RENOZ ENERGY

AUGUST 2025

LV-5KWH100AH
LV STACKABLE
BATTERY SYSTEM

INSTALLATION AND USER MANUAL

RENOZ ENERGY PTY LTD
Unit 4 / 8 Murphy St, O'Connor, WA, 6163
ABN 56 674 982 408

General Information

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Applicable Countries

- Australia
- New Zealand

Other Information

This manual contains important instructions for use during the installation and maintenance of the RENOZ Energy LV-5KWH100AH LV Stackable Battery System.

Read this document in full before installing or operating the LV Stackable Battery System.

Failure to do so or to follow any of the instructions or warnings in this document may result in electrical shock, serious injury, or death, or can damage the LV Stackable Battery System, potentially rendering it inoperable.

The product information in this manual is subject to change without notice.

Revision History

VERSION	DATE	DESCRIPTION
1.0	1st March 2025	First Official Release
2.0	30th June 2025	Comprehensive revision Alignment to Clean Energy Council Best Practice Guide Inclusion of DC Isolation Devices for Australian Installations
2.1	8th August 2025	Update of Business Address

Table of Contents

Section 1 Information on this document

Section 1.1 Validity

This document is valid only for the RENOZ Energy LV-5KWH100AH LV Stackable Battery System and its parallel configurations.

Section 1.2 Audience

The instructions in this document may only be performed by qualified persons who must have the following skills:

- Knowledge of how battery systems work and are operated
- Knowledge of how an inverter or energy controller works and is operated
- Knowledge of, and adherence to locally applicable connection requirements, standards, and directives.
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions.
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries.
- Training in the installation of commissioning of electrical equipment
- This manual is intended for use by professional installation and maintenance personnel.

Only authorized professionals can replace the equipment or components (including software), remove safety devices, or repair the equipment.

Failure to follow the instructions in this document may render the manufacturer's warranty, guarantee, or liability null, and void. Please refer to the manufacturer's warranty to understand consumer rights available under the Manufacturers Limited Product Warranty at: https://renoz.energy

Section 1.3 Applicable Standards and Directives

For installations in Australia, the following applicable standards and directives include, but are not limited to, the following documents. The versions of these documents are current as of publication of this manual. The latest versions, or more relevant standards take precedence over any information presented in this document.

- Electricity Act 1945 and regulations.
- AS/NZS 3000:2018 (Wiring Rules).
- AS/NZS 5139:2019 - Electrical installations - Safety of battery systems for use with power conversion equipment
- The Australian Building Code.
- Network Operator Technical Rules.
- Network Operator consumer connection agreements.

Refer to your local Building and Energy code for the latest applicable standards and directives.

Section 1.4 Content and structure of this document

This document contains safety information and instructions, scope of delivery, battery system overview, installation, electrical connection, commissioning, operation, decommissioning, troubleshooting, maintenance and storage, disposal of the battery system, technical parameters, and contact information. Please read this document in full before taking any actions on the battery system.

Section 1.5 Declaration of Conformity

THE RENOZ Energy LV Stackable Battery system (Model: LV-5KWH100AH), manufactured by Shandong Huison Electronics Technology Co., Ltd., has been designed, tested, and documented to comply with the to the Best Practice Guide for Battery Storage Equipment – Electrical Safety Requirements: Pre-assembled Battery System Equipment (Version 1.0, July 2018) - Mandatory Requirements of Method 2.

This statement of compliance is available in the download page of https://renoz.energy

Section 2 Important Safety Information

Section 2.1 Level of Warning Messages

The following levels of warning messages may occur when handling the battery system.

⚠ 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

⚠ Notes
Indicates a situation which, if not avoided, can result in property damage.

Section 2.2 General Requirements

Before installing these batteries, ensure you carefully read and follow all safety instructions. Strictly follow the instructions in the manual and adhere to all safety precautions indicated on the equipment and within the manual. The "Danger," "Warning," and "Caution" statements described in this manual are only supplementary precautions to all safety notices.

RENOZ Energy shall not be held liable for equipment damage or property loss resulting from violation of safety operation requirements or safety standards of design, production, and use of equipment, including but not limited to the following:

- The installation environment does not comply with relevant international, national, or regional standards.
- Failure to comply with local laws and regulations during the transportation, installation, operation, and maintenance of the equipment.
- Cables, tools, and other materials used do not comply with relevant international, national, or regional standards.
- Damage caused by storage conditions that do not meet the requirements of the equipment.
- Failure to operate according to the instructions and precautions in the manual.
- Failure to follow the prescribed sequence of steps for installation, operation, and maintenance in the manual, unauthorized changes to the installation sequence, unauthorized modification, additions, or changes to equipment, etc.
- Damages due to force majeure (such as lightning, earthquakes, fire, and storms).
- Unauthorized modifications or removal of the software package.
- Operation in extreme environments not allowed in this document.

Section 2.3 Intended use (and prohibited use)

The RENOZ Energy LV Stackable (LV-5KWH100AH) is suitable for use:

- Without modifying the recommended configuration as advised by RENOZ Energy.
- For its intended use and to provide home energy storage.
- Only when installed by installers with the relevant accreditation via Solar Accreditation Australia (SAA).
- Only when installed at a location adhering to AS/NZS 3000:2018 and AS/NZS 5139:2019.
- When operated in connection with a compatible inverter. For a complete and up-to-date list of compatible models, please refer to the official 'Inverter Compatibility Statement' document.
- When operated in indoor use under the conditions described in Section 5.2

The RENOZ Energy LV Stackable (LV-5KWH100AH) is not suitable for use:

- When the installed platform is moving.
- In the presence of potential water ingress, water exposure, or high humidity.
- In flame-prone locations.
- In the presence of combustible dust and debris.
- In the presence of ammonia and other corrosive gases.
- At an altitude of over 2000 metres above sea level.
- Ambient temperatures outside the -20°C to 55°C non-condensing recommended temperature range.
- When operated outside of the battery system's intended use as a battery system.
- When the battery system is supplying power to life-sustaining medical devices. Please ensure that no personal injury will occur due to any potential failure of the battery system.
- When alterations to the battery system (i.e., physical, cosmetic, or software changes or modifications) have been made without the expressed, written consent of RENOZ Energy. Unauthorized alterations will void guarantee and warranty claim. RENOZ Energy shall not be held liable for any damage caused by such changes

Section 2.4 Important Safety Instructions

The RENOZ Energy LV-5KWH100AH battery system has been designed and tested in accordance with international safety requirements. However, to prevent personal injury, property damage, and ensure the long-term operation of the battery system, please read this section carefully and always observe the necessary safety precautions.

⚠ Warning

A battery system can present a risk of electrical shock, fire, or explosion from vented gases. Always observe proper safety precautions.

Battery system installation and commissioning must be carried out only by a competent electrician who has been trained in dealing with low voltage electricity. The electrician must hold the relevant local and regional accreditations for installation of battery storage systems.

Before beginning the wiring portion of the installation, ensure that battery system is switched off, and lock out any associated circuit breakers and disconnect switches (if applicable for the installation).

Do not attempt to open, disassemble, repair, tamper with, or modify the battery system. The RENOZ Energy LV Stackable battery system and its components are not user serviceable. Contact RENOZ Energy for guidance on repairs.

To protect the battery system and its components from damage when transporting, handle with care. Do not impact, pull, drag, or step on battery system. Do not subject the battery system to any strong force. To help prevent damage, leave the battery system in its shipping packaging until it is ready to be installed.

Do not insert foreign objects into any part of the battery system. Do not crush, drop, or pierce the battery pack.

Do not expose the battery system or its components to direct flame.

Do not install the LV Stackable battery system within 600mm of heating vents or radiators.

Ensure that concentrated water sources do not drain onto the RENOZ Energy LV Stackable battery system.

Do not install the battery in locations where it may come into contact with conductive materials, water, seawater, strong oxidizers, or strong acids.

Ensure that the charging voltage does not exceed 57.6V.

Do not install the RENOZ Energy LV Stackable battery system outdoors or in exposed environments. Do not install the battery in direct sunlight, on hot surfaces, or in high-temperature environments exceeding the operating temperature range.

Do not immerse the battery system or its components in water or other fluids.

Do not charge or discharge the battery when the ambient temperature exceeds 55°C. Do not charge the battery if the ambient temperature is below 0°C, and do not discharge the battery if the temperature drops below -20°C.

Do not install the battery in confined spaces with inadequate ventilation, as this may cause the system to overheat. If the battery emits unusual odors, heats up, or exhibits abnormal behavior during operation or charging – if it safe to do so, perform the shutdown procedure.

⚠ Caution

The RENOZ Energy LV Stackable battery system is not designed nor warranted for non-stationary applications.

Do not use solvents to clean the RENOZ Energy LV Stackable battery system or expose the battery system to flammable or harsh chemicals, or vapours.

Do not place the battery system in a storage condition for more than three (3) months or permit the electrical feed on the battery system to be severed for more than three (3) months, without placing the battery system into a storage condition in accordance with RENOZ Energy's storage specifications.

The LV-5KWH100AH battery module is heavy. Use of proper tools, lifting techniques, or lift equipment is recommended.

Do not paint, coat, or wrap any part of the RENOZ Energy LV Stackable battery system, including any internal or external components such as the exterior shell or casing. These may cause the battery system to overheat, resulting in damage to the product.

Use insulated tools to reduce the risk of potential short-circuit during installation or maintenance procedures.

Ensure all cables, busbars, and plug connections are properly tightened and secured prior to commissioning of the battery system.

Do not place any objects on the top of the battery system. Do not use the top of the battery system for storage as this may impact the cooling ability of the battery system.

Handle the battery carefully to avoid damage: prevent drops, dragging, or other improper handling.

Ensure product warning stickers and labels are visible.

Do not touch or operate the battery system with wet hands.

Section 2.4.1 Handling and Storage Instructions

- The battery modules and its components should be protected from damage when transporting and handling.
- Do not impact, pull, drag, or step on the battery modules.
- Do not insert unrelated objects into any part of the battery modules.
- Do not throw the battery module into a fire.
- Do not soak the battery modules in water or seawater.
- Do not expose to strong oxidizers.
- Do not short circuit the battery modules.
- The battery modules cannot be stored at high temperatures (more than 40°C).
- The battery modules cannot be stored directly under the sun.
- The battery modules cannot be stored in a high humidity environment.
- The battery modules cannot be stored upside down.
- Do not use the battery modules if it is defective, or appears cracked, broken or otherwise damaged, or fails to operate.
- Do not attempt to open, disassemble, repair, tamper with, or modify the battery modules. The battery modules are not user serviceable.
- Do not use cleaning solvents to clean the battery modules

Section 2.4.2 Transportation Requirements

- The LV-5KWH100AH battery module is certified to UN38.3 (Seventh Revised Edition) and SN/T 0370.2-2009 (Part 2).
- The LV-5KWH100AH battery module is classified as Category 9 Dangerous Goods. The battery pack shall not be transported with other inflammable, explosive or toxic substances.
- Ensure the original packaging and label is complete and recognizable.
- Do not transport or place the LV-5KWH100AH battery module upside down or on its side.
- Prohibit direct exposure to sunlight, rain, or condensation caused by temperature difference and/or mechanical damage.
- Do not stack more than 6 shipping cartons on top of each other.
- Maintain transportation temperature between 0°C to 40°C, relative humidity: 5%~95%RH.
- It is normal for the LV-5kWH100AH battery system to self-discharge without load and a drop in capacity will be observed after transportation.

Section 3 The LV Stackable Battery System

The RENOZ Energy LV-5KWH100AH is a 51.2V, 100Ah, 5kWh battery module with the capability to expand from 5kWh to 80kWh in parallel configurations. The LV Stackable battery system is ideal for low-voltage residential solar, off-grid power systems, and backup power applications.

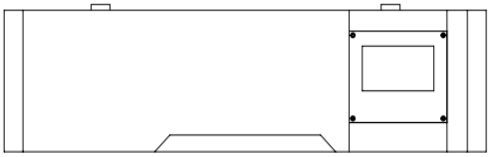
All RENOZ Energy LV Stackable battery products are equipped with our specially developed Battery Management System (BMS), which continuously monitors and records battery voltage, as well as real-time data on module current, voltage, and temperature. The BMS features both active and passive balancing functions with advanced algorithms to enhance battery pack performance.

Designed for durability, RENOZ Stackable battery has an expected lifespan of over 15 years, achieving 6000 cycles at 80% Depth of Discharge (DOD). The battery system state and performance can be monitored via the product's touchscreen interface, displaying real-time battery conditions.

Figure 1: RENOZ Energy LV Stackable Battery System (6-off LV-5KWH100AH Battery Modules)

- Advanced Battery Management System (BMS)
- Modular Design for Simple Installation and Scalable Expansion (up to 80 kWh)
- Multi-layer Safety Protection
- Touchscreen User Interface for operation and debugging
- Compatible with a wide range of mainstream inverters
- Safe, efficient, and long-lasting Lithium Iron-Phosphate (LFP) battery cells.
- Built-in, Automatic Fire Suppression using an aerosol extinguishing agent.
- Active balancing Module
- Busbar Design Suitable for High Current Operation.
- CANBUS and RS485 communication

Section 3.1 Products and Accessories



51.2V100Ah 5KWh Battery Pack (LV-5KWH100AH)

Side cover plate

Ethernet patch cable (T568B-T568B) for parallel data connection

Green & Yellow PE Cable with Insulated Spade Connectors

Positive Busbar (orange)

Negative Busbar (black)

Terminal Insulation Covers

Spare Fuse (500A)

Section 3.2 LV-5KWH100AH Parameters

The RENOZ Energy LV-5KWH100AH is a modular, scalable Lithium Iron Phosphate (LiFePO4) Battery System designed for residential and small commercial applications. It offers scalability of up to 8 modules in a single tower, active cell balancing for extended battery longevity, and features an automatic, aerosol-based fire suppression system for enhanced safety.

Section 3.2.1 LV-5KWH100AH Battery System - Technical Parameters

Table 1: LV-5KWH100AH Technical Parameters

Parameter	*Value / Description*
Model	LV-5KWH100AH
Nominal DC Voltage	51.2 V
Operational DC Voltage Window	40 V to 57.6 V
Rated Discharge Rate	0.9 C / 4.61 kW
Lithium Cell Chemistry / Composition	Lithium Iron Phosphate ($LiFePO_4$ or LFP)
Cell Format	Prismatic
Nominal Capacity	5.12 kWh / 100Ah
Usable Capacity	4.61 kWh
Depth of Discharge	Up to 90%
Cycle Life	6,000 at 80% Depth of Discharge and 25°C.
Minimum Retained Capacity at End of Life	70% of Usable Capacity after 10 years per warranty.
Battery Dimensions	640mm x 450mm x 177mm
Module Weight	53 kg
Battery Cell Certifications	UL9540A, UL1973, IEC62619, CE/EMC, MSDS, UN38.3, GB36276
Battery Module Certifications	ANSI/CAN/UL 1973:2022, UN38.3, CE (IEC 61000-6)
Warranty	10 Year Limited Product Warranty (Conditions Apply)[1]

Note 1: Refer to RENOZ Energy LV-5KWH100AH Residential Product Warranty

Section 3.3 BMS Technical Parameters

Table 2: LV-5KWH100AH BMS Technical Parameters

Parameter	Value / Description
Low Voltage Cutout	40 V
Max Voltage	57.6 V
Max Continuous Charge	100 A
Max Continuous Discharge Current	100 A
Recommended Charge Current	50 A
Recommended Discharge Current	50 A
Active Cell Balancing Current	1.0 A
Communication	CAN / RS485
User Interface	LCD Colour Touchscreen

Section 3.4 General Parameters

Table 3: LV-5KWH100AH General Parameters

Parameter	Value / Description
Discharge Temperature Range	-20°C to 55°C
Charge Temperature Range	0°C to 45°C
Working Altitude	< 2000m (Seek manufacturers advice for installations above 2000m)
Noise	< 40 dB
Cooling	Natural Air Convection (Passive)
IP Level	IP40 (Indoor Use, Seek manufacturers advice for exposed installation conditions).
Recommended Storage Temperature	0°C to 40°C
Parallel Connection	Up to 8 modules in a single tower; up to 2 towers in a system
Series Connection	Not supported
Country of Manufacture	China
Battery Mounting	Stacked & Free Standing. No Cabinet or Wall Mounting required.
Enclosure Material	Powder Coated, Galvanised Mild Steel
In-Built Fire Suppression	Aerosol Extinguishing Agent (Strontium Nitrate & Potassium Nitrate)

Section 3.5 Compatible Inverter Brands

The RENOZ Energy LV-5KWH100AH is a lithium-iron phosphate (LFP) battery system designed for use with an external inverter. The RENOZ LV-5KWH100AH is compatible with a wide range of leading inverter brands. For a complete and up-to-date list of compatible models, please refer to the official 'Inverter Compatibility Statement' document.

Table 4: LV-5KWH100AH Compatible Inverter Brands

Parameter	*Value / Description*
Compatible Brands	Afore, Aiswei, Deye, Goodwe, Growatt, Luxpower, Noark, Selectronic, Sofar, Solis, Sunsynk, Victron

Section 3.6 LV-5KWH100AH Parallel Configurations

The RENOZ Energy LV Battery System is designed for scalability. A single LV Stackable battery tower can contain between 1-8 LV-5KWH100AH battery modules stacked in parallel, ranging from 4.61 kWh to 36.88 kWh usable capacity in one tower. Up to two towers can be connected in parallel. Seek manufacturers advice for applications requiring more than two towers.

Table 5: LV-5KWH100AH Parallel Configuration Parameters

Battery Module	*RENOZ Energy LV-5KWH100AH Battery Module*							
Number of Modules	1	2	3	4	5	6	7	8
Nominal Capacity (kWh)	5.12	10.24	15.36	20.48	25.6	30.72	35.84	40.96
Usable Capacity (kWh)	4.61	9.22	13.83	18.44	23.05	27.66	32.37	36.88
Nominal DC Voltage (V)	51.2							
Continuous Output Power (kW)	4.61	9.22	13.83	18.44	23.05	27.66	32.37	36.88
Maximum Output Power (kW)	4.61	9.22	13.83	18.44	23.05	27.66	32.37	36.88
Rated Discharge Current (A)	90	180	270	360	450	540	630	720
Height w.o top cover/base (mm)[1]	177	347	517	687	857	1027	1197	1367
Weight w.o top cover/base (kg)	53	106	159	212	265	318	371	424
Height w. top cover/base (mm)[1]	270	440	610	780	950	1120	1290	1460
Weight w. top cover/base (kg)	77	130	183	236	289	342	395	448

Note 1: Height of Top Module includes 7mm docking pins. These pins are hidden with inset of Top Cover. Refer to Installation Manual for Drawing.

Section 3.7 Mechanical Dimensions

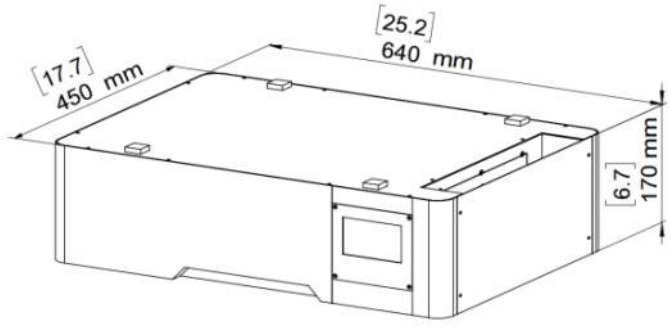


Figure 2: One (1) LV-5KWH100AH Module

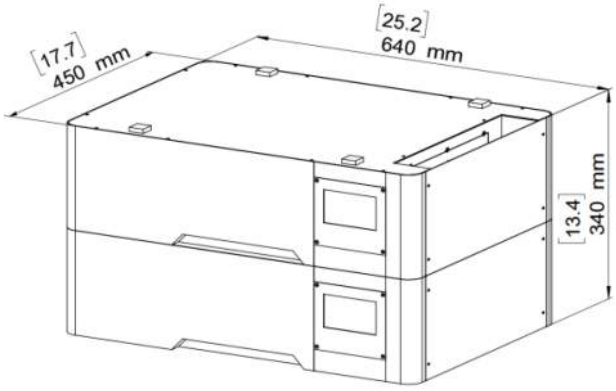


Figure 3: Two (2) LV-5KWH100AH Modules

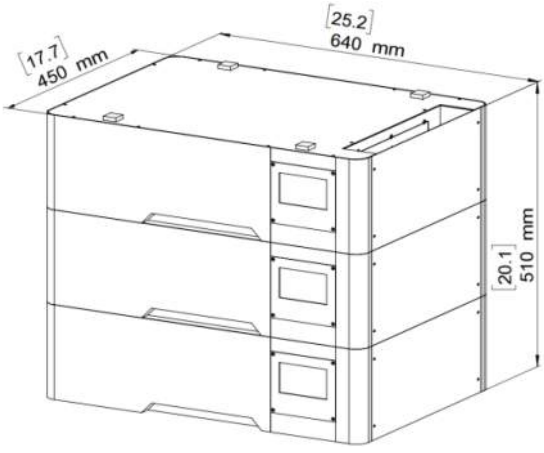


Figure 4: Three (3) LV-5KWH100AH Modules

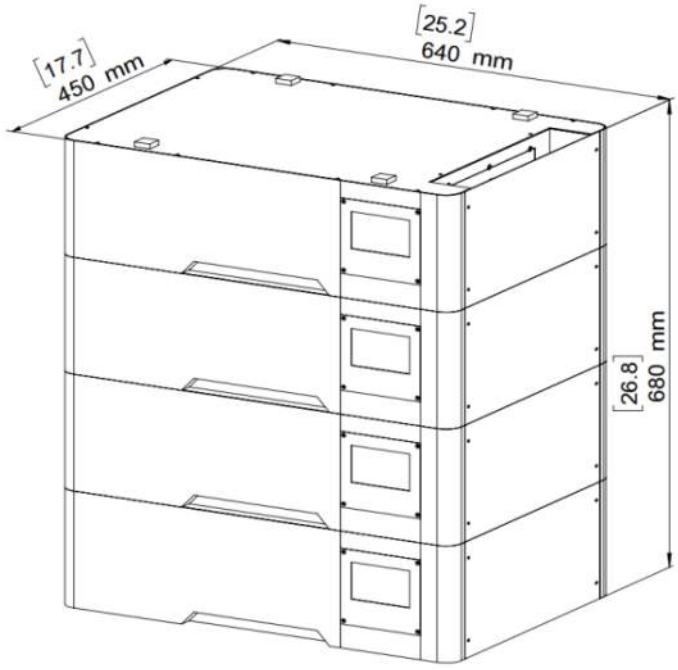


Figure 5: Four (4) LV-5KWH100AH Modules

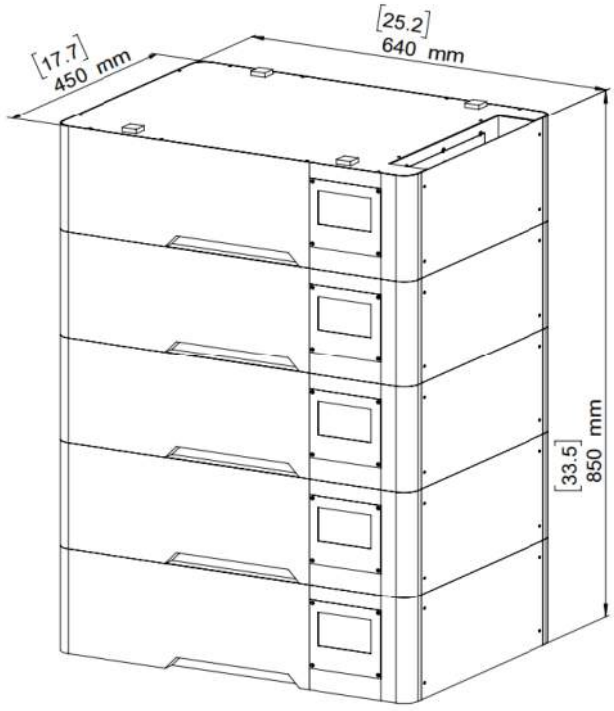


Figure 6: Five (5) LV-5KWH100AH Modules

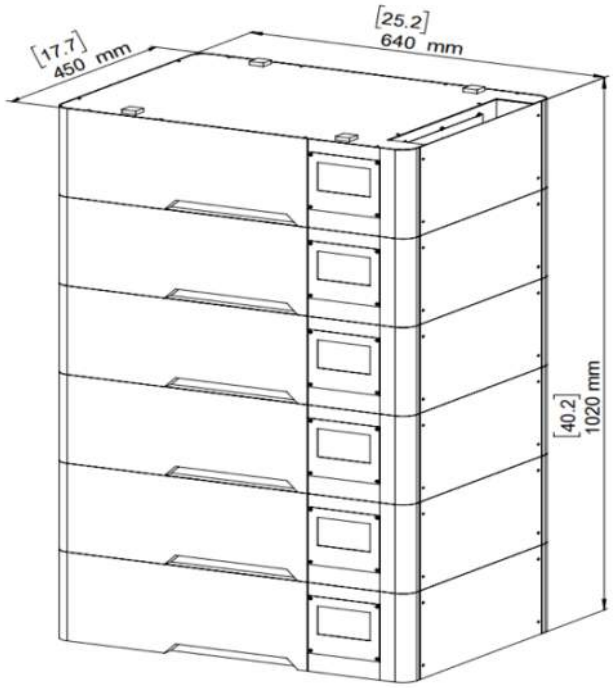


Figure 7: Six (6) LV-5KWH100AH Modules

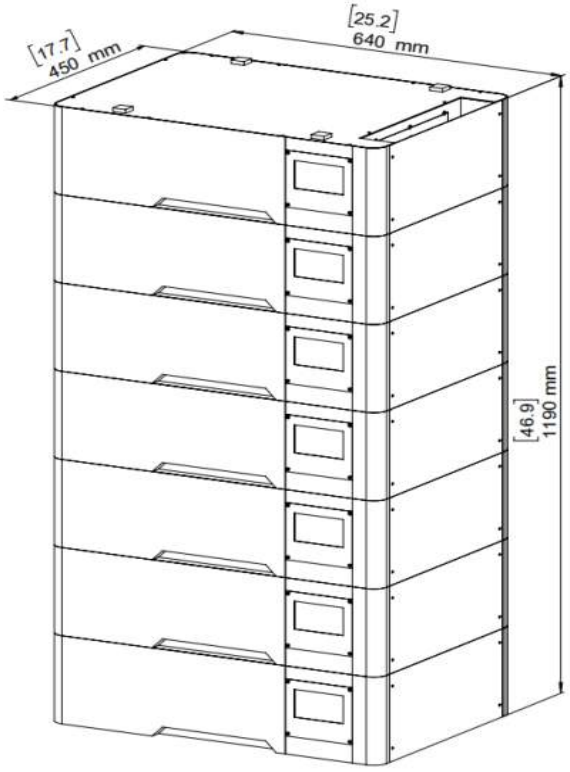


Figure 8: Seven (7) LV-5KWH100AH Modules

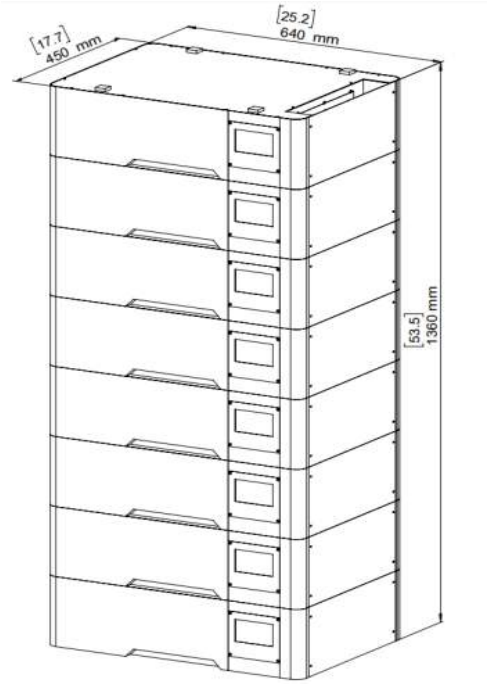


Figure 9: Eight (8) LV-5KWH100AH Modules

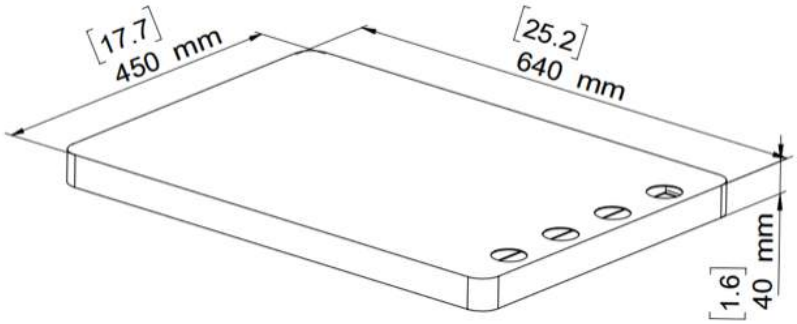


Figure 10: Top Cover (6kg)

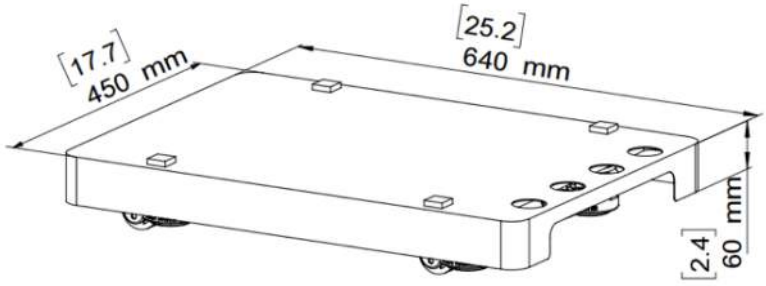


Figure 11: Bottom Base and Self-Levelling Caster (18kg)

Section 3.8 BMS Interface

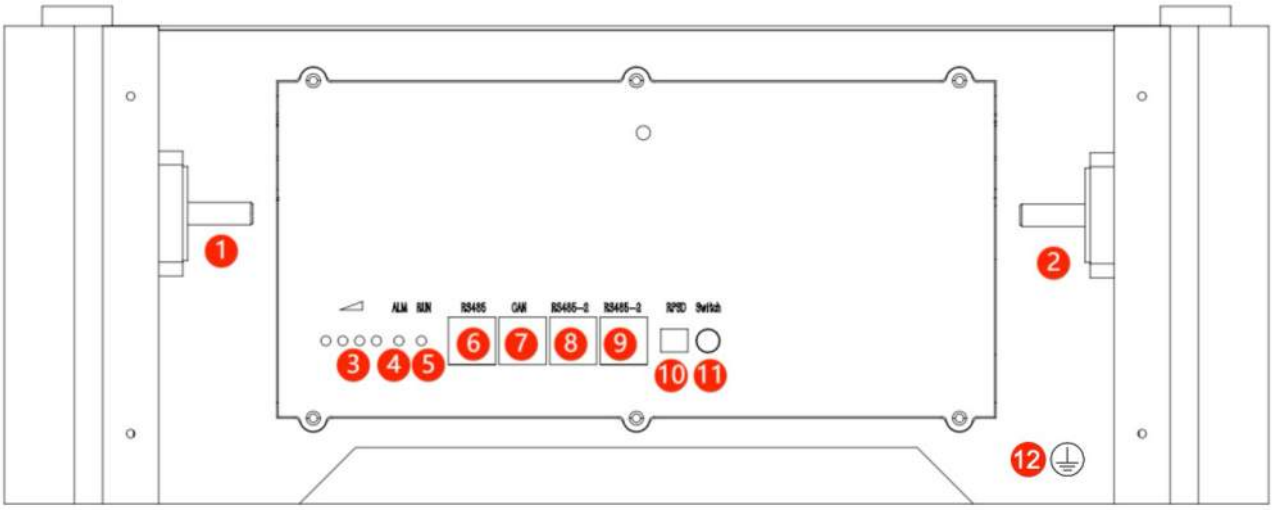


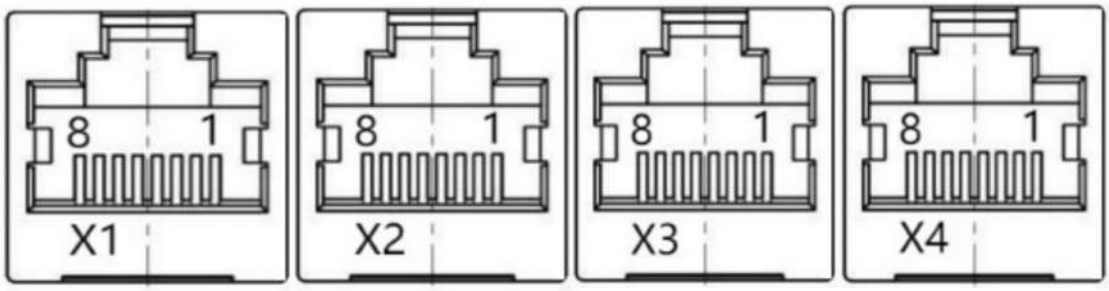
Table 6: BMS Interface diagram (without side cover plate)

No.	Item	Description	Note
1	Negative Terminal Batt -ve	Black Terminal	400A Current
2	Positive Terminal Batt +ve	Orange Terminal	400A Current
3	State Of Charge indicator	0-100% SOC	4 LED (25/50/75/100 %SOC)
4	Alarm	Fault Indicator	
5	Run indicator	BMS Powered On	
6	RS485 Communication port	PC Software/Inverter Communication	
7	CANBUS Communication port	Inverter Communication	
8	RS485-2 port	Battery Inter-Module Communications	
9	RS485-2 port	Battery Inter-Module Communications	
10	RPSD	2-Pin Dry-Contact	Rapid Shut Down
11	Power switch	Switch On/Off the BMS	Toggle Button
12	Protective Earth (PE) Terminal	Terminal for PE Connection	

Section 3.8.1 Communication Port RS485 & CANBUS

The communication ports from (left to right) are described as the following:

- Port 1 (X1) - RS485
  - Used for PC Software Update
- Port 2 (X2) - CANBUS
  - Used for Inverter CAN or RS485 Communications
- Port 3 (X3) – RS485-2
  - Used for Inter-Module Communications
- Port 4 (X4) – RS485-2
  - Used for Inter-Module Communications



Pin	RS485	CANBUS	RS485-2	RS485-2
PIN1	NC	NC	NC	NC
PIN2	NC	NC	DI	DI
PIN3	RS485A	NC	A-PACK Parallel	A-PACK Parallel
PIN4	NC	CAN-H	GNDDI	GNDDI
PIN5	RS485B	CAN-L	B-PACK Parallel	B-PACK Parallel
PIN6	NC	NC	IO1	IO2
PIN7	NC	RS485A1	NC	NC
PIN8	NC	RS485B1	DGND	DGND

Section 3.8.2 SoC LED Indicator Guide

The guide below describes the SoC LED Indicator guide, alarms, and run state of the battery system.

Table 7: SoC LED Indicator guide

State	Normal / Alarm / Protection	Energy Level Indicator LEDs				Alarm indicator	Run indicator	Description
		🟢	🟢	🟢	🟢	🔴	🟢	
Shut down	Sleep	OFF	OFF	OFF	OFF	OFF	OFF	All off
Charge	Normal	25%	50%	75%	100%	OFF	Flashing	No alarms
	Alarm	25%	50%	75%	100%	ON	Flashing	Stop Charging
	Overcharge protection	ON	ON	ON	ON	ON	Flashing	Stop Charging
	Temperature, overcurrent, and failure protection	25%	50%	75%	100%	ON	Flashing	Stop Charging
Discharge	Normal	25%	50%	75%	100%	OFF	Flashing	No alarms
	Alarm	25%	50%	75%	100%	ON	Flashing	Stop discharge
	Over-discharge protection	ON	ON	ON	ON	ON	Flashing	Stop discharge
	Temperature, overcurrent, and failure protection	25%	50%	75%	100%	ON	Flashing	Stop discharge

Section 3.8.3 Rapid Shutdown

The RENOZ Energy LV-5KWH100AH battery system comes equipped with a rapid shutdown (RPSD) 2-pin, dry contact connector that must be connected. For use of the RPSD, the parallel LV-5KWH100AH connectors must be daisy-chained in parallel using the two-pin connector. Refer to Section 7.

RPSD	*Description*
	1. Connect multiple battery packs in parallel. 2. Use the centre and right terminals on the RPSD connector. 3. Connecting the 2 terminals together will activate the rapid shutdown feature. 4. When activated, the red alarm (ALM) light will light up and the LCD display will display the text 'RPSD Activated.

Section 4 Operation

⚠ Caution
Use insulated tools to reduce the risk of potential short-circuit during installation or maintenance procedures.

Section 4.1 Startup (System On) Procedure

⚠ Warning
Prior to initiating startup of the LV-5KWH100AH battery module and parallel configurations, ensure that all cables are firmly attached and the DC bus bars are safely connected. Ensure that the Inverter / Charger is switched OFF before initiating startup.

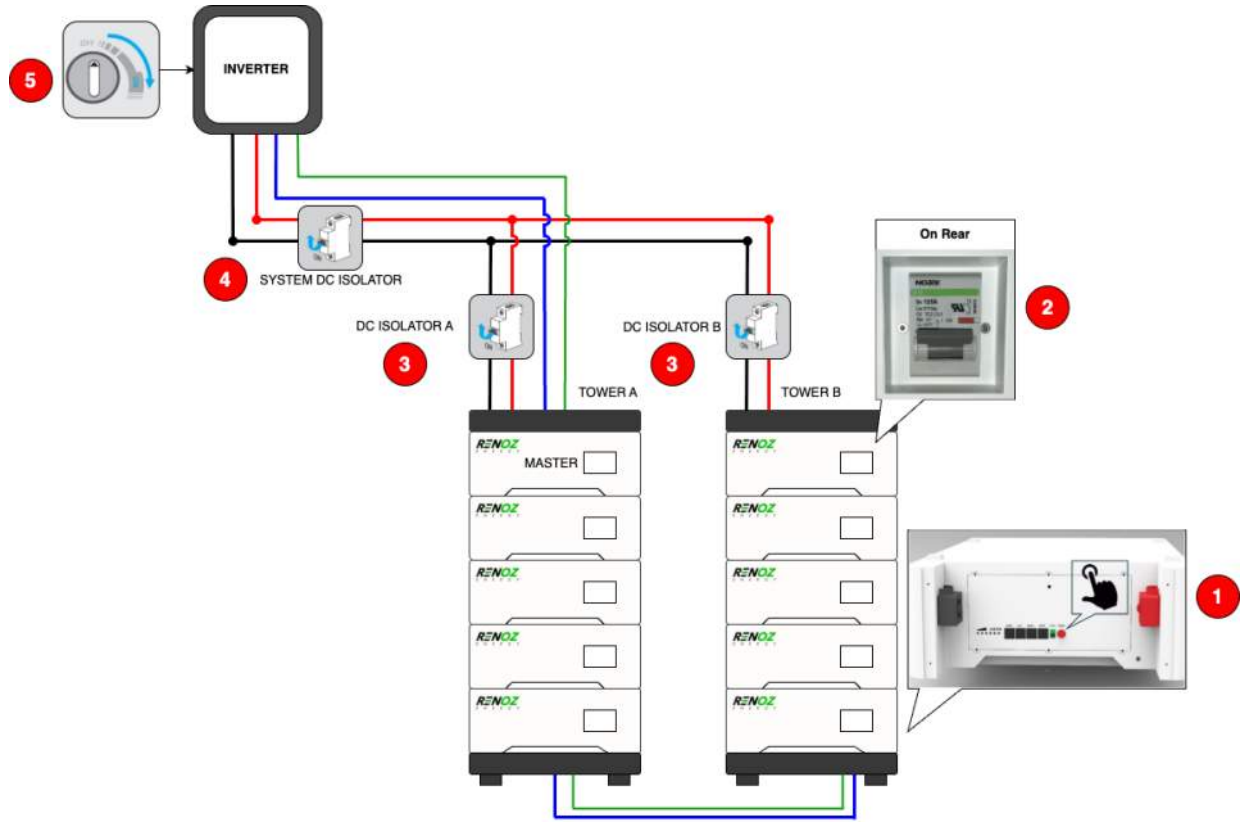


Figure 12: System-On Procedure

Follow the procedure below to initiate startup of the LV-5KWH100AH Battery System

Step 1. Turn on the BMS for all LV-KWH100AH battery modules

- Press the red power button on the **Master** battery pack to switch on the BMS.
- The run indicator light will begin flashing to indicate the BMS is in a normal working state.
- The LCD will also switch on, briefly displaying the logo followed by the battery status screen.
- Repeat this step for all LV-5KWH100AH Slave Modules.

Step 2. Switch the rear-panel circuit breaker to the on position

- Switch the rear-panel circuit breaker of the **Master** LV-5KWH100AH Battery Module on (up position) to energise the battery terminals.
- Repeat this step for all LV-5KWH100AH Slave Modules.
- Switch the external circuit breaker/isolator to the on position.

Step 3. Switch the dedicated battery tower circuit breaker/isolator the on position

- If there are multiple towers, switch the dedicated DC circuit breaker to the on position.

Step 4. Switch the external system DC circuit breaker/isolator to the on position.

- Switch the external system DC circuit breaker/isolator to the on position.

Step 5. Switch on the inverter.

Step 6. Confirm the battery system is operating correctly.

- Confirm no alarm indicators or faults.
- If any faults arise refer to Troubleshooting Table in Section 11.

Step 7. Confirm inverter user interface detects battery storage

- Confirm battery storage is detected on Inverter user interface.

Step 8. Attach the top cover and side plates

- Attach the side plates using the fixing screws
- Attach the top cover.

Section 4.2 Shutdown (System Off) Procedure

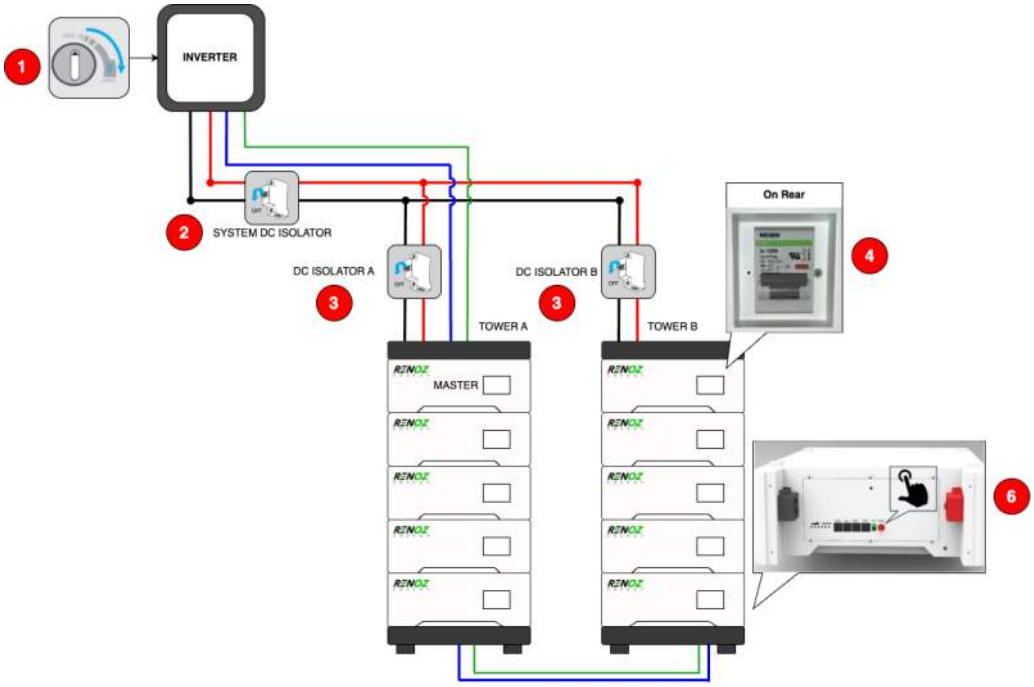


Figure 13: System-Off Procedure

Follow the procedure below to initiate shutdown of the LV-5KWH100AH Battery System

Step 1. Switch off the PCE / inverter

Step 2. Switch the external system circuit breaker/isolator to the off position.

- Switch the external system DC circuit breaker/isolator to the off position.

Step 3. Switch the dedicated battery tower circuit breaker/isolator the off position

- If there are multiple towers, switch the dedicated DC circuit breaker to the off position.

Step 4. Switch the rear-panel circuit breaker to the off position

- Switch the rear-panel circuit breaker of the **Master** LV-5KWH100AH Battery Module off (down position) to de-energise the battery terminals.
- Repeat this step for all LV-5KWH100AH Slave Modules.

Step 5. Remove the top cover and side plates

- Remove the Top cover.
- Remove the side plates to access the power button for the LV-5KWH100AH battery modules.

Step 6. Turn off the BMS of the LV-KWH100AH battery modules

- Press the red power button on the **Master** battery pack to switch off the BMS.
- The run indicator light and LCD will switch off, and the BMS enters the shutdown state
- Repeat this step for all LV-5KWH100AH Slave Modules.

Section 4.3 Emergency Shutdown

⚠ Warning

Do not follow this procedure unless it is completely safe to do so. Do not expose yourself to hazardous conditions to power down the LV-5KWH100AH battery system.

If the LV-5kWH100AH Rapid Shutdown sequence has been activated and/or the circuit breakers have been switched to the off position, The battery terminals of the LV-5KWH100AH will be isolated and will not be energised. Only follow the procedure below unless it is completely safe to do so.

In the event of an emergency where it is safe to power down the LV-5KWH100AH battery system, follow the procedure below to power down and isolate the battery system.

Section 4.3.1 Procedure

Step 1. Press the rapid shutdown switch (if installed).

- If installed, locate and press the Emergency Shutdown / Rapid Shutdown switch to initiate Rapid Shutdown of the LV-5KWH100AH battery system.

Step 2. Switch off the Inverter

- If it is safe to do so, locate the power button on the inverter and switch off the inverter.

Step 3. Switch the external system circuit breaker/isolator to the off position.

- Switch the external system DC circuit breaker/isolator to the off position.

Step 4. Switch the dedicated battery tower circuit breaker/isolator the off position

- If there are multiple towers, switch the dedicated DC circuit breaker to the off position.

Step 5. Switch off the LV-5KWH100AH battery module circuit breakers.

- If it is safe to do so, locate the rear-panel circuit breakers of the LV-5KWH100AH battery modules.
- Switch the circuit breaker to the off (down) position.
- Repeat for all LV-5kWH100AH battery modules.
- The battery terminals will now be isolated.

Step 6. Remove the top cover and side plates

- Remove the Top cover.
- Remove the side plates to access the power button for the LV-5KWH100AH battery modules.

Step 7. Turn off the BMS of the LV-KWH100AH battery modules

- Press the red power button on the **Master** battery pack to switch off the BMS.
- The run indicator light and LCD will switch off, and the BMS enters the shutdown state
- Repeat this step for all LV-5KWH100AH Slave Modules.

Section 4.4 Standard Operating Conditions

Section 4.4.1 Charging Conditions

- Confirm charging voltage is within nominal voltage range before connecting.
- Charging is not permitted below 0°C (32°F). The Battery Management System (BMS) prevents charging until cell temperature exceeds 0°C (32°F).
- Frequent full charges or fast charging reduce service life. Maintain moderate SOC levels during normal use to extend battery life.
- Recharge when SOC reaches 20% to maximize longevity. Deep discharge is permitted but may reduce total cycle life if performed frequently.

Section 4.4.2 Discharge Conditions

- Discharge to 0% SOC is permitted however not recommended. Routine operation above 20% SOC is recommended to maximise the cycle life of your battery.
- Do not discharge if ambient or cell temperature exceeds 55°C.
- Discharging below 0°C may reduce available capacity. Capacity returns as temperature rises above 0°C.
- Discharge automatically terminates when minimum voltage is reached. No operator action required.
- Recharge promptly after full discharge. Extended storage at 0% SOC causes irreversible damage and voids warranty.

Section 4.5 Battery Life Recommendations

RENOZ Energy LV-5KWH100AH battery systems are designed for a service life of 10–15 years under normal operating conditions. Adherence to all specified operating parameters is mandatory. To further maximize service life, observe the following best practices:

- Maintain State of Charge above 20% SoC under standard operating conditions.
- Maintain ambient and cell temperatures between 15°C and 35°C during operation and storage.
- Limit both charge and discharge current to ≤ 0.5C rated capacity during normal operation.
- Conduct routine visual inspections for signs of corrosion or mechanical damage on external connectors, cabling, enclosures, and busbars. If any damage is observed, contact qualified service personnel.

⚠ Warning
Do not attempt to clean, repair, or service battery connections without proper training and authorization.

Section 4.6 Navigating the LCD User Interface

This section illustrates the LCD User Interface screen for viewing the operational state of the RENOZ Energy LV-5KWH100AH battery system.

Section 4.6.1 User Navigation Screens

Figure 14: Logo Splash Screen

Figure 15: Home Screen – Battery Status

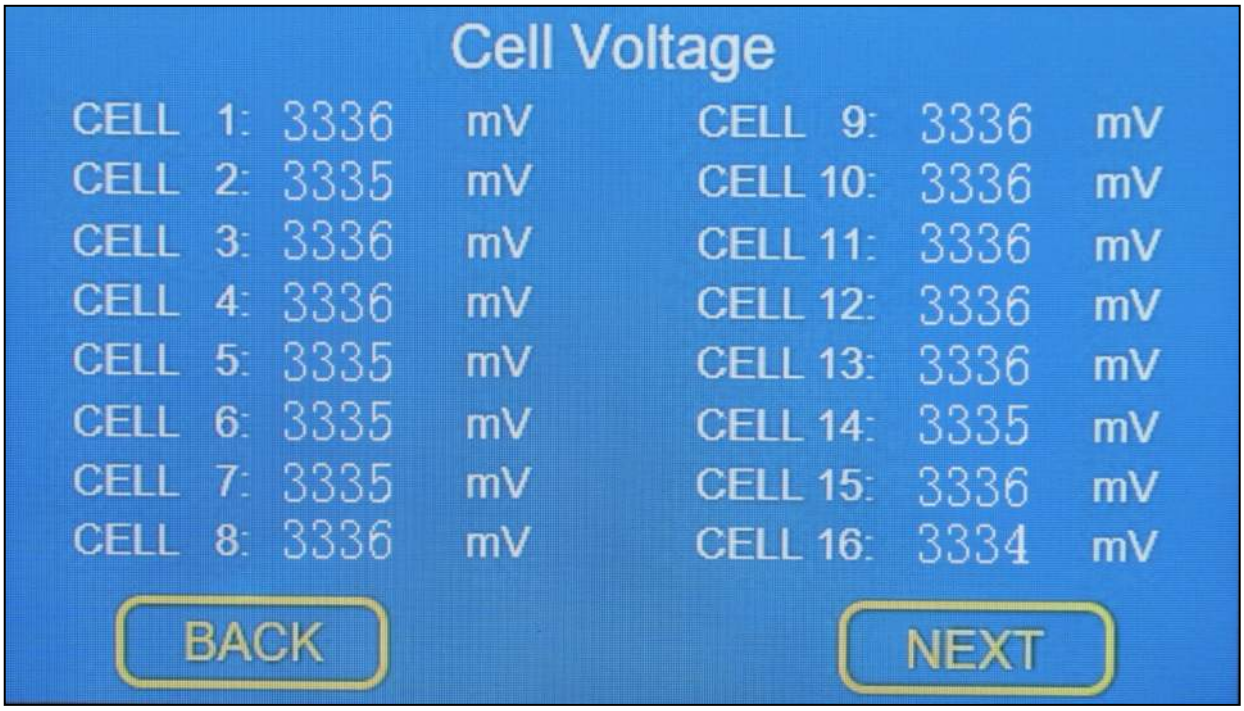


Figure 16: Cell Voltage of Individual Pack

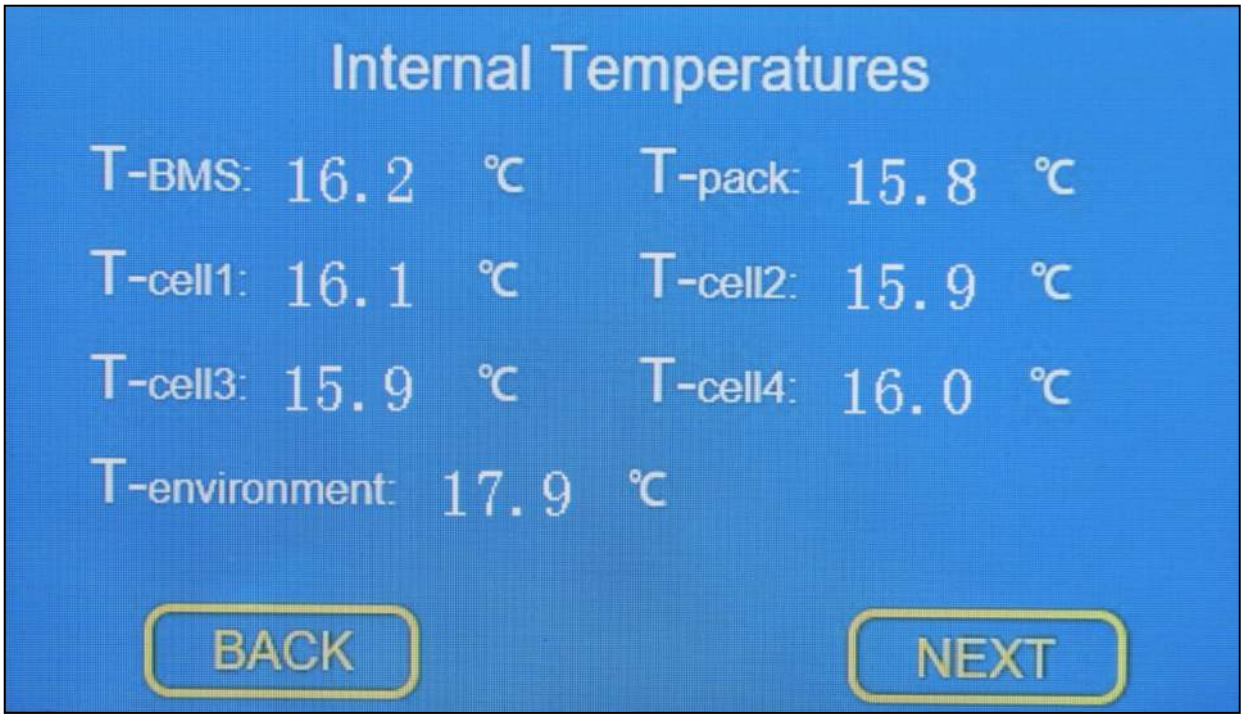


Figure 17: Internal Temperature of Individual Pack

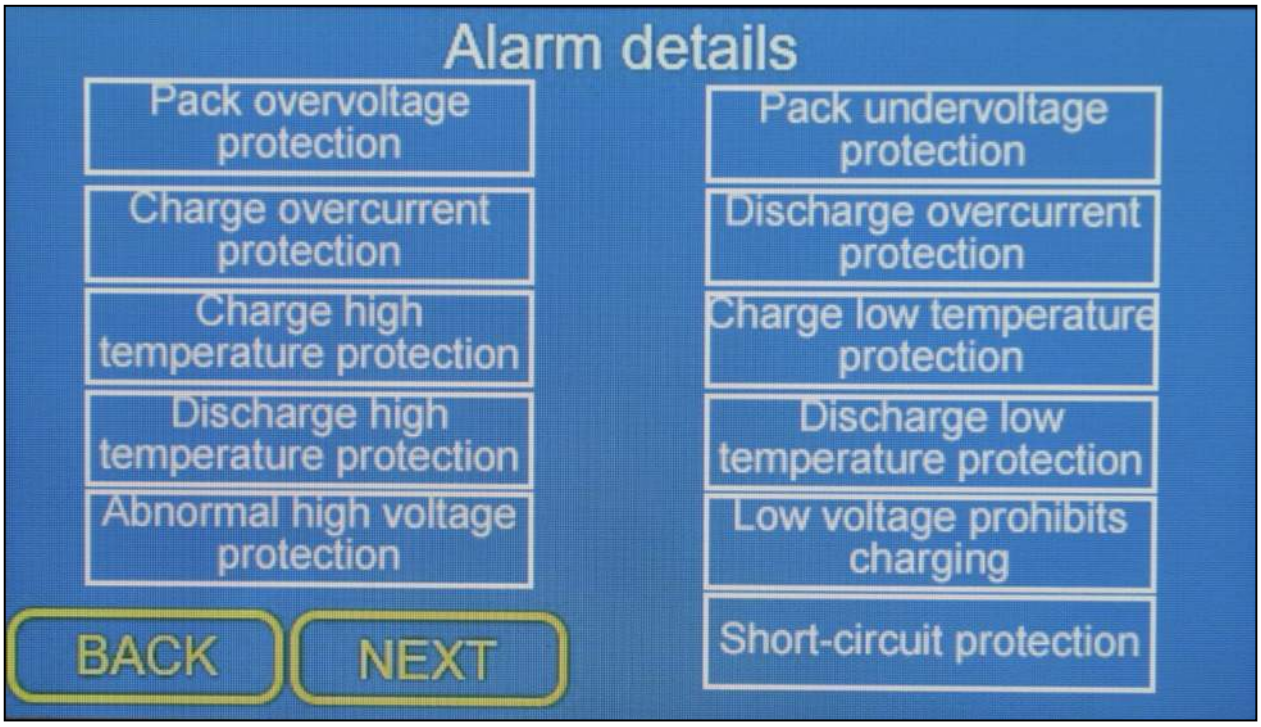


Figure 18: Alarms Overview

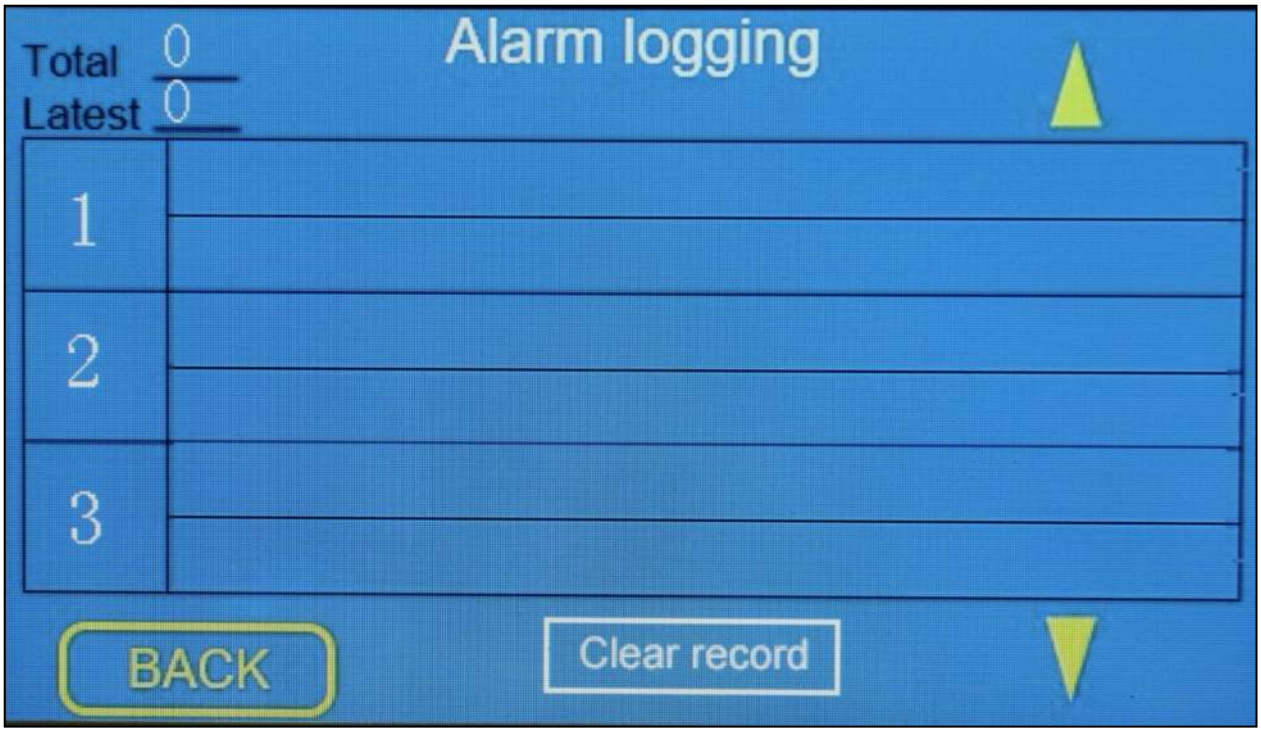


Figure 19: Alarms History

Section 4.6.2 Settings Configuration Screens (For Service and Maintenance Only)

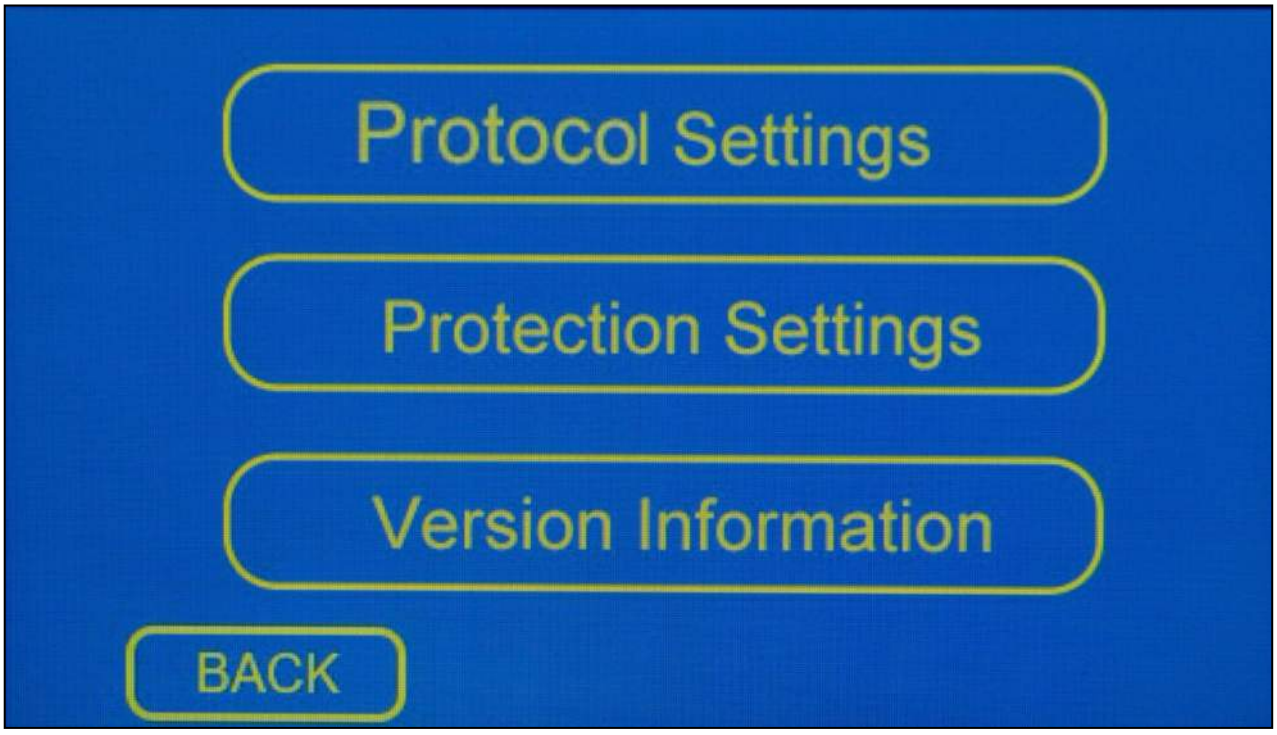


Figure 20: Settings Navigation Page (Passcode Protected)

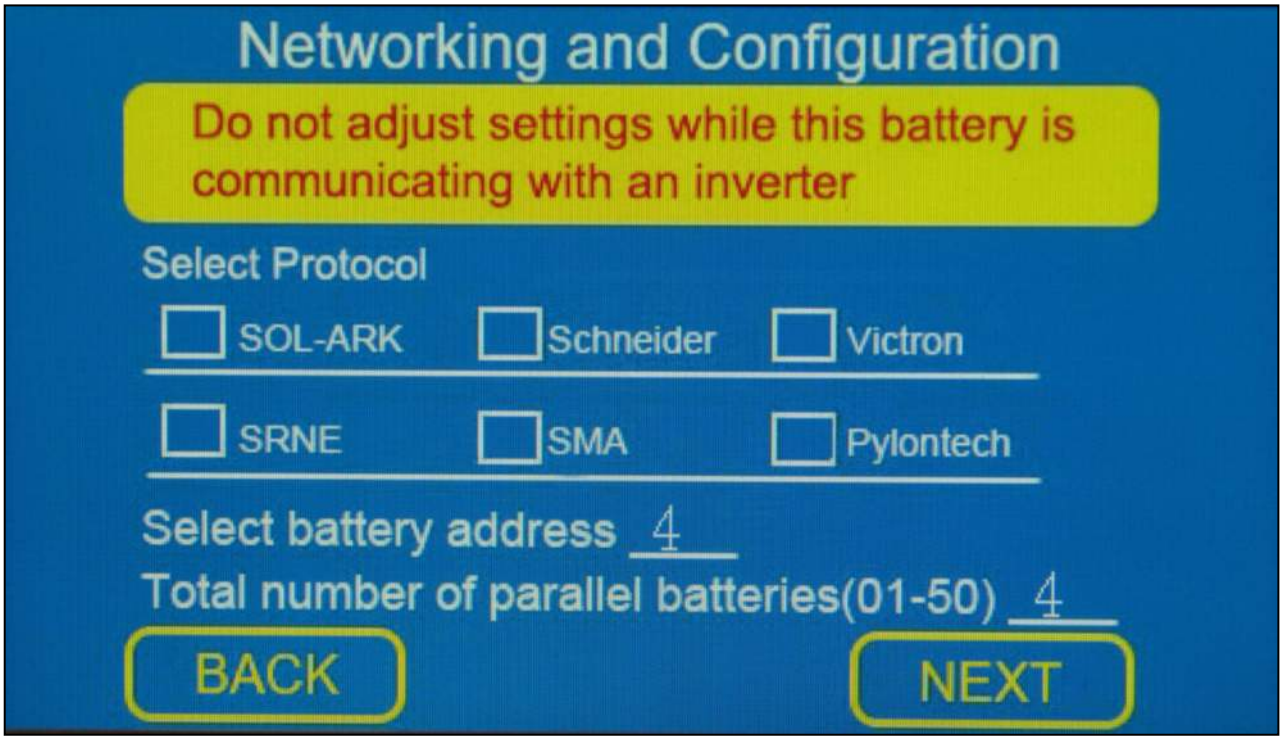


Figure 21: Battery Address Configuration (Passcode Protected)

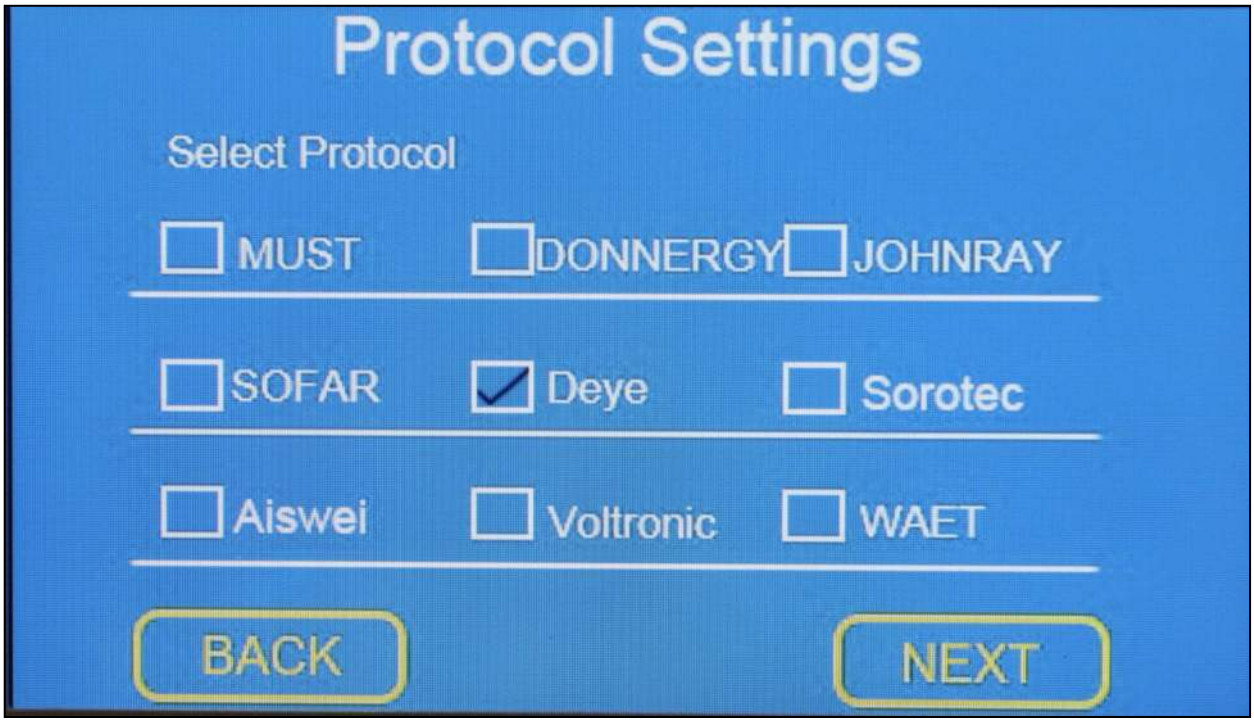


Figure 22: Inverter Protocol Configuration (Passcode Protected)

⚠ Warning

Protection settings are passcode protected with access only by Authorized RENOZ Energy Technicians. Do not attempt to modify protection settings without written authorization by RENOZ Energy.

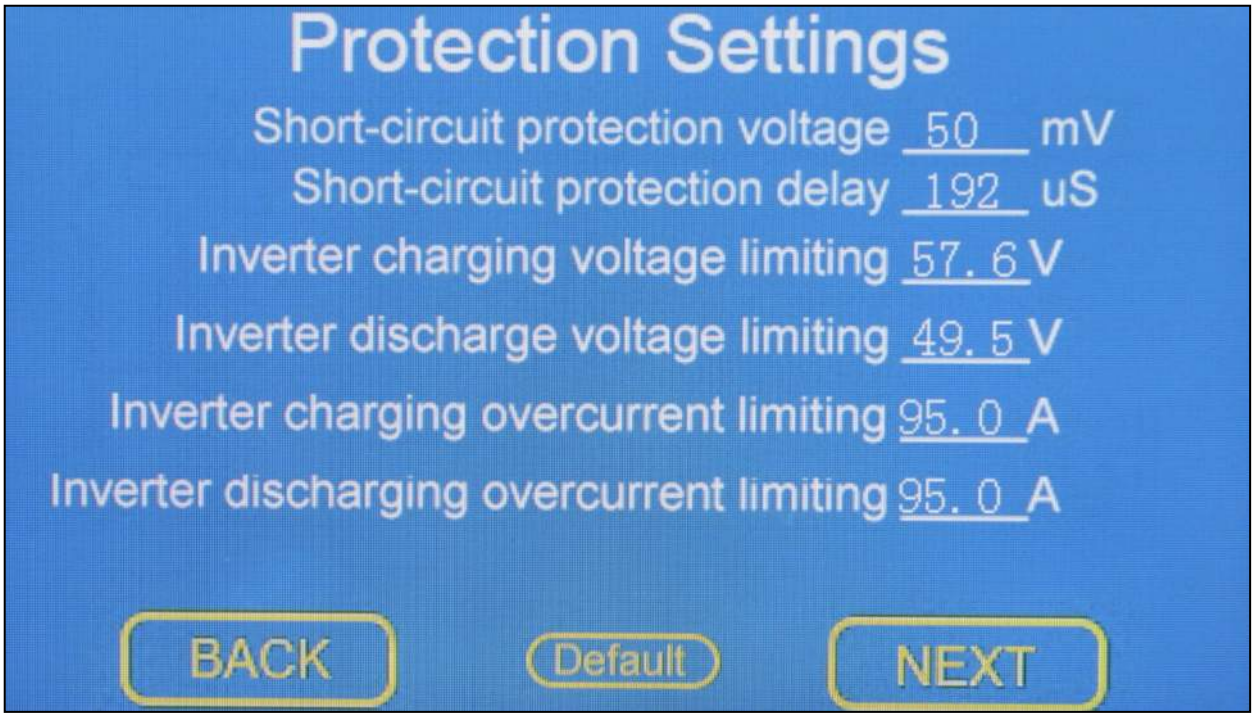


Figure 23: Protection Settings Page 1 (For RENOZ Energy Technicians Only – Passcode Protected)

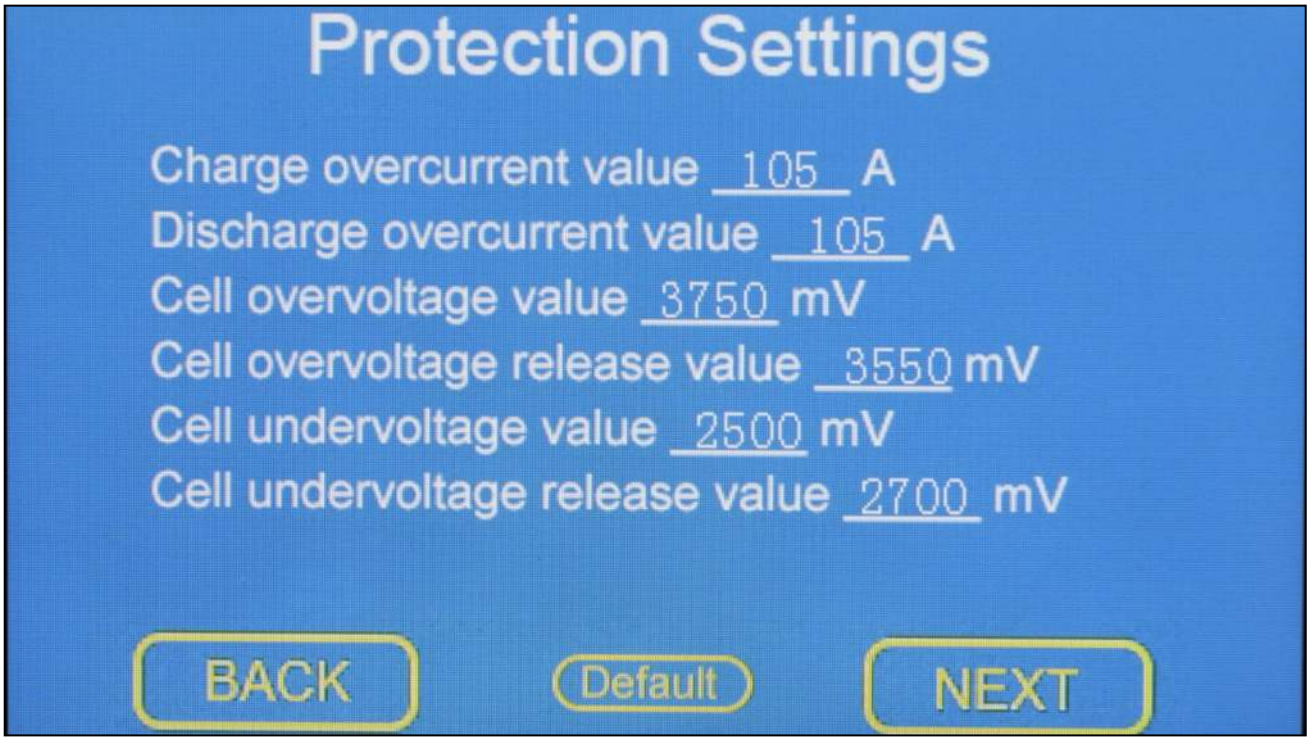


Figure 24: Protection Settings Page 2 (For RENOZ Energy Technicians Only – Passcode Protected)

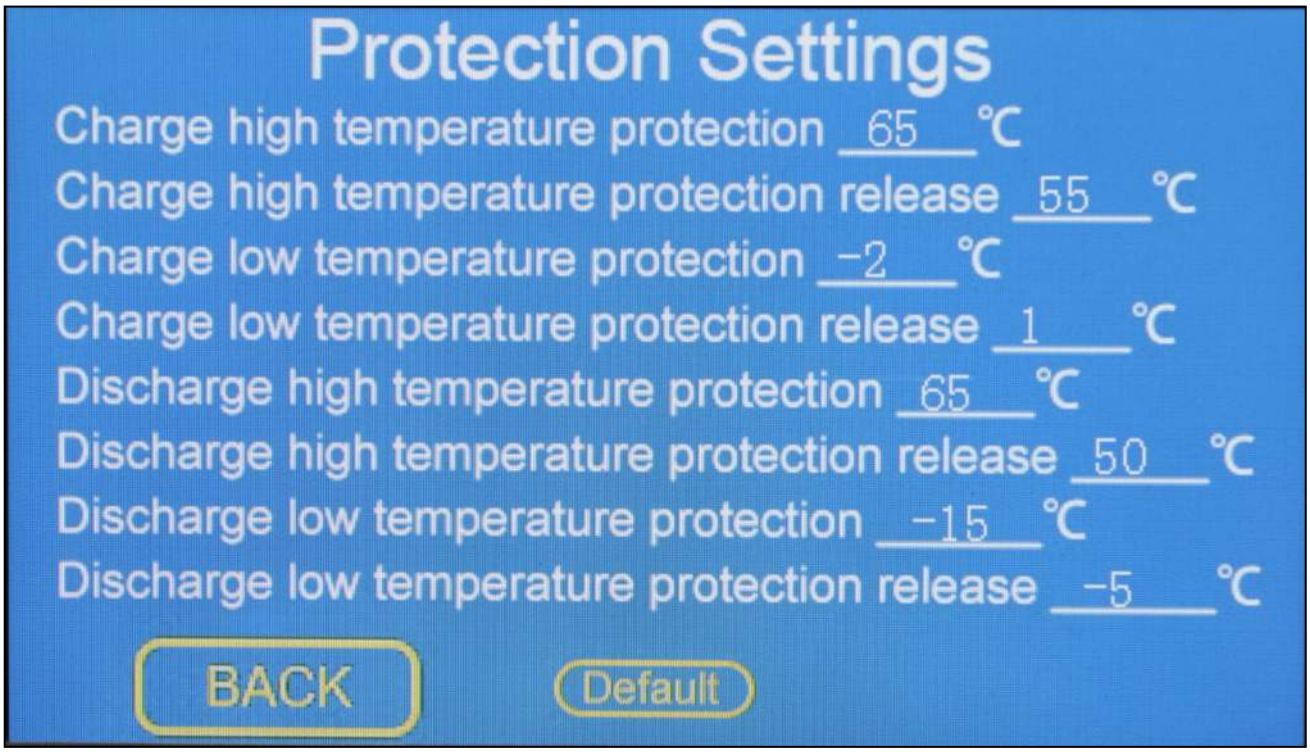


Figure 25: Protection Settings Page 3 (For RENOZ Energy Technicians Only – Passcode Protected)

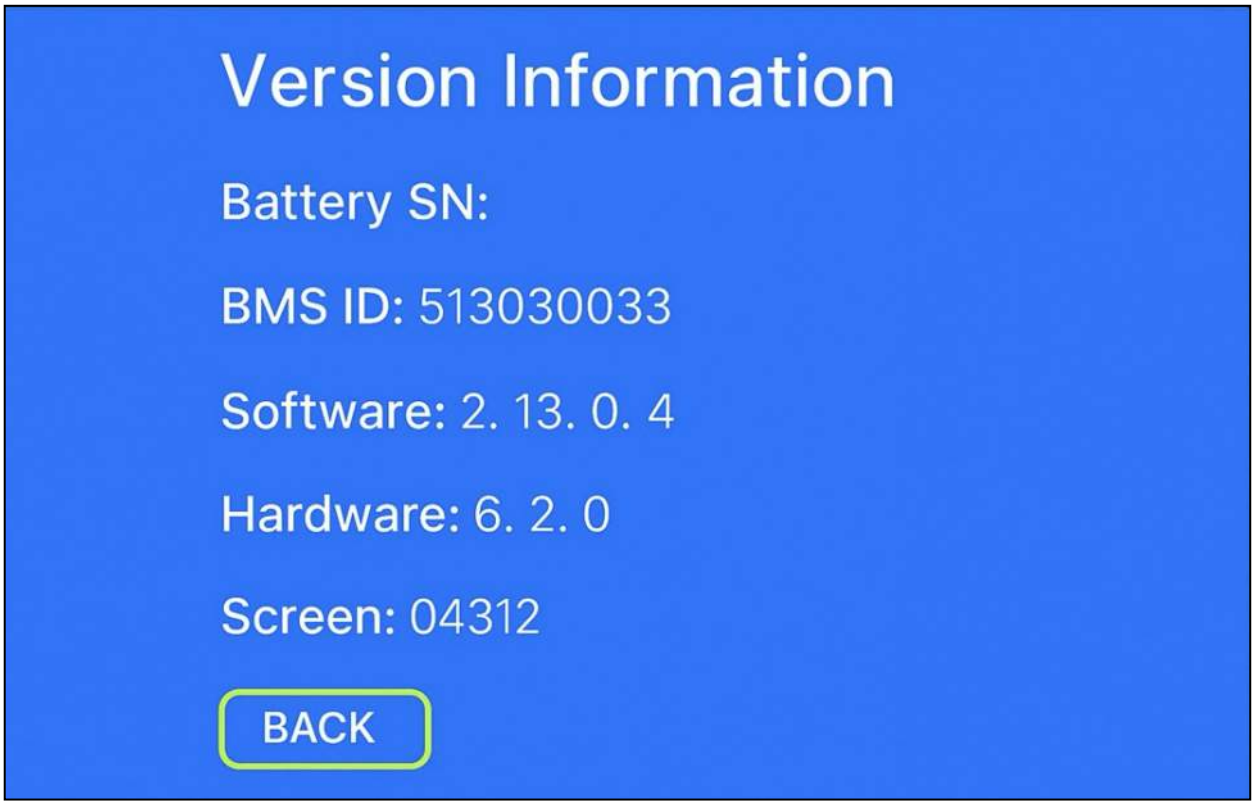


Figure 26: Version Information

Section 5 Preparing for Installation

⚠ Notes
• The RENOZ Energy product warranty applies only when the equipment has been installed properly for its intended use and in accordance with the operating instructions. • Installation must be performed only by competent personnel trained in the relevant international, national, and regional standards and directives. • During actual installation, the selection of installation location should comply with local firefighting, environmental protection regulations, and other relevant laws.

Section 5.1 Unpacking and Inspection

Section 5.1.1 LV-5KWH100AH Box

The Standard LV-5KWH100AH box contains the following items:

- LV-5KWH100AH Battery Module
- LV-5KWH100AH side cover plate and hardware.
- 2.5mm^2 copper wire for PE connection.
- RJ45 inter-module connections cable for RS485-2 port.
- Spare 500A fuse.
- Positive Busbar (orange).
- Negative Busbar (black).
- Terminal Insulation Covers.

Section 5.1.2 Base Caster Box

The base caster box contains the following items:

- Top Cover.
- Base Caster.
- RJ45 ethernet patch cable for CANBUS Connection to Inverter (or for linking parallel battery towers).
- 2.5mm^2 copper wire for PE connection of battery system to inverter.

Section 5.2 Installation Requirements

⚠ Notes
The RENOZ Energy LV-5KWH100AH Battery System is designed for indoor use only.

Section 5.2.1 Indoor Installation Location Requirements

The battery standard AS/NZS 5139:2019 (or later) is the guiding document overseeing installation of the battery system in an indoor environment. When installing the RENOZ Energy LV stackable battery system indoors, consider physical access to the system as well as any future servicing and maintenance work.

The following requirements must be followed when considering the installation location:

1. A solid support surface must be available (e.g., concrete or masonry).
2. The installation location must be inaccessible to children.
3. The installation location must be suitable for the weight and dimensions of the battery system.
4. The installation location must not be exposed to direct solar irradiation.
5. The installation location must not be close to any exposed flame or heat sources.
6. The altitude of the installation location should be less than 2000m.
7. The ambient temperature should be between -20°C and +55°C.
8. The ambient humidity should be between 5-95%

Section 5.2.2 Clearance Requirements

The minimum clearance requirements as per Section 4 AS/NZS 5139:2019 in an indoor setting are as follows:

- Minimum 600 mm horizontally from windows to habitable rooms and/or entrance doorways and minimum 900 mm vertically from windows or egress to habitable rooms.
- Minimum 600 mm horizontal clearance from any appliances not associated with RENOZ Energy LV Stackable battery system. This includes but is not limited to any customer's electrical appliances, that is, refrigerators, TVs, and/or other electrical appliances outside the installation scope of the RENOZ Energy LV Stackable battery system.
- Exceptions to other electrical appliances include electrical switchboards, AC and DC isolators, and power outlets. Associated appliances with the RENOZ Energy LV Stackable battery system are permitted to be located within the clearance zones, including the PV distribution board and solar PV inverters.
- Consider the following dimension recommendations when RENOZ Energy LV Battery System indoors, where the back wall is a habitable room within the allowed dimensions in AS/NZS 5139:2019 as per Figure 27..

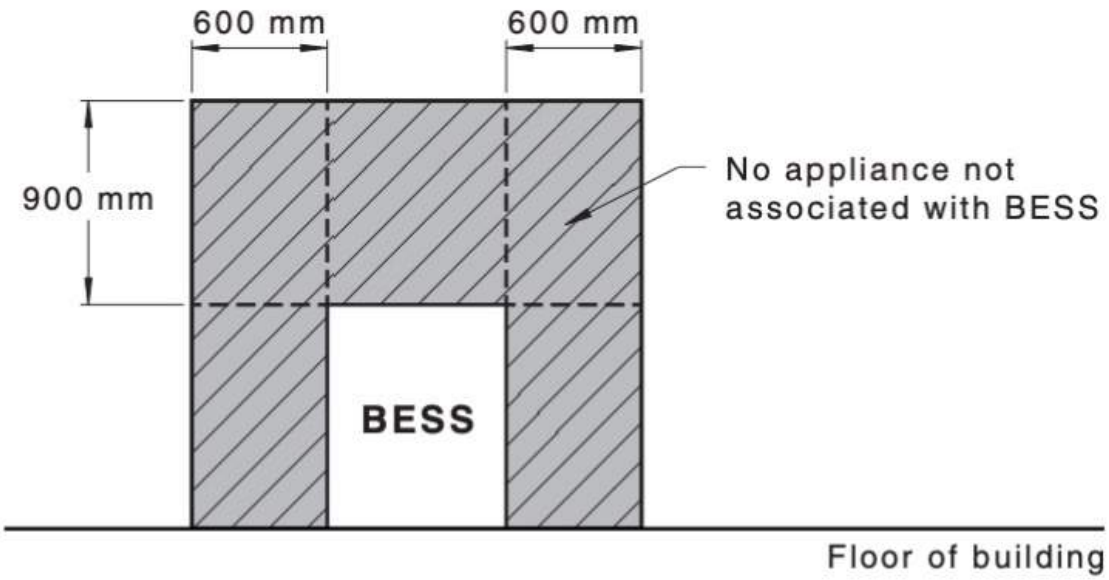


Figure 27: Suggested dimensions and barrier zones for pre-assembled integrated BESS installed on or near a habitable room facing wall (AS/NZS 5139:2019).

⚠ Notes

The relevant local and regional installation standards (AS/NZS 513:2019) take precedence over any requirements stated in this guide.

Section 5.3 Visual Inspection Checklist

Perform visual inspection before installation commissioning of the LV-5KWH100AH Battery System.

Section 5.3.1 Box and Packaging

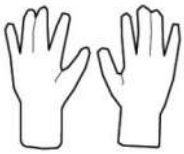
- Package exterior undamaged.
- Correct quantity received.
- No signs of moisture ingress.
- No signs of obvious transportation damage.

Section 5.3.2 LV-5KWH100AH Module Inspection

- Enclosure free of dents or cracks.
- LCD Display undamaged.
- All terminals present and undamaged.
- No loose components rattling inside.
- Serial number label legible
- CE compliance markings present

Section 5.4 Personal Protective Equipment

Insulated Helmet

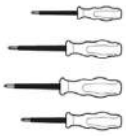


Insulated Gloves

Safety Glasses

Protective Footwear

Section 5.5 Required Tools



Insulated Screwdriver Set

TORX / HEX Driver Set

Multimeter

USB to RS485 adapter

Current Clamp Meter

Knife

Tape Measure

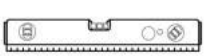
Wire Stripper

Torque Wrench

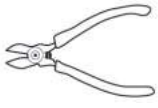
Marker / Pencil

Heat Shrinkable Sleeve

Crimp Tool



Level



Wire Cutter

Section 6 Installation

Section 6.1 Plan the Installation Location

The RENOZ Energy LV-5KWH100AH Battery System is designed for indoor installation and requires adequate clearance for installation, cabling, and airflow.

⚠ Notes
When installing the LV Stackable Battery System indoors, the room must be at least 1.6 m x 1.6 m x 2.4m. This is the minimum room size for any LV-5kWH100AH battery system.

Section 6.1.1 Installation Environment:

- Do not install the equipment in smoky, flammable, or explosive environments.
- Avoid exposing the equipment to direct sunlight, rain, standing water, snow, or dust. Install the equipment in a sheltered location. Take preventive measures in operating areas prone to natural disasters such as floods, mudslides, earthquakes, and typhoons.
- Do not install the equipment in an environment with strong electromagnetic interference.
- Ensure that the temperature and humidity of the installation environment comply with the equipment's requirements.
- The equipment should be installed in an area that is at least 500m away from corrosion sources that may result in salt damage or acid damage (corrosion sources include but are not limited to seaside, thermal power plants, chemical plants, smelters, coal plants, rubber plants, and electroplating plants).

Section 6.1.2 Installation Location

Suitable locations for installation may include garages, storage rooms, a dedicated battery storage room, or a suitably enclosed veranda. Ensure that a smoke detector is installed in any enclosed rooms.

- Do not tilt or overturn the equipment to ensure that it is installed horizontally.
- Do not install the equipment in a place easily touched by children.
- Do not install the equipment in places with fire or damp conditions (including but not limited to kitchen, toilet, shower room, laundry room, etc.).
- As per AZ/NZS 5139:2019, battery systems are restricted for install in habitable rooms. Please keep away from the daily work and living places (including but not limited to living room, bedroom, studio, lounge, study, etc.)
- Do not install the equipment in areas with difficult access (i.e., roof space, attic, basement, etc.).
- Do not install the equipment in mobile scenarios such as recreational vehicles, caravans, maritime vessels, and trains.
- It is recommended install the equipment in a location that is easy to operate, maintain, and access the LCD User Interface.

Section 6.1.3 Mounting Surface

- Do not install the equipment on a flammable installation base.
- The installation base should meet the load-bearing requirement considering the total weight of the battery system. Solid brick, concrete, and stone floors are recommended.
- The surface of the installation base must be smooth, and the installation area must meet the installation space requirements.
- No water or electricity is routed inside the installation base to prevent drilling hazards during equipment installation.

Section 6.1.4 Clearance Requirements for Access and Ventilation

The battery is a convectively cooled product. Air flow space is required around the battery system. A clearance of at least 100mm is required at the rear of the LV-5KWH100AH Battery System for access to the rear circuit breaker and for ventilation. A clearance of at least 40mm is required on each side of the battery system, with 150mm required from the top to any surrounding non-battery system related items.

If installation in proximity to a heat source (such as water heater, heat pump, etc.) is unavoidable, ensure that there is at least 600mm clearance between the LV Stackable battery system and the heat source. Refer to AS/NZS 5139:2019 for more specific clearance requirements.

For floor installation, we recommend that the number of the stacked battery modules is no higher than eight (8). If there are more than eight (8), please install them in two separate towers, and the spacing between towers should be greater than or equal to 300mm.

Additional installation requirements are detailed in Section 5.

⚠ Notes
When selecting locations, consider any future complications from the selected installation location of the BESS and requirements as per AS/NZS 5139:2019 (or later). The governing local and regional standards take precedence to any requirements stated within this document. Any possible damage that can be caused by a vehicle if installed in a carport or garage may be mitigated by installation of a bollard or equivalent protection.

Section 6.2 Installation of LV-5KWH100AH Battery System Tower

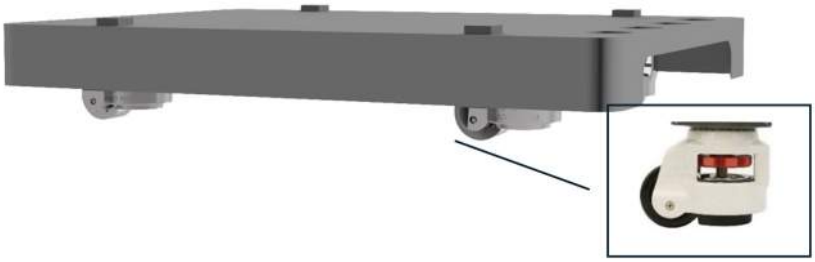
The RENOZ Energy LV-5kWH100AH LV Stackable battery system is a floor mounted, stackable battery system. The following procedure describes the installation process for the LV Stackable battery system.

Section 6.2.1 Procedure

Step 1. Set the base

- Place the bottom base on stable and level ground minimum of 100mm away from the wall. This is to ensure accessibility to the circuit breaker on the rear-panel.
- Lift the casters off the ground by winding the feet down to the ground. This will lock the casters to prevent movement.
- Use a spirit level to ensure that the base is sitting level.
- Adjust the height of individual feet to ensure the base is sitting stable and level.

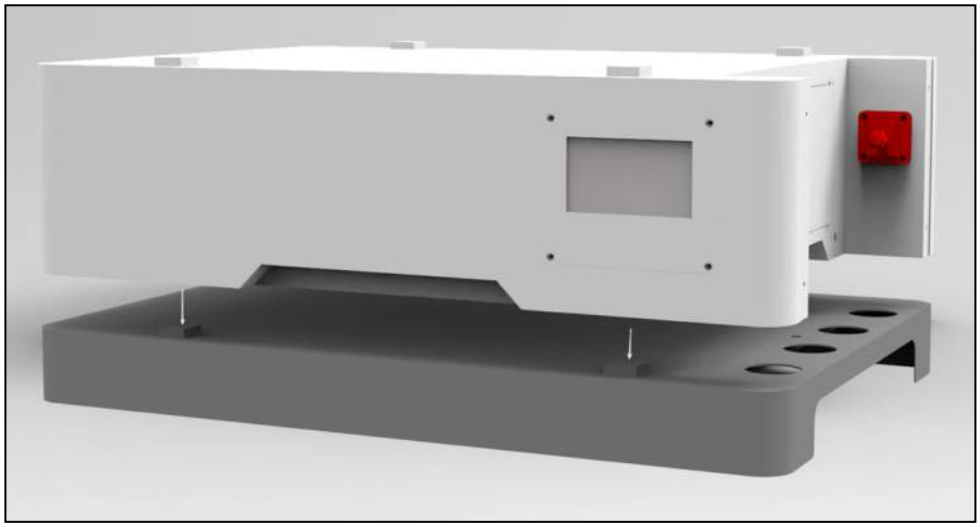
LV-5KWH100AH Bottom Base and Caster Wheels



Step 2. Stack the first battery module

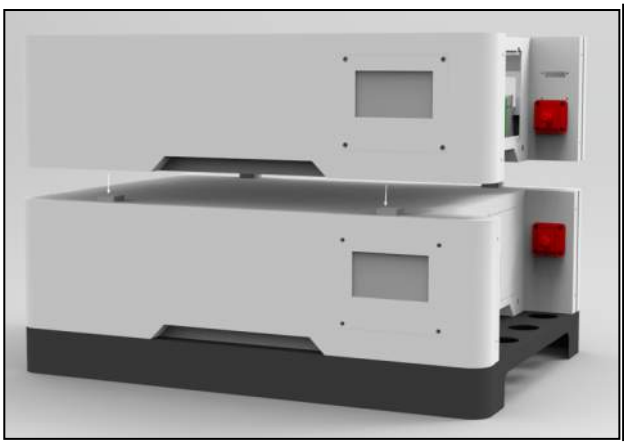
- Stack the first battery pack module on top of the bottom base, ensuring that the fixing holes are aligned to with the docking pins.

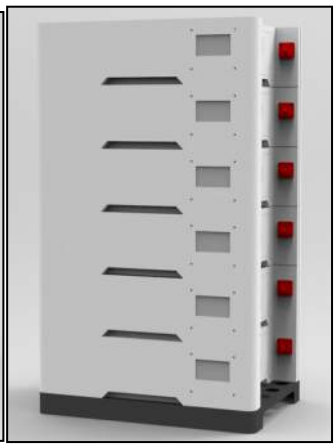
Align the fixing holes of the first battery module and docking pins of the bottom base.



Step 3. Repeat stacking of the battery modules

- For parallel configurations, stack additional batteries on top of the first battery module, ensuring that the slots on the bottom of the battery align with the docking pins of the battery below.
- Properly installed, there should be no gap between the stacked batteries modules.
- Repeat stacking of the battery modules until the desired battery system capacity is met.
- No more than eight (8) battery modules are to be stacked per tower.





Step 4. Adjustment of location

- Once the batteries are stacked to the desired configuration, if adjustment of the final location is required, unlock the base casters and safely shift the battery system to the permanent position.
- Re-lock the casters so that the batteries will not move when accidentally bumped or pushed.

Section 6.3 Protective Earthing

Protective Earth (PE) is required to protect against electric shock and sparks due to current leakage.

⚠ Warning

A Protective Earth conductor is required for safe operation of the LV-5KWH100AH Battery System. Do not operate the battery in the absence of a properly installed Protective Earth conductor.

Ensure that the battery is connected permanently to the PE. Before operating the battery, check the electrical connection to ensure that it is sufficiently grounded.

⚠ Notes

The earthing of this battery system must comply with AS/NZS 3000:2018 and AS/NZS 5139:2019, as determined by the installing electrician based on the system's design and installation requirements. The cross-section of the grounding terminal must comply with locally applicable standards and directives.

Section 6.3.1 Required Materials:

To assist the installation electrician, all LV-5KWH100AH packs are pre-fitted with a 4.8mm male dual-spade connectors near the Red (+) battery terminal.

The battery castor base is also pre-fitted with a 4.8mm male dual-spade connector.

- A length of pre-cut 2.5 mm^2 copper wire, crimped with female 4.8mm spade connectors, is supplied with each LV-5KWH100AH battery pack.
- A 5m length of pre-crimped 2.5mm^2 copper wire is also supplied in the Battery Castor Base carton for connecting the Master LV-5KWH100AH module to the PE terminal at the Inverter.

Section 6.3.2 Procedure

Step 1. Ensure that all LV-5KWH100AH battery modules are switched off.

- Ensure that the LCD screen is unresponsive to touch.
- If the BMS is on, press the red power button to turn off the BMS and wait 5 seconds.
- Repeat for all battery modules.

Step 2. Locate the PE terminal on the Master Battery Module.

Step 3. Connect the PE from the master battery module to the slave module below.

- Attach the pre-cut 2.5mm^2 copper wire to the dual-spade connector on the Master battery module.
- Connect the other end of the pre-cut PE wire from the dual-spade connector on the **Master** battery module pack, to the dual-spade connector of the **Slave** battery module below.

Step 4. Repeat for all remaining slave LV-5KWH100AH battery modules

- Connect the pre-cut PE wire from the dual-spade connector on the PE terminal and dual-spade connector above to the dual-spade connector / PE terminal of the battery module below.

Step 5. Attach the pre-cut 2.5mm^2 copper wire to the battery castor base

- For the bottom-most LV-5KWH100AH battery module, connect the pre-cut PE wire from the dual-spade connector / PE terminal to the PE terminal (noted with Earth markings) on the battery castor base.

Step 6. Connect the PE of the battery system to the Inverter

- Connect a length of 2.5mm^2 copper wire from the **Master** (top) LV-5KWH100AH battery module to the PE terminal of the Inverter.
- The Installation electrician will need to cut the copper wire to length and terminate with a suitable connector to pair with the Inverter PE terminal.

Section 6.4 Installing the Busbars Connections

Busbars are required for parallel connection of the LV-5KWH100AH Battery Modules. Note the following:

- The top LV-5KWH100AH Battery Module, closest to the inverter is considered the ***Master*** module.
- Each LV-5KWH100AH battery module beneath the Master is a ***Slave*** module.

⚠ Warning

LV-5KWH100AH battery modules must be connected in parallel.

Before installing the busbar connections, ensure that the LV-5KWH100AH Battery Modules are switched off. Check that the battery module circuit breakers are off (down position) to ensure that the battery terminals are de-energized. The LED indicators should be off and LCD screen should not respond to touch. Refer to Section 4.2 for the shutdown procedure

⚠ Caution

The busbar must be in direct contact with the battery terminal. Do not use washers between busbars and battery terminals.

Use insulated tools to reduce the risk of potential short-circuit during installation or maintenance procedures

Section 6.4.1 Procedure

Step 1. Connect the negative terminals of the master battery module to the slave battery modules.

- Connect the negative (black) terminals of the master battery and the slave batteries using the provided black insulated busbars.

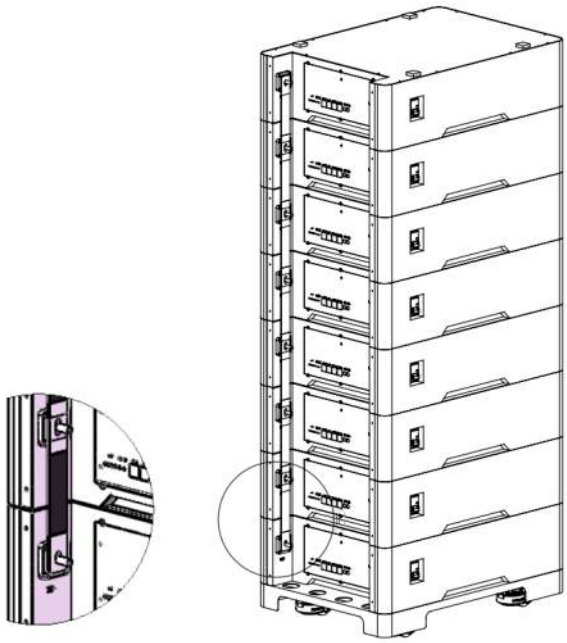


Figure 28: Negative Insulated Busbar Connection

Step 2. Secure the negative insulated busbars.

- Use the provided M8 nuts and washers to secure the negative insulated busbars.
- Tighten M8 nuts with a torque wrench to 20-25 Nm.

Step 3. Connect the positive terminals of the master battery module to the slave battery modules.

- Connect the positive (orange) terminals of the master and slave battery modules using the provided orange insulated bus bars.

Step 4. Secure the positive insulated busbars.

- Use the provided M8 nuts and washers to secure the positive insulated busbars.
- Tighten the M8 nuts with a torque wrench to 20-25 Nm.

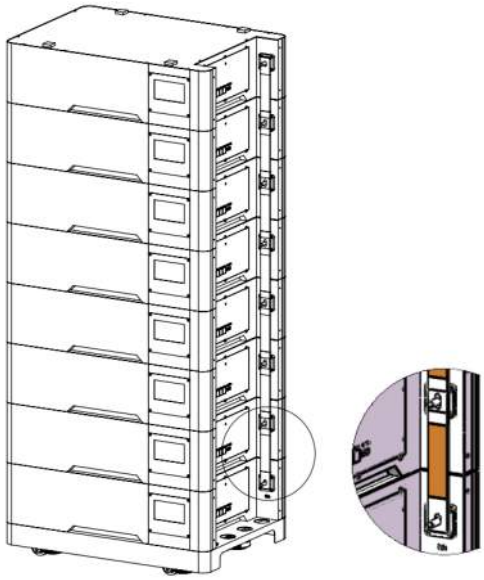


Figure 29: Positive Insulated Busbar Connection

Step 5. Attach the terminal insulation covers

- Attach the provided terminal insulation covers to the busbar terminals.
- Secure the covers using the plastic nuts.
- Note: Take care not to overtighten the plastic nuts or they may break.

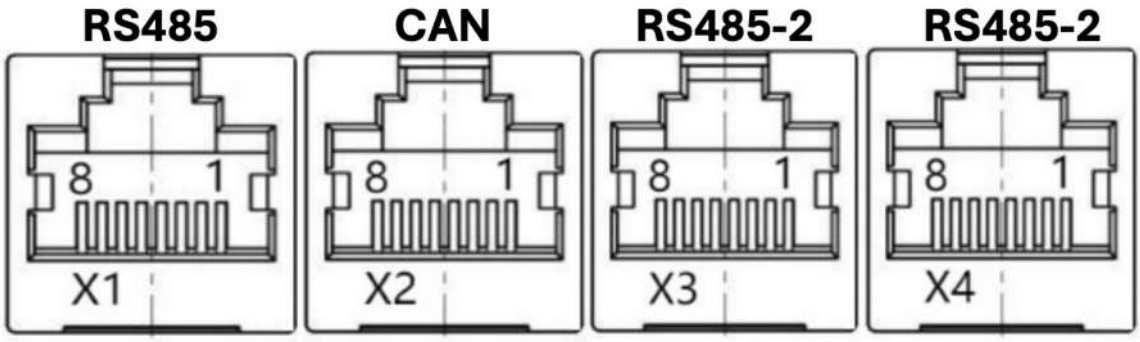
⚠ Notes

It is recommended not to install the side cover plates and top cover until commissioning of the LV-5KWH100AH Battery System is completed.

Section 6.5 Communication Cable Connections

⚠ Caution
Ensure that Port X3 of the **Master** battery module is left open.

For communication between paralleled LV-5KWH100AH battery modules, the provided T568B ethernet cable must be used. Ports X3 and X4 are used solely for paralleled communications between paralleled modules. Ensure not to use ports X1 and X2 for parallel communications.



Section 6.5.1 Procedure

Step 1. Connect the RJ45 connector to X4 port of the master battery

- Using the provided T568B patch cables, insert the RJ45 connector of one end of the T568B network cable into the fourth port (X4) of the **Master** battery.

Step 2. Connect the RJ45 connector to the X3 port of the slave battery

- Insert the RJ45 connector at the other end of the T568B network cable into the third port (X3) of the second battery.

Step 3. Repeat for subsequent modules

- Repeat this process for the corresponding LV-5KWH100AH battery modules until all modules are connected.
- No termination is required for Port (X4) of the last battery module.
- Refer to Figure 30: Communications Connection Diagram on the following page.

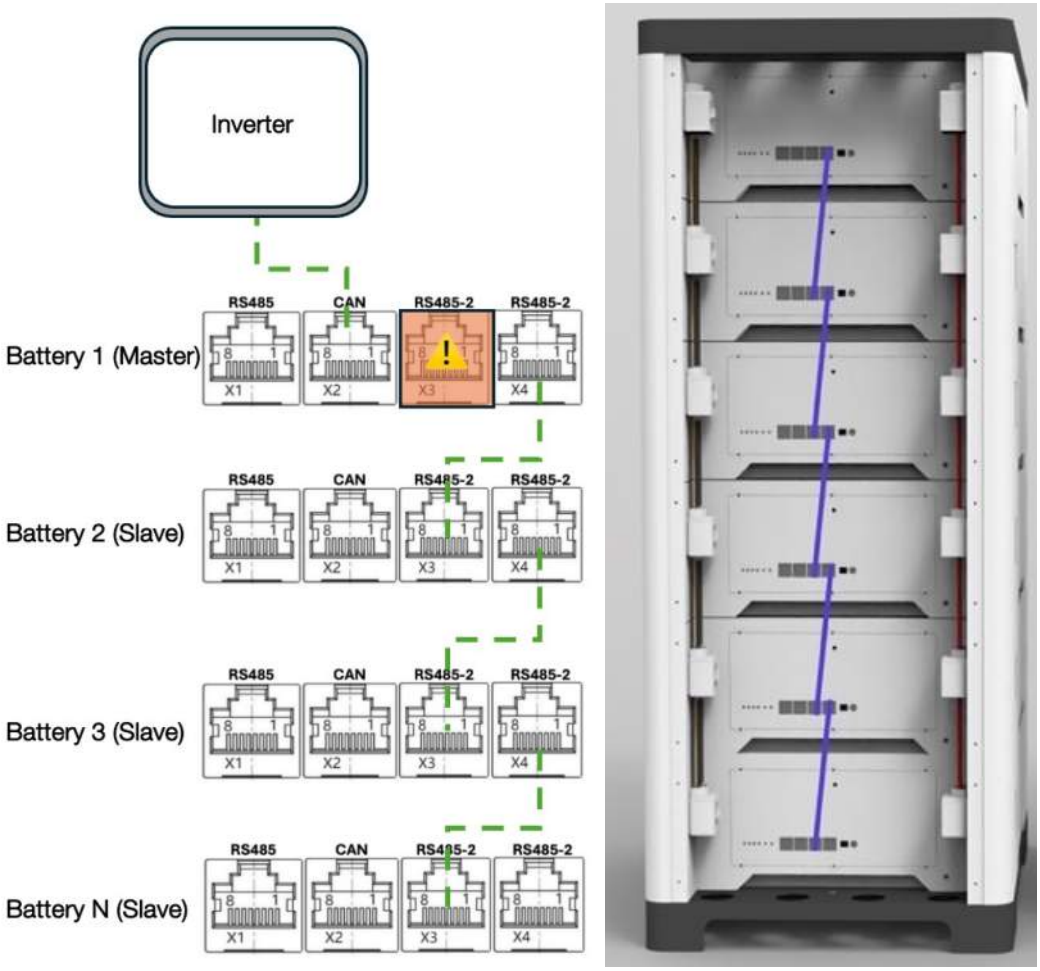


Figure 30: Communications Connection Diagram

Section 6.6 Inverter DC Connection

DC cabling is required for connection of the **Master** battery module to a compatible inverter.

⚠ Warning

Ensure that the rear circuit breaker of all battery modules is in the OFF position

Ensure that the Battery BMS are also powered OFF.

⚠ Caution

The RENOZ Energy LV-5KWH100 is designed for use with an external inverter. For a complete and up-to-date list of compatible models, please refer to the official 'Inverter Compatibility Statement' document or the RENOZ Energy website at https://renoz.energy

For Australian installations, an external circuit breaker / isolator is required between the LV-5KWH100AH battery system and inverter for disconnection and protection purposes. Refer to the relevant local or regional standards for isolation of pre-assembled battery systems from power conversion equipment.

After installation of the busbars, DC cabling will need to be prepared for connection of the battery system to the inverter.

To minimise electrical losses, it is essential to use correctly sized cables for connecting the LV-5KWH100AH to a matching PCE / Inverter. The following table details the recommended minimum wire gauges required for different sized battery system capacities (based on a 2.5-metre cable run).

Table 8: Recommended Minimum Wire Gauge for DC Cabling

Number of Battery Modules	Max DC Current (A)	Cable Cross-Section (mm^2)
1	95	16
2	210	35
3	300	50
4	420	70
5	570	95
6	570	95
7	720	120
8	720	120

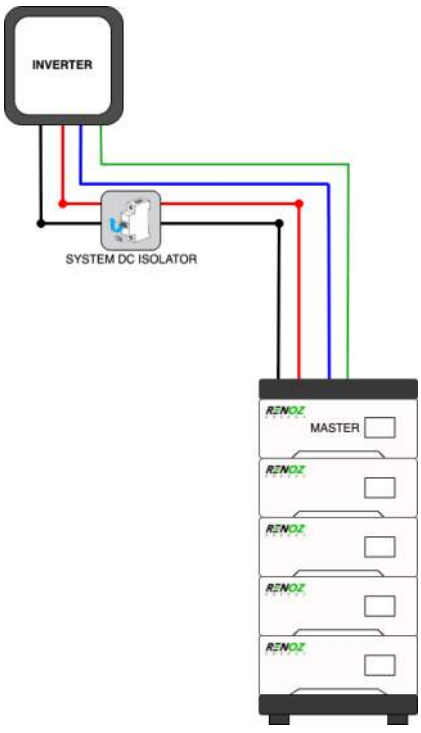


Figure 31: Single Tower Connection to Inverter

In all cases, the size of the required DC cabling will be dependent on the maximum capacity of the Inverter / PCE, rather than the maximum DC output capacity of the batteries.

For example:

- A 15kW inverter will be drawing slightly over 300A DC at maximum power.
- This means a 70mm^2 cable will be adequately sized for maximum power transfer.
- To deliver the required power, you would need to have a minimum of 4 battery packs connected in parallel as a system, to support the 15kW load capacity – otherwise there is a risk that the batteries will be overloaded and activate the in-built protection systems.

Section 6.6.1 Required Materials:

1. DC Cabling

- One set of red and black conductors for positive and negative DC connection from each tower to dedicated DC isolator / circuit breaker.
- One set of red and black conductors for positive and negative DC connection from each DC isolator / circuit breaker to PCE / inverter.
- Depending on the total LV-5KWH100AH battery system capacity, use Table 8 above or the relevant local and regional standards to determine the minimum wire gauge to be used for the DC cabling.
- Prepare LV-5KWH100AH DC cabling with crimped copper lugs suitable for M8 terminal studs.

2. 2-Pole DC Isolator / Circuit Breaker

- For Australian installations, isolation of the LV-5KWH100AH battery system is required using a dedicated 2-pole DC isolator or circuit breaker connected between the positive and negative output terminals of the main LV-5kWH100AH battery module and the PCE / inverter.

3. Other materials

- Four (4) sets of Red and Black insulated heat shrink tubing.
- Eight (8) copper cable lugs.

Section 6.6.2 Procedure

Step 1. Identify suitable location for isolation equipment between battery system and inverter.

- Identify a suitable location for the isolation equipment between the pre-assembled battery system and power conversion equipment (inverter).

Step 2. Install external circuit breaker / isolator

- Install a suitable DC isolator between the battery system and power conversion equipment as per AS/NZS 5139:2019 or relevant local and regional standards.

Step 3. Measure length of LV-5KWH100AH battery system to external circuit breaker / isolator

- Measure the distance between the master battery pack and the external circuit breaker, ensuring there is sufficient length to cater for cable radius of curvature as well as the size of crimped lug connectors.

Step 4. Measure length of external circuit breaker / isolator to PCE.

- Measure the distance between the external circuit breaker and the PCE / inverter, ensuring there is sufficient length to cater for cable radius of curvature as well as the size of crimped lug connectors.

Step 5. Cut DC cabling lengths

- Cut the Red and Black DC cabling precisely based on the measurements at Step 3 and Step 4.

Step 6. Strip DC cabling to match depth of lug barrel

- Using a rotary cable stripper, at each end of the Red and Black cables, remove a length of insulation that matches the depth of the lug barrel such that all the copper strands can fit correctly inside the lug barrel.

Step 7. Crimp cable lugs

- Working on one length of cable at a time, insert all the copper wire strands into one of the cable lugs; then carefully crimp the lug at multiple locations along the barrel to ensure a strong, low-resistance connection.

Step 8. Repeat crimping for remaining seven (7) cable lugs.

Step 9. Apply heat shrink

- Slide the Red heat shrink tubing over the two lugs at both ends of each of the red cables, then shrink the tubing using a heat gun for a neat finish.
- Repeat for the Black cable.

Step 10. Connect black DC conductor from negative battery output terminal to external DC isolator

- Connect one set of black, negative DC cabling from the negative output terminal of the Master battery module to the input terminal of the external circuit breaker.
- Carefully tighten the M8 nut to 20 to 25Nm.

Step 11. Connect red DC conductor from positive battery output terminal to external DC isolator

- Connect one set of red, positive DC cabling from the positive output terminal of the Master battery module to the other input terminal of the external circuit breaker.
- Carefully tighten the M8 nut to 20 to 25Nm.

Step 12. Connect black DC conductor from negative circuit breaker output terminal to PCE input.

- Ensure that the Battery Circuit Breaker is in the OFF position
- Ensure that the Battery BMS is also powered OFF.

- Connect one set of black DC cabling from the negative output terminal of the external circuit breaker to the negative input terminal of the PCE / inverter.
- Carefully tighten the M8 nut to 20 to 25Nm.

Step 13. Connect red DC conductor from positive circuit breaker output terminal to PCE input.

- Connect one set of red DC cabling from the positive output terminal of the external circuit breaker to the positive input terminal of the PCE / inverter.
- Carefully tighten the M8 nut to 20 to 25Nm.

Step 14. Confirm Cabling is Secure.

- Lightly tug on all cabling made to ensure that connections are secured.

Section 6.7 Connection of Multiple Battery Towers (if required)

The recommended maximum number of modules in a single tower is eight (8) battery modules. For systems larger than eight (8) battery modules, up to two battery towers can be configured.

For connection of multiple towers, additional DC connections and communications cabling, and dedicated external 2-pole DC isolators will be required to connect the master battery tower to the subsequent tower.

⚠ Warning

Before connecting multiple battery towers, ensure that the LV-5KWH100AH Battery Modules are switched off and not energized. The LED indicators should be off and LCD screen should not respond to touch.

For Australian installations, isolation of EACH LV-5KWH100AH battery tower is required using a dedicated 2-pole DC isolator or circuit breaker connected to the positive and negative output terminals of the main LV-5kWH100AH battery module. The Isolator must simultaneously disconnect both positive and negative conductors for safe isolation of each stack. Each tower must be individually isolatable from the rest of the system for safe maintenance and inspection.

Ensure that the DC isolator / circuit breaker is sized correctly for the inverter power rating and battery system sizing following the relevant local and regional standards. Note that:

- The dedicated DC isolator must be located within 2 metres from each battery tower.
- An additional DC isolator / circuit breaker is required adjacent to the PCE if the battery system and PCE are separated by ≥3 metres.

⚠ Notes

The maximum distance between two battery towers should not exceed 1 metre.

Section 6.7.1 Required Materials:

1. DC Cabling

- One set of red and black conductors for positive and negative DC connection from each tower to dedicated DC isolator / circuit breaker.
- One set of red and black conductors for positive and negative DC connection from each DC isolator / circuit breaker to PCE / inverter.
- Prepare LV-5KWH100AH DC cabling with crimped copper lugs suitable for M8 terminal studs.

2. Communications Cabling.

- ≤1 metre length of T568B straight-through patch cable for inter-tower communications.

3. Dedicated, 2-pole DC isolator / circuit breaker (1 per battery tower).

- 2-pole, DC-rated, ≥ system voltage & current.

4. System, 2-pole DC isolator / circuit breaker (1 per total system).

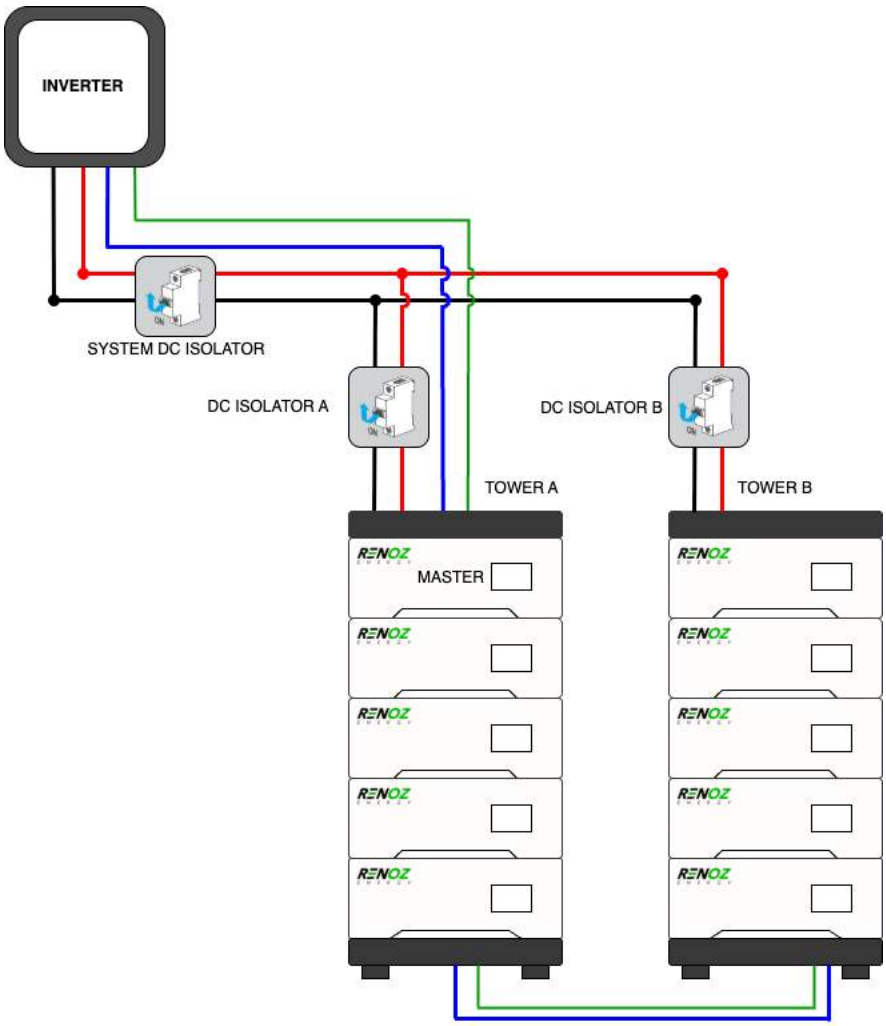


Figure 32: Connection of Multiple LV-5KWH100AH Battery Towers

Section 6.7.2 Procedure

Step 1. Identify Tower A and Tower B

- Identify Tower A – Battery Tower closest to PCE / Inverter.
- Identify Tower B – Battery Tower furthest from PCE / Inverter.

Step 2. Connect the negative output terminals of Tower A to DC Isolator A

- Connect the prepared black DC cabling from the negative battery output terminal of the top-most battery module of Tower A to the input side of dedicated DC Isolator A (-).

Step 3. Connect the positive output terminals of Tower A to DC Isolator A

- Connect the prepared red DC cabling from the positive battery output terminal of the top-most battery module of Tower A to the input side of dedicated DC Isolator A (+).

Step 4. Connect the DC cabling of Tower B to DC Isolator B

- Repeat Steps 2-3 for Tower B using DC Isolator B.

Step 5. Connect output terminals of dedicated DC Isolators to system DC isolator

- Run positive & negative conductors from the output side of each dedicated DC isolator to the input of the system DC Isolator.

Step 6. Connect output terminals of system DC isolator to input terminal of PCE / inverter.

- Run positive & negative conductors from the output of system DC isolator to the input of the PCE / Inverter

Step 7. Connect the communications between the battery towers

- Using the T568B ethernet patch cable (blue), connect the fourth port (X4) of the last (bottom) battery in the Tower A (closest to PCE) to the third port (X3) of the last (bottom) battery of Tower B.

Step 8. Connect protective earth (PE) between the battery towers.

- Using the provided PE cabling (green) in the top and bottom-base shipper carton, connect the PE cabling from Tower A to Tower B via the PE terminals.

Step 9. Connect the PE of the master battery module to the Inverter

- Connect a length of 2.5mm^2 copper wire from the **Master** (top) LV-5KWH100AH battery module to the PE terminal of the Inverter.
- The Installation electrician will need to cut the copper wire to length and terminate with a suitable connector to pair with the Inverter PE terminal.

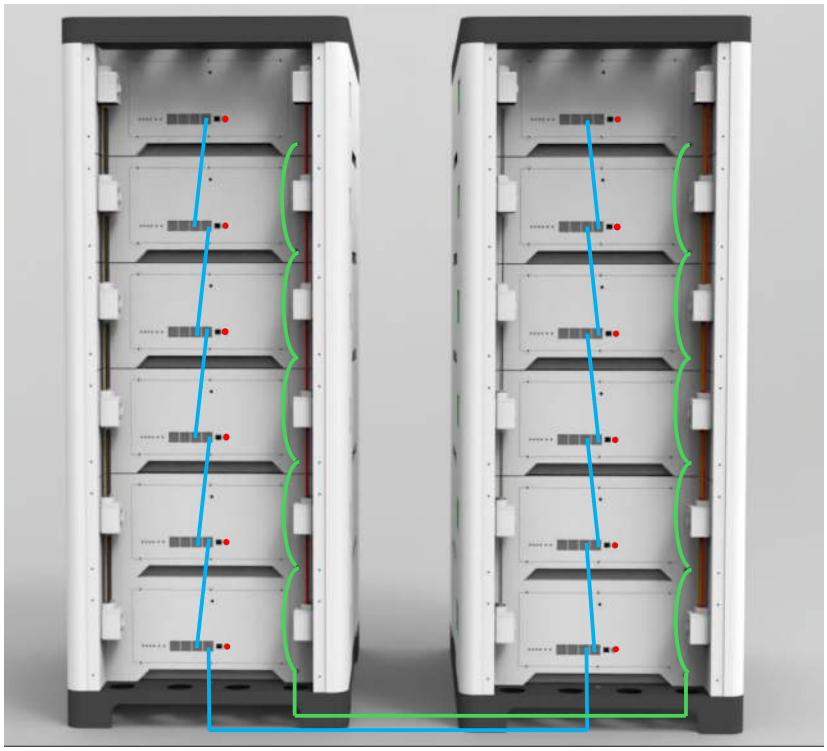


Figure 33: Communications and PE Connections for Multiple Towers

Section 6.8 Data Cable Connection Between the Master and Inverter

The RENOZ Energy LV-5KWH100AH Battery System is designed for use with an external inverter. For a complete and up-to-date list of compatible models, please refer to the official 'Inverter Compatibility Statement' document.

Section 6.8.1 Data Cable Connection Between the Master and Inverter

The cable length and quality affect the quality of the signal. Observe the following cable requirements:

- Cable Category: CAT5, CAT5E or higher
- Plug Type: Metal Shielded RJ45 of CAT5, CAT5E or higher.
- Shielding: Yes
- Straight Through Wired Cable (T568B Standard).
- Maximum Cable Length: 10m

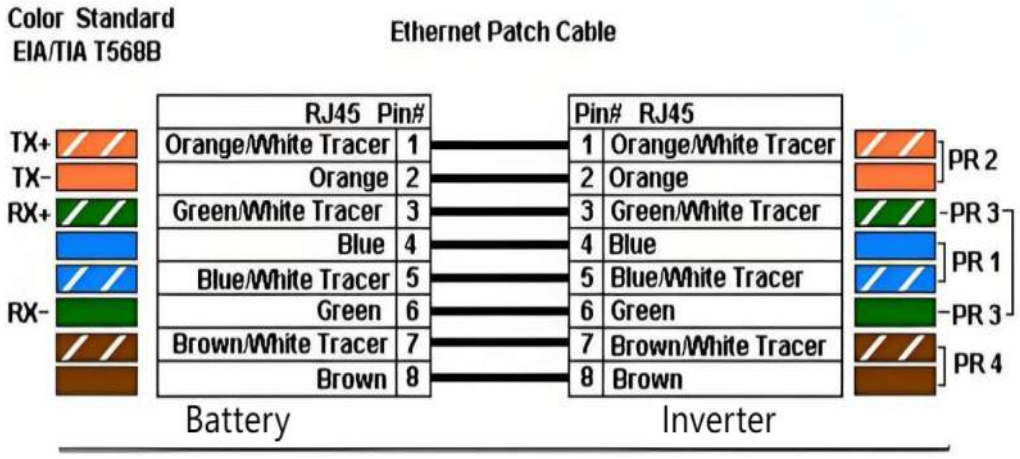


Figure 34: T568B Network Cable Standard

Section 6.8.2 Procedure

Step 1. Determine designation of the Inverter Port.

- Determine the designation of the Inverter Port from the Inverter Manual.
- Determine whether modification of the Inverter data cable connection is required.

Step 2. Modify the data cable (if required)

- If the data cable needs to be modified, cut the cable.
- Arrange the wire positions according to Inverter Manufacturer's manual.
- Crimp the RJ45 connector with a network wire clamp.

Step 3. Connect the data cable

- Connect the data cable from the **Master** battery module (CAN Port X2) to the corresponding port at the inverter.
- Ensure that Port X3 of the **Master** battery module (RS485-2 Port X3) remains not-connected (NC).

CAN Port (X2)
CAN/RS485 communications

Pin	Description
PIN1	Empty
PIN2	Empty
PIN3	Empty
PIN4	CAN-BUSH
PIN5	CAN-BUSL
PIN6	Empty
PIN7	RS485A1
PIN8	RS485B1

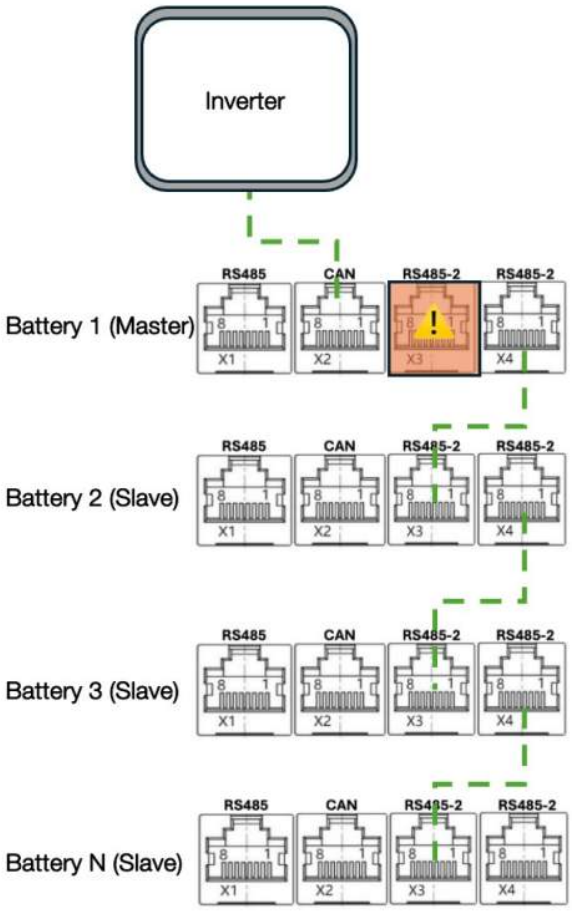


Figure 35: CAN/RS485 Port (X2) Communication Pins

Section 6.9 Top Cover and Side-Panel Installation

⚠ Notes

It is recommended not to install the side-panels and top cover until commissioning (refer to Section 9) has been completed. This is to avoid having to remove the top cover and side-panels in case of improper installation.

⚠ Notes

The BMS cannot be switched off (using the red button) without removing the side-panel cover. Ensure that the battery is functioning and operating as described in this installation manual prior to installation of the side-cover. It is noted that the bus-bar connections are not energized until the circuit breaker is switched into the on position.

Once all connections and cabling have been completed as described by the installation procedure in Section 6, the top cover and side-panels can be installed for completion of the installation process.

Materials Required:

1. LV-5KWH100AH Side-Cover Panels.
2. Fixing Screws for Side Panel.
    a. Four (4) per side-panel.
3. LV-5KWH100AH Top Cover.

Section 6.9.1 Procedure:

Step 1. Confirm connections and cabling

- Confirm busbar connections and terminals are secure and covered.
- Confirm inter-module data-cable connections.
- Confirm PE terminals, inter-module PE cabling, and screw connections.
- Confirm RPSD wiring (if installed).

Step 2. Install side panels

- Ensure all cabling and connections are secure and out of the way.
- Align Side-Panels of LV-5KWH100AH battery modules with screw holes and
- Use fixing screws to install side-panels in place.
- Repeat for all LV-5KWH100AH Battery Modules.

Step 3. Install top cover

- Align the fixing holes of the top cover and master battery module.
- Fit the top cover.

Section 6.10 Installation Completion Checklist

Walk through the completion checklist below to confirm installation completion prior to commissioning.

1. LV-5KWH100AH battery system made up of:

   b. Stacked LV-5KWH100AH Battery System in final installation location - Section 6.2.
   c. Protective Earthing between all Master and Slave battery modules, terminated at the battery caster base - Section 6.3.
   d. Secured busbar connections enclosed with terminal covers - Section 6.4.
   e. Communications connections between Master and Slave battery modules - Section 6.5.
   f. Side Panels and Top Cover installed with all cabling and connections inaccessible without use of a tool - Section 6.9.
   g. If required, Rapid Shutdown configured and tested - Section 7.

2. Battery to inverter DC cabling and communications including:

   a. DC cabling from **Master** battery module to external circuit breaker - Section 6.6.
   b. DC cabling from external circuit breaker to PCE / inverter - Section 6.6.
   c. Data cable connection from **Master** battery module to Inverter - Section 6.8.
   d. Protective Earthing from **Master** battery module to PE terminal on Inverter - Section 6.3.
   e. If required, isolation equipment between Battery System and Power Conversion Equipment as per AS/NZS 5139:2019 or relevant local and regional standards - Section 6.6 and Section 6.7.

3. Configured Master BMS including:

   a. Configured battery address for **Master** battery module.

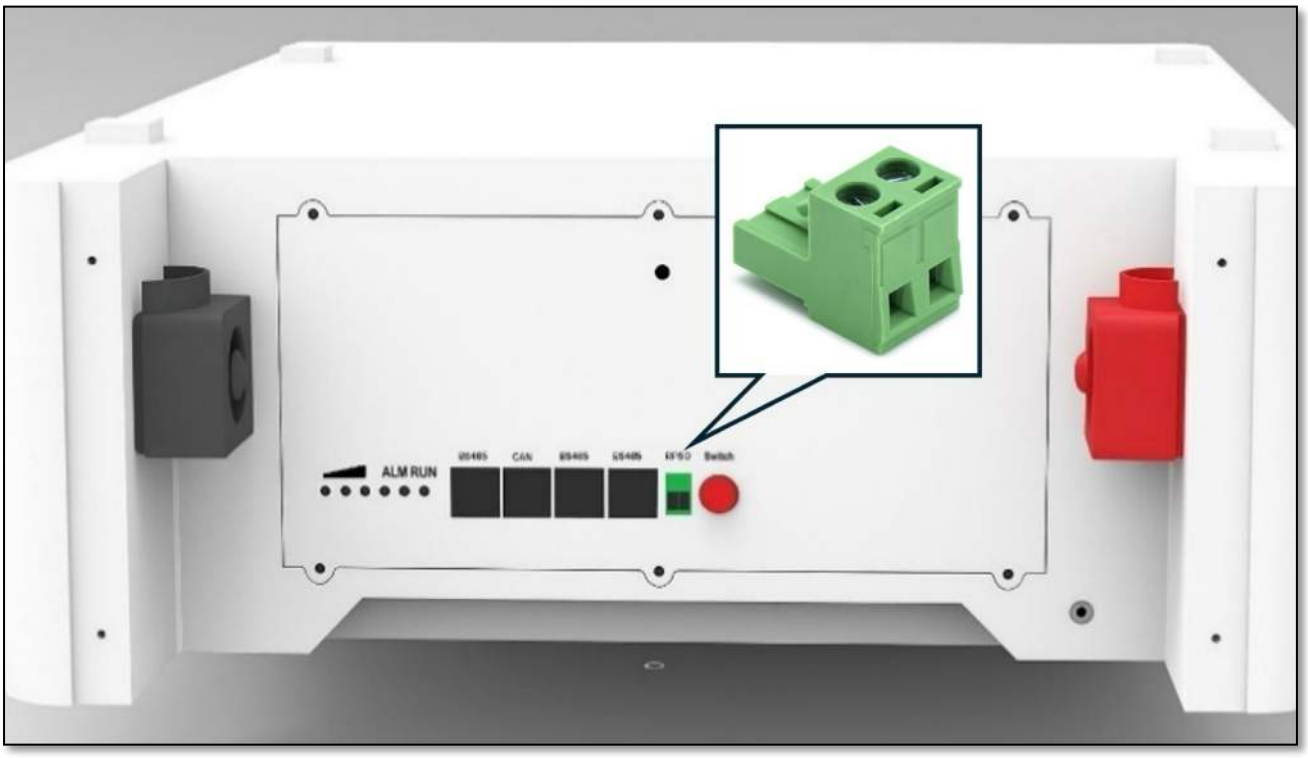
      - Note that the battery address of **Slave** battery modules should automatically configured -- Section 8.1.1.
      - This can be validated by navigating to "Settings" of the **Slave** battery module (for example., the 2nd battery module from the top should display Battery Address "2" in the settings page). If the battery address is not configured correctly it will need to be manually configured - Section 8.1.2.

   b. Configured Inverter Protocol on Settings page of **Master** battery module - Section 8.2.

Section 7 Rapid Shutdown

The RENOZ Energy LV-5KWH100AH battery module is equipped with a rapid shutdown (RPSD) dual-pin connector. If required, rapid shutdown can be configured using the following procedure.

⚠ Warning
Ensure the LV-5KWH100AH battery system is completely switched off and isolated. This includes the BMS, circuit breakers, and external circuit breaker to the Inverter.



Section 7.1.1 Materials Required:

- 2-conductor cable (18-24 AWG)
- Normally Open (NO) Emergency Stop Switch (or RSD button)
- Screwdriver

Section 7.1.2 Procedure:

Step 1. Ensure that all LV-5KWH100AH battery modules are switched off.

- Ensure that the BMS is switched off by testing the LCD user interface. The LCD should be black and unresponsive to touch. If the LCD screen activates with touch, press the red on/off button next to the RPSD 2-pin connector.
- Ensure that the circuit breaker on the LV-5KWH100AH is switched to the off-position.
- Repeat for all LV-5KWH100AH battery modules in the tower/system.

Step 2. Locate RPSD Terminals

- Remove side panels if installed.
- Identify the two RPSD terminals / connector pins on the LV-5kWH100AH.

Step 3. Prepare the cable

- Strip about 6mm of insulation from each end of the two-conductor cable.

Step 4. Connect the NO emergency stop switch (or RPSD)

- Connect one wire from the cable to each terminal of the Normally Open (NO) emergency stop switch (or RPSD button).

Step 5. Mount the NO emergency stop switch (or RPSD Button)

- Mount the switch in an accessible location for emergency use.

Step 6. Wire the switch to the RPSD terminals

- Connect the other ends of the cable to the two RPSD terminals on the Master LV-5KWH100AH battery system.
- Ensure the connections are secure by tightening the terminal screws (typical 0.22-0.25Nm).

Step 7. Wire the remaining LV-5KWH100AH Battery RPSD terminals

- Connect all Pin 1 terminals of the RPSD dual-pin connector for all LV-5KWH100AH master and slave packs in parallel.
- Connect all Pin 2 terminals of the RPSD dual-pin connector for all LV-5KWH100AH master and slave packs in parallel.

Step 8. Secure and test

- Tug gently on the wires to confirm they are firmly connected.
- With all LV-5KWH100AH master and slave modules powered on and energised test the RPSD switch.
- Pressing or closing the NO/RPSD switch should immediately initiate rapid shutdown of the system.
- The red alarm (ALARM) LED indicator will light up, and the LCD screen will display "RPSD ACTIVATED" – See Figure 36.
- Reset the Emergency Stop switch (or RPSD button).
- Clear the alarm by navigating to the Alarm page and pressing "Clear Record" – See Figure 37.

Step 9. Label the switch

- Clearly label the emergency stop switch as "RAPID SHUTDOWN" as per the relevant international/regional/local code requirements.

Figure 36: LCD User Interface - RPSD Activated State

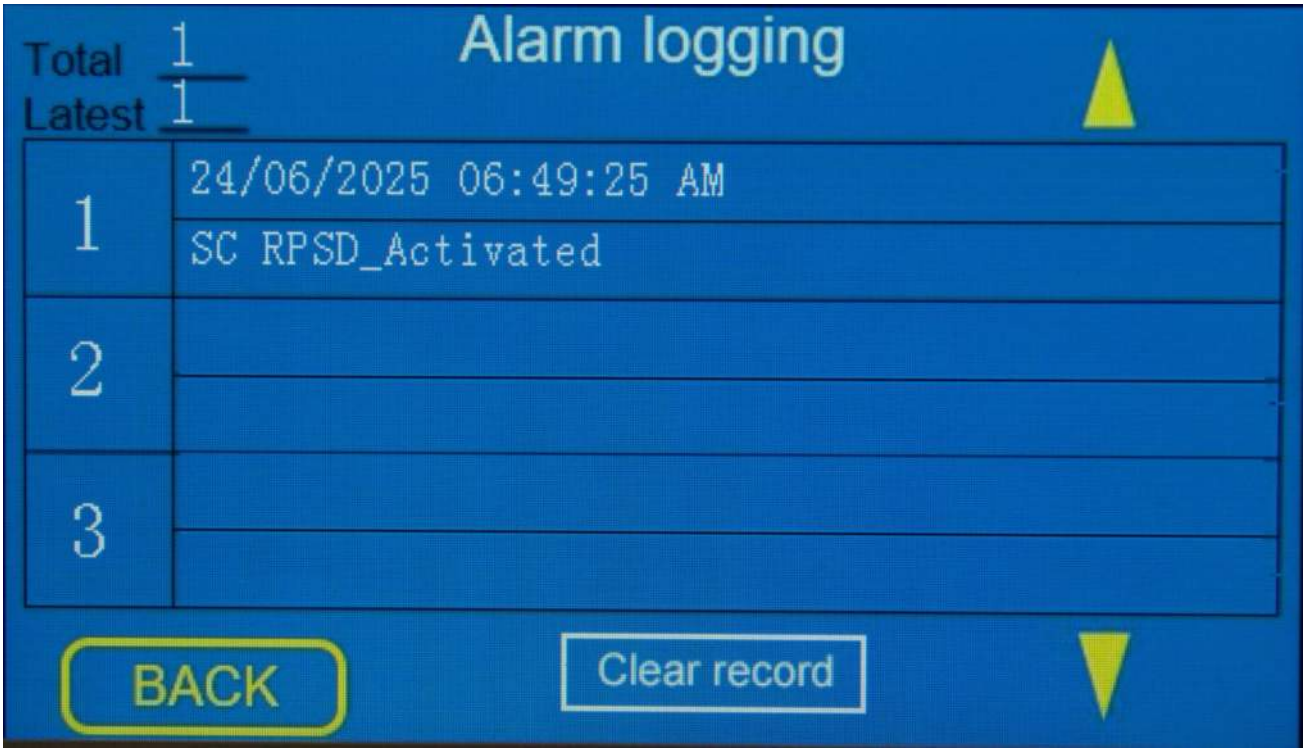


Figure 37: LCD User Interface – History Alarm Page (RPSD Activated)

Section 8 BMS Configuration

Section 8.1 Activate the BMS of the Battery Modules

⚠ Caution
The BMS of the LV-5KWH100AH all battery modules must be switched on for this step. Refer to Section 4.1 for instructions on how to switch on the LV-5KWH100AH BMS.

⚠ Warning
Do not switch the circuit breaker into the on-position during this step Ensure that the external circuit breaker between the Inverter and the Battery System is switched to the "isolated" position

Step 1. Select the master battery module.

- Before interacting with the LCD User Interface, determine which battery module is going to be the Master. This is the battery module to be connected to the inverter.
- Typically, this will be the top-most battery module, closest to the Inverter (if you have multiple battery towers).
- All other battery modules in the system will therein be referred to as **Slave** battery modules

Step 2. Switch on the master battery module BMS.

- Press the red button on the LV-5KWH100AH **Master** battery module
- Do not switch the circuit breaker of the battery module into the on-position

Step 3. Switch on the slave battery modules BMS.

- Press the red button on all the LV-5KWH100AH **Slave** battery modules.
- Do not switch the circuit breaker of the battery module into the on-position

Step 4. Check that the BMS is activated on all battery modules.

- Check that the BMS is activated on all connected Master and Slave battery modules by lightly pressing the LCD Screen of all battery modules.

Section 8.1.1 Automatic Configuration of the Master Battery Module Address

⚠ Notes

A passcode will be required for configuration of the Battery Address and Charging Voltage Limit. This passcode is accessible to RENOZ Energy Trained Installers only.

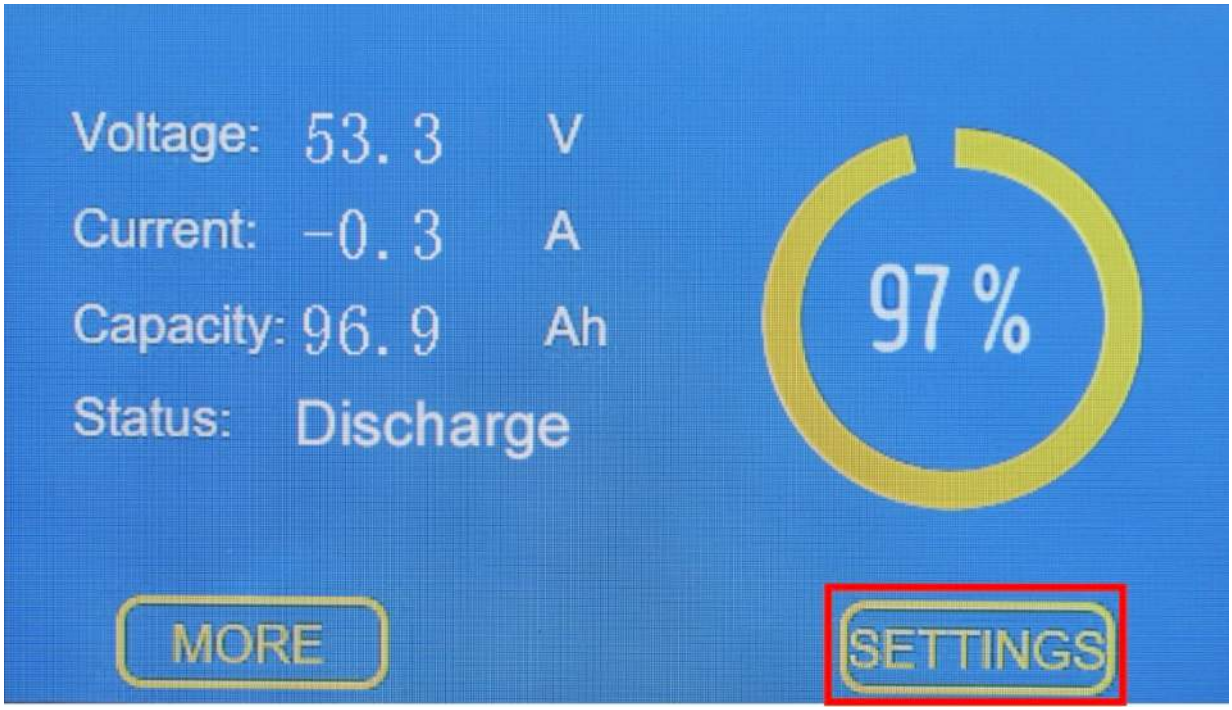
To request this passcode prior or during installation, contact RENOZ Energy at https://renoz.energy or via the 24/7 support line.

Prior to connection of the LV5KWH100AH **Master** battery module to the **Inverter**, the **Master** battery address needs to be assigned in the BMS. The **Slave** batteries will be automatically assigned ***after the Master address is set.***

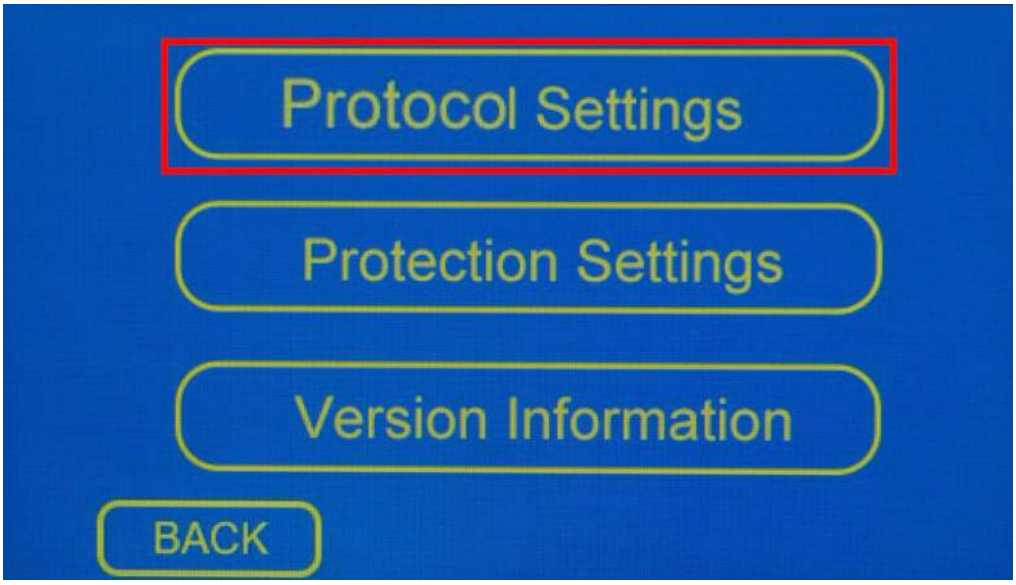
Step 1. Activate the LCD user interface of the master battery module.

- Ensure that the BMS is switched on for all connected battery modules
- Lightly tap the LCD user interface of the **Master** battery module.

Step 2. Navigate to the settings screen.

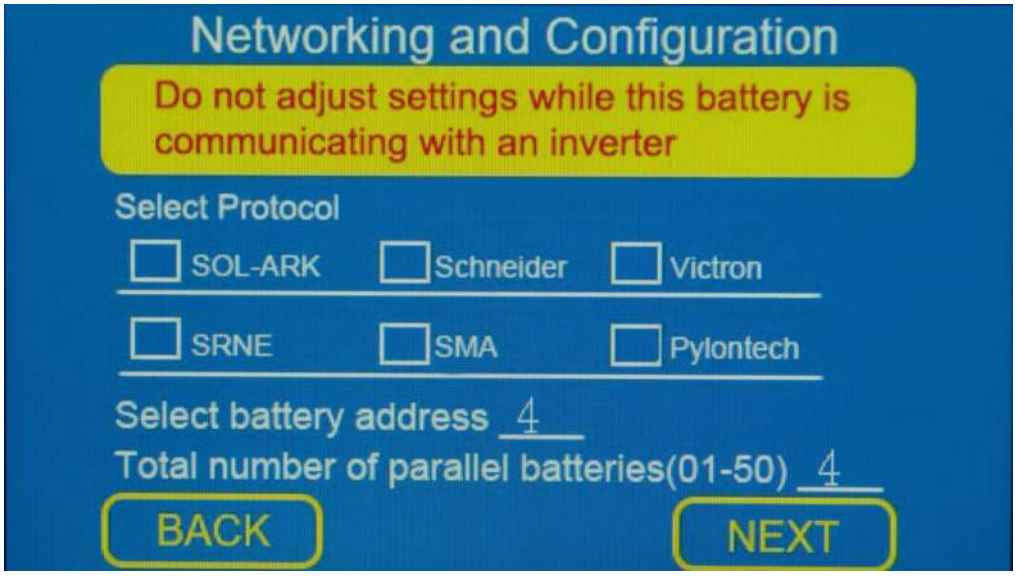


Step 3. Navigate to the protocol settings.



Step 4. Configure the battery address and number of modules on the master battery module.

- The installer will be prompted for passcode to open the Settings Page
- Enter the passcode as directed.
- Navigate to Protocol Settings
- Set the Battery Address of the **Master** Battery Module to "1".
- Set the number of modules as per the total system configuration.
- Once the Battery Address of the **Master** battery module is set, the battery address of the **Slave** battery modules will auto-configure.



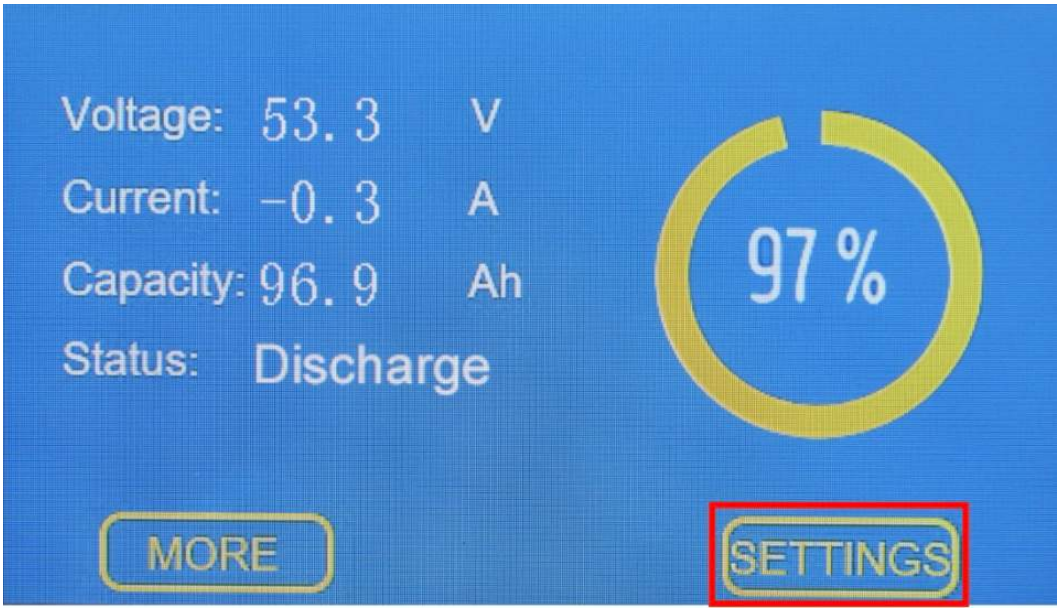
Section 8.1.2 Manual Configuration of Battery Address (if required)

In the situation that the Battery Address of the LV-5KWH100AH battery modules does not configure automatically, the battery address can be manually configured.

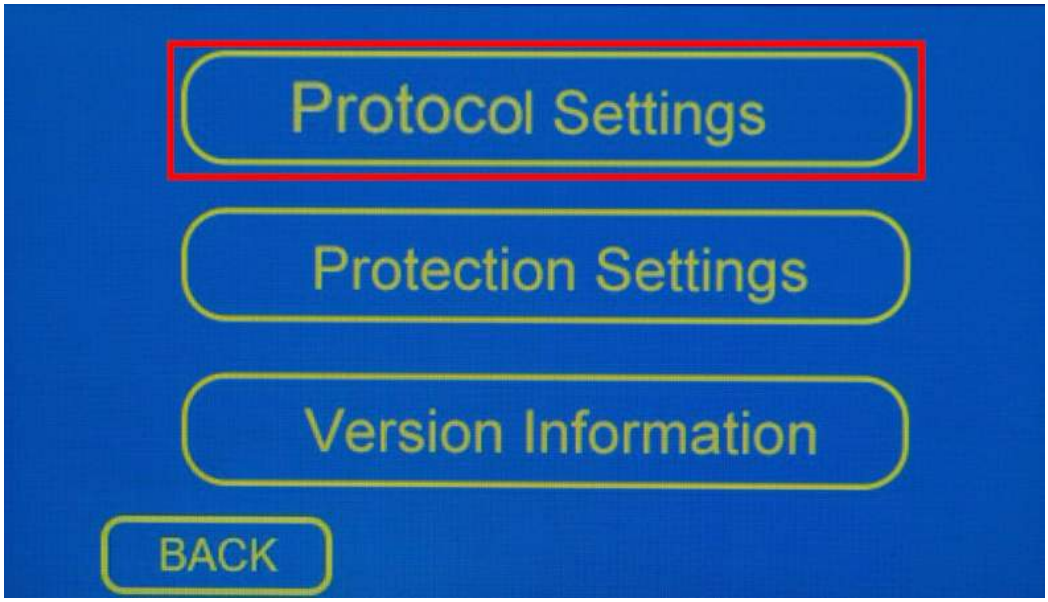
Step 1. Activate the LCD user interface of the master battery module.

- Ensure that the BMS is switched on for all connected battery modules
- Lightly tap the LCD user interface of the **Master** battery module.

Step 2. Navigate to the settings screen.

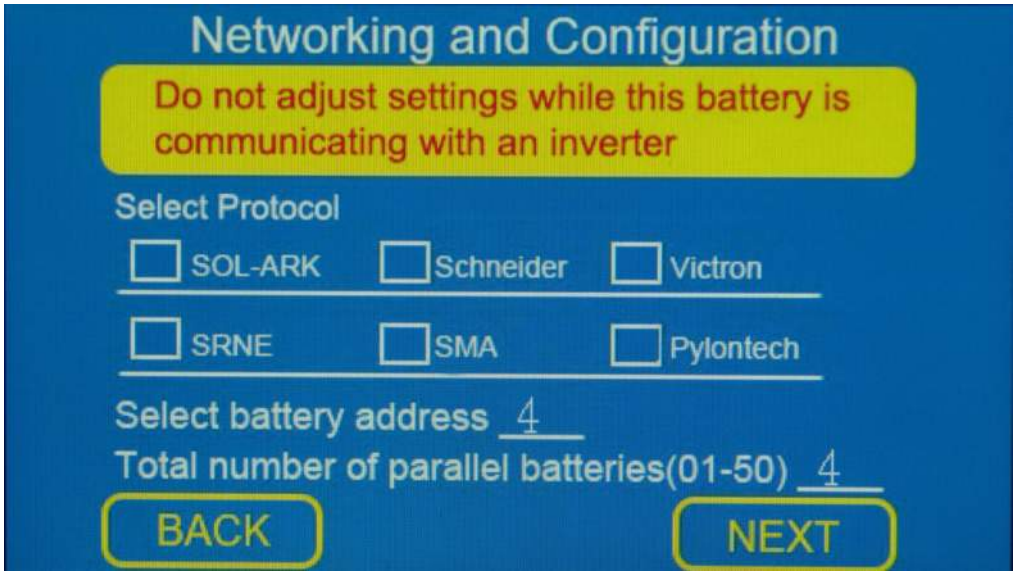


Step 3. Navigate to the protocol settings.



Step 4. Configure the battery address and charge voltage limit of the master battery module.

- The installer will be prompted for passcode to open the settings page.
- Enter the passcode as directed.
- Set the Battery Address of the **Master** Battery Module to "1" using the keyboard.



Step 5. Repeat configuration of the battery address for the 2nd battery module.

- Repeat Steps 1-2
- Set the Battery Address of the **Master** Battery Module to "2" using the LCD keyboard.

Step 6. Repeat configuration of the battery address for the remaining battery modules.

- Repeat Steps 1-2
- Set the Battery Address of the **Master** Battery Module to "3" using the LCD keyboard.
- Repeat for all remaining battery modules in sequence. Ensure that the battery address is in numerical, ascending sequence for all battery modules.

Section 8.2 Configure the Inverter Settings on the Battery Module BMS

After the data connection between the **Master** battery module and the Inverter has been made, the **Master** battery module BMS must be configured with the corresponding inverter protocol.

⚠ Warning
Do not switch the battery module circuit breaker into the on-position during Ensure that the external circuit breaker between the Inverter and the Battery System is switched to the off position

Step 1. Check connections

- Validate that all busbar and communications connections have been securely fastened.

Step 2. Ensure the battery module circuit breakers are switched off.

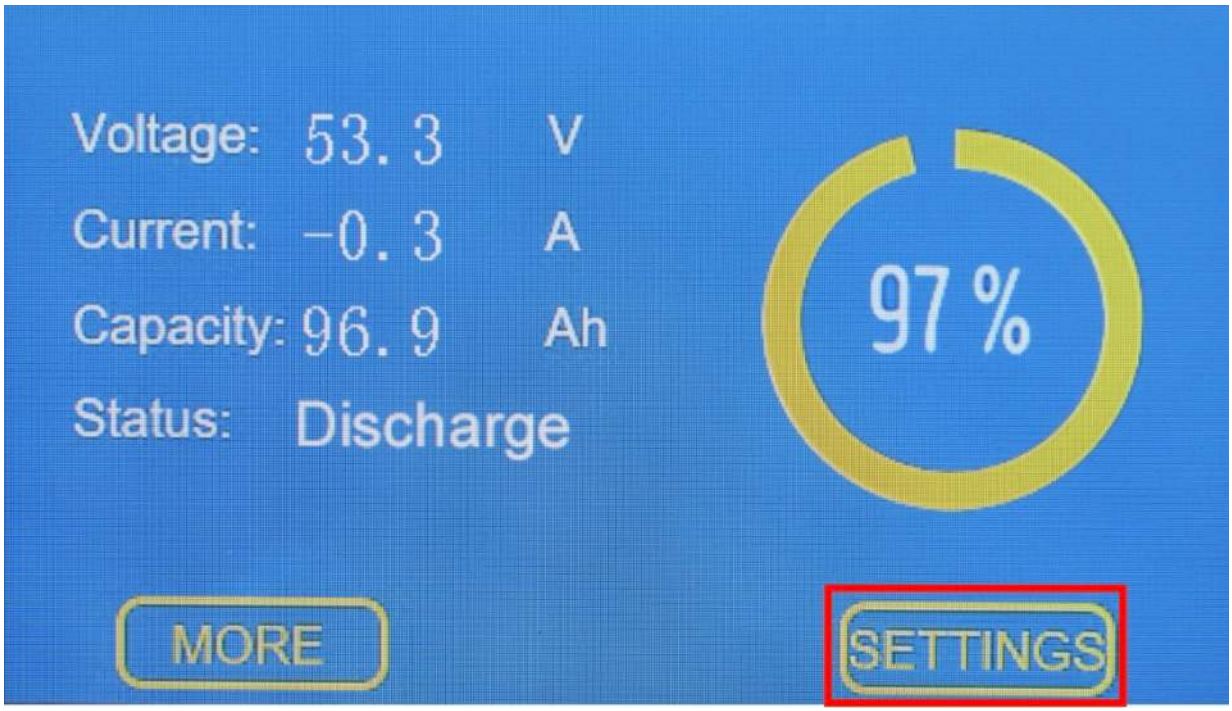
- Ensure the circuit breakers on the battery modules are in the off position.

Step 3. Activate the LCD user interface of the master battery module.

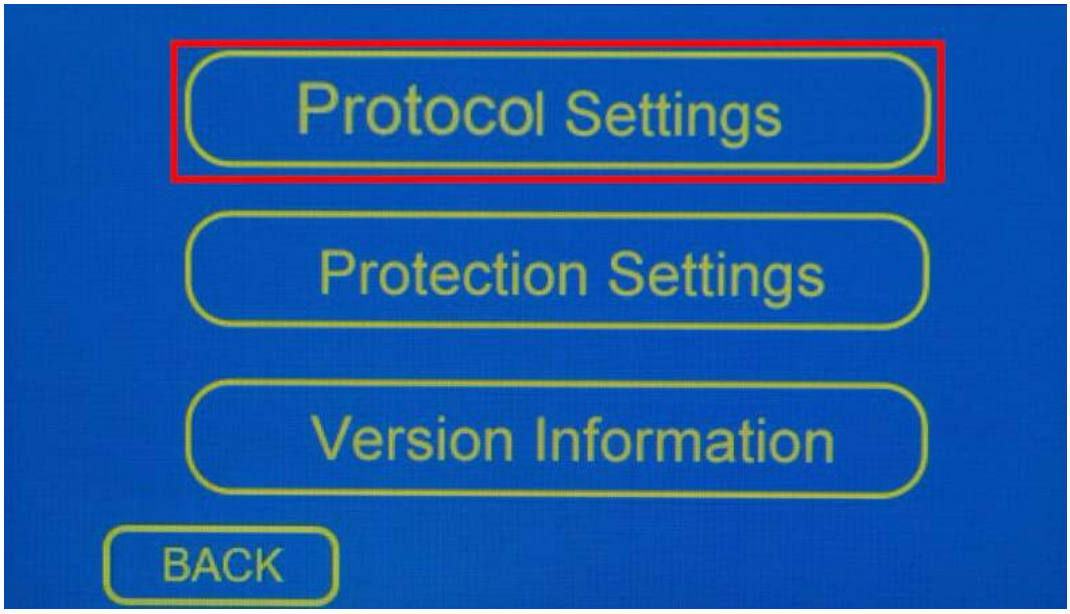
- Ensure that the BMS is switched on for all connected battery modules
- Lightly tap the LCD user interface of the **Master** battery module.

Step 4. Navigate to the settings screen.

- The installer will be prompted for passcode to open the settings page.
- Enter the passcode as directed.

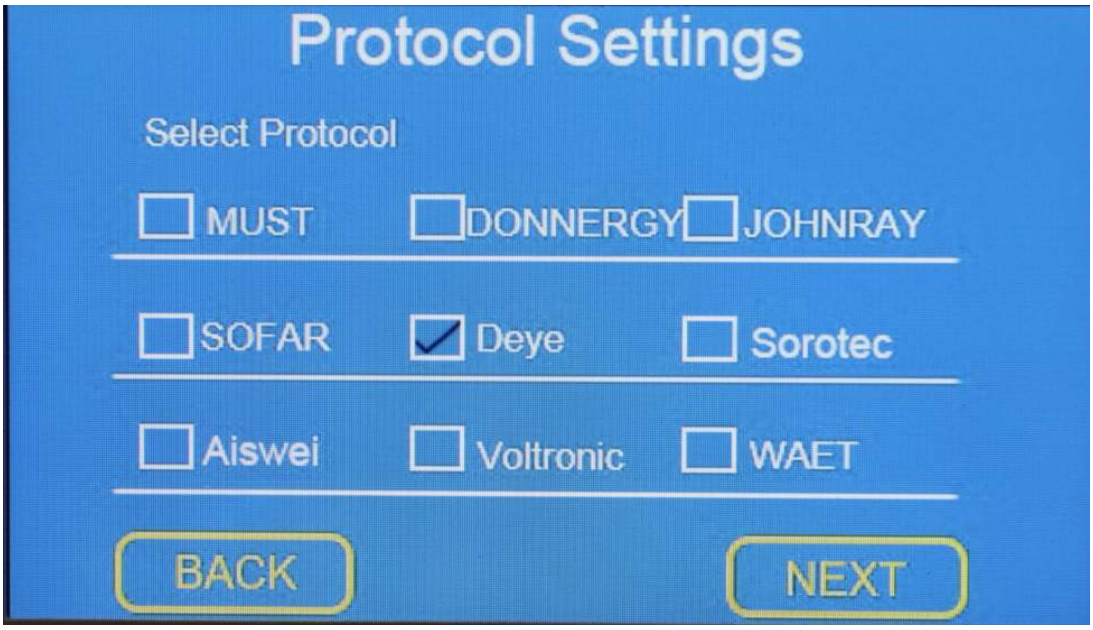


Step 5. Navigate to the protocol settings.



Step 6. Select the corresponding inverter brand.

- Select the corresponding inverter brand for the installed inverter.
- Upon selecting the corresponding inverter brand, navigate back to the home screen.



Step 7. Validate that the inverter protocol has been configured correctly.

- After selecting the corresponding inverter protocol, exit back to the home screen.
- Navigate back to the settings page and confirm that the BMS is now configured to the appropriate inverter brand.
- Note that the Inverter protocol does not need to be configured on the **Slave** modules.

Section 9 Commissioning

Commissioning must be performed only by a qualified Electrical Contractor or Installer qualified and trained in the relevant international/national/regional standards and directives.

Requirements

- The DC power cable connection between the battery system and the inverter must be switched off.
- The inverter must be correctly mounted and switched off.
- All cables must be secured and correctly connected.
- The external circuit breaker (if any) is switched off.

Section 9.1 Procedure

Step 1. Ensure the BMS for all LV-5KWH100AH battery modules are switched on.

- Press the red (on/off) button on the side of all LV-5kWH100AH battery modules.
- The run indicator light will begin flashing to indicate the BMS is in normal working state.
- The LCD will also switch on, displaying the RENOZ Energy logo followed by the battery status screen. If required, lightly tap the LCD screen to activate the user interface.

Step 2. Switch the LV-5KWH100AH circuit breakers into the on position.

- Switch the LV-5KWH100AH circuit breakers on the rear panel into the on position (up position) for all battery modules.
- The insulated busbars of all LV-5KWH100AH modules will now be live.
- Validate the busbar connections using a multimeter or equivalent.
- The Voltage at the DC connection and inverter can be measured. The expected range is between 48V and 56V (i.e., >20% SoC <70%).

Step 3. Switch the dedicated battery tower circuit breakers into the on position.

- If multiple towers are installed, switch the dedicated battery tower circuit breaker into the on position.

Step 4. Switch the external circuit breaker between the battery system and the inverter into the on position.

Step 5. Switch on and commission the inverter.

- Commission and configure the inverter according to the inverter manufacturer's instructions.

Step 6. Confirm the battery system and inverter are configured correctly.

- Confirm the battery system and Inverter are communicating correctly.
- Validate that battery information is correctly displayed in the Inverter software or hardware interface.
- Confirm no alarm indicators or faults.
- If any faults arise refer to Troubleshooting Table in Section 11.

Section 10 Decommissioning

Decommissioning must be performed only by a qualified Electrical Contractor or Installer qualified and trained in the relevant international/national/regional standards and directives.

Section 10.1 Procedure

Step 1. Switch off the inverter.

Step 2. Switch the external circuit breaker between the battery system and the inverter into the off position.

Step 3. Switch the dedicated battery tower circuit breakers into the off position (if required).

- If multiple towers are installed, switch the dedicated battery tower circuit breaker into the off position.

Step 4. Switch the LV-5KWH100AH circuit breaker into the off position.

- Switch the LV-5KWH100AH circuit breakers on the rear panel into the off position (down position) for all battery modules.
- The insulated busbars of all LV-5KWH100AH modules will now be de-energised.

Step 5. Remove top cover and side plates.

- Remove the Top Cover and Side Plates of LV-5KWH100AH battery modules.

Step 6. Ensure the BMS for all LV-5kWH100AH battery modules are switched off.

- Press the red (on/off) button on the side of all LV-5KWH100AH battery modules.
- The SoC/run indicator lights will turn off to indicate the BMS is in shutdown mode.

Step 7. Disconnect the inverter and master battery module.

- Disconnect the DC cabling between the inverter and Master battery module.
- Disconnect the PE cabling.
- Disconnect the data cables.

Step 8. Disconnect the LV-5KWH100AH battery system.

- Disconnect the PE cabling.
- Disconnect the data cabling.
- Disconnect the busbars and terminal connections.

Step 9. Unstack the LV-5KWH100AH battery system.

- Unstack the LV-5KWH100AH battery modules from the tower.

If the battery system is to be stored or shipped, pack the system. Use the original packaging or packaging that is suitable for the weight and dimensions of the system.

Dispose of the battery system in accordance with the locally applicable disposal regulations for electronic waste.

Section 11 Troubleshooting

Section 11.1 Battery System Behaviour Under Fault Conditions

1. **Fault: Alarm Indicator On**

- If the red LED activates and stays solid, it indicates a fault has occurred.
- When the LCD user interface is activated, the corresponding error will appear on the screen, and you can view the fault in the history log (refer to the error codes in Section 11.3).

2. **Fault: The battery cannot be turned on.**

- Confirm that the LV-5KWH100AH battery system has been installed and commissioned according to this user manual.
- Confirm that the system is paired with a compatible inverter as stated in the Manufacturer Official Inverter Compatibility Statement. This can be found at https://renoz.energy
- Refer to Section 4.1 for startup procedure.
- If the problem cannot be resolved, contact RENOZ Energy after-sales support

3. **Fault: The battery system cannot be turned off.**

- Refer to Section 4.2 for shutdown procedure.
- If the problem cannot be resolved, contact RENOZ Energy after-sales support

⚠ Notes
If the battery is installed correctly and there is no immediate recognizable fault, the battery system may be damaged due to under-voltage. Otherwise, the battery system may be permanently damaged. Contact RENOZ Energy after-sales support.

Section 11.2 Viewing Alarms

Alarms can be viewed by following the procedure below:

Step 1. Navigate to the Alarms Page

- Navigate to the alarms page by clicking on the "More" Button on the Home Screen as per Figure 38
- Continue clicking "Next" until "Alarms Details" is shown as per Figure 39.

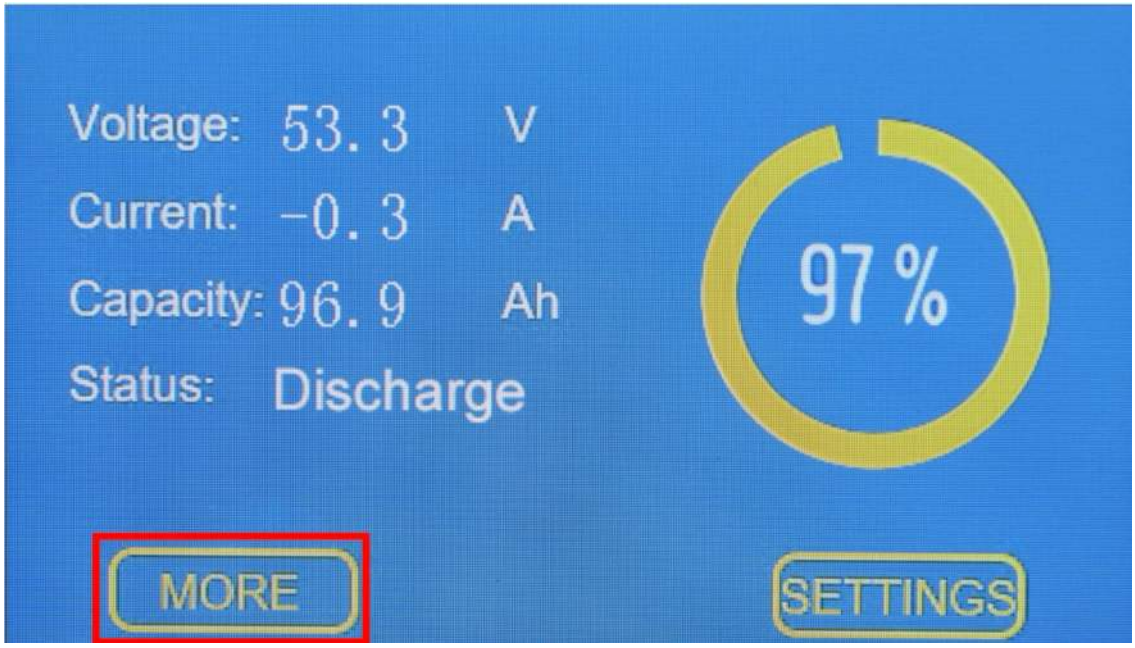


Figure 38: Home Screen – Navigating to Alarm Details

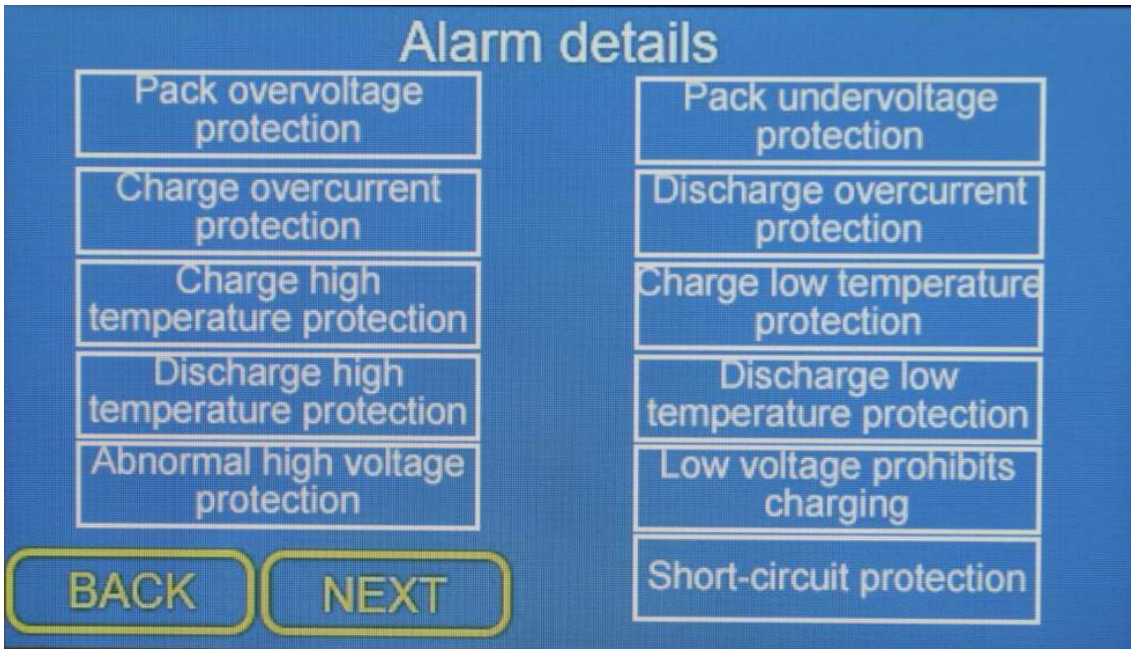


Figure 39: LCD User Interface – Navigating to Alarm Details

Step 2. View Historical Alarms

- Historical will be able to be viewed on the "Alarms History Page"
- Refer to Section 11.3 for Alarm Fault Codes

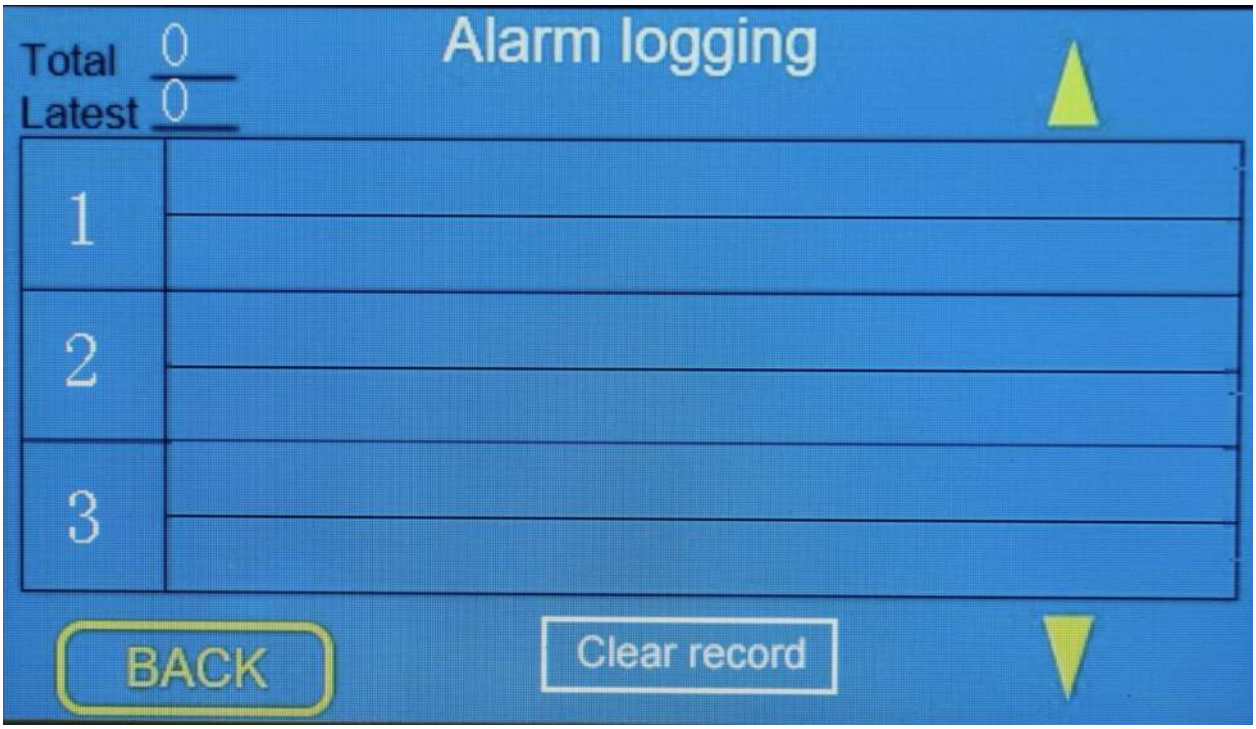


Figure 40: LCD User Interface – Alarms History Page

Section 11.3 Alarm Fault Codes

The table below describes the LV-5KWH100AH alarm fault codes displayed on the "Alarms History" page.

Table 9: LV-5KWH100AH Alarm Fault Codes

Fault Code	Description
OCC	Charging over-current protection
UTC	Charging low temperature protection
OTC	Charging high temperature protection
OCD	Discharge over-current protection
UTD	Discharge low temperature protection
OTD	Discharge high temperature protection
OV	Single cell over-voltage protection
UV	Single cell under-voltage protection
SC	Short circuit protection
RPSD Activated	Emergency stop alarm
C-MOS fault/D-MOS fault	Charge/discharge MOS fault

Section 11.4 BMS Software Version

The BMS software version may need to be interrogated for support queries and/or warranty claims. The BMS Software Version can be viewed by navigating to the Version Information page from the Settings Page.

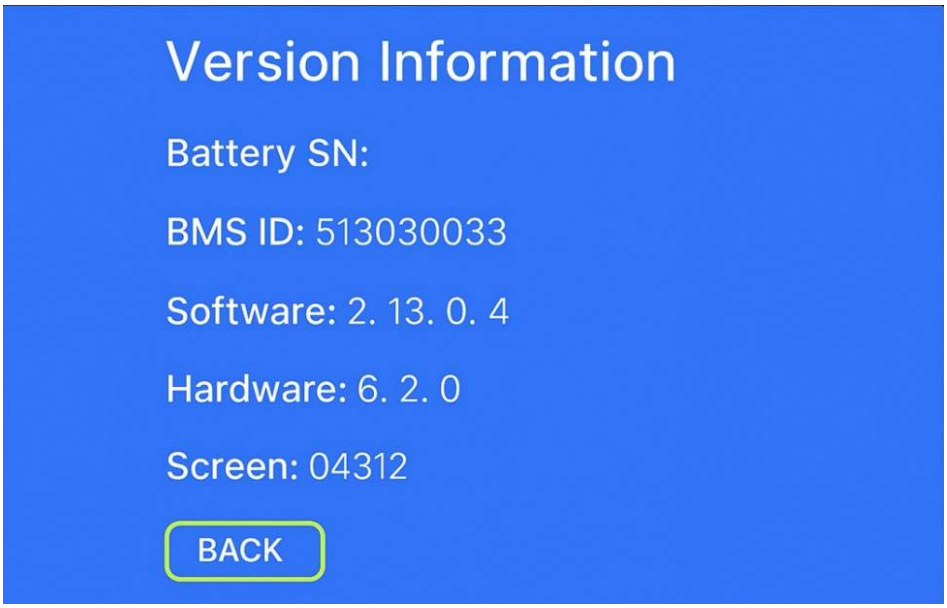


Figure 41: Version Information Page

Section 11.5 Servicing and Maintenance Troubleshooting Options

⚠ Warning

Troubleshooting must only be performed a qualified Electrical Contractor or Installer qualified and trained in the relevant international/national/regional standards and directives. Any servicing and maintenance performed by a non-qualified individual may result in voiding of your warranty. Refer to the RENOZ Energy LV-5KWH100AH Residential Product Warranty at https://renoz.energy.

Description	Cause	Corrective Action
Communication Failure	Incorrect RJ45 wiring Battery address conflict Protocol mismatch	Verify correct PIN assignment on RJ45 connector. Reset battery address according to system configuration. Confirm protocol selection matches inverter/BMS requirements.
No DC Output	Battery shutdown due to undervoltage or tripped circuit breaker	Check all circuit breakers Turn on battery. Charge battery to restore voltage.
Reduced Runtime	Insufficient capacity Incomplete charging	Verify full charging cycle. Inspect for loose connections and cabling. Contact authorized service provider for warranty assessment if capacity remains low.
Incomplete Charging	Charging voltage too low	Verify and reset charging voltage parameters per system specification.
Reduced Capacity	Cell voltage imbalance	Review cell voltage readings. Allow BMS active balancing function to operate. Contact RENOZ Energy after sales support if imbalance persists.
Charge/Discharge Failure	BMS, cell, or sensor failure	Contact RENOZ Energy after sales support for warranty service.
Overcurrent Protection	Excessive charge or discharge current	Reduce system load to within rated current limits.
Temperature Protection	Over-temperature or under-temperature	Power off system. Allow temperature to stabilize within safe operating range.
Voltage Protection	Overvoltage or undervoltage	Charge or discharge system to restore normal voltage range.
Short Circuit Detected	External or internal short circuit	Isolate system and identify short circuit source. Do not attempt internal service. Contact RENOZ Energy after sales support.
LCD Display Fault	Touchscreen error or freeze	Contact RENOZ Energy after sales support for warranty service.

Disposal of the battery system

Disposal of the system must comply with the local applicable disposal regulations for electronic waste and used batteries.

Do not dispose of the battery system with your household waste.

Avoid exposing the batteries to high temperatures or direct sunlight.

Avoid exposing the batteries to high humidity or corrosive atmospheres.

For more information, please contact RENOZ Energy or your local lithium-ion battery recycling facility.

Contact Information

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