



R24100 Lithium-ion Battery for Household Energy Storage

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FOREWORD

Overview

This manual describes the installation, history recording and parameter settings etc. Please keep the manual in safety for more information.





Readers

This document provides technical details regarding the tools and infrastructure used by the following users:

- Sales engineer
- Technical support engineer
- Installation engineer
- Application engineer
- Maintenance engineer

Symbol convention

The following symbols may appear in this article, and they are represented as follows:

Symbol	Indication
 Dangerous	Used as warning in an emergency, if not avoided, it will result in death or serious personal injury.
 Warning	Used as a warning of a middle or low potential hazards, if not avoided, it may cause minor or normal injury.
 Caution	Used as a warning of potential dangers, if ignore this information, it may result in equipment broken, data lost, equipment performance decrease and other unpredictable result.
 INTRO	Represents the supplement information of main text to emphasize or replenish.

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1 OVERVIEW

1.1 Product model

The model of lithium-ion battery (hereafter referred to as battery or PACK) is shown in Figure1-1.



Figure1-1 The explanation of the product model

- ① R represents the Racked-type Lithium-ion Battery for Household Energy Storage
- ② The nominal voltage is 25.6V
- ③ The rated capacity is 100Ah

1.2 Product profiles

The R24100 Lithium-ion Battery is one of the new energy storage products developed and manufactured for household energy storage. It can be used to support reliable power for various types of devices and solar systems. R24100 is especially suitable for application scene of high power and long cycle life.

The R24100 has a built-in BMS battery management system that can manage and monitor cell information including voltage, current and temperature. What's more, the BMS can balance the charging and discharging of cells to extend cycle life. Multiple batteries can be connected in parallel to increase capacity and power for greater capacity and longer power support requirements.

1.3 Product structure

The appearance of the Lithium-ion battery pack is shown in Figure 1-2. For interface description, please refer to the 2.2 panel description.



Figure 1-2 Product picture

2 ILLUSTRATION

2.1 Interface display

The structure of Lithium-Ion battery pack is as shown in Figure 2-1.

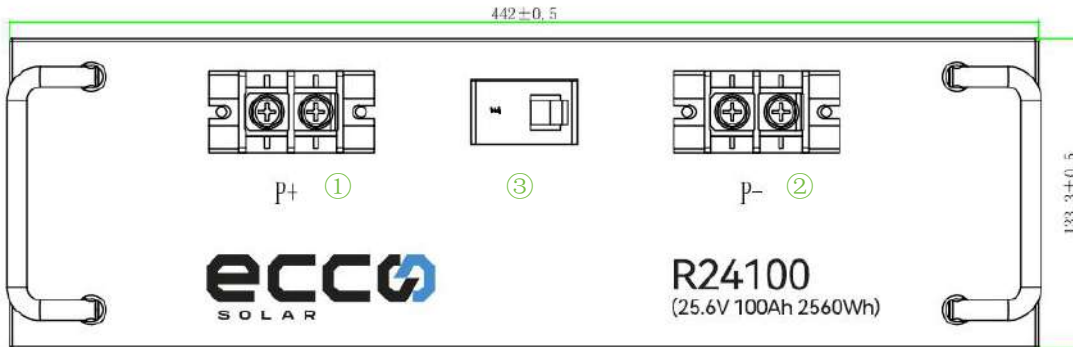


Figure 2-1 Product structure

2.2 Panel description

Pin number	Function definition	Function Description	Note
1	P+	Output positive terminal	Positive output terminal of battery
2	P-	Output negative terminal	Negative output terminal of battery
3	circuit breaker	Overload and short circuit protection	Overload and short circuit protection

3 INSTALLATION GUIDE

3.1 Installation precaution notes

Comply with local laws and regulations

When operating the equipment, make sure to certain to comply with local laws and regulations.

Personnel requirements

Technicians responsible for installation and maintenance must first undergo rigorous training. Only when they have mastered the correct methods of operation and safety can installation, operation and maintenance be carried out.

In order to maximize the efficiency of the equipment, achieve the best possible operating results and ensure maximum service life, please pay careful attention to the correct installation and use requirements.

Personal safety

- Insulated tools and gloves should be used and worn at all times - watches, bracelets, rings and other metal items should be removed during installation.
- Avoid falls or collisions during installation.
- Do not remove any battery components. Battery maintenance should be carried out by a qualified technician.
- All operations should be carried out and supervised by an experienced engineer who can take preventive measures against potential battery hazards.

Field and environment

- **Site requirements**

1) Cleanness

Lithium-ion battery packs cannot be placed in or near garbage disposals, or accidentally dropped or placed in smaller disposal units, as their interaction with metals is likely to cause short circuits and endanger the system and personal safety.

2) Fire protection

It is forbidden to store flammable, explosive and other dangerous goods where the battery pack is installed, and it should be equipped with effective fire-fighting equipment (e.g. CO2 fire extinguishers).

3) Ventilation and heat dissipation

To facilitate operation and maintenance of the battery, a minimum of 30~50cm should be left around the battery, with approximately 50cm left for the upper space. The installation space should be fitted with an exhaust fan to ensure good ventilation.

4) Installation requirements

Installation should be carried out as shown in Figure 3-1 to avoid possible hazards. Place the Lithium-ion battery on the ground and avoid tilting or uneven surfaces. Avoid exposure to sunlight, rain or wet surfaces.

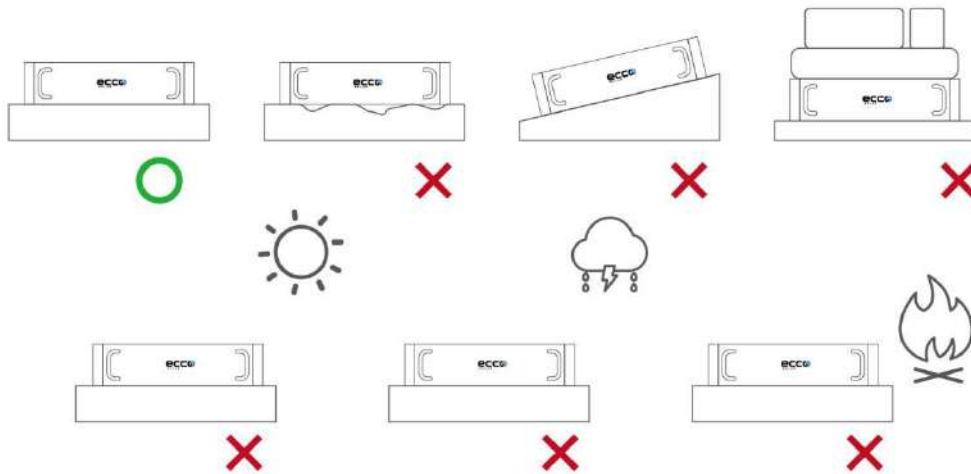


Figure3-1 Requirements for installation scenarios

● Environmental requirements

Ambient temperature: -10~40°C.

Relative humidity level: 0~95%RH, no condensation. Cooling method: air cooler.

Verticality: no vibration and the vertical tilt does not exceed 5°.

Pollution level: Level 2.

Recommended operating temperature: 20~25°C, humidity level control within 50%.

Caution

- Do not install in an environment with metallic conductive dust.
- Do not install anything containing corrosive gases.
- Do not place anything in the areas where dust is concentrated.
- Do not place anything on top of the lithium-ion battery.
- Do not allow people to sit on the battery.

Power check

Before installation, make sure that the load capacity of the supply wire meets the requirements of the new equipment. Check that the voltage and frequency of the

power supply matches the nameplate on the equipment and that the current carrying capacity has not decreased due to ageing of the wire.

If in doubt, please consult your local power supply Consultation Department.

- Ground wire
To avoid electric shock, the ground wire needs to be reliably connected.
- DC output voltage and load
Rated output voltage is 25.6V; the output power cannot exceed 3KW.

Caution

When installing the Lithium-ion Battery Pack, the user should check the Lithium-ion Battery Pack in advance to ensure that the contacts and connectors are securely in place to avoid an open circuit or short circuit fault.

When installing the Lithium-ion Battery Pack, do not reverse the polarity or connect it incorrectly to avoid short circuit.

Do not connect the terminals without safety or insulation protection to avoid the risk of electric shock.

3.2 Installation preparation

3.2.1 Unpacking and inspection





Lithium-ion batteries and accessories are packed in cardboard or wooden boxes. Take care when unpacking. Check the battery and accessories against the packing list to ensure that they are complete and that nothing has been damaged in transit.

If the equipment or accessories have been damaged in transit or are incomplete or incompatible, the equipment, accessories and purchase orders should be recorded and the local branch or office contacted immediately.

3.2.2 Installation tools

For possible commonly used tools, as shown in Table 3-1~3-4, the field technician will increase or decrease the amount according to the construction.

Table3-1 General purpose tools

The appearance of the tools, parameters, and names			
Adjustable wrench	Phillips screwdriver	Slotted screwdriver	Socket wrench
			
Torque wrench	Open-end wrench	Double offset ring spanner	Diagonal cutting pliers




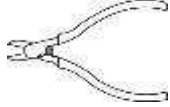
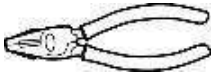
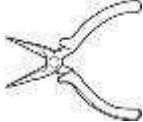



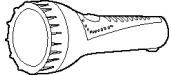


			
Wire cutters	Needle-nosed pliers	Marking pen	Working gloves
			
Ladder (2m)	Flashlight	Tape measure	Impact drill
			

Table3-2 Tools for delivery and unpacking

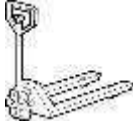

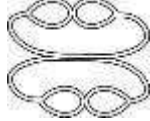

The appearance of the tools, parameters, and names			
Manual forklifts	Electric forklift	Sling (weight≥400 kg)	Leverage (weight≥400kg)
			

Table3-3 Electrical installation tools


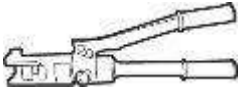
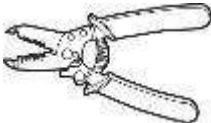
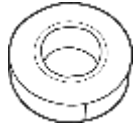

The appearance of the tools, parameters, and names			
Insulated gloves	Power cable crimping pliers	Wire stripping pliers	Electrical tape
			

Table3-4 Measuring tools

The appearance of the tools, parameters, and names			
Clamp ammeters			
			

4 MAINTENANCE


To ensure that the lithium-ion battery pack achieves the longest possible service life, the service technician should carry out regular inspections and maintenance.

Maintenance records should be complete and routine so that subsequent verification of the battery pack's management parameters can be tracked.

4.1 Routine maintenance

The routine maintenance of the battery part can be carried out by referring to the table.

Period	Item	Treatment measures
Per month	Operating environment	Keep away from heat sources and avoid direct sunlight.
	Visual inspection	If the appearance is damaged, leaked or deformed, the faulty battery pack should be disconnected, photographed and replaced.
Each quarter	Clean appearance	Clean the exterior with a cotton cloth. Due to the high voltage of the battery pack, care should be taken when cleaning.
	Connection Status	<ul style="list-style-type: none"> ● Check the bolts at each terminal and retighten them if they are loose. ● If the temperature of the connection line exceeds 40°C (feeling hot), check the cause.
Every half year	Voltage detection	<ul style="list-style-type: none"> ● At the end of charging, measure and record the busbar voltage and the positive and negative terminal voltages of the battery pack. The voltages of the two are consistent. Otherwise, check whether the cable at the corresponding connection is faulty. ● In the first year, real-time data collection at the end of discharge was performed at least every six months. ● Beginning in the second year, on-site capacity determination will be conducted every three months.

 **INTRO:** The final state of charge and discharge can be judged by the capacity light, refer to the definition of LED light capacity status light.

- The battery pack should remain at 40% - 60% of state of charge.
- When the battery pack is not used for a long time, it is recommended to charge it with 0.2C current every three months or so.
- During the maintenance process, do not install or remove the battery in the battery pack by yourself, otherwise the battery performance will be reduced.
- Any battery in the battery pack shall not be disassembled or replaced without authorization, and dissection of the battery is strictly prohibited.

5 SPECIFICATION

5.1 Technical specifications

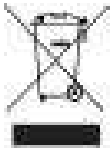
Technical data for a single battery is shown in table 5-1.

Table 5-1 technical data

Item	Specification
Model	R24100
Rated Capacity	100 Ah
Nominal Voltage	25.6 V
Discharge Ending Voltage	20 ± 0.5 V
Charging Limited Voltage	29.2 ± 0.5 V
Float Charge Voltage	27.6 ± 0.5 V
Maximum Charging Current	100 A
Maximum Continue Discharging Current	100 A
Peak Current	150 A less than 60 seconds
Weight	Approx. 24 Kg
Dimensions (W*D*H) mm	$442*450*133 \pm 1$ mm (3U)
Design life	More than 15 years
Cycle Life	More than 5000 cycles at 80% DOD
IP Class	IP 54
Operating Temperature	Charging: 0~45°C; Discharging: -20~60°C; Storage: -20~60°C

6 ENVIRONMENT PROTECTION

6.1 Recycle



This symbol indicates that the product cannot be classified with other wastes. To prevent potentially hazardous substances from being disposed of in a way that endangers the environment and human health, please refer to the classification of waste recycling to promote the sustainable use of material resources.



To recycle used equipment, please use the recycling system or contact the manufacturer or seller of the product, or the local authority responsible for managing the product.

6.2 Storage

- 1) The battery pack is usually stored at a state of charge of 20% to 40% in a clean, dry, ventilated and rain-proof room with an ambient temperature of -5°C to 35°C and a relative humidity of not more than 75%, and should be placed flat. Pad height, not less than 100MM from the ground;
- 2) Batteries cannot be stored with active chemicals or dusting items;
- 3) The battery cannot be subjected to any mechanical shock or heavy pressure;
- 4) The battery should avoid direct sunlight, keep away from the fire source, and the distance from the heat source should not be less than 2M;
- 5) From the date of manufacture, every 3 months of storage should be charged with a current of $0.2\sim 0.5\text{C}$ for $30\sim 60\text{min}$, and the temperature range is $25^{\circ}\text{C}\pm 5^{\circ}\text{C}$.

6.3 Transportation

The battery pack should be packaged and shipped. During transportation, avoid severe vibration, shock or extrusion, and avoid sun and rain. Batteries can be transported by vehicles such as cars, trains, ships, and planes.