowledge of how an energy storage system (including PV/battery/hybrid inverter, MPPT, Meter, Distribution box etc.) works and is operated.
- Knowledge of local applicable connection requirements, standards, and directives.
- Training in the installation and commissioning of electrical devices, batteries.
- Training in how to deal with the dangers and risks associated with installing, repairing and using electrical devices, batteries.

1.3 Levels of warning messages

The following levels of warning messages may occur when handling the product

⚠ DANGER
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

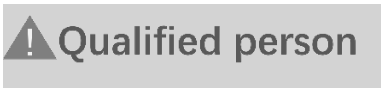
⚠ CAUTION
Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or product permanent damage.

⚠ NOTICE
Indicates a situation which, if not avoided, can result in property damage or product not work or

accelerated product damage.

1.4 Symbol Description

Label	Definition
	Beware of electrical shock.
	Refer to the instruction manual.
	Do not place the battery within children/pet touchable area.
	Do not place the battery near heat source and flammable material.
	Do not expose the battery to direct sunlight, rain and snow.
	Do not short circuit the battery.
	The certificate label for Safety by SGS. (The logo is only for illustration purposes.)
	The certificate label for European EMC directives. (The logo is only for illustration purposes.)
	Recycle label.
	WEEE designation.

	The product has Bluetooth functionality.
	Indicates activities that can only be performed by qualified persons.
	Grounding point.

1.5 Abbreviation Description

Abbreviation	Definition
Battery/battery pack/battery unit	Single LITHI2-20 rechargeable lithium iron phosphate battery pack including cells, BMS and enclosure etc.
Battery system/cluster	Multiple LITHI2-20 battery pack connected in parallel with power, communication and grounding cables and installation auxiliaries.
BMS	Battery management system Electronical Unit to ensure lithium cells' safety and display information or control the battery work mode.
SOC	State of charge The battery state of charge refers to the percentage of the remaining capacity and rated capacity of the battery.
SOH	State of health The battery health status refers to the percentage between the full charged capacity and the rated capacity of the battery.
Bluetooth	Using the Bluetooth function through the RUIXU Battery APP.

2. Safety

2.1 Safety precautions

DANGER

Explosion risk

- Do not impact the battery with heavy objects.
- Do not squeeze or pierce the battery pack.
- Do not throw the battery pack into the fire.

WARNING

Fire risk

- Do not expose the battery pack to the condition over 60°C.
- Do not put the battery near a heat source, such as a fireplace.
- Do not expose the battery pack to direct sunlight or raining.

⚠ CAUTION

Electric shock risk

- Do not allow non-qualified person to disassemble the battery pack.
- Do not touch the battery pack with wet hands.
- Do not expose the battery pack to moisture or liquid environment.

⚠ NOTICE

Damage risk

- Do not short-circuit or reverse connect the battery.
- Do not use chargers or charging devices unapproved by the manufacturer to charge the battery.
- Do not mix batteries from different manufacturers or different kinds, types or brands.

2.2 Safety instructions

The battery has been designed and tested in accordance with international (such as UL, IEC, UN38.3 etc.) safety requirements. However, Due to various factors during the whole lifetime process, RUiXU cannot guarantee absolute safety, in order to prevent personal injury and property damage and ensure long-term operation of the battery, please do read and following the below section carefully to operate the battery and handle emergency situations.

2.2.1 Safety gear

It is required to wear the following safety gear when installing and handling the battery pack.



Insulated gloves



Safety Glasses



Safety Shoes

2.2.2 Emergency safety measures

Water invasion

Please cut off the AC power supply of the system first and then disconnect all switched under the premise of ensuring safety.

Electrolyte or gas leakage

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below.

- **Gas Inhalation:** Evacuate the people in the contaminated area and seek medical aid immediately.
- **Eye Contact:** Flush your eye with clean and flowing water for 15 min, and seek medical aid immediately.
- **Skin Contact:** Thoroughly rinse the exposed area with soap and water to be sure no chemical or soap is left on them, and seek medical aid immediately.
- **Ingestion:** Rinse your mouth thoroughly, and arrange immediate medical treatment.

⚠WARNING

In the event of a fire, immediately notify the local fire department.

For lithium battery fires, apply continuous water spray for sustained cooling to suppress thermal runaway propagation. Carbon dioxide fire extinguishers can be used to extinguish fires involving other ordinary combustible materials.

2.2.3 Other Tips

- All the product are strictly inspected before shipment, please contact us for replacement if you notice there's any defectives such as swelling.
- Do not disassemble batteries and components, otherwise the manufacturer will not be responsible for any damage caused by unauthorized disassembly or repair.

2.3 Electrical safety

2.3.1 Grounding requirements

The energy storage system shall be permanently bonded to a dedicated protective grounding system. All equipment grounding terminations shall be inspected and verified to establish a reliable electrical connection. The resistance measured between any accessible system earthing point and the earth electrode shall be ≤ 4 Ω, in accordance with IEC 60364 and local installation codes.

2.3.2 Lightning protection measures

This energy storage system requires certified surge protection on the AC side. Install a type-tested Surge Protective Device（SPD） at the grid connection cabinet and the AC output side of the photovoltaic inverter, with all SPD protective conductors connected to the system shared equalization

grounding bus. Site installers must verify SPD installation and grounding continuity before system energization. If the system or battery modules are damaged by lightning surges, and the inspection confirms the required AC-side SPD is missing, damaged, or not compliant with specified specifications, such damage will not qualify for free warranty service from RUIXU.

2.4 Handling safety

Use a certified industrial forklift to transport the packaged battery unit. The total weight of the battery and its shipping packaging is approximately 180 kg (402 lbs). Manual lifting and carrying are strictly not recommended, as improper handling may cause crushing or personal injury.

After unpacking, use approved lifting tools to move the battery for installation, and always stay alert to avoid mechanical pinch and impact hazards.



The bottom of the battery unit is fitted with Foma casters. To move the unit on a hard flat surface, lift the battery upright, then lower the caster assembly to lock it in place. For safety, only push or pull the battery via its side panels; pushing or pulling from the front or rear face is strictly prohibited to prevent tipping hazards.



⚠ WARNING

- Forklift and lifting operation tasks shall only be performed by certified, qualified personnel, with all work strictly executed in accordance with relevant construction standards and safety protocols.
- Be careful not to tip over the battery when pushing it.

2.5 Installation safety

Standard Installation Safety Instructions

This product is designed with floor-mounted installation as the default standard method. After moving the battery unit to the pre-defined installation area, extend the adjustable support feet and secure the unit to the floor as specified.

If wall-mounted installation is selected as an alternative, only load-bearing, structurally rigid walls with verified sufficient load capacity shall be used. Upon completion of wall-mounted installation, the wall must show no cracking or deformation under full battery load, and the mounting structure must reliably prevent the battery from falling off due to wall structural failure. For all wall-mounted installations, the bottom edge of the battery shall be no more than 0.5 m above finished ground level. No personnel shall stand within the operating radius during installation to avoid injury from accidental battery tipping. Children are strictly prohibited from approaching the installation area at any time. RUIXU assumes no liability for personal injury or product damage resulting from improper wall selection, inadequate installation fixation, or non-compliance with the above mounting requirements.



DANGER

No access is allowed to the area below and around the battery, to prevent serious personal injury or even death caused by the battery falling.

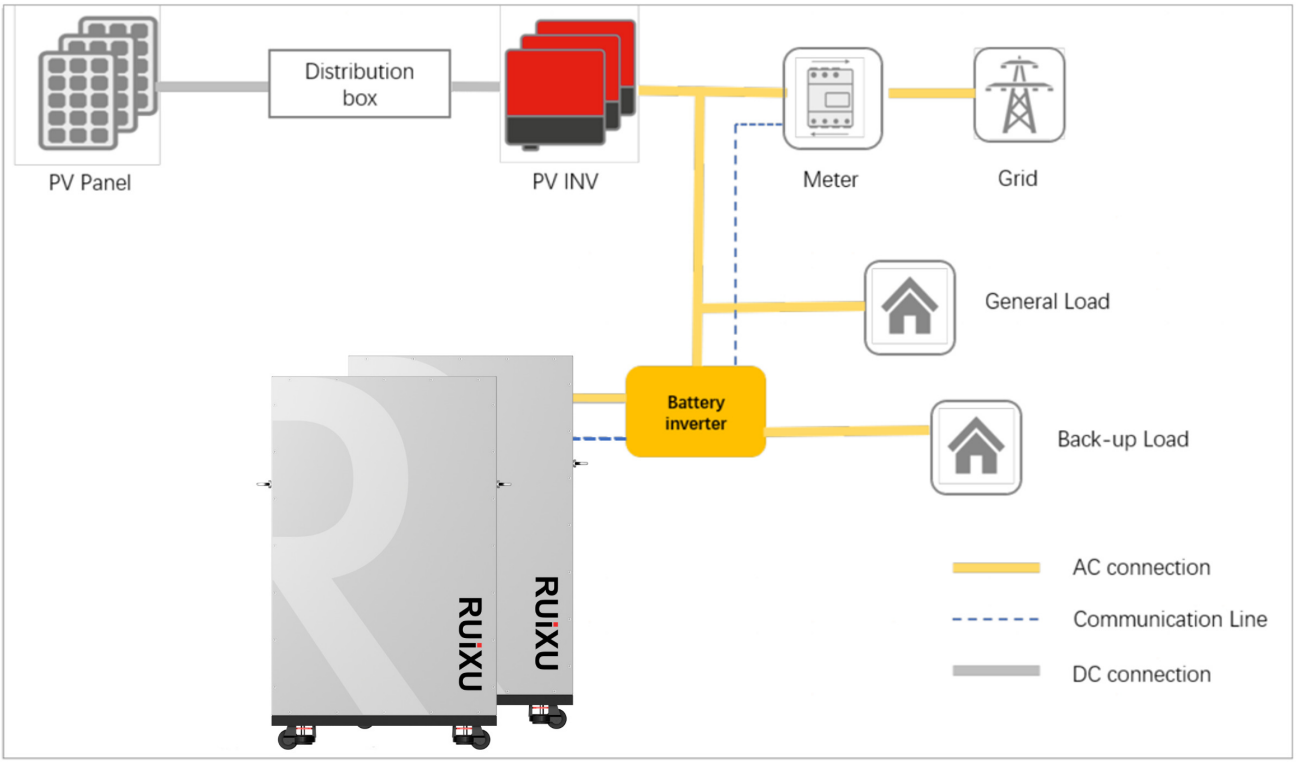
WARNING

Unsecured batteries may shift unexpectedly during installation, posing a serious risk of personal injury.

3. Product Overview

3.1 Introduction

The **Lithi2-20** battery is designed for residential application and works as a storage unit in the photovoltaic system. It is a 48V Li-ion battery storage system, with BMS inside itself. It could be operated in both on-grid, back-up and off-grid modes with compatible inverters. Below is the general schematic of an ac-coupled system.



CAUTION

This electrical connection in this diagram is only for illustration, please follow the Manual suggestions of related devices and operate in accordance with locally applicable connection requirements, standards, and directives.

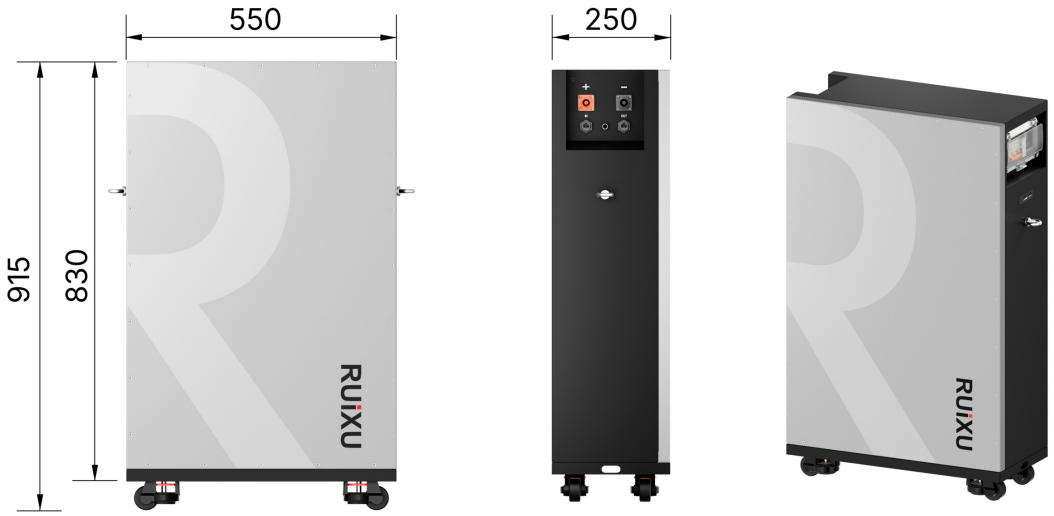
3.2 Features

- Highest safety, battery is made from LiFePO4 chemistry and comply with highest international safety and transport standard.
- Modular and flexible, support up to 32 batteries connect together to expand the system energy.
- Build-in pre-charge circuit to avoid rush current when connecting with different inverter/chargers.
- Automatic dynamic addressing function when connected multiple batteries together.

- Rapid shut down function for North American market.
- Support a maximum of 100% DOD under off-grid and back-up application.
- Built in BMS provide warning and protection functions including over-discharged, over-charged, over-current, short-circuit and high/low temperature.
- LiFePO4 as cathode material and automatic balancing function to meet long cycle life.
- Compact size and light weight for easy installation and maintenance.
- Multiple installation bracket to adopt with different customers' requirement.
- CAN/RS485 port for external communication and upgrade the BMS firmware.
- Bluetooth function. You can view battery information, select inverter protocol, and wirelessly connect to upgrade the battery firmware through the RUIXU Battery APP. The usage method of the RUIXU battery APP can be found in the **Appendix Ⅲ.**
- Lithi2-20 supports heating during charging. It is equipped with an internal heating element, with a total power of 1000W. The built-in heating system enables the battery pack to rapidly ramp up to its optimal operating temperature, ensuring consistent charge and discharge performance even in cold winter environments.

3.3 Specification

3.3.1 Dimension



3.3.2 Parameters

Items	LITHI2-20	
Rated voltage	51.2V	
Max. voltage range	44.8V~57.6V, Shipping voltage>51.2V	
Charge voltage	56.5V	
Float charge voltage	54.6V	
Low voltage cut-off	44.8V	
Nominal energy	20kWh	
Usable energy [1]	20kWh	
Nominal capacity	392Ah	
Dimension	830*550*250mm (32.7 * 21.7 *9.8 inch)	
Weight	150kg (330.7lbs)	
Standard charge current	150A	
Max. charge current	200A	
Standard discharge current	150A	
Max. discharge current	200A (initial temp ≤35℃)	
Peak discharge current	240A/15S	
Communication	RS485 /CAN/ Bluetooth	
Max parallel number	32pcs	
Operation temperature	Charge: -5℃~60℃ Discharge:-30℃~60℃	
Heating	Cell Min Temp [-30℃～5℃] ON , Turn Off when rise to 15℃	
Storage temperature	0℃<T<30℃	< 6 months
	-10℃<T<45℃	< 3 months
	Recommended environment	15~35℃, 5~75%RH

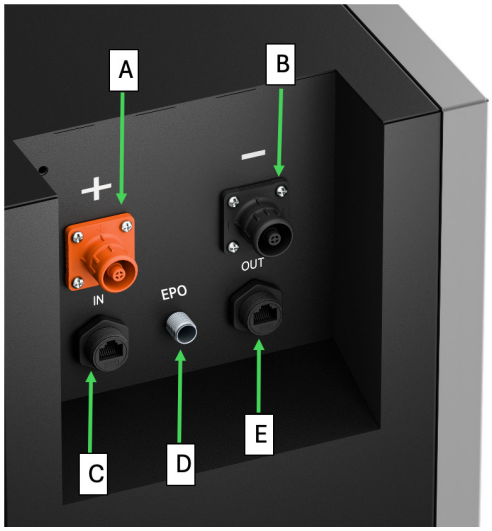
[1]Usable energy

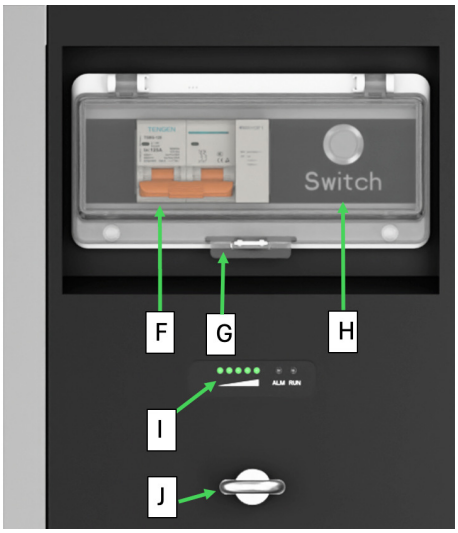
1.Test conditions:100% depth of Discharge (DOD) ,0.2C rate charge/discharge at 25°C,actual usable energy at the AC output may vary by condition, such as the inverter efficiency and temperature.

NOTICE

The optimum operating temperature range is from 15°C to 30°C, Frequent exposure to the harsh temperatures may worsen the performance of the battery pack and cycle life.

3.3.3 Panel Interface



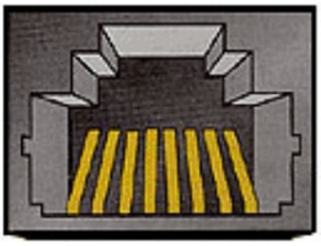


No.	Items	Usage description	Remark
A	+	Positive terminal	
B	-	Negtive terminal	
C	IN	Used for battery parallel communication. The Master's IN is connected to the slave's OUT.	
D	EPO	Short contact of Pin1 and Pin 2 causes EPO emergency stop. The circuit breaker trips upon triggering.	Need to purchase the EPO switch kit for use
E	OUT	Used for battery parallel communication. Used for connecting to PCS or computer software. The Master's OUT is connected to the inverter.	**Connected to the inverter**
F	Circuit breker	Used for closing/opening the battery circuit.	
G	Protective cover	For dust and water protection.	
H	Switch	Used to Power on/off battery.	Self-locking switch
I	LED light	◢:Used to show battery real-time SOC. ALM：Used to show battery Alarm/Protection status. RUN：Used to show battery is in running status when lighting or flashing.	
J	Lifting ring	Used for hooking during lifting operations. After removing the lifting ring, the screw holes can be used for installing the fixing components.	Removable

NOTICE

The master's OUT port connected to the inverter.

3.3.3.2 RJ-45 Port



8 7 6 5 4 3 2 1

Pin1 on the right

Description

Port	Pin No.	Definition	Remarks
IN	1	DO-B (RS485-B2)	1.Used to connect with downward battery pack OUT.
	2	DO-A (RS485-A2)	
	3	SGND	
	4	CAN-H	
	5	CAN-L	
	6	SGND	
	7	DO-A (RS485-A2)	
	8	DO-B (RS485-B2)	
OUT	1	DI-B (RS485-B1)	1.Used to connect with upper battery pack IN. 2.The Master's **OUT** is connected to the **Inverter**. 3.Used to connect with PC to establish communication.
	2	DI-A (RS485-A1)	
	3	SGND	
	4	CAN-H	
	5	CAN-L	
	6	SGND	
	7	DI-A (RS485-A1)	
	8	DI-B (RS485-B1)	

NOTICE

The BMS contains the CANBUS 120Ω resistance, and the BMS will automatically connect or disconnect the resistance according to the need. It is not necessary to connect the 120Ω resistance when connecting the CANBUS.

3.3.3.4 RUN/ALM/SOC

Mode	Normal/Alarm/Protection	RUN	ALM	LED indicator						description
		●	●	●	●	●	●	●	●	
Shutdown	Dormancy	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ALL OFF
Standby	Normal	FLASH 1	OFF	According to battery SOC						Standby
	Warning	FLASH 1	FLASH 3							See Note
Charge	Normal	ON	OFF	According to battery SOC (highest SOC LED: FLASH2)						All alarm except the over charge
	Warning	ON	FLASH 3							
	Full chanrge/OV	ON	OFF	ON						Stop charging
	Over-current	FLASH 1	ON	According to battery SOC						Stop charging
Discharge	Normal	FLASH 3	OFF	According to battery SOC						See Note
	Warning	FLASH 3	FLASH 3							
	Under voltage	OFF	FLASH 3	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
	Over current, short circuit	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Temperature	Protection	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging/discharging
Failure	Cell failure NTC failure Sensor failure MOS failure Charger HV failure	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging/discharging

FLASH Type	ON	OFF
FLASH1	0.25S	3.75S
FLASH2	0.5S	0.5S
FLASH3	0.5S	1.5S

Note: "Warning' including items of cell imbalanced/low voltage/high current/high&low temperature.

3.4 Protection

Items	Description	Remark
Charge End Cell/PACK high-voltage	The BMS will stop charging if any cell or PACK voltage reach the protection value and it will be auto-released only when both Pack and cell voltage back to the release voltage range or there is efficient discharge current	
Discharge End Cell/PACK low-voltage	The BMS will stop discharging if any cell or PACK voltage is under the protection value and it will be released only when all the cell voltage back to the release voltage range or there is efficient charge current	Can Automatic recovery. Please charge timely, otherwise it may be in Low-power mode to be over-discharged.
High temperature	The BMS will stop charging or discharging or both if any cell/environment/MOS temperature is beyond the range.	Automatic recovery
Low temperature	The BMS will stop charging or discharging or both if any cell/environment/MOS temperature is under the range.	Automatic recovery
Charge over-current	The BMS will stop charging when the charging current is higher than the protection value. And it will release from the protection when the system delays time is met.	Automatic recovery. If locked after three consecutive times, manual intervention is required.
Discharge over-current/ Overload	The BMS will stop discharging when the discharging current is higher than the protection value. And it will release from the protection when the system delays time is met	Automatic recovery. If locked after three consecutive times, manual intervention is required.
Short-circuit/Reversed	Short-circuit and Reversed polarity protection happened	Charge to release Manual reset
Temperature, Voltage, Current sensor failure	Enter the failure mode, manual intervention is required no charging and discharging.	Manual intervention
dormancy mode	After reaching a certain condition, it will be in the dormancy mode.	Recoverable

NOTICE

Please re-charge the battery via solar, grid/generator or other energy source within 24h if the battery is over discharged.

Manually short-circuit and reverse the battery will void the warranty.

4. Installation

4.1 Preparation

4.1.1 Safety Compliance

Qualified person

The system installation must be finished by qualified person(s), During the whole installation process, please strictly follow the local safety regulations and related operating procedures.

4.1.2 Environment

The operating environment shall meet the following requirements:

Category	Description
Working temperature	10℃-35℃ (optimal temperature) -30 ℃ -60 ℃ (maximum operating range) Operation under extreme temperatures should be at reduced capacity, for a short period of time.
Relative humidity	5%~90%, No condensation
Altitude	Operating Altitude: ≤ 4000 m (Derating required above 3000m and the product warranty period will be shortened.)
Safety requirement	• Do not expose the battery to direct sunlight, rain and snow. • Do not place the battery within children/pet touchable area. • Do not place the battery near heat source and flammable material • Do not place the battery in a closed place where the ventilation is not available. • Do not put heavy things on battery.

This product is suitable for indoor and outdoor installation scenarios.

For installation environments with minimum temperature < 0°C, mandatory thermal insulation is required.

For installation environments with max temperature over 35°C, mandatory heat dissipation is required.

For floor-mounted installations, secure the battery to the wall with mounting hardware to prevent shifting or tipping.

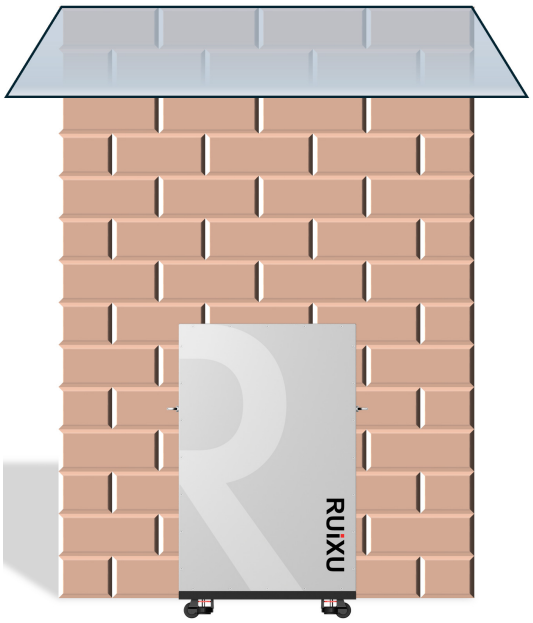
For wall-mounted installation, the load-bearing wall must support no less than 4 times the total weight of the battery unit.

For indoor installation, select an unoccupied, restricted-access room with no permanent personnel

occupancy, where ambient temperature and humidity consistently stay within the product's officially specified operating range. Installation in habitable living areas (bedrooms, kitchens, escape routes) is strictly prohibited, to comply with UL 9540 and local electrical safety regulations.

For outdoor installation, place the unit under building eaves or on a permanently shaded facade with no more than 4 hours of direct sunlight exposure per day, and keep it completely away from areas subject to direct rain wash. If the product is installed along an exterior wall, a custom weatherproof shelter shall be added to provide integrated sunshade and rain shielding.

While this product holds a certified IP55 ingress protection rating per IEC 60529, prolonged unprotected exposure to direct sunlight and rain will accelerate the aging of internal and external metal and plastic components. Compliance with the above sun and rain protection requirements will effectively extend the product's service life.

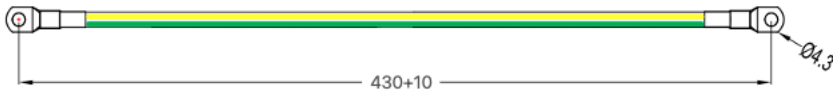
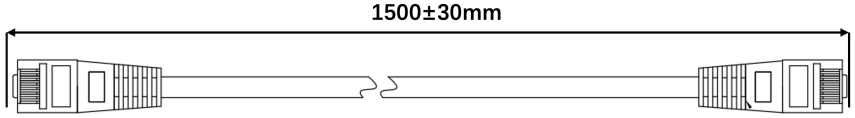


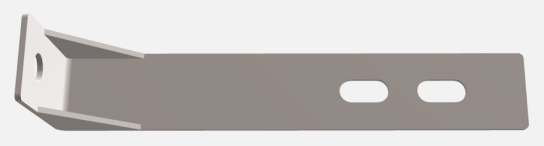
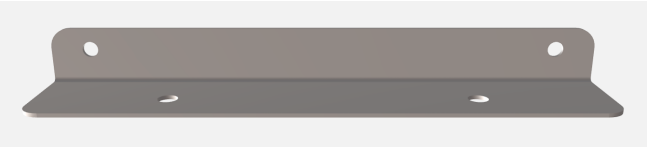
4.1.3 Tools

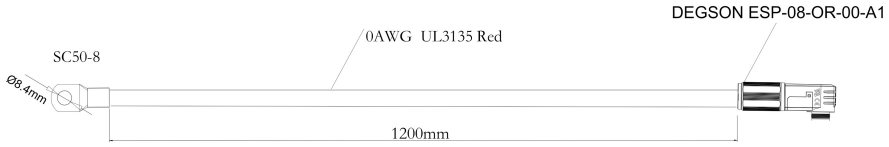
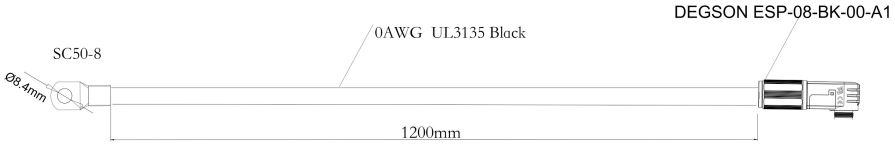
Tools	
Screwdriver (slot, cross)	Multi-meter
Wrench	Clamp meters
Diagonal pliers	Insulating tape
Needle nose pliers	Thermometer (observe the installation environment)
Clamping pliers	Anti-static bracelet
Wire stripper	Network cable crimping tool
Claw hammer	cable ties
Small lifting equipment (200kg capacity)	Electric drill

4.2 Unpacking instructions

- Upon receipt of the product, confirm that all outer packaging is intact and free of severe impact, puncture or water soaking traces.
- After using the forklift to move the battery to the installation location, use the claw hammer to open the wooden box.
- After opening the wooden crate, check all items inside the package against the following checklist to confirm full completeness.

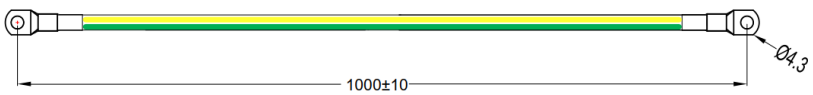
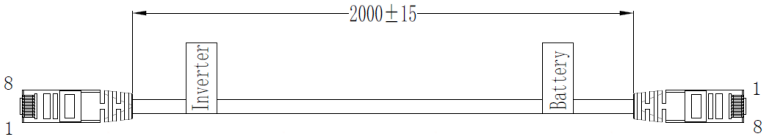
General materials		
Type	**Matirial detail**	**Qty.**
1.Battery		1pcs
2.Manual	Refer to the manual 	1pcs
3.Warranty Card	Warranty Card	1pcs
4.Grounding Cable	Battery to battery grounding cable(430mm) 	1pcs
5. Network Cable	Battery to battery communication cable(1500mm) 	1pcs
6. Woven Lifting Sling		2pcs

7. Side fixing member		2pcs
8. Horizontal fixed member		2pcs

Optional materials		
Type	**Matirial detail**	**Qty.**
Rack mounted kits (Packed with general materials)	A: Battery to Busbar positive cable(0AWG 1200mm RED) 	1pcs
	B: Battery to Busbar negetive cable(0AWG 1200mm BLACK) 	1pcs

4.2.3 External cable kits

Cables connected to inverter or junction box belongs to an External Cable kits, there are ***not supplied*** with the unit. Users can purchase it separately or make it by themselves following the wiring specifications. Related details are listed below.

Type	Detail	Qty.
Grounding cable		1pcs
Inverter communication cable		1pcs

The communication interface pin definitions vary across different inverter models. For inverter communication PIN definition detail, please check **Appendix I**.

NOTICE
Keep the unused cable pins NULL to avoid affecting the closed loop communication.

NOTICE

A ground connection of communication cable may be required from some inverters, please follow the rules from inverter manufacture.

4.3 Installation

Qualified person

4.3.1 Procedures

CAUTION

Injuries may result if the product is lifted incorrectly or dropped while being transported or mounted.

Wear suitable personal protective equipment for all work on the product.

CAUTION

Ensure that no lines are laid in the wall which could be damaged when drilling holes.

After confirming all items on the delivery checklist are complete and intact, thread the included sling through the lifting lugs on both sides of the battery, then use hoisting equipment to transport the battery units to the designated installation position.

Switch on all battery and close each circuit breaker sequentially.Connect to the APP or check the various information of the batteries through the indicator lights to ensure they are operating within the normal range and check for any active alarm or protection event. If any abnormality is detected, proceed to the corresponding troubleshooting procedure. After the above operations are completed, open each circuit breaker in sequence, and then switch off all battery units.

After positioning the battery unit in place, secure it to the mounting wall using the dedicated fixing hardware.

If there are any RUIXU accessories not listed, install and secure them properly.

Install and secure other machines within the system, such as the inverter.

Optional Installation Methods：



Floor-mounted installation



Wall-mounted installation



Horizontal installation

4.3.2 Cable connection

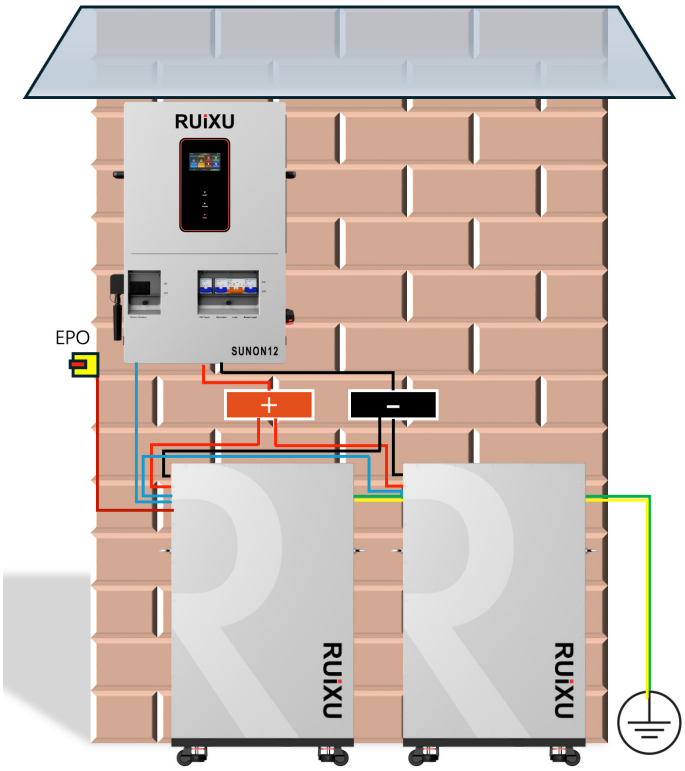
Connect all grounding points of the battery units in series using the dedicated grounding cables.

Confirm the installation position of the master battery unit. Connect the **OUT** port of the master battery to the **BMS COM** port of the inverter, then connect the **IN** port of the master battery to the **OUT** port of Slave Battery 1, and connect the **IN** port of Slave Battery 1 to the **OUT** port of Slave Battery 2, and continue this daisy-chain connection for all subsequent battery units.

Connect the positive and negative power cables of the battery to the corresponding positive and negative terminals of the inverter respectively. For multi-battery parallel configurations, route all battery cables to the dedicated busbar first, then connect the busbar output terminals to the inverter.

If the emergency stop (EPO) kit is configured on the system, connect the cable connector to the EPO port of the master battery, mount the emergency stop switch at a designated accessible position, and keep the switch in the normally open state.

Typical Installation & Wiring Diagram：



NOTICE

The maximum communication cable length is required to be less than 15m between inverter/charge and battery.

The maximum power cable length is suggested to be less than 10m between inverter/charge and battery.

For other type of installation, please also follow the rules above to wiring your system.

CAUTION

Ensure all terminal mounting screws are fully tightened.

4.3.3 Commissioning

After completing the battery closed-loop communication cabling as illustrated in the schematic, power on all battery units sequentially. The master and slave battery roles will be automatically assigned by the BMS. The battery unit nearest to the inverter as the Master.

Close all battery circuit breakers.

If fitted, close the DC breaker between the inverter and the battery system, then engage the inverter/charger AC isolator.

Set the battery-side communication protocol via the RUiXU Battery APP, aligned with the target inverter's protocol requirements.

Finish all configuration on the inverter/charger and other control devices locally. Once full system check passes, the system is ready for commissioning.

> **⚠ CAUTION**
>
> For backup or off-grid systems, ensure the system configuration is sized to cover the maximum worst-case load profile, preventing deep battery over-discharge.

4.3.4 Battery System Shutdown

Power off the inverter/charger unit.

Open all battery circuit breakers.

5. Troubleshooting

Items	Solution	Measure
Unable to start	1. Switch off and switch on battery to observe whether the battery can be started. 2. Charge the battery use a charge or inverter to provide 54~57.6V voltage and observe it can be started.	If the abnormal status still alive after above steps, please contact your supplier. If there is any other situation(s) excluding in this table, turn off the fault battery, contact your supplier.
Unable to charge	1. Check whether the cable connection between the battery and the inverter/charger is correct. 2. Check whether the inverter/charger setting is correct. 3. Check whether the battery is in charge protection mode, if yes, try to discharge the battery.	
Unable to discharge	1. Check whether the cable connection between the battery and the inverter/charger is correct 2. Check whether the battery occurs short circuit, reverse connection, pre-charge failure during connection inverter etc. 3. Check whether the battery is in discharge protection mode, if yes, try to charge the battery.	
High/Low temperature	1. Stop the battery system for a while, check whether the installation location temperature meet the requirement. 2. Avoid continuous full charging and discharging	
High current	Check the configuration and parameters setting on the inverter/charger is correct.	
ALM always on	Turn off all the batteries, and remove the fault battery from the system.	
Communication fail	1. Check the communication cable type is correct and is contacted well. 2. Check if the Bluetooth APP is properly connected. 3. Check the inverter protocol related setting is correct. 4. Check both battery and inverter are working properly.	

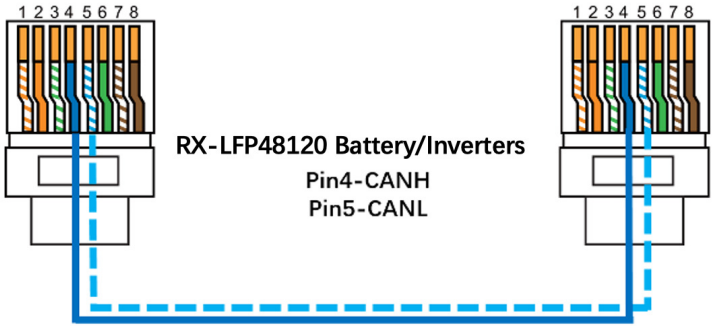
NOTICE

View the battery status through the RUiXU Battery APP.
Please restart after software upgrade.

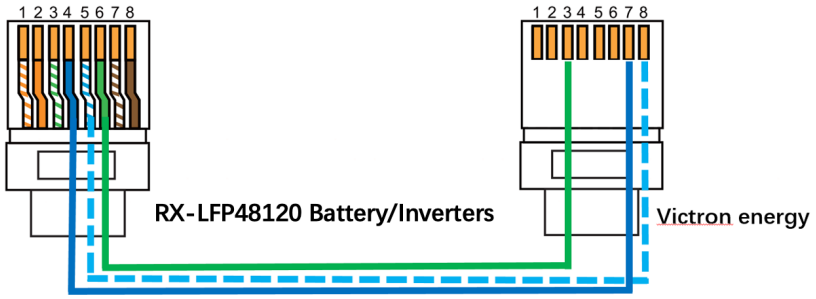
6. Transport, Storage and disposal

- During transportation, avoid violent shaking, impact or squeezing, and prevent direct sunlight and rain exposure.
- Handle with care during loading and unloading, strictly prevent falling, rolling and heavy pressure on the battery packs.
- For long-term storage, place the batteries in a dry, clean, dark and well-ventilated indoor environment, with the recommended storage temperature ranging from 15 to 30℃.
- The storage location must be free of harmful gases, flammable and explosive materials, and corrosive chemical substances.
- Store and transport the batteries at approximately 50% SOC under normal ambient temperature conditions.
- Perform full charge-discharge cycle every 6 months for long-term idle batteries.
- Do not drop the batteries, do not stack more than 4 layers, and keep them in the upright orientation at all times.
- Battery disposal must comply with local applicable electronic waste and spent battery disposal regulations. Please refer to your local battery recycling and management rules, or contact RUiXU for further support.

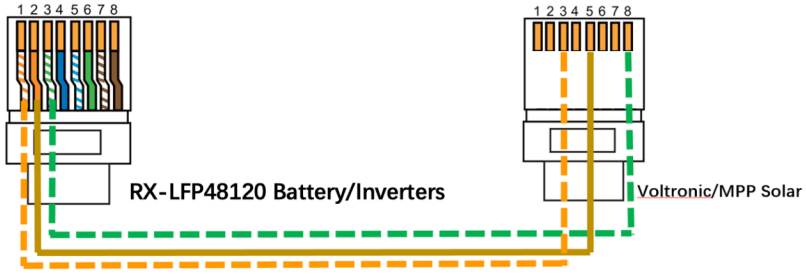
Appendix I



Definition	Battery CAN port	Inverter communication	Cable suggest
CAN H	Pin4	Pin4	Version-I(CAN)
CAN L	Pin5	Pin5	



Definition	Battery CAN port	Inveter communication	Cable suggest
CAN H	Pin4	Pin7	Version-II (CAN)
CAN L	Pin5	Pin8	
GND	Pin6	Pin3	



Definition	Battery RS 485 port	Inverter communication	Cable suggest
RS485-B	Pin1	Pin3	Version-III (RS485)
RS485-A	Pin2	Pin5	
GND	Pin3	Pin8	

Appendix Ⅱ

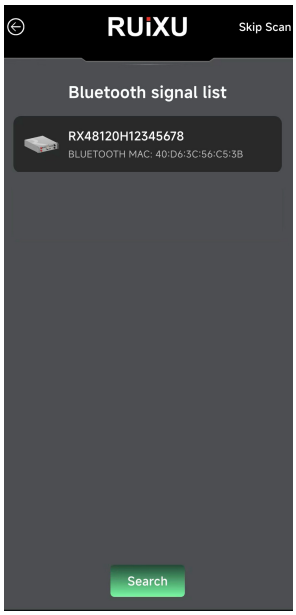
RUiXU Battery APP Operating Instructions

Download the RUIXU Battery APP from the RUIXU website or the Apple store.

a, Register and log in to your account, then enter the homepage of the APP. Click on "battery" to enter the system page.

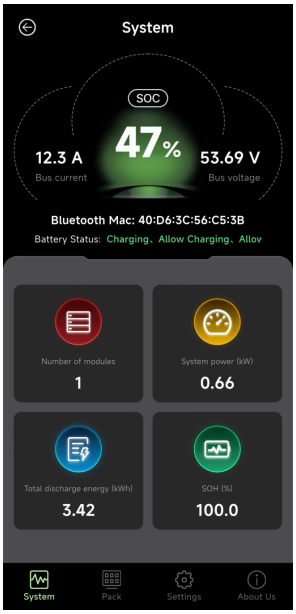
b, Click on "Search", wait for the Bluetooth list to refresh, and locate your battery and click to enter the system information page.

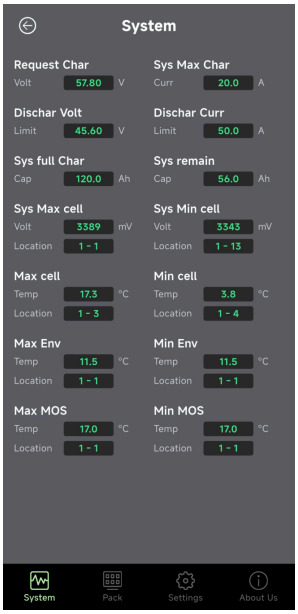




c, On the system page, you can view information system.

d, Click on the red icon to enter the system details page and view more system information.

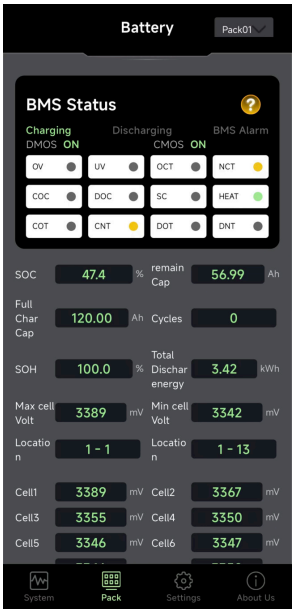




e, Click the "Pack" icon at the bottom to switch to the single battery detail page and view the information of a single battery.

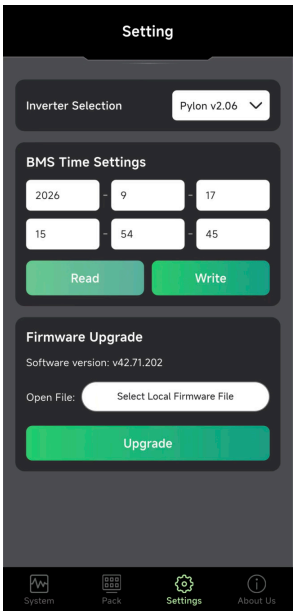
Click on "Pack01" to switch to the page for individual battery information.

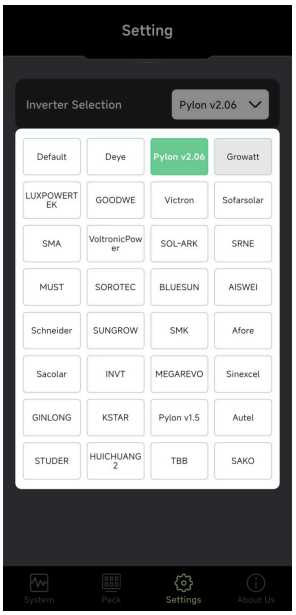
Click on "?" Icon for viewing BMS status - brief explanation.





g, Click "Setting" to configure the inverter protocol, set the battery's internal time, and upgrade the BMS firmware.





Appendix Ⅲ

Battery Selection

On the RUiXU Battery App, click ‘Setting’, Select the corresponding inverter brand in ‘Inverter selection’.

Compatible Inverter Models and Settings

Inverter Brand	Applicable Models	Battery Settings	Inverter Settings
Sol-Ark	5K-2P-N, 8K-2P-N, 12K-2P-N, Limitless 15K-2P-LV, Limitless 18K-2P-LV	SOL-ARK	BMS Lithium Batt = 00; see Appendix I for the remaining parameters
Deye	SUN-5K-SG01LP1-US, SUN-6K-SG01LP1-US, SUN-7.6K-SG01LP1-US, SUN-8K-SG01LP1-US	Deye	BMS Lithium Batt = 00; see Appendix I for the remaining parameters
EG4	18KPV, 6000XP, 12000XP	LUXPOWERTEK	Battery Type = Lithium; Lithium Brand = 6
EG4	FlexBOSS21	Pylon	Battery Type = Lithium; Lithium Brand = Type1;
Victron	MultiPlus-II 48/3000/35-50 120V UL, Quattro 48/5000 UL, Quattro 48/10000 UL	Victron	GX device: CAN-bus Profile = CAN-bus BMS; CAN Rate = 500 kbit/s
Solis	S6-EH2P(9.6-16)K03-SV-YD-L-US, S6-EH2P(9.6-16)K03-SV-YD-L-E, S6-EH2P(10-18)K03-SV-YD-L-US	Solis/Pylon	In the SolisCloud app, select Battery Model = Lithium LV / RUIXU
Ruixu	RX-12K	Pylon v2.06	Battery Setting = RUIXU
Ruixu	SUNON7.2, SUNON12	Pylon v2.06	Battery Type = LFP16; BMS Select = CAN-BMS; BMS Protocol = Pylon-CAN
Schneider Electric	XW Pro 6848 NA 120/240V, P/N 865-6848-21	Schneider	Setup > BMS Setup > Battery Type = Undefined
Senergy	SE 5KHB-130-D2/UL, SE 6KHB-130-D2/UL, SE 7K6HB-180-T2/UL, SE 10KHB-210-T2/UL, SE 11K4HB-210-T2/UL	Pylon v2.06	Battery Brand = Pylon
SMA	SI4548-US, SI5048U, SI6048-US, SI6048-US-10	SMA	Battery Type = Li-ion
LuxpowerTek	LXP-LB-US 8K, 10K, 11.4K, 12K	Pylon v2.06	Battery Type = Lithium; Lithium Brand = 2
Voltronic	InfiniSolar WP LV 6kW	VoltronicPower	In Program 05, set Battery Type = LIB; some versions use Program 04
MPP Solar	LVX6048WP, LVX 12KW WP, LV6548V 500V	Pylon v2.06	In Program 05, set Battery Type = LIB; some versions use Program 04

Recommended Parameters for Sol-Ark and Deye

Let N represent the number of Lithi2-16 batteries connected in parallel. Calculate the following values based on the actual number of parallel batteries.

Parameter	Setting Value
Battery capacity	392 Ah × N
Maximum charge current	210 A × N
Maximum discharge current	210 A × N
Maximum grid charge current	78 A × N
Temperature compensation	0
Float voltage	54.6 V
Absorption voltage	56.0 V
Equalization voltage	56.0 V
Equalization interval and duration	Every 30 days for 1 hour
Recommended shutdown voltage and SOC	50.2 V / 20%
Recommended low-battery voltage and SOC	50.6 V / 30%
Recommended restart voltage and SOC	51.0 V / 40%
Battery internal resistance	8 mΩ ÷ N
Charge efficiency	0.99
Fully discharged battery voltage	47.0 V