Applicable Models

User Manual

UNIV-16kWh(II)

File version A0–EN Release Date 15.06.2025

This manual introduces the product. The UNIV-14.3kWh(Ⅱ)/ UNIV-16kWh(Ⅱ) is an energy storage system composed of lithium iron phosphate batteries. Please read this manual before installing the battery and strictly follow the instructions during the installation process. If you have any questions, please contact the after-sales service personnel or an authorized distributor for advice and clarification.

Contents

About this document

This manual describes the product information, installation, electrical connection, commissioning. Read through this manual before installing and operating the product. All the installers and users have to be familiar with the product features, functions, and safety precautions. This manual is subject to update without notice. For more product details and the latest documents, please contact the supplier.

Revision History

Revision No.	Revision Date	Revision Reason
A0	2025-03-25	First Published
A1	2025-06-15	Structural change of the battery enclosure

Symbol Definition

⚠ DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
⚠ WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
⚠ CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.

1. Safety

⚠ WARNING

Please read all safety instructions carefully before performing any work and strictly follow them while handling the battery.

Only qualified persons are allowed to wire the batteries.

Failure to comply may result in:

- Serious injury or fatality to the operator or others.
- Damage to system components, equipment, or third-party property.

Required Qualifications for Personnel:

Personnel must possess the following qualifications to perform installation, commissioning, and maintenance:

- Training in electrical system installation and hazard management.
- Familiarity with this manual and other relevant documentation.
- Knowledge of local regulations and applicable directives.

⚠ CAUTION

Please read carefully to ensure error-free operation of your battery.

Wrong step may cause battery system failure or life cycle reduction.

Before Connecting

- Before installation, ensure that the grid power is disconnected and the battery is turned off. Properly connect the positive and negative cables to avoid reversal, and confirm there are no short circuits in external devices.
- All the battery pack terminals must be disconnected before any maintenance.
- Do not use cleaning solvents to clean battery pack.
- Do not expose battery to flammable or harsh chemicals or vapors.
- Do not connect battery pack with AC/PV solar wiring directly.
- Do not insert any foreign object into any part of the battery pack.
- Keep the battery away from water and fire.
- The battery system must be correctly grounded.

When using

- If the battery system requires relocation or repair, ensure that the power is disconnected and the battery is turned off.
- Do not connect different types of batteries.
- Do not connect the battery to incompatible or malfunctioning inverters.If you insist on using the battery without communication, we will shorten the warranty period in accordance with the warranty agreement.
- Do not touch the battery pack with wet hands.
- Do not crush, drop or puncture the battery pack.
- Always dispose of the battery pack according to local safety regulations.
- Store and recharge the battery pack in a manner in accordance with this user manual.
- Do not reverse the polarity when installing.
- Do not short circuit the terminals, remove all jewelry items that could cause a short circuit before installation and handling.
- The battery packs should be not stacked more than specified numbers.
- Continued operation of a damaged battery pack can result in dangerous situation.

Special Reminder

- If the battery pack is stored for a long time, it is required to charge them every six months, and the SOC should be no less than 90%.
- Battery needs to be recharged within 12 hours, after fully discharged.
- If the battery is not fully charged and discharged over a long period, the SOC may become inaccurate. Please perform a full charge calibration at least once every two weeks.
- If you encounter any battery issues, do not attempt to open the battery for inspection or repair by yourself. In case of problems, please immediately contact after-sales personnel or distributor for assistance. Any disassembly of the battery must be done under the supervision of after-sales personnel to prevent accidents.
- Don't conduct any dangerous tests by yourself. All testing must be performed under the supervision of technical to avoid serious accidents.

- Battery startup sequence:

1. Connect external wiring properly.
2. Turn on the circuit breaker to begin usage.
3. Press the switch button and wait for the battery to power on normally.

- Battery turn off sequence:

1. Turn off the circuit breaker.
2. Press the switch button and wait for the battery to power off.
3. Disconnect external wiring properly.

2. Introduction

The UNIV-14.3kWh(Ⅱ)/UNIV-16kWh(Ⅱ) series battery is a low-voltage energy storage system based on lithium iron phosphate (LiFePO4) batteries. It is one of the new energy storage products developed and manufactured by the supplier.

This system provides reliable power support for various equipment and systems, especially in applications requiring high power, large capacity, limited installation space, and long cycle life.

2.1 Features

- High Scalability: Supports max of 20 batteries in parallel.
- Environmentally Friendly: The entire module is non-toxic, non-polluting, and eco-friendly.
- High Safety & Long Cycle Life: Uses LiFePO4 as the cathode material for enhanced safety and longevity.
- Intelligent Battery Management System (BMS): Provides protection against over-discharge, over-charge, over-current, and high/low temperature.
- Flexible Configuration: Multiple battery can be connected in parallel to expand the capacity.
- Exceptional safety performance: Equipped with secondary protection featuring trip (disconnection) functionality, and optional aerosol configuration for enhanced safety.
- Wide Operating Temperature Range: Functions efficiently with a charging temperature range of 0°C to +55°C and a discharging temperature range of -20°C to +55°C, ensuring excellent performance and longevity.

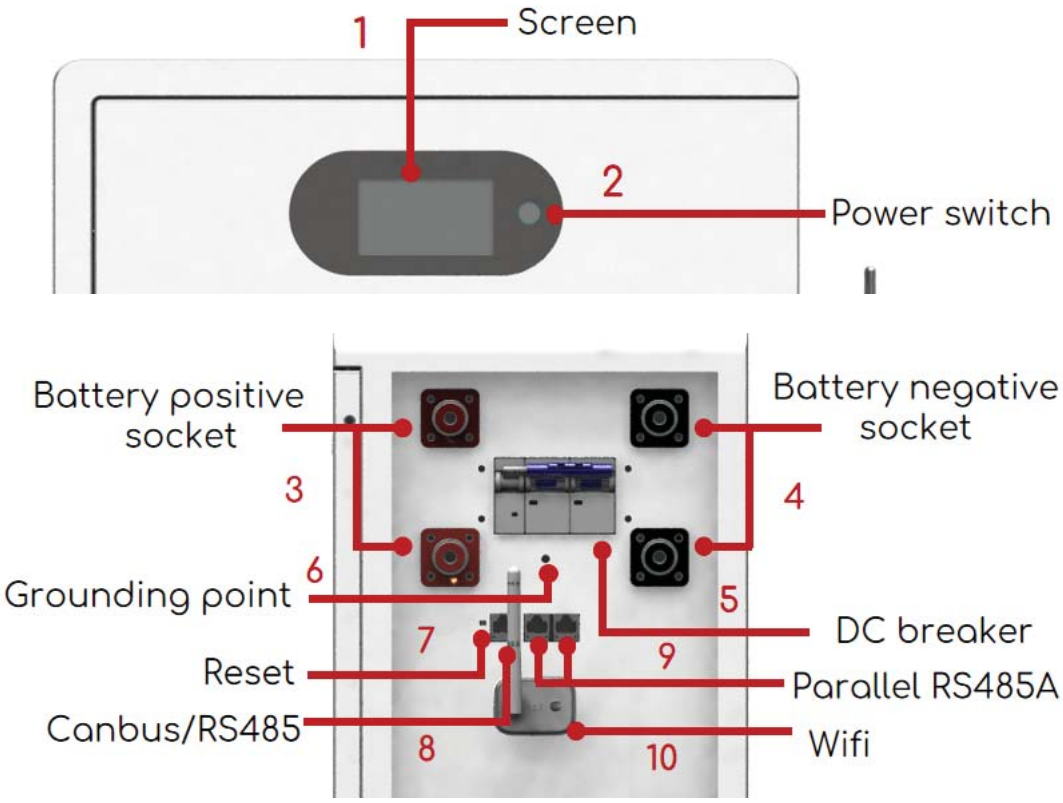
3. Battery Introduction

3.1 Battery Specification

MODEL		UNIV-14.3kWh	UNIV-16kWh
BATTERY PARAMETERS			
Total Energy (kWh)		14.34	16.08
Usable Energy (kWh)		13.48	15.11
Nominal Voltage (Vd.c)		51.2	51.2
Voltage Range (Vd.c)		44.8 ~ 57.6	44.8 ~ 57.6
Rated Capacity (Ah)		280	314
Normal Current(A)	Charge	140	157
	Discharge	140	157
Dimension(W *H* D) (mm)		525*720*245	525*720*245
Weight (KG)		110	117
BMS Features		Over-voltage Protection/Over-current Protection Short-circuit Protection/Temperature Protection Low-voltage Protection/ Cell Balance Over	
Model		Ⅱ	
Standard Features		Screen/Trip Protection/Wifi (Optional)	
Communication		CAN/RS485	
Charge Temperature		0℃ ~ 55℃ (32℉ ~ 131℉)	
Discharge Temperature		-20℃ ~ 55℃ (-4℉ ~ 131℉)	
Storage Temperature		-20℃ ~ 55℃ (-4℉ ~ 131℉)	
IP Rating		IP20	
Cooling Type		Natural	
Operating Environment		Indoor (5% ~ 95%(RH) No Condensing)	
Altitude		≤2000 m	
Warranty		5+5 Years	
Operation Life		15+ Years (25℃/77 ℉)	
Certification		CE/Cell UL 1973/UN38.3/MSDS/IEC62619	

3.2 Battery Pack Introduction

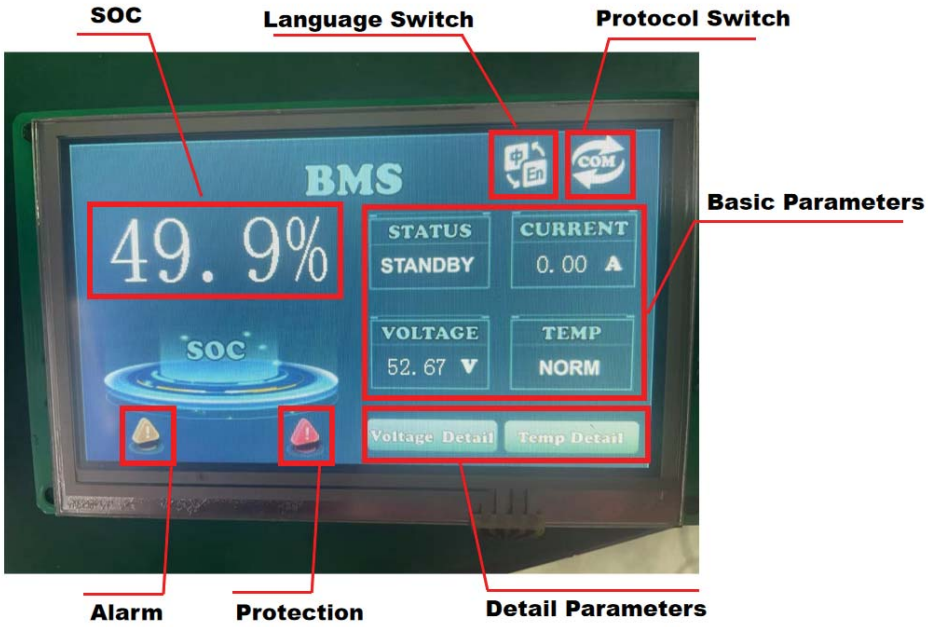
3.2.1 Battery Pack Appearance



Item	Name	Function Description
1	Screen	Check battery status information
2	Power switch	Switch the battery on or off
3	Battery positive socket	Connect with battery positive terminal
4	Battery negative socket	Connect with battery negative terminal
5	DC breaker	The master switch of the battery system
6	Grounding point	Reserved baseline interface
7	Reset	Restore factory settings
8	CAN/RS485	Communicate with the inverter
9	Parallel RS485	Parallel communication with other battery
10	Wifi port	Wi-Fi function (optional)

3.2.2 Battery Screen Introduction

3.2.2.1 Home Screen

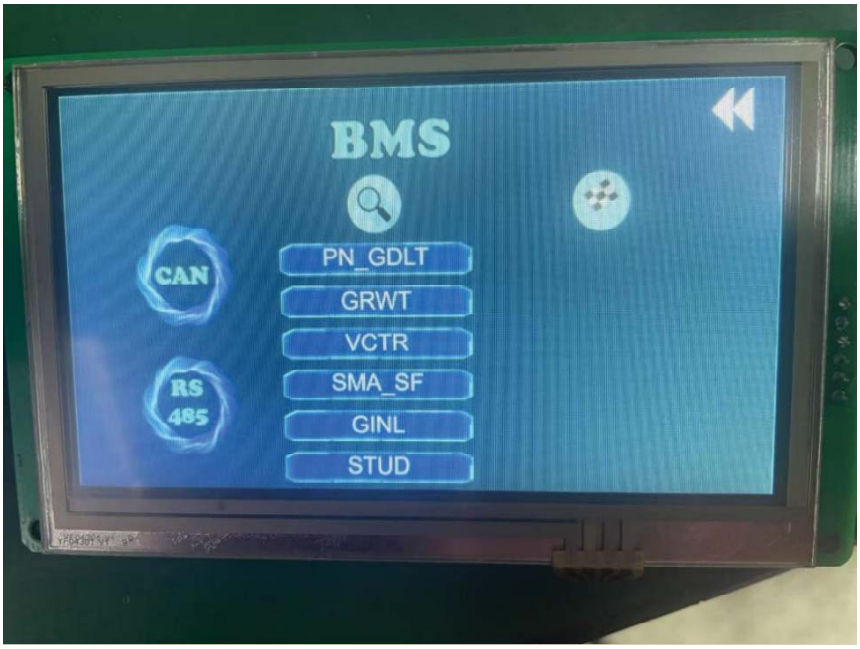


As shown in the image above, the display screen will show the current working status of the protection board, such as 'Standby,' 'Charging,' or 'Discharging' modes. It will also display the main parameters of the current BMS board: SOC, current, voltage, and temperature. The orange and red icons represent the alarm and protection items of the BMS board, respectively. If you want to check specific voltage and temperature parameters, you can click on these two icons. The two small icons in the upper right corner are used to switch the interface language and switch protocols.

3.2.2.2 Cells Detail Parameters

You can view detailed information such as the cell voltage, cell temperature, total battery voltage, total battery current, ambient temperature, and more through this interface.

3.2.2.3 Protocol Switch



You can adjust different protocols through this interface to correspond to different inverters.

3.2.2.4 Alarm and Protection information

You can view warning and protection information through this interface.

3.3 Communication Instructions

3.3.1 Communication With Inverter

⚠ CAUTION

Please read the definition of the Battery Communication interface in the inverter's instruction manual before proceeding with this part of the operation.

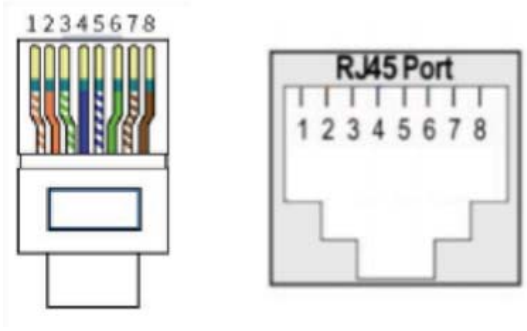
If you have problems with this part of the communication, please contact the after-sales department or an authorized dealer.

if you use CAN communication, you need to pay attention to CAN_H and CAN_L in the definition of battery interface.

When the pin definition of communication between the inverter side and the battery side is the same, the communication can be done by using normal network cable.

If the pin definition of communication between inverter and BMS is not the same, you need to make a special cable according to the inverter pin, otherwise the inverter will not recognize the battery.

Interface Definition



CAN	
Pin	Definition description
1	RS485-B
2	RS485-A
3	NC
4	CAN-H
5	CAN-L
6	NC
7	RS485-A
8	RS485-B

3.3.2 Communication Between The Battery Packs

Communication between batteries can be achieved using the provided standard network cables, with no modifications required.

4 Installation And Configuration

4.1 Installation Recommendations

Environmental Requirements

DANGER

Cleanliness

The battery system features high-voltage connectors, and environmental conditions can affect the system's isolation. Before installation and powering on, ensure that dust and metal debris are removed to maintain system cleanliness. The environment should provide a certain level of dust protection. During ongoing system operation, regularly check for dust and humidity levels.

Fire Protection

The room must be equipped with a fire protection system or fire extinguishers (foam extinguishers are recommended). The fire protection system should be regularly inspected to ensure it is functioning properly. Please follow the local guidelines for the use and maintenance of fire protection equipment.

Grounding Protection

Ensure that the grounding point for the battery system is stable and reliable prior to installation. If the battery system is installed in a standalone equipment cabin (e.g., a container), verify that the grounding of the cabin is stable and reliable. The resistance of the grounding system must be ≤100mΩ.

CAUTION

Temperature Considerations

The Easyway-LV series battery has a working temperature range of -20°C to +55°C, with an optimal operating temperature range of -20°C to +55°C. Exceeding the rated working temperature range will result in over-temperature/under-temperature alarms or protection, and prolonged use outside of this range may reduce the cycle life of the battery system.

Cooling System

If the temperature does not meet the operating conditions, an external cooling

system, such as central air conditioning, should be provided to ensure the battery system remains within the optimal temperature range. Exceeding the temperature range will trigger over-temperature alarms or protection, which may reduce the service life.

Heating System

If the temperature does not meet the operating conditions, a heating system, such as central heating, should be provided to ensure the battery system stays within the optimal temperature range. If the ambient temperature falls below 0°C, the system may shut down for protection. In this case, the heating system must be activated first. Exceeding the working temperature range will trigger under-temperature alarms or protection, potentially reducing the cycle life of the battery system.

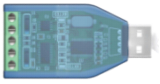
Installation Tools

		
Wrench	Multimeter	Drilling machine
		
Crimping tool	Phillips screwdriver	Wire stripper

Protective equipment

	
Insulated gloves	Safety shoes

Battery Accessories List

Item	Specification	Quantity	Appearance
Battery	UNIV-14.3kWh(Ⅱ)/ UNIV-16kWh(Ⅱ)	1	
Power Cable (Optional)	Connect with inverter(1.5M)	2	
	Parallel Cable (0.5M)	2	
Copper Lug (Optional)	SC50-8	4	
Network Cable (Optional)	Connect with inverter(1.5M)	1	
	Parallel Cable (0.5M)	1	
RJ45 Plug	RJ45 Plug	4	
Manual	Manual	1	
Copper Lug	OT4-5	2	
Warranty Card	Warranty Card	1	
Quality Inspection Report	Report	1	
RS485 to usb(Optional)	RS485 to usb	1	
WiFi dongle (Optional)		1	

Preparation Before Installation

Site Assessment:

Ensure the installation site is dry, clean, and free from dust. The area should be free from direct sunlight and excessive humidity to protect the equipment.

Unpacking:

Before unpacking, check the shipping list to confirm the total number of packages. Inspect each package for any visible damage.

Equipment Inspection:

Once unpacked, verify that all items are intact and match the packing list. If there is any damage to the packaging, document and inspect the goods thoroughly.

Handling:

Handle all equipment with care, paying particular attention to avoid damaging the surface

4.2 Equipment Installation

4.2.1 Installation Preparation

⚠ WARNING

1. Batteries stored for a period of time may experience some capacity degradation. Mixing these batteries with newly manufactured ones may result in capacity loss.
2. Batteries from different production batches may have slight capacity differences. Mixing batteries from different batches may cause capacity loss.
3. Do not mix batteries of different models without proper authorization.

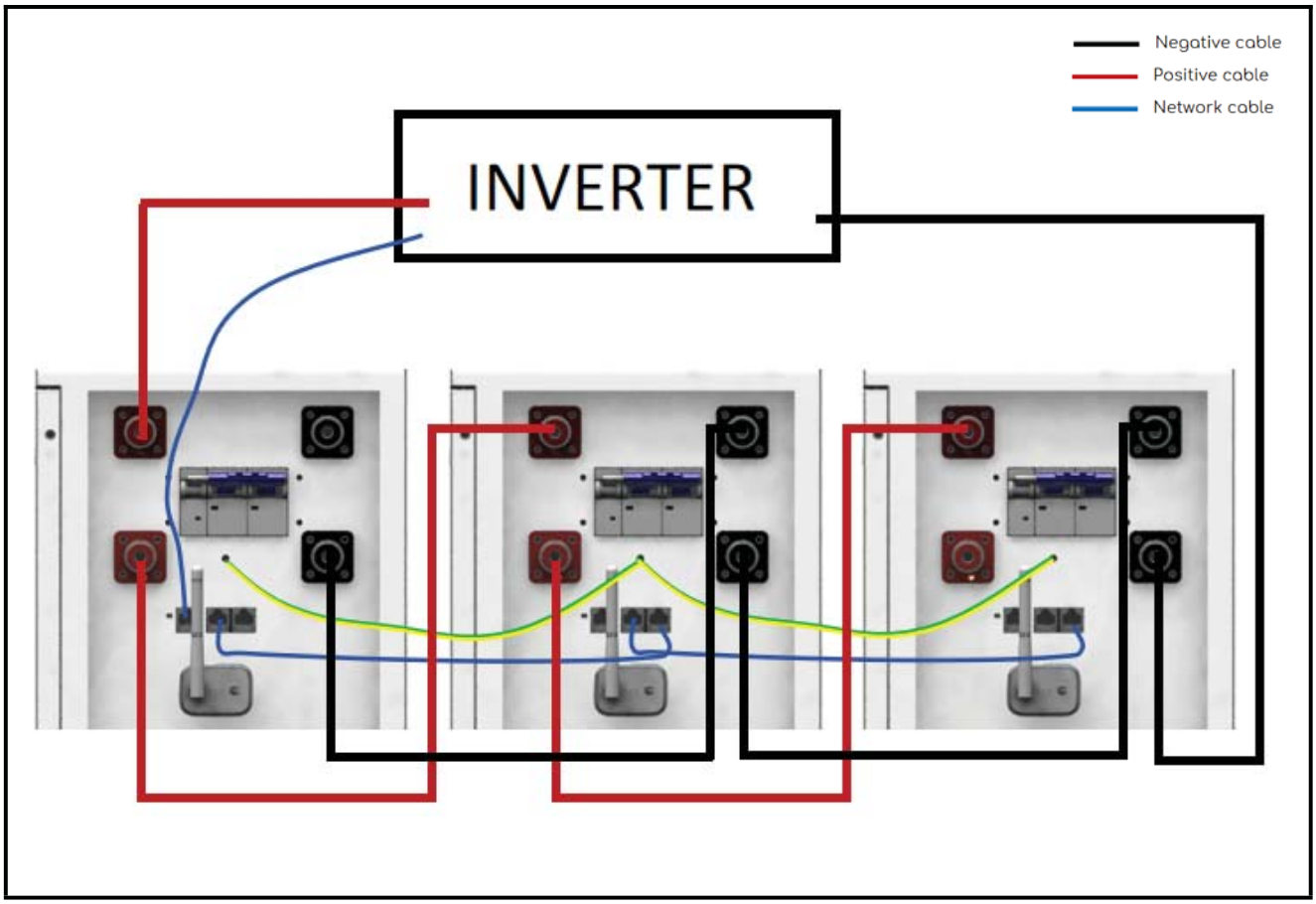
If any of the above unavoidable situations occur, please contact after-sales service personnel or a distributor.

1. Check whether all battery accessories are complete
2. Ensure that the environment meets all the technical specifications.
3. Make sure the installation project adheres to the guidelines outlined in section 4.2.1 Caution.
4. Prepare the necessary equipment and tools for installation.
5. Verify that the DC breaker is in the OFF position.

4.2.2 Connection With Inverter

⚠ CAUTION

Please double-check whether the inverter you are using appears on the official compatibility list for this battery system. If it does not, the system may not operate properly. If a compatibility issue occurs, please contact your supplier or an authorized distributor immediately for prompt assistance in resolving the issue.



5 Battery Monitor software

You can get the battery monitor software from after-sales department or distributor.

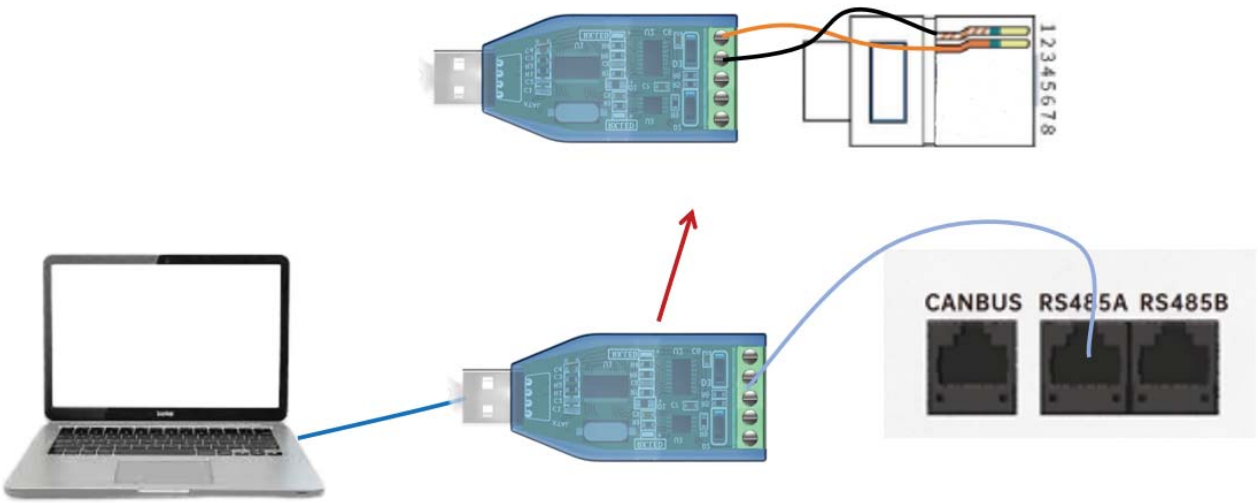
Low Voltage RS485 To USB Production

Please refer to the following images to properly connect the Low-Voltage RS485 to USB, provided by Supplier, to the computer and battery.

(The driver required for the Can Box should be obtained from Distributors.)

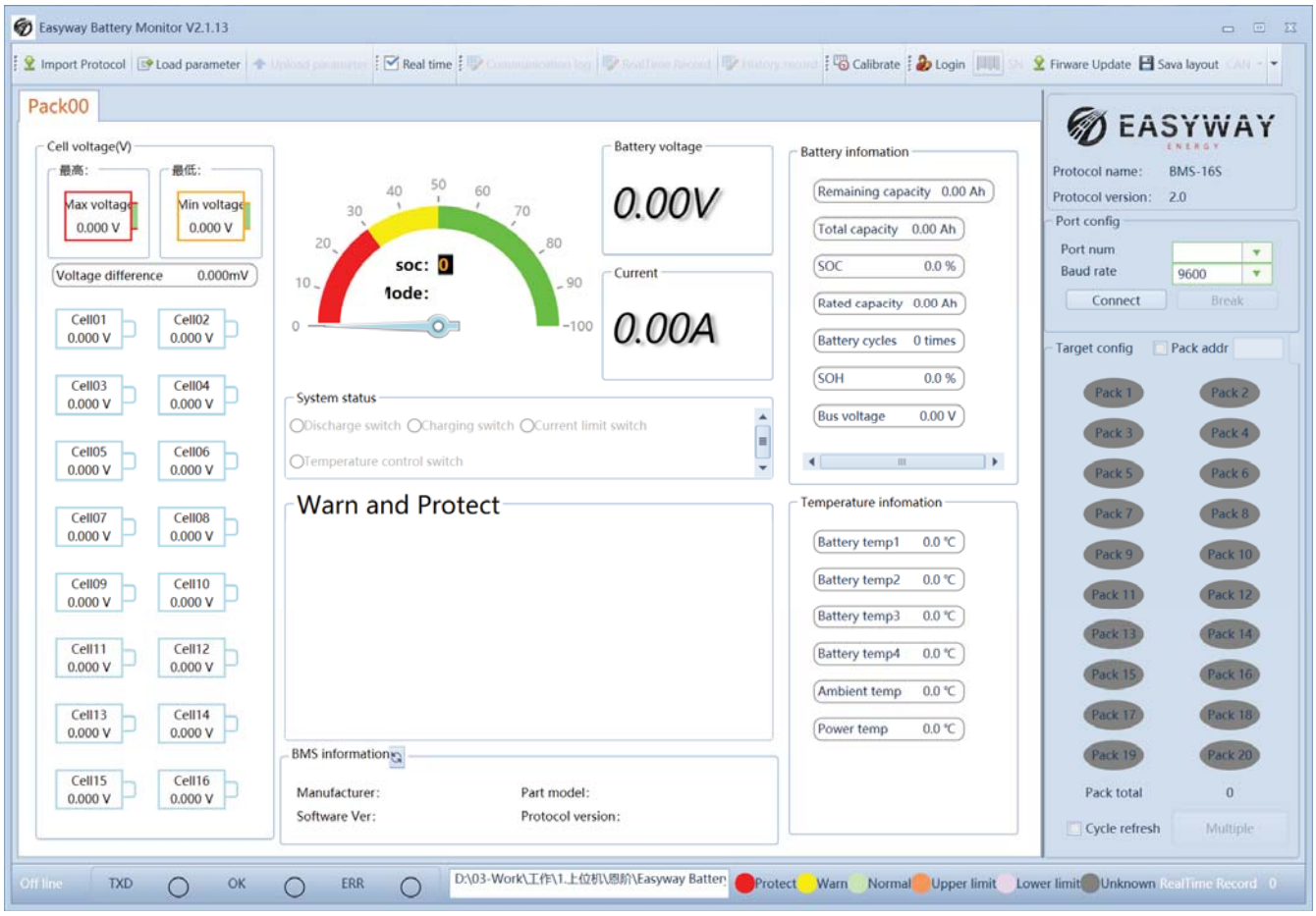
Use the Ethernet cable provided by the RS485 to USB for the setup:

- Connect the first pin of the Ethernet cable to the second port of the RS485
- Connect the second pin of the Ethernet cable to the first port of the RS485



Software Usage Guide

1. Insert the RS485 cable into the battery's RS485A port(When the batteries are connected in parallel, connect to the RS485B port of the master unit.), then connect it to the computer.
2. After installing the driver, open the Battery Monitor System software (for first-time use, you can contact the supplier for technical support).
3. Click "Import Protocol", then go to the "agreement" folder in the software directory and open 16S_V20_ADDR_EN.xml (If you need to use another language, go to the "Other language" folder.CS: Czech, DE: German, PL: Polish, PT: Portuguese, IT: Italian, FR: French)
4. Select the baud rate 9600, click "Connect", and you're ready to use the system.



If you encounter any issues while using this software, please contact after-sales personnel or a distributor. We will provide technical support.